

November 13, 2018

VIA ELECTRONIC FILING

Honorable Kimberly D. Bose, Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington DC 20426

West Canada Creek Hydroelectric Project (FERC No. 2701)
Supplemental Response to FERC Additional Information Request - Public Domain

Dear Secretary Bose:

Erie Boulevard Hydropower, L.P. (Erie or Licensee), a Brookfield Renewable company, is the Licensee, owner and operator of the West Canada Creek Hydroelectric Project (FERC No. 2701) (Project). The West Canada Creek Project consists of two developments, Prospect and Trenton, and is located on West Canada Creek in Oneida and Herkimer counties, New York. The current license for the West Canada Creek Project expires on February 28, 2023. Erie is pursuing a new license for the Project using the Commission's Integrated Licensing Process (ILP). On February 28, 2018, Erie filed a Notice of Intent (NOI) and Pre-Application Document (PAD) with the Federal Energy Commission (FERC or Commission) to initiate the ILP.

On April 30, 2018, FERC issued a notice of the PAD and NOI filing and commencement of the pre-filing process and requested comments and study requests. FERC concurrently issued Scoping Document 1 (SD1) for the Project to identify the subject areas to be addressed in FERC's environmental analysis of the Project relicensing pursuant to the National Environmental Policy Act (NEPA). On May 30 and May 31, 2018, FERC held the agency and public scoping meetings at the Town of Trenton Municipal Center in Barneveld, New York, and a site visit on May 30, 2018 at the Project. Comments on the PAD and study requests were due on June 29, 2018.

By letter dated June 28, 2018, FERC submitted an Additional Information Request (AIR) and comments on the PAD to Erie, requesting that Erie provide additional information FERC deemed necessary to adequately assess potential project effects on environmental resources. FERC requested that Erie provide responses to the AIR with the Project Scoping Plan (PSP), unless otherwise specified in the additional information request.

On August 13, 2018, Erie submitted responses to FERC's Schedule A – Comments on the PAD and Additional Information, as requested in FERC's letter dated June 28, 2018. Erie contacted FERC staff to request an extension for the filing of the response to AIR items 5 and 8 and received authorization to file AIR 5 and 8 on or before November 11, 2018.¹ Accordingly, following is Erie's responses to AIR No. 5 and 8.

¹ Since November 11, 2018 is a Sunday and November 12, 2018 is a federal holiday (Veterans' Day), this AIR Response is being filed on November 13, 2018 -- the next business day following November 11, 2018.

Public domain attachments referenced in the AIR response are provided as referenced. Some of the information included in Erie's AIR response is Privileged Information as defined by the Commission at 18 CFR § 388.112, and this information has been removed from the public version of the AIR response. In accordance with the Commission's filing guidelines, all Privileged Information is included in a separate filing that has been clearly labeled as Privileged. Referenced attachments that contain Privileged Information are provided under separate cover as referenced.

RESPONSE TO FERC AIR 5 – WEST CANADA CREEK AGREEMENTS

***FERC AIR 5:** On page 4-13 of the PAD, you state that Hinckley Reservoir is operated in accordance with the 2012 Operating Diagram and governed by legally binding agreements between the New York State Canal Corporation (Canal Corporation), Mohawk Valley Water Authority, and Erie Boulevard Hydroelectric, L.P. (Erie). So that staff can better understand the past and present flow regulation and hydropower operation in West Canada Creek, please provide a copy of the current operating agreement as well as any previous operating agreements between Erie and the Canal Corporation. In addition, please describe the purpose of the most recent operating agreement and 2012 Operating Diagram and why Erie's previous agreement with the Canal Corporation was updated.*

Erie Response:

Competing interests regarding water use and allocation on West Canada Creek extend back to the original water rights bestowed in the late 1800s. These interests involve water use and allocation for municipal water withdrawals, canal navigation, hydropower operations, reservoir operations, provision of downstream flows for aquatics/fisheries, and recreation purposes. From the early 1900s to the present day, these competing interests have led to numerous public-private contractual arrangements, legal challenges, settlement agreements and various other agreements between multiple parties. Litigation in some cases has resulted in adjudication up to level of the Appellate Division of the New York State Supreme Court interpreting the historic agreements and clarifying water rights.

The 2015 Settlement Agreement (2015 Agreement) between Erie, the State of New York, New York State Canal Corporation (NYSCC), and the New York State Thruway Authority (NYSTA) is the result of this long history of legal conflicts and agreements. Collectively, the 2015 Agreement and 2012 Operating Diagram recognize Erie's vested rights that were established through agreements beginning in 1905, prior to the enactment of the Federal Water Power Act (1920) or the Federal Power Act (1935). The 2015 Agreement and 2012 Operating Diagram superseded a 1920 Operating Diagram. In the 1980s, FERC issued licenses for the Gregory B. Jarvis and West Canada Creek Hydroelectric projects consistent with the 1920 Operating Diagram. As outlined in more detail below, Erie's long-standing water rights have been affirmed and documented in applicable deed restrictions, subsequent agreements, and Court decisions that have spanned over 90 years.

Table 1 provides a summary of key agreements associated with water regulation on West Canada Creek in relation to the West Canada Creek Project. Key entities involved in these agreements

include NYSCC, Erie (or its predecessor Utica Gas & Electric Company (UG&E)), and the Mohawk Valley Water Authority (MVWA) (or its predecessor Consolidated Water Company of Utica, New York (CWC)). These agreements are provided in Attachment A, which is being filed as Privileged Information as defined by 18 CFR §388.112, as the agreements contain confidential legal and financial information for the parties involved in these agreements.

Erie was not involved in the development of the 2012 Operating Diagram. Instead, these operating parameters were created as part of a 2013 settlement entered into following litigation in New York State Supreme Court between MVWA, NYSCC, and the State of New York.

The 2012 Operating Diagram did not appropriately recognize Erie's water rights. A 2014 decision by the Appellate Division of the New York State Supreme Court clarified Erie's water rights by interpreting an operative clause in a 1921 agreement between the State of New York and UG&E (1921 Agreement), which agreement had memorialized water rights established much earlier. Therefore, the 2015 Agreement became necessary to address Erie's water rights. See further discussion in the narrative description of the timeline below.

TABLE 1 PRESENT TO PAST TIMELINE OF KEY AGREEMENTS AND EVENTS IMPACTING WEST CANADA CREEK

DATE	AGREEMENT/PARTIES	KEY COMPONENTS
1/15/2015	Settlement Agreement and Mutual Release - The State of New York; NYSCC; NYSTA; Erie Attachment A-1	<ul style="list-style-type: none"> • Amends, modifies and supplements the Memorandum of Agreement dated 6/14/1921 • Establishes that the 2012 Operating Diagram replaces the 1920 Operating Diagram • Establishes protocols for State reimbursement of Erie for lost generation revenue • Establishes communication procedures
02/01/2013	New York State Supreme Court - Stipulation and Order of Final Settlement and Amendment of the December 27, 1917 Agreement between the State of New York and CWC (Predecessor of MVWA) Attachment A-2 Erie is not a party to this agreement	<ul style="list-style-type: none"> • Formalizes use of 2012 Operations Diagram for Hinckley Reservoir (Hinckley) operation • Grants MVWA rights to withdraw from Hinckley 75 cubic feet per second (cfs) • Requires State to keep Hinckley at elevation 1,195 ft or higher except in times of unusual drought • Reaffirms 1917 Agreement • Amends the 1917 Agreement that established the 1917 Operations Diagram (used from 1917 to 2012)

DATE	AGREEMENT/PARTIES	KEY COMPONENTS
06/14/1921	Agreement between the State of New York and UG&E Attachment A-3	<ul style="list-style-type: none"> Established the 1920 Operating Diagram Requires State to discharge water stored in Hinckley in accordance with 1920 Operating Diagram Notes intent of agreement is to operate Hinckley so that after serving canal interests, stored water will be used for downstream power generation on West Canada Creek
12/27/1917	Memorandum of Amended and Supplemental Agreement between the State of New York and CWC Attachment A-4	<ul style="list-style-type: none"> Establishes water withdrawal right of up to 75 cfs for CWC; withdraw a 24-hour average of 75 cfs for consumptive use with an instantaneous maximum withdrawal of 85 cfs Requires CWC to establish and maintain storage reservoir(s) above Hinckley (e.g., Gray Reservoir) to supplement flow and fulfill 3 contracts CWC has with downstream users Requires State to operate Hinckley to allow CWC to fulfill these contracts Does not affect prior agreements between CWC and UG&E executed on 3/10/1905
Date	Agreement/Parties	Key Components
03/10/1905	Contract between CWC and UG&E Attachment A-5	<ul style="list-style-type: none"> Water taken by CWC will not diminish generating capacity of UG&E's plant as it exists or is expanded in future CWC would not take water from West Canada Creek when flows are insufficient to support downstream power generation and will make up any flows it does take using stored water CWC will store at least an aggregate of 500,000,000 gallons annually upstream of UG&E; CWC only allowed to store flows in West Canada Creek after flow to West Canada Creek was adequate to meet downstream power needs
1897 - 1901	Utica Electric Light & Power Company ²	<ul style="list-style-type: none"> The Utica Electric Light and Power Company formed - secured water rights to West Canada Creek and began construction of the Trenton dam and powerhouse

² In 1902, the Utica Electric Light and Power Company merged with the Equitable Gas and Electric Company of Utica to form Utica Gas and Electric Company.

Narrative Description of Timeline

During the period 1897-1899, Erie's predecessor Utica Electric Light and Power Company (UEL&P) formed and secured land and water rights and began construction of the Trenton dam and powerhouse. In 1902, UEL&P merged with Equitable Gas and Electric Company of Utica to form UG&E. CWC entered into a contract with UG&E in 1905 in which CWC agreed to not impact the operation of the Trenton Falls hydropower project or the planned Prospect project by not withdrawing water unless there was sufficient water for operation of the project(s) and/or water would be provided from upstream reservoirs. The CWC installed a water intake at the site of the present-day Hinckley Reservoir to provide water to the City of Utica in the early 1900s.

Meanwhile, in response to the Barge Canal Act of 1903, the State of New York appropriated the land necessary to construct the Hinckley Reservoir. The Hinckley Dam was completed in 1915 for the purpose of supplying water to the Barge Canal. UG&E filed claims in the Court of Claims for the State of New York for diminution of property value and other damages as a result of the construction, maintenance, and operation of the canal works and structure. In June 1921, New York State and UG&E settled these claims. This agreement (Memorandum of Agreement between the State of New York and UG&E) established the 1920 Operating Diagram for operation of Hinckley Reservoir. In addition, the CWC filed a claim against the State due to extinction of its water rights by being cut off from access to water from its upstream Gray Reservoir on Black Creek. This claim was settled in a 1917 agreement between New York State and CWC.

The West Canada Creek Project was issued a FERC operating license in 1983. This new operating license required a continuous minimum flow of 160 cubic feet per second (cfs) or the inflow to the Project, whichever is less, as measured immediately downstream of the NYSCC diversion weir (Morgan Dam), for the purpose of protecting and enhancing aquatic resources in West Canada Creek. FERC issued a license in 1982 to NYPA for the Jarvis Hydroelectric Project. In March 1984, NYPA obtained a permanent easement from the New York State Department of Transportation (NYSDOT) that provided property and other rights to construct and operate the Jarvis Project, required water to be released in accordance with the existing rule curve, and required operation in a manner that ensures Hinckley water levels sufficient to ensure Canal System navigation.³ The Jarvis Project was installed at Hinckley Dam in 1986. The current FERC license for the Jarvis Project requires the NYPA (as licensee for the Jarvis Project) to coordinate with Erie (as licensee for the West Canada Creek Project) and the NYSCC to maintain a continuous minimum flow of 160 cfs in West Canada Creek, as measured immediately downstream of the NYSCC diversion weir.

In 2013, there were various lawsuits and counterclaims between the State of New York and MVWA (formerly CWC) regarding water withdrawals from and use of Hinckley Reservoir that were ultimately resolved in a 2013 Stipulation and Order of Final Settlement and Amendment of the December 17, 1917 Agreement entered by the New York Supreme Court between MVWA, NYSCC, and the State of New York (2013 Agreement). This agreement established the existing

³ The NYSDOT is predecessor to the NYSTA. The Hinckley dam, reservoir and associated lands are owned by the people of the State of New York under the jurisdiction of the NYSCC, formerly a subsidiary of the NYSTA.

2012 Operating Diagram. Erie was not involved in the development of the 2012 Operating Diagram and was not a party to the 2013 Agreement.

As a result of this 2013 Agreement, the NYSCC implemented the 2012 Operating Diagram, which replaced the existing 1920 Operating Diagram. The implementation of the revised Operating Diagram was in conflict with the 1921 Agreement, and Erie filed claims against the New York State, NYSCC and NYSTA for breach of contract. In January 2014, the Appellate Division (Third Judicial Department) of the New York Supreme Court ruled that the Defendants breached the 1921 Agreement. These claims subsequently were settled in a judicially-approved 2015 Settlement Agreement between State of NY, NYSCC, NYSTA, and Erie that established a process for identifying and addressing Erie's vested water usage rights pursuant to the 1921 Agreement.

Erie does not control Hinckley Reservoir releases or Jarvis Project operations; rather, NYSCC controls, on a day-to-day basis, the Hinckley Reservoir flow per the 2012 Operating Diagram.

References

Erie Boulevard Hydropower, L.P. (Erie). 2018. West Canada Creek Hydroelectric Project (P-2701) Pre-Application Document, February 28, 2018. Available at:
<http://www.westcanadacreekproject.com>

New York Power Authority (NYPA). 2017. Gregory B. Jarvis Project (P-3211), Relicensing Pre-Application Document, June 2017. Available at:
http://www.jarvis.nypa.gov/Lists/JARVIS%20Relicensing%20Documents/Attachments/125/Jarvis_PAD.pdf

RESPONSE TO FERC AIR 8 – GRAY'S RESERVOIR

***FERC AIR 8:** At the public scoping meeting on May 30, 2018, a member of the public inquired about the effects of the removal of Gray's Reservoir, a reservoir previously located upstream of Hinckley Reservoir on Black Creek, on downstream hydropower operations. So that staff can evaluate potential cumulative effects of the elimination of Gray's Reservoir on flows in West Canada Creek, please describe any changes in flow releases or hydropower operation at the West Canada Creek Project as a result of the removal of Gray's Reservoir.*

Erie Response:

Gray Reservoir, located on Black Creek, a tributary of West Canada Creek, was constructed in 1907, had a capacity of 1.2 billion gallons (323-acre impoundment), and was owned by the MVWA. MVWA removed the Gray Reservoir dam in 2002. As stated in the Upper Mohawk Valley Regional Water Board report on the Gray Reservoir Project (2000), the Gray Reservoir dam had been classified as a high risk due to disrepair and release gates had been open for over 20 years (prior to dam removal). However, this reservoir still provided dynamic water storage due to the small size of the release gates.

As part of a 1917 contract in the form of a Memorandum of Amended and Supplemental Agreement between the CWC (predecessor to the MVWA) and the State of New York (1917 Agreement), the CWC was required to maintain a supplemental reservoir (one or more) within the Hinckley watershed to replace CWC withdrawals. At the time of the 1917 Agreement, the CWC withdrew an amount less than 25 cfs, and maintained Gray Reservoir with a capacity of 1.2 billion gallons. The 1917 Agreement limited withdrawals to a maximum daily average of 75 cfs and specified the supplemental reservoir capacity to be 2 billion gallons when the maximum diversion was 75 cfs. This agreement has been the source of litigation between the MVWA and the NYSCC.

As stated in the PAD (Erie 2018), water to the West Canada Creek Project is supplied from Hinckley Reservoir outflows. Hinckley Reservoir is operated by the NYSCC in accordance with the 2012 Hinckley Reservoir Operating Diagram which became effective in 2013 by an agreement between NYSCC and MVWA dated February 1, 2013. As summarized in response to AIR 5, Erie was not party to that agreement.

Removal of the Gray Reservoir has and may result in flow deviations by NYSCC from both the 1920 and 2012 Operating Diagrams. Compensating water is therefore no longer available to West Canada Creek consumptive and riparian users due to the removal of this reservoir. As part of the 1917 Agreement, the State of New York agreed to maintain a reservoir with sufficient capacity to meet the obligations in this Agreement.

Additional available information regarding Gray Reservoir is provided in Appendices B-1 and B-2.

References

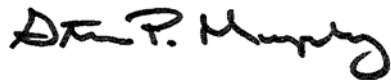
- Erie Boulevard Hydropower, L.P. (Erie). 2018. West Canada Creek Hydroelectric Project (P-2701) Relicensing Pre-Application Document, February 28, 2018. Available at: <http://www.westcanadacreekproject.com>.
- New York Power Authority. 2017. Gregory B. Jarvis Project (P-3211) Relicensing Pre-Application Document, June 2017. Available at: http://www.jarvis.nypa.gov/Lists/JARVIS%20Relicensing%20Documents/Attachments/125/Jarvis_PAD.pdf
- Upper Mohawk Valley Regional Water Board. 2000. Gray Reservoir Project, Upper Mohawk Valley Regional Water Board, November 2000. See Attachment B-1.
- New York State Canal Corporation. 2008. Memorandum re Hinckley Reservoir Working Group Dissenting Opinion to Dr. N. Kim, New York State Department of Health, April 28, 2008. See Attachment B-2.

Summary

The public domain AIR electronic files can be downloaded through FERC's eLibrary at <https://www.ferc.gov/docs-filing/elibrary.asp> by searching under the Project's docket P-2701, and can also be downloaded from the Project's relicensing website at: <http://www.westcanadacreekproject.com>.

Erie looks forward to working with FERC staff, agencies, Indian tribes, local governments, non-governmental organizations, and members of the public to develop a license application and supporting record that fully meets regulatory requirements in relicensing of the West Canada Creek Project. If you have any questions concerning this AIR filing, or need additional information, please contact me at (315) 598-6130 or via email at steven.murphy@brookfieldrenewable.com.

Sincerely,

A handwritten signature in black ink that reads "Steven P. Murphy". The signature is written in a cursive, slightly slanted style.

Steven Murphy
Director, Licensing
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Attachments: Attachment A – FERC AIR 5 – Project Operations Agreements AIR Response
Attachment B – FERC AIR 8 – Gray's Reservoir

cc: Distribution List
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West Canada Creek Hydroelectric Project (P-2701)

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ATTACHMENT A

**ATTACHMENTS FOR RESPONSE TO
FERC AIR 5 – PROJECT OPERATIONS AGREEMENTS**

RESPONSE IS FILED AS PRIVILEGED INFORMATION

ATTACHMENT B

**ATTACHMENTS FOR RESPONSE TO
FERC AIR 8 – GRAY’S RESERVOIR**

ATTACHMENT B-1

Upper Mohawk Valley Regional Water Board. 2000. Gray Reservoir Project,
Upper Mohawk Valley Regional Water Board, November 2000.

Upper Mohawk Valley Regional Water Board

Gray Reservoir Project



November 2000

BACKGROUND

The Black Creek Reservoir, also known as the Gray Reservoir, is an impoundment of water created by the Gray Dam and is located on the Black Creek just north of the hamlet of Gray which is upstream from Hinckley Reservoir. Our research indicates that there has been a dam at this approximate location since the late 1700's. The original dam was constructed to operate a mill. The current dam was purchased by the Upper Mohawk Valley Regional Water Board from the Utica Board of Water Supply. It was previously owned and operated by the Board of Water Supply's predecessor, the Consolidated Water Company.

The reservoir stores approximately 1.2 billion gallons at full capacity when the water level reaches the dam's spillway. This volume of water could pose a serious threat to the homes located downstream if the dam suffered a catastrophic failure. Because there is a potential for loss of life in the event of a failure, the Gray Dam is classified as "high hazard" by the NY Department of Environmental Conservation (DEC).

The dam is also classified as "high risk" because it has been in a state of disrepair for at least twenty-five years. The concrete training (side) walls are slowly separating from the concrete spillway. Because of its weakened state, the release gates have been left open for more than twenty years so that the reservoir is not filled to capacity on a year-round basis. At least one of the gates is now inoperable.

With the release gates open virtually all of the time, the level of the reservoir changes dramatically in response to rainfall and the melting of the snow pack. During an average Spring season, the reservoir fills and often releases water over the spillway until the runoff of water into the reservoir subsides. The water level then diminishes as the water continues to pass through the

gates. The reservoir can be at full capacity for several days or several weeks before it is gradually emptied. The reservoir has been at full capacity for an average of approximately thirty days during each of the past two years. Accordingly, the size of the body of the water can reach the proportions of a lake during certain months and be reduced to that of a creek at other times.

In 1988, the Utica Board of Water Supply initiated a study to determine the cost to mitigate the risks associated with ownership of the Gray Dam. An inspection and structural study was undertaken by Stetson-Harza to evaluate both repair and replacement of the dam. The first option of repairing the dam was estimated to cost \$720,000 at that time.

A second option studied was that of replacing the dam with a larger structure to increase the volume of the reservoir to approximately 2.5 billion gallons. This option was examined because of requirement for water storage on the Black Creek upstream from the point where the Black Creek merges with the West Canada Creek. The requirement dates back to a 1917 contract for water supply between the state Canal Authority and the Consolidated Water Company.

Because the water company was drawing increasing amounts of water to support an expanding metropolitan industrial base, it was required to maintain an ample reserve to ensure that creek flows on the West Canada could be maintained at adequate levels to support boat traffic on the Barge Canal.

The option of increasing the size of the Gray Dam and Gray Reservoir was studied because the existing reservoir has never met the contractual storage requirements found in the 1917 agreement. Some consideration had been given to whether compliance with the agreement should be attempted if there was to be any structural improvement to the dam. The cost to increase the size of the dam to the level needed to meet this requirement was determined by Stetson-Harza to be in the range of \$3.3 to \$9.5 million. The lower cost involved a moveable gate that would have higher maintenance and electrical costs.

The DEC's Dam Safety Committee has continued to express growing concerns regarding the safety of the dam. They have also indicated that an enforcement action may be necessary if the Water Board does not move to mitigate the flood potential. In response, the Regional Water Board will soon retain the services of an engineering consultant to update the previous studies and help determine the appropriate course of action. A third option, that of removing the dam, will also be evaluated. Removal may also be the most cost effective and operationally preferable method of flood abatement.

Separate from any legal obligations the Water Board may have regarding water storage for the Canal Authority, removal of the dam must be evaluated from the standpoint of the Water Board's own needs. Therefore, the purpose of this study is to determine whether dam removal is within the best interests of the Water Board. To make such a determination, the study must address two basic questions:

1) Is the Gray Reservoir needed to ensure an adequate supply of water to meet the system-wide daily demand? and 2) Would removal of the dam and elimination of the reservoir have any adverse effects on the quality of the raw water entering the Water Filtration Plant through Hinckley Reservoir?

To answer these questions, senior staff at the Water Board were asked to investigate and develop the necessary data from which to draw reasonable conclusions. The Engineering staff investigated the need for the reservoir in terms of volume. This information appears in Part I. The issue of water quality was studied by the Board's Water Quality Department and is presented in Part II.

PART I:

**GRAY RESERVOIR EFFECT
ON WATER VOLUME**

Gray Reservoir:
Water Storage Needs

At issue is the concern over whether current and future demands for water use from Hinckley Reservoir will could require large scale supplementation by water held in storage in the Gray Reservoir. The table below summarizes water use by the New York Power Authority, the Upper Mohawk Valley Regional Water Board, and the State Canal Authority. The water use calculations are expressed in cubic feet of water per second to indicate the flow rate. It should be noted that the New York Power Authority regulates the overall release of water through Hinckley Dam and, therefore, controls the elevation of the Hinckley Reservoir. The minimum releases by the Power Authority are determined by the requirement to maintain adequate creek flows downstream from the dam and are shown as Minimum Stream Flows below.

<u>USE</u>	<u>CURRENT MINIMUM REQUIRED</u>	<u>PROJECTED FUTURE MAXIMUMS</u>
Minimum Stream Flows	160.0 cfs	160 cfs
UMVRWB	32.8 cfs (21.2 MGD) (13%)	49.5 cfs * (32 MGD) (19%)
Erie Canal Operation	<u>50.0 cfs</u>	<u>50 cfs</u> (?)
	242.8 cfs	259.5 cfs
	(say 243)	(say 260)

* 32 MGD Design Capability of Filtration Plant

The information presented below was provided by the New York Power Authority and indicates the number of days that the water released through Hinckley Dam was below the specified flow rates during the recent 12 year period from 1987 to 1999:

<160 cfs	5 days
<180 cfs	8 days
<210 cfs	12 days
<220 cfs	13 days
<243 cfs	24 days
<260 cfs	33 days
<335 cfs	247 days

There was an average of approximately one day per year in which the release from Hinckley Reservoir fell below the level of 210 cfs (the combined minimum flow requirement for the Power Authority and the Canal Authority on the West Canada Creek below the Morgan Dam.) However, it cannot necessarily be inferred that the flow was below that level because adequate water was not available in the reservoir. It could be that creek flows did not require higher releases from the dam because of rainfall or snow melt, or that maintenance activities at the dam required lower than usual releases of water.

Assuming the Regional Water Board's water requirements will reach the treatment capacity of the Filtration Plant, this would require a future total draw from Hinckley of 260 cfs. This release quantity was not met 33 days during a recent 12 year time frame (1987 to 1999). On the average, this would mean there would be about 3 days per year where drinking water might have to be used from storage tanks or open reservoirs owned by the Regional Water Board.

The current covered storage capacity in the Regional Water Board system is about 11.7 MG (far less than the average daily flow of 20.6 MGD (FY '00)). A proposal to build a total of 34 MG additional in covered water storage (at a cost of approximately \$23M), would provide storage to satisfy the water system's Average Daily Flow for about 33 hours. In all probability, the total additional storage would not be available until year 2020. Until that time, the quantity of water will be drawn from open storage reservoirs to meet the quantities of water required.

The best locations from which to draw upon water needed from open storage reservoirs would be where the water is needed. In other words, as close to the points of consumption as possible, not 20-25 miles north of Utica at Gray Dam.

Upon additional study with the use of a consultant with expertise in dam operations, the least costly method of mitigating the flood risk should be clearly identified. If it is most cost effective to remove or partially remove the dam, then this option should be pursued. Especially in light of the fact that release of water from Gray Reservoir to supplement Hinckley Reservoir has never been required or requested and is not likely to be needed at any point in the future.

Donald Weimer, Principal Engineer

Richard Goodney, P.E., Design Engineer

PART II:

**GRAY RESERVOIR EFFECT
ON WATER QUALITY**

Gray Reservoir:

Organic Carbon Loading Study

Background

The UMVRWB Water Quality Department has undertaken a project in recent months to determine what effect the water from the Gray Reservoir has on the overall water quality entering our treatment plant at Prospect. The studies by both the UMVRWB Engineering Department and the Water Quality Department were initiated because of safety concerns. The reservoir, located on Black Creek in the town of Ohio, has been designated a high hazard dam by the DEC and that office has notified the UMVRWB that it must bring the structure into compliance. The UMVRWB Engineering Department has identified several courses of action; these include repair, replacement, or removal of the Grey Reservoir dam. This dam holds back a large volume of water during spring runoff and normal precipitation events, these effluent waters have been shown to have high concentrations of Total Organic Carbon (TOC). The organic carbon concentration at the raw water intake at the UMVRWB's Hinckley Water Treatment Plant (HWTP) is generally > 4.50 mg/L. This high level is considered to be a TOC trigger by the USEPA and consequently we were ordered to perform an \$ 80,000 study using a Rapid Small Scale Column Test. High levels of TOC are continually problematic in treating the water because these compounds react with chlorine. As a result, carcinogenic disinfection by-products (DBP's) are formed. (trihalomethanes , haloacetic acids and organic halides)

Approach/Results

For this study the Water Quality Department initiated a rapid sampling study to offer a quick assessment of TOC loading from the Gray Reservoir. Data from a specific site that was

100 meters downstream from the dam on Black Creek, was compared to loading rates of three other tributaries (Ash Creek, Mounts Creek/Little York Stream, and the North Branch of Black Creek/Mill Creek) were collected (Map 1). Each of the four sites were sampled on four separate occasions during the summer of 2000, twice during low flow periods (June 30 & July 28) and twice following rain events (July 18 & August 1). It should be noted that vegetative areas were flooded in Gray Reservoir during the rain and runoff events. Figure 1 demonstrates that on each of these sampling dates, the Black Creek at Gray contributed more organic carbon than any of the other tributaries to the Black Creek. Following precipitation events (July 18 & August 1), TOC values in the Black Creek at Gray waters were significantly higher than the TOC's in any of its tributaries. An increase was observed in the North Branch of Black Creek/Mill Creek and smaller increases were observed in both Ash Creek and Mounts Creek/Little York Stream during precipitation/runoff events.

To better assess the collective impact of elevated TOC concentrations in the Black Creek, they were compared to those concentrations at the HWTP intake (Figure 2). These data demonstrate that neither the TOC levels, at any of the four Black Creek sites, nor those from the West Canada Creek correspond well with the levels recorded at the HWTP plant intake. However, these data did not take into account stream discharges or TOC loading rates. Precise volumes from Hinckley's tributaries could not be determined therefore one time flow ratings were measured for each of the eight tributaries discharging into Hinckley Reservoir; these sites were also used in our on going EPA funded Source Water Protection grant. These measurements were made following a heavy rain when increased TOC levels would be expected. Included in these eight tributaries are both the West Canada Creek and Black Creek (at Grant, downstream of the confluences of Ash Creek, Mounts Creek/Little York Stream, and the North Branch of Black

Creek/Mill Creek). The sample plan served as a quick assessment of the various loadings of total organic carbon to the Hinckley Reservoir. Six of the eight tributaries appear to have negligible loading rates (≤ 1.5 grams/second) of TOC to the reservoir. At the time of this determination both the West Canada and Black Creeks were found to have the highest TOC loading rates. The West Canada Creek contributed 92.6 grams/second and The Black Creek contributed a higher rate at 116.8 grams/second (Figure 3).

Long-term trends were then established between each of the two major contributors (West Canada Creek and Black Creek) and TOC levels at the HWTP raw water intake. Figure 4 compares TOC concentrations from the West Canada with influent plant water TOC's. When graphed the data clearly indicate that the TOC's at the plant do not generally follow the TOC concentration trends observed at the West Canada site. When the same comparison is made between the HWTP raw water and the Black Creek (Figure 5), it is apparent that the TOC concentrations at the plant more closely resemble those of the Black Creek, and while the data are preliminary they do suggest that the Black Creek may well be the most significant contributor of organic carbon to the Hinckley Reservoir.

Summary

- The Black Creek at Gray and its tributaries emptying into the Hinckley Reservoir seem to be the most significant contributors of TOC, that make adequate water treatment difficult.
- Among the four tributaries emptying into the Black Creek, flow volume and TOC data show that the largest amount of TOC loading was contributed by the Black Creek at Gray Reservoir (Figure 1).
- Independent of flow rates, TOC concentrations in the West Canada Creek are well

below those found in the influent water of the HWTP while TOC concentrations from the Black Creek are significantly higher than the HWTP influent levels. Of the four tributaries of the Black Creek monitored, the Black Creek at Gray generally had the highest TOC levels (Figure 2).

- TOC loading rates computed at the eight EPA watershed monitoring sites at Hinckley Reservoir showed that aside from the West Canada and the Black Creek the remaining tributaries contributed only negligible amounts of TOC to the reservoir (Figure 3).
- While the discharge volume of the West Canada Creek into Hinckley Reservoir far exceeds the volume of the Black Creek. However, the TOC loading contributed to Hinckley Reservoir by the Black Creek cannot be discounted.
- These data indicate that TOC's from the West Canada do not account for the TOC concentrations seen coming into the HWTP (Figure 4).
- TOC concentrations from the Black Creek are much closer to TOC concentrations at the HWTP (Figure 5).

Conclusions

Either as a natural flowing stream, or impounded, stabilizing water levels on the Black Creek at the Gray Reservoir location should have a positive effect on the amount of organics released into the Hinckley Reservoir; the ultimate goal is that of reducing TOC loading in source water. It seems feasible that removal of the dam and restoration of the reservoir to its natural state as a creek could accomplish this objective. Current industry standards for optimized filtration enables the TOC content of the water to be reduced by 55-65%, at best. The fraction of TOC remaining is that amount which is available to form DBP's when combined with chlorine. By

minimizing the amount of TOC entering the plant, the efficiency of the treatment process can be improved. Economically the long term effects of lowered TOC levels would result in cost savings by reducing the amount of chemicals (alum, polymer, chlorine) needed for the treatment process. As an integral part of the RFP's proposed for Gray Reservoir, studies of sediments formed by previous impoundment events will partially indicate the significance of stabilization efforts. Lack of precise flow data from Hinckley's tributaries make absolute conclusions a matter of conjecture.

Determinations for the fate and cycling of organic carbon through Black Creek and, more specifically at Gray reservoir, need to be assessed as proposed, and these sediment determinations are only a beginning. While costly, these studies should be conducted to provide UMVRWB with the data to make valid conclusions. Important missing elements in our study include a USGS gauging station that was to be installed on the West Canada Creek; this facility lost its funding for fiscal year 2000 but USGS will attempt to construct this facility as soon as funding becomes available. In addition conclusions drawn need to include considerations from hydrological and engineering studies.

Committee

Connie K. Schreppel, MS; Director of Water Quality
David Fredericksen, PhD; Research Scientist
Philip A. Tangorra, MS; Senior Water Quality Analyst
Paul M. Donahue, Water Quality Technician

Figures

[illegible]

-
- Map Gray Area**
- Sites #**
1. West Canada Creek
 2. Northwood
 3. Thomas Road
 4. Beaver Meadow
 5. Butternut Creek
 6. Tugster Brook
 7. Remus Brook
 8. Black Creek at Grant
- The map displays a detailed road network, including Highway 305, and various geographical features such as lakes (e.g., Tom's Lake, Tugster Lake, Remus Lake, Black Creek Res.) and creeks (e.g., West Canada Creek, Northwood Creek, Thomas Creek, Beaver Creek, Butternut Creek, Tugster Brook, Remus Brook, Black Creek). Key locations marked include Northwood, Tom's Lake, and various smaller settlements and landmarks like the War Memorial and the Town Barn. The map also shows the border with the United States to the west and south.

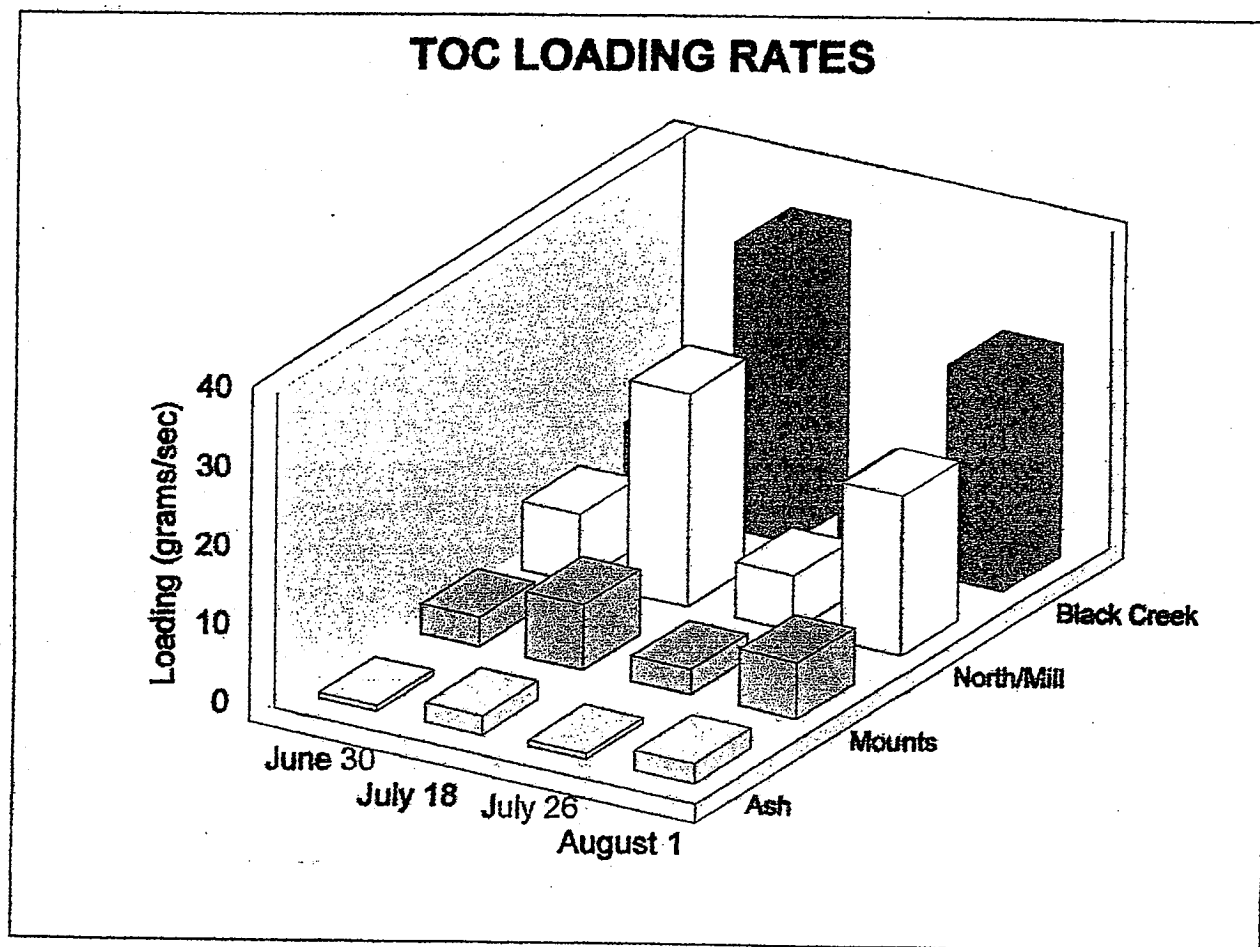


Figure 1.

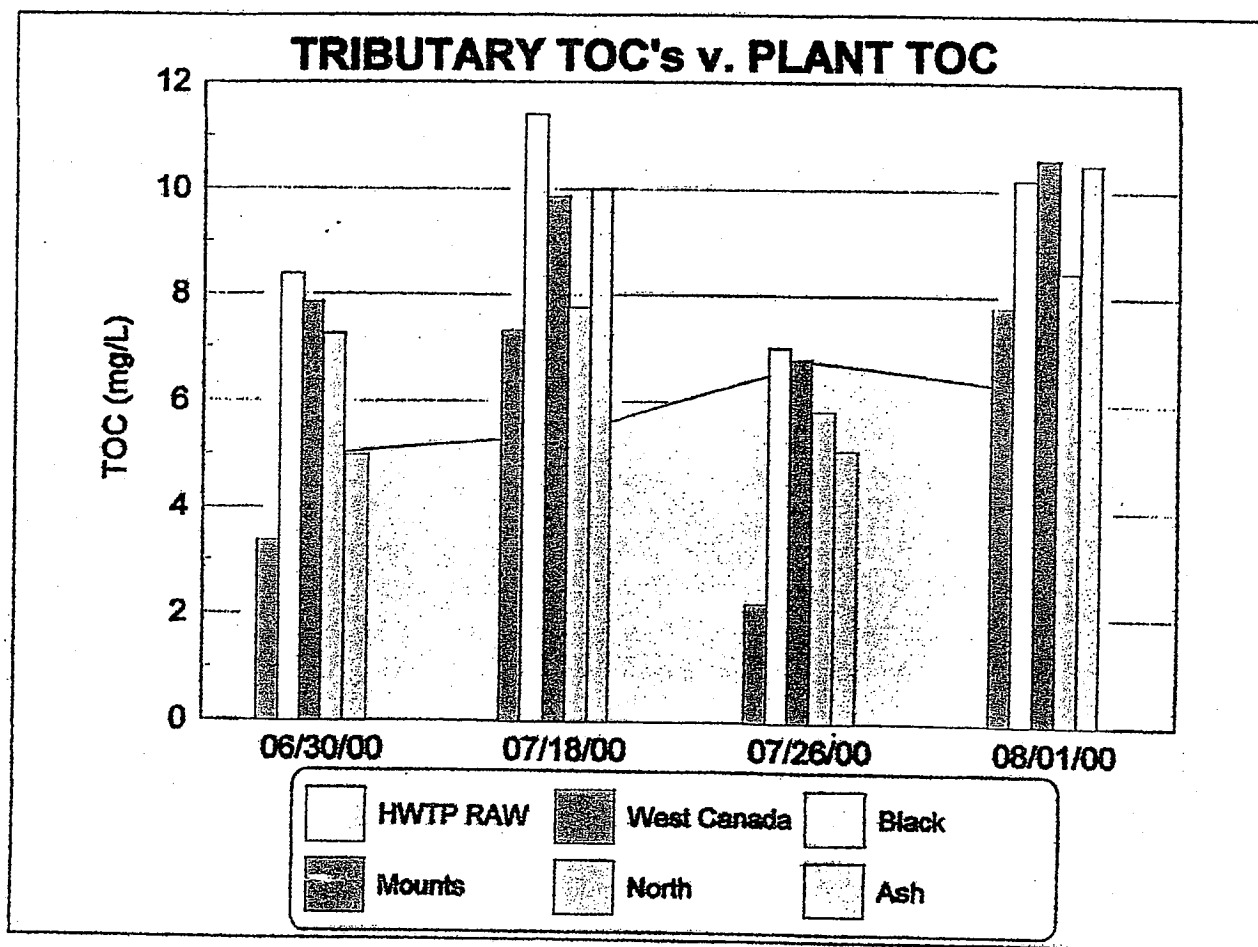


Figure 2.

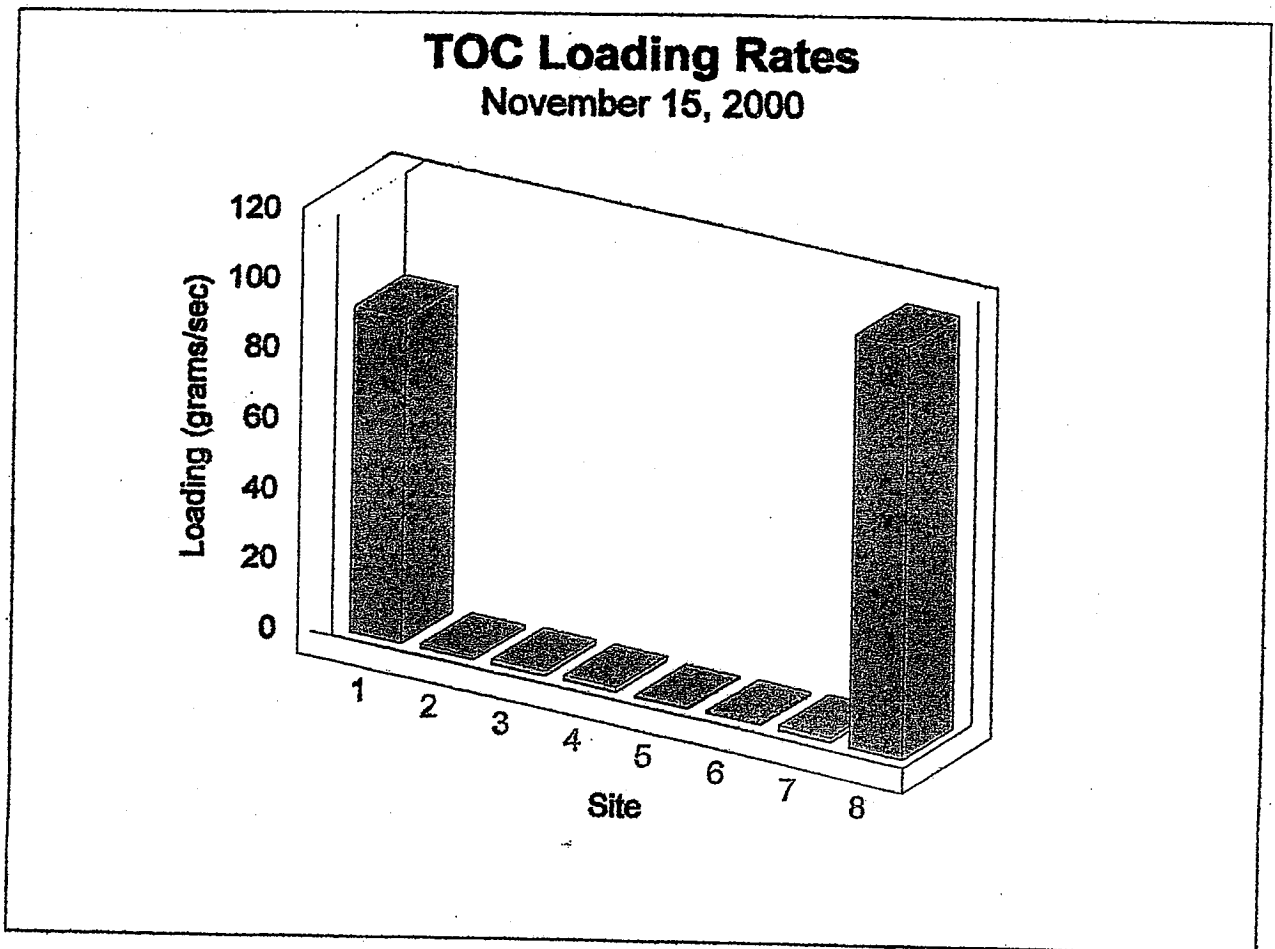


Figure 3.

- Site #
1. West Canada Creek
 2. Northwood
 3. Thomas Road
 4. Beaver Meadow
 5. Buttermilk Creek
 6. Taynter Brook
 7. Remus Brook
 8. Black Creek at Grant

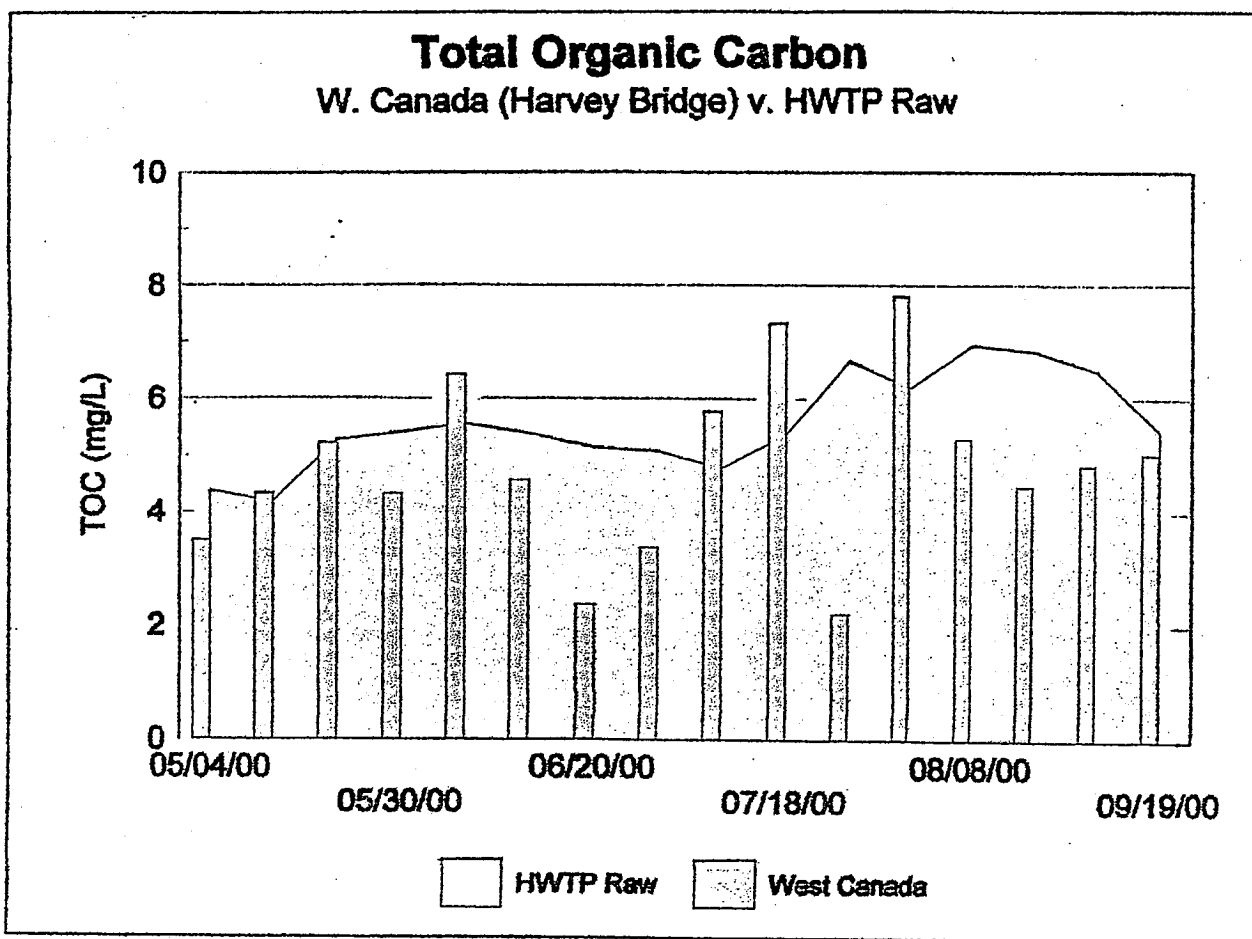


Figure 4.

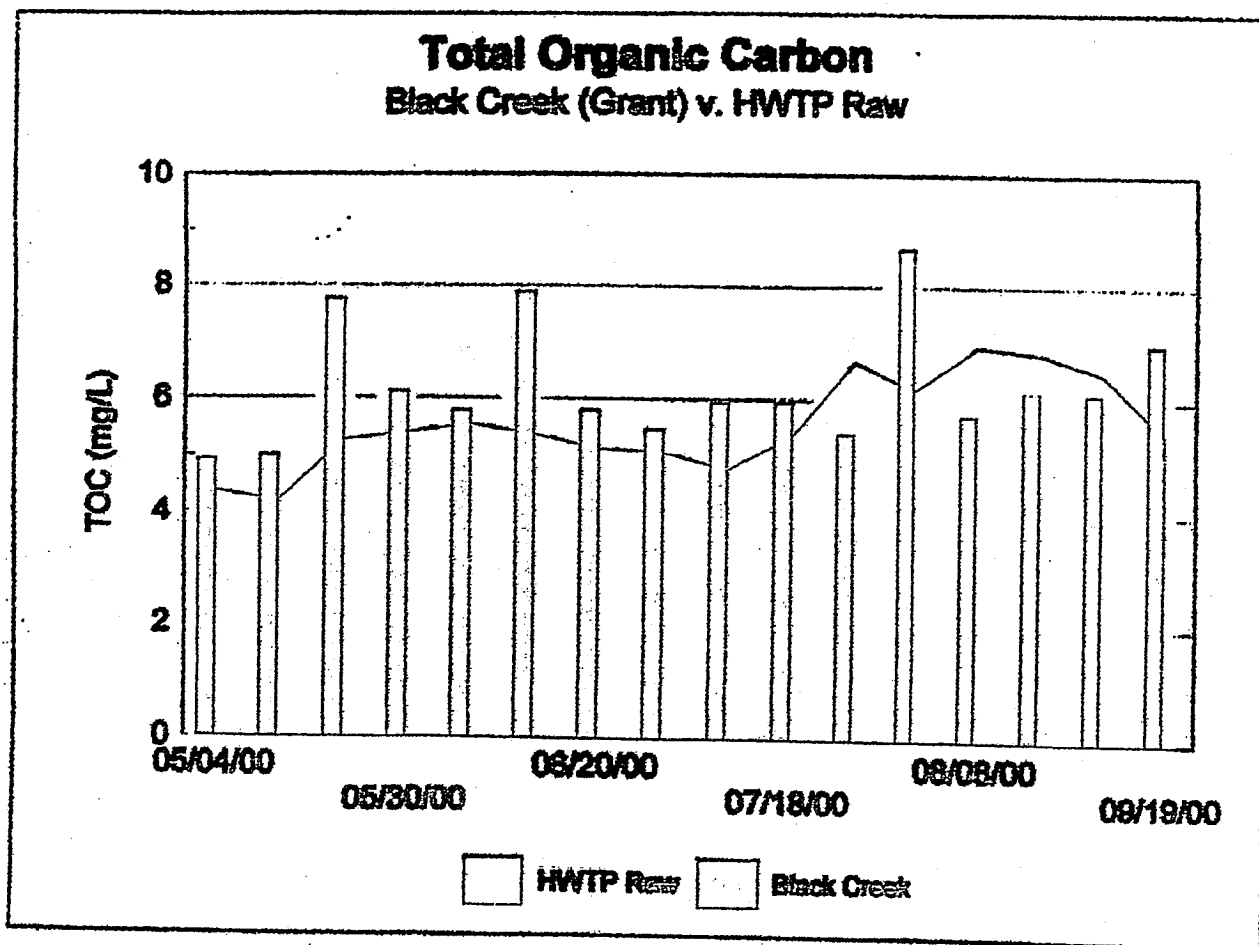


Figure 5.

Photographs
Gray Reservoir



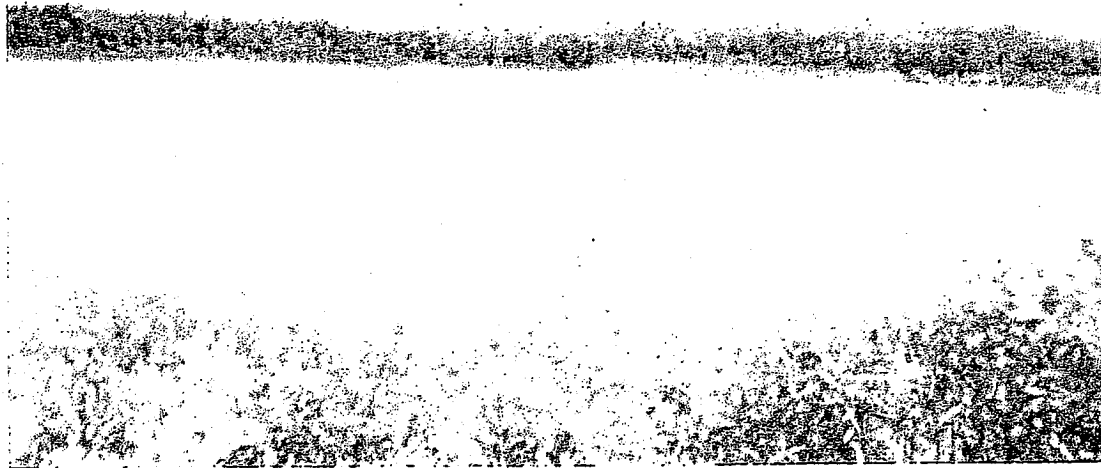
GREY RESERVOIR AT LOW FLOW



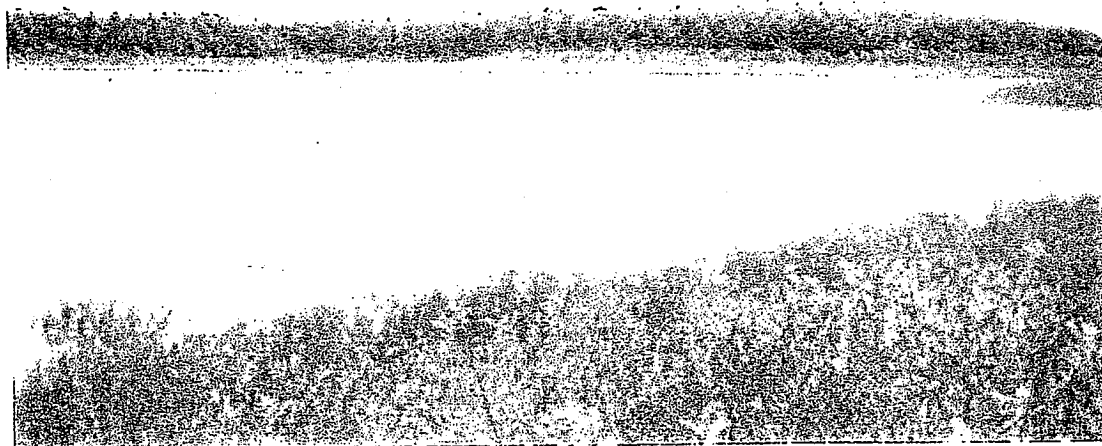
GREY RESERVOIR AT MODERATE FLOW



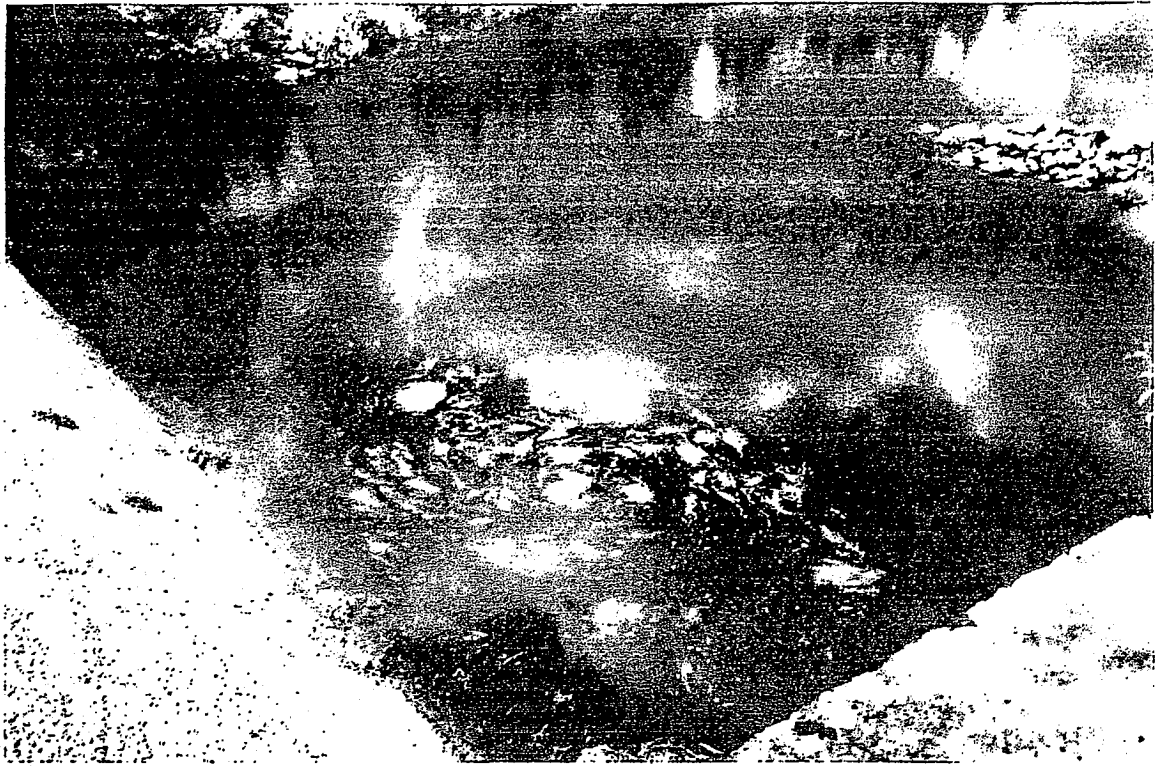
GREY RESERVOIR FLOODED



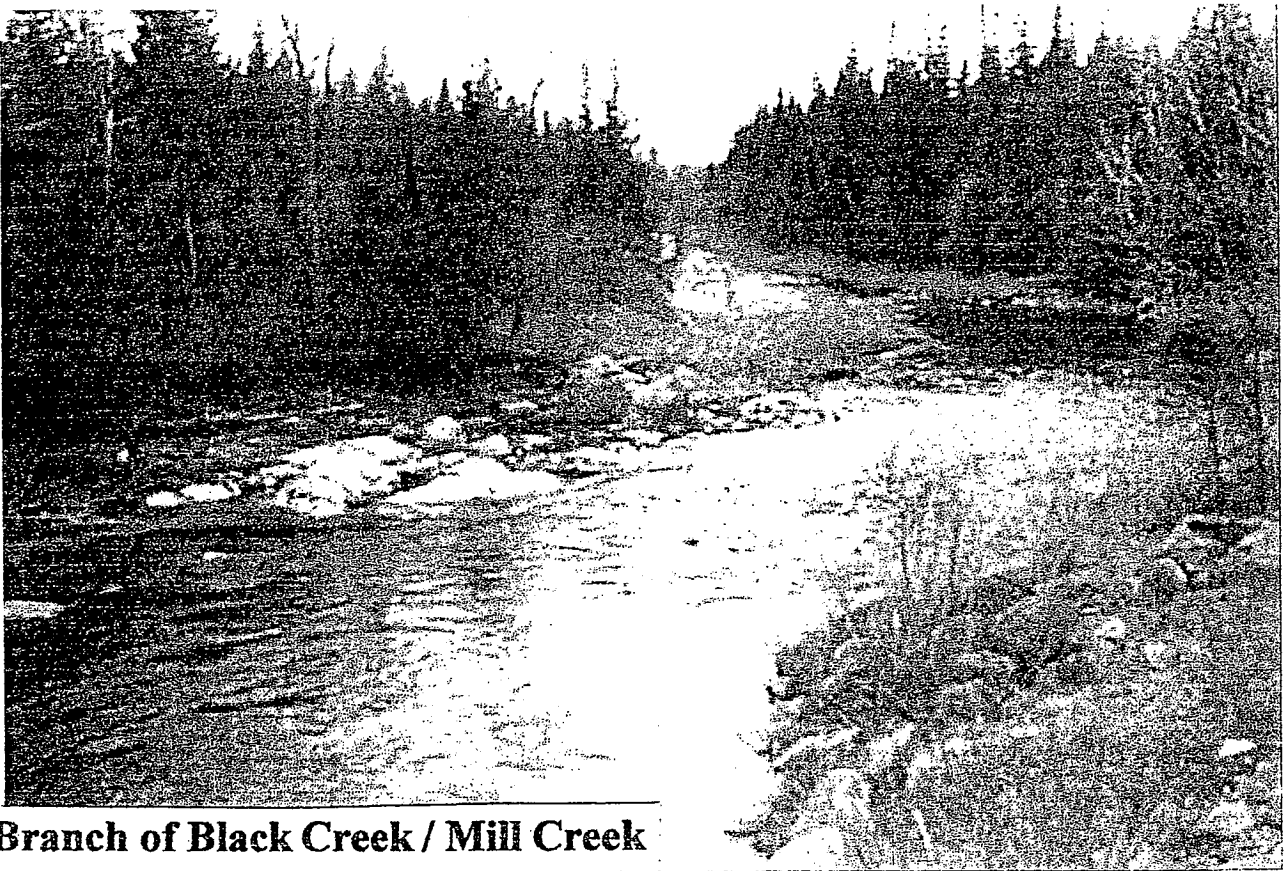
GREY RESERVOIR FLOODED - VEGETATION GREEN



GREY RESERVOIR WATERS RECEDED AND DECAYING VEGETATION BROWN



Accumulation of decaying vegetation following a flooding event



North Branch of Black Creek / Mill Creek



Mounts Creek/Little York Stream



Ash Creek

**Stream Gauging
and
Total Organic Loading Data**

ATTACHMENT B-2

New York State Canal Corporation. 2008.
Memorandum re Hinckley Reservoir Working Group Dissenting Opinion to Dr. N. Kim,
New York State Department of Health, April 28, 2008.



NEW YORK STATE CANAL CORPORATION
Memorandum

TO: Dr. Nancy Kim
New York State Department of Health

DATE: April 28, 2008

FROM: New York State Canal Corporation

SUBJECT: Hinckley Reservoir Working Group
Dissenting Opinion

The Canal Corporation and Thruway Authority (The Corporation) would like to commend all of the members of the Hinckley Reservoir Working Group for their diligent efforts to bring this important project to fruition. The Corporation would especially like to recognize the staff from the Department of Health, led by Dr. Kim, for their leadership and countless hours of coordination and editing.

The importance of the work accomplished by the Working Group cannot be overstated. Hinckley Reservoir is a resource used by many different entities for many different purposes. Perhaps the most important accomplishment of the Working Group was to bring these entities together for discussion about their individual uses and constraints. It was integral, not only to the Report, but for moving into the future, that everyone understand the view points of all members of the Working Group. The Corporation believes, as a result of this effort, a strong partnership has been developed among the parties that will help us address any challenges in the future. The Corporation recognizes the importance of the other competing interests for the water supply provided by Hinckley Reservoir, especially drinking water, however, the Corporation's legal obligation is the water supply for the Canal System.

It was evident that the members of the Working Group could not come away with all of the issues resolved to their sole benefit. With this understanding, the Corporation approached the project with the objective of a compromise solution that would be best for all involved. As a result, the Corporation supports the Working Group's Findings and Recommendations. It was never the Corporation's intention to assemble a dissenting opinion; however, since other parties have chosen to do so, it was imperative that the Corporation document certain concerns.

The Report does not include the Corporation's analysis of how Hinckley Reservoir could be operated in the absence of compensating flows as a result of MVWA's demolition of the Gray Reservoir Dam upstream of Hinckley Reservoir. The absence of Gray Dam will not endanger the drinking water supply at current withdrawal rates, but will continue to have a detrimental impact on reservoir levels, canal navigation, hydropower generation and fisheries in the time of drought. The Operating Diagram created in 1920 has withstood the test of time, including the drought of record, which occurred in 1964 (although Gray Reservoir was in operation during

1964). It is through the use of this 1920 Operating Diagram and its associated legal and contractual constraints that the Corporation and its predecessors have operated the reservoir for the benefit of all users, and must continue doing so. Improved communications recommended by the Working Group will be very helpful in that regard.

The Corporation fully supports the following Findings and Recommendations:

1. Communications
4. Data Gaps
5. Working Group Data Archive
8. Drought Region IV
9. Planning and Advisory Group

The Corporation supports the following Findings and Recommendations; however, the legal foundation from which MVWA is permitted to withdraw Hinckley Reservoir water is not adequately addressed:

2. Drinking Water Conveyance
6. Low Water Pumping
10. Upstream Storage

Hinckley Reservoir was built in 1915 to provide sufficient water to this highest point of the eastern section of the new Barge Canal and the Corporation is required by law to use it for that purpose. MVWA and the Corporation inherited the obligations contained in the 1917 agreement which settled litigation over rights to the water for the city of Utica and other users. Under that agreement MVWA, has a right to pass water through the reservoir, but its right is contingent on it maintaining sufficient water storage reservoirs upstream of Hinckley reservoir to make up for any adverse impact on Hinckley Reservoir water levels. The agreement is not ambiguous concerning this obligation, and in fact states that without this upstream storage, MVWA has no right to draw Hinckley Reservoir water. Furthermore, MVWA's FERC license and water supply permit require compliance with the 1917 Agreement.

In 2002, MVWA dismantled its only upstream reservoir, Gray, and now expects to use the State reservoir for its sole water supply, and also wants to increase the amount of water it can take to the detriment of other purposes (e.g. canal navigation, hydropower generation, and fisheries). The legal and contractual ramifications of this course of action are the subject of pending litigation.

The absence of any upstream compensating reservoir means the impact on Hinckley Reservoir water levels during either drought or flood will be exaggerated. The back-to-back 2006 flood and 2007 drought experienced in the Mohawk Valley coincidentally, represented the extremes in weather conditions experienced at the location since the drought of record, in 1964.

The Report does not fully consider the hydrology of the reservoir. Among the facts not fully explained in the final Report are:

- MVWA has the lowest intakes from the Hinckley Dam, which means that they may still draw water when others cannot. Historically, there has been sufficient water for MVWA's current level of use. At current demand, the Canal System, hydropower companies, and fisheries will be jeopardized before MVWA's customers are affected;
- When the Corporation reduced its withdrawals at the request of the State Emergency Management Office (SEMO) and the Oneida County Department of Health, the discharges from Hinckley Reservoir fell below those required by the 1920 Operating Diagram, and this has resulted in the State and the Corporation being served with a Notice of Intention to File a Claim to pay damages to the downstream hydropower generators for loss of revenues;
- The 1921 Agreement with the hydropower companies also resulted from the settlement of litigation over the water rights, and required that the discharges from Hinckley Reservoir be maintained at the rates set forth in the 1920 Operating Diagram.

While the Report recommendations task the MVWA with correcting some of these issues, the Report does not necessarily recognize the implications surrounding the remedies. The legal, regulatory and contractual issues involved in the low level pumping and drinking water conveyance recommendations are very significant. The Report does not directly consider the key questions of (1) how much water can be provided in the absence of an upstream compensating reservoir, and (2) should the State subsidize a single local water authority, MVWA, that dismantled its own reservoir above Hinckley Reservoir and now wants to take more water to expand its service area.

The Working Group did not address the legal basis from which MVWA is permitted to withdraw Hinckley Reservoir water for MVWA customers, as well as the impacts on Hinckley Reservoir levels from MVWA withdrawals on the rights of other users of that resource. The 1917 Agreement, between the State and (now) the Canal Corporation and the predecessor to MVWA forms the sole basis for MVWA to take water from Hinckley Reservoir. The permission to withdraw water, however, came with obligations to which it agreed. One was that it construct and maintain "a compensating storage reservoir" or reservoirs, the first being at Gray, NY, on the Black Creek, a tributary of the West Canada Creek above Hinckley Reservoir. Issues surrounding the 1917 Agreement are presently being litigated, but there are explicit provisions in the Agreement that establish its intent and are essential for understanding Hinckley Reservoir operations. The 1917 Agreement states:

"The [Water Company] covenants and agrees that it and its successors, grantees and assigns will at all times maintain, or cause to be maintained, a storage reservoir or reservoirs above the State dam at Hinckley, on West Canada Creek or its tributaries; fill the same from time to time from the flood, freshet or excess of the flow of water in said creek or its tributaries over and above the amount of water sufficient to comply with the contracts hereinafter mentioned, and from said reservoir or reservoirs, discharge into, contribute and supply to the natural flow of West Canada Creek, above the aforesaid State dam from time to time, quantities of water sufficient to comply fully with such of the

provisions of the several contracts of the [Water Company] with the [Hydropower Companies].”

MVWA becomes obligated to release water from its upstream compensating reservoir(s) when the flow into Hinckley Reservoir is below 335 cfs. When this low-flow point is reached, the MVWA is required to replace all the water it takes from Hinckley in order to ensure that its withdrawals will not impact the water in the reservoir needed for other users. Without Gray Reservoir, MVWA is unable to meet its contractual obligations and is prohibited from taking water from Hinckley Reservoir. The 1917 Agreement states:

“...And it is further understood and agreed that in the event of the failure of the [Water Company], its successors, grantees or assigns to provide and operate or cause to be provided and operated the storage reservoir or reservoirs as and in the manner in this paragraph provided, it shall have no right or authority or be permitted to take or draw water from the said State reservoir or said creek above Trenton Falls while such failure continues ...”

During the 122 days between June 1, 2007 and September 30, 2007, the calculated Hinckley Reservoir inflow was less than the required 335 cfs for 101 days, or 83 percent of the time. Following its demolition of the Gray Reservoir Dam in 2002, MWVA cannot provide the required low-flow compensation as its agreement required. The consequence of this was dramatically lower Hinckley Reservoir levels throughout the summer of 2007. MVWA’s consultant, Barton and Loguidice indicated in documents supporting their Safe Yield Analysis for Hinckley Reservoir in 2004 that MVWA’s failure to maintain compensating reservoir(s) and the requisite low-flow compensation “demonstrates how detrimental MVWA taking is to reservoir level”.

The Corporation seeks to clarify the following Finding and Recommendation:

3. Use of Other Canal Sources

The Report does not fully explain that most of the Canal System’s 20 other reservoirs are not a realistic supply-alternative to Hinckley and Delta Reservoirs because they are small, remote, and mechanically unusable and/or present their own environmental or contractual limitations. This means that the water contained in them could be very difficult to bring to the needed location at the summit-level of the canal in a timely manner. The local communities at those locations, not consulted for this Report, may very well oppose these drawdowns.

In addition, even those reservoirs which can provide some water could never supply the volume of water that would be needed during drought periods. The only other reservoir that offers any significant relief to help alleviate problems during a drought is Delta Reservoir. In each navigation season, including 2007, Delta Reservoir has been used extensively. The finding on page 63 makes it appear as if the Corporation does not use Delta, but rather exclusively relies on Hinckley. The recommendation on this same page suggests that the Corporation “should consider using ... Delta Reservoir for water needed in the Rome Summit section when the Hinckley Reservoir water levels are below normal or declining.” This is already standard operating procedure, yet it may lead a reader to believe this option has not been used in the past, or worse, that the Corporation had not considered or utilized this resource.

The Corporation would like to comment on the funding issues surrounding the following Finding and Recommendation:

7. Canal Resource Infrastructure Limitations

In general, the Report makes a number of costly recommendations, but does not say how they will be funded. The Corporation's Capital Program is primarily funded using toll revenues from the Thruway Authority. The use of toll revenue to support the Canal System was recently a subject of public debate over the increase in tolls. The Corporation is concerned that Thruway toll payers will now be called upon not only to fund the Canal System, but also to subsidize infrastructure costs of a single local water authority.

The Report suggests that the Corporation should assess and upgrade its infrastructure in Recommendation 7. The recommendation goes on to say that the "long term study should identify capital improvements and funding mechanism for modernizing canal capital facilities and related operational systems." However, the Corporation notes that no funding source for this recommendation is specified in the Report. Furthermore, many of the possible infrastructure improvements may have little or no benefit to the users of Hinckley Reservoir.

Much more work remains to be done. The Corporation is committed to working with all parties in a collaborative fashion.