
APPENDICES



Madison County farm with windmill in the background (Photo: Saltman)

- Appendix A** FLOODING AND WATER LEVEL MANAGEMENT
Process
Accomplishments
Groups and Responsibilities
Flood Definitions
Presentation Summaries
Literature Citations
- Appendix B** BOATING RULES
- Appendix C** NEW YORK STATE DEPARTMENT OF HEALTH FACT SHEET
- Appendix D** PUBLIC COMMENTS

Appendix A: Flooding and Water Level Management

The Flooding and Water Level Management Working Group met on a regular basis for a twelve-month period during 2003 and 2004. Special emphasis was placed on research and education and several guest speakers were invited to present at the meetings. The following information was compiled by the Working Group members and most agreed with the contents of these documents. Full group endorsement was not reached, however, as several people did not agree with the information presented or with the manner in which historical data was interpreted.

Process

Organizations, businesses, and homeowners throughout the watershed have expressed many differing opinions regarding flooding and water level management. The Flooding and Water Level Management (F/WLM) Working Group was comprised of a diverse collection of representatives that met on a monthly basis for approximately 12 months with the assistance of a meeting facilitator from Cornell University.

Education was identified as an integral component of the Working Group process and a considerable amount of time was therefore spent reviewing documents and hearing presentations from guest speakers. Education and outreach ideas for homeowners, elected officials, and other primary stakeholders are emphasized in the list of recommendations.

Throughout the duration of this period, the Working Group agreed on several important points:

- A specific timeline was established for compiling the recommendations;

- Several important issues relating to flooding and water level management were determined to be beyond the scope of the Working Group because of time restrictions, inadequate availability of information, conflicting opinions, and/or because the appropriate stakeholders were not participating in the discussions. This includes the following topics: downstream (beyond the watershed boundary) issues, upstream water storage and flooding, dam remnants removal, dredging of the shoals, interpretation of several technical reports, rulings from recent law suites, water level regulation by hydropower companies on the Oswego River, and GIS mapping of flood prone areas;

- Although upstream and downstream impacts were considered and recognized to be potentially relevant factors, the current priority was to develop recommendations to address only flooding and water level management along the Oneida Lake shoreline;

- Effective surface water management is a regional issue and decisions to alleviate flooding in the Oneida Lake watershed require regional partnerships with lake communities throughout the Oswego River Basin.

Accomplishments

Throughout the course of 12 months, the Working Group accomplished the following tasks:

- Educational programs and opportunities were discussed at length for primary decision-makers as well as the general public. Recommendations were developed to provide greater assistance to home and business owners prior to flooding and after the flooding has occurred.
- Flooding definitions were developed for improved communication among Working Group members. Because stakeholder groups frequently interpret the terms “flooding” and “flood damage” differently, the Working Group defined levels of flooding and discussed methods to evaluate flood damage. Definitions were developed for nuisance high water, minor flooding, and major flooding levels in both US Geological Survey and Barge Canal datum.
- Working Group stakeholders were surveyed to determine the optimum numeric water level objectives and the information was presented in graphic format.
- There are many uses of the lake. The Working Group debated on whether water level management decisions should be made to facilitate tourism, recreation, fisheries and wildlife habitat, commercial navigation, flood control, and/or boat launch and marina profitability. To learn more about this issue, a guest speaker from the United States Geological Survey (William Kappel) was invited to present to the Working Group. Diverse lake uses were considered when the recommendations were compiled.
- The timing of water level fluctuations has a direct impact on lake ecology. Discussions focused on the challenging task of managing the lake water levels for maximum protection

of aquatic habitat, while acknowledging diverse recreational uses and recognizing existing statute and liability concerns. A guest speaker from the Cornell Biological Field Station (Dr. Edward Mills) was invited to discuss aquatic impacts from water level fluctuations. The protection of aquatic habitat was considered when water level recommendations were developed.

- Working Group members attended Fisheries Working Group meetings to facilitate communication and to discuss recommendations that were consistent between the two groups. The Fisheries Working Group was asked to coordinate with the F/WLM Working Group to establish water levels that are beneficial to fish habitat and spawning.
- There was an initial lack of understanding among Working Group members regarding the control structures regulating water level in the lake. In response to this need, Howard Goebel, a representative from the New York State Canal Corporation, was invited to present information on what structures are in place and who is responsible for their operation.
- The Working Group reviewed the timing of the navigation regulations (the dates the NYS Canal Corporation begins and ends their control of the system each year) and evaluated the impacts of flooding in relation to the navigation season. Recommendations were based on these findings.
- Accurate GIS mapping was identified by the Working Group as a critical need in order to evaluate the current flooding problems and to set water level goals. H. Goebel (NYS Canal Corporation) and S. Ingmire (Madison County Planning Department) researched current mapping capabilities and determined that there was insufficient coverage in the current digital elevation model (DEM) to provide a graphical

depiction of lake levels for varying (approximately 1 foot increments) water levels. In a July 1, 2003 e-mail correspondence, Goebel stated that unless a 1-foot DEM is available, this method is not capable of producing

accurate results. Given the inherent uncertainty of the current DEMs (only precise to 40 feet), the ultimate end product would be very unreliable with considerable error.

Groups and Responsibilities

Central New York Boating Industry Association

Ray Cooper, Board Member
2302 West Genesee St., Baldwinsville, NY,
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Email: CNYBIAMailbox@Gisco.net
Website: cnybia.com

The Central New York Boating Industry Association (CNYBIA) is a group that is dedicated to the ways and means of enjoying boating in Central New York. The CNYBIA helps both the federal and state government spread information about rules and regulations that concern boating or use of water resources in NYS, Lake Ontario, the Canal System, or the St. Lawrence Seaway. CNYBIA looks to promote the resources within their membership and protect the local waterways. Membership includes a variety of boat related small businesses in CNY.

Central New York Regional Planning and Development Board

David Bottar, Director
126 N. Salina Street, 100 Clinton Square,
Suite 200, Syracuse, New York 13202
Phone: (315) 422-8276 Fax: (315) 422-
9051 Website: www.cnyrpdb.org

The Central New York Regional Planning and Development Board (CNY RPDB), a public agency established in 1966 under state municipal law, is supported by Cayuga, Cortland, Madison, Onondaga and Oswego counties. Through communication, planning, policy-making, coordination, advocacy, and technical assistance, the CNY RPDB serves its member-counties by helping to address regional issues on an intermunicipal basis. With US EPA and

NYS DEC funds, the CNY RPDB is coordinating the three-year Oneida Lake Watershed Management Planning Project (www.cnyrpdb.org/oneidalake). Under the guidance of the Watershed Advisory Council, the CNY RPDB worked with agencies, organizations and stakeholders throughout the watershed to identify goals and compile recommendations for the long-term management of Oneida Lake and its watershed. Flooding and water level management are high priority issues of concern that were identified in the *Oneida Lake State of the Lake and Watershed Report*.

Central New York Waterways Association Inc.

Samuel P. Cimilluca, President
P.O. Box 33, Baldwinsville, New York, 13027
Phone: (315) 437-4663

The Central New York Waterways Association was formed in July of 2001, after the Cross Lake Seneca River Association retired. In the last two years the board has been researching canal problems and its history. In July of 2002 the Association set goals to get the state and canal representatives to act on the settlement from the class action lawsuit initiated by Kent Partridge. The Judge, after agreement by both parties, issued the following: install a bladder dam at Baldwinsville; install two additional floodgates at Phoenix; and remove the old dam base at Caughdenoy.

Cornell Cooperative Extension of Onondaga County

Amy M. Samuels, Extension Educator
220 Herald Place, 2nd Floor, Syracuse, New York, 13202-1045 Phone: (315) 424-9485
Fax: (315) 424-7056

Website: www.cce.cornell.edu/onondaga
Cornell Cooperative Extension (CCE) of Onondaga County offers educational programs, resources, and services for communities, families and individuals. The CCE educational system builds partnerships and coalitions with individuals, communities, organizations, government agencies, and businesses around issues of mutual concern. While CCE of Onondaga County has not been actively involved in lake level issues, CCE has worked with some watershed municipalities and citizens to help them understand the connection between land-use and flooding.

Federal Emergency Management Agency Region II

26 Federal Plaza, Suite 1307, New York, New York, 10278-0001
Phone: (212) 680-3600 Fax: (212) 680-3681
Website: www.fema.gov

The Federal Emergency Management Agency (FEMA) – a former independent agency that became part of the newly established Department of Homeland Security in March 2003 – is tasked with responding to, planning for, recovering from, and mitigating against disasters. FEMA is the federal agency in charge of the National Flood Insurance Program (NFIP). The NFIP is a collaboration between local communities and the federal government, where the federal government issues flood insurance to communities that formally adopt floodplain management regulations to reduce the risks associated with flooding.

Herkimer-Oneida Counties Comprehensive Planning Program

Jessica Breiten, Chief Planner
The Boehlert Center at Union Station, 321 Main Street, Utica, NY 13501
Phone: (315) 798-5710 Fax: (315) 798-5852
Website:
www.co.oneida.ny.us/oneidacty/gov/dept/planning/planningindex.htm

The Herkimer-Oneida Counties Comprehensive Planning Program (HOCCPP) is one of nine Regional Planning Councils in New York State established under State municipal law. Through communication, planning, policy-making, coordination, advocacy, and technical assistance, HOCCPP serves its member-counties by helping to address regional issues on an intermunicipal basis. The Regional Planning Program routinely provides assistance in the study of both structural and non-structural flood mitigation alternatives for area creeks and waterways. The program offers local governments assistance in flood hazard mitigation activities - acting as a liaison between the local governments and the NYS DEC and Army Corps of Engineers. HOCCPP routinely coordinates efforts with the NYS DEC, the US Army Corps of Engineers, the State Emergency Management Office (SEMO), the Federal Emergency Management Agency (FEMA) in the development of Community Flood Hazard Mitigation Plans and other flood hazard mitigation activities. HOCCPP also maintains close working relationships with other agencies involved in flooding and water level management such as Soil and Water Conservation Districts, the NYS Canal Corporation, and Cooperative Extension.

New York State Canal Corporation

Howard M. Goebel, P.E., Hydrologist
200 Southern Boulevard, P.O. Box 189,
Albany, New York, 12201-0189
Phone: (518) 471-5888 Fax: (518) 471-5936
Website: www.canals.state.ny.us

The NYS Canal Corporation (NYSCC) operates the NYS Canal System (formerly the Barge Canal, and previously the Erie Canal). The NYSCC continually monitors the canal system and makes adjustments to the Caughdenoy Dam to meet their primary responsibility of navigation. The relative importance of the numerous secondary uses, including fish and wildlife, irrigation, drought and flood control, and recreation are also considered. Each of the seven taintor gates at the Caughdenoy Dam are fully opened at the end of each navigation season and remain fully open and out of the water throughout the winter and the spring runoff seasons allowing the lake to revert to a run-of-river mode based on variations of uncontrolled precipitation and runoff. The gates are placed back into operation following spring runoff period and managed prior to the start of the navigation season to achieve targeted water levels.

New York State Department of Environmental Conservation, Bureau of Flood Protection

William Nechamen, Floodplain Management
Section Chief
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12233-3507
Phone: (518) 402-8146 Fax: (518) 402-9029
Website: www.dec.state.ny.us

The NYS DEC, Bureau of Flood Protection (BFP) is the floodplain coordination agency in New York State. The mission of the BFP is to:

- Reduce loss of life from flooding, dam breaks, and erosion
- Reduce economic loss to new and existing development

- Encourage appropriate floodplain development planning and wise choices by local officials, developers, and private citizens
- The BFP attempts to meet these directives through their role in the National Flood Insurance Program (NFIP). The BFP provides technical support to the local communities who have actual jurisdiction over development. The BFP does not function in a regulatory capacity in this program, but is essentially a facilitator between local communities and FEMA.

New York State Department of Environmental Conservation, Division of Water, Region 6

Steve Botsford, P.E., Regional Water
Engineer
207 Genesee Street, Utica, New York
13501-2885
Phone: (315) 793-2554 Fax: (315) 793-2748
Website: www.dec.state.ny.us

NYS DEC Region 6 covers the Oneida Lake watershed counties of Lewis and Oneida. The lakeshore communities include the Towns of Vienna and Verona and the Village of Sylvan Beach. They are responsible for the following tasks:

- Administer the National Flood Insurance Program consistent with the requirements of the Federal Emergency Management Agency; audit local communities for compliance with development in special flood hazard areas; where review of construction activities is compared to acceptable development codes, publish floodway and flood insurance rate maps and flood insurance studies; and provide technical guidance relative to floodplain management and local development.
- Administer Article 36 of the Environmental Conservation Law throughout the region; provide assistance to local governments in the adoption of flood prevention laws and ordinances; train local officials on flood preven-

tion requirements upon initial entry into the National Flood Insurance Program.

- Complete program specific review of Article 15 permit applications, Environmental Conservation Law - Protection of Water, relative to activities in special flood hazard areas.
- Pursue violations of the Environmental Conservation Law and National Flood Insurance Regulations using formal and informal enforcement action; reporting to the Federal Emergency Management Agency.

New York State Department of Environmental Conservation, Division of Water, Region 7

Steven P. Eidt, P.E., Regional Water Engineer
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NYS Department of Environmental Conservation (NYS DEC) Region 7 covers the Oneida Lake watershed counties of Madison, Onondaga, Oswego, and Cortland. NYS DEC Division of Water responsibilities are described under Region 6.

New York State Emergency Management Office

Charles Wright, Region IV Office
6900 Thompson Road, Room 113
Syracuse, New York, 13210
Phone: (315) 438-8907
Fax: (315) 438- 3350
Website: www.nysemo.state.ny.us

The New York State Emergency Management Office (SEMO) coordinates emergency management services with other federal and state agencies to support county and local governments to protect lives, property and the environment. SEMO is responsible for coordinating all activities necessary to protect New York's communities from natural,

technological and manmade disasters and other emergencies that threaten the State, including flooding. SEMO coordinates emergency management services for the State by providing leadership, planning, education and resources to protect lives, property and the environment. In times of emergency or disaster, SEMO coordinates the response of State agencies ensuring the most appropriate resources are dispatched to the impacted area. Through its major programs, SEMO works with local governments, volunteer organizations and the private sector across NYS to develop disaster preparedness plans and mitigation projects.

Oneida Lake Association, Inc.

Kurt Snyder, President, P.O. Box 3536,
Syracuse, NY 13220
Phone: (315) 675-3103

The Oneida Lake Association was formed in 1945 and currently has over 3,000 members. The purpose of the organization is to: "advocate work for the improvement of the conditions affecting or pertaining to Oneida Lake, including conditions affecting or pertaining to fishing, hunting, boating or camping on the shores of Oneida Lake. To endeavor to bring about, through proper channels, correction of any conditions found to be detrimental to the maintenance of the natural resources of Oneida Lake and to the streams tributary thereto." To this end, the Oneida Lake Association supports consistent and environmentally sound water level management.

Oneida Lake Watershed Advisory Council

Dan Ramer, Chairman,
City of Oneida Wastewater Treatment Plant
109 N. Main Street, Oneida, NY 13421
Phone: (315) 363-4860

The Oneida Lake Watershed Advisory Council Board of Directors is a group of county and municipal representatives and stakeholders that guide the development and implementa-

tion of the Oneida Lake and Watershed Management Plan. Council members have worked closely with the CNY RPDB in the development of a plan that identifies the priority water resource issues of concern, summarizes recommendations, and provides opportunities for program implementation. The Advisory Council was responsible for reviewing and endorsing all recommendations that address the water resource issues of concern in the Management Plan. The Advisory Council is committed to the protection and restoration of a multiple-use lake and watershed that sustains healthy ground and surface water, fisheries, aesthetic values, cultural resources, economic vitality, wildlife habitat, and water-based recreation.

Onondaga County Flood Advisory Committee

David Coburn, Director Onondaga County Office of Environment
421 Montgomery Street, 14th Floor,
Syracuse, New York 13202
Phone: (315) 435-2647

The Onondaga County Flood Advisory Committee was created after the damaging floods of 1993. The Committee was created to help keep county officials apprised of water levels during critical high water periods, and to afford the county with another vehicle to provide affected communities with information on water level management efforts by the State, flood preparedness efforts carried out by the County Office of Emergency Management and related public safety concerns.

United States Army Corps of Engineers, Buffalo District

Larry Sherman, Hydrologist,
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The U.S. Army Corps of Engineers (ACOE) is a federal agency that provides engineering

services throughout the nation for planning, designing, building and operating water resources and other civil works projects, including flood control. The ACOE authority for flood control is provided in Section 205 of the 1948 Flood Control Act, as amended. This legislation provides the ACOE authority for investigation and construction (if deemed feasible) of flood protection projects. The ACOE has extensively studied Oneida Lake flooding and its impacts. Flood reduction measures have been proposed but have been deemed not feasible due to their limited benefits for Oneida Lake flooding, increases in flooding downstream of the lake in the Oneida River, negative impacts on fish and wildlife resources, and their high cost. The NYS DEC is the local cooperator with the ACOE for flood control projects in New York State.

United States Geological Survey

Bill Kappel, Hydrogeologist
30 Brown Road, Ithaca, New York, 14850
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Website: waterdata.usgs.gov/nwis/

The United States Geological Survey (USGS) investigates the occurrence, quantity, quality, distribution, and movement of surface and underground waters and disseminates the data to the public, state and local governments, public and private utilities, and other federal agencies involved with managing our water resources. USGS has collected water-resources data at approximately 1.5 million sites across the United States, Puerto Rico, and Guam. Surface-water data, such as gage height (stage) and streamflow (discharge), are collected at major rivers, lakes, and reservoirs. Ground-water data, such as water level, are collected at wells and springs. Water-quality data is available for both surface water and ground water. USGS provided advice and a technical review of information that was compiled by the Flooding and Water Level Management Working Group.

Flood Definitions

Flood: “A great flowing or overflowing of water, especially over land not usually submerged.” (The Random House College Dictionary).

A “flood”, as defined by the National Flood Insurance Program (NFIP) by the Federal Emergency Management Agency (FEMA) is, "a general and temporary condition of partial or complete inundation of two or more acres of normally dry land area or of two or more properties (at least one of which is your property) from overflow of inland or tidal waters, unusual and rapid accumulation or runoff of surface waters from any source, or a mudflow.

[The] collapse or subsidence of land along the shore of a lake or similar body of water as a result of erosion or undermining caused by waves or currents of water exceeding anticipated cyclical levels that result in a flood."

Major flood: “A general term indicating high water that causes extensive inundation and property damage, usually characterized by evacuation of people and animals and closure of highways.” (U.S. Army Corps of Engineers (ACOE))

Nuisance High Water: Water above “normal levels” that may temporarily impact docks, seawalls, shorelines, lawns and roads in low-lying shoreline areas but that does not cause structural damage to homes and businesses.

Minor Flooding: Flooding above “Nuisance High Water” at which structural damage may occur but that does not represent a serious threat to life or substantial commercial or residential damage. Flooding in this category may enter into some residential and commercial structures and basements with very limited structural damage. This flooding may also result in closure of some roads and require the rerouting of traffic. Further, minor flooding may have temporary impacts on in ground septic systems, wells, electrical supplies, and HVAC systems. This level of flooding would trigger a response from county and local emergency managers.

* Minor flooding begins at elevation: 371.0 feet (ACOE “Level where flooding begins”).

Major Flooding: Flooding that has a high potential for loss of life and total property loss. Water levels that are sufficiently high to enter into a large percentage of shoreline residential and commercial structures and result in considerable structural damage. Major flooding would trigger a response from the full breath of emergency response agencies, including but not limited to FEMA, ACOE, New York State Emergency Management Office (SEMO), and county and local emergency managers.

* Major flooding begins at elevation: 372.4 feet (ACOE Major Flood Damage Level).

The terms “Nuisance”, “Minor” and “Major” flooding are derived from a basin-wide planning perspective (big picture) and not from the individual property owner perspective. It is understood that even minor flooding can be a catastrophe to individual property owners.

Presentation Summaries

CONTROL STRUCTURES THAT INFLUENCE ONEIDA LAKE LEVELS

By Howard Goebel - NYS Canal Corporation, Albany, NY

Control Structures

- Caughdenoy Dam (7 taintor gates that span the Oneida River and 1 slide gate that is part of the old Oswego Steamboat Canal) along the Oneida River, the Oneida Lake outlet.
- Lock E-23 at Anthony's Cut, (navigation lock only, no flow releases at any time).
- Lock E-24 in Baldwinsville along the Seneca River, one taintor gate, 350-foot long concrete overflow spillway, and 2 hydropower generation facilities.
- Lock O-1 in Phoenix along the Oswego River, 6 taintor gates, 540-foot long concrete overflow spillway, and 1 hydropower generation facility.
- Lock O-2 in Fulton along the Oswego River, 6 taintor gates, 200-foot long concrete overflow spillway, and 2 hydropower generation facilities.

Primary Control Structures

The Caughdenoy Dam is the primary control structure during the Navigation Season (May through October). During non-navigation season (November through April), all gates of the Caughdenoy Dam are completely open. The observed lake levels are a function of the natural precipitation and runoff cycle, including snowmelt coupled with the hydraulic capacity of the Oneida River with the Caughdenoy Dam fully opened.

Secondary Control Structures

The hydraulic capacity of the Oneida River during the non-navigation season may be partially affected by any or all:

- The natural Caughdenoy Shoals along the Oneida River.
- The remnants of the original Caughdenoy Dam that was taken out of service in 1952.
- The NYS-DOT bridge (Route 33) immediately downstream of the existing Caughdenoy Dam. Considerable sediment is present on the upstream side of this bridge that reduces the hydraulic capacity of the river.
- Flows from the Seneca River at the Three Rivers junction (impacted by controls at Lock E-24 in Baldwinsville).
- Operation of the hydropower generation facility at Lock O-1 in Phoenix owned by Oswego Hydro Partners in concert with operation of 6 taintor gates owned by the New York State Canal Corporation (NYSCC) that are part the dam that creates the navigation pool above Lock O-1. Oswego Hydro Partners operates and maintains the 6 taintor gates in accordance with operation and maintenance agreement with the NYSCC that is part of their Federal Energy Regulatory Commission (FERC) license.
- Operation of two hydropower generation facilities at Lock O-2 in Fulton owned by Reliant Energy in concert with operation of 6 taintor gates owned by the New York State Canal Corporation that are part the dam that creates the navigation pool above Lock O-2. Reliant Energy operates and maintains the 6 taintor gates in accordance with operation and maintenance agreement with the NYSCC that is part of their Federal Energy Regulatory Commission (FERC) license.

Oneida Lake Level Control Issues

The NYSCC is required to provide minimum water levels for navigation purposes and is responsible for the conditions of the canal

navigation channel, not the entire width of the Canal or Oneida Lake. The minimum navigation level for Oneida Lake is 370.3 feet Barge Canal Datum (BCD) and the maximum target level of the lake is 371.2 feet BCD. During June and July, the difference between minimum and maximum levels less than 0.4 feet.

During the navigation season, Oneida Lake levels are controlled by the NYSCC to specified rule curves through adjustments to the Caughdenoy Dam. The rule curves were originally established to ensure that the minimum navigation level for Oneida Lake are provided even during the most severe droughts.

Oneida Lake levels during the navigation season normally can be managed close to the regulation curves. However, high water levels are normally observed during the non-navigation season in the spring when the Caughdenoy Dam is fully open.

The unpredictability of the weather, especially during the spring snowmelt period, is an issue that further complicates management decisions.

A High Flow Operating Procedure (HFOP) exists between the NYSCC and Oswego Hydro Partners and Reliant Energy. The HFOP calls for a drawdown of six inches below the normal headpond levels at Phoenix (Lock O-1) and Fulton (Lock O-2) when the flows in the Oswego River at Phoenix exceed 10,000 cubic feet per second and when the Seneca River elevation downstream of Lock E-24 reaches 366.0 ft BCD. The hydropower companies voluntarily participate in this program. The plan increases the slope in the Seneca, Oneida, and Oswego Rivers that increases the rates of flow in the rivers.

Presently the NYSCC has a good working relationship with and Oswego Hydro Partners (Lock O-1, Phoenix) and Reliant Energy (Lock O-2).

The U.S. Army Corps of Engineers (ACOE) is the agency responsible for investigation and

construction (if feasible) of flood projection projects. The ACOE has extensively studied Oneida Lake for flood reduction and has created a Final Feasibility Study in 1984 and a Reconnaissance Report in 1989. These reports identified considerable options for reducing the frequency and magnitude of Oneida Lake flooding; however, no options were found to be cost-effective primarily due to environmental consequences to the Oneida Lake ecosystem and negative impacts to downstream areas.

The Oneida River downstream of the Caughdenoy Dam is very flood prone. There is considerable development in the Horseshoe Island area along the Oneida River. Flood damages to this area would be realized if more water was released from Oneida Lake.

SOME RANDOM THOUGHTS ON WATER LEVEL MANAGEMENT IN THE FINGER LAKES REGION

By Bill Kappel - US Geological Survey, Ithaca, NY

The following are some thoughts that summarize my experiences in working with watershed groups when trying to come to 'grips' with the issue of water-level regulation. The task at hand is how to educate ourselves and others living in the watershed -- especially those who live along the rivers, streams, and lakeshores. The educational process should emphasize what we can do as individuals and as lake organizations to understand and live with the changes in river/stream flow and lake levels and anticipate or prepare for them before they occur. While I will use Oneida Lake as an example, much of what is put forth below is true in many of the Finger Lakes watersheds.

The Oneida Lake and River system is a part of a larger water-flow and water-level-regulated Oswego River Basin. A basin comprised of large watersheds and reservoirs (Finger Lakes). It is a natural system that had large

fluctuations in flow and water levels (in the past) that early settlers learned to live with. “We” then decided that we were going to use this resource to fit our needs (transportation, drinking water, waste-water assimilation, recreation, and so on). The control we imposed upon the waters of the basin; regulating the highs and lows of water levels and the flow within this system lead us to believe it was safer to live closer to the waters edge. Somewhere along this path of getting closer to the water we love, we forgot that we don’t have control over the weather and the resulting river flows and lake levels. During extreme conditions (too much water or too little) we’re just spectators to the whims of Mother Nature and hope for the best.

As such, the specter of “control” leads to the assumption that we can, and do control the water resource system (at all times) to meet our diverse needs. The term control leads to several assumptions that get us to the heart of the riverside and lakeshore homeowners concerns:

1. Once a population feels that the water level is “under control” they move to the waters’ edge feeling that there will not be any problem (The Mt. Olympus mode of thinking -- “everything is perfect, all the time”). The fact that living on a water body makes one feel better is another matter -- as long as the water stays where it is supposed to stay.
2. Oneida Lake levels and flows have been “controlled” for over a century and within that time there were floods and droughts, but now people feel that flooding and lower water periods have become more prevalent. Whether this ‘fact’ is due to our continued utilization and harnessing of a natural system, to changes in our climate and weather patterns, or due to an entity (The Canal Corp) “not doing its’ job”, is constantly being debated, but our society has moved from assuming personal responsibility to finding someone to blame. We need to return to assessing the situation and learning what we can do and cannot do (individually and as a group) to reduce the damages to our property and livelihood.
3. The population that lives ‘on the lake or along the river’ has dramatically increased -- from seasonal cabins to year-round homes; from homes near the lake/river to homes on the lake/river, and the increase in the number of homes has been dramatic. All of these actions put our dwellings into a zone that is affected to a greater degree by river/lake-level changes (even small ones). These homes also impact water quality due to the location of their septic systems and manicured lawns adjacent to the water body (but that’s another story).
4. People tend to forget that the lake (its ecology, its water level, its water quality) does not remain static. The life cycle of a lake is one of growth to ultimate demise (albeit this process occurs over many of our life times, although we do have a way of speeding up the process)! A lake naturally becomes more productive (eutrophic), filling with sediment, and changing its ecology along the way. Man has altered these processes to the point that people don’t like what they see and therefore someone (else) has to be responsible for the change.
5. The control of water levels in a managed water-resource system is probably 95 percent or more efficient (or non threatening), but the remaining 5 percent is responsible for 100 percent of the heartburn we have when we find that we really can’t control the water resource for that 5 percent of the time.
6. The presentation by Howard Gobel (Canal Corp.) during one of the last water-level-management meeting highlighted the wa-

ter level conditions in Oneida Lake and outlet channels during navigation and the non-navigation seasons. The greatest amount of water level variation (which exceeds our “control”) occurs during the non-navigation season -- especially during the spring freshet or January thaw periods.

This water (precipitation) is placed into natural storage (snow and ice) that then melts. Little water can be stored in the soils or uptaken by vegetation, which lies dormant during the winter and early spring, therefore most of the ‘stored’ water is available as runoff. Sometimes the melting of this stored water is increased by heavy rains that further add to the sum total of water available as runoff within the watershed. At this point, runoff begins its rapid descent from the surrounding hills down to the lake and adjacent wetlands, but this water does not readily leave the lake as the gradient downstream of the lake outlet is many times less than that of the surrounding upland areas.

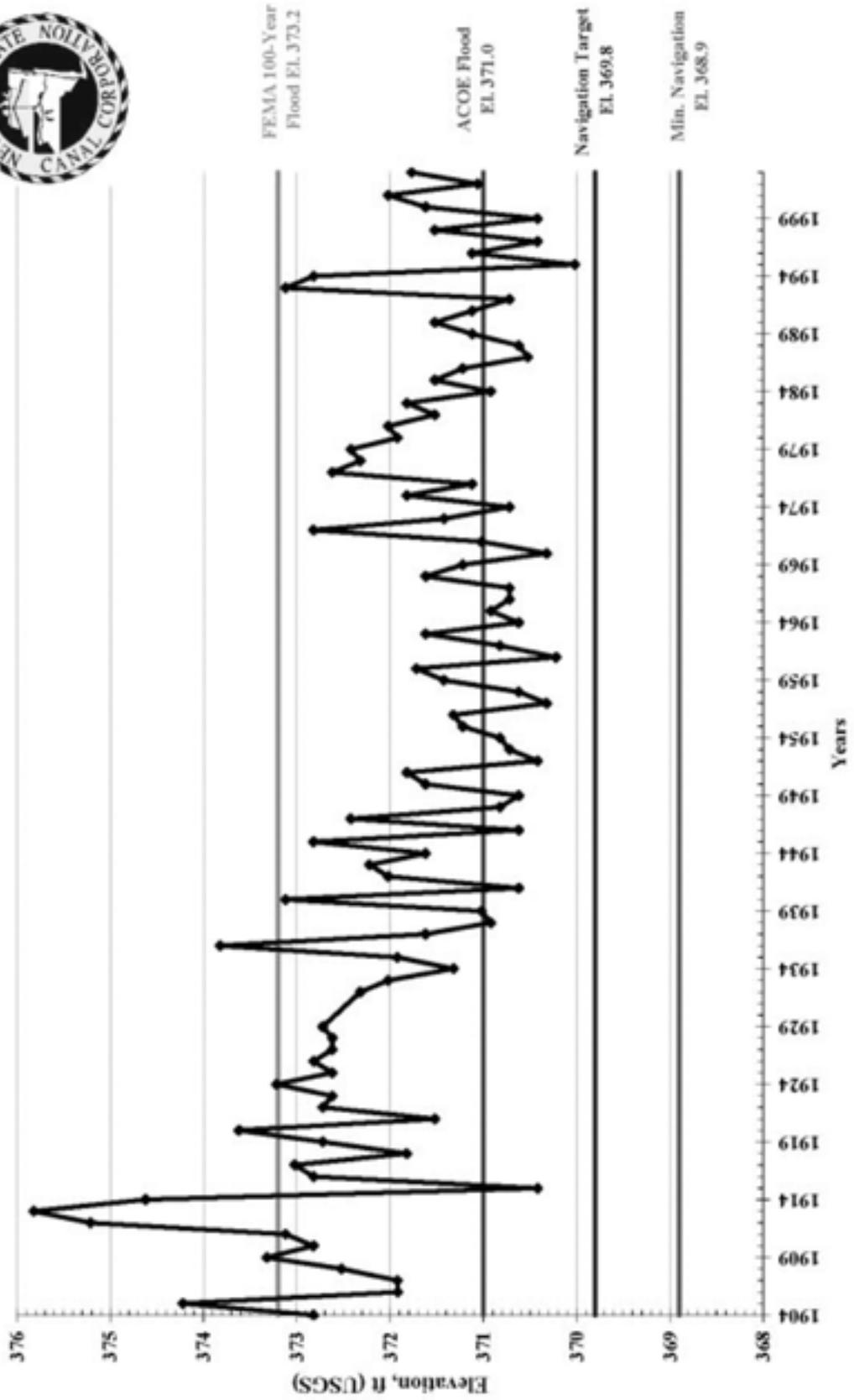
Therefore we have two aspects to be aware of when trying to understand what is happening in our watershed:

Watershed conditions: The response of the lake to its’ watershed -- the amount of water available to run off within the upland watershed, how quickly the water can get to the downstream end of the watershed, how much water can be held within the lake, and what lake elevation is it acceptable (high and low levels) before ‘adverse’ damages occur?

Water-control (structural) conditions: What are the physical features of the structure that holds the water in the lake, how quickly could it be released from that structure, and what controls the volume of water that can be carried (discharged) downstream of the structure?

A surprising revelation during the May 2003 water-level management meeting was that the group (all parties) appeared to feel that during the navigation season, natural high water events do occur, that we can’t control these, and we have to live with them. But, the spring freshet period (usually a longer duration “event”) appears to be a different case, one in which we could do a better job of controlling, either through getting the water out of the lake faster, or lowering the lake in anticipation of the “event” to reduce/mitigate its effects. Unfortunately you can’t have it both ways -- it is the same watershed, it is the same rapid movement of water from the headwaters to the lake, but the difference is that the ‘runoff event’ usually occurs basin-wide. The lack of a means to get this water out any one particular sub-basin is compounded across the entire Oswego River Basin and the entire system ‘bogs-down’ due to the overall volume of water that is running off. Navigation season events are usually not basin wide, therefore the Oswego system can handle sub-basin storms more readily. The exception is the Hurricane Agnes type of event that was basin-wide.

Annual Peak Oneida Lake Levels



Ranking of Annual Peak Oneida Lake Water Levels

No.	Year	USGS Elevation		No.	Year	USGS Elevation		No.	Year	USGS Elevation
1	1913*	375.8	Above 100-Year Flood Elevation	38	1930*	371.8	Above ACOE Flood Elevation	75	1938*	370.9
2	1912*	375.2		39	1975	371.8		76	1965	370.9
3	1914*	374.6		40	1906*	371.9		77	1984	370.9
4	1905*	374.2		41	1907*	371.9		78	1974	370.7
5	1936*	373.8		42	1935*	371.9		79	1992	370.7
6	1920*	373.6		43	1980	371.9		80	1948*	370.8
7	1909*	373.3		44	1960	371.7		81	1954	370.8
8	1993	373.1	45	1918*	371.8	82		1962	370.8	
9	1924*	373.2	46	1951*	371.8	83		1953	370.7	
10	1911*	373.1	47	1983	371.8	84		1966	370.7	
11	1940*	373.1	48	2003	371.8	85	1967	370.7		
12	1917*	373.0	49	1990	371.5	86	1941*	370.6		
13	1972	372.8	50	1937*	371.6	87	1946*	370.6		
14	1994	372.8	51	1944*	371.6	88	1949*	370.6		
15	1904*	372.8	52	1950*	371.6	89	1958	370.6		
16	1910*	372.8	53	1963	371.6	90	1964	370.6		
17	1916*	372.8	54	1968	371.6	91	1988	370.6		
18	1926*	372.8	55	2000	371.6	92	1987	370.5		
19	1945*	372.8	56	1973	371.4	93	1970	370.3		
20	1919*	372.7	57	1921*	371.5	94	1915*	370.4		
21	1922*	372.7	58	1982	371.5	95	1952*	370.4		
22	1929*	372.7	59	1985	371.5	96	1997	370.4		
23	1923*	372.6	60	1998	371.5	97	1999	370.4		
24	1925*	372.6	61	1959	371.4	98	1961	370.2		
25	1927*	372.6	62	1931*	371.3	99	1957	370.3		
26	1928*	372.6	63	1934*	371.3	100	1995	370.0		
27	1977	372.6	64	1956	371.3					
28	1908*	372.5	65	1955	371.2					
29	1947*	372.4	66	1969	371.2					
30	1979	372.4	67	1986	371.2					
31	1932*	372.3	68	1971	371.0					
32	1978	372.3	69	1976	371.1					
33	1943*	372.2	70	1989	371.1					
34	1933*	372.0	71	1991	371.1					
35	1942*	372.0	72	1996	371.1					
36	1981	372.0	73	2002	371.1					
37	2001	372.0	74	1939*	371.0					



373.2 FEMA: 100-Year Flood Elevation
 371.0 ACOE: Elevation where flooding begins
 369.8 NYSCC: Target Navigation Elevation
 368.9 NYSCC: Minimum Navigation Elevation

* Denotes data prior to construction of the existing Caughdenoy Dam in 1952

Summary of Targeted Oneida Lake Levels, by Source

Target Level	Elevation USGS NGVD 29 (MEL) ft	Source	Description
100-Year Flood Elevation (Base Flood Elevation)	373.2	FEMA	Level that statistically has a one percent chance of being equaled or exceeded in any given year Used to define the extent of the Regulatory Floodplain
Major Flood Damage Level	372.5	ACOE	Level where considerable damage to habitable structures begins to occur (unpublished ACOE action level)
Top of Flood Control Zone (Minor Flood Damage Level)	371.0	ACOE	"The level where flooding begins"
Recreation Optimum	370.0	ACOE	"Optimal elevation at which the lake should be kept"
Normal Summer Level (Top of Rule Curve)	369.8	NYSCC	Level that the lake is normally kept during the summer months
Minimum Navigation Level (Bottom of Rule Curve)	368.9	NYSCC	Minimum lake level to provide the required navigation depth at Lock E-23, Brewerton

Notes: FEMA: Federal Emergency Management Agency
 ACOE: United States Army Corps of Engineers
 NYSCC: New York State Canal Corporation

ONEIDA LAKE DATUM CONVERSIONS

Location	To convert Barge Canal Datum (BCD) levels to UGSG datum levels (NGVD 29), add the following correction.
Cleveland	-1.38 ft
Sylvan Beach	-1.18 ft
Brewerton (USGS Gage)	-1.06 ft
Lock E-23	-1.01 ft

Literature Citations

Caughdenoy Dam Study, Oswego County, NY, D212290 – Term Agreement Assignment #6, TAMS Consultants, Inc. February, 1999.

Cross Lake / Seneca River Flood Damage Reduction Measures, Final Detailed Project Report and Environmental Assessment, US Army Corps of Engineers, January 1999.

Operational Audit for the New York State Canal System: Oswego River Basin, Baker Engineering, NY, September 1997.

Review of Project Operation and Local Flooding, Federal Energy Regulatory Commission, Phoenix Hydroelectric Project FERC No. 4113, December 1996.

Oneida Lake, Oswego and Oneida Counties, New York, Reconnaissance Report, Section 205 of the 1958 Flood Control Act, as amended, April 1989.

Oneida Lake, Beach Road Flood Study, Town of Cicero, Onondaga County, New York, Calocerinos and Spina Consulting Engineers, October 1985.

Oneida Lake N.Y. (Final Feasibility Report), Oswego River Basin, N.Y., Management Plan Analysis, US Army Corps of Engineers, January 1984.

Preliminary Institutional Studies, Oswego River Watershed, New York, Volume 1, Main Report, Acres American Incorporated, (for Department of Army, Buffalo District, Corps of Engineers), December 1979.

Appendix B: Boating Rules

Age

If you wish to operate a motorboat (excluding personal watercraft) and you are:

Under 10 years old: you must have a person 18 or older on board;

10 to 18 years of age: you must have a person 18 or older on board, or hold a safety certificate;

18 years or older: you may operate a motorboat alone (excluding personal watercraft).

Speed

In New York State, vessel speed is generally limited to 5 mph when within 100 feet of the shore, a dock, pier, raft, float, or anchored boat. On some specific bodies of water the 5 mph limit has been extended to 200 feet, and there may also be a 45 mph daytime and 25 mph nighttime speed limit. Local ordinances may further regulate the speed of boats operated within specific areas.

Required Equipment

Every pleasure vessel operated upon the waters of New York must carry at least one USCG approved Type I or II or III Personal Flotation Device (PFD), or Life Jacket as they are more commonly known, for each person on board.

Personal Watercraft Rules

As of 1/1/2004 anyone operating a personal watercraft (PWC) will need to complete a

boating safety course. For the most part, the laws that apply to all boats will also apply to personal watercraft. There are some restrictions placed on PWC however, that do not apply to other boats.

- Operation of a PWC is prohibited from sunset to sunrise.
- A personal flotation device (life jacket) must be worn by the operator and all passengers. A Type III PFD is recommended.
- If equipped, the engine cut-off lanyard must be attached to the operator.
- Visual distress signals and a sound signaling device (horn or whistle) must be carried.
- Personal watercraft are not allowed within 500 feet of a marked swim area.
- Reckless operation, defined as wake jumping, playing "chicken," and weaving in and out of congested traffic is forbidden, and constitutes a misdemeanor.

Mandatory Education

As of January 1, 2004 all operators of personal watercraft will be required to earn a safety certificate before they may operate PWCs. In addition to teaching the particulars of handling a PWC, this course will also be beneficial for any boater wishing to learn more about the rules of the road, reading buoys, boat handling, and other boating safety related topics. A listing of available state courses may be accessed through the following link.
<http://www.nysparks.com/boats/pwc/>

All of the information on current laws and programs to address the problem is taken from the NYS OPRHP website
<http://www.nysparks.com/boats/index.shtml>.

Appendix C: New York State Department of Health Fact Sheet

Bureau of Water Supply Protection
Flanigan Square, 547 River Street, Troy, New York 12180-2216
January 13, 2004

Need for Licensed Design Professionals - Residential Onsite Wastewater Treatment Systems

Purpose: Provide guidance to regulatory officials and interested parties regarding the need for a licensed professional engineer or architect to design residential onsite wastewater treatment systems (OWTSs). The State Education Department has reviewed this document with the State Department of Health and offers the following as guidance in applying the requirements of the New York State Education Law relating to the design of OWTSs.

Licensed Design Professional: The Department of Health and the State Education Department recognize that, generally, OWTS design activities come within the definition of the practice of professional engineering or architecture under Article 145 or 147 of Title VIII of the New York State Education Law and that OWTS designs must be prepared by a design professional appropriately licensed or otherwise authorized under such law. Please be advised that licensees providing OWTS design services must be qualified to provide those services based upon education, training, and experience. Any licensee providing services that they are not qualified to provide may be subject to professional misconduct charges. OWTS design activities include the evaluation of surface and subsurface site conditions at a defined parcel of land, which may include the investigation of soil characteristics, the performance of soil percolation tests, the determination of subsurface boundary condition and depths, the measurement and recording of existing surface features both natural and manmade, and the subsequent application of these data and the data related

to proposed wastewater generation to design an OWTS. These activities generally fall within the scope of practice of professional engineering or architecture.

New Residential Construction: The design of all new residential OWTSs (including conventional systems) shall be performed by an appropriately licensed design professional, as defined above. The design may also be issued/approved by county health departments where such issuance/approval is performed and authorized by an appropriately licensed design professional on staff. Private practice engineers and architects, and engineering and architectural firms with appropriately licensed design professionals may also provide such services.

Additions or Alterations: An OWTS evaluation shall be performed and submitted by a licensed design professional for home alterations resulting in an increase in the number of bedrooms, for complete home replacements (including those resulting in the same number of bedrooms) and for alterations resulting in significant increases in wastewater generation. The evaluation must document if the existing OWTS complies with applicable State and local design standards, if the OWTS and its components are in satisfactory condition and functioning properly and if the existing OWTS can properly treat the proposed increase in wastewater generation. If the existing OWTS does not comply with regulatory design standards or needs significant modification, the licensed design professional shall prepare plans and oversee the installation

of the alterations to the OWTS. This may include incorporating appropriate mitigative measures and/or designs as such ordinarily come within the scope of practice of professional engineering.

Repairs and Replacements: The repair or replacement of OWTS components "in kind" or "like-for-like" may not require the involvement of a licensed design professional. However, repair or replacement of any type of absorption field that involves relocating or extending an absorption area to a location not previously approved for such, does require a licensed design professional. A licensed design professional is required when repair or replacement involves installation of a new subsurface treatment system at the same location or the use of an alternative system (i.e., raised system, mounds, or sand filter) or innovative system design or technology.

Note: In all cases: 1) local government, watershed protection agencies or other jurisdictional agency rules and regulations may also apply; 2) All OWTS design plans must be prepared by a design professional licensed to practice in New York State; 3) When no regulatory agency is responsible for inspection of a constructed OWTS, it is recommended that a written certificate of compliance be submitted by a New York State licensed professional engineer or architect prior to occupancy.

For questions concerning this Fact Sheet:
Residential Sanitation Section
Bureau of Water Supply Protection
New York State Department of Health
(518) 402-7650 or FAX (518) 402-7659
E-mail: bpwsp@health.state.ny.us

Appendix D: Public Comments

Working Groups met over the course of a year to conduct research and compile recommendations for the high priority issues of concern throughout Oneida Lake and its watershed. Once the recommendations were developed, members of the Watershed Advisory Council reviewed, discussed, and eventually endorsed them. During May and June 2004 the recommendations were then presented at six public meetings held throughout the watershed. The schedule for these public meetings, referred to as the “Know Your Lake and Watershed Series,” is found below.

Topic: Exotic Species

Title: Nuisance Neighbors: Invasive Plants and Animals in Our Community

Monday, March 29 Brewerton Public Library Meeting Room

Guest Speaker: Ed Mills

Topic: Erosion/Sedimentation and Deicing/Salt Storage

Title: Losing Ground: When Property and Pollution Wash Out into Local Waters

Thursday, April 8 Verona Town Hall

Guest Speaker: Joanne Faulkner

Recommendations: Anne Saltman

Topic: Septic Systems

Title: Everything You Wanted To Know About Septic Systems But Were Afraid to Ask

Thursday, May 13 Canastota Village Hall Court Room

Guest Speaker: Kelly Somerlot

Recommendations: Dan Ramer

Topic: Fishing and Boating

Title: Recreational Review: Current News and Old Concerns Involving Fishing and Boating

Date: Thursday, May 27

Location: Sullivan Town Hall

Guest Speaker: Lars Rudstam Recommendations: Ed Mills (Fishing) and CCE (boating)

Topic: Flooding and Water Level Management

Title: The Highs and Lows of Managing Water Levels

#1-Thursday, June 3 #2-June Tuesday, June 8

#1-Sylvan Beach Village Hall #2-Arrowhead Lodge

Guest Speakers: Steve Eidt and Bill Kappel

Recommendations: Howard Goebel Facilitator: Ron Seeber

The meetings were designed to encourage public review, participation, and comments concerning the recommendations. Guest speakers, many from the Watershed Advisory Council, gave presentations at each meeting. This Appendix contains a summary of the written comments that were submitted during the public comment period.

Topic: Erosion/Sedimentation

- Comment submitted by Greg Tupper, Brewerton, NY
Volmer/Black Creek in the Town of Cicero during periods of moderate to heavy rainfall or during spring runoff causes 1/2 to 3/4 of the total surface area of the Lower South Bay area of Oneida Lake to turn chocolate brown. The duration of heavy silt depositing into Oneida Lake can continue for a few days to as long as a few weeks. I recommend that Volmer/Black Creek be added to the list of creeks in the watershed that are monitored and that contribute to excessive quantities of silt into the lake.

Topic: Exotic Species

- Comment submitted by Mr. Williams
I am very concerned about animal changes – fishing, bait, waterfowl, etc.

Topic: Flooding and Water Level Management

Public meetings were held at Sylvan Beach and Cicero to present the Flooding and Water Level Management recommendations. Homeowners at the Sylvan Beach meeting emphasized their concern for beach erosion, logjams and vegetative debris, potential impacts from the Ava land-fill, liquid fertilizer and agricultural runoff, septic waste, and the impacts of water level changes on shoreline erosion.

- Comment submitted by Leo Bitz, Verona Beach, NY
Oneida Lake lies west to east and prevailing winds blow west of northwest. I'm in favor of present water levels for the following reasons:

If you lower water levels we (on east shore) end up with sand bars about 200 feet out from shore and we have stagnant water from sand bars to break walls.

Wildlife is better off because seaweed grows in patches in sandy bottom which they feed on and they also travel close to shore and clean up anything edible next to shore.

Also, if we have sand bars out front and we have strong winds for a long period of time, we can end up with sand accumulation on our lawns.

However, I do not think water levels should be maintained any higher than what we have at present. Present water conditions also have a cleansing action for debris built up in limestone in from of breakwalls.

- Comment submitted by Samuel P. Cimilluca, CNY Waterways
Many comments on why and how we flood for the last 15-20 years. One thing many and myself express is nothing has been done to help us rid the floodwaters. That is one of our biggest problems. We have been made known the Corps of Engineers recommendations but no one, Canal Corporation, DEC or T-way, want to do anything to help. Thank you.

- Kent Partridge submitted the following document.

Flooding and Water Level Management Working Group

Items Undiscussed or Tabled

1. Facilities or control outside of the Oneida Lake basin were refused discussion, however specific topics that affect the levels in Oneida Lake should be recommended for discussion by the wider area working group.
2. Downstream facilities or control subjects for the Oneida Lake basin were rejected even though the effects of large releases downstream from Oneida Lake were presented.
3. The discussion of the original natural state of Oneida Lake was dismissed. A graph, "Lake Level Variation" was presented instead, purportedly showing early conditions. This graph defined "Mean Lake Level (by Grouped Years)" with groups starting with one for 1904-1910. This selection of years is misleading as Contract #45 for the construction of the Caughdenoy Dam was let May 6, 1908. Dams are created to increase water levels upstream therefore Oneida Lake had a significant increase in level with the installation of a solid dam more than six foot high. The levels and conditions prior to the dams construction were not discussed even when a New York State map of 1865 was presented showing the level of Oneida Lake at 367.33 TWD. The years 1926-1950 are missing on this graph and contain some of the most serious flooding and times of many successful suits against the state for flood damages. The group of 1951-1960 is also misleading as Contract # 29 for the removal of the Caughdenoy Dam and the installation of the present Tainter Gate controlled dam was let in 1952 to reduce flooding. There are also clarity issues which were not discussed.
4. People were blamed for settling in the wrong place but the repeated systematic raising of the level of the lake by mechanical means were not to be discussed. The drawings show that each succeeding control structure effectively raised the lake level.
5. The discussion of the naturally occurring variations in level were considered at some length. The capacity changes as a result of these changes was not considered nor the storage changes as a result of the ever increasing mean level.
6. Higher levels over the years were deemed necessary to compensate for drought and evaporation but a verification of those years in which the level fell below the navigation minimum and at what location were sidetracked.
7. The specific levels at which flood damage starts was not determined. Instead of accepting the professional research and report of Acres America for the ACOE it was suggested that we poll individual towns for the figures which many of them would not understand.
8. FEMA was mentioned as a source for obtaining flooding levels but not discussed was their upgrading of levels after each increasing flooding event and providing future possibilities to allay damage payments. Each local area therefore has a different a level though on the same body of water. The recent levels assigned to the town of Cicero are an example. They project a 500 year flood level which when converted to BCD is 375.58 feet. (5.28 feet above Minimum Navigation level) Consider that when you are standing on the shoreline everything below eyelevel may be underwater.

9. The subject of who the levels are managed for repeatedly came up and that commercial traffic on the canal is no longer a factor. The legality and necessity of maintaining the 14 foot canal depth throughout its length was sidetracked.
10. Ronald Seeber, Facilitator, proposed the submittal of a list of actions that the NYSCC could undertake to alleviate flooding. Specific suggestions such as proactive response to weather conditions, channel maintenance, rule curve modifications, navigation period, etc. were discounted and not discussed.
11. The specific subject of how to reduce flooding was sidelined as unattainable in spite of considering many accepted causes of flooding. The technical expertise of many specialists was questioned. Among them was DEC on upstream control, ACOE Acres America control levels, NYSCC list of impediments to the Oneida River, NYSCC Arbitration Agreements to reduce flooding, Hydropower emergency tests and agreements and reports by TAMS, Baker, and FERC. These were considered beyond the scope of the working group even though the Goal of the group was "To minimize flood damage" and one of the Objectives was to "Minimize the intensity and duration of high water levels on Oneida Lake".
12. The discussion regarding the GIS mapping of flood prone areas in the future was tabled due to the absence of data.
13. Several suggestions were made that were detrimental to reducing flooding but favored special interest groups. The changes necessary to accommodate these suggestions were not specified or accepted under discussion.
14. There was a visit to a meeting of the fisheries working group in an effort to widen our information. During this meeting some of their sport fisherman questioned the benefits of stocking Sturgeon and American Eel in Oneida Lake. The plus and minus impacts on the ecological balance were questioned in view of the expense of time and money required when other programs needed more success. To date we have not been informed of a discussion on this subject or an answer to those questions.