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December 12, 2017

Secretary Kimberly D. Bose
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: Gregory B. Jarvis Power Project (Hinckley Reservoir), FERC No. P-3211-009
Filing of Proposed Study Plan and Request for Privileged Treatment of Confidential,
Non-Public Information

Dear Secretary Bose:

The New York Power Authority (Power Authority) is pleased to file the enclosed Proposed Study Plan (PSP) for the Federal Energy Regulatory Commission's (Commission or FERC) relicensing of the Gregory B. Jarvis Power Project (Hinckley Reservoir), FERC Project No. 3211 (Jarvis Project). The Power Authority appreciates the information requests, comments, and study recommendations submitted by federal and state resource agencies, Commission staff, and members of the public in accordance with the Commission's Integrated Licensing Process (ILP), as outlined in 18 C.F.R. § 5.9.

The Power Authority's enclosed filing includes: (1) responses to FERC's Additional Information Requests; (2) the Power Authority's proposed study plans for the relicensing effort; and (3) the Power Authority's rationale for not adopting certain study recommendations and response to comments received by licensing participants. Upon review of all study recommendations and comments received, the Power Authority's PSP proposes the following four studies, as detailed in the PSP:

1. Hinckley Reservoir Bathymetric Survey
2. Tailwater Water Quality Study
3. Assessment of Fish Entrainment and Turbine Passage Survival
4. Recreation and Public Access Survey

The Power Authority acknowledges that Commission staff and other resource agencies submitted additional study requests that the Power Authority has not fully adopted in the PSP. After carefully reviewing all recommended studies, the Power Authority included in the PSP only those recommendations: (1) that contain "any nexus between [Jarvis P]roject operations and effects (direct, indirect, and/or cumulative) on the resource to be studied"; and (2) in which "study results

would inform the development of license requirements.”¹ As set forth more fully in the Pre-Application Document (PAD) which the Power Authority filed with the Commission on June 30, 2017,² outflows from the Hinckley Reservoir are governed by long-standing, legally binding agreements between: (1) New York State Canal Corporation (NYSCC) and Mohawk Valley Water Authority (MVWA); and (2) NYSCC and Erie Boulevard Hydropower, L.P. (Erie Boulevard). These agreements, which predate the Jarvis Project by almost 70 years, establish comprehensive storage and flow requirements of the West Canada Creek, which are mandated by the 2012 Operating Diagram.

The Power Authority has never been a party to any of these agreements establishing the Operating Diagram and the required release requirements at Hinckley Dam. Rather, the Power Authority—partially in response to the domestic energy crisis in the 1970s—sought a license from FERC to construct the small Jarvis Project for the limited purpose of capturing the energy potential associated with the preexisting water releases under the Operating Diagram. FERC granted that license in 1982, which contained no requirement for the Power Authority to modify or otherwise disturb the existing flow regime of West Canada Creek established in these long-standing agreements—and expressly preserved the existing operating regime despite requests from other parties to change it.³

The Power Authority recognizes the concerns expressed during the scoping meetings and comments related to water levels at Hinckley Reservoir, aquatic resources in the watershed, sedimentation and erosion, and other resources. However, these issues have nothing to do with the limited operations of the Jarvis Project, are not needed to understand effects of the Jarvis Project, or to develop protection, mitigation and enhancement measures. Storage and release requirements are not a function of the FERC-issued license, but rather are mandated by well-established agreements that date back nearly a century, serve uses other than the Jarvis Project, and which involve parties other than the Power Authority. Even in the absence of the Jarvis Project, the same reservoir water levels and discharges would still occur in accordance with the Operating Diagram.

The Power Authority also recognizes the Commission’s obligation in this relicensing process to balance the public interest in accordance with the comprehensive waterway/equal consideration requirements of the Federal Power Act (FPA).⁴ In unique circumstances such as here—where the licensee has no control over releases through the project and there are already other well-established water resource uses at the project—the Commission has exercised its FPA

¹ 18 C.F.R. § 5.9(b)(5).

² PAD Section 3.4.1.

³ *Power Auth. of the State of N.Y.*, 20 FERC ¶ 62,264, at pp. 63,442-43 (1982) (rejecting spillage of flows requested by the U.S. Department of the Interior on the basis that the Power Authority’s proposed operation “is consistent with the intended function of the reservoir in providing low-flow augmentation to the [New York State Department of Transportation’s] barge canal”).

⁴ 16 U.S.C. §§ 797(e), 803(a)(1).

obligations in a manner that respects and protects these existing uses.⁵ Otherwise, owners of existing infrastructure that is capable of supporting new hydropower development will have every incentive to oppose and reject such development efforts, thereby creating conflict between the Commission's licensing requirements and bipartisan efforts by Congress to promote and facilitate small hydropower development at existing non-powered dams.⁶ The Power Authority is encouraged by the growing momentum in Congress to recognize the tremendous untapped potential of this clean energy source, as analyzed and identified by the U.S. Department of Energy as well as the Commission.⁷

⁵ *E. Tex. Elec. Coop., Inc.*, 136 FERC ¶ 62,171 (2011), *order on reh'g and clarification*, 140 FERC ¶ 61,228 (2012) (At a Texas project with contractual obligations to provide drinking water to the City of Houston, the Commission found that any reopener proceeding to impose further conditions for safety and environmental protection "will be conducted with the fullest possible consideration of and deference to the project's primary purpose of water supply, to the extent consistent with the Commission's obligations under the Federal Power Act."); *S. Cal. Edison Co.*, 115 FERC ¶ 62,187, *order on reh'g and clarification*, 117 FERC ¶ 61,067 (2006) (requiring the release of whitewater boating flows at a California project, but only on condition that the authorized purposes of the U.S. Corps of Engineers project were protected and any adverse effect on downstream water rights holders would be minimized); *PacifiCorp*, 105 FERC ¶ 62,207 (2003) (conditioning all operating constraints under the license on the availability of water beyond the licensee's water contracts and agreements and flood control responsibilities); *Appalachian Power Co.*, 66 FERC ¶ 61,316 (1994) (including several license conditions to protect the City of Lynchburg's water supply operations at its pumping stations located upstream and downstream of the project).

⁶ See S. 1460, 115th Cong. § 3003 (2017); H.R. 2872, 115th Cong. (2017); H.R. 3043, 115th Cong. (2017); S. 1029, 115th Cong. (2017); H.R. 8, 114th Cong. (2016); Hydropower Regulatory Efficiency Act of 2013, 16 U.S.C.A. §§ 798, 823a, 2705 (West 2013).

The Hydropower Regulatory Efficiency Act (HREA), signed into law by President Obama in 2013, is the latest piece of enacted legislation to promote hydroelectric development at existing non-powered dams. The bill, which broadened the definition of "small hydroelectric power project" under the Public Utility Regulatory Policies Act of 1978 to include projects with an installed capacity of up to 10 MW, enjoyed overwhelming bipartisan support in Congress, with both Houses voting unanimously in favor of the bill. See H.R. 267, 113th Cong. (2013).

H.R. 3043, or the Hydropower Policy Modernization Act of 2017, provides the most recent example of Congressional attempts to promote hydropower development on non-powered dams. While the bill is mainly targeted at improving the hydropower licensing process under Part I of the FPA, Representative Cathy McMorris Rodgers (R-WA-5), the bill's sponsor, has said that she hopes the bill will encourage additional development on non-powered dam infrastructure. Michael Harris, *Hydro licensing bill passes House; Dam safety amendment omitted*, HYDROWORLD.COM (Nov. 9, 2017), <http://www.hydroworld.com/articles/2017/11/hydro-licensing-bill-passes-house-dam-safety-amendment-omitted.html>. The bill was passed by the House of Representatives 257-166 on November 8, 2017. See H.R. 3043, *supra*.

⁷ The Department of Energy has been studying the feasibility of expanding hydroelectric development at existing non-powered dams for some time. See Wind and Water Power Technologies Office, U.S. Dep't of Energy, DOE/GO-102016-4869, *Hydropower Vision: A New Chapter for America's 1st Renewable Electricity Source*, Executive Summary § 3.2 (2016) (finding potential to develop 4.8 GW of new hydropower capacity at existing non-powered dams by 2050); Oak Ridge Nat'l Lab., U.S. Dep't of Energy, *An Assessment of Energy Potential at Non-Powered Dams in the United States* (2012).

The Commission has recognized the potential for new development on existing dams as well: "In addition to the nation's existing hydropower generating capacity, there is also potential to increase hydropower development. Many dams that were originally constructed for other purposes, such as

For the relicensing of the Jarvis Project, the Commission should leave undisturbed the long-standing water management regime under the Operating Diagram over which the Power Authority has no authority or control. As explained in more detail in the PSP, it is the Power Authority's view that several of the proposed studies advanced by Commission staff and resource agencies would reach beyond the rather narrow effects of the Jarvis Project and extend to matters controlled exclusively by the Operating Diagram, or other downstream projects. As such, the Power Authority in the PSP excludes these studies as they do not meet the study criteria under 18 C.F.R. § 5.9(b).

The Power Authority looks forward to discussing the PSP with Commission staff, resource agencies, and other relicensing participants at the upcoming study plan meeting. In accordance with the Commission's ILP regulations and its process plan and schedule issued for the Jarvis Project,⁸ the Power Authority will hold a study plan meeting open to agencies and the public at 9:00 AM on Thursday, January 11, 2018, at SUNY Polytechnic Institute (Kunsela Hall Auditorium) in Utica, New York. At the meeting, the Power Authority will discuss the proposed study plans with stakeholders. Stakeholders may provide comments during the meeting.

Also, in accordance with the ILP and process plan and schedule, relicensing participants may provide comments on the enclosed PSP within 90 days of this filing, i.e., by March 12, 2018.⁹ After the PSP meeting and following the receipt of any written comments received on the PSP, the Power Authority will file a Revised Study Plan with the Commission by April 11, 2018, as required by the ILP regulations and the process plan and schedule.¹⁰

Finally, the Power Authority notes that its response to the Commission's Additional Information Request No. 13 contains sensitive locational information related to cultural resources. This information is protected from public dissemination and exempt from the mandatory public disclosure requirements of the Freedom of Information Act. Pursuant to sections 385.1112 and 388.112 of the Commission's regulations,¹¹ the Power Authority requests that this information be placed in the non-public file and not be released to the public. As required, the Power Authority is filing this information separately, as confidential information.

commercial navigation (locks and dams) ... do not have power generating facilities. In the United States, there are approximately 87,000 existing dams and only 3 percent generate electricity." Office of Energy Projects, Fed. Energy Regulatory Comm'n, *Hydropower Primer: A Handbook of Hydropower Basics* 3 (2017). The Commission has also explored regulatory avenues to promote such development. In May 2017, Commission staff determined that a two-year licensing process for certain projects located on non-powered dams was feasible and could occur without making any statutory changes to the FPA. *Report on the Pilot Two-Year Hydroelectric Licensing Process for Non-Powered Dams and Closed-Loop Pumped Storage Projects and Recommendations Pursuant to Section 6 of the Hydropower Regulatory Efficiency Act of 2013* 46 (2017).

⁸ 18 C.F.R. § 5.11(e); see Scoping Document 1 for the Hinckley (Gregory B. Jarvis) Project, Appendix B, Project No. 3211-009 (issued Aug. 29, 2017).

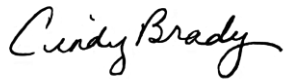
⁹ 18 C.F.R. § 5.12.

¹⁰ *Id.* § 5.13(a).

¹¹ 18 C.F.R. §§ 385.1112, 388.112.

If there are any questions regarding the Proposed Study Plan or the relicensing process, please direct them to the undersigned at (914) 287-3153 or cindy.brady@nypa.gov. Information regarding the relicensing of the Jarvis Project can be found at the Power Authority's relicensing website at <http://www.jarvis.nypa.gov>.

Sincerely,

A handwritten signature in black ink that reads "Cindy Brady". The script is cursive and fluid, with the first letters of each name being capitalized and prominent.

Cindy Brady
Business Development Manager, Licensing

PROPOSED STUDY PLAN



Prepared by:



December 2017

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**GREGORY B. JARVIS PROJECT
RELICENSING**

FERC NO. 3211



**NY Power
Authority**

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List of Abbreviations

A	Area
ADCP	Acoustic Doppler Current Profiler
APE	Area of Potential Effect
ADA	Americans with Disabilities Act
BCD	Barge Canal Datum
CAD	Computer aided-design
C.F.R.	Code of Federal Regulations
cfs	Cubic feet per second
DO	Dissolved oxygen
Erie Boulevard	Erie Boulevard Hydropower, L.P.
FERC	Federal Energy Regulatory Commission
ft/s	feet per second
GIS	Geographic Information System
HPMP	Historic Properties Management Plan
ILP	Integrated Licensing Process
ISR	Initial Study Report
km	Kilometer
kV	Kilovolt
mg/L	Milligram per liter
MVWA	Mohawk Valley Water Authority
NAD83	North American Datum of 1983
NAVD88	North American Vertical Datum of 1988
NOI	Notice of Intent
NGO	Non-governmental organization
NWI	National Wetlands Inventory
NY	New York
NYSCC	New York State Canal Corporation
NYSDEC	New York State Department of Environmental Conservation
NYSM	New York State Museum
Operating Diagram	2012 Hinckley Reservoir Operating Diagram
OPRHP	New York State Office of Parks, Recreation and Historic Preservation
PAD	Pre-Application Document
PSP	Proposed Study Plan
Q	Discharge / Flow

QA/QC	Quality Assurance / Quality Control
RSP	Revised Study Plan
RTK GPS	Real-time Kinematic Global Positioning System
SCORP	Statewide Comprehensive Outdoor Recreation Plan
SD1	Scoping Document 1
SHPO	State Historic Preservation Officer
SPD	Study Plan Determination
SUNY	State University of New York
the Commission	Federal Energy Regulatory Commission
the Power Authority	the Power Authority of the State of New York
the Project	Gregory B. Jarvis Power Project (Hinckley Reservoir)
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
V	Velocity

1 Introduction

The Power Authority of the State of New York (d/b/a “New York Power Authority” and referred to as “the Power Authority”) is relicensing the Gregory B. Jarvis Power Project (Hinckley Reservoir) (FERC No. 3211-NY), referred to herein as “the Project.” The Project is located on West Canada Creek, a tributary to the Mohawk River, at the Hinckley Reservoir Dam. The Project is approximately 0.5 miles upstream of the Town of Hinckley in the counties of Oneida and Herkimer, New York (NY). The original license was issued on August 12, 1982 and expires on July 31, 2022. The Power Authority is using the Federal Energy Regulatory Commission’s (FERC or the Commission) Integrated Licensing Process (ILP) as outlined in 18 C.F.R. Part 5.

In accordance with 18 C.F.R. § 5.5 and 5.6, the Power Authority filed its Notice of Intent (NOI) and Pre-Application Document (PAD) on June 30, 2017, which included the Power Authority’s preliminary study plan for the Project. As discussed in the PAD, the Power Authority proposed to conduct a desktop study entitled *Assessment of Fish Entrainment and Turbine Passage Survival*. The Commission issued its Scoping Document 1 (SD1) on August 29, 2017, and held scoping meetings on September 26 and 27, 2017 at SUNY Polytechnic Institute in Utica, NY, where potential issues were identified by agencies, stakeholders, and the public. Subsequently, the Power Authority received comments on the PAD and the study plans as well as requests for additional studies. The Power Authority has reviewed these comments and study requests, which are addressed in this Proposed Study Plan (PSP).

In addition to responding to comments received, the Power Authority proposes to build on the *Assessment of Fish Entrainment and Turbine Passage Survival* study initially proposed in the PAD in response to feedback received during the scoping process. Furthermore, the Power Authority is proposing three new studies which were requested by Commission staff and stakeholders during the study request process, including: (1) Hinckley Reservoir Bathymetric Survey; (2) Tailwater Water Quality Study; and (3) Recreation and Public Access Study. The Power Authority believes that the tailwater water quality and recreation and public access studies are relevant to the continued operation of the Project and will enable FERC to analyze the effects of continued operation of the Project on power and non-power resources. Although a reservoir bathymetric survey has been proposed in the PSP, in response to requests by FERC and multiple stakeholders, the Power Authority does not believe that this study will produce any information relevant to ascertaining any effects of the continued operation of the Project. The irrelevance of the bathymetric survey as it relates to the continued operation of the Project, and other requested studies which are not proposed in the PSP, is discussed in greater detail in later sections.

The Power Authority will hold a study plan meeting, open to agencies and the public, at 9:00 AM on Thursday, January 11, 2018, at SUNY Polytechnic Institute (Kunsela Hall Auditorium) in Utica, NY during which time the Power Authority will discuss the proposed study plans with stakeholders. FERC will also be in attendance at the study plan meeting.

Stakeholders may provide comments on the proposed study plans within 90 days of this filing, the deadline of which is March 12, 2018. Written comments need to be filed directly with FERC using the eFiling system at <https://www.ferc.gov/docs-filing/efiling.asp> or by regular mail at: Federal Energy Regulatory Commission, 888 First Street, N.E., Washington, D.C., 20426. The Power Authority will subsequently file a Revised Study Plan (RSP) with the Commission by April 11, 2018.

Following this section, the PSP is divided into the following sections:

- [Section 2](#) – FERC Additional Information Requests
- [Section 3](#) – Proposed Studies
- [Section 4](#) – Discussion of Proposed Study Requests Not Adopted
- Appendices:
 - [Appendix A](#) – MVWA Water Use Data: 1983-2016
 - [Appendix B](#) – List of PAD Comment and Study Request Letters
 - [Appendix C](#) – Reservoir Daily Peaking Analysis Results

2 FERC Additional Information Requests

By letter dated October 27, 2017, FERC issued its Request for Additional Information and Study Requests for the Jarvis Project. FERC's letter included fourteen additional information requests (AIRs) and three study requests. Discussion pertaining to the study requests is included in [Section 3](#), while responses to the AIRs is presented below.

2.1 FERC AIR No. 1: Project Boundary

"On page 8 of the Pre-Application Document (PAD), you state that the Project boundary extends downstream approximately 0.3 mile (1,600 feet) from Hinckley Dam to the Hinckley Road Bridge. However, during the environmental site review, NYPA staff stated that the Project boundary extends only 250 feet from the dam and does not extend all the way to Hinckley Road Bridge. Please clarify how far below the dam the Project boundary extends."

Power Authority Response:

Project boundary information presented in the PAD was approximate based on a preliminary interpretation of historic information. Since the filing of the PAD, the Power Authority has conducted additional research into the exact configuration of the Project boundary. Based on the additional research conducted, the current Project boundary appears to extend approximately 400 feet downstream of Hinckley Dam. [Figure 2.1-1](#) depicts the Project boundary in this area based on the additional research conducted to date.

The Power Authority notes that although the Project boundary appears to extend approximately 400 feet downstream of Hinckley Dam, the relicensing effort offers an opportunity to reposition the boundary, as needed to capture only those lands that are needed for Project purposes. The Power Authority will undertake a comprehensive review of the Project boundary and propose any changes in the Exhibit G of its Final License Application.

2.2 FERC AIR No. 2: Project Operation

"On page 16 of the PAD, you state that the 1920 Operating Diagram was used until it was superseded by the 2012 Operating Diagram. You only provide the 2012 Operating Diagram in the PAD. To help us better understand the changes in operation that occurred during the current license, please provide a copy of the 1920 Operating Diagram."

Power Authority Response:

[Figure 2.2-1](#), found at the end of this section, depicts the 1920 Operating Diagram.

2.3 FERC AIR No. 3: Transmission System

"On page 13 of the PAD, you describe the project transmission system. Please verify that the project transmission infrastructure includes: (1) two approximately 50-foot-long underground

generator leads that run between the project generators and an aboveground, NYPA-owned transformer within the powerhouse parking area; and (2) a 200-foot-long underground transmission line running from the transformer to a NYPA-owned switchyard located north of New York State Route 365, which is where project power interconnects with transmission lines owned by National Grid. Also, please provide the voltage values for the generator leads, the underground line between the transformer and switchyard, and the National Grid transmission line. Lastly, please verify that there are no overhead lines between the transformer and the switchyard.”

Power Authority Response:

The Project transmission infrastructure includes:

- 4.16-kV electrical leads from each generator routed through an underground chase approximately 50 feet long to the aboveground Power Authority-owned 46-kV/4.16-kV step-up transformer located within the powerhouse parking area, and
- A 46-kV underground transmission line, approximately 300 feet long, which runs from the 46-kV/4.16-kV step-up transformer to a Power Authority-owned switchyard located north of NYS Route 365 at which point Project power interconnects with transmission lines owned by National Grid.

As noted above, voltage values are as follows:

- Generator leads: 4.16-kV;
- Underground leads located between the step-up transformer and the switchyard: 41.6 kV; and
- National Grid transmission line: 41.6-kV.

There are no overhead lines between the step-up transformer and the switchyard. The only overhead line serving the Project is a 480-volt overhead line that terminates at the metering pole located just north of the main entrance to the powerhouse. Conduit from the metering pole is routed to the powerhouse running west to east along the soldier pile wall.

2.4 FERC AIR No. 4: Water Resources

“On pages 27 through 29 of the PAD, table 4.1.2-1 provides Mohawk Valley Water Authority (MVWA) and New York State Canal Corporation (Canal Corp) water withdrawals for the period 2009 through 2016. So that staff may understand historic water usage during the period of the current license, particularly changes in water usage for municipal water supply and canal operation, please also provide any MVWA and Canal Corp water use data from 1983 through 2009. Also, please provide information on any increases or decreases in municipal or canal water usage planned for future years.”

Power Authority Response:

The requested water use data for MVWA for the period 1983 through 2016 is included in [Appendix A](#). The data from 2009 to 2016 has been updated after a more thorough review of the data by the MVWA. The data presented in the PAD was downloaded from the New York State Canal Corporation (NYSCC) website and had not been corrected for errors.

The Power Authority requested data from the NYSCC for their flow diversion from West Canada Creek to the Nine Mile Feeder Canal, which supplies water to the Rome Summit of the NYS Barge Canal for the period 1983 to 2009. The NYSCC informed the Power Authority that such data was not available. Based on follow-up conversations with the NYSCC, it was noted that, in general, between 2001 and 2008, during the navigation season (5/1 to 11/15), the NYSCC typically diverted between 20-25 cubic feet per second (cfs) daily up to a maximum of 82 cfs. Canal diversions have been limited to 82 cfs due to the deteriorated condition of the diversion structure (i.e., a plugged culvert downstream that raises the tailwater elevation at Morgan Dam). The 2008 Hinckley Reservoir Working Group Report¹ states that according to the NYSCC the historic maximum diversion has been measured at 188 cfs.

In regard to MVWA and NYSCC future water usage, it is the Power Authority's understanding that neither entity currently utilizes their full water allocations established under the various legal agreements. Both MVWA and the NYSCC are exploring future infrastructure upgrades to allow for more efficient and greater use of their allowable water rights. The MVWA has stated that they plan on expanding their capacity to utilize their full allowable allocation of 75 cfs (48.5 MGD) (according to the 2013 Settlement Agreement) as their distribution system expands and new industries relocate to their service area.

The NYSCC has stated their intention to rehabilitate their diversion structure during the 2018-2019 non-navigation season so that they will have the ability to divert up to 400 cfs to the Rome summit section of the NYS Barge Canal.

2.5 FERC AIR No. 5: Geology and Soils

"On page 38 of the PAD, you state that there is "minimal to no" erosion throughout the reservoir and "limited" streambank erosion along the banks downstream of the project dam, particularly along the left bank. So that staff may better understand the shoreline erosion within the project reservoir and downstream of the dam as described in the PAD, please provide a description of the extent of erosion observed (such as the length of shoreline affected), the potential causes of observed erosion, and photo-documentation of the erosion."

¹ Hinckley Reservoir Working Group. 2008. Report to the Governor. Available at https://www.health.ny.gov/environmental/investigations/hinckley_reservoir/docs/2008-04-30_report_to_the_governor.pdf

Power Authority Response:

As noted above and in the PAD, there is minimal to no shoreline erosion throughout the reservoir. Regarding the downstream erosion noted in the PAD, as discussed in [Section 2.1](#), the Project boundary depicted in the PAD was approximate based on a preliminary interpretation of historic information. Based on additional research which has been conducted since the filing of the PAD, the current Project boundary does not extend as far downstream as originally thought. As a result, the downstream bank erosion discussed in the PAD is actually outside of the Project boundary. The bank from Hinckley Dam to the downstream extent of the Project boundary has minimal to no erosion ([Figure 2.5-1](#) through [2.5-4](#)). The downstream erosion discussed in the PAD, which is outside of the Project boundary, was the result of high flows that passed over the spillway during the flood of record on April 28, 2011 during which time the peak reservoir water level was elevation 1230.74 (approximately 6 feet over the crest of the spillway) and peak flow was approximately 21,000 cfs.

2.6 FERC AIR No. 6: Geology and Soils

“On pages 43 and 44 of the PAD, the figure illustrating soils in the vicinity of the project (figure 4.2.3-1) does not contain soil codes. To allow for easier comparison with the legend, please provide soil type codes within the colored soil types in figure 4.2.3-1.”

Power Authority Response:

PAD Figure 4.2.3-1 has been updated to include soil code labels as requested. The updated figure can be found as [Figure 2.6-1](#) at the end of this section.

2.7 FERC AIR No. 7: Terrestrial Resources

“On pages 115 and 116 of the PAD, you provide a general description of wetland and riparian habitat within the Project boundary. However, table 4.6.1-1 only lists specific classifications for National Wetland Inventory (NWI) mapped wetlands. So that staff has adequate information to describe wetlands within the project area, please provide a table that contains acreage estimates within the Project boundary for each state and federal wetland classification (i.e., National Wetland Inventory, New York State Department of Environmental Conservation, or Adirondack Park Authority).”

Power Authority Response:

[Table 2.7-1](#) provides the acreage estimates for National Wetlands Inventory (NWI) and NYS Department of Environmental Conservation (NYSDEC) wetlands within the Project boundary. As discussed below, [Figure 2.8-1](#) provides an updated map of wetlands in the Project vicinity.

2.8 FERC AIR No. 8: Terrestrial Resources

“On page 118 of the PAD, the single, large-scale wetlands figure 4.6.1-1 does not provide an

adequate degree of detail. Also, it is unclear why certain wetland boundaries (in yellow) within the eastern portion of the reservoir overlap with the reservoir. For clarity, please provide a series of finer-scaled maps that represent state and federal mapped wetlands adjacent to the entire Project boundary, and include the specific wetland classification code for each wetland parcel on the map.”

Power Authority Response:

[Figure 2.8-1](#), found at the end of this section, provides a corrected map series denoting the wetlands information requested.

2.9 FERC AIR No. 9: Terrestrial Resources

“On pages 119 and 120 of the PAD, you state that one adult common loon (a New York species of special concern) was recorded within Hinckley Reservoir in July 2013. So that staff may adequately determine project effects on common loons, please provide a list of all common loon sightings since 2001 within Hinckley Reservoir as part of the New York Annual Loon Census or similar survey effort, including the location of the sighting (if known), and whether specific evidence of breeding activity was observed.”

Power Authority Response:

In response to this AIR, the Power Authority examined several sources, including the NYSDEC Breeding Bird Atlas and the Adirondack Communities and Conservation Program (i.e., Loon Census). Upon review of the NYSDEC Breeding Bird Atlas, it was observed that Common Loon were listed for the period 2000-2005 at Hinckley Reservoir. Per the NYS Breeding Bird Atlas database, a pair of Common Loon were observed in suitable habitat in breeding season on two separate occasions - July 20, 2002 and July 16, 2005. As a result, Common Loon were categorized as having a breeding bird atlas behavior category of ‘Probable’ in this area. However, based on correspondence with the Adirondack Communities and Conservation Program, it was noted that Hinckley Reservoir does not support successfully nesting pairs of loons, nor has it ever had chicks or immature loons reported for the period 2002 - 2017. The available Loon Census data for Hinckley Reservoir is summarized below:

- 2002: 4 adults
- 2005: 2 adults
- 2007: 5 adults
- 2008: 0 loons observed
- 2009: 0 loons observed
- 2010: 1 adult
- 2011: 2 adults

- 2012: 1 adult
- 2013: 1 adult
- 2014: 2 adults
- 2016: 0 loons observed
- 2017: 0 loons observed

2.10 FERC AIR No. 10: Land Use

“On page 126 of the PAD, you state that there are a number of private residences adjacent to the reservoir that use project lands for fishing, boating, swimming, and other recreation. So that staff has adequate information to describe land use at the project, please specify the number of private residences within the Project boundary and whether the majority of residences are full-time residences or vacation properties.”

Power Authority Response:

The private residences adjacent to the reservoir that were noted in the PAD refer to residences that are outside of the Project boundary on lands owned by third parties. The Project boundary surrounding the reservoir follows the normal pool elevation of 1225 feet (Barge Canal Datum). Downstream of the dam, the Project boundary follows the shoreline on the left bank and encompasses the powerhouse on the right bank, before terminating approximately 400 feet downstream of Hinckley Dam. As such, there are no private residences within the Project boundary. The Power Authority has the necessary rights for all lands within the Project boundary.

2.11 FERC AIR No. 11: Cultural Resources

“On page 9, you state that the Hinckley Dam and Reservoir are discontinuous contributing elements to the New York State Barge Canal Historic District and in January 2017, the New York State Barge Canal Historic District was designated as a National Historic Landmark. Because of the Historic District’s designation as a National Historic Landmark, we will need to conduct additional consultation with the National Park Service. Further, a historic properties management plan will mostly likely be required to protect the historic property from any adverse effects that may result from continued project operation. Please prepare a historic properties management plan and file it with your study report.”

Power Authority Response:

The Power Authority has engaged the State Historic Preservation Officer (SHPO) to determine the Project’s Area of Potential Effect (APE). Until the APE has been determined, it is premature to commit to the development of a Historic Properties Management Plan (HPMP). The Power Authority anticipates that a determination will be made in advance of the RSP, which will be

updated accordingly to reflect the outcome of these discussions.

2.12 FERC AIR No. 12: Cultural Resources

“On page 131 of the PAD, you state that an examination of the New York State Cultural Resources Information System within two miles of the project identified three historic properties: one property listed on the National Register of Historic Places (National Register) and two properties deemed eligible for the National Register. However, the table identifying these properties (table 4.10.3-1 on page 137) only includes two properties. Further, that table lists the Hinckley Dam and Reservoir as a historic property, but indicates it is adjacent to the project, as opposed to within the Project boundary. It also lists the New York State Barge and Canal Historic District as being within the Project boundary. So that staff has a clear understanding of historic properties at the project, please clarify why there are only two properties listed in this table when three were identified, and explain why the table states Hinckley Dam and Reservoir is not within the Project boundary.”

Power Authority Response:

PAD Table 4.10.3-1 correctly identifies one historic property listed within two miles of the Project; however, the description found in the text on page 131 of the PAD is incorrect. As noted in the PAD, there is one property listed on the National Register within two miles of the Project – the New York State Barge Canal Historic District and Hinckley Dam and Reservoir, of which Hinckley Dam and Reservoir is a contributing feature. The two properties deemed eligible in the remainder of the sentence are facilities associated with the West Canada Creek Hydroelectric Project (FERC No. 2701), which are greater than 2 miles from the Jarvis Project. The first sentence of Section 4.10.3 on PAD page 131 should have simply stated: “An examination of CRIS within two miles of the Project identified one property listed on the National Register (NRL).”

In addition, PAD Table 4.10.3-1 incorrectly states that Hinckley Reservoir and Dam are not within the Project boundary. These features are within the Project boundary.

2.13 FERC AIR No. 13: Cultural Resources

“On page 136, table 4.10.2-1 lists the archaeological sites within two miles of the project. So that staff has a clear understanding of the locations of these sites in relation to the project, please add a column that explains the proximity of each site to the Project boundary.”

Power Authority Response:

Due to its sensitive nature, the requested proximity information is summarized in Table 2.13-1, which is filed as privileged under separate cover.

2.14 FERC AIR No. 14: Cultural Resources

“On page 149, you state that pending consultation with the New York State Historic Preservation Officer (New York SHPO), no further studies for cultural resources are proposed at this time. If any additional consultation with the New York SHPO has occurred since filing the PAD, please provide a record of that communication.”

Power Authority Response:

As noted in [Section 2.11](#), the Power Authority has engaged the SHPO to determine the Project APE. It is anticipated that a determination will be made in advance of filing the RSP. The RSP will be updated to include a record of these discussions.

2.15 Additional Requests

In addition to the AIRs discussed above, FERC also requested that the PSP include a master schedule for conducting each proposed study (i.e., data collection, data analysis, consultation, and report preparation), the distribution of progress reports, the filing date of the initial study report, and the date of the initial study report meeting. [Table 2.15-1](#) provides the schedule information requested. In addition, task-specific schedules for each proposed study can be found in [Section 3](#).

Table 2.7-1. Acreage Estimates for NWI and NYSDEC Wetlands within the Project Boundary

Code	System / Subsystem	Acreage	Source
L1UBHh	Lake	2,701.6	NWI
PEM1E	Freshwater Emergent	0.4	NWI
PEM1Fh	Freshwater Emergent	0.9	NWI
PFO1/SS1E	Freshwater Forested/Shrub	3.8	NWI
PFO1E	Freshwater Forested/Shrub	0.7	NWI
PFO4/1E	Freshwater Forested/Shrub	0.04	NWI
PFO4E	Freshwater Forested/Shrub	0.1	NWI
PSS1/EM1E	Freshwater Forested/Shrub	1.9	NWI
PSS1E	Freshwater Forested/Shrub	14.2	NWI
R2UBH	Riverine	0.8	NWI
R5UBH	Riverine	0.4	NWI
HY-2	Freshwater Emergent	3.5	NYSDEC
H-5	Freshwater Emergent	2.0	NYSDEC

Table 2.13-1. Archeological Sites within Two Miles (3.2 km) of the Project

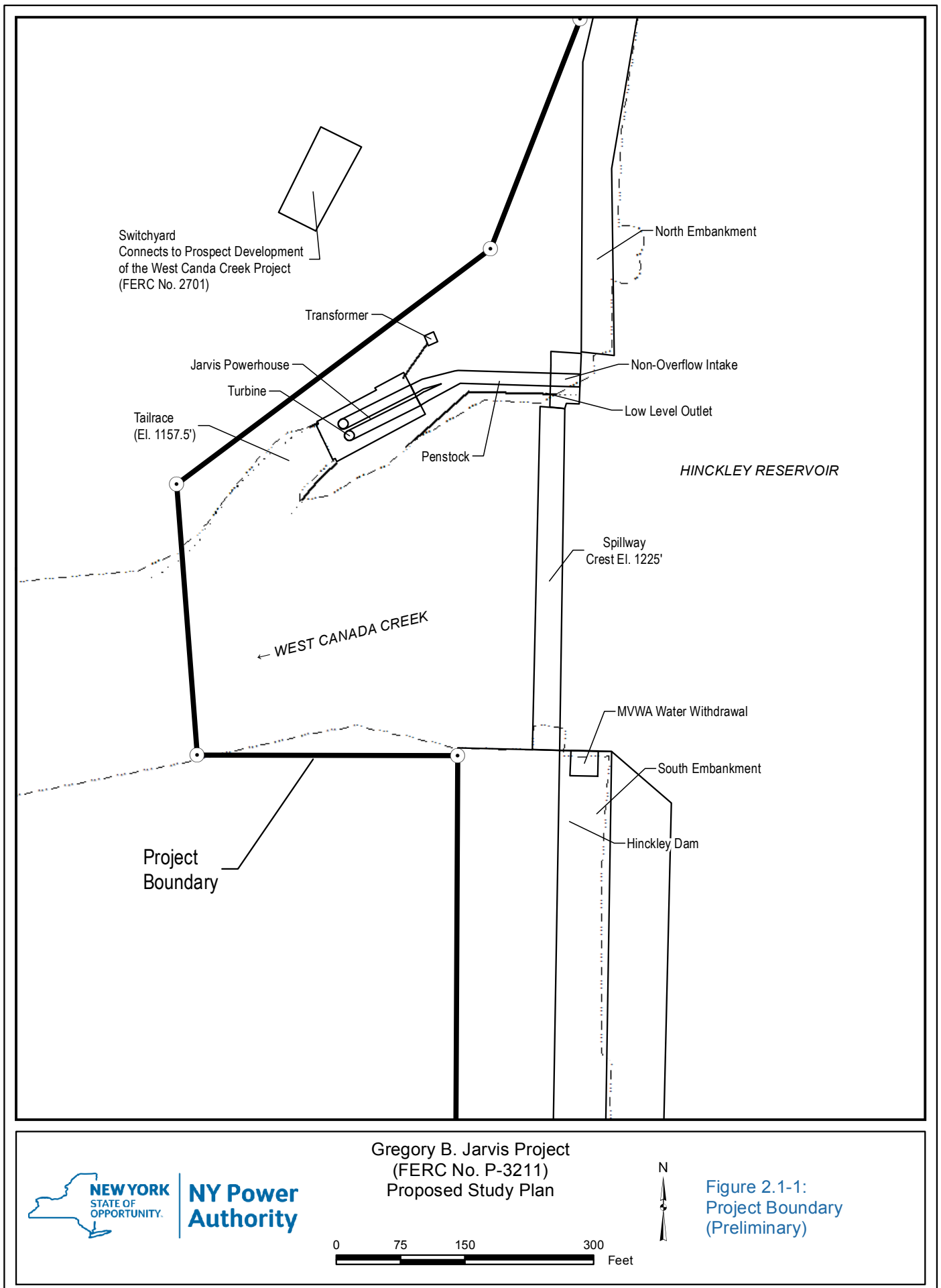
Information presented in this table is privileged and has been filed under separate cover as Non-Public information.

Table 2.15-1. Master Schedule of Proposed Studies

Activity	Approximate Schedule ²
The Power Authority files the PSP with FERC	December 12, 2017
The Power Authority holds the Study Plan meeting	January 11, 2018
Stakeholders file comments on PSP	March 12, 2018
The Power Authority files the RSP with FERC	April 11, 2018
Stakeholders file comments on RSP	April 26, 2018
FERC Issues Study Plan Determination (SPD)	May 11, 2018
Conduct Hinckley Reservoir bathymetric survey	May 2018
Conduct <i>Recreation and Public Access Study</i> Literature Review and Outreach	Spring – Summer 2018
Conduct tailwater water quality monitoring	June - September 2018
Collect supplemental field data in support of the <i>Assessment of Fish Entrainment and Turbine Passage Survival Study</i>	Summer 2018
Conduct research and analysis associated with the <i>Assessment of Fish Entrainment and Turbine Passage Survival Study</i>	Summer - Fall 2018
Hinckley Reservoir bathymetric data analysis and report preparation	Summer - Fall 2018
Conduct <i>Recreation and Public Access Study</i> field work	May 2018 – October 2018
File Progress Report (all studies)	November 2018
<i>Assessment of Fish Entrainment and Turbine Passage Survival Study</i> – report preparation	Fall 2018 - Winter 2018/2019
Tailwater water quality data analysis and report preparation	Fall 2018 - Winter 2018/2019
<i>Recreation and Public Access Study</i> report preparation	Fall 2018 - Winter 2018/2019
File Initial Study Report (ISR) (including final reports for all studies)	May 11, 2019
ISR Meeting	May 26, 2019
The Power Authority files the ISR Meeting Summary	June 10, 2019
Stakeholders file Meeting Summary Disagreements (if necessary)	July 10, 2019

² Note that the proposed schedule assumes that initiation of the formal dispute resolution process will not be necessary. Should this process be initiated, the schedule would need to be updated accordingly. Furthermore, certain dates shown in this table are dependent upon the timing of previous activities and therefore may be subject to change. For updated dates, see www.jarvis.nypa.gov.

Activity	Approximate Schedule ²
The Power Authority files Responses to Disagreements (if necessary)	August 9, 2019
FERC Resolves Disagreements (if necessary)	September 8, 2019



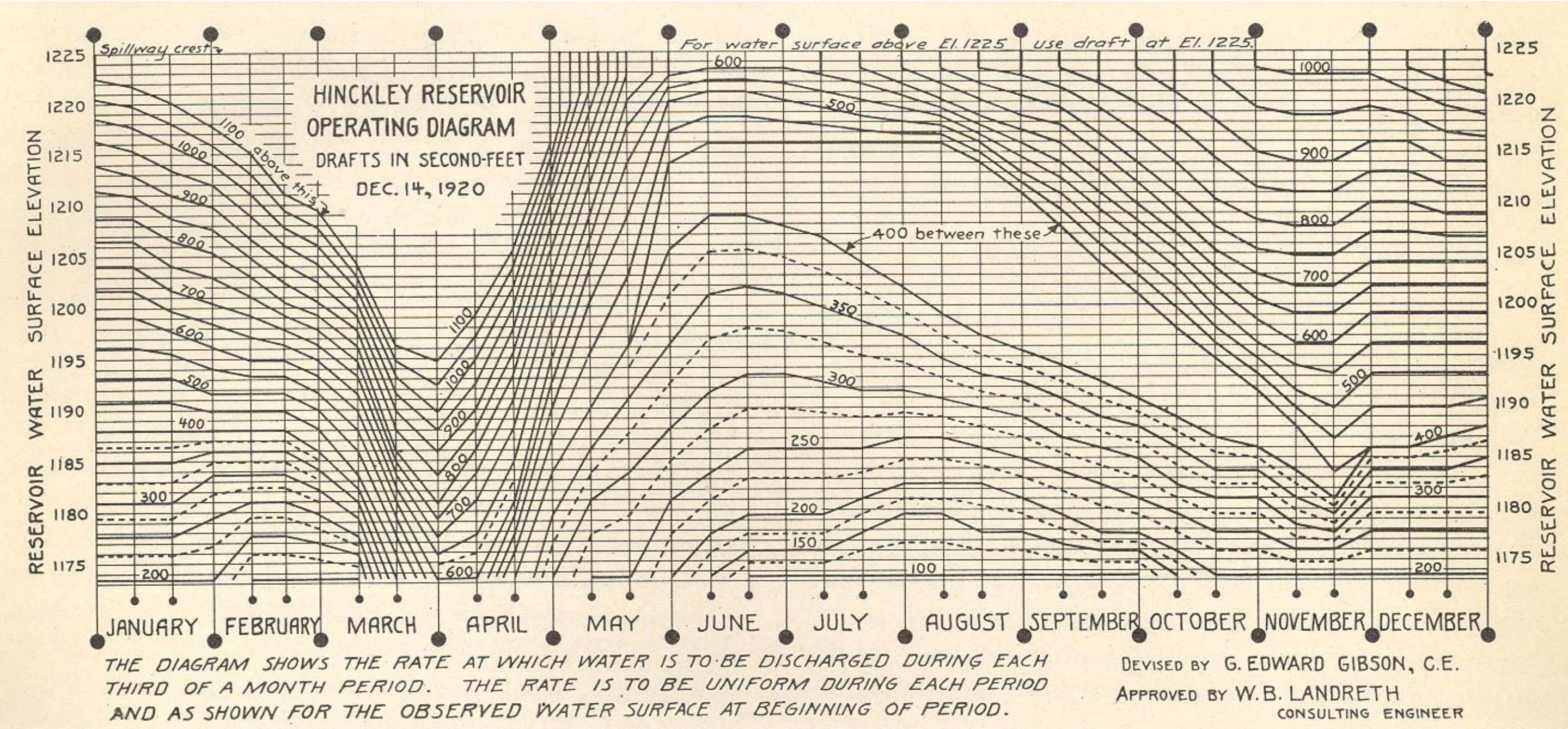


Figure 2.2-1. 1920 Hinckley Reservoir Operating Diagram

Figure 2.5-1. Riverbank Downstream of Hinckley Dam



Figure 2.5-2. Riverbank Downstream of Hinckley Dam

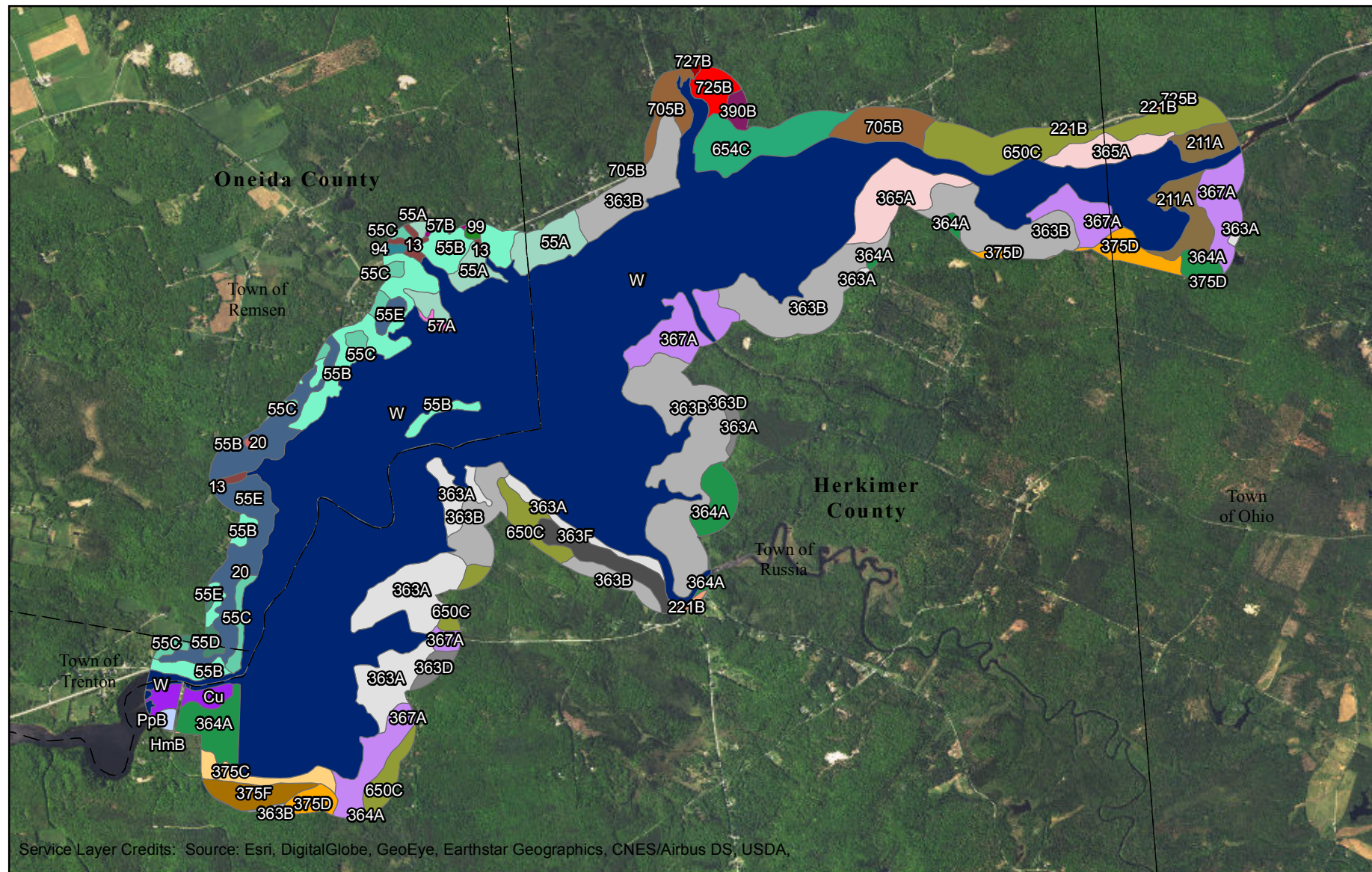


Figure 2.5-3. Riverbank Downstream of Hinckley Dam



Figure 2.5-4. Riverbank Downstream of Hinckley Dam





Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA,

Gregory B. Jarvis Project
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Proposed Study Plan

Figure 2.6-1:
Soils in the Vicinity of the Project



0 2,000 4,000 8,000
Feet

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Path: J:\maps\proposed_study_plan\fig_2_6-1.mxd

Legend

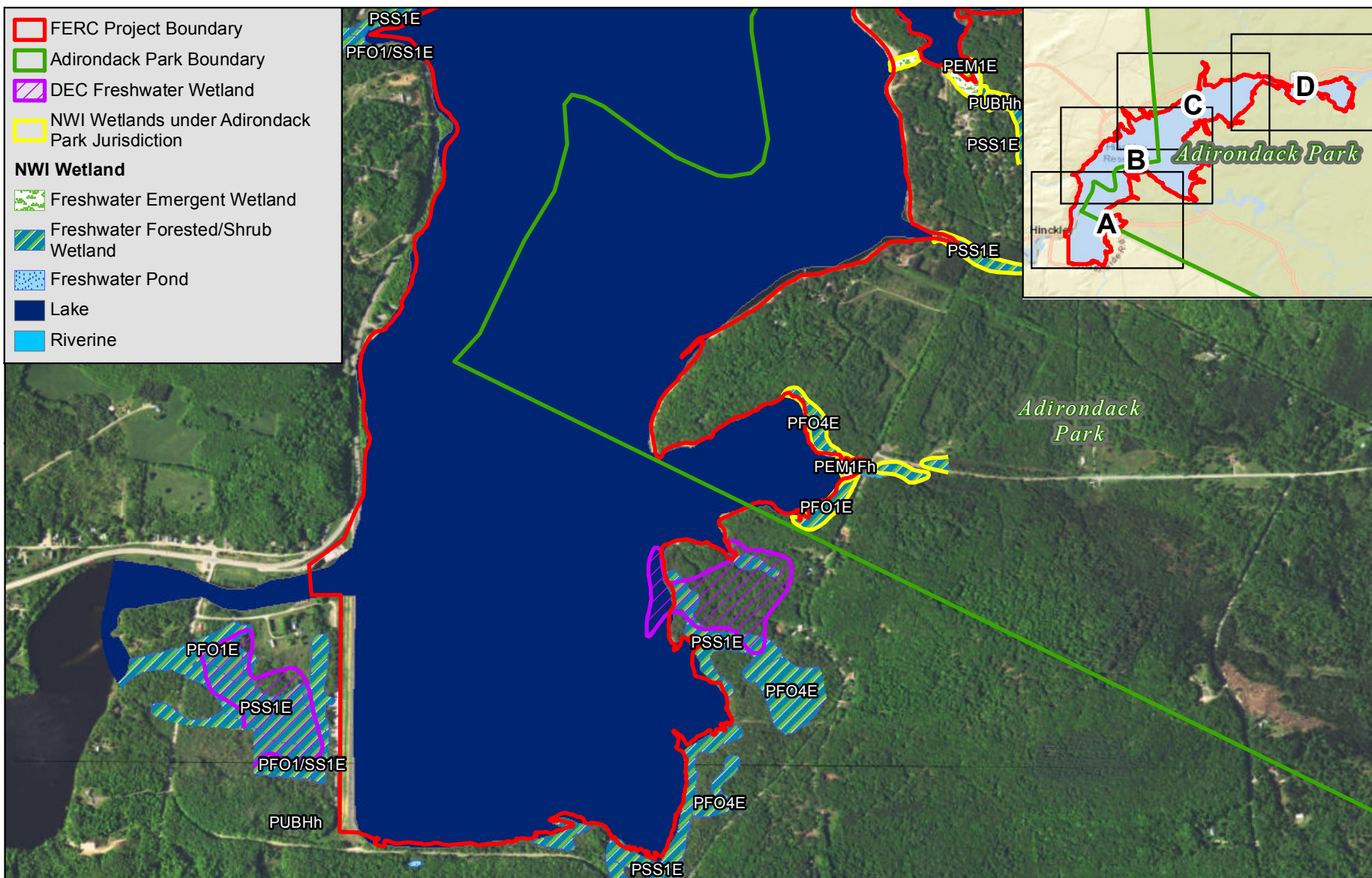
	13 - Fluvaquents-Borosapristis complex
	20 - Pits, sand and gravel
	211A - Burnt Vly-Humaquepts-Pleasant Lake complex, 0 to 2
	221B - Roundabout-Nicholville complex, 0 to 8 percent slopes
	363A - Adams loamy fine sand, 0 to 3 percent slopes
	363B - Adams loamy fine sand, 3 to 15 percent slopes
	363D - Adams loamy fine sand, 15 to 35 percent slopes
	363F - Adams loamy fine sand, 35 to 60 percent slopes
	364A - Croghan-Naumburg complex, 0 to 3 percent slopes
	365A - Naumburg-Croghan complex, 0 to 3 percent slopes
	367A - Searsport-Haplosapristis-Naumburg complex, 0 to 3 percent slopes
	375C - Colton-Adams complex, 3 to 15 percent slopes
	375D - Colton-Adams complex, 15 to 35 percent slopes
	375F - Colton-Adams complex, 35 to 70 percent slopes
	390B - Salmon-Nicholville complex, 0 to 8 percent slopes
	55A - Adams loamy sand, 0 to 3 percent slopes
	55B - Adams loamy sand, 3 to 8 percent slopes
	55C - Adams loamy sand, 8 to 15 percent slopes
	55D - Adams loamy sand, 15 to 25 percent slopes
	55E - Adams loamy sand, 25 to 45 percent slopes
	57A - Croghan loamy fine sand, 0 to 3 percent slopes
	57B - Croghan loamy fine sand, 3 to 8 percent slopes
	650C - Monadnock-Adams-Colton complex, 3 to 15 percent slopes, bouldery
	654C - Monadnock-Sabattis complex, rolling, very bouldery
	705B - Adirondack-Tahawus complex, 0 to 8 percent slopes, very bouldery
	725B - Skerry-Becket complex, 3 to 15 percent slopes, very bouldery
	727B - Skerry-Adirondack complex, 0 to 8 percent slopes, very bouldery
	94 - Naumburg loamy sand
	99 - Greenwood peat
	Cu - Cut and fill land
	HmB - Hinckley gravelly loamy sand, 3 to 8 percent slopes
	PpB - Phelps gravelly fine sandy loam, 0 to 4 percent slopes
	W - Water



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Figure 2.6-1:
Soils Legend



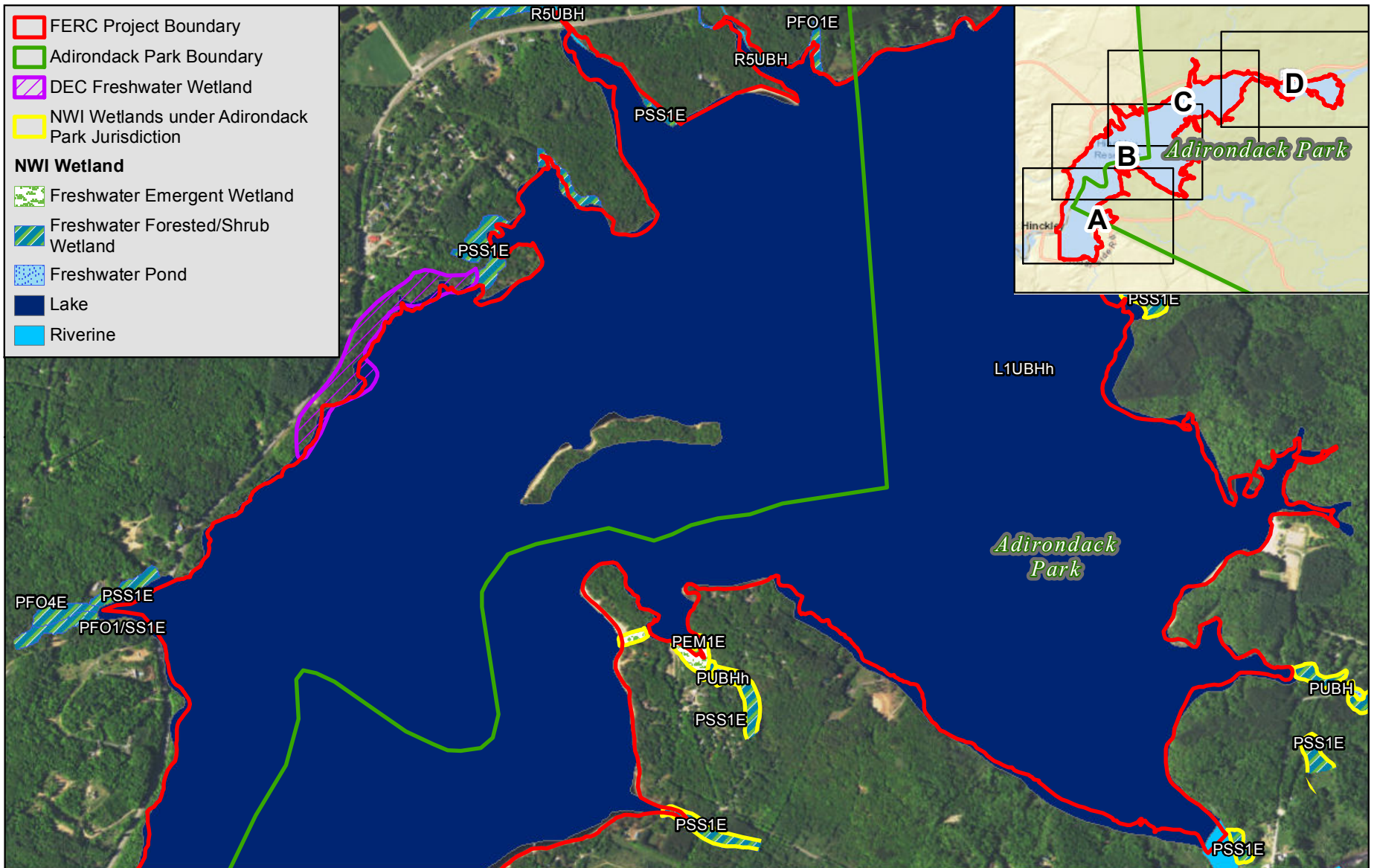
Gregory B. Jarvis Project
(FERC No. P-3211)
Proposed Study Plan

Figure 2.8-1A:
State and Federal Wetlands in the
Project Vicinity



0 750 1,500 3,000
Feet

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri



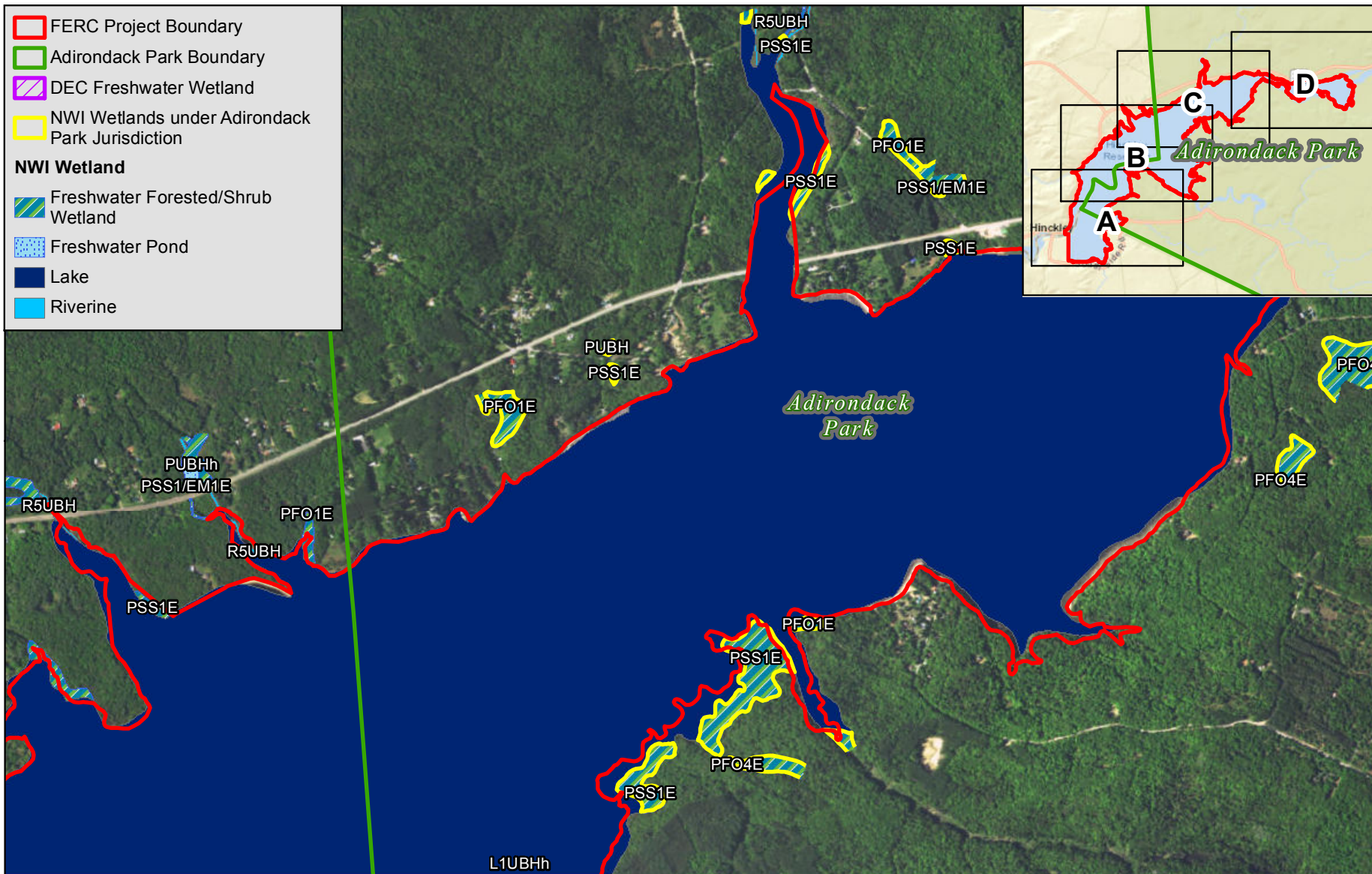
Gregory B. Jarvis Project
(FERC No. P-3211)
Proposed Study Plan

Figure 2.8-1B:
State and Federal Wetlands in the
Project Vicinity



0 750 1,500 3,000
Feet

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri



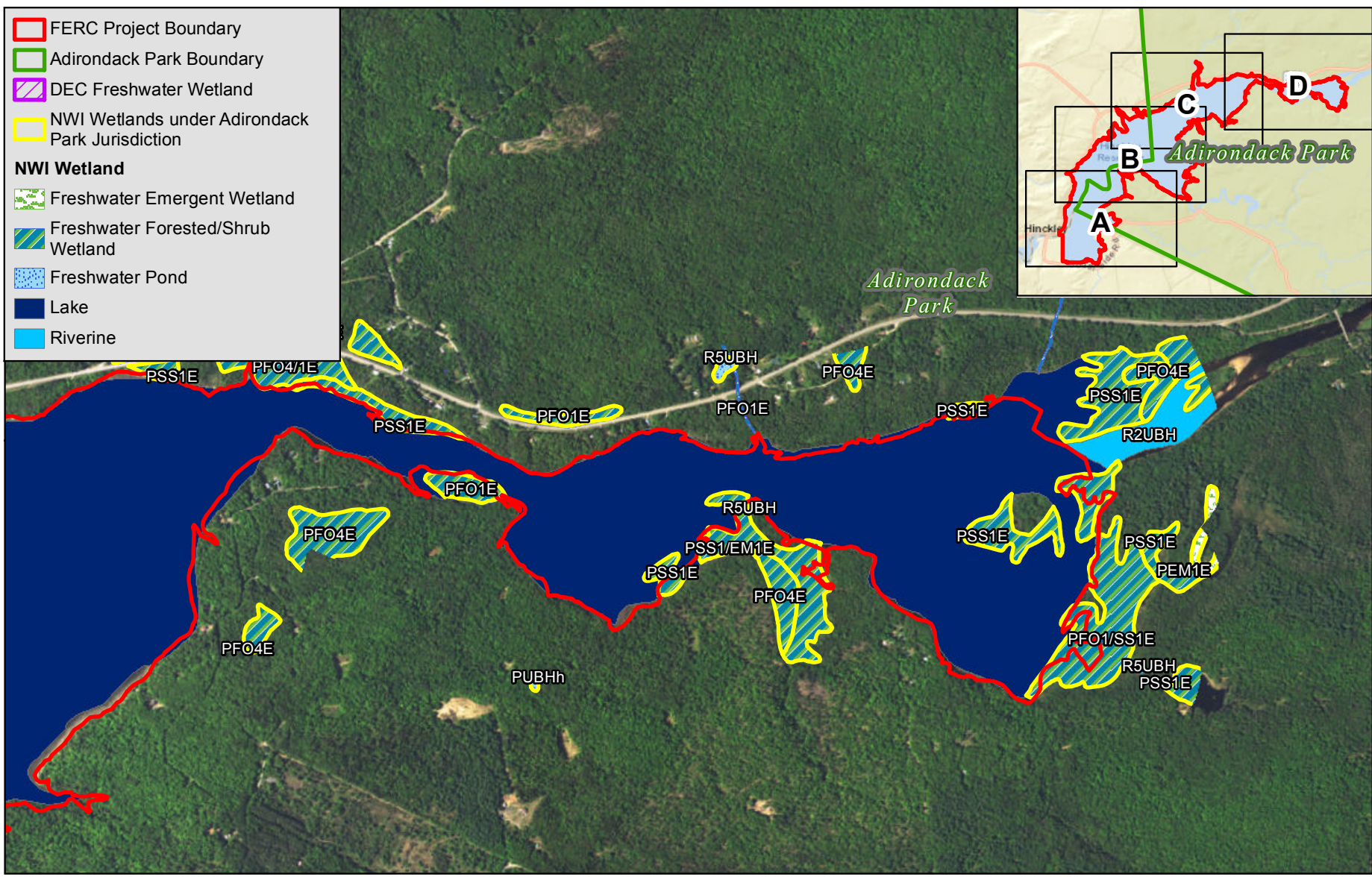
Gregory B. Jarvis Project
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Figure 2.8-1C:
State and Federal Wetlands in the
Project Vicinity



0 750 1,500 3,000
Feet

Service Layer Credits: Sources: Esri, HERE, DeLorme, USGS, Intermap, INCREMENT P, NRCan, Esri Japan, METI, Esri China (Hong Kong), Esri Korea, Esri



3 Proposed Studies

In the PAD, the Power Authority proposed one initial study – a desktop assessment of fish entrainment and turbine passage survival. Based on comments received during scoping, the Power Authority has revised this study plan and proposed three additional studies in response to study requests received, including: (1) Hinckley Reservoir Bathymetric Survey; (2) Tailwater Water Quality Study; and (3) Recreation and Public Access Study. Proposed study plans for the aforementioned studies are included below.

3.1 Hinckley Reservoir Bathymetric Survey

3.1.1 General Description of Proposed Study

FERC requested a bathymetric survey of Hinckley Reservoir for the purposes of providing updated information on reservoir area and volume. The survey includes standard bathymetric data collection methods, subsequent analyses to develop contours and new elevation-area-volume curves for Hinckley Reservoir, and a comparison to historic information.

3.1.2 Geographic Scope

The survey will be completed on Hinckley Reservoir, in all areas navigable by boat.

3.1.3 Study Goals and Objectives

The goals of this survey are to obtain the current bathymetric or bottom surface contours of the reservoir and update the elevation-area-volume curves. The objectives are to:

- Collect depth and water surface elevation measurements along pre-determined transects in Hinckley Reservoir for subsequent calculation of lake bottom (bed) elevations;
- Develop a bathymetric contour map;
- Develop new elevation-area-volume curves;
- Consult with the NYSCC and MVWA to determine what, if any, historic bathymetric data exists; and
- Compare the results of the bathymetric survey with historic data, to the extent historic data is available and of such quality that a comparison can be made

3.1.4 Relevant Resource Management Goals and Public Interest Considerations

This is a study requested by FERC and stakeholder comments. No relevant resource management goals were presented by stakeholders.

3.1.5 Existing Information and Need for Additional Information

Per the FERC study request, the New York State Engineer and Surveyor's office determined contours of the Hinckley Reservoir before the reservoir was constructed, beginning in 1912, and no additional bottom contour surveys are believed to have been completed since that time. In 1919 and 1921, the New York State Engineer used the bottom contour information to prepare

area-volume curves to help estimate the volume of water stored in the reservoir for any given water elevation. While the elevation-volume relationship has been re-evaluated several times, including in 1934 by the U.S. Geological Survey (USGS) and in 1988 by the Power Authority, the bottom contours on which the elevation-volume relationships are based have not been surveyed since construction.

As noted in [Hinckley Reservoir Working Group, 2008](#), neither the accuracy of the original work nor the method used is known. Updated bottom contour information would support more accurate calculations of the volume of water in the reservoir.

3.1.6 Project Nexus

There is no nexus between the requested survey and the continued operation of the Jarvis Project. The Power Authority is solely proposing this study to fill a data gap requested by FERC. Hinckley Dam and Reservoir operations pre-date the Jarvis Project by approximately 70 years. Reservoir water levels and flow releases are determined by the 2012 Hinckley Reservoir Operating Diagram (Operating Diagram) and associated legal agreements governing reservoir operations, none of which include the Jarvis Project. As discussed in [Section 4](#), given the legal agreements currently in place between NYSCC, MVWA, and Erie Boulevard Hydropower, LP (Erie Boulevard), reservoir water level fluctuations and flow releases would still occur if the Project were to no longer exist. Further, as demonstrated in [Section 4.1.2](#), non-peaking Jarvis Project operations (i.e., constant flow) have no impact on reservoir water level fluctuations and peaking operations have minimal to no impact. The Jarvis Project simply redirects reservoir outflow through the Project's power generating equipment that otherwise would be conveyed over the spillway or other outlet works.

3.1.7 Methodology

The study includes bathymetric survey data collection, data processing, development of new elevation-storage relationships, and a comparison to historic data.

Task 1 Bathymetric Survey Data Collection

The survey will be performed during a period of high reservoir water levels to achieve the most spatial coverage, including over areas that may become exposed or too shallow to survey during periods of low water level. Field surveyors will collect depth and water surface elevation by boat along the survey tracks proposed in [Figure 3.1.7-1](#). The survey design ensures adequate coverage of Hinckley Reservoir for the development of new bathymetric contours and calculation of reservoir volume.

An Acoustic Doppler Current Profiler (ADCP), or similar technology, linked to a Real-Time Kinematic Global Positioning System (RTK-GPS) will be used to collect the data.³ The ADCP

³ The vertical accuracy of the RTK GPS unit is approximately +/- 0.10 ft., while the vertical accuracy of the ADCP is +/-1% of water depth.

will be set to record depth every second, and each measurement will be georeferenced from the RTK-GPS data stream. The boat will be driven along the survey tracks at a determined speed depending on water conditions (depth, turbidity, etc.). Depth measurements will be collected every 10 feet or less. Independent depth verification will occur at various points during the survey to ensure the ADCP is accurately collecting depth measurements. Additionally, the RTK-GPS will record water surface elevations at regular intervals over the span of the survey.

Task 2. Data Processing and Bathymetric Calculations

All ADCP measurements will be offloaded and initially processed using the manufacturer-supplied software. The georeferenced depth and water surface elevation measurements will be uploaded to GIS and/or CAD for further quality assurance / quality control (QA/QC) and processing. All data will be referenced to the New York State Plane Coordinate System NAD83 horizontal datum and New York Barge Canal Datum (BCD) vertical datum. Outlier measurements, or those with known poor quality, will be flagged in the dataset and will not be used in subsequent analyses. Depth measurements will be converted to bed elevations by subtracting the measured depth from the measured water surface elevation. All suitable bed elevations will be used to develop a bathymetric contour map in GIS and CAD. New elevation-storage curves will be developed using the bathymetric contour data. Additionally, for direct comparison with historic information in Task 3, an additional bathymetric map and elevation-storage curve will be developed that is referenced to the same datum as the historic information.

Task 3. Comparison to Historic Information

The Power Authority will consult with the NYSCC and MWWA, as well as other relevant groups, to determine what historic Hinckley Reservoir bathymetric and/or storage information exists. Available historic bathymetric and elevation-storage information will be compiled. The updated elevation-storage information will be compared to the historic elevation-storage information such that the overall change in storage can be characterized, to the extent possible based on the limitations of the historic information. Additionally, the new bathymetric contour map will be compared with the most recent historic bathymetric information, to characterize the spatial extent and magnitude of infilling, if possible.

Task 4. Report

A report will be developed, which will include information on the methodologies utilized in the study; new bathymetric and elevation-storage results; Volumetric Storage Table based on various water level elevations up to the Max. Pool elevation; and a comparison to historic information, to the extent possible.

3.1.8 Proposed Deliverables and Schedule

This survey will be completed in a single study season, during open water and high reservoir water levels. The general schedule for each task is outlined in the table below.

Task	Schedule
FERC SPD	May 11, 2018 (<i>anticipated</i>)
Task 1. Bathymetric Survey Data Collection	Spring 2018 (<i>weather dependent</i>)
Task 2. Data Processing and Bathymetric Calculations	Summer / Fall 2018
Task 3. Comparison to Historic Information	Fall 2018
Task 4. Report	Within one year of SPD (<i>likely May 11, 2019</i>)

3.1.9 Level of Effort and Cost

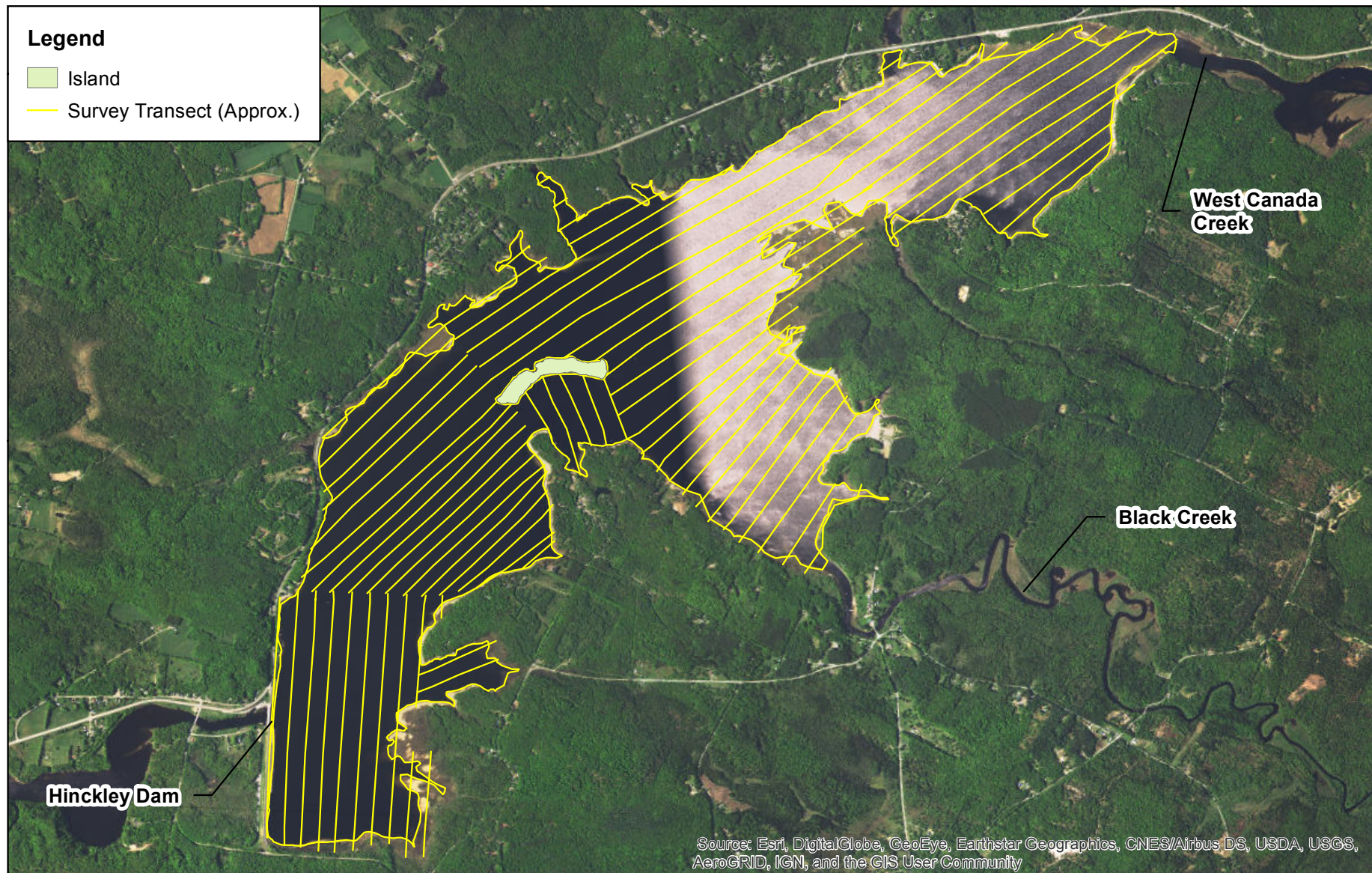
The estimated cost for the Hinckley Reservoir bathymetric survey and associated tasks is estimated to range from \$45,000 to \$65,000. The Power Authority believes that this level of effort is adequate to obtain and update the requested bathymetric and elevation-storage data.

3.1.10 References

Hinckley Reservoir Working Group. 2008. Report to the Governor by the Hinckley Reservoir Working Group. Prepared by the Hinckley Reservoir Working Group Member Agencies. Albany, NY.

Legend

- Island
- Survey Transect (Approx.)



Gregory B. Jarvis Project
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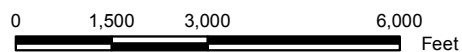


Figure 3.1.7-1
Hinckley Reservoir
Bathymetric Survey
Proposed Track Lines

3.2 Tailwater Water Quality Study

3.2.1 General Description of Proposed Study

FERC and the NYSDEC requested a water quality study for the Project tailwater in order to gain a better understanding of water quality downstream of the Project. The proposed study plan includes utilizing standard sampling methodologies, such as using in-situ water quality meters to continuously record dissolved oxygen (DO), temperature, and pH data.

3.2.2 Geographic Scope

The study will be performed in the tailwater of the Project.

3.2.3 Study Goals and Objectives

The goals of this study are to: (1) determine if the Project has an effect on downstream water quality parameters such as DO, temperature, or pH, and (2) determine compliance with NY water quality standards. The objective of this study is to collect continuous DO, temperature, and pH data in the Project tailwater downstream of the Project during the warm summer and early fall months (i.e., the period when reservoir stratification may be most pronounced and low DO waters could be released from the reservoir downstream).

3.2.4 Relevant Resource Management Goals and Public Interest Considerations

NYSDEC defines West Canada Creek downstream of the Project as Class B (trout waters). The best uses of these waters are defined as primary and secondary contact recreation and fishing. These waters are also suitable for fish, shellfish and wildlife propagation and survival ([State of New York, 2016a](#)). Class B (trout waters) shall have a pH no less than 6.5 and no more than 8.5. DO shall have a minimum daily average no less than 6.0 mg/L and at no time shall DO concentration be less than 5.0 mg/L ([State of New York, 2016b](#)).

NYSDEC states the middle mainstem of West Canada Creek (from Hinckley Dam downstream to the Prospect Development) is categorized as an “Impaired Segment” with regard to aquatic life and habitat/hydrology due to hydrologic modifications resulting from hydro generation. The reassessment of these and related waters in the Mohawk River basin was stated to occur between 2015 and 2017. A report is not currently available to the public showing if the latest findings have changed ([NYSDEC, 2010](#)).

NYSDEC manages the West Canada Creek as a mixed cool/cold water fishery. Their relevant resource management goal is to assure relevant water quality standards are achieved and maintained to help promote the maintenance and promulgation of all fish, wildlife, and plant species.

Sections 4(e) and 10(a) of the Federal Power Act require FERC to give equal consideration to all uses of the waterway on which the Project is located. Ensuring that the effect of Project operation pertaining to water quality is considered in a reasoned way is relevant to FERC’s public interest determination.

The results of the *Tailwater Water Quality Study* will provide information sufficient to enable agencies to understand water quality conditions at the Project.

3.2.5 Existing Information and Need for Additional Information

The Power Authority is not aware of any existing water quality data immediately downstream of the Project. Water quality data from the Project tailwater is needed for FERC to assess whether the continued Project operation would affect water quality downstream.

3.2.6 Project Nexus

Existing reservoir water quality data demonstrates that stratification sometimes occurs during the summer. The Project has deep intakes that withdraw water from the portion of the water column where DO levels may be less than 5 mg/L during the stratification period. As a result, the Project may potentially release water that will reduce downstream DO concentrations.

3.2.7 Methodology

Task 1. Water Quality Data Collection

The study is proposed to occur in 2018 during the warm summer and early fall months of June through September. This period was chosen as it represents the period when Hinckley Reservoir is likely to have the most pronounced stratification and when outflows are expected to be the lowest. The Power Authority will target the first week in June for the initiation of the water quality study. Based on review of existing reservoir water quality data, initiation of the study at this time should ensure data collection has commenced prior to the reservoir becoming stratified.

One water quality meter will be installed below Hinckley Dam as depicted in [Figure 3.2.7-1](#) (note that the monitoring location depicted in the figure is approximate pending field verification). It is anticipated that a multi-parameter sonde will be suspended to mid-depth in the channel from a surface buoy anchored to the river bottom. Any likely variations in water depth will be taken into account prior to installation in order to avoid the meter coming in contact with the river sediment. The sampling location will ultimately be confirmed in the field to ensure the field crew can safely access the meter and that the data collection location is representative of Project outflow conditions. Depending on the final monitoring location, the deployment method described above may be altered to accommodate river characteristics at the site. The coordinates of the monitoring location will be collected via GPS.

The sonde will be set to record DO, temperature, and pH every 15 minutes. The site will be visited approximately twice per month, at which time data will be downloaded, the instrument checked for calibration, and then re-deployed. Spot measurements of DO, temperature, and pH will be collected with an independent meter during deployment, periodic site visits (approximately every 2 weeks), and upon retrieval to verify meter accuracy. Weather, flow, and Project operations will be noted. Project generation data for the monitoring period will be

provided by the Power Authority for inclusion in the final report.

Task 2. Data Analysis

Upon completion of the field monitoring, the data will be reviewed for QA/QC. Any erroneous data will be removed and an explanation will be provided for the reason the data were rejected. Water quality data will be compared with generation data provided by the Power Authority as well as flow and meteorological data. Available reservoir water quality data collected by other parties (e.g., MVWA, NYSDEC, etc.) for the monitoring period, if any, will also be analyzed. The data will then be summarized in graphical and tabular form for inclusion in the study report.

Task 3. Water Quality Report

A study report which will describe monitoring methods and study results will be prepared. Study results will include comparisons of data to Class B (trout) water quality standards, Project generation activity, applicable Hinckley Reservoir data (if any), flow, and meteorological data. Discussion pertaining to QA/QC procedures will also be included.

3.2.8 Proposed Deliverables and Schedule

Assuming the summer of 2018 is a typical year, the survey is anticipated to be completed in a single study season during low flow, warm summer/fall months.

Task	Schedule
FERC SPD	May 11, 2018 (<i>anticipated</i>)
Task 1. Water Quality Data Collection	June – September 2018
Task 2. Data Analysis	Summer – Winter 2018
Task 3. Water Quality Report	Within one year of SPD (<i>likely May 11, 2019</i>)

3.2.9 Level of Effort and Cost

The estimated cost for the *Tailwater Water Quality Study* and associated tasks is estimated to range from \$25,000 to \$40,000. The Power Authority believes that this level of effort is adequate to obtain the data needed to determine potential Project impacts on water quality, if any.

3.2.10 References

New York State Department of Environmental Conservation. 2010. Mohawk River Basin Waterbody Inventory and Priority Waterbodies List: Middle West Canada Creek Watershed. [Online]. URL: <http://www.dec.ny.gov/chemical/36739.html>. Date Accessed: November 10, 2016.

State of New York. 2016a. Official Compilations of Codes, Rules and Regulations of the State of New York – Title 6. Department of Environmental Conservation – Chapter X. Division of Water Resources – Subchapter A. General – Article 2. Classifications and Standards

of Quality and Purity Part 701 Classifications – Surface Waters and Groundwaters.
[Online]. URL:

[https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guid=I0682f230b5a111dda0a4e17826ebc834&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guid=I0682f230b5a111dda0a4e17826ebc834&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default)). Date Accessed: November 10, 2016.

State of New York. 2016b. Official Compilations of Codes, Rules and Regulations of the State of New York – Tile 6. Department of Environmental Conservation – Chapter X. Division of Water Resources – Subchapter A. General – Article 2. Classifications and Standards of Quality and Purity – Part 703 Surface Water and Groundwater Quality Standards and Groundwater Effluent Limitations. [Online]. URL:

[https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guid=I070d30d0b5a111dda0a4e17826ebc834&originationContext=documenttoc&transitionType=Default&contextData=\(sc.Default\)](https://govt.westlaw.com/nycrr/Browse/Home/NewYork/NewYorkCodesRulesandRegulations?guid=I070d30d0b5a111dda0a4e17826ebc834&originationContext=documenttoc&transitionType=Default&contextData=(sc.Default)). Date Accessed: November 10, 2016.



NY Power Authority

Gregory B. Jarvis Project
(FERC No. P-3211)
Proposed Study Plan



Figure 3.2.7-1
Proposed Water Quality
Sampling Location

3.3 Assessment of Fish Entrainment and Turbine Passage Survival

3.3.1 General Description of Proposed Study

In the PAD, the Power Authority proposed to conduct a literature-based assessment with objectives to evaluate the potential for fish entrainment and associated turbine passage mortality at the Project using existing scientific literature and data, and to assess the potential effects of entrainment on fish communities at the Project.

In their comments on the PAD, the U.S. Fish and Wildlife Service (USFWS) and NYSDEC requested fish protection and downstream passage studies including investigations of alternatives to keep all fish species out of the turbines, with special emphasis on gamefish species and any other species found in abundance, and an investigation of alternatives to effectively pass fish downstream around the dam. They noted that new licenses issued for projects throughout New York and the Northeast have incorporated 1"-clear spaced trashracks to physically exclude most adult fishes from the turbines, as well as alternate downstream passage routes and other features (e.g., reduced approach velocities, adequate plunge pools, etc.) to encourage safe downstream fish passage.

The study requests recommended that the Power Authority:

- Conduct a literature search of available passage designs for the species of concern as well as information on the relative effectiveness of each design;
- Collect site-specific data from the Project to aid in the design of protection and passage facilities, including flows, velocities, water depths, and substrates; and
- Collect information on the passage requirements of the fish species found in West Canada Creek, including swimming speeds, water column use, and attractants and repellents that may help to guide each species.

Agency goals as stated in the study requests are to provide information on potential fish passage and protection structures that could be utilized at this site to allow evaluation of the potential effectiveness of various options. Based on these comments, the Power Authority has revised its study initially proposed in the PAD to better address issues raised. In addition to evaluating the potential for fish entrainment and associated turbine passage mortality as proposed in the PAD, the Power Authority proposes to evaluate the need for additional fish passage or protection measures at the Project based on the entrainment evaluation, prior to evaluating potential fish passage and protection alternatives, if deemed necessary.

This proposed study plan does not include an evaluation of potential fish passage or protection measures at the Project at this juncture. The Power Authority believes the agencies' request to evaluate potential additional measures before the analysis of impacts has been performed is premature given that the entrainment study has not yet been completed.

3.3.2 Geographic Scope

Additional data collection describing facilities and operational conditions will be conducted at the Project in the vicinity of the intake. All other aspects will be literature / desktop based.

3.3.3 Study Goals and Objectives

The goals of this study are to assess the potential Project effects of turbine entrainment on fish residing in Hinckley Reservoir and to evaluate whether additional downstream passage or protective measures are necessary, and, if so, to determine which measures are appropriate and feasible.

The objectives are to:

- Provide a description of physical characteristics of the Project including the intake location and dimensions, trashrack spacing, and depths and velocities near the intake structure;
- Conduct a literature review for species of interest relative to physiology, behavior, life history and habitat preferences in the context of downstream passage and turbine entrainment and survival; and
- Assess the potential for entrainment and estimate turbine passage survival rates for target species, including, but not limited to, Brook Trout, Brown Trout, Rainbow Trout, Smallmouth Bass, and Yellow Perch.

The information compiled and analyzed in the study will be used as a basis of discussion with resource agencies regarding the need for, and feasibility of, any potential fish passage and protection structures that could be utilized at this site. An understanding of the probabilities of entrainment of species of interest based on life histories and project intake characteristics along with estimates of turbine passage mortality will allow for discussion of the merit of additional passage alternatives analysis in the context of risk of turbine entrainment/passage.

3.3.4 Relevant Resource Management Goals and Public Interest Considerations

West Canada Creek, in the vicinity of the Project, is managed by the NYSDEC as a mixed cool/cold water fishery. NYSDEC's fishery management goals include sustaining and enhancing all existing viable fisheries resources of West Canada Creek and Hinckley Reservoir, especially for trout (Brook Trout, Brown Trout, and Rainbow Trout), Smallmouth Bass, Yellow Perch and sunfish. Additional goals include promoting the maintenance and propagation of all fish, wildlife and plant species in an ecological balance, and assuring designated water quality standards are achieved and maintained.

3.3.5 Existing Information and Need for Additional Information

As noted in the USFWS and NYSDEC study requests, the PAD contains discussion of a variety of fish community datasets spanning a 27-year period from 1988 through 2014 (see PAD Section 4.4). There is no reason to believe that the fish species composition has changed in the study area since the previous datasets were collected. Therefore, the Power Authority believes

that the existing information provides the fisheries data required to successfully complete this study.

The physical characteristics of the Project need to be compiled along with the physiology, behavior, life history and habitat preferences of the species of interest to estimate entrainment and turbine passage survival and to determine the need for additional downstream passage measures, if any. The physical characteristics of the Project turbines are well documented; however, additional site-specific field data collection is proposed to supplement the analysis.

3.3.6 Project Nexus

Potential effects of Project operations and facilities include migratory obstruction and entrainment through the generating units. Fish moving downstream in Hinckley Reservoir as part of their life cycle encounter the Project and may be entrained in the generating units. Similarly, fish species resident to Hinckley Reservoir may come in proximity to the intakes. These actions may result in exposure of fish to entrainment, potentially causing some level of mortality.

3.3.7 Methodology

Task 1. Data Collection, Current Conditions

The Power Authority will collect and compile site-specific data from the Project area to document existing conditions regarding factors likely to influence the potential for entrainment including: (1) intake location relative to shore and littoral habitat; (2) depth of intakes; (3) hydraulic capacity; (4) intake velocities; and (5) generating unit specifications.

The Power Authority will collect depth and velocity data from the area in front of the powerhouse intakes and minimum flow release structures during the full range of generation (300 cfs to 1,800 cfs) and minimum flow releases (160 cfs).

Task 2. Literature Review for Species of Interest

A list of fish species residing in Hinckley Reservoir was included in the PAD (Section 4.4). A literature survey will be conducted to compile the life history and swim speed characteristics of species of interest (gamefish) and guilds representing non-gamefish, as necessary. Factors likely to influence the potential for entrainment including the prevalence of littoral species and obligatory migrants are of particular interest.

Task 3. Estimate Entrainment and Turbine Passage Survival

The assessment of entrainment and turbine passage survival will be conducted as a desktop analysis. The potential for entrainment will be characterized based on the relationship of site-specific intake characteristics along with swim speed and life history characteristics of species of interest. This assessment will rely on intake velocities calculated using the velocity equation $Q = V \cdot A$ where Q = flow rate (cfs), V = velocity (feet per second) and A = area (square feet); the

calculated intake velocity will be supplemented with field measurements as described in Task 1. The likelihood of entrainment for a particular species will be qualitatively assessed through the comparison of site-specific intake characteristics to literature reported swim speeds, body dimensions, and other life history characteristics.

A review of entrainment studies conducted at other hydroelectric projects (i.e., [EPRI, 1997](#)) will be conducted to derive entrainment rates for target fish species. EPRI ([1997](#)) summarized entrainment rate data for hydroelectric projects, which relied on full-flow tailrace netting to sample the entire flow passing from one or more units at a project. Partial flow sampling was not included in that database due to the higher potential for sample contamination as a result of collection of resident tailrace fish or net avoidance. Each of the 43 projects contained in the EPRI ([1997](#)) data compilation will be reviewed for characteristics similar to the Project. Following determination of appropriate project(s) for use as surrogates, available entrainment rate data will be summarized for the species of interest at the Project.

Entrainment survival for target fish species will be estimated using data from survival studies conducted at other hydroelectric facilities with similar characteristics (e.g., [EPRI, 1997](#); [Winchell et al., 2000](#)), and the Franke blade strike probability equation ([Franke et al., 1997](#)).

Task 4. Report

Results of this study, including estimates of entrained fish survival through the Project turbines, will be summarized in a report. All supporting data used in the development of those estimates will be provided in an appendix to the study report. As described above (Section 3.3.3), the results of this study will provide the basis of discussion with resource agencies regarding the need for and feasibility of any potential fish passage or protection structures that could be utilized at this site by characterizing risk resulting from turbine passage. Expansion of the study plan, if any, based on the results of the assessment and subsequent consultation will be presented in the Final Study Report, which will be filed with the ISR.

3.3.8 Proposed Deliverables and Schedule

The Power Authority anticipates that the desktop and field components of this study can be completed during one field season in accordance with the schedule outline below.

Task	Schedule
FERC SPD	May 11, 2018 (<i>anticipated</i>)
Task 1. Data Collection - Current Conditions	June - September 2018
Task 2. Literature Review for Species of Interest	Summer - Fall 2018
Task 3. Estimate of Entrainment and Turbine Passage Survival	Summer - Fall 2018
Task 4. Report	Within one year of SPD (<i>likely May 11, 2019</i>)

3.3.9 Level of Effort and Cost

The estimated cost for the *Assessment of Fish Entrainment and Turbine Passage Survival Study* and associated tasks is estimated to range from \$60,000 to \$80,000. The Power Authority believes that this level of effort is adequate to complete the tasks outlined above and is consistent with the level of effort of similar studies at other projects.

3.3.10 References

- EPRI (Electric Power Research Institute). 1997. Turbine Entrainment and Survival Database—Field Tests. Prepared by Alden Research Laboratory, Inc. EPRI Report No. TR-108630. 13 pp.
- Franke, G.F., D.R. Webb, R.K. Fisher, D. Mathur, P.N. Hopping, P.A. March, M.R. Headrick, I.T. Laczó, Y. Ventikos, and F. Sotiropoulos. 1997. Development of Environmentally Advanced Hydropower Turbine System Design Concepts. Contract DE-AC07-94ID13223. Prepared for U.S. Department of Energy, Idaho Operations Office.
- Winchell, F., S. Amaral, and D. Dixon. 2000. Hydroelectric Turbine Entrainment and Survival Database: An Alternative to Field Studies. In: *Hydrovision 2000: New Realities, New Responses*. HCI Publications, Kansas City, MO.

3.4 Recreation & Public Access

3.4.1 General Description of Proposed Study

FERC has requested that the Power Authority conduct a Recreation Study to determine existing and future recreation use and capacity at the Project. NYSDEC has requested that a Public Access Study be conducted to evaluate the existing public access facilities in the Project vicinity, focusing on the current condition of the facilities and the potential need for improvements to ensure that the facilities are compliant with the Americans with Disabilities Act (ADA). Trout Power, Inc. and local residents have requested that the Power Authority conduct a Recreation Study to evaluate the impacts of fluctuating water levels on recreational opportunities, as well as the capacity of current recreation facilities and the potential to create additional facilities.

The Power Authority proposes to conduct a Recreation & Public Access study to evaluate the existing and future recreational use, capacity, condition, and accessibility of public recreation facilities in the Project vicinity. Public recreation facilities include well-used sites within the Project boundary accessed by the public without trespassing. Private recreation facilities, including commercial campgrounds, will not be included in this study. The proposed study will gather information using a combination of methods including: (1) literature review; (2) outreach to local municipalities, agencies and organizations for existing data; (3) recreation facilities inventory and assessments; and (4) spot counts at Project recreation facilities. Project recreation facilities include the Power Authority boat launch, the tailwater fishing area, and the scenic overlook north of the dam (see [Section 3.4.5](#)). The proposed study will also include a visitor intercept survey at Project recreation facilities to supplement user counts and to provide user perceptions of recreation opportunities and facilities in the Project area. Although the NYSDEC Hinckley Reservoir Picnic Area is a public recreation facility, spot counts and visitor intercept surveys will not be conducted at that site as it is not a Project facility. Instead, the Power Authority will rely on existing information collected by NYSDEC to determine use and adequacy of that site.

In addition to evaluating existing access and facilities, NYSDEC has requested that the study evaluate the potential to create additional public access where feasible. Existing estimates indicate that Project facilities have been used at less than 50% capacity ([NYPA, 2015](#)). The proposed study will provide additional data on the current and future use and capacity of Project facilities. Analysis of this data will allow the Power Authority to ascertain whether there is a need for additional access at the Project. As a need for additional access has not yet been established, the Power Authority does not propose to study the potential to create additional public access at this time.

In addition to the requests of Trout Power, Inc. and local residents, FERC requested that the results of the bathymetric survey be used to visually assess the effects of reservoir levels on reservoir surface area and identify specific areas that may become inaccessible at lower reservoir levels. Hinckley Dam and Reservoir pre-date the Jarvis Project by approximately 70-

years. Reservoir water levels and flow releases are determined by the Operating Diagram and associated legal agreements governing reservoir operations, none of which include the Jarvis Project. As discussed in [Section 4](#), given the legal agreements currently in place between NYSCC, MVWA, and Erie Boulevard, reservoir water level fluctuations and flow releases would still occur if the Project were to no longer exist. Further, as demonstrated in [Section 4.1.2](#), non-peaking Jarvis Project operations (i.e. constant flow) have no impact on reservoir water level fluctuations and peaking operations have minimal to no impact. The Jarvis Project simply redirects reservoir outflow through the Project's power generating equipment. Given this, the Power Authority is not proposing to conduct any analyses regarding the impact water level fluctuations have on recreation as there is no nexus to continued Project operations.

Furthermore, the Power Authority currently has plans in place to extend the boat launch from elevation 1210 to elevation 1205 (a horizontal distance of approximately 45 feet) to enable it to be accessible over a greater range of water levels. Construction is scheduled to occur as soon as the right field conditions occur (i.e., water levels low enough to enable installation of the extension). With the extension of the boat launch, the Power Authority is implementing the only protection, mitigation, or enhancement measure within its control to alleviate the potential impacts of water level fluctuations on recreation in the reservoir. As such, examination of potential impacts of water level fluctuations on recreation would not inform the development of license requirements as the Power Authority could not mitigate those impacts beyond what is already proposed, nor should it as there is no nexus to Project operations.

Finally, the FERC study request also notes that the Power Authority should identify erosion at each recreation site that may be due to recreational use. For the reasons discussed above, as well as in [Section 4.2.7](#), the Power Authority is not proposing to conduct erosion assessments at sites which are not owned or maintained by the Power Authority as there is no nexus to continued Project operations. However, the Power Authority will identify any recreation induced erosion at the Power Authority boat launch, if such erosion exists.

3.4.2 Geographic Scope

The study area encompasses lands and waters available for public recreation within and abutting (i.e., touching) the Project boundary, including at the Project tailrace. [Figure 3.4.2-1](#) provides a map of known public recreation facilities in the study area.

NYSDEC requested that the study area extend one mile upstream and downstream of the Project's boundary. The Power Authority has not identified any public recreation facilities within one mile upstream of the Project boundary. Downstream of the Project is the West Canada Creek Hydroelectric Project (FERC No. 2701), which is comprised of the Prospect and Trenton Falls Developments. The Prospect impoundment backwaters to Hinckley Dam; as such, there is no free-flowing reach downstream of Hinckley Dam. While the Power Authority intends to include public recreation access areas within and abutting the Project boundary, it does not propose to extend the study area to include the Prospect impoundment, any Erie Boulevard

recreation sites that may be within one mile of the Project boundary, or the area upstream of the Project boundary.

3.4.3 Study Goals and Objectives

The goal of this study is to evaluate the existing and future recreational use, capacity, condition, and accessibility of recreation facilities in the study area.

The objectives of the study are as follows:

1. Identify, describe, and photo document each formal and informal public recreation site and facility in the study area, as well as each site's location relative to the Project boundary;
2. Assess the condition of Project recreation facilities, including erosion that may exist due to recreational use at the Power Authority boat launch;
3. Assess whether upgrades would be necessary to ensure Project recreation facilities are ADA compliant;
4. Create GIS-based map layers denoting the recreation sites/facilities populated with information from 1-3 above; and
5. Conduct visitor surveys and spot counts during the recreation season to determine the use and adequacy of Project recreation facilities and if changes or upgrades to the sites would be needed to meet current or future recreation needs.

3.4.4 Relevant Resource Management Goals and Public Interest Considerations

The Federal Power Act requires that FERC give equal consideration to all uses of the waterway on which a project is located. When reviewing a proposed action, FERC must consider the environmental, recreational, fish and wildlife, and other non-developmental values of the Project, as well as power and developmental values.

NYSDEC manages West Canada Creek in the Project vicinity as a mixed cool/cold water fishery. NYSDEC goals include sustaining and enhancing all viable fisheries resources of West Canada Creek and the Hinckley Reservoir.

3.4.5 Existing Information and Need for Additional Information

Section 4.8 of the PAD provided information regarding recreation resources within the Project boundary and surrounding area. Recreation opportunities at Hinckley Reservoir include fishing, boating, swimming, camping, and picnicking. Two formal public recreation sites offering public access to the reservoir are located either wholly or partially in the Project boundary: (1) the Power Authority Boat Launch, which also provides hunting and fishing access, and (2) the Hinckley Reservoir Picnic Area, also known as the NYSDEC Day Use Area. Formal public recreation sites in the Project vicinity but outside the Project boundary include Hinckley State Forest, a 1,590-acre tract offering 6.5 miles of multi-use trails, primitive camping, hunting and trapping. Portions of the Project lie within the boundaries of the Adirondack Park, a six-million-

acre state park with 2.6 million acres of state-owned land open to the public for recreation. State-owned recreation facilities within the Adirondack Park and Project vicinity include the Black River Wild Forest and Hinckley Reservoir Picnic Area. A small portion of the Black River Wild Forest abuts the Project Boundary; however, a map of the Forest does not identify any formal recreation facilities proximate to the Project ([NYSDEC, 2015](#)).

In addition to these formal recreation sites, recreationists access the reservoir via informal sites, including an area at the Project tailrace primarily used for fishing and a scenic overlook area maintained by the Power Authority near the northern end of the dam. Within the reservoir, several beaches and at least one island are reportedly used informally for recreation.

The Power Authority's most recent estimate of use indicates that approximately 12,900 recreation days occurred at publicly operated areas at the Project in 2014 ([NYPA, 2015](#)). This includes activity at the boat launch, the scenic viewing area, and the picnic area. No overnight activity was reported for locations within the Project boundary. Review of the FERC Form 80's from 1996, 2002, 2008, and 2014 indicate that estimated recreational use within the Project boundary is shown to be increasing over time (See PAD Figure 4.8.1.2-1).

New York State's Office of Parks, Recreation and Historic Preservation (OPRHP) reviews statewide recreational needs at five-year intervals. The most recent review is reported in the 2014-2019 Statewide Comprehensive Outdoor Recreation Plan (SCORP). Within the SCORP, OPRHP examines the supply and demand for outdoor recreational opportunities and provides a relative index of need by county. The index is a scale of 1 to 10, where 1 indicates the least level of need, 5 is considered the statewide average, and 10 indicates the highest level of need. Demand for pursuits typically identified with hydroelectric projects are generally shown to be near the statewide average in Herkimer and Oneida counties ([OPRHP, 2014](#)). This result is consistent with the findings of the most recent Form 80, which shows that no recreation-related facilities at the Project are being used at more than 50% of capacity ([NYPA, 2015](#)).

Additional information on current use, condition, and accessibility of Project recreation sites and facilities, along with recreational users' perceptions of Project recreation opportunities and facilities, will help inform a decision on whether existing Project recreation sites and facilities are meeting public recreation needs.

3.4.6 Project Nexus

FERC regulations require that the license application include a statement of the existing recreation measures or facilities to be continued or maintained, any new measures or facilities proposed by the applicant to create, preserve, or enhance recreational opportunities at the Project and in its vicinity, and to ensure the safety of the public in its use of Project lands and waters. In addition, recreation is a recognized project purpose at FERC-licensed projects under section 10(a) of the Federal Power Act.

3.4.7 Methodology

Task 1. Literature Review and Outreach

Prior to conducting the recreation field inventory, the Power Authority will conduct an internet literature review and contact readily known and identified local recreational organizations and county, state and federal agencies to identify any commonly used formal and informal public recreation access sites within the study area. If available, information on facility use and capacity and user survey results will be obtained from NYSDEC.

The Power Authority will also attempt to survey these entities to identify known seasonal usage of the investigation area, to determine whether existing public recreational facilities and access in the study area are meeting current user needs, and to determine what (if any) recreational improvements they feel are warranted at Project recreation facilities.

Task 2. Recreation Field Inventory of Access, Condition, and Use

A recreation field inventory will be conducted to confirm public access sites identified in Task 1, to document any additional sites that were overlooked, and to gather information on all readily identified public access sites. The shoreline within the study area accessible by passenger vehicle will be visually surveyed to document formal and informal public access locations. The specific location of recreational access points will be captured via GPS. For each public recreation access point, the following information will be recorded:

- A physical description of the type of recreational feature;
- The type of recreation opportunity provided (boating access, angler access, picnicking, etc.);
- The type (if any) of vehicular access and parking; and
- Photographic documentation of the location and amenities.

For Project recreation facilities, the following additional information will be recorded:

- Whether the facilities are ADA compliant; and the condition of the facility and any amenities, including erosion that may exist due to recreational use at the Power Authority boat launch.

Information from this investigation will be used to develop a GIS map depicting all public access points within the study area. In addition, any recreational activity observed occurring at or in relation to a public access point during the site visit will be recorded.

Task 3. Recreation Field Survey of Existing Use

The Power Authority will conduct field surveys at Project recreation sites to estimate current recreational use between May 12, 2018 and October 8, 2018 (Columbus Day), which encompasses the height of the water-based recreation season. The Power Authority does not propose to conduct field surveys in the winter given that the Power Authority boat launch is closed during the winter. Survey days will be stratified by weekdays, weekends, and holidays

during the investigation timeframe, with the majority of the surveys conducted during the peak recreation season (Memorial Day through Labor Day). Survey routes will be completed on a rotating basis and at different times of day to account for time-of-day use patterns.

Surveys will consist of spot counts and visitor intercept surveys. Spot counts are short duration counts which will be utilized as a snapshot of use at each survey location. Individuals conducting the count will collect data immediately upon arriving at the survey location. The number of vehicles parked at each site and any observed recreation use will be recorded on data forms to determine the time-of-day use patterns at the sites. See [Figure 3.4.7-1](#) for proposed spot count data forms.

Visitor intercept surveys will be conducted on the same days as spot counts. A proposed visitor intercept survey has been developed (see [Figure 3.4.7-2](#)) to determine users' perceptions of Project recreation sites and facilities. Among other things, the survey will ask respondents what recreational activities they are participating in at the Project that day, the frequency with which they visit the Project area, and what other seasonal recreation activities they participate in at the Project. The survey will also be used to determine length of stay, number of people in a party, and user distribution.

Spot counts and visitor intercept surveys will be conducted at Project recreation sites including the Power Authority boat launch, the tailwater fishing area, and the scenic overlook north of the dam. Survey administrators will spend two hours at each location.

Task 4. Study Report

Data collected from previous tasks will be entered into spreadsheets for statistical analysis. A report will be developed to summarize the methods and the results of the study. The report will include a summary of each access site identified within the study area, including location in relation to the Project boundary; types and number of amenities provided; the condition of the facility and amenities; site accessibility and ADA compliance; the entity responsible for operation and maintenance; and the hours/seasons of operation. Photographs and, if available, use figures and projected use figures will be provided for each site. Average weekday, weekend and holiday recreation days will be estimated for Project recreation facilities using spot count and visitor intercept survey data. Future recreation demand over the term of a new license will be projected. The report will describe the general recreational usage of Project facilities, including activities participated in, seasonal usage, and visitor distribution. Visitor perceptions of the condition and adequacy of existing facilities will be discussed. Using the information gathered, the Power Authority will assess the overall adequacy of Project recreation facilities and whether changes or upgrades to the sites would be needed to meet current or future recreation needs.

3.4.8 Proposed Deliverables and Schedule

The Power Authority anticipates that the Recreation and Public Access Study can be completed during one field season in accordance with the schedule outline below.

Task	Schedule
FERC SPD	May 11, 2018 (<i>anticipated</i>)
Task 1. Literature Review and Outreach	Spring – Summer 2018
Task 2. Recreation Field Inventory of Access, Condition, and Use	Summer 2018
Task 3. Recreation Field Survey of Existing Use	May 2018 – October 2018
Task 4. Study Report	Within one year of SPD (<i>likely May 11, 2019</i>)

3.4.9 Level of Effort and Cost

The Power Authority believes that the proposed level of effort is sufficient to determine the adequacy of existing recreation facilities in meeting existing and future recreation needs at the Project. The cost of the proposed study as outlined in this plan is estimated to range from \$90,000 to \$110,000.

3.4.10 References

New York Power Authority. 1997. FERC Form 80 for Gregory B. Jarvis Project 1996/97. March 1997.

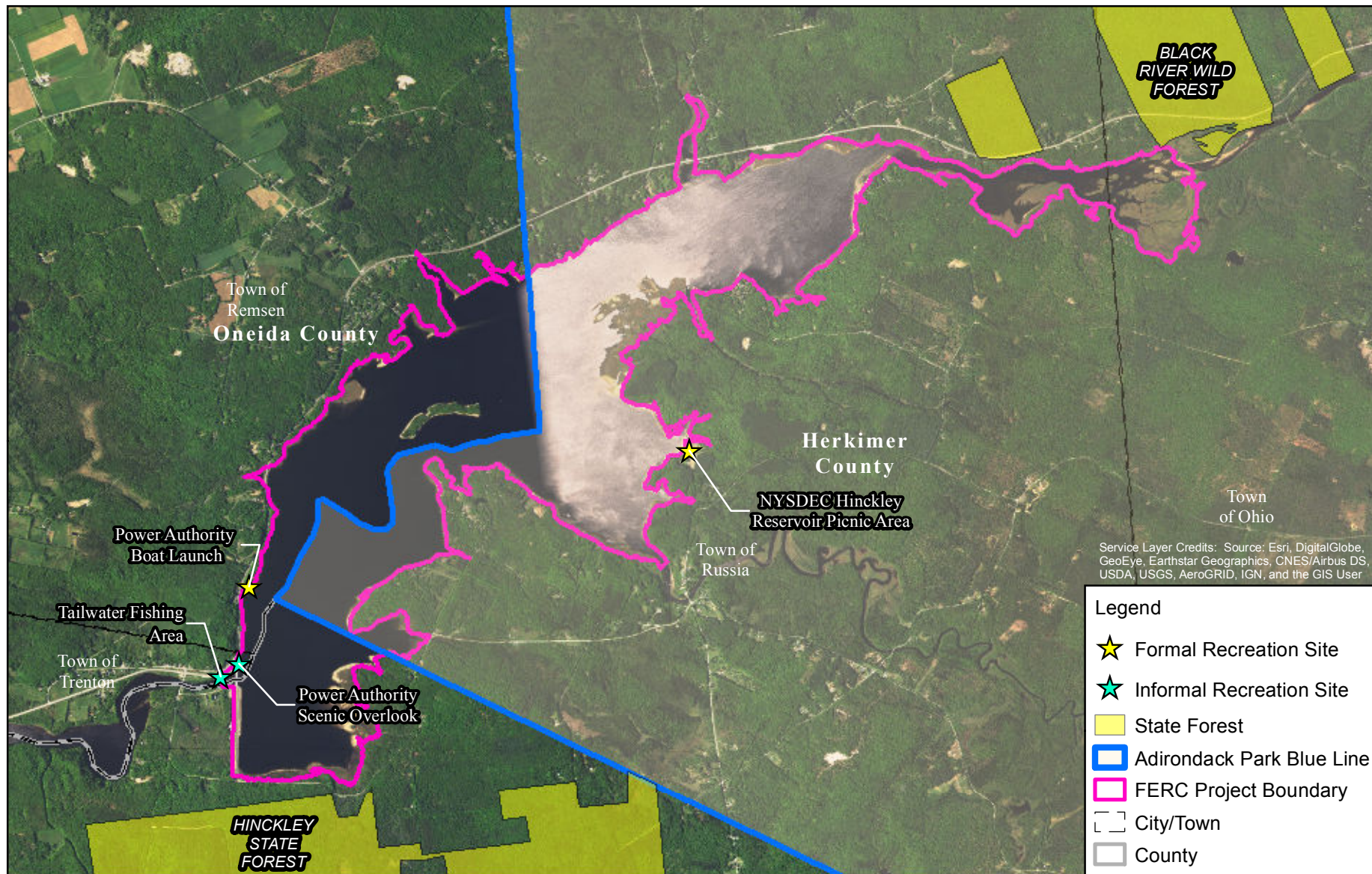
New York Power Authority. 2003. FERC Form 80 for Gregory B. Jarvis Project 2002. March 2003.

New York Power Authority. 2009. FERC Form 80 for Gregory B. Jarvis Project 2008. March 2009.

New York Power Authority. 2015. FERC Form 80 for Gregory B. Jarvis Project 2014. May 2015.

New York State Department of Environmental Conservation. 2015. New York's Forest Preserve Black River Wild Forest. Map. <http://www.dec.ny.gov/outdoor/56067.html>. Accessed November 21, 2016.

New York State Office of Parks, Recreation and Historic Preservation. 2014. Statewide Comprehensive Outdoor Recreation Plan 2014-2019. March 26, 2014.



Gregory B. Jarvis Project
(FERC No. P-3211)
Proposed Study Plan

Figure 3.4.2-1:
Known Public Recreation Facilities
in Study Area



0 2,000 4,000 8,000
Feet

Figure 3.4.7-1 Draft Spot Count Data Collection Form

General info:

Name of Observer	
Date	
Time	
Location	
Temperature	
Weather	
# of adults present (age 18+)	
# of children present (under age 18)	

Number of people observed engaged in each of the following activities:

Backpacking		Horseback Riding		Power Boating	
Camping		Hunting		Road Bicycling	
Canoeing		Jet Skiing		Rowing	
Cross Country Skiing		Kayaking		Running	
Fishing from a Boat		Mountain Biking		Sailing	
Fishing from Shore		Paddle Boarding		Swimming	
Hiking		Picnicking		Waterskiing	
OTHER:					

Parking Area:

Vehicles w/out car top rack	
Vehicles w/ car top rack	
Vehicles w/ trailer	
Vehicles w/out trailer	
Buses	
Total vehicles	

Number of vehicles observed with license plate from the following state:

Massachusetts	
New Hampshire	
New York	
Pennsylvania	
Vermont	
OTHER:	

Notes:

Figure 3.4.7-2 Draft Visitor Intercept Survey

Interviewer: _____ Date/Time: _____ Location: _____
Weather: _____ Air Temp: _____ Declined Survey: _____

Good afternoon. My name is _____ and I am conducting a recreation use survey of visitors to the Gregory B. Jarvis Hydroelectric Project area for the New York Power Authority. We are surveying public access areas at Hinckley Reservoir and the surrounding area. Collected information will assist the Power Authority in understanding more about land and water based recreation in this area. Responses from the survey will remain anonymous. Would you mind answering a few questions?

1. Have you participated in this survey effort before?

Yes _____ Thank you for your time. We are only interviewing each person once with this survey.

No _____ Continue with survey

2. How many people are in your group, including yourself? _____

3. Which of the following best describes your group? (check one)

☐ Alone
☐ Family
☐ Friends

☐ Multiple Families
☐ Family & Friends

☐ Organized Outing Group
☐ Educational Group
☐ Other _____

4. How many vehicles did your group use to come here? _____

5. Have you ever visited the Hinckley Reservoir area before? Yes _____ No _____

If yes, how many times a year do you typically visit for recreation? (please use a number) _____

6. What is your zip code? _____

7. When did you arrive, and when do you plan to depart?

Arrived: Date: _____ Time: _____ AM _____ PM _____

Departing: Date: _____ Time: _____ AM _____ PM _____

8. Please indicate which of the following activities you participate in at Hinckley Reservoir by season. (Mark all that apply)

Activity	This Trip	Spring (Mar. 1-May 31)	Summer (June 1-Aug. 31)	Fall (Sept. 1-Nov. 30)	Winter (Dec. 1-Feb. 28)
Backpacking					
Birding					
Boating					
Canoeing					
Kayaking					
Power Boating					
Rowing					
Sailing					
Camping					
Cross Country Skiing					
Dog Walking					
Driving for Pleasure					
Educational Programs					
Fishing from a Boat					
Fishing from Shore					
Hiking					
Horseback Riding					
Hunting					
Ice Fishing					
Ice Skating					
Jet Skiing					
Mountain Biking					
Multi-day Boat Trip					
Nature Observation					
Orienteering					
Paddle Boarding					
Photography					
Picnicking					
Road Bicycling					
Running					
Sightseeing					
Snowshoeing					
Swimming					
Walking					
Waterskiing					
Other:					

9. Of the activities listed above, which is your PRIMARY activity on this trip? _____

10. During your visit today what is your perception of the amount of use occurring at this site? (circle a number)

1	2	3	4	5
Not Crowded		Somewhat Crowded		Extremely Crowded

11. During your visit today, did you experience any conflicts with other users? Yes____ No____
If yes, please explain: _____

12. Please rate the following for this location

	Poor		Fair		Excellent
Availability of parking	1	2	3	4	5
Site condition	1	2	3	4	5
Adequacy of facilities	1	2	3	4	5
Adequacy of access to reservoir	1	2	3	4	5
Adequacy of signage	1	2	3	4	5
Placement of signage	1	2	3	4	5

Please explain any ratings below Fair (3): _____

13. Does this recreation facility serve your interests? Yes____ No____
If no, please explain: _____

Thank you for your time and input.

4 Discussion of Proposed Study Requests Not Adopted

This section presents discussion pertaining to major comments received from stakeholders ([Section 4.1](#)) as well as studies which were requested but not adopted ([Section 4.2](#)).

4.1 Overview and Background

PAD comment and study request letters were filed with the Commission from local residents, non-governmental organizations (NGO), and resource agencies (as listed in [Appendix B](#)). Many of the comments received were related to Hinckley Reservoir water levels and the 2012 Operating Diagram. In addition, comments and study requests were received pertaining to the Power Authority's ability to operate the Project in a peaking mode and the potential impacts peaking operations may have on various resources. The Power Authority has provided detailed responses to these comments and study requests in the sections below.

4.1.1 Hinckley Reservoir Water Levels and the 2012 Operating Diagram

As noted above, the Commission received comments from multiple stakeholders with concerns regarding Hinckley Reservoir water level fluctuations resulting from the 2012 Operating Diagram and the corresponding impact on various resources. Commenters noted their desire to reevaluate the Operating Diagram, and perhaps modify it, as part of the Jarvis Project relicensing proceeding. The Power Authority recognizes these concerns and appreciates the viewpoints expressed in these comments and during the recent scoping meetings. However, as explained in the PAD (Section 3.4.1) and in this PSP (below), issues related to storage and release requirements of Hinckley Dam are beyond the scope of FERC's relicensing of the Jarvis Project.

Hinckley Reservoir is owned by the NYSCC and was constructed in 1915. Outflows from the reservoir are governed by operating agreements between NYSCC, MVWA, and Erie Boulevard that predate the Jarvis Project by almost 70 years. Accordingly, in operating the Jarvis Project, the Power Authority's only role is to release the legally mandated flows at Hinckley Dam, in accordance with the Operating Diagram. Except for the minor peaking operations described in [Section 4.1.2](#), the Power Authority has no legal right or authority to deviate from the releases required by the Operating Diagram.

In fact, the Power Authority's only objective in developing the Jarvis Project was to take advantage of unrealized hydropower potential of long-standing and stable releases at Hinckley Dam. The development of this hydropower was in response to the US government's mandate to become less dependent on foreign sources of energy during the 1970's oil crisis. When issuing the original license to the Power Authority for the Jarvis Project nearly 40 years ago, FERC—by not requiring any change to the existing flow regime at Hinckley Dam—respected and protected ongoing uses of the water resources in West Canada Creek and recognized that the Power Authority's objective of merely capturing existing flows should not disturb long-

standing water delivery arrangements.⁴

For this reason, issues related to water levels at Hinckley Reservoir, aquatic resources in the watershed, sedimentation and erosion, and other resources have nothing to do with the limited operations of the Jarvis Project, are not needed to understand effects of the Jarvis Project, or to develop protection, mitigation and enhancement measures. Storage and release requirements are not a function of the FERC-issued license, but rather are mandated by well-established agreements that date back nearly a century, serve uses other than the Jarvis Project, and which involve parties other than the Power Authority.

The Power Authority also recognizes the Commission's obligation in this relicensing process to balance the public interest in accordance with the comprehensive waterway/equal consideration requirements of the FPA.⁵ In unique circumstances such as here—where the licensee has no control over releases through the project and there are already other well-established water resource uses at the project—the Commission has exercised its FPA obligations in a manner that respects and protects these existing uses. For instance, the Commission has included language in a license ensuring that project operations would be conducted with the fullest possible consideration of and deference to existing water resource uses,⁶ and that any additional water releases would be allowed only on condition that existing authorized water resource uses are protected.⁷ At similarly situated hydropower projects throughout the U.S., FERC's licensing decisions have respected preexisting rights associated with water resources, and the same result is warranted here.⁸

Indeed, if the Jarvis Project were not to exist, the same reservoir water levels and releases pursuant to the Operating Diagram would still occur. The Jarvis Project simply redirects reservoir outflow (determined by the Operating Diagram) through the Project's power generating equipment, which is released by the NYSCC for purposes other than generation at the Jarvis Project and which would be made even in the absence of the Project.

⁴ *Power Auth. of the State of N.Y.*, 20 FERC ¶ 62,264, at pp. 63,442-43 (1982); PAD Section 3.4.1.

⁵ 16 U.S.C. §§ 797(e), 803(a)(1).

⁶ *E. Tex. Elec. Coop., Inc.*, 136 FERC ¶ 62,171 (2011), *order on reh'g and clarification*, 140 FERC ¶ 61,228 (2012) (at a Texas project with contractual obligations to provide drinking water to the City of Houston, the Commission found that any reopener proceeding to impose further conditions for safety and environmental protection "will be conducted with the fullest possible consideration of and deference to the project's primary purpose of water supply, to the extent consistent with the Commission's obligations under the Federal Power Act.").

⁷ *S. Cal. Edison Co.*, 115 FERC ¶ 62,187, *order on reh'g and clarification*, 117 FERC ¶ 61,067 (2006) (requiring the release of whitewater boating flows at a California project, but only on condition that the downstream water rights holders would be minimized)

⁸ See also *PacifiCorp*, 105 FERC ¶ 62,207 (2003) (conditioning all operating constraints under the license on the availability of water beyond the licensee's water contracts and agreements and flood control responsibilities); *Appalachian Power Co.*, 66 FERC ¶ 61,316 (1994) (including several license conditions to protect the City of Lynchburg's water supply operations at its pumping stations located upstream and downstream of the project).

Finally, several comments noted that NYSCC is now owned by the Power Authority. Commenters noted their hope that as a result of this current arrangement the Operating Diagram could be modified to alleviate water level fluctuation concerns as part of the Jarvis relicensing proceeding. As previously explained, the Operating Diagram is the result of various lawsuits and legal agreements between NYSCC, MVWA, and Erie Boulevard. The Power Authority was not party to these legal proceedings nor was the Jarvis Project. The New York State Legislature's recent decision to restructure NYSCC as an entity within the Power Authority does not affect the long-standing contractual obligations associated with the Operating Diagram. Regardless of the current corporate structure of the Power Authority and the NYSCC, neither the Power Authority nor NYSCC has the unilateral legal authority to modify the Operating Diagram or the water rights granted to MVWA or Erie Boulevard through past litigation.

4.1.2 Effects of Jarvis Peaking Operations on Water Level Fluctuations

Although the Jarvis Project is operated in accordance with the Operating Diagram, the current FERC license allows the Project to be operated in a peaking mode, with higher peak outflows during peak demand periods and lower outflows during non-peak periods, resulting in an average daily peak flow. As noted by the USFWS in its request letter, this can result in outflows varying from the minimum base flow (160 cfs) to the maximum generation capacity (1,800 cfs). As such, the USFWS contends that daily fluctuations in impoundment elevations can occur due to Project operations, and requests several studies to study the effect of peaking, including a reservoir model to demonstrate the impacts of the Project on daily water level fluctuations. In lieu of conducting the study requested by USFWS, the Power Authority has conducted analyses examining the upstream and downstream impacts of peaking. The results of this analysis demonstrates that no further study is warranted.

The ability for the Power Authority to operate the Project in peaking mode is extremely limited. When the Power Authority operates the Jarvis Project in a peaking mode it will average the outflow required by the Operating Diagram over the course of the day. When operated in this manner, the Project will generate with a lower outflow during non-peak demand periods and then generate with a higher outflow during peak demand periods such that the total daily average flow is equal to the outflow required by the Operating Diagram.

In response to USFWS's study request, the Power Authority conducted an analysis to compare the difference in reservoir water level over the course of a 24 hour period that would occur if water was released at a constant rate as compared to peaking. It was assumed that the Jarvis peaking period duration would be four hours and that the Jarvis Project would operate at maximum generating capacity with a discharge of 1,800 cfs. For the remaining 20 hours of the day, outflows would be reduced so that the average daily discharge is equivalent to 24 hours of the flow release specified by the Operating Diagram. For example, if the scheduled daily flow release from the Operating Diagram is 600 cfs and the Power Authority operated Jarvis in peaking mode, the release is 1,800 cfs for four hours and 360 cfs the remaining 20 hours. [Table 4.1.2-1](#) shows the flow during peak operations and the remainder of the day for Operating

Diagram releases varying from 300 cfs to 1,800 cfs.

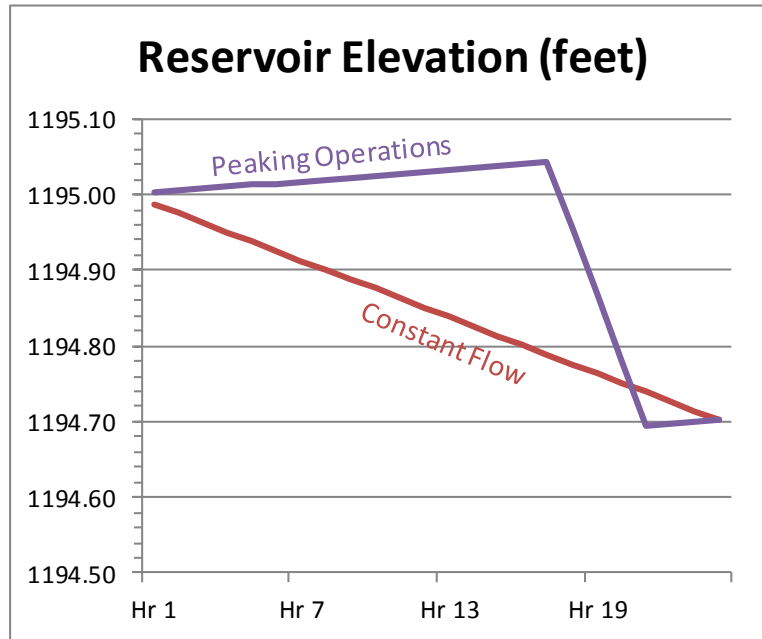
Based on the results of the analysis described below, due to the large amount of storage in Hinckley Reservoir (25.8 billion gallons at El. 1225), changes in daily water level due to peaking are small (less than 0.25 ft or 3 inches). The results of this analysis are shown in [Table 4.1.2-1](#). The results described above are based on analysis of the difference in water level over the course of a 24 hour period that would occur if water was released at a constant rate compared to the difference in water level that would result from four hours of peaking for Operating Diagram daily flow releases ranging from 300 to 1,800 cfs and for water levels varying between El. 1195 and El. 1225 (i.e., the operating range of the Jarvis Project). The analysis found that the difference in reservoir water level between a constant flow and peaking increases as the flow from the Operating Diagram decreases and as the reservoir elevation is drawn down. The largest difference in daily reservoir level occurs at El. 1195 and with an Operating Diagram release of 600 cfs. An illustration of this change is shown in [Figure 4.1.2-1](#). This analysis assumes that the peaking occurs between 5 pm and 9 pm. Figures showing the other simulations are in [Appendix C](#).

Table 4.1.2-1. Effect of Jarvis Peaking on Flow Releases and Hinckley Water Levels

	2012 Operating Diagram release (cfs)					
	1800	1500	1200	900	600	300
	Jarvis Release into Prospect Pond (cfs)					
	1800	1800	1800	1800	1800	300
4 peak hours	1800	1440	1080	720	360	300
20 other hours	1800	1500	1200	900	600	300
average daily flow	1800	1500	1200	900	600	300
	Hinckley Water Level Difference (feet)					
	(peaking minus flat release)					
Reservoir El. 1225 ft	0	0.03	0.06	0.09	0.12	0
Reservoir El. 1215 ft	0	0.04	0.08	0.11	0.15	0
Reservoir El. 1205 ft	0	0.05	0.09	0.14	0.19	0
Reservoir El. 1195 ft	0	0.06	0.13	0.19	0.25	0

Even though peaking can cause a change in water level of up to three inches over the course of the day, at the end of the day, the reservoir water level is unchanged because the average daily flow must equal the Operating Diagram release. This is illustrated in [Figure 4.1.2-1](#).

Figure 4.1.2-1. Hinckley Water Level for Constant Flow Rate and Four Hours of Peaking (Peaking Occurs from 5 PM to 9 PM)



Start-of-day elevation (ft)	1195
Scheduled OD release (cfs)	600
Desirable 4-hr peaking release (cfs)	1800
Corresponding 20-hr release (cfs)	360
Maximum water level change (feet)	0.25

As demonstrated above, Jarvis peaking operations have minimal impact on reservoir water level fluctuations. Regarding potential downstream impacts, the Prospect Hydroelectric Project impoundment backwaters to the Hinckley Dam, thus resulting in the absence of a free flowing reach downstream of the Jarvis Project. The tailwater elevation for the Jarvis Hydroelectric Project is 1157.5 ft BCD⁹ and the five foot fluctuation range of the Prospect impoundment¹⁰ is between El. 1157.54 BCD (1156.5 NGVD29) and El. 1162.54 BCD (1161.5 NGVD29). Based on this, as well as the size of the Prospect impoundment (806 ac-ft of storage), Jarvis peaking outflows are absorbed by the Prospect impoundment resulting in minimal increases in water level. In fact, Jarvis peaking can reduce water level fluctuations in the Prospect impoundment if peaking cycles of the two projects overlap. The Jarvis Hydroelectric Project can operate with flows between 300 and 1800 cfs and the stated hydraulic capacity in the West Canada Creek license (FERC No. 2701) for the Prospect and Trenton Falls Developments is 1525 cfs but the two projects can likely generate over a similar generation flow range as Jarvis although not as

⁹ The Barge Canal Datum (BCD) is 1.04 ft higher than the USGS National Geodetic Vertical Datum (NGVD) of 1929.

¹⁰ The West Canada Creek Project, FERC No. 2701, owned by Erie Boulevard consists of the Trenton Falls and Prospect Developments.

efficiently as at best gate.

The Jarvis Project simply redirects reservoir outflow determined by the Operating Diagram through the Project's power generating equipment, regardless of the Project's mode of operation. These releases would be made even in the absence of the Project due to the various legal agreements governing reservoir operations.

4.2 Study Requests Not Adopted by the Power Authority

In addition to the study plans proposed in [Section 3](#), additional studies were requested by several stakeholders. In accordance with FERC's criteria for supporting a study request, which were presented in Scoping Document 1, the Power Authority has concluded that these additional studies are unnecessary because: (1) there is sufficient existing information concerning the subject of the study proposal; (2) there is no nexus between Project operations and effects on the resources requested to be studied; and/or (3) these requested studies would not inform the development of license requirements. A discussion of each request is provided below.

4.2.1 Reservoir Modeling

As discussed extensively in [Section 4.1.2](#), the USFWS requested that the Power Authority develop a reservoir model to demonstrate the impacts of the Project on daily water level fluctuations as a result of the Power Authority's ability to operate the Project in a peaking mode. As demonstrated in [Section 4.1.2](#) and the accompanying appendix, the reservoir modeling study requested by the USFWS is not necessary as the Power Authority already has the tools in place to determine the impacts of Project peaking operations on daily water level fluctuations. As such, there is sufficient existing information concerning the potential impacts of peaking. Furthermore, a reservoir modeling effort would not produce information that would inform protection, mitigation, or enhancement measures as required by FERC's study plan criteria.

4.2.2 Water Level Fluctuation Impact

Numerous local residents and stakeholders requested various iterations of a study which examines the impacts that the Operating Diagram and associated Hinckley Reservoir water level fluctuations have on resources at Hinckley Reservoir, including: fisheries and aquatics, recreation, and socio-economics. The Power Authority is not proposing to conduct the requested study as (1) there is no nexus between Project operations and effects on the resources requested to be studied, and (2) the requested study would not inform the development of license requirements.

Hinckley Dam and Reservoir pre-date the Jarvis Project by approximately 70-years. As noted in the PAD, as well as [Section 4.1](#) of this PSP, Hinckley Reservoir is owned by the NYSCC and outflows from the reservoir are governed by legally binding agreements between the NYSCC, the MVWA, and Erie Boulevard. The Power Authority does not have the rights to deviate from these releases and if the Jarvis Project were not to exist, the same reservoir water levels and

discharges would still occur in accordance with the Operating Diagram. In other words, the Jarvis Project simply redirects reservoir outflow (determined by the Operating Diagram) through the Project's power generating equipment, which is released by the NYSCC for purposes other than generation at the Jarvis Project and which would be made even in the absence of the Project. NYSCC does not manage Hinckley Reservoir water levels or releases to promote generation at the Jarvis Project.

As such, any potential resource impacts associated with water level fluctuations are due to the water level and flow release requirements of the Operating Diagram, which are determined by the requirements of the various legal agreements governing reservoir operations, none of which include Jarvis Project operations. Jarvis Project operations do not cause water level fluctuations during non-peaking operations (i.e. constant flow) and cause minimal to no fluctuations during peaking operations (see [Section 4.1.2](#)). Thus, the requested study has no nexus to Jarvis Project operations and completion of such a study would not inform the development of license requirements as required by FERC's study plan criteria.

4.2.3 Base Flow

The USFWS and NYSDEC requested that a flow study be conducted to determine whether the current minimum flow is appropriate for West Canada Creek. Both USFWS and NYSDEC recommended the use of a Delphi approach and that habitat mapping be conducted in the downstream study reach to identify the type of habitat in each section (e.g., riffle, run, pool) along with depths, velocities, and substrates. In addition, Trout Unlimited and Trout Power requested that the adequacy of the current minimum flow requirement be examined. The Power Authority is not proposing to conduct this study as there is no nexus to Project operations.

The current license requires a continuous minimum flow of 160 cfs be maintained in West Canada Creek, as measured downstream of the NYSCC diversion weir at the Nine Mile Creek Feeder Dam. The Nine Mile Creek Feeder Dam is located downstream of the West Canada Creek Hydroelectric Project (FERC No. 2701), which consists of the Prospect and Trenton Falls Developments and is owned and operated by Erie Boulevard. The Prospect Dam is located approximately 2.5 miles downstream of the Jarvis Project, the Trenton Falls Dam is located approximately 1.6 miles below the Prospect Dam, and the Nine Mile Creek Feeder Dam is located approximately 1 mile downstream of the Trenton Falls Dam (see PAD Figure 4.1.3-1).

As noted earlier in this PSP, the Prospect impoundment backwaters to the Hinckley Dam; there is no free flowing reach downstream of Jarvis. Based on the absence of a free flowing reach downstream of Hinckley Dam, combined with the size of the Prospect impoundment (806 ac-ft of storage), Jarvis peaking outflows are absorbed by the Prospect impoundment resulting in minimal increases in water level (as demonstrated in [Section 4.1.2](#)). The Jarvis Project simply is required to release adequate water volume to the Prospect impoundment to allow the downstream controlling Projects to meet the current minimum flow requirement. Once released from Hinckley Reservoir, it is the responsibility of the West Canada Creek Project to ensure that

minimum flow requirements are met at the Nine Mile Creek Feeder Dam. The Power Authority is not responsible for, nor does it have control over, how the West Canada Creek Project is operated.

Furthermore, the “downstream study reach” noted in the USFWS and NYSDEC study requests is located within the West Canada Creek Project boundary, below the Prospect Dam and the Trenton Falls Dam. Potential impacts to fisheries and aquatic resources in these reaches, if any, are not related to Jarvis Project operations and, as such, are not subject to study or mitigation as part of the Jarvis relicensing proceeding. In fact, the current minimum flow requirement of 160 cfs is based on the instream flow study that was conducted in 1980 for the licensing of the West Canada Creek Project.¹¹

Finally, as noted in [Section 4.1.1](#), outflows from Hinckley Reservoir are governed by legally binding agreements between the NYSCC, the MVWA, and Erie Boulevard. The Power Authority does not have the rights to deviate from these releases and if the Jarvis Project were not to exist, the same reservoir water levels and discharges would still occur in accordance with the Operating Diagram.

As demonstrated above, the requested study (1) has no nexus to Jarvis Project operations, and (2) would not inform the development of protection, mitigation, or enhancement measures that could apply to Jarvis as required by FERC’s study plan criteria.

4.2.4 Fish Survey

The USFWS and NYSDEC recommended that the Power Authority conduct a thorough fisheries survey in the vicinity of the Project, including both the reservoir and the river downstream from the Project. Standard water quality data were also recommended to be collected in conjunction with these surveys. The USFWS and NYSDEC note that the focus of the study should be on general fishery resources to aid in determination of what the Project impacts may be. In addition, Trout Power requested an Aquatic Resource Survey and Fish Community Survey; however, it is unclear what these requests entail as no additional information was provided. The Power Authority is not proposing to conduct the requested study as sufficient information exists to determine the potential Project impacts of continued operation on fishery resources.

As noted above, the goal of the USFWS and NYSDEC study requests is to determine potential impacts of continued Project operation on general fishery resources. As demonstrated in [Section 4.1.2](#), non-peaking Jarvis Project operations (i.e. constant flow) have no impact on reservoir water level fluctuations or downstream flows, while peaking operations have minimal to no impact. Furthermore, the Prospect impoundment backwaters to the Hinckley Dam, with the Jarvis Project boundary only extending approximately 400 feet downstream of the dam. Finally, given that the current trashrack spacing is 5 3/8 inches, impingement of fish is unlikely to be of concern. As a result, potential impacts associated with the continued operation of the

¹¹ Ichthyological Associates, Inc.1980. West Canada Creek Instream Flow Study.

Jarvis Project on fishery resources are limited to entrainment and downstream passage, which will be examined in the studies proposed in Section 3 (see [Section 3.2](#) and [3.3](#)).

Therefore, information collected during the requested fish survey would be used solely to inform the desktop *Assessment of Fish Entrainment and Turbine Passage Survival Study* detailed in [Section 3.3](#). Due to the nature of the proposed desktop entrainment study, the various datasets collected over the 26-year period from 1988 through 2014 (see PAD Section 4.4) are sufficient to conduct such a study, and a new study is not necessary. Furthermore, there is no reason to believe that the species composition has changed in the study area since the previous datasets were collected. Therefore, the updated data is not necessary. Regarding the recommendation to collect water quality data in conjunction with the fish surveys, the Power Authority has proposed the *Tailwater Water Quality Study* (as discussed in [Section 3.2](#)) to complement the extensive reservoir water quality data which already exists (discussed further in [Section 4.2.8](#)). The Power Authority is not proposing additional water quality data collection beyond that which is discussed in [Section 3.2](#).

Due to the multiple fishery and water quality datasets which already exist, and the studies already proposed in Section 3, the Power Authority is not proposing to conduct the requested study as sufficient information exists to determine the potential Project impacts of continued operation on fishery resources.

4.2.5 Macroinvertebrate and Freshwater Mussel Surveys

The USFWS and NYSDEC recommended that the Power Authority conduct a macroinvertebrate and freshwater mussel survey to provide information on the existing macroinvertebrate communities that may be impacted by Project operations. The USFWS and NYSDEC note in their study requests that the Project affects water levels in the impoundment and flows downstream from the dam, which can impact macroinvertebrate communities that may be present. In addition, Trout Power requested an Aquatic Resource Survey and Invertebrate Survey; however, it is unclear what these requests entail as no additional information was provided. The Power Authority is not proposing to conduct the requested study as (1) there is no nexus between Project operations and effects on macroinvertebrate communities that may be present, and (2) the requested study would not inform the development of license requirements.

As previously discussed, reservoir water level and flow releases are determined by the Operating Diagram and associated legal agreements governing reservoir operations, none of which include Jarvis Project operations. Hinckley Dam and Reservoir pre-date the Jarvis Project by approximately 70-years and if the Project were to no longer exist the dam would still be in place and the water level fluctuations and flow releases would still occur in accordance with the Operating Diagram. As demonstrated in [Section 4.1.2](#), non-peaking Jarvis Project operations (i.e. constant flow) have no impact on reservoir water level fluctuations or downstream flows and peaking operations have minimal to no impact. The Jarvis Project simply

redirects reservoir outflow through the Project's power generating equipment. Furthermore, the Prospect impoundment backwaters to the Hinckley Dam, with the Jarvis Project boundary only extending approximately 400 feet downstream of the dam.

Therefore, there is no nexus between Project operations and effects on macroinvertebrates or freshwater mussels nor would the study inform the development of license requirements as required by FERC's study plan criteria. Any potential resource impacts associated with water level fluctuations are due to the water level and flow requirements of the Operating Diagram and associated legal agreements governing reservoir operations or by downstream hydroelectric operations.

4.2.6 Wetland Delineation and Aquatic Habitat Survey

The NYSDEC recommended that the Power Authority document all wetlands and identify any aquatic habitat found within the Project's vicinity. The study request further notes that operation of the Project affects water levels and velocities as well as the timing and location of releases and that the information will be used to determine what, if any, impacts the Project may have on these resources. In addition, Trout Power requested a Wetland Survey; however, it is unclear what these requests entail as no additional information was provided. The Power Authority is not proposing to conduct the requested study as (1) there is no nexus between Project operations and effects on wetlands and aquatic habitat, and (2) the requested study would not inform the development of license requirements.

As previously discussed, reservoir water level and flow releases are determined by the Operating Diagram and associated legal agreements governing reservoir operations, none of which include Jarvis Project operations. Hinckley Dam and Reservoir pre-date the Jarvis Project by approximately 70-years and if the Project were to no longer exist the dam would still be in place and the water level fluctuations and flow releases would still occur in accordance with the Operating Diagram. As demonstrated in [Section 4.1.2](#), non-peaking Jarvis Project operations (i.e. constant flow) have no impact on reservoir water level fluctuations or downstream flows and peaking operations have minimal to no impact. The Jarvis Project simply redirects reservoir outflow through the Project's power generating equipment. Furthermore, the Prospect impoundment backwaters to the Hinckley Dam, with the Jarvis Project boundary only extending approximately 400 feet downstream of the dam.

For these reasons, there is no nexus between Project operations and effects on wetlands or aquatic habitat nor would the study inform the development of license requirements as required by FERC's study plan criteria. Any potential resource impacts associated with water level fluctuations are due to the water level and flow requirements of the Operating Diagram and associated legal agreements governing reservoir operations or by downstream hydroelectric operations.

4.2.7 Shoreline Erosion Survey

Multiple local residents and Trout Power requested that the Power Authority conduct a shoreline erosion survey to determine the extent of erosion throughout Hinckley Reservoir. The Power Authority is not proposing to conduct the requested study as (1) there is no nexus between Project operations and effects on shoreline erosion, and (2) the requested study would not inform the development of license requirements.

As previously discussed, reservoir water level and flow releases are determined by the Operating Diagram and associated legal agreements governing reservoir operations, none of which include Jarvis Project operations. Hinckley Dam and Reservoir pre-date the Jarvis Project by approximately 70-years and if the Project were to no longer exist the dam would still be in place and the water level fluctuations and flow releases would still occur in accordance with the Operating Diagram. As demonstrated in [Section 4.1.2](#), non-peaking Jarvis Project operations (i.e. constant flow) have no impact on reservoir water level fluctuations and peaking operations have minimal to no impact. The Jarvis Project simply redirects reservoir outflow through the Project's power generating equipment.

Given this, there is no nexus between Project operations and effects on shoreline erosion nor would the study inform the development of license requirements as required by FERC's study plan criteria. Any potential resource impacts associated with water level fluctuations are due to the water level and flow requirements of the Operating Diagram and associated legal agreements governing reservoir operations.

4.2.8 Reservoir Water Quality

Water quality studies, in the reservoir and/or the tailwater area, were requested by multiple groups including NYSDEC, MVWA, and Trout Power. In addition, the USFWS requested that standard water quality data be collected in conjunction with their requested fish survey ([Section 4.2.4](#)). As discussed in [Section 3.2](#), the Power Authority is proposing to conduct a water quality study in the tailwater area of the Project; however, the Power Authority is not proposing to conduct reservoir water quality studies as it believes that (1) sufficient information exists to determine the potential Project impacts of continued operation on water quality; (2) there is no nexus to Project operations; and (3) the requested study is not necessary to inform the development of license requirements.

Unlike the downstream area, extensive water quality data exists for Hinckley Reservoir. Reservoir because it is a public drinking water supply. Water quality data discussed in the PAD includes 16 years of MVWA collected data (2000 – 2016) as well as five years of NYSDEC data (1989, 1994, 2009, 2010, and 2011). Water quality parameters included temperature and dissolved oxygen as well as percent oxygen saturation, turbidity, and pH, among others. Based on review of the existing dataset, combined with the analysis presented in the PAD, the Power Authority believes that the existing reservoir water quality data is adequate to determine potential Project impacts, that a new study is not required, and that a new study would not

inform the development of license requirements beyond the existing data.

In addition, as previously discussed, reservoir water level and flow releases are determined by the Operating Diagram and associated legal agreements governing reservoir operations, none of which include Jarvis Project operations. Hinckley Dam and Reservoir pre-date the Jarvis Project by approximately 70-years and if the Project were to no longer exist the dam would still be in place and the water level fluctuations and flow releases would still occur in accordance with the Operating Diagram. The Jarvis Project simply redirects reservoir outflow through the Project's power generating equipment. Given this, there is no nexus between Project operations and effects on water quality as required by FERC's study plan criteria.

4.2.9 Archeological Resource Survey

Trout Power requested that an Archeological Resource Study be conducted; however, it is unclear what this request entails as no additional information was provided. In addition, in its AIR and Study Request letter, FERC requested that an HPMP be prepared and filed with the Power Authority's study report. As discussed in [Section 2.14](#), the Power Authority has engaged with the SHPO to determine the Project's APE. Until the APE has been determined, it is premature to commit to the development of a HPMP. In addition, the SHPO has not requested any cultural resource studies at this time. Given this, an archeological resource survey is not proposed.

Appendix A – MVWA Water Use Data: 1983-2016

Year	Average Monthly MVWA Water Withdrawal Amounts (cfs)											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1983	35.5	37.7	39	37.9	36.1	41.1	43.2	42.5	40.8	38	37.4	36.1
1984	36.9	41.2	41.5	41	38.5	41.8	43.9	41.5	41.5	40.7	40	36.7
1985	38.4	40.4	40.8	38.2	40.5	41.6	41.9	44.5	42.5	40.5	37.9	37.8
1986	40.1	40.4	41.3	39.2	40.9	41.7	41.3	40	39.2	39.1	38.7	39.2
1987	37.3	38.7	41.2	40.3	41.5	42.4	43.4	46	42.4	39.9	38.2	37.2
1988	38.2	40.7	39.4	41.3	39.8	42.9	45.2	44.4	44.7	41.5	38.4	37.4
1989	36	39.1	40	39.8	38.3	41.5	43.7	41.1	40.4	36.8	33.6	36
1990	37.1	37.2	35.3	36.1	36.5	38.4	40.1	40	39.7	37.2	39	36.9
1991	35.7	36.8	38.2	38.5	38.8	42.5	42.5	41.9	41.4	39.6	38.5	38.4
1992	38.2	41.3	41.1	40.2	38.9	40.7	40.4	38.9	38.9	39.2	39	39
1993	40.3	40.9	40.9	40.2	37.5	38.6	41.3	40.5	40	43.1	40.7	37.2
1994	40.2	44.8	48.7	46.7	42.7	42.6	42.8	41.9	38.9	39.4	37.5	36.6
1995	38.5	38.2	38.9	38.1	37.3	40.1	43.6	40.1	39.9	38	36.6	36.9
1996	36.5	35.7	40.3	39	38.9	39	37.5	38.6	39.6	36.8	36.8	35.9
1997	37.7	39.5	38.1	38.2	35.7	39.8	38.5	39.8	39.1	38.4	36.6	38.1
1998	37.9	39.3	38.2	38	38.3	39.9	39.1	41.1	39.1	38.2	38.2	37
1999	39.3	40.3	39.9	40.4	40.4	42.6	41.2	41.8	40.7	38.6	38.8	39.4
2000	40.5	39.6	41.8	38.5	38.1	39.2	39.2	38.5	37.2	37.5	37	35.3
2001	35.7	36.4	36.4	34	38.6	35.7	37.3	40	37.5	35.4	32.8	34.5
2002	36.5	37.9	37.4	37.4	38.1	38.2	42.2	44.1	39	38.5	39	41.1
2003	40.9	44.1	44.6	41.2	38.6	37.6	40.7	38.8	38.1	38.8	37.5	38.6
2004	41.6	44.7	46.5	38.2	36.4	38.1	37.4	38.4	37.5	37.4	41.8	41.7
2005	42.1	44.8	42.3	36.7	36.4	43.9	37.9	40.6	36.9	37	37.7	37.1
2006	38.5	38.6	38.2	37.8	37.1	36.8	38.5	36.8	37.6	36.7	36.9	36.7
2007	37.2	39	40.7	38	38	41.8	40.6	40.5	40.4	37.7	40.6	38.2
2008	39.1	38	37.7	36.9	36.5	37.5	37.6	35.2	38	35.7	35.1	38.6
2009	39.5	40.7	37.2	34.2	34.6	35.9	33.4	36.5	35	33.6	34.1	34.7
2010	35.7	36.1	36.1	34.1	34.3	35.1	38.3	34.6	35.6	34.4	34.6	34.5
2011	36.1	37.2	37.3	36.5	35.6	38.2	41.6	39.9	40.2	39	39	39.3
2012	40.8	41.3	40.1	37.8	38.9	39.5	42.5	39.4	38.5	38.4	38.9	40.3
2013	41.4	43.6	42.2	40.4	39.5	38.6	41.3	39.4	39	39.4	39.2	41.7
2014	41.5	45.1	43.1	41.2	37.4	38.7	40.9	38.8	40	38.5	40	41.4
2015	42.5	44	45.4	42.3	41.5	40	41.2	38.7	38.7	38.9	38.3	38.1
2016	38.9	39.8	37.5	35.7	35.6	37.3	36.2	36.1	35.1	31.3	32.3	34.5

Source: Mohawk Valley Water Authority

Appendix B – List of PAD Comment and Study Request Letters

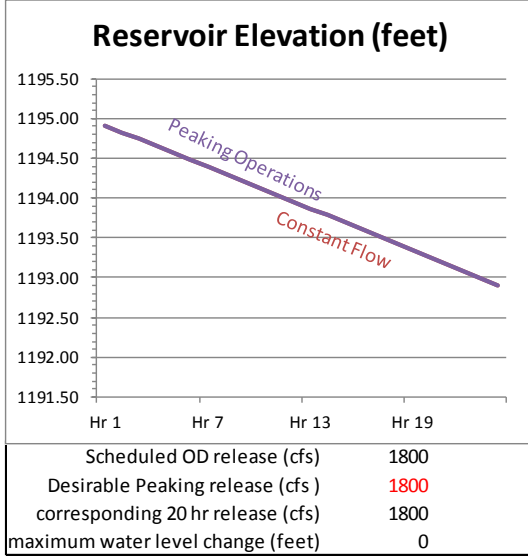
List of Study Requests, Comment Letters, and other Correspondence

ID	Date	Entity	Description
274	8/29/2017	FERC	Scoping Document 1
275	9/20/2017	Patricia Gunio	Pad Comments and Study Requests
277	9/26/2017	FERC	Scoping Meeting Presentations
276	9/28/2017	Robert Carnevale	PAD Comments and Study Requests
278	9/29/2017	Christina Sprague	Scoping Comments
279	10/3/2017	Justin Horstman representing Hinckley Lake Facebook Page	PAD Comments and Study Requests
280	10/5/2017	Fred Lampert	PAD Comments and Study Requests
281	10/10/2017	Steve Wheeler	PAD Comments and Study Requests
299	10/12/2017	FERC	Transcript of 9/26/2017 Meeting in Utica, NY
300	10/12/2017	FERC	Transcript of 9/27/2017 Meeting in Utica, NY
282	10/13/2017	Stephanie Fransman	PAD Comments and Study Requests
284	10/21/2017	James Darcy	PAD Comments and Study Requests
286	10/23/2017	David Stilwell representing the USFWS	PAD Comments and Study Requests
283	10/23/2017	Paul Miller representing NYS Council of Trout Unlimited	PAD Comments and Study Requests
285	10/23/2017	Heidi Benson	PAD Comments and Study Requests
294	10/24/2017	David Corr representing Mohawk Valley Chapter of Trout Unlimited NYS Conservation Fund Advisory Board Region 6	PAD Comments and Study Requests
287	10/25/2017	Carol Weidner	PAD Comments and Study Requests
288	10/26/2017	Thomas Zembrzuski representing the West Canada Watershed Alliance	PAD Comments and Study Requests
301	10/26/2017	The Reinhart Family	PAD Comments and Study Requests
295	10/27/2017	Robert Carnevale Jr	PAD Comments and Study Requests
290	10/27/2017	John Smith representing FERC	PAD Comments, Additional Information Requests, and Study Requests
291	10/27/2017	Dave Waters	PAD Comments and Study Requests

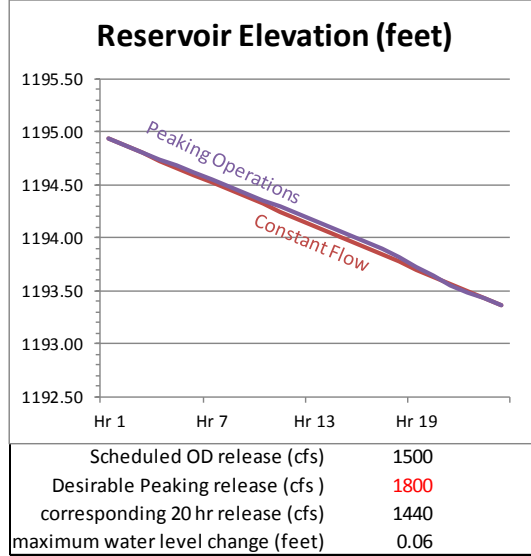
ID	Date	Entity	Description
292	10/27/2017	Blake Bellinger	PAD Comments and Study Requests
293	10/27/2017	Todd Philips representing NYSDEC	PAD Comments and Study Requests
289	10/27/2017	Michael Galime representing City of Utica Common Council	PAD Comments and Study Requests
302	10/28/2017	Richard D. Goodney P.E representing Mohawk Valley Water Authority	PAD Comments and Study Requests
303	10/28/2017	Trout Power, Inc.	PAD Comments and Study Requests
304	11/03/2017	Elizabeth Daws	PAD Comments and Study Requests

Appendix C – Reservoir Daily Peaking Analysis Results

Start of Day Elevation = 1195



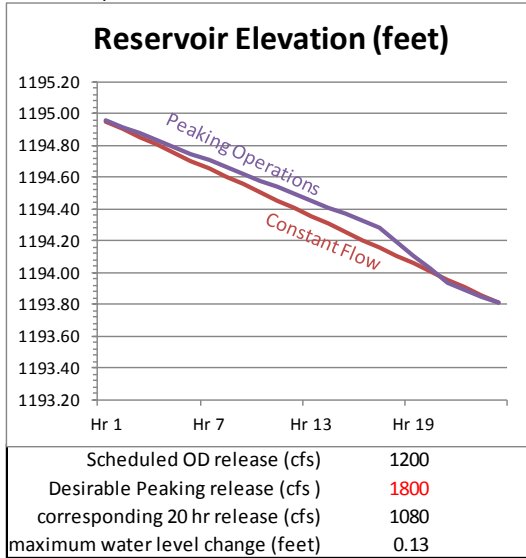
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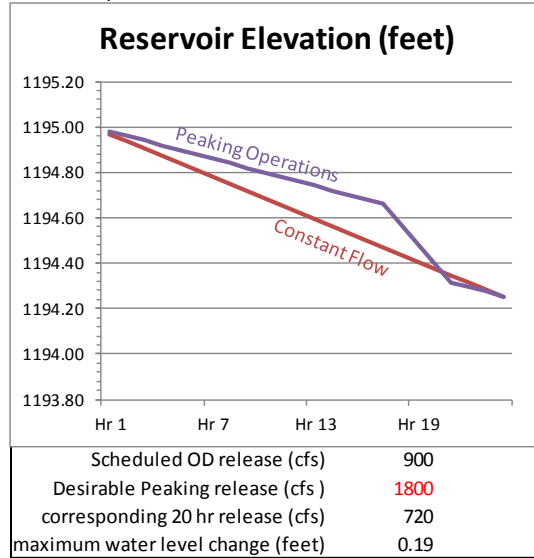
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	Release	Elev	Release	Elev	
Hr 1	1800	1194.91	1800	1194.91	0
Hr 2	1800	1194.83	1800	1194.83	0
Hr 3	1800	1194.74	1800	1194.74	0
Hr 4	1800	1194.65	1800	1194.65	0
Hr 5	1800	1194.56	1800	1194.56	0
Hr 6	1800	1194.48	1800	1194.48	0
Hr 7	1800	1194.39	1800	1194.39	0
Hr 8	1800	1194.30	1800	1194.30	0
Hr 9	1800	1194.22	1800	1194.22	0
Hr 10	1800	1194.13	1800	1194.13	0
Hr 11	1800	1194.04	1800	1194.04	0
Hr 12	1800	1193.96	1800	1193.96	0
Hr 13	1800	1193.87	1800	1193.87	0
Hr 14	1800	1193.78	1800	1193.78	0
Hr 15	1800	1193.69	1800	1193.69	0
Hr 16	1800	1193.61	1800	1193.61	0
Hr 17	1800	1193.52	1800	1193.52	0
Hr 18	1800	1193.43	1800	1193.43	0
Hr 19	1800	1193.35	1800	1193.35	0
Hr 20	1800	1193.26	1800	1193.26	0
Hr 21	1800	1193.17	1800	1193.17	0
Hr 22	1800	1193.08	1800	1193.08	0
Hr 23	1800	1193.00	1800	1193.00	0
Hr 24	1800	1192.91	1800	1192.91	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	1500	1194.93	1440	1194.94	0
	1500	1194.86	1440	1194.87	0.01
	1500	1194.79	1440	1194.81	0.01
	1500	1194.73	1440	1194.74	0.01
	1500	1194.66	1440	1194.68	0.02
	1500	1194.59	1440	1194.61	0.02
	1500	1194.52	1440	1194.55	0.03
	1500	1194.45	1440	1194.48	0.03
	1500	1194.38	1440	1194.42	0.03
	1500	1194.32	1440	1194.35	0.04
	1500	1194.25	1440	1194.29	0.04
	1500	1194.18	1440	1194.22	0.04
	1500	1194.11	1440	1194.16	0.05
	1500	1194.04	1440	1194.09	0.05
	1500	1193.97	1440	1194.03	0.06
	1500	1193.91	1440	1193.97	0.06
	1500	1193.84	1440	1193.90	0.06
	1500	1193.77	1800	1193.81	0.04
	1500	1193.70	1800	1193.73	0.03
	1500	1193.63	1800	1193.64	0.01
	1500	1193.56	1800	1193.55	-0.01
	1500	1193.50	1440	1193.49	-0.01
	1500	1193.43	1440	1193.42	0
	1500	1193.36	1440	1193.36	0

Start of Day Elevation = 1195



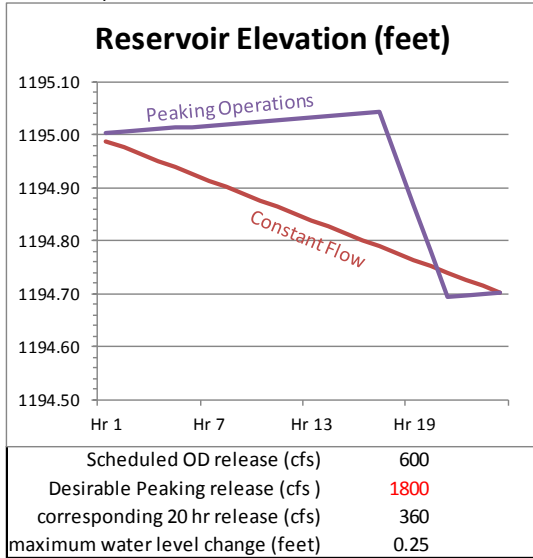
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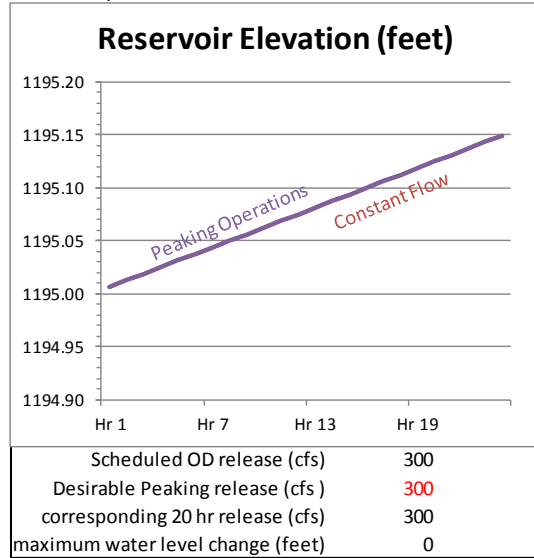
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	Release	Elev	Release	Elev	
Hr 1	1200	1194.95	1080	1194.96	0.01
Hr 2	1200	1194.90	1080	1194.92	0.01
Hr 3	1200	1194.85	1080	1194.87	0.02
Hr 4	1200	1194.80	1080	1194.83	0.03
Hr 5	1200	1194.75	1080	1194.79	0.04
Hr 6	1200	1194.70	1080	1194.75	0.04
Hr 7	1200	1194.65	1080	1194.70	0.05
Hr 8	1200	1194.60	1080	1194.66	0.06
Hr 9	1200	1194.55	1080	1194.62	0.07
Hr 10	1200	1194.50	1080	1194.58	0.07
Hr 11	1200	1194.45	1080	1194.53	0.08
Hr 12	1200	1194.40	1080	1194.49	0.09
Hr 13	1200	1194.35	1080	1194.45	0.1
Hr 14	1200	1194.30	1080	1194.41	0.1
Hr 15	1200	1194.25	1080	1194.37	0.11
Hr 16	1200	1194.20	1080	1194.32	0.12
Hr 17	1200	1194.15	1080	1194.28	0.13
Hr 18	1200	1194.10	1800	1194.19	0.09
Hr 19	1200	1194.05	1800	1194.11	0.05
Hr 20	1200	1194.00	1800	1194.02	0.01
Hr 21	1200	1193.96	1800	1193.93	-0.02
Hr 22	1200	1193.91	1080	1193.89	-0.01
Hr 23	1200	1193.86	1080	1193.85	-0.01
Hr 24	1200	1193.81	1080	1193.81	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	900	1194.97	720	1194.98	0.01
	900	1194.94	720	1194.96	0.02
	900	1194.91	720	1194.94	0.03
	900	1194.88	720	1194.92	0.04
	900	1194.84	720	1194.90	0.06
	900	1194.81	720	1194.88	0.07
	900	1194.78	720	1194.86	0.08
	900	1194.75	720	1194.84	0.09
	900	1194.72	720	1194.82	0.1
	900	1194.69	720	1194.80	0.11
	900	1194.66	720	1194.78	0.12
	900	1194.63	720	1194.76	0.13
	900	1194.60	720	1194.74	0.15
	900	1194.56	720	1194.72	0.16
	900	1194.53	720	1194.70	0.17
	900	1194.50	720	1194.68	0.18
	900	1194.47	720	1194.66	0.19
	900	1194.44	1800	1194.57	0.13
	900	1194.41	1800	1194.49	0.08
	900	1194.38	1800	1194.40	0.02
	900	1194.35	1800	1194.31	-0.03
	900	1194.32	720	1194.29	-0.02
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Start of Day Elevation = 1195



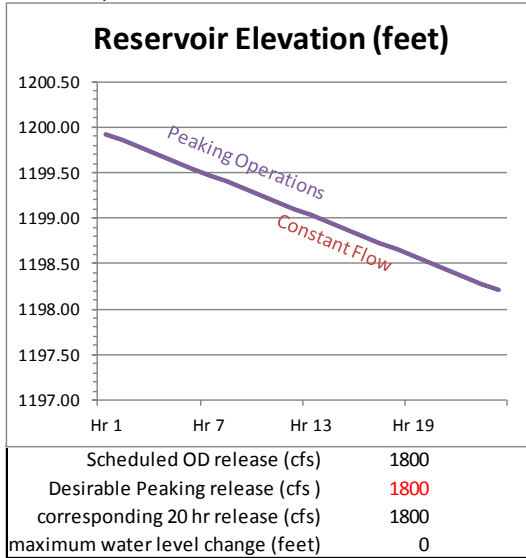
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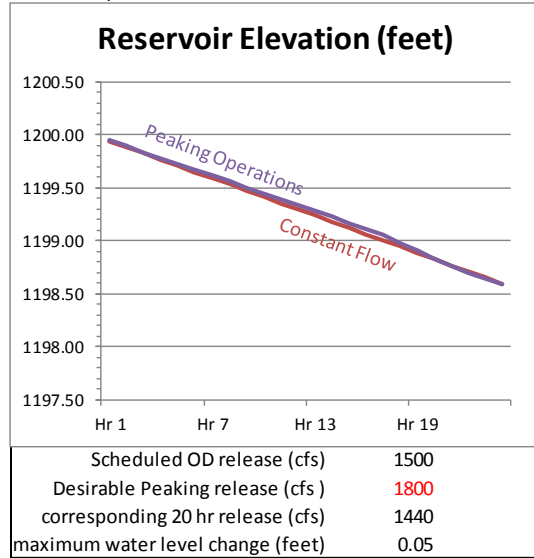
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Hr 3	600	1194.96	360	1195.01	0.04
Hr 4	600	1194.95	360	1195.01	0.06
Hr 5	600	1194.94	360	1195.01	0.07
Hr 6	600	1194.93	360	1195.01	0.09
Hr 7	600	1194.91	360	1195.02	0.1
Hr 8	600	1194.90	360	1195.02	0.12
Hr 9	600	1194.89	360	1195.02	0.13
Hr 10	600	1194.88	360	1195.02	0.15
Hr 11	600	1194.86	360	1195.03	0.16
Hr 12	600	1194.85	360	1195.03	0.18
Hr 13	600	1194.84	360	1195.03	0.19
Hr 14	600	1194.83	360	1195.03	0.21
Hr 15	600	1194.81	360	1195.04	0.22
Hr 16	600	1194.80	360	1195.04	0.24
Hr 17	600	1194.79	360	1195.04	0.25
Hr 18	600	1194.78	1800	1194.96	0.18
Hr 19	600	1194.76	1800	1194.87	0.1
Hr 20	600	1194.75	1800	1194.78	0.03
Hr 21	600	1194.74	1800	1194.69	-0.04
Hr 22	600	1194.73	360	1194.70	-0.03
Hr 23	600	1194.71	360	1194.70	-0.01
Hr 24	600	1194.70	360	1194.70	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
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	300	1195.01	300	1195.01	0
	300	1195.02	300	1195.02	0
	300	1195.02	300	1195.02	0
	300	1195.03	300	1195.03	0
	300	1195.04	300	1195.04	0
	300	1195.04	300	1195.04	0
	300	1195.05	300	1195.05	0
	300	1195.06	300	1195.06	0
	300	1195.06	300	1195.06	0
	300	1195.07	300	1195.07	0
	300	1195.07	300	1195.07	0
	300	1195.08	300	1195.08	0
	300	1195.09	300	1195.09	0
	300	1195.09	300	1195.09	0
	300	1195.10	300	1195.10	0
	300	1195.11	300	1195.11	0
	300	1195.11	300	1195.11	0
	300	1195.12	300	1195.12	0
	300	1195.12	300	1195.12	0
	300	1195.13	300	1195.13	0
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Start of Day Elevation = 1200



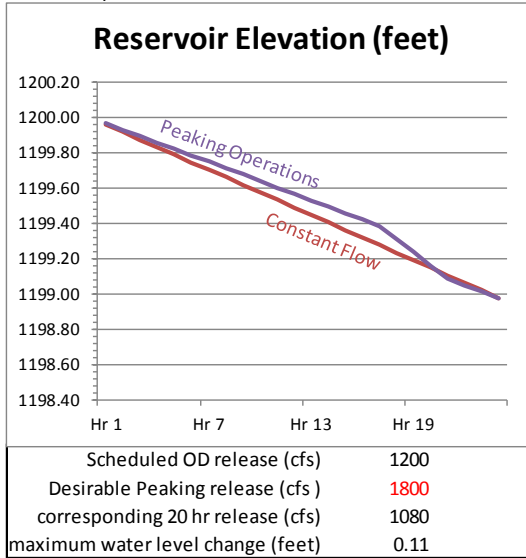
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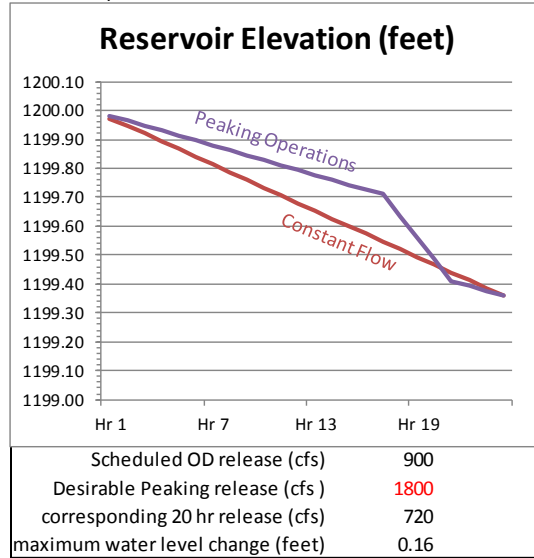
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	Release	Elev	Release	Elev	
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Hr 3	1800	1199.78	1800	1199.78	0
Hr 4	1800	1199.70	1800	1199.70	0
Hr 5	1800	1199.63	1800	1199.63	0
Hr 6	1800	1199.55	1800	1199.55	0
Hr 7	1800	1199.48	1800	1199.48	0
Hr 8	1800	1199.40	1800	1199.40	0
Hr 9	1800	1199.33	1800	1199.33	0
Hr 10	1800	1199.25	1800	1199.25	0
Hr 11	1800	1199.18	1800	1199.18	0
Hr 12	1800	1199.10	1800	1199.10	0
Hr 13	1800	1199.03	1800	1199.03	0
Hr 14	1800	1198.95	1800	1198.95	0
Hr 15	1800	1198.88	1800	1198.88	0
Hr 16	1800	1198.80	1800	1198.80	0
Hr 17	1800	1198.73	1800	1198.73	0
Hr 18	1800	1198.65	1800	1198.65	0
Hr 19	1800	1198.58	1800	1198.58	0
Hr 20	1800	1198.50	1800	1198.50	0
Hr 21	1800	1198.43	1800	1198.43	0
Hr 22	1800	1198.35	1800	1198.35	0
Hr 23	1800	1198.28	1800	1198.28	0
Hr 24	1800	1198.21	1800	1198.21	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	1500	1199.94	1440	1199.94	0
	1500	1199.88	1440	1199.89	0.01
	1500	1199.82	1440	1199.83	0.01
	1500	1199.76	1440	1199.78	0.01
	1500	1199.71	1440	1199.72	0.02
	1500	1199.65	1440	1199.67	0.02
	1500	1199.59	1440	1199.61	0.02
	1500	1199.53	1440	1199.56	0.03
	1500	1199.47	1440	1199.50	0.03
	1500	1199.41	1440	1199.44	0.03
	1500	1199.35	1440	1199.39	0.04
	1500	1199.29	1440	1199.33	0.04
	1500	1199.24	1440	1199.28	0.04
	1500	1199.18	1440	1199.22	0.04
	1500	1199.12	1440	1199.17	0.05
	1500	1199.06	1440	1199.11	0.05
	1500	1199.00	1440	1199.06	0.05
	1500	1198.94	1800	1198.98	0.04
	1500	1198.88	1800	1198.91	0.02
	1500	1198.82	1800	1198.83	0.01
	1500	1198.77	1800	1198.76	-0.01
	1500	1198.71	1440	1198.70	-0.01
	1500	1198.65	1440	1198.65	0
	1500	1198.59	1440	1198.59	0

Start of Day Elevation = 1200



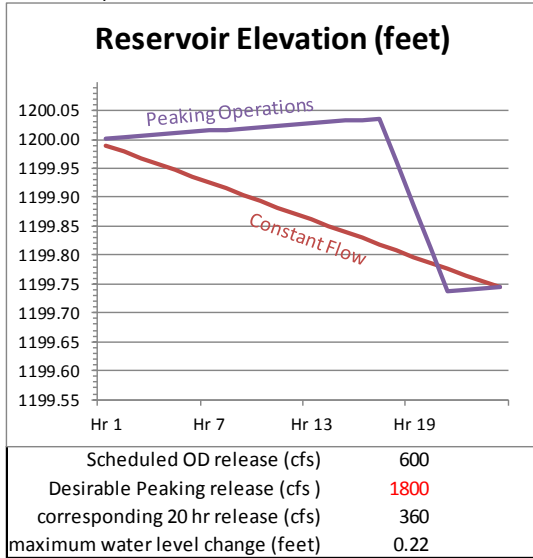
Start of Day Elevation = 1200



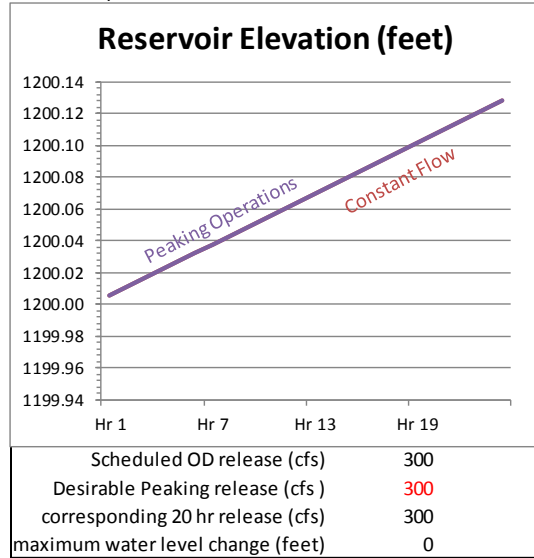
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	1200	1199.96	1080	1199.96	0.01
Hr 2	1200	1199.91	1080	1199.93	0.01
Hr 3	1200	1199.87	1080	1199.89	0.02
Hr 4	1200	1199.83	1080	1199.85	0.03
Hr 5	1200	1199.79	1080	1199.82	0.03
Hr 6	1200	1199.74	1080	1199.78	0.04
Hr 7	1200	1199.70	1080	1199.75	0.04
Hr 8	1200	1199.66	1080	1199.71	0.05
Hr 9	1200	1199.62	1080	1199.67	0.06
Hr 10	1200	1199.57	1080	1199.64	0.06
Hr 11	1200	1199.53	1080	1199.60	0.07
Hr 12	1200	1199.49	1080	1199.56	0.08
Hr 13	1200	1199.44	1080	1199.53	0.08
Hr 14	1200	1199.40	1080	1199.49	0.09
Hr 15	1200	1199.36	1080	1199.46	0.1
Hr 16	1200	1199.32	1080	1199.42	0.1
Hr 17	1200	1199.27	1080	1199.38	0.11
Hr 18	1200	1199.23	1800	1199.31	0.08
Hr 19	1200	1199.19	1800	1199.23	0.04
Hr 20	1200	1199.15	1800	1199.16	0.01
Hr 21	1200	1199.10	1800	1199.08	-0.02
Hr 22	1200	1199.06	1080	1199.05	-0.01
Hr 23	1200	1199.02	1080	1199.01	-0.01
Hr 24	1200	1198.97	1080	1198.97	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	900	1199.97	720	1199.98	0.01
	900	1199.95	720	1199.97	0.02
	900	1199.92	720	1199.95	0.03
	900	1199.89	720	1199.93	0.04
	900	1199.87	720	1199.91	0.05
	900	1199.84	720	1199.90	0.06
	900	1199.81	720	1199.88	0.07
	900	1199.79	720	1199.86	0.08
	900	1199.76	720	1199.85	0.09
	900	1199.73	720	1199.83	0.1
	900	1199.71	720	1199.81	0.11
	900	1199.68	720	1199.79	0.12
	900	1199.65	720	1199.78	0.13
	900	1199.63	720	1199.76	0.13
	900	1199.60	720	1199.74	0.14
	900	1199.57	720	1199.73	0.15
	900	1199.55	720	1199.71	0.16
	900	1199.52	1800	1199.63	0.12
	900	1199.49	1800	1199.56	0.07
	900	1199.47	1800	1199.49	0.02
	900	1199.44	1800	1199.41	-0.03
	900	1199.41	720	1199.39	-0.02
	900	1199.39	720	1199.38	-0.01
	900	1199.36	720	1199.36	0

Start of Day Elevation = 1200



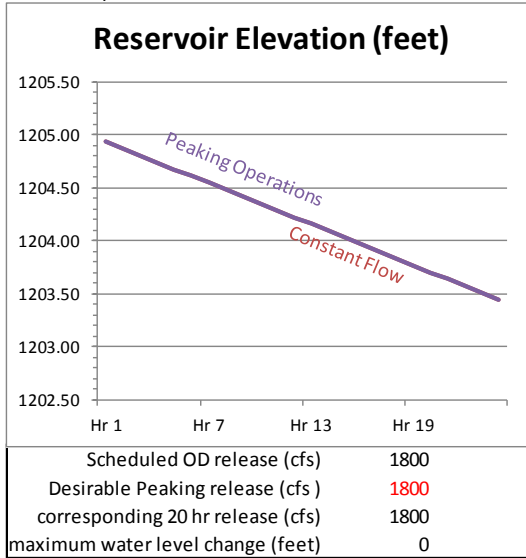
Start of Day Elevation = 1200



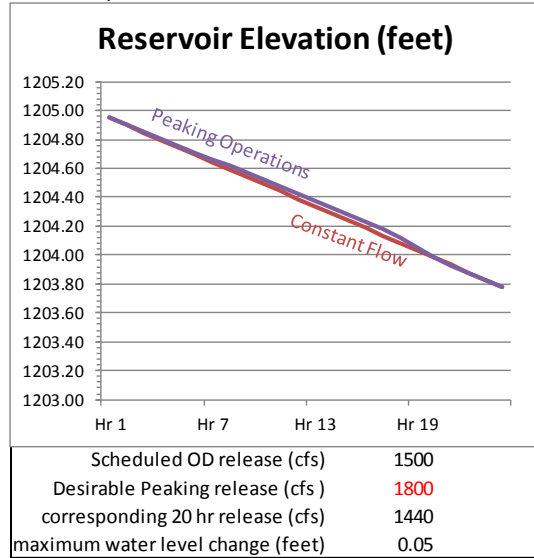
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	600	1199.99	360	1200.00	0.01
Hr 2	600	1199.98	360	1200.00	0.03
Hr 3	600	1199.97	360	1200.01	0.04
Hr 4	600	1199.96	360	1200.01	0.05
Hr 5	600	1199.95	360	1200.01	0.06
Hr 6	600	1199.94	360	1200.01	0.08
Hr 7	600	1199.93	360	1200.01	0.09
Hr 8	600	1199.91	360	1200.02	0.1
Hr 9	600	1199.90	360	1200.02	0.12
Hr 10	600	1199.89	360	1200.02	0.13
Hr 11	600	1199.88	360	1200.02	0.14
Hr 12	600	1199.87	360	1200.03	0.15
Hr 13	600	1199.86	360	1200.03	0.17
Hr 14	600	1199.85	360	1200.03	0.18
Hr 15	600	1199.84	360	1200.03	0.19
Hr 16	600	1199.83	360	1200.03	0.21
Hr 17	600	1199.82	360	1200.04	0.22
Hr 18	600	1199.81	1800	1199.96	0.15
Hr 19	600	1199.80	1800	1199.89	0.09
Hr 20	600	1199.79	1800	1199.81	0.03
Hr 21	600	1199.78	1800	1199.74	-0.04
Hr 22	600	1199.76	360	1199.74	-0.03
Hr 23	600	1199.75	360	1199.74	-0.01
Hr 24	600	1199.74	360	1199.74	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	300	1200.01	300	1200.01	0
	300	1200.01	300	1200.01	0
	300	1200.02	300	1200.02	0
	300	1200.02	300	1200.02	0
	300	1200.03	300	1200.03	0
	300	1200.03	300	1200.03	0
	300	1200.04	300	1200.04	0
	300	1200.04	300	1200.04	0
	300	1200.05	300	1200.05	0
	300	1200.05	300	1200.05	0
	300	1200.06	300	1200.06	0
	300	1200.06	300	1200.06	0
	300	1200.07	300	1200.07	0
	300	1200.07	300	1200.07	0
	300	1200.08	300	1200.08	0
	300	1200.09	300	1200.09	0
	300	1200.09	300	1200.09	0
	300	1200.10	300	1200.10	0
	300	1200.10	300	1200.10	0
	300	1200.11	300	1200.11	0
	300	1200.11	300	1200.11	0
	300	1200.12	300	1200.12	0
	300	1200.12	300	1200.12	0
	300	1200.13	300	1200.13	0

Start of Day Elevation = 1205



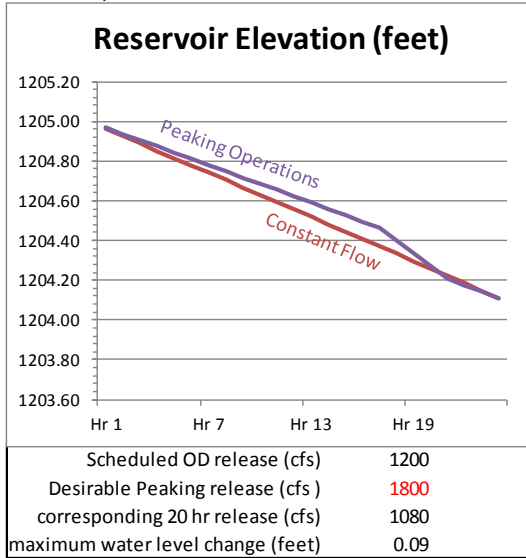
Start of Day Elevation = 1205



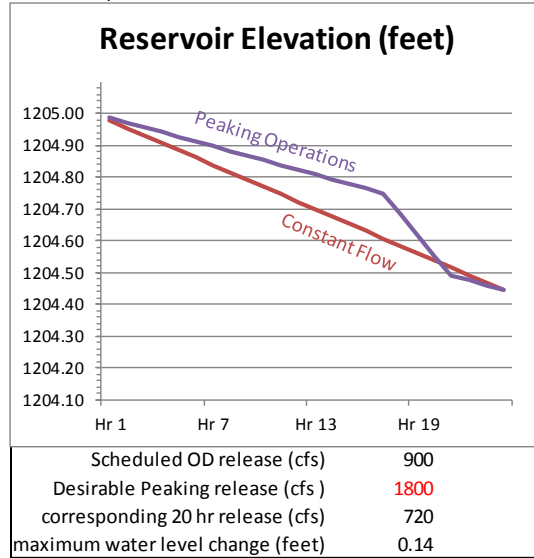
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	1800	1204.94	1800	1204.94	0
Hr 2	1800	1204.87	1800	1204.87	0
Hr 3	1800	1204.81	1800	1204.81	0
Hr 4	1800	1204.74	1800	1204.74	0
Hr 5	1800	1204.68	1800	1204.68	0
Hr 6	1800	1204.61	1800	1204.61	0
Hr 7	1800	1204.55	1800	1204.55	0
Hr 8	1800	1204.48	1800	1204.48	0
Hr 9	1800	1204.42	1800	1204.42	0
Hr 10	1800	1204.35	1800	1204.35	0
Hr 11	1800	1204.29	1800	1204.29	0
Hr 12	1800	1204.22	1800	1204.22	0
Hr 13	1800	1204.16	1800	1204.16	0
Hr 14	1800	1204.09	1800	1204.09	0
Hr 15	1800	1204.03	1800	1204.03	0
Hr 16	1800	1203.96	1800	1203.96	0
Hr 17	1800	1203.90	1800	1203.90	0
Hr 18	1800	1203.83	1800	1203.83	0
Hr 19	1800	1203.77	1800	1203.77	0
Hr 20	1800	1203.70	1800	1203.70	0
Hr 21	1800	1203.64	1800	1203.64	0
Hr 22	1800	1203.57	1800	1203.57	0
Hr 23	1800	1203.51	1800	1203.51	0
Hr 24	1800	1203.44	1800	1203.44	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	1500	1204.95	1440	1204.95	0
	1500	1204.90	1440	1204.90	0.01
	1500	1204.85	1440	1204.86	0.01
	1500	1204.80	1440	1204.81	0.01
	1500	1204.75	1440	1204.76	0.01
	1500	1204.69	1440	1204.71	0.02
	1500	1204.64	1440	1204.66	0.02
	1500	1204.59	1440	1204.61	0.02
	1500	1204.54	1440	1204.57	0.02
	1500	1204.49	1440	1204.52	0.03
	1500	1204.44	1440	1204.47	0.03
	1500	1204.39	1440	1204.42	0.03
	1500	1204.34	1440	1204.37	0.04
	1500	1204.29	1440	1204.33	0.04
	1500	1204.24	1440	1204.28	0.04
	1500	1204.19	1440	1204.23	0.04
	1500	1204.13	1440	1204.18	0.05
	1500	1204.08	1800	1204.12	0.03
	1500	1204.03	1800	1204.05	0.02
	1500	1203.98	1800	1203.99	0.01
	1500	1203.93	1800	1203.92	-0.01
	1500	1203.88	1440	1203.87	-0.01
	1500	1203.83	1440	1203.83	0
	1500	1203.78	1440	1203.78	0

Start of Day Elevation = 1205



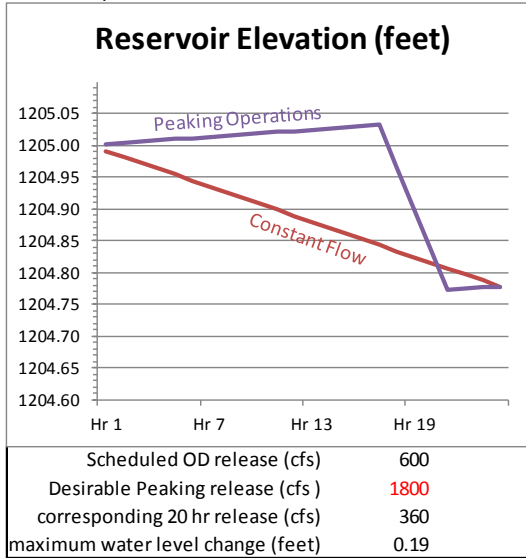
Start of Day Elevation = 1205



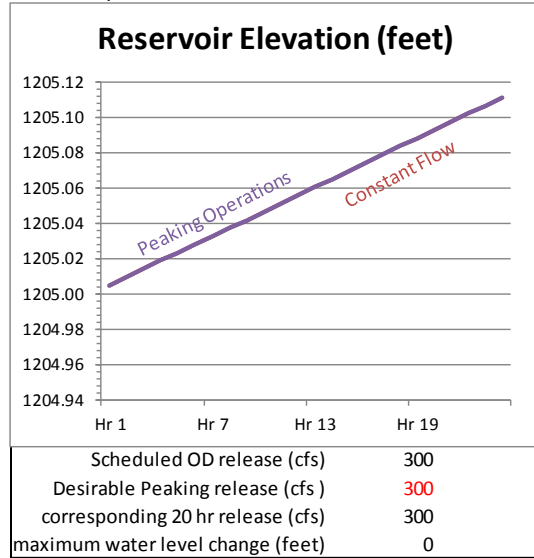
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	1200	1204.96	1080	1204.97	0.01
Hr 2	1200	1204.93	1080	1204.94	0.01
Hr 3	1200	1204.89	1080	1204.91	0.02
Hr 4	1200	1204.85	1080	1204.87	0.02
Hr 5	1200	1204.81	1080	1204.84	0.03
Hr 6	1200	1204.78	1080	1204.81	0.03
Hr 7	1200	1204.74	1080	1204.78	0.04
Hr 8	1200	1204.70	1080	1204.75	0.04
Hr 9	1200	1204.67	1080	1204.72	0.05
Hr 10	1200	1204.63	1080	1204.69	0.06
Hr 11	1200	1204.59	1080	1204.65	0.06
Hr 12	1200	1204.56	1080	1204.62	0.07
Hr 13	1200	1204.52	1080	1204.59	0.07
Hr 14	1200	1204.48	1080	1204.56	0.08
Hr 15	1200	1204.44	1080	1204.53	0.08
Hr 16	1200	1204.41	1080	1204.50	0.09
Hr 17	1200	1204.37	1080	1204.46	0.09
Hr 18	1200	1204.33	1800	1204.40	0.07
Hr 19	1200	1204.30	1800	1204.34	0.04
Hr 20	1200	1204.26	1800	1204.27	0.01
Hr 21	1200	1204.22	1800	1204.21	-0.02
Hr 22	1200	1204.19	1080	1204.17	-0.01
Hr 23	1200	1204.15	1080	1204.14	-0.01
Hr 24	1200	1204.11	1080	1204.11	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	900	1204.98	720	1204.99	0.01
	900	1204.95	720	1204.97	0.02
	900	1204.93	720	1204.96	0.02
	900	1204.91	720	1204.94	0.03
	900	1204.88	720	1204.93	0.04
	900	1204.86	720	1204.91	0.05
	900	1204.84	720	1204.90	0.06
	900	1204.81	720	1204.88	0.07
	900	1204.79	720	1204.87	0.07
	900	1204.77	720	1204.85	0.08
	900	1204.75	720	1204.84	0.09
	900	1204.72	720	1204.82	0.1
	900	1204.70	720	1204.81	0.11
	900	1204.68	720	1204.79	0.12
	900	1204.65	720	1204.78	0.12
	900	1204.63	720	1204.76	0.13
	900	1204.61	720	1204.75	0.14
	900	1204.58	1800	1204.68	0.1
	900	1204.56	1800	1204.62	0.06
	900	1204.54	1800	1204.55	0.02
	900	1204.51	1800	1204.49	-0.03
	900	1204.49	720	1204.47	-0.02
	900	1204.47	720	1204.46	-0.01
	900	1204.44	720	1204.44	0

Start of Day Elevation = 1205



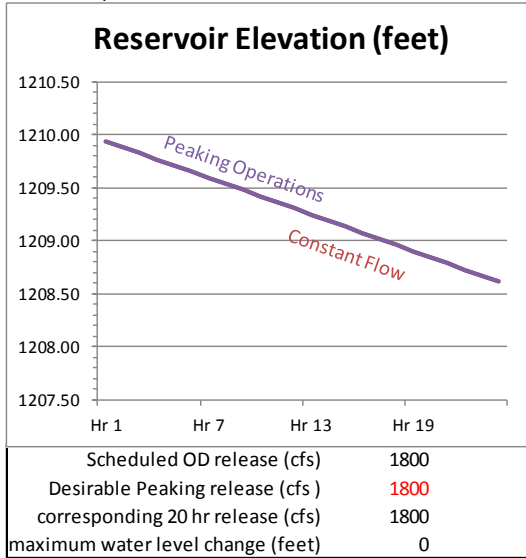
Start of Day Elevation = 1205



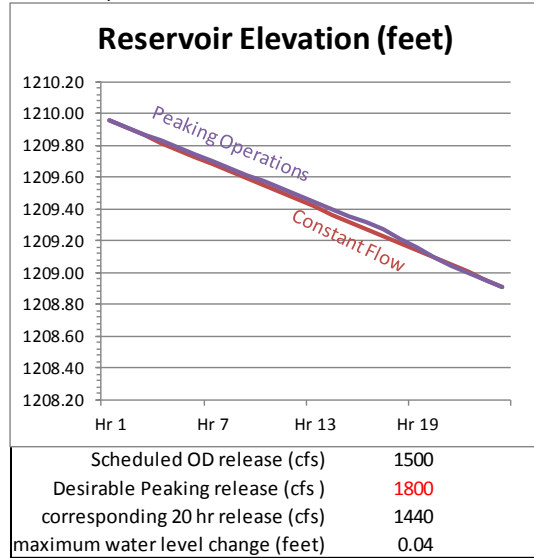
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	600	1204.99	360	1205.00	0.01
Hr 2	600	1204.98	360	1205.00	0.02
Hr 3	600	1204.97	360	1205.01	0.03
Hr 4	600	1204.96	360	1205.01	0.04
Hr 5	600	1204.95	360	1205.01	0.06
Hr 6	600	1204.94	360	1205.01	0.07
Hr 7	600	1204.94	360	1205.01	0.08
Hr 8	600	1204.93	360	1205.01	0.09
Hr 9	600	1204.92	360	1205.02	0.1
Hr 10	600	1204.91	360	1205.02	0.11
Hr 11	600	1204.90	360	1205.02	0.12
Hr 12	600	1204.89	360	1205.02	0.13
Hr 13	600	1204.88	360	1205.02	0.14
Hr 14	600	1204.87	360	1205.03	0.16
Hr 15	600	1204.86	360	1205.03	0.17
Hr 16	600	1204.85	360	1205.03	0.18
Hr 17	600	1204.84	360	1205.03	0.19
Hr 18	600	1204.83	1800	1204.97	0.13
Hr 19	600	1204.82	1800	1204.90	0.08
Hr 20	600	1204.81	1800	1204.84	0.02
Hr 21	600	1204.81	1800	1204.77	-0.03
Hr 22	600	1204.80	360	1204.77	-0.02
Hr 23	600	1204.79	360	1204.78	-0.01
Hr 24	600	1204.78	360	1204.78	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	300	1205.00	300	1205.00	0
	300	1205.01	300	1205.01	0
	300	1205.01	300	1205.01	0
	300	1205.02	300	1205.02	0
	300	1205.02	300	1205.02	0
	300	1205.03	300	1205.03	0
	300	1205.03	300	1205.03	0
	300	1205.04	300	1205.04	0
	300	1205.04	300	1205.04	0
	300	1205.05	300	1205.05	0
	300	1205.05	300	1205.05	0
	300	1205.06	300	1205.06	0
	300	1205.06	300	1205.06	0
	300	1205.07	300	1205.07	0
	300	1205.07	300	1205.07	0
	300	1205.08	300	1205.08	0
	300	1205.08	300	1205.08	0
	300	1205.09	300	1205.09	0
	300	1205.09	300	1205.09	0
	300	1205.10	300	1205.10	0
	300	1205.10	300	1205.10	0
	300	1205.11	300	1205.11	0
	300	1205.11	300	1205.11	0

Start of Day Elevation = 1210



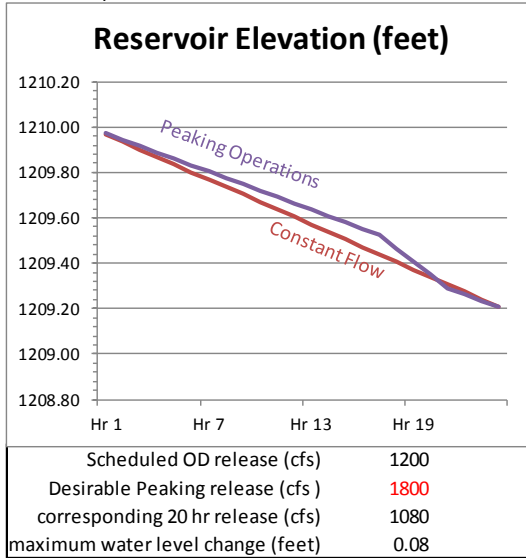
Start of Day Elevation = 1210



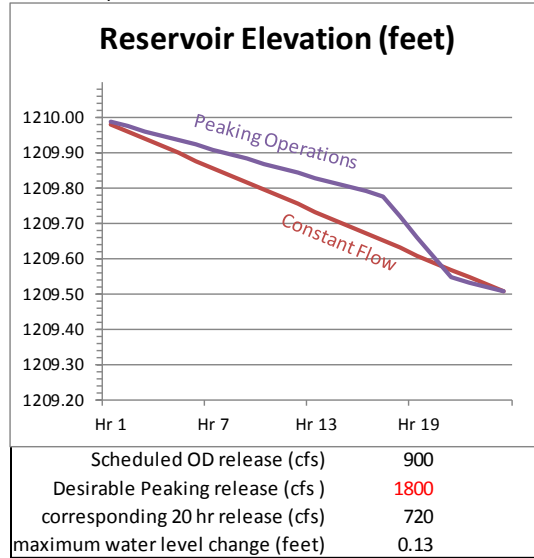
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	1800	1209.94	1800	1209.94	0
Hr 2	1800	1209.88	1800	1209.88	0
Hr 3	1800	1209.83	1800	1209.83	0
Hr 4	1800	1209.77	1800	1209.77	0
Hr 5	1800	1209.71	1800	1209.71	0
Hr 6	1800	1209.65	1800	1209.65	0
Hr 7	1800	1209.60	1800	1209.60	0
Hr 8	1800	1209.54	1800	1209.54	0
Hr 9	1800	1209.48	1800	1209.48	0
Hr 10	1800	1209.42	1800	1209.42	0
Hr 11	1800	1209.36	1800	1209.36	0
Hr 12	1800	1209.31	1800	1209.31	0
Hr 13	1800	1209.25	1800	1209.25	0
Hr 14	1800	1209.19	1800	1209.19	0
Hr 15	1800	1209.13	1800	1209.13	0
Hr 16	1800	1209.08	1800	1209.08	0
Hr 17	1800	1209.02	1800	1209.02	0
Hr 18	1800	1208.96	1800	1208.96	0
Hr 19	1800	1208.90	1800	1208.90	0
Hr 20	1800	1208.84	1800	1208.84	0
Hr 21	1800	1208.79	1800	1208.79	0
Hr 22	1800	1208.73	1800	1208.73	0
Hr 23	1800	1208.67	1800	1208.67	0
Hr 24	1800	1208.61	1800	1208.61	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	1500	1209.95	1440	1209.96	0
	1500	1209.91	1440	1209.91	0
	1500	1209.86	1440	1209.87	0.01
	1500	1209.82	1440	1209.83	0.01
	1500	1209.77	1440	1209.79	0.01
	1500	1209.73	1440	1209.74	0.01
	1500	1209.68	1440	1209.70	0.02
	1500	1209.64	1440	1209.66	0.02
	1500	1209.59	1440	1209.61	0.02
	1500	1209.55	1440	1209.57	0.02
	1500	1209.50	1440	1209.53	0.03
	1500	1209.46	1440	1209.49	0.03
	1500	1209.41	1440	1209.44	0.03
	1500	1209.36	1440	1209.40	0.03
	1500	1209.32	1440	1209.36	0.04
	1500	1209.27	1440	1209.31	0.04
	1500	1209.23	1440	1209.27	0.04
	1500	1209.18	1800	1209.21	0.03
	1500	1209.14	1800	1209.16	0.02
	1500	1209.09	1800	1209.10	0
	1500	1209.05	1800	1209.04	-0.01
	1500	1209.00	1440	1209.00	0
	1500	1208.96	1440	1208.95	0
	1500	1208.91	1440	1208.91	0

Start of Day Elevation = 1210



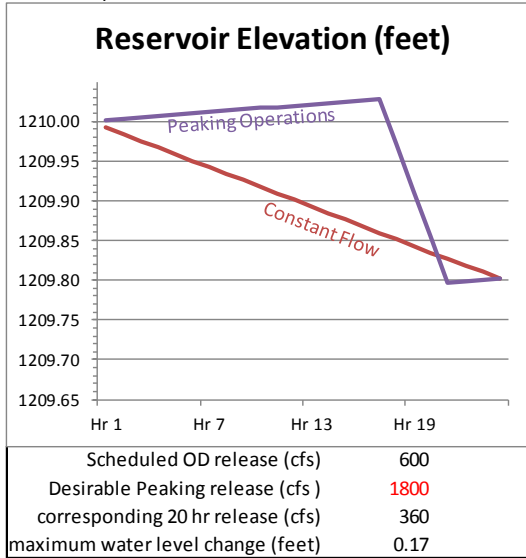
Start of Day Elevation = 1210



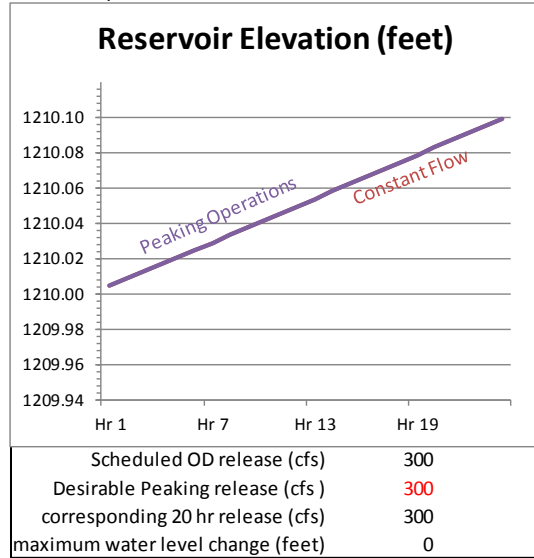
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	1200	1209.97	1080	1209.97	0
Hr 2	1200	1209.93	1080	1209.94	0.01
Hr 3	1200	1209.90	1080	1209.92	0.01
Hr 4	1200	1209.87	1080	1209.89	0.02
Hr 5	1200	1209.83	1080	1209.86	0.02
Hr 6	1200	1209.80	1080	1209.83	0.03
Hr 7	1200	1209.77	1080	1209.80	0.03
Hr 8	1200	1209.74	1080	1209.78	0.04
Hr 9	1200	1209.70	1080	1209.75	0.04
Hr 10	1200	1209.67	1080	1209.72	0.05
Hr 11	1200	1209.64	1080	1209.69	0.05
Hr 12	1200	1209.60	1080	1209.66	0.06
Hr 13	1200	1209.57	1080	1209.64	0.06
Hr 14	1200	1209.54	1080	1209.61	0.07
Hr 15	1200	1209.50	1080	1209.58	0.07
Hr 16	1200	1209.47	1080	1209.55	0.08
Hr 17	1200	1209.44	1080	1209.52	0.08
Hr 18	1200	1209.41	1800	1209.47	0.06
Hr 19	1200	1209.37	1800	1209.41	0.03
Hr 20	1200	1209.34	1800	1209.35	0.01
Hr 21	1200	1209.31	1800	1209.29	-0.01
Hr 22	1200	1209.27	1080	1209.26	-0.01
Hr 23	1200	1209.24	1080	1209.24	0
Hr 24	1200	1209.21	1080	1209.21	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	900	1209.98	720	1209.99	0.01
	900	1209.96	720	1209.97	0.01
	900	1209.94	720	1209.96	0.02
	900	1209.92	720	1209.95	0.03
	900	1209.90	720	1209.93	0.04
	900	1209.88	720	1209.92	0.04
	900	1209.86	720	1209.91	0.05
	900	1209.83	720	1209.89	0.06
	900	1209.81	720	1209.88	0.07
	900	1209.79	720	1209.87	0.07
	900	1209.77	720	1209.85	0.08
	900	1209.75	720	1209.84	0.09
	900	1209.73	720	1209.83	0.1
	900	1209.71	720	1209.82	0.1
	900	1209.69	720	1209.80	0.11
	900	1209.67	720	1209.79	0.12
	900	1209.65	720	1209.78	0.13
	900	1209.63	1800	1209.72	0.09
	900	1209.61	1800	1209.66	0.05
	900	1209.59	1800	1209.60	0.01
	900	1209.57	1800	1209.54	-0.02
	900	1209.55	720	1209.53	-0.01
	900	1209.53	720	1209.52	-0.01
	900	1209.50	720	1209.50	0

Start of Day Elevation = 1210



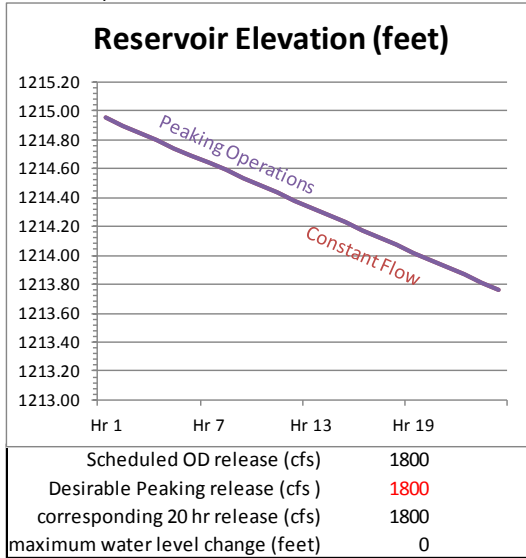
Start of Day Elevation = 1210



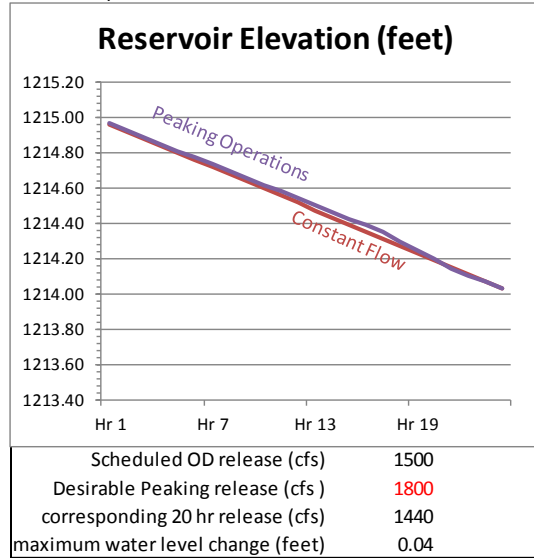
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	600	1209.99	360	1210.00	0.01
Hr 2	600	1209.98	360	1210.00	0.02
Hr 3	600	1209.98	360	1210.00	0.03
Hr 4	600	1209.97	360	1210.01	0.04
Hr 5	600	1209.96	360	1210.01	0.05
Hr 6	600	1209.95	360	1210.01	0.06
Hr 7	600	1209.94	360	1210.01	0.07
Hr 8	600	1209.93	360	1210.01	0.08
Hr 9	600	1209.93	360	1210.01	0.09
Hr 10	600	1209.92	360	1210.02	0.1
Hr 11	600	1209.91	360	1210.02	0.11
Hr 12	600	1209.90	360	1210.02	0.12
Hr 13	600	1209.89	360	1210.02	0.13
Hr 14	600	1209.88	360	1210.02	0.14
Hr 15	600	1209.88	360	1210.02	0.15
Hr 16	600	1209.87	360	1210.03	0.16
Hr 17	600	1209.86	360	1210.03	0.17
Hr 18	600	1209.85	1800	1209.97	0.12
Hr 19	600	1209.84	1800	1209.91	0.07
Hr 20	600	1209.83	1800	1209.85	0.02
Hr 21	600	1209.83	1800	1209.80	-0.03
Hr 22	600	1209.82	360	1209.80	-0.02
Hr 23	600	1209.81	360	1209.80	-0.01
Hr 24	600	1209.80	360	1209.80	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	300	1210.00	300	1210.00	0
	300	1210.01	300	1210.01	0
	300	1210.01	300	1210.01	0
	300	1210.02	300	1210.02	0
	300	1210.02	300	1210.02	0
	300	1210.02	300	1210.02	0
	300	1210.03	300	1210.03	0
	300	1210.03	300	1210.03	0
	300	1210.04	300	1210.04	0
	300	1210.04	300	1210.04	0
	300	1210.05	300	1210.05	0
	300	1210.05	300	1210.05	0
	300	1210.05	300	1210.05	0
	300	1210.06	300	1210.06	0
	300	1210.06	300	1210.06	0
	300	1210.07	300	1210.07	0
	300	1210.07	300	1210.07	0
	300	1210.08	300	1210.08	0
	300	1210.08	300	1210.08	0
	300	1210.09	300	1210.09	0
	300	1210.09	300	1210.09	0
	300	1210.10	300	1210.10	0

Start of Day Elevation = 1215



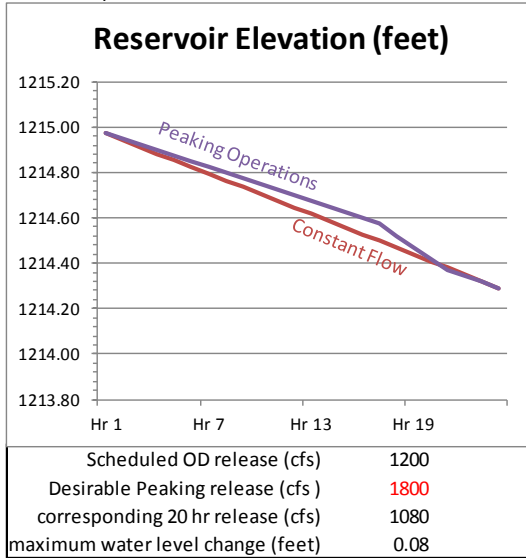
Start of Day Elevation = 1215



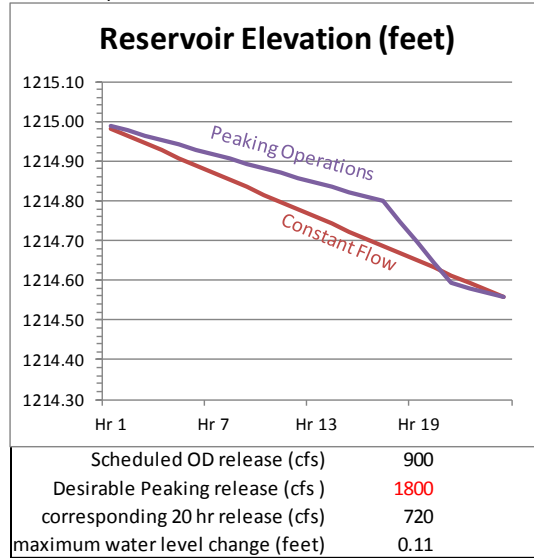
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	1800	1214.95	1800	1214.95	0
Hr 2	1800	1214.90	1800	1214.90	0
Hr 3	1800	1214.85	1800	1214.85	0
Hr 4	1800	1214.79	1800	1214.79	0
Hr 5	1800	1214.74	1800	1214.74	0
Hr 6	1800	1214.69	1800	1214.69	0
Hr 7	1800	1214.64	1800	1214.64	0
Hr 8	1800	1214.59	1800	1214.59	0
Hr 9	1800	1214.54	1800	1214.54	0
Hr 10	1800	1214.48	1800	1214.48	0
Hr 11	1800	1214.43	1800	1214.43	0
Hr 12	1800	1214.38	1800	1214.38	0
Hr 13	1800	1214.33	1800	1214.33	0
Hr 14	1800	1214.28	1800	1214.28	0
Hr 15	1800	1214.23	1800	1214.23	0
Hr 16	1800	1214.17	1800	1214.17	0
Hr 17	1800	1214.12	1800	1214.12	0
Hr 18	1800	1214.07	1800	1214.07	0
Hr 19	1800	1214.02	1800	1214.02	0
Hr 20	1800	1213.97	1800	1213.97	0
Hr 21	1800	1213.92	1800	1213.92	0
Hr 22	1800	1213.86	1800	1213.86	0
Hr 23	1800	1213.81	1800	1213.81	0
Hr 24	1800	1213.76	1800	1213.76	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	1500	1214.96	1440	1214.96	0
	1500	1214.92	1440	1214.92	0
	1500	1214.88	1440	1214.88	0.01
	1500	1214.84	1440	1214.85	0.01
	1500	1214.80	1440	1214.81	0.01
	1500	1214.76	1440	1214.77	0.01
	1500	1214.72	1440	1214.73	0.02
	1500	1214.68	1440	1214.69	0.02
	1500	1214.63	1440	1214.65	0.02
	1500	1214.59	1440	1214.62	0.02
	1500	1214.55	1440	1214.58	0.02
	1500	1214.51	1440	1214.54	0.03
	1500	1214.47	1440	1214.50	0.03
	1500	1214.43	1440	1214.46	0.03
	1500	1214.39	1440	1214.42	0.03
	1500	1214.35	1440	1214.39	0.04
	1500	1214.31	1440	1214.35	0.04
	1500	1214.27	1800	1214.30	0.03
	1500	1214.23	1800	1214.24	0.02
	1500	1214.19	1800	1214.19	0
	1500	1214.15	1800	1214.14	-0.01
	1500	1214.11	1440	1214.10	0
	1500	1214.07	1440	1214.06	0
	1500	1214.03	1440	1214.03	0

Start of Day Elevation = 1215



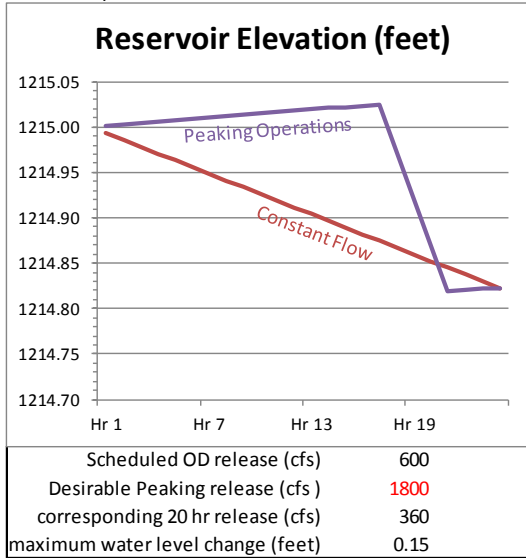
Start of Day Elevation = 1215



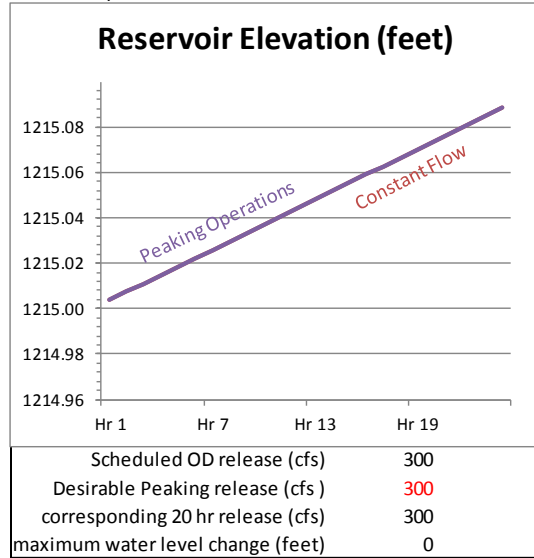
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	1200	1214.97	1080	1214.97	0
Hr 2	1200	1214.94	1080	1214.95	0.01
Hr 3	1200	1214.91	1080	1214.92	0.01
Hr 4	1200	1214.88	1080	1214.90	0.02
Hr 5	1200	1214.85	1080	1214.87	0.02
Hr 6	1200	1214.82	1080	1214.85	0.03
Hr 7	1200	1214.79	1080	1214.82	0.03
Hr 8	1200	1214.76	1080	1214.80	0.04
Hr 9	1200	1214.73	1080	1214.77	0.04
Hr 10	1200	1214.71	1080	1214.75	0.04
Hr 11	1200	1214.68	1080	1214.72	0.05
Hr 12	1200	1214.65	1080	1214.70	0.05
Hr 13	1200	1214.62	1080	1214.67	0.06
Hr 14	1200	1214.59	1080	1214.65	0.06
Hr 15	1200	1214.56	1080	1214.62	0.07
Hr 16	1200	1214.53	1080	1214.60	0.07
Hr 17	1200	1214.50	1080	1214.57	0.08
Hr 18	1200	1214.47	1800	1214.52	0.05
Hr 19	1200	1214.44	1800	1214.47	0.03
Hr 20	1200	1214.41	1800	1214.42	0.01
Hr 21	1200	1214.38	1800	1214.37	-0.01
Hr 22	1200	1214.35	1080	1214.34	-0.01
Hr 23	1200	1214.32	1080	1214.32	0
Hr 24	1200	1214.29	1080	1214.29	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	900	1214.98	720	1214.99	0.01
	900	1214.96	720	1214.98	0.01
	900	1214.94	720	1214.96	0.02
	900	1214.93	720	1214.95	0.03
	900	1214.91	720	1214.94	0.03
	900	1214.89	720	1214.93	0.04
	900	1214.87	720	1214.92	0.05
	900	1214.85	720	1214.91	0.05
	900	1214.83	720	1214.89	0.06
	900	1214.82	720	1214.88	0.07
	900	1214.80	720	1214.87	0.07
	900	1214.78	720	1214.86	0.08
	900	1214.76	720	1214.85	0.09
	900	1214.74	720	1214.83	0.09
	900	1214.72	720	1214.82	0.1
	900	1214.71	720	1214.81	0.11
	900	1214.69	720	1214.80	0.11
	900	1214.67	1800	1214.75	0.08
	900	1214.65	1800	1214.70	0.05
	900	1214.63	1800	1214.64	0.01
	900	1214.61	1800	1214.59	-0.02
	900	1214.59	720	1214.58	-0.01
	900	1214.58	720	1214.57	-0.01
	900	1214.56	720	1214.56	0

Start of Day Elevation = 1215



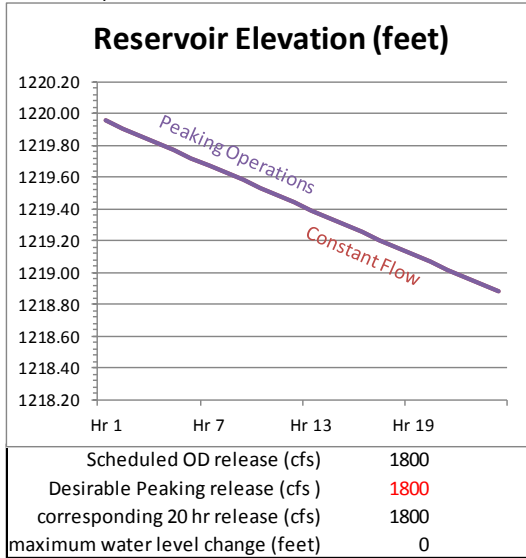
Start of Day Elevation = 1215



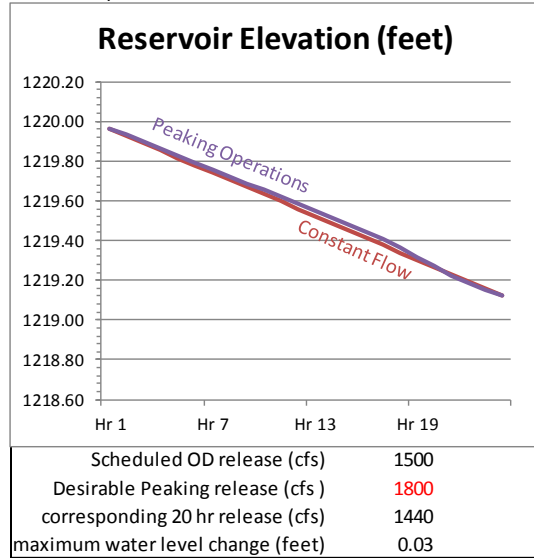
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	600	1214.99	360	1215.00	0.01
Hr 2	600	1214.99	360	1215.00	0.02
Hr 3	600	1214.98	360	1215.00	0.03
Hr 4	600	1214.97	360	1215.01	0.04
Hr 5	600	1214.96	360	1215.01	0.04
Hr 6	600	1214.96	360	1215.01	0.05
Hr 7	600	1214.95	360	1215.01	0.06
Hr 8	600	1214.94	360	1215.01	0.07
Hr 9	600	1214.93	360	1215.01	0.08
Hr 10	600	1214.93	360	1215.01	0.09
Hr 11	600	1214.92	360	1215.02	0.1
Hr 12	600	1214.91	360	1215.02	0.11
Hr 13	600	1214.90	360	1215.02	0.12
Hr 14	600	1214.90	360	1215.02	0.12
Hr 15	600	1214.89	360	1215.02	0.13
Hr 16	600	1214.88	360	1215.02	0.14
Hr 17	600	1214.87	360	1215.03	0.15
Hr 18	600	1214.87	1800	1214.97	0.11
Hr 19	600	1214.86	1800	1214.92	0.06
Hr 20	600	1214.85	1800	1214.87	0.02
Hr 21	600	1214.85	1800	1214.82	-0.03
Hr 22	600	1214.84	360	1214.82	-0.02
Hr 23	600	1214.83	360	1214.82	-0.01
Hr 24	600	1214.82	360	1214.82	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	300	1215.00	300	1215.00	0
	300	1215.01	300	1215.01	0
	300	1215.01	300	1215.01	0
	300	1215.01	300	1215.01	0
	300	1215.02	300	1215.02	0
	300	1215.02	300	1215.02	0
	300	1215.03	300	1215.03	0
	300	1215.03	300	1215.03	0
	300	1215.03	300	1215.03	0
	300	1215.04	300	1215.04	0
	300	1215.04	300	1215.04	0
	300	1215.04	300	1215.04	0
	300	1215.05	300	1215.05	0
	300	1215.05	300	1215.05	0
	300	1215.06	300	1215.06	0
	300	1215.06	300	1215.06	0
	300	1215.06	300	1215.06	0
	300	1215.07	300	1215.07	0
	300	1215.07	300	1215.07	0
	300	1215.07	300	1215.07	0
	300	1215.08	300	1215.08	0
	300	1215.08	300	1215.08	0
	300	1215.08	300	1215.08	0
	300	1215.09	300	1215.09	0

Start of Day Elevation = 1220



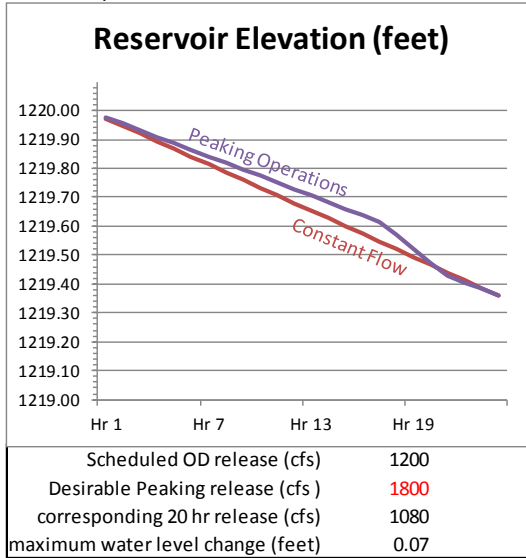
Start of Day Elevation = 1220



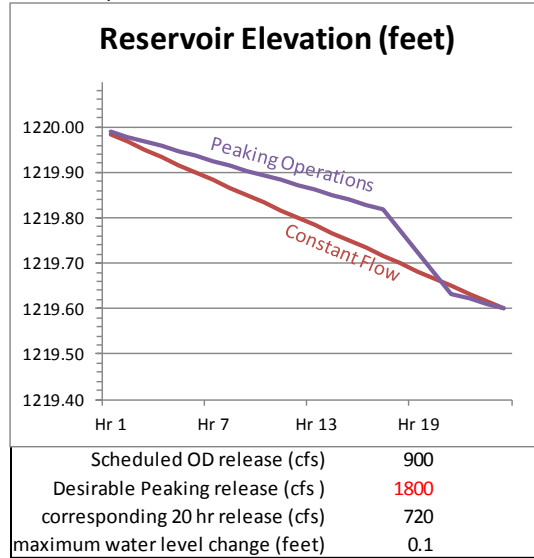
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	1800	1219.95	1800	1219.95	0
Hr 2	1800	1219.91	1800	1219.91	0
Hr 3	1800	1219.86	1800	1219.86	0
Hr 4	1800	1219.81	1800	1219.81	0
Hr 5	1800	1219.77	1800	1219.77	0
Hr 6	1800	1219.72	1800	1219.72	0
Hr 7	1800	1219.67	1800	1219.67	0
Hr 8	1800	1219.63	1800	1219.63	0
Hr 9	1800	1219.58	1800	1219.58	0
Hr 10	1800	1219.53	1800	1219.53	0
Hr 11	1800	1219.49	1800	1219.49	0
Hr 12	1800	1219.44	1800	1219.44	0
Hr 13	1800	1219.39	1800	1219.39	0
Hr 14	1800	1219.35	1800	1219.35	0
Hr 15	1800	1219.30	1800	1219.30	0
Hr 16	1800	1219.25	1800	1219.25	0
Hr 17	1800	1219.21	1800	1219.21	0
Hr 18	1800	1219.16	1800	1219.16	0
Hr 19	1800	1219.11	1800	1219.11	0
Hr 20	1800	1219.07	1800	1219.07	0
Hr 21	1800	1219.02	1800	1219.02	0
Hr 22	1800	1218.97	1800	1218.97	0
Hr 23	1800	1218.93	1800	1218.93	0
Hr 24	1800	1218.88	1800	1218.88	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	1500	1219.96	1440	1219.97	0
	1500	1219.93	1440	1219.93	0
	1500	1219.89	1440	1219.90	0.01
	1500	1219.85	1440	1219.86	0.01
	1500	1219.82	1440	1219.83	0.01
	1500	1219.78	1440	1219.79	0.01
	1500	1219.74	1440	1219.76	0.01
	1500	1219.71	1440	1219.72	0.02
	1500	1219.67	1440	1219.69	0.02
	1500	1219.63	1440	1219.65	0.02
	1500	1219.60	1440	1219.62	0.02
	1500	1219.56	1440	1219.58	0.02
	1500	1219.52	1440	1219.55	0.03
	1500	1219.49	1440	1219.51	0.03
	1500	1219.45	1440	1219.48	0.03
	1500	1219.41	1440	1219.45	0.03
	1500	1219.38	1440	1219.41	0.03
	1500	1219.34	1800	1219.36	0.02
	1500	1219.30	1800	1219.32	0.01
	1500	1219.27	1800	1219.27	0
	1500	1219.23	1800	1219.22	-0.01
	1500	1219.19	1440	1219.19	0
	1500	1219.16	1440	1219.15	0
	1500	1219.12	1440	1219.12	0

Start of Day Elevation = 1220



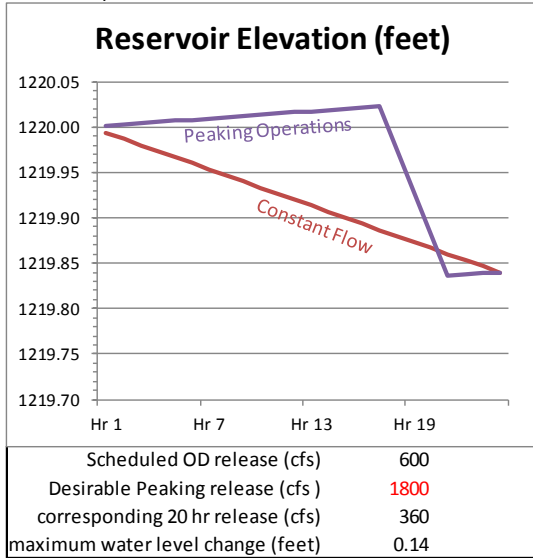
Start of Day Elevation = 1220



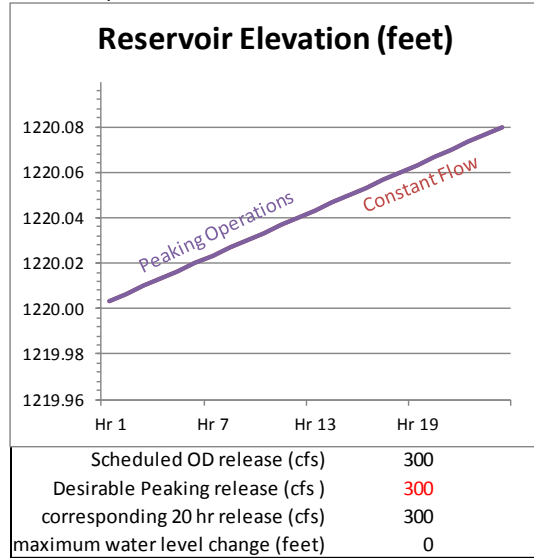
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	1200	1219.97	1080	1219.98	0
Hr 2	1200	1219.95	1080	1219.95	0.01
Hr 3	1200	1219.92	1080	1219.93	0.01
Hr 4	1200	1219.89	1080	1219.91	0.02
Hr 5	1200	1219.87	1080	1219.89	0.02
Hr 6	1200	1219.84	1080	1219.86	0.02
Hr 7	1200	1219.81	1080	1219.84	0.03
Hr 8	1200	1219.79	1080	1219.82	0.03
Hr 9	1200	1219.76	1080	1219.80	0.04
Hr 10	1200	1219.73	1080	1219.77	0.04
Hr 11	1200	1219.71	1080	1219.75	0.04
Hr 12	1200	1219.68	1080	1219.73	0.05
Hr 13	1200	1219.65	1080	1219.71	0.05
Hr 14	1200	1219.63	1080	1219.68	0.06
Hr 15	1200	1219.60	1080	1219.66	0.06
Hr 16	1200	1219.57	1080	1219.64	0.06
Hr 17	1200	1219.55	1080	1219.61	0.07
Hr 18	1200	1219.52	1800	1219.57	0.05
Hr 19	1200	1219.49	1800	1219.52	0.03
Hr 20	1200	1219.47	1800	1219.47	0.01
Hr 21	1200	1219.44	1800	1219.43	-0.01
Hr 22	1200	1219.41	1080	1219.41	-0.01
Hr 23	1200	1219.39	1080	1219.38	0
Hr 24	1200	1219.36	1080	1219.36	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	900	1219.98	720	1219.99	0.01
	900	1219.97	720	1219.98	0.01
	900	1219.95	720	1219.97	0.02
	900	1219.93	720	1219.96	0.02
	900	1219.92	720	1219.95	0.03
	900	1219.90	720	1219.94	0.04
	900	1219.88	720	1219.93	0.04
	900	1219.87	720	1219.91	0.05
	900	1219.85	720	1219.90	0.05
	900	1219.83	720	1219.89	0.06
	900	1219.82	720	1219.88	0.07
	900	1219.80	720	1219.87	0.07
	900	1219.78	720	1219.86	0.08
	900	1219.77	720	1219.85	0.08
	900	1219.75	720	1219.84	0.09
	900	1219.73	720	1219.83	0.1
	900	1219.72	720	1219.82	0.1
	900	1219.70	1800	1219.77	0.07
	900	1219.68	1800	1219.73	0.04
	900	1219.67	1800	1219.68	0.01
	900	1219.65	1800	1219.63	-0.02
	900	1219.63	720	1219.62	-0.01
	900	1219.62	720	1219.61	-0.01
	900	1219.60	720	1219.60	0

Start of Day Elevation = 1220



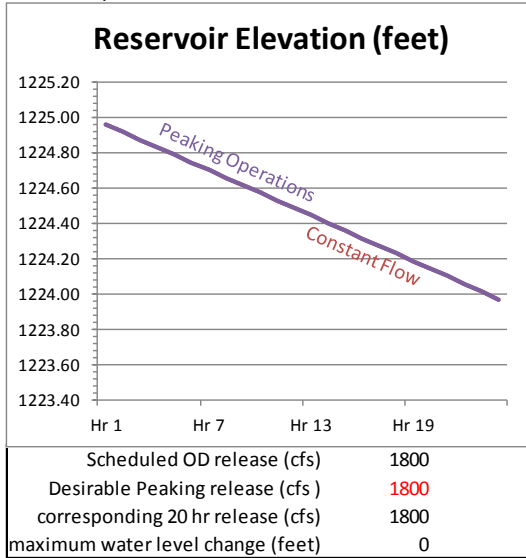
Start of Day Elevation = 1220



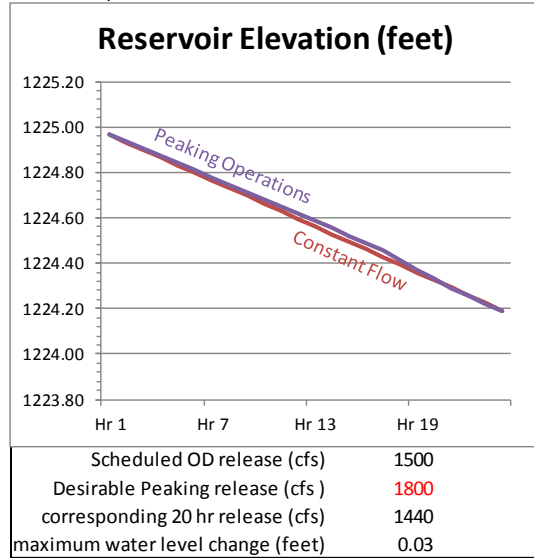
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	600	1219.99	360	1220.00	0.01
Hr 2	600	1219.99	360	1220.00	0.02
Hr 3	600	1219.98	360	1220.00	0.02
Hr 4	600	1219.97	360	1220.01	0.03
Hr 5	600	1219.97	360	1220.01	0.04
Hr 6	600	1219.96	360	1220.01	0.05
Hr 7	600	1219.95	360	1220.01	0.06
Hr 8	600	1219.95	360	1220.01	0.06
Hr 9	600	1219.94	360	1220.01	0.07
Hr 10	600	1219.93	360	1220.01	0.08
Hr 11	600	1219.93	360	1220.01	0.09
Hr 12	600	1219.92	360	1220.02	0.1
Hr 13	600	1219.91	360	1220.02	0.1
Hr 14	600	1219.91	360	1220.02	0.11
Hr 15	600	1219.90	360	1220.02	0.12
Hr 16	600	1219.89	360	1220.02	0.13
Hr 17	600	1219.89	360	1220.02	0.14
Hr 18	600	1219.88	1800	1219.98	0.1
Hr 19	600	1219.87	1800	1219.93	0.06
Hr 20	600	1219.87	1800	1219.88	0.02
Hr 21	600	1219.86	1800	1219.84	-0.02
Hr 22	600	1219.85	360	1219.84	-0.02
Hr 23	600	1219.85	360	1219.84	-0.01
Hr 24	600	1219.84	360	1219.84	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	300	1220.00	300	1220.00	0
	300	1220.01	300	1220.01	0
	300	1220.01	300	1220.01	0
	300	1220.01	300	1220.01	0
	300	1220.02	300	1220.02	0
	300	1220.02	300	1220.02	0
	300	1220.02	300	1220.02	0
	300	1220.03	300	1220.03	0
	300	1220.03	300	1220.03	0
	300	1220.03	300	1220.03	0
	300	1220.04	300	1220.04	0
	300	1220.04	300	1220.04	0
	300	1220.04	300	1220.04	0
	300	1220.05	300	1220.05	0
	300	1220.05	300	1220.05	0
	300	1220.05	300	1220.05	0
	300	1220.06	300	1220.06	0
	300	1220.06	300	1220.06	0
	300	1220.06	300	1220.06	0
	300	1220.07	300	1220.07	0
	300	1220.07	300	1220.07	0
	300	1220.07	300	1220.07	0
	300	1220.08	300	1220.08	0
	300	1220.08	300	1220.08	0

Start of Day Elevation = 1225



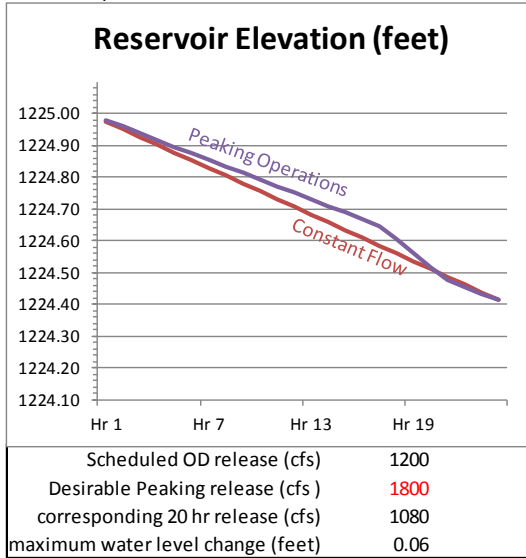
Start of Day Elevation = 1225



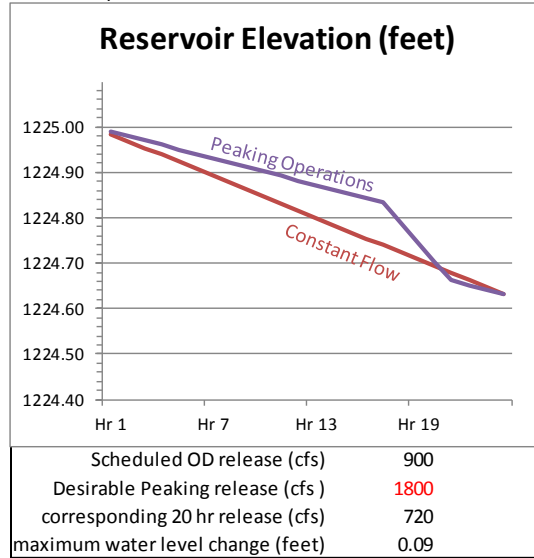
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	1800	1224.96	1800	1224.96	0
Hr 2	1800	1224.91	1800	1224.91	0
Hr 3	1800	1224.87	1800	1224.87	0
Hr 4	1800	1224.83	1800	1224.83	0
Hr 5	1800	1224.79	1800	1224.79	0
Hr 6	1800	1224.74	1800	1224.74	0
Hr 7	1800	1224.70	1800	1224.70	0
Hr 8	1800	1224.66	1800	1224.66	0
Hr 9	1800	1224.61	1800	1224.61	0
Hr 10	1800	1224.57	1800	1224.57	0
Hr 11	1800	1224.53	1800	1224.53	0
Hr 12	1800	1224.49	1800	1224.49	0
Hr 13	1800	1224.44	1800	1224.44	0
Hr 14	1800	1224.40	1800	1224.40	0
Hr 15	1800	1224.36	1800	1224.36	0
Hr 16	1800	1224.31	1800	1224.31	0
Hr 17	1800	1224.27	1800	1224.27	0
Hr 18	1800	1224.23	1800	1224.23	0
Hr 19	1800	1224.19	1800	1224.19	0
Hr 20	1800	1224.14	1800	1224.14	0
Hr 21	1800	1224.10	1800	1224.10	0
Hr 22	1800	1224.06	1800	1224.06	0
Hr 23	1800	1224.01	1800	1224.01	0
Hr 24	1800	1223.97	1800	1223.97	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	1500	1224.97	1440	1224.97	0
	1500	1224.93	1440	1224.94	0
	1500	1224.90	1440	1224.90	0.01
	1500	1224.87	1440	1224.87	0.01
	1500	1224.83	1440	1224.84	0.01
	1500	1224.80	1440	1224.81	0.01
	1500	1224.76	1440	1224.78	0.01
	1500	1224.73	1440	1224.75	0.01
	1500	1224.70	1440	1224.71	0.02
	1500	1224.66	1440	1224.68	0.02
	1500	1224.63	1440	1224.65	0.02
	1500	1224.60	1440	1224.62	0.02
	1500	1224.56	1440	1224.59	0.02
	1500	1224.53	1440	1224.55	0.03
	1500	1224.49	1440	1224.52	0.03
	1500	1224.46	1440	1224.49	0.03
	1500	1224.43	1440	1224.46	0.03
	1500	1224.39	1800	1224.42	0.02
	1500	1224.36	1800	1224.37	0.01
	1500	1224.33	1800	1224.33	0
	1500	1224.29	1800	1224.29	-0.01
	1500	1224.26	1440	1224.25	0
	1500	1224.22	1440	1224.22	0
	1500	1224.19	1440	1224.19	0

Start of Day Elevation = 1225



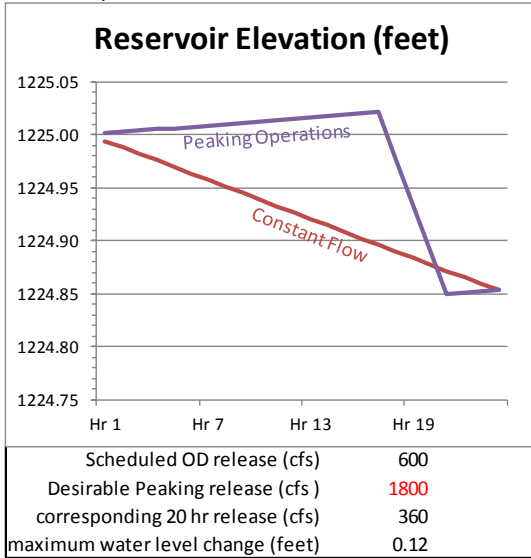
Start of Day Elevation = 1225



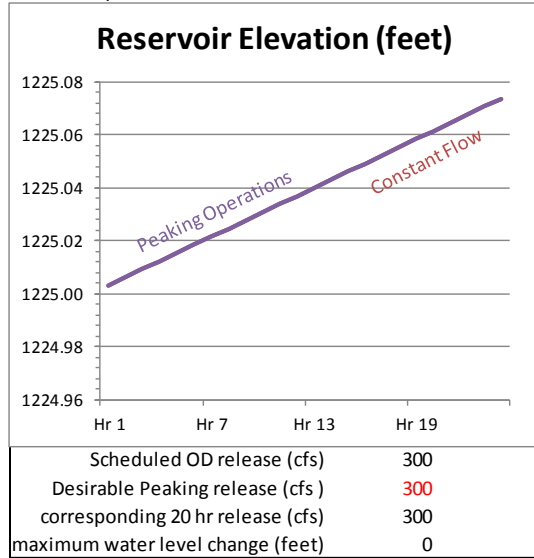
	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	1200	1224.98	1080	1224.98	0
Hr 2	1200	1224.95	1080	1224.96	0.01
Hr 3	1200	1224.93	1080	1224.94	0.01
Hr 4	1200	1224.90	1080	1224.92	0.01
Hr 5	1200	1224.88	1080	1224.90	0.02
Hr 6	1200	1224.85	1080	1224.88	0.02
Hr 7	1200	1224.83	1080	1224.85	0.03
Hr 8	1200	1224.80	1080	1224.83	0.03
Hr 9	1200	1224.78	1080	1224.81	0.03
Hr 10	1200	1224.75	1080	1224.79	0.04
Hr 11	1200	1224.73	1080	1224.77	0.04
Hr 12	1200	1224.71	1080	1224.75	0.04
Hr 13	1200	1224.68	1080	1224.73	0.05
Hr 14	1200	1224.66	1080	1224.71	0.05
Hr 15	1200	1224.63	1080	1224.69	0.06
Hr 16	1200	1224.61	1080	1224.67	0.06
Hr 17	1200	1224.58	1080	1224.65	0.06
Hr 18	1200	1224.56	1800	1224.60	0.04
Hr 19	1200	1224.53	1800	1224.56	0.03
Hr 20	1200	1224.51	1800	1224.52	0.01
Hr 21	1200	1224.49	1800	1224.47	-0.01
Hr 22	1200	1224.46	1080	1224.45	-0.01
Hr 23	1200	1224.44	1080	1224.43	0
Hr 24	1200	1224.41	1080	1224.41	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	900	1224.98	720	1224.99	0.01
	900	1224.97	720	1224.98	0.01
	900	1224.95	720	1224.97	0.02
	900	1224.94	720	1224.96	0.02
	900	1224.92	720	1224.95	0.03
	900	1224.91	720	1224.94	0.03
	900	1224.89	720	1224.93	0.04
	900	1224.88	720	1224.92	0.04
	900	1224.86	720	1224.91	0.05
	900	1224.85	720	1224.90	0.06
	900	1224.83	720	1224.89	0.06
	900	1224.82	720	1224.88	0.07
	900	1224.80	720	1224.87	0.07
	900	1224.79	720	1224.86	0.08
	900	1224.77	720	1224.85	0.08
	900	1224.75	720	1224.84	0.09
	900	1224.74	720	1224.83	0.09
	900	1224.72	1800	1224.79	0.07
	900	1224.71	1800	1224.75	0.04
	900	1224.69	1800	1224.70	0.01
	900	1224.68	1800	1224.66	-0.02
	900	1224.66	720	1224.65	-0.01
	900	1224.65	720	1224.64	-0.01
	900	1224.63	720	1224.63	0

Start of Day Elevation = 1225



Start of Day Elevation = 1225



	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
Hr 1	600	1224.99	360	1225.00	0.01
Hr 2	600	1224.99	360	1225.00	0.01
Hr 3	600	1224.98	360	1225.00	0.02
Hr 4	600	1224.98	360	1225.00	0.03
Hr 5	600	1224.97	360	1225.01	0.04
Hr 6	600	1224.96	360	1225.01	0.04
Hr 7	600	1224.96	360	1225.01	0.05
Hr 8	600	1224.95	360	1225.01	0.06
Hr 9	600	1224.94	360	1225.01	0.07
Hr 10	600	1224.94	360	1225.01	0.07
Hr 11	600	1224.93	360	1225.01	0.08
Hr 12	600	1224.93	360	1225.01	0.09
Hr 13	600	1224.92	360	1225.02	0.1
Hr 14	600	1224.91	360	1225.02	0.1
Hr 15	600	1224.91	360	1225.02	0.11
Hr 16	600	1224.90	360	1225.02	0.12
Hr 17	600	1224.90	360	1225.02	0.12
Hr 18	600	1224.89	1800	1224.98	0.09
Hr 19	600	1224.88	1800	1224.94	0.05
Hr 20	600	1224.88	1800	1224.89	0.01
Hr 21	600	1224.87	1800	1224.85	-0.02
Hr 22	600	1224.87	360	1224.85	-0.01
Hr 23	600	1224.86	360	1224.85	-0.01
Hr 24	600	1224.85	360	1224.85	0

	Flat schedule		Peaking schedule		Peak-Flat Elev diff
	Release	Elev	Release	Elev	
	300	1225.00	300	1225.00	0
	300	1225.01	300	1225.01	0
	300	1225.01	300	1225.01	0
	300	1225.01	300	1225.01	0
	300	1225.02	300	1225.02	0
	300	1225.02	300	1225.02	0
	300	1225.02	300	1225.02	0
	300	1225.02	300	1225.02	0
	300	1225.03	300	1225.03	0
	300	1225.03	300	1225.03	0
	300	1225.03	300	1225.03	0
	300	1225.04	300	1225.04	0
	300	1225.04	300	1225.04	0
	300	1225.04	300	1225.04	0
	300	1225.05	300	1225.05	0
	300	1225.05	300	1225.05	0
	300	1225.05	300	1225.05	0
	300	1225.06	300	1225.06	0
	300	1225.06	300	1225.06	0
	300	1225.06	300	1225.06	0
	300	1225.06	300	1225.06	0
	300	1225.07	300	1225.07	0
	300	1225.07	300	1225.07	0
	300	1225.07	300	1225.07	0