

UNITED STATES OF AMERICA 117 FERC ¶ 62,210  
FEDERAL ENERGY REGULATORY COMMISSION

City of Tacoma

Project No. 2016 – 139

ORDER MODIFYING AND APPROVING MAYFIELD DAM DOWNSTREAM  
FISH PASSAGE IMPROVEMENT PLAN, ARTICLES 401 AND 2 (b)

(Issued December 05, 2006)

On July 18, 2006, the City of Tacoma (licensee) filed its Mayfield Dam Downstream Fish Passage Improvement Plan pursuant to license Article 401 and Settlement Agreement Article 2 (b) of the March 13, 2002 Order Approving Settlement and Issuing New License<sup>1</sup> and the July 9, 2004 Order Amending New License<sup>2</sup> for the Cowlitz River Project. By letter issued September 26, 2003, the Commission established the effective and issuance date of the new license for compliance purposes as July 18, 2003, the date of the Order Denying Rehearing and Lifting Stay.<sup>3</sup> The project consists of the Mayfield and Mossyrock developments and is located on the Cowlitz River in Lewis County, in southwestern Washington.

**BACKGROUND AND LICENSE REQUIREMENTS**

License Article 401 incorporates Settlement Agreement (SA) Articles 1, 2, and 3, which address upstream and downstream fish passage at the project and requires various plans and reports to be filed for Commission approval. The SA Article 2 (b) requires the licensee, to develop and file with the Commission, a plan for improvements to downstream fish passage at Mayfield Dam within three years of license issuance. License Article 401 as amended by the July 9, 2004 order requires the licensee to prepare their plan in consultation with the Fisheries Technical Committee (FTC)<sup>4</sup> and file the plan with the Commission for approval.

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<sup>1</sup> 98 FERC ¶ 61,274 (2002)

<sup>2</sup> 108 FERC ¶ 61,031 (2004)

<sup>3</sup> 104 FERC ¶ 61,092 (2003)

<sup>4</sup> The FTC is comprised of the licensee and representatives from the National Marine Fisheries Service (NMFS), the U.S. Fish and Wildlife Service (FWS), the

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## LICENSEE'S PLAN

The licensee's plan identifies the following proposed improvements to the Mayfield Dam downstream fish guidance and collection facility: (1) debris management; (2) hydraulic improvements; (3) noise investigations; (4) secondary separator improvements; (5) counting house improvements; (6) discharge chute upgrade; (7) emergency procedures; (8) manual updates; and (9) evaluation and study plan schedule. Fish collected for examination and/or tagging at the collection facility include Chinook salmon, coho salmon, steelhead trout, cutthroat trout, rainbow trout and tiger musky.

### DEBRIS MANAGEMENT

The intent of the debris management improvements is to reduce the size and amount of woody debris making it through the trashrack and clogging the louver apex, the intake to the bypass pipelines and the turning vanes. The licensee plans to continue to investigate methods to keep the louver apex clear of any obstructions that may hinder or discourage downstream migrants from entering the intake structure and primary separator. In order to reduce the size and amount of debris making it through the trashrack, the licensee plans to install a trash rake over the trashrack, which would be automated to clean the trashrack at a specified interval. Additionally, the licensee plans to explore the possibility of placing a vertical steel bar between the existing trashrack bars, if approved by the FTC. The licensee plans to initiate design of the new trash rake in the winter of 2007 and installing the rake in the summer of 2008.

### HYDRAULIC IMPROVEMENTS

The licensee plans to control the existing louver system pumps with the existing discharge weir or install variable frequency drives (VFD) on two attraction water pumps to allow improved control of hydraulic conditions in the louver bays and secondary separator for varying reservoir levels and turbine operations. A new programmable logic controller (PLC) would automatically operate the pumps to provide appropriate attraction flow to the louver bays for the plant's current operating condition. The PLC/VFD combination or the discharge weir controls are also proposed to maintain screen approach velocities in the secondary separator from exceeding 0.4 feet per second at the lower reservoir elevations. The licensee plans to initiate design of the VFD and the Mayfield

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Washington Department of Fish and Wildlife (WDFW), the Washington Department of Ecology, Yakama Nation, and American Rivers/Trout Unlimited.

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Plant Control System control of the pumps in 2006, but the licensee states that it could require several years to fully integrate with the planned Mayfield powerhouse control improvements. The licensee plans to contract for construction of the manual control system in 2007.

### NOISE INVESTIGATIONS

The licensee plans to investigate potential measures to reduce any noise that may cause avoidance behavior and, thus, decrease overall fish collection efficiency. The licensee plans to collect baseline frequencies and decibel levels at the louver bay exit slots and near the outlet of the secondary separator and report their results to the FTC. If determined to be needed, the licensee would identify potential measures that could reduce noise levels. The licensee plans to hire a consultant to perform the measurements in the fall/winter of 2006, with a report to the FTC in 2007.

### SECONDARY SEPARATOR IMPROVEMENTS

The licensee plans to replace the existing ¼" mesh with wire cloth on 4 screen panels with a screen material that meets NMFS' criteria for salmonid fry. Additionally, the licensee plans to install a flow baffle panel (louver system) behind each of the two downstream screen sections in the secondary separator. The two louver systems would provide the means to achieve a more uniform velocity distribution through the secondary separator screens and, thus, avoid any potential hot spots. Four vertical brush cleaners would be installed on the four screen panels of the secondary separator. Finally, the licensee plans to either install a transition structure in the downwell to the bypass pipe to minimize the potential impact of fish against the concrete wall after they exit the secondary separator's weir or install a liner to protect fish from impacting the concrete wall. The licensee plans to initiate the design of their secondary separator improvements in the fall/winter of 2006, with fabrication in the winter and installation in the spring of 2007 prior to the juvenile outmigration season.

### COUNTING HOUSE IMPROVEMENTS

The goal of the improvements to the counting facility is to minimize the amount of handling and human contact with the downstream migrants. The licensee plans to install a new trough and transport pipe from the holding ponds to the counting house, and redesign the processing area inside of the counting house. The licensee's plan identifies various planned physical improvements and methods of counting and evaluating downstream migrants. The licensee plans to initiate design of their proposed

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improvements in the winter of 2006/2007 with construction and changes to the fish transfer pipe and modifications to the counting house to be completed in the winter of 2007.

#### DISCHARGE CHUTE UPGRADE

The licensee states that they are considering several improvements to the final leg of the downstream transport pipeline that descends to the powerhouse and drops the fish into the tailrace. The licensee plans to evaluate the following three possible improvements: (1) installing a liner in the pipe if an inspection reveals a rough finish that may injure fish; (2) replacing the existing pipe with a new 24-inch diameter pipe if the inside of the pipe shows deterioration; and (3) evaluating various options to reduce the drop at the exit of the pipe to the tailrace. The licensee plans to bring its recommendations to the FTC in the fall of 2006. Once an agreement on improvements is finalized, the licensee plans to initiate design of the improvements for installation in the winter of 2007.

#### EMERGENCY PROCEDURES

The licensee's plan identifies various emergency procedures regarding the attraction and guidance system, fish capture and enumeration and transportation and release. The licensee plans to include the reporting of any emergency events in the Annual Upstream Passage Study Report (SA Article 3). The licensee's plan also identifies emergency reporting procedures regarding any monitoring or inspection activity that yields a finding outside of established operational standards.

#### MANUAL UPDATES

The licensee plans to update their operations and emergency procedures manual as necessary. Further, the licensee states that their manual would also be updated upon completion of the improvements planned and scheduled for the Mayfield downstream migrant facility. The licensee notes that their associated procedures and updates are also identified in the plan under license Article 415 and the associated Order Approving Anadromous Fish Passage Plan, issued May 10, 2006.<sup>5</sup>

#### EVALUATION AND STUDY PLAN

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<sup>5</sup> 115 FERC ¶ 62,160 (2006)

The licensee plans to complete their proposed improvements prior to conducting relevant evaluation studies. Thus, the licensee plans to conduct the studies necessary to calculate the Fish Guidance Efficiency (FGE) and Fish Passage Survival (FPS) at Mayfield Dam, and bypass improvement evaluations, following the improvements to the louver facilities and bypass and collection facilities. Additionally, following the facility improvements, the need for additional turbine survival studies would be evaluated with the FTC. Due to the infrequency of spill events at Mayfield Dam, especially during the peak juvenile outmigration period, the licensee does not plan to conduct a spill survival test. The licensee states that for the 10-year period, 1996-2005, only 2.93% of the total flow past Mayfield Dam was via spill. Finally, the licensee plans to monitor steelhead kelts and fallbacks for injury and enumeration at the Mayfield separator before and after the planned improvements are implemented to determine if they are being negatively impacted, in consultation with the FTC.

The licensee's plan also included an operations and maintenance manual regarding the Mayfield fish guidance and collection system. The licensee states that their plan under license Article 415 included an expanded schedule for operating the counting house; however, the licensee states that based on further discussions with NMFS, they plan to further increase the number of operating days. The licensee plans to operate the counting house (fish examination and tagging or marking) at least three days per week from April to December. Operation frequencies would be increased depending on the daily average counts, as determined by the previous five-day running average. Facility operation (processing and releasing all fish) would occur first thing Monday mornings and last thing Friday or Saturday, depending on which is the last day of the week's operation, to minimize fish holding time. During the months of January to March, the louver system would operate in a bypass mode such that no fish enter the counting house raceways and all fish are bypassed directly into the downstream transport pipe. The louver bay trash racks would be cleaned as often as needed while individual louver bay cleaning would occur every year as possible. The bypass pipelines would be cleaned by specialized equipment once the louver bay is dewatered. Counting house and raceway maintenance would occur on an as-needed basis and the fish transport pipe and the discharge flume would be visually inspected weekly and repaired as needed.

## AGENCY CONSULTATION

Article 401 requires the licensee to prepare their plan in consultation with the FTC and file the plan for Commission approval. The Article requires the licensee to submit to the Commission documentation of its consultation with the resource agencies, copies of comments and recommendations made in connection with the plan, and a description of

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how the plan accommodates the comments and recommendations. The licensee's filing included their consultation record on the subject plan, which included various meetings and correspondence with the FTC, on April 12, May 10, May 18, June 19, June 30 and July 17, 2006.

By letter dated June 16, 2006, NMFS provided comments on the licensee's plan, which the licensee provided responses to or incorporated into their final plan. By email dated July 17, 2006, NMFS approved the licensee's filed plan. By letter dated June 13, 2006, the WDFW provided comments on the licensee's plan, which the licensee also provided responses to or incorporated into their final plan. Generally, WDFW provided additional improvement options, which the licensee stated that they will continue to work with NMFS and WDFW in the final design of the counting house, including the operational criteria, the fish handling protocols and the physical improvements. Although drafts of their plan were distributed to the other FTC members on April 12 and May 18, 2006, no additional comments were received.

## DISCUSSION AND CONCLUSIONS

The licensee states that progress towards completing the improvements to the downstream fish passage facilities at Mayfield Dam would be reported in any annual reports required by the order for license Article 401 and SA Article 2(a). The SA Article 2 (a) required the licensee to file for Commission approval, a study plan or study results evaluating turbine mortality and the effectiveness of the existing louver system at Mayfield Dam. However, by the Order Approving Downstream Fish Passage Report under SA Article 2 (a), issued July 12, 2005, an annual reporting requirement was not included in the order. Therefore, the licensee should include in their Annual Hydropower Compliance Management Program Report under license Article 501, a report regarding the status, schedule and associated evaluation studies of the Mayfield Dam downstream fish passage improvements.

The licensee's Mayfield Dam Downstream Fish Passage Improvement Plan should assist in improving overall fish passage at Mayfield Dam. The associated improvements and modifications proposed in the licensee's plan should assist in achieving FGE and downstream FPS rates as defined in the SA. Additionally, the FTC collaboration and review process should provide the guidance necessary for making future decisions and facility modifications for improving downstream juvenile guidance and survival at Mayfield Dam.

The licensee's plan satisfies the requirements of license Article 401 and SA Article 2 (b) of the March 13, 2002 Order Approving Settlement and Issuing New License and

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the July 9, 2004 Order Amending New License for the Cowlitz River Project. Therefore, the licensee's plan, as modified, should be approved.

The Director orders:

(A) The Mayfield Dam Downstream Fish Passage Improvement Plan, filed July 18, 2006, under license Article 401 and Settlement Agreement Article 2 (b) of the March 13, 2002 Order Approving Settlement and Issuing New License for the Cowlitz River Project as amended by the July 9, 2004 Order Amending License, as modified by paragraph (B), is approved.

(B) The licensee shall include in their Annual Hydropower Compliance Management Program Report under license Article 501, a report regarding the status, schedule and associated evaluation studies of the Mayfield Dam downstream fish passage improvements.

(C) This order constitutes final agency action. Requests for rehearing by the Commission may be filed within 30 days from the date of issuance of this order, pursuant to 18 CFR § 385.713.

George H. Taylor  
Chief, Biological Resources Branch  
Division of Hydropower Administration  
and Compliance