Document Accession #: 20231113-5275 Filed Date: 11/13/2023

NEW YORK STATE | NY Power Authority

KATHY HOCHUL
Governor

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Chairman

JUSTIN E. DRISCOLL
President and Chief Executive Officer

November 13, 2023

VIA ELECTRONIC FILING

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

Vischer Ferry Hydroelectric Project, FERC Project No. 4679
Technical Conference Call

Dear Secretary Bose:

On August 7, 2023, the Federal Energy Regulatory Commission (FERC) issued a Request for Additional Information (AIR) to the Power Authority of the State of New York (Power Authority or NYPA) for the Vischer Ferry Project, FERC P-4679-050, (Project) with respect to the Final License Application the Power Authority filed on May 25, 2022. Within the Application, NYPA informed FERC that is was exploring methods to reduce the extent and severity of ice-jam induced flooding on the Mohawk River upstream of the Vischer Ferry Project, this specific effort is known as Vischer Ferry Dam Modification.

After internal meetings to discuss the response to the AIR, the Power Authority determined that clarification on some of the questions posed by FERC in the AIR was necessary to respond effectively. To that point, the Power Authority requested, and FERC agreed, to have a Technical Conference to discuss the AIR, specifically items 2 and 3. Subsequently a meeting was established for November 8, 2023, at 1:00 pm.

Attached is the PowerPoint presentation the Power Authority used to pose its questions and explain further the work associated with Vischer Ferry Dam Modification project.

The Power Authority looks forward to continuing to work with the Commission, if you have any questions regarding this submission, please contact me. Thank you for your assistance in this matter.

Sincerely,

Robert Daly
Director, Licensing

New York Power Authority
5777 Lewiston Road
Lewiston, NY 14092
Telephone: (716) 628-5894
Email: rob.daly@nypa.gov

Attachments:
PowerPoint presentation

Vischer Ferry Dam Modifications Project Technical Meeting

FERC Project No. 4679-050 - NY

November 8, 2023

Kleinschmidt

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Document Accession #: 20231113-5275 Filed Date: 11/13/2023

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Agenda

- Meeting Objectives
- AIR Review
- Project vision
- Existing conditions
- Flood mitigation: Current conditions and proposed mitigation strategy
- Vischer Ferry Dam Modifications Project Overview
- Proposed Schedule
- Standard Operating Procedures
- AIR Question Review

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Presenters/Attendees:

NYPA – Owner & Operator

WSP – Program Manager

Kleinschmidt Associates – Engineer of Record

Gomez and Sullivan – Technical consultant

GEI Consultants – Technical consultant and current Independent Consultant

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Meeting Objectives:

Provide clarification on FERC's Additional Information Request (AIR) issued on August 7, 2023. Topics include:

(1) Item 2 – a. Provide analysis of historical storms/floods.

b. Perform flood frequency analysis of flows.

c. Comparison of impacts with proposed modifications to existing; and

d,e,f. Review, summarize, certify and provide results

(2) Item 3 - Stability analysis and revised Supporting Design Report (included in FLA).

Document Accession #: 20231113-5275 Filed Date: 11/13/2023

AIR Review

Document Accession #: 20231113-5275 Filed Date: 11/13/2023

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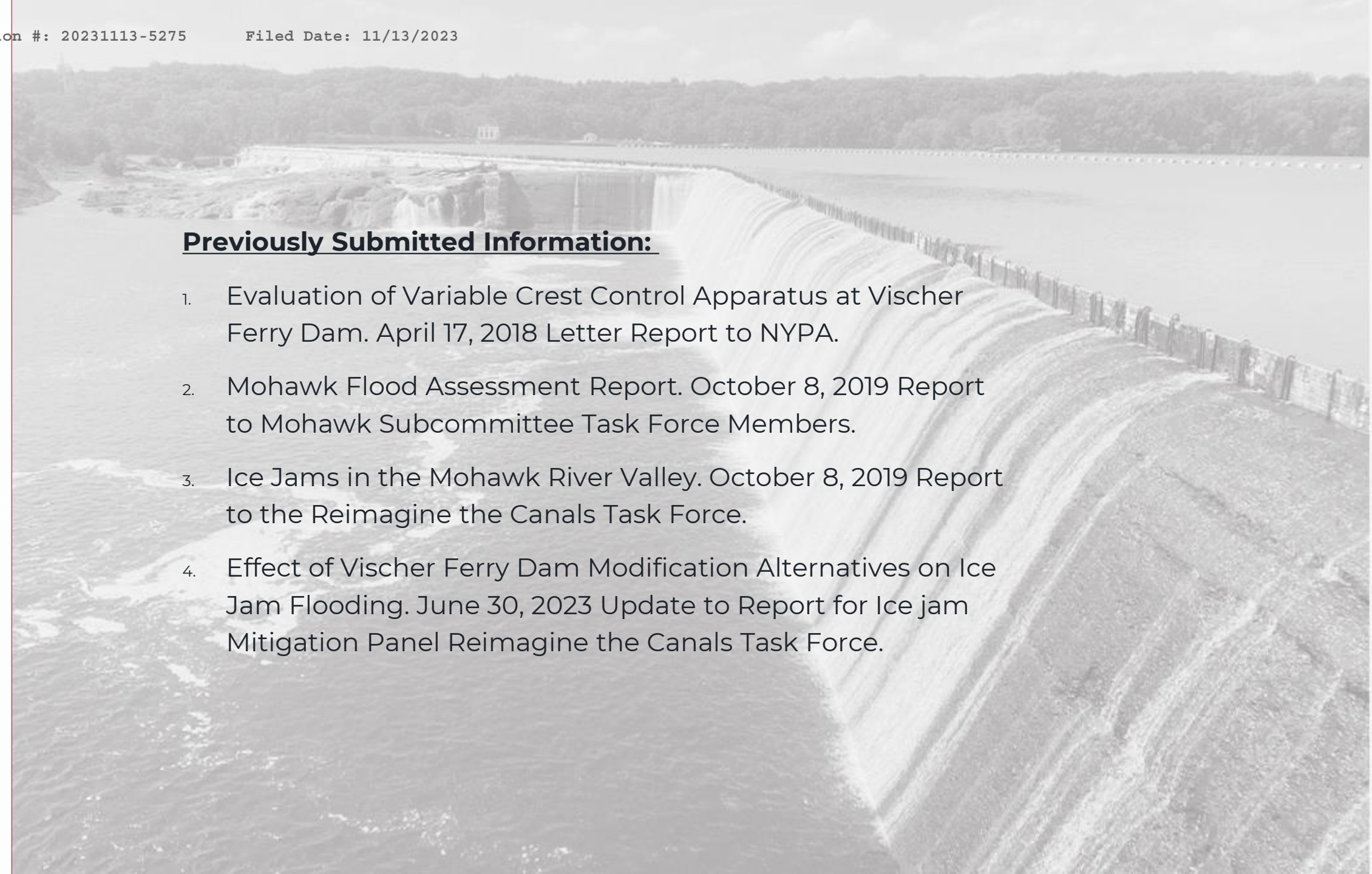

Previously Submitted Information:

1. Evaluation of Variable Crest Control Apparatus at Vischer Ferry Dam. April 17, 2018 Letter Report to NYPA.
2. Mohawk Flood Assessment Report. October 8, 2019 Report to Mohawk Subcommittee Task Force Members.
3. Ice Jams in the Mohawk River Valley. October 8, 2019 Report to the Reimagine the Canals Task Force.
4. Effect of Vischer Ferry Dam Modification Alternatives on Ice Jam Flooding. June 30, 2023 Update to Report for Ice jam Mitigation Panel Reimagine the Canals Task Force.

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Anticipated Crest Gate Operations:

- The installation of the proposed crest gates at Vischer Ferry will improve NYPA's ability to manage both summer and winter floods by strategically opening and closing crest gates in response to fluctuations of flow in the Mohawk River, maintaining near normal water levels (213.25 BCD) up to about 26,700 CFS (2.25' over the crest).
- During major flood events when flows exceed 26,700 CFS, water levels will rise, but less than they would with the existing flashboard system which are designed to begin failing at elevation 215.5 (BCD).
- When river flow exceeds about 40,000 CFS, which is about when the existing flashboards begin to fail, flooding upstream and downstream of Vischer Ferry Dam is expected to be similar for both flashboards and crest gates

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AIR Review

Item 2: “It is unclear what NYPA’s proposed changes to the operation of the Vischer Ferry Project and it features would have on upstream and downstream flooding of non-project properties and structures”.

- What additional information is needed considering:
  - (1) the proposed crest gate operations will produce less or very similar flooding when compared to the existing flashboard system,
  - (2) existing studies identified Vischer Ferry Dam crest modifications have no significant effect on flooding in Schenectady, New York,
  - (3) According to the February 20, 2020 Study Determination Letter "Based on our review of the studies and the alternatives analyzed, existing information appears to be adequate for staff to assess the effects of project impoundment on upstream flooding. Therefore, a new flooding study for free-flow conditions is not recommended.", and
  - (4) NYPA has provided substantial information on the flood reduction benefits of the proposed crest gates under ice conditions.

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AIR Review

Item 2a: Prepare an engineering analysis "of historical storms/flood that occurred at the project". The analysis should include an estimate of the recurrence interval of each historical event and the resultant upstream and downstream impacts".

- As described above, crest gate operations will result in less or very similar flooding compared to flashboards for free flow conditions and are expected to help mitigate flooding due to ice-jam events. Please clarify what additional studies are required and why.

Item 2b: Prepare an engineering analysis of "A flood frequency analysis of 1flows at the project. At a minimum, the magnitude of the 2-year, 5-year, 10-year, 25-year, 50-year, 100-year and 500-year events…"

- As described above, crest gate operations will result in less or very similar flooding compared to flashboards for free flow conditions and are expected to help mitigate flooding due to ice-jam events. Please clarify what additional studies are required and why.

Item 2c: Prepare and engineering analysis of "A comparison of how potential flood impacts in the areas upstream and downstream of the project would differ for each historical and flood frequency event".

- As described above, crest gate operations will result in less or very similar flooding compared to flashboards for free flow conditions and are expected to help mitigate flooding due to ice-jam events. Please clarify what additional studies are required and why.

Item 2d: Provide "a statement from the licensee's Chief Dam Safety Engineer …. that he agrees that the change in project operations and features would have no significant impact on upstream and downstream flooding".

- As described above, crest gate operations will result in less or very similar flooding compared to flashboards for free flow conditions and are expected to help mitigate flooding due to ice-jam events. Please clarify what additional studies are required and why.

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AIR Review

Item 2e: Provide "a discussion of any proposed modifications or remedial measures that would be necessary if it is determined that the change in operations would result in significant impact on upstream and downstream flooding".

- As described above, crest gate operations will result in less or very similar flooding compared to flashboards for free flow conditions and are expected to help mitigate flooding due to ice-jam events. Please clarify what additional studies are required and way.

Item 2f: "Within 6 months of the date of this letter, please file a study that provides and summarizes the modeling results for this effort" (Items a, b and c).

- Response time will be reevaluated after clarification of study requirements have been received.

Document Accession #: 20231113-5275 Filed Date: 11/13/2023

AIR Review

Item 3: It is unclear how the proposed changes in the features and operation of the Vischer Ferry Project would affect the stability of the project. The installation of 48-inch crest gates would require cutting the existing crest of Dam F and removing concrete".

- NYPA would like to discuss the timing of the dam safety review that should be performed to determine the dam stability impacts to this 60-foot-long section of dam.

Document Accession #: 20231113-5275 Filed Date: 11/13/2023

Project Vision

Document Accession #: 20231113-5275 Filed Date: 11/13/2023

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Project Vision

- Flood risk reduction
  - Install and operate new crest gates to reduce the likelihood of ice jams by breaking up and flushing ice as needed
  - Enhance the ability to manage summer floods
- Improved water level management
  - Strategically open and close crest gates as flows increase or decrease to maintain normal water levels.
  - Navigation season is main driver for water level management in summer months
  - Reduce the occurrence of extended periods of low water elevations when existing flashboards fail
  - Reduce safety risks and operational costs associated with flashboard installation/removal each navigation season
- Improve ability to pass/flush large debris
- Increase power generation capacity
  - By eliminating flashboard leakage and
  - Providing higher head throughout the year

Document Accession #: 20231113-5275 Filed Date: 11/13/2023

Existing Conditions

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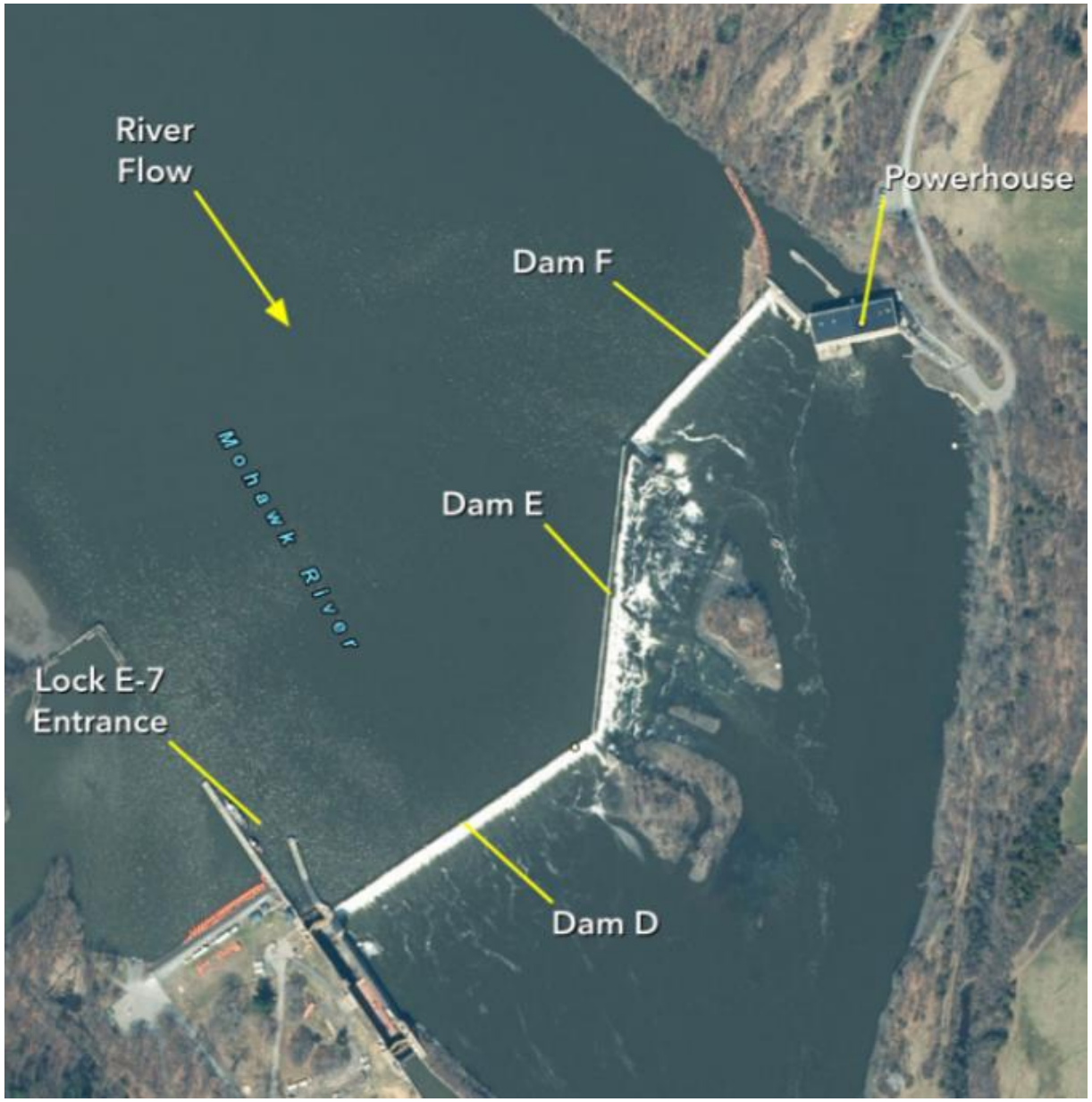
Existing Conditions



Dam D

- Concrete gravity structure
- 735 ft long; 36 ft high

Dam E

- Raised wall located on rock outcrop
- 682 ft long; 2 to 8 ft high

Dam F

- Concrete gravity structure
- 502 ft long; 34 ft high

Existing flashboards are designed to sequentially fail when water overtops flashboards by 2.25 to 3.25ft

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Existing Conditions

Document Accession #: 20231113-5275 Filed Date: 11/13/2023

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Existing Conditions – Flashboard Installation

Document Accession #: 20231113-5275 Filed Date: 11/13/2023

Flood Mitigation

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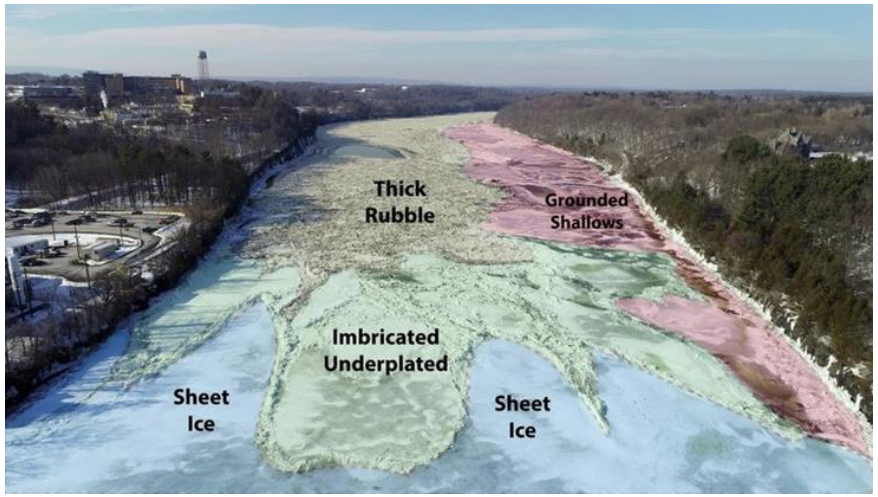
Ice Jams in Vischer Ferry Pool

The Vischer Ferry Pool has a long history of ice jams and associated flood damage

80% of all the flooding in this reach is associated with ice jams

Schenectady Stockade Flooding, 2007



Rexford Knolls, 2018
2 miles upstream of the Vischer Ferry Dam

Schenectady Stockade, 2022

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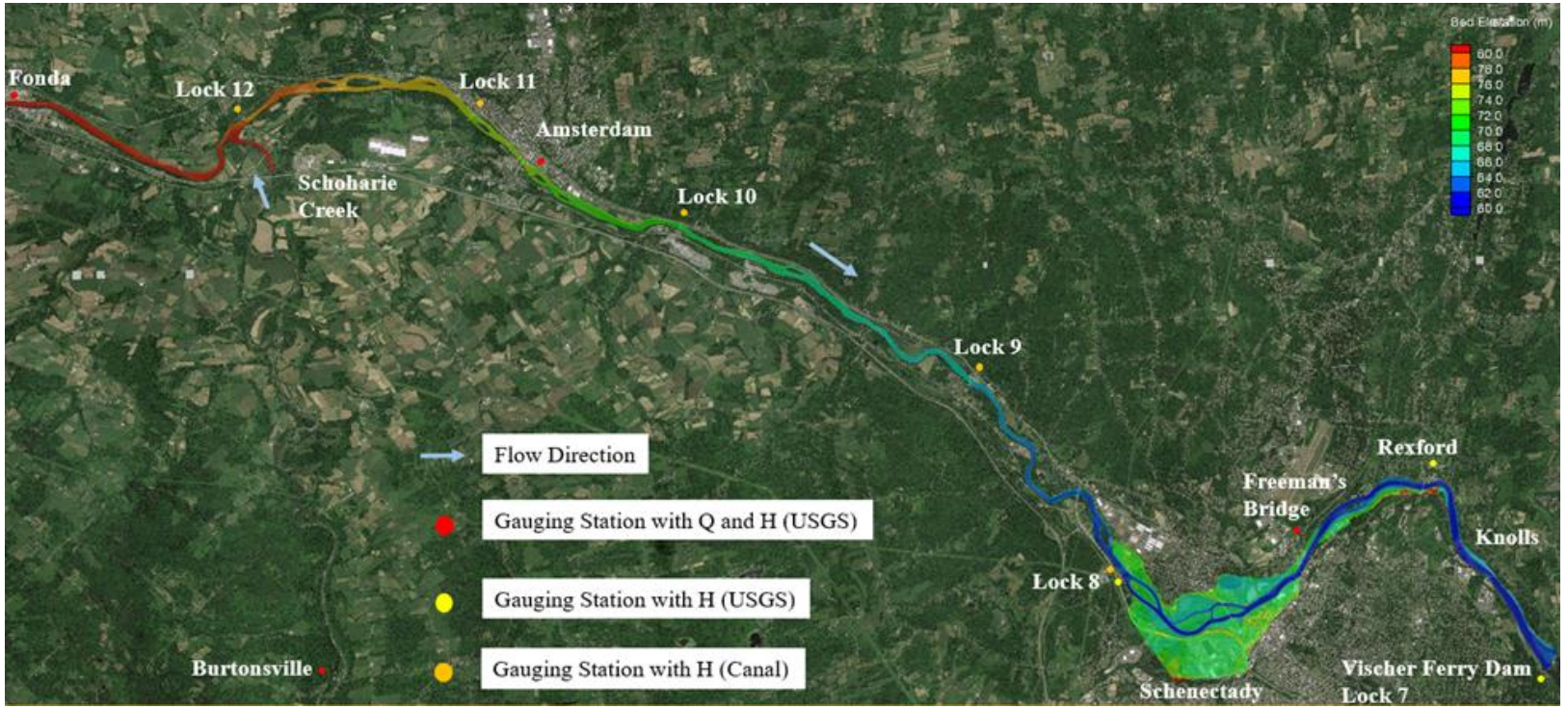
Ice Jams in Vischer Ferry Pool

Clarkson University developed an ice jam model to assess ice jam formation and ice floe transport between the Vischer Ferry Dam and upstream to Fonda (approximately 30 miles)

Model was used to evaluate four ice jam mitigation alternatives resulting in the proposed 27-inch high flashboard design.



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Ice Jams in Vischer Ferry Pool

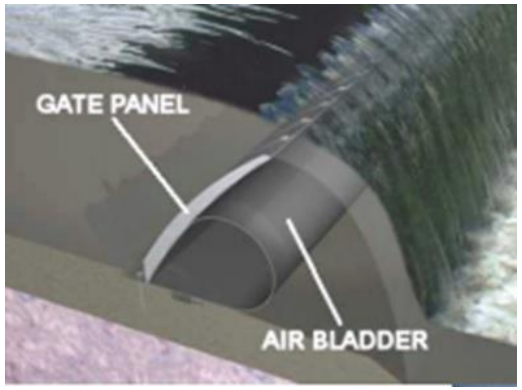
Clarkson University has been working with NYPA on modeling ice mitigation on the lower Mohawk River using a 2D numerical model led by Drs. Fengbin Huang and Hung Tao Shen

Clarkson's findings:

- Breaking of sheet ice is very beneficial to an ice jam mitigation strategy at the Vischer Ferry Dam
- Installation of inflatable crest gates will serve two purposes during the winter:
  - Flushing of ice fragments associated with ice breaking
  - Enhance the passage of ice floes during the spring ice run

The combination of ice breaking and periodic flushing of ice floes is expected to significantly reduce the probability of ice jams on the Mohawk River

Ice Breaking Tug Margot



Inflatable gates

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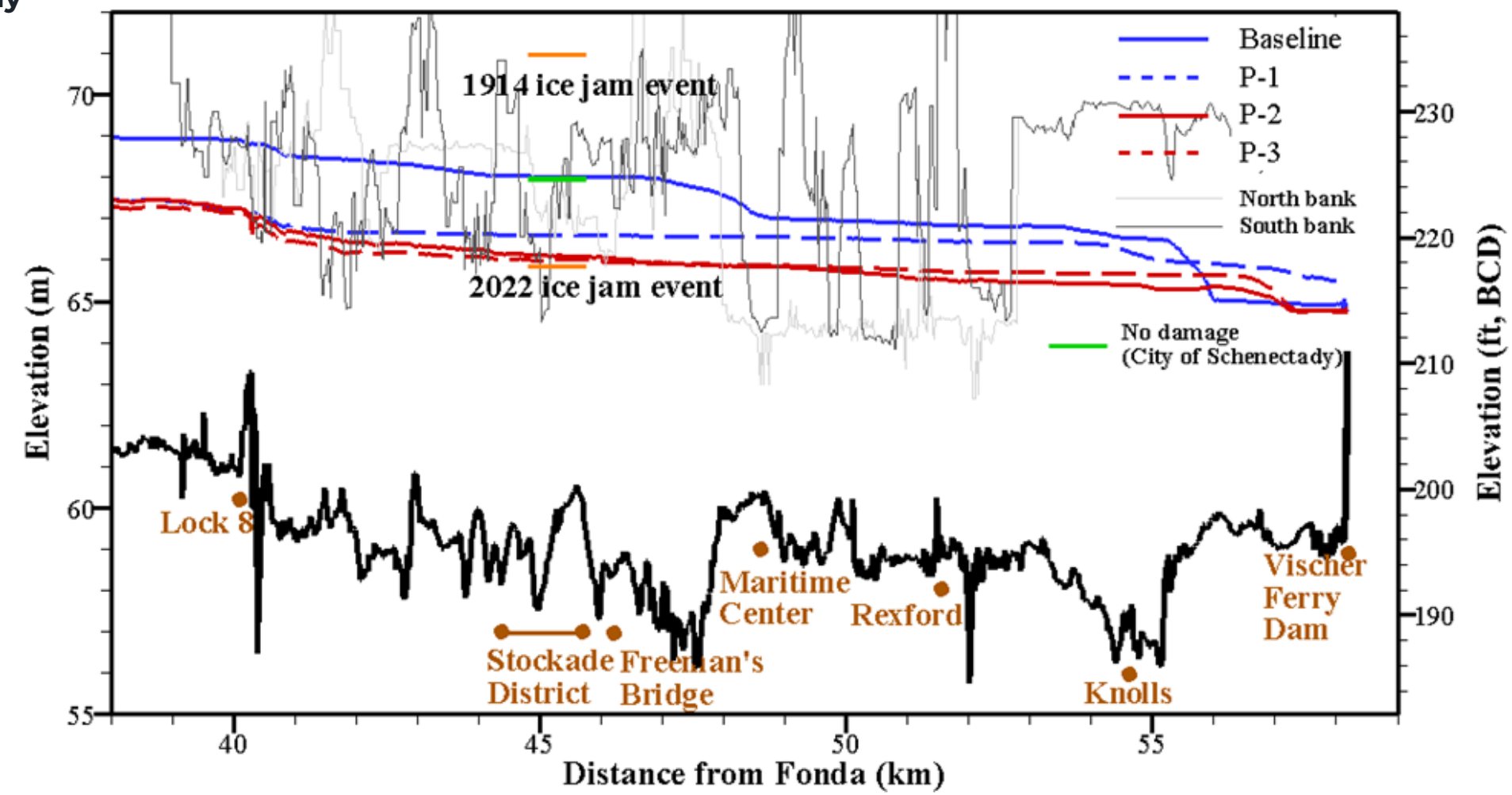
Ice Jam and Riverine Flooding Impacts (From Clarkson University study)



Comparison of simulated peak water level profiles between the Baseline case (January 2018 model calibration event) and Alternatives P-1 through P-3. Note: No Damage elevation of approximately 223 ft (NAVD88)/ 224.58 ft (BCD).

Document Accession #: 20231113-5275 Filed Date: 11/13/2023

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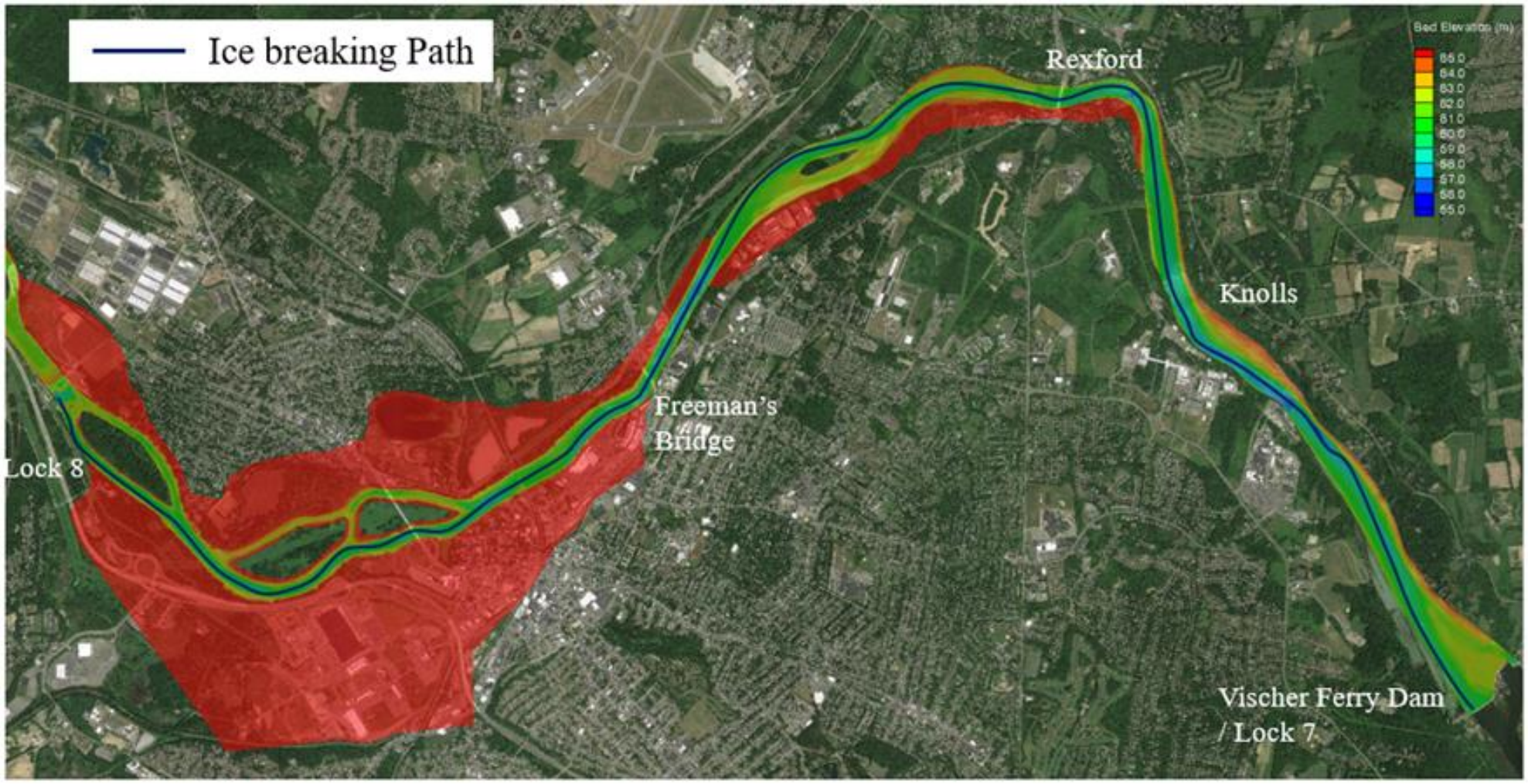
Ice Jam and Riverine Flooding Impacts



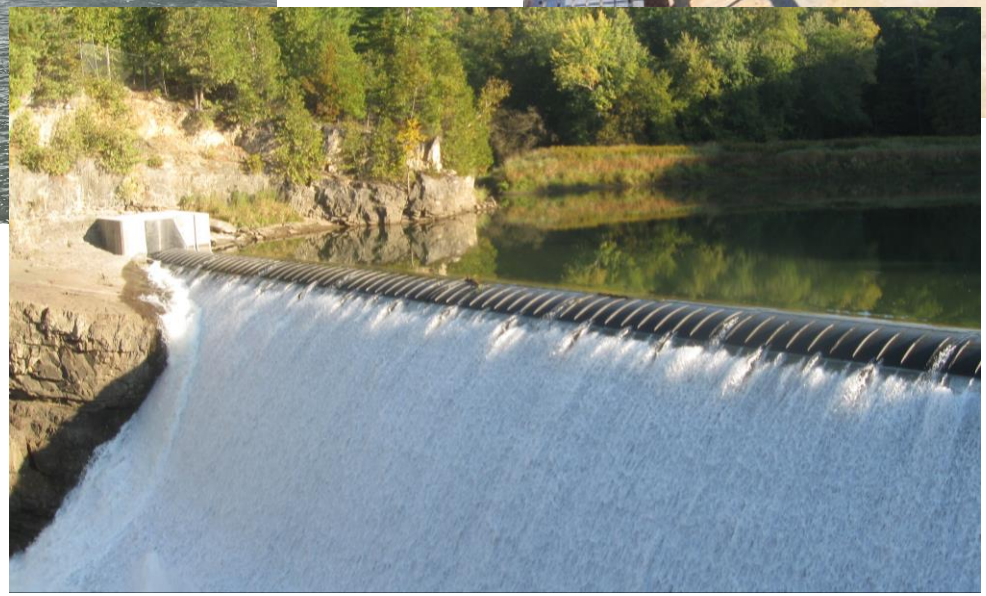
Ice-breaking path between Lock 7 and Lock 8. The red zone outside the river channel represents the floodplain coverage of the March 1914 breakup ice jam event, equivalent to the 500-year riverine damages (Avery, 2022).

Document Accession #: 20231113-5275 Filed Date: 11/13/2023

Proposed Dam Modifications Overview

Design Development

- Selected design is the result of an evaluation of +30 gate alternatives, including input from operators of existing systems and equipment vendors



Document Accession #: 20231113-5275 Filed Date: 11/13/2023

Preliminary Schedule – Inflatable Crest Gates

- Project Award to Engineer of Record – August 8, 2023
- 30 Percent Design Development – Complete
- 60 Percent Design Development – End of Year 2023
- Regulatory and Permitting – November 2023 through June 2025
- Estimated notice of funding award – January 2024
- Additional Studies – March 2024 through June 2024
- 90 Percent Design Development – September 2024
- 100 Percent Design Submittal – March 2025
- FERC review for Construction Approval – September 2025 through Nov 2025
- Issued for Bid Package - December 2025
- Construction award – May 2026
- Construction Complete – November 2028

Document Accession #: 20231113-5275 Filed Date: 11/13/2023

Standard Operating Procedures

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Proposed Standard Operating Procedures

OPERATION OF CREST GATES – SUMMER & WINTER (No Ice)

- Normal operations – River flow ≤ 6,000 cfs
  - Generation units maintain normal water level @ 213.25± (BCD) Year
  - Crest gates will remain in the raised (closed) position
- Minor flood operations – River flow between 6,000 to 26,700 cfs
  - All available generating units are online passing flow
  - Crest gates are gradually and strategically lowered (opened) to maintain water level @ 213.25± BCD. Gates are able to be automated and operated manually (locally and remotely)
  - Crest gates are gradually raised (closed) as river flow returns to normal (≤6,000 cfs)
- Major flood operations – River flow ≥ 26,700 cfs up to the IDF of 131,600 cfs
  - All available generating units are online passing flow
  - All crest gates are lowered (open)
  - Water level rises to max water level of 218.0 (BCD)
  - Crest gates are gradually raised (closed) as river flow returns to normal (≤6,000 cfs)

Document Accession #: 20231113-5275 Filed Date: 11/13/2023

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Proposed Standard Operating Procedures

OPERATION OF CREST GATES – WINTER (Proposed Ice Management)

- Normal operations – River flow ≤6,000 cfs
  - Generation units maintain normal water level @ 213.25± (BCD)
  - Crest gates will remain in the raised (closed) position
- Stage 1: Sheet ice breaking and sluicing mode – River flow ≤6,000 cfs
  - Tugboat breaks ice between Lock E7 and Lock E8 when ice thickness = 3” forms on river
  - Dam D crest gates will occasionally be lowered (opened) to flush ice over the dam
    - Generation may be reduced to minimum flow
    - Crest gates on Dams E & F remain raised (closed)
    - Water level at VF dam may drop up to 18” to create enough flow to pass ice
    - Duration of ice flushing is dependent on inflow (generally 2 to 4 hours)
  - Crest gates are then raised (closed) to restore normal water level
    - Generation remains at minimum flow until normal water level is restored
  - Stage 1 ice sluicing may be repeated as necessary to avoid ice buildup upstream
- Stage 2: Ice floe passage mode (spring break up) – River flow ≥6,000 cfs
  - All available generating units are online passing flow
  - Crest gates are gradually and strategically lowered (opened) to maintain water level @ 213.25± BCD
    - Sequence of crest gate operation: Dam D, then Dam E, then Dam F
  - Crest gates are gradually raised (closed) as river flow returns to normal (≤6,000 cfs)

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Questions?

Document Accession #: 20231113-5275 Filed Date: 11/13/2023

Document Content(s)