

**RESPONSES TO FERC ON
DEFICIENCY OF LICENSE APPLICATION AND
ADDITIONAL INFORMATION REQUESTS**

FERC Deficiency & AIR Responses

On April 28, 2022 the Federal Energy Regulatory Division (FERC or Commission) Division of Hydropower Licensing commented on the Green Lake Project Final License Application requesting additional Information. Please find responses to specific information needs included below.

DEFICIENCIES

Exhibit A

1. Section 4.61(c)(1)(x) of the Commission's regulations requires the application to include an estimate of the capital costs and annual operation and maintenance expense of each proposed environmental measure. The application does not include an estimate of the capital cost of modifying the trashrack to have a consistent 1-inch clear bar spacing by either closing a two-inch gap at the side of the trashrack or reducing the gap to one inch. The application must be revised to include this information.

GLWP: The information has been added to Exhibit A

Exhibit E

2. Section 5.18(b)(5)(ii)(A) of the Commission's regulations requires the application to contain a general description of socioeconomic conditions in the project vicinity, including general land use patterns, population patterns, and sources of employment. The application does not contain information on population patterns and sources of employment. Exhibit E of the application must be revised to include this information.

GLWP: Exhibit E has been updated to include this data.

Exhibit F

3. Section 4.39(a) of the Commission's regulations requires full-sized prints of drawings on sheets no smaller than 22 by 34 inches and no larger than 24 by 36 inches. The Exhibit F drawings filed as part of the license application do not meet these size requirements. The application must be revised to provide this information.

GLWP: Please see #4 below:

4. Section 4.41(g) of the Commission's regulations requires the application to include an Exhibit F that contains drawings showing all major project structures in sufficient detail to provide a full understanding of the project, including plans (overhead view),

elevations (front view), profiles (side view), and sections. The Exhibit F drawings filed as part of the license application do not provide: (1) an overhead view, a side view, and typical sections of the entire penstock; (2) a front view of the project dam that shows the height of the spillway sections, and dimensions and elevations of the penstock headgate, sluice gates, trashracks, and fish screen; and (3) a side view of the powerhouse discharge pipes. The application must be revised to provide this information.

GLWP Response:

Drawings were located of the penstock (plan, profile and sections), of the new (in 1986) spillway, and of the complete pre-1986 dam. All of these drawings and the prior as-built drawings, except the drawings of the new spillway, pre-date CAD software. Some of the drawings (the penstock sections) are construction blueprints. Work commenced to enter the drawings into AutoCAD, combine the spillway drawings with the dam drawing, and to generate the side view of the powerhouse discharge pipes and the penstock sections drawings.

The penstock plan and profile drawing only required minor modifications to remove the surge tank and enlarge the title block. These modifications were completed as an image edit. The resulting drawing is included with this filing.

The next drawing tackled was the combined dam drawing. As the work progressed on this, and as the questions about dam lengths in the Additional Information Requests for Exhibit A below were investigated, it became clear that measurements between the actual dam and the drawings did not match up to the precision being requested. Most of the errors appear to go back to the original Bangor Hydro Electric dam drawing of 1979. The resulting work basically amounted to creating a new drawing of the dam from scratch. Emphasis was put on getting trusted numbers for all the needed lengths at the dam so the descriptions in Exhibit A could be accurate. This work has been done, but the dam drawing is not yet complete.

The new drawings turned into a much larger effort than was anticipated. The powerhouse drawings appear largely accurate with the exception of the second unit, but they still require being entered into AutoCAD and scaled and formatted as requested. The penstock sections are simple and should be easy to reproduce on a new drawing. The complete drawings set will be filed with the second Deficiencies and AIRs information that is due in mid-September.

Exhibit G

5. Section 4.39(a) of the Commission's regulations requires drawings with a space five inches high by seven inches wide in the lower right-hand corner that includes the title, numerical and graphical scale, and other pertinent information concerning the drawing with the lower half of the space left clear. The lower half of the space in the lower right-hand corner of the Exhibit G maps filed as part of the license application

on April 14, 2022, are not left clear. To address this deficiency, a revised Exhibit G must be filed in accordance with section 4.39 of the Commission's regulations.

GLWP: The Exhibit G drawings have been corrected.

6. Section 4.41(h)(2) of the Commission's regulations requires Exhibit G to include a project boundary that encloses all project works and other features described under Exhibit A that are to be licensed. Exhibit A identifies a 650-foot-long, 12.47-kV underground transmission line as a project facility. However, the project boundary in Exhibit G does not enclose the transmission line. Please revise Exhibit G to include the transmission line in the project boundary.

GLWP: The Exhibit G drawings have been corrected.

7. Section 4.41(h)(2) of the Commission's regulations requires Exhibit G to clearly describe the project boundary around: (1) continuous features using specified distances from centerlines or offset lines of survey; and (2) noncontinuous features using contour lines, courses and distances, and/or lines upon or parallel to lines on a public land survey. The Exhibit G submitted as part of the license application does not describe the penstock and the transmission line (continuous features) and the dam and powerhouse (noncontinuous features), as required. Exhibit G must be revised to meet the requirements of section 4.41(h)(2).

GLWP: The Exhibit G drawings have been corrected.

8. Section 4.41(h)(3) of the Commission's regulations requires Exhibit G to identify federal lands that are within the project boundary. The boundaries of the federal lands must be identified by: (1) legal subdivisions of a public land survey of the affected area; and (2) the federal agency, identified by symbol or legend, that maintains or manages each identified subdivision of the public land survey within the project boundary; or (3) the location of the federal lands according to the distances and directions from fixed monuments or physical features in the absence of a public land survey. The Exhibit G submitted as part of the license application identifies the Green Lake National Fish Hatchery, but does not identify that it is land of the U.S. Fish and Wildlife Service, as required. Exhibit G must be revised to meet this requirement.

GLWP: The Exhibit G drawings have been corrected.

9. Section 4.41(h)(4) of the Commission's regulations requires an Exhibit G map that identifies, by legal subdivision, lands owned in fee by the applicant, lands that the

applicant plans to acquire in fee, and lands over which the license applicant has acquired or plans to acquire rights by other than fee title, including rights acquired or to be acquired by easement or lease. The Exhibit G maps filed with the application do not include this information and must be revised to identify land within the project boundary by legal subdivision.

GLWP: The Exhibit G drawings have been corrected.

REQUESTS FOR ADDITIONAL INFORMATION

Exhibit A

1. The elevations in the license application are provided in the United States Geological Survey (USGS) datum, which is not a current state-of-practice datum. Please revise the license application to include a current state-of-practice datum, such as the National Geodetic Vertical Datum of 1929 (NGVD 29) or the North American Vertical Datum of 1988 (NAVD 88). Alternatively, please provide conversion factors from USGS datum to NGVD 29 or NAVD 88 for the project vicinity, if available.

GLWP Response:

All elevations in the exhibits have been changed to use the NGVD29 datum. If USGS elevation datum is referenced in any secondary document (such as a study report) it should be interpreted as NGVD29 datum. The USGS used the NGVD29 datum in the Project area from before the Project was first licensed until a few years ago.

2. Sections 2.1.2 and 2.1.9 of Exhibit A state that the project includes a 270-foot-long dam. Section 2.1.2 of Exhibit A also states that the dam includes: (1) an 82-foot-long concrete-gravity section with an 80-foot-long overflow spillway; (2) a 12-foot-long concrete intake structure; (3) a 22.2-foot-long concrete section with two sluice gates; and (4) an approximately 157-foot-long section that includes two auxiliary spillways, which indicates that the project includes a 273.2-foot-long dam. Please revise the application to rectify the inconsistency and clarify the length of the project dam. In addition, please explain if the project dam includes any abutments and, if so, provide the dimensions of the abutments.

GLWP Response:

The lengths of the various parts of the dam were measured to compile definitive lengths. New drawings are being prepared that use these lengths. Exhibits A and E have been updated to these values. The southwest end of the dam starts at a ledge outcropping. The northeast end of the dam ends at a boulder which is irregular and not all visible but looks to average perhaps 6 feet in diameter.

3. Sections 2.1.6 and 2.1.9 of Exhibit A describe a 400-kilowatt (kW) Allis-Chalmers tube turbine-generator unit and a 25-kW centrifugal pump turbine-generator unit. Exhibit A does not describe the runner heights, runner diameters at the inlets, runner diameters at the discharge points, turbine efficiencies at best gates, turbine rotational speeds, and number of blades. Please provide the specifications listed above for each turbine, to the extent available.

GLWP: The turbine information has been updated in Exhibit A.

GLWP Response:

The 400 kW Allis-Chalmers tube turbine has a 28-inch runner (with five blades) which is centered on an elevation of 101.9 ft NGVD29 datum. This tube turbine does not have different runner inlet and discharge diameters. The turbine runs at a speed of 726 RPM when generating at normal capacity, with a generator efficiency of 95.3%. The turbine does not have a variable gate.

The 25-kW centrifugal pump-as-turbine has an eleven-inch runner. It has a six-inch inlet and an eight-inch outlet, but the exact geometry inside the pump is not currently known. The runner outlet would be expected to be quite a bit smaller than the outer diameter of the runner. The actual speed of this turbine must be determined experimentally by adjusting the belt ratio between the turbine and generator and measuring the power output. The maximum efficiency should be around 85%. The best operating point (turbine to generator belt ratio) is likely to vary depending on whether the main unit is running or not. This affects when and how the 25-kW unit is used. The work of dialing in this unit and determining any desirable changes with changing head is ongoing. It has been delayed by the demands of the relicensing process.

4. Section 2.2.1 of Exhibit A of the license application states that the project operation includes seasonal impoundment drawdowns and refills. Please provide a description of the procedure for implementing the seasonal impoundment drawdowns and refills, and clarify whether or not the turbine-generator units operate during the drawdowns and refills.

GLWP: Exhibit A has been updated with this data.

5. Section 2.2.1 of Exhibit A of the license application states that the project operation is “closer to fixed point ‘run of river’ than it is to peaking.” The same section also states that “current plans are not to do peaking generation as it has not been an effective means of operating recently.” So that Commission staff may understand current project operation, please provide daily impoundment levels, flow records for the project (i.e., inflow and outflow), and daily generation records, to the extent the information is available. The data provided should cover a sufficient period to include a range of conditions, including wet, moderate precipitation, and dry years.

To the extent that Green River Power is proposing any changes to current project operation, please specify those changes in the context of this additional information on current project operation.

GLWP Response:

Daily log data is provided for lake level, generation, and precipitation for 2011 through 2020. This data is in the excel spreadsheet Generation-Precipitation-and-Lake-Levels which is included as an attachment for this submission. This covers a sufficient period to include a range of conditions, including wet, moderate precipitation, and dry years.

Additional information on project operation is in #6 below.

6. Section 2.5 of Exhibit A of the license application states that the minimum and maximum hydraulic capacities of the powerhouse are 7 cfs and 97 cfs, respectively. Please provide a description of project operation when the inflow to the impoundment is: (1) less than the minimum hydraulic capacity of the powerhouse; (2) between the minimum and maximum hydraulic capacities of the powerhouse; and (3) exceeds the maximum hydraulic capacity of the powerhouse. Please also clarify the order the turbine-generator units are brought online, approximate impoundment levels and fluctuations, storage volume of the impoundment used for operation of the turbine-generator units, and conditions that initiate use of the spillway section of the dam as well as other project structures (e.g., gates).

GLWP Response:

The actual inflow to the impoundment is not known, except by lake level changes. Because of this, lake level changes are used to make operational decisions. Precise lake level readings for accurate level comparison with prior days are often hampered by the presence of standing waves in the lake (with a period of slightly less than one hour).

If the lake level is low (below the allowed minimum) the turbines are not run. If the lake level is high (near or above the allowed maximum of 160.7 ft NGVD29 datum) the turbines are run non-stop. If turbine operation is not expected to keep, or quickly restore, the lake level in range, waste gates are opened at the dam.

Time of year has a very large effect on project operation for several reasons. During the summer and into the early fall, the Green Lake National Fish Hatchery draws water from the Project penstock. Since the Hatchery draws water downstream of the Project headworks, the water pressure they experience at their filtration plant varies depending on whether the main turbine is running or not. Because of this, the Project must coordinate main turbine startup operations with the Hatchery to avoid filtration plant low water alarms. Turbine shutdowns are not as critical since they increase the Hatchery filtration plant water pressure, but this does result in wasted water from extra filter plant water overflow. Because of this interaction with the operation of the Hatchery, frequent starting and stopping of the turbine is not practical from late spring through early fall. In practice, interaction with the Hatchery

has not proven to be a large problem—the Project usually has either a surplus of water (allowing continuous operation) or a lack of water (leading to a protracted shutdown) during the time the Hatchery is using the Project penstock.

While it might seem straightforward to predict runoff into the lake from precipitation, there are several factors that complicate this. Hills north of the lake can cause large differences in precipitation between different areas around the lake. Much of the precipitation around the lake runs off into local marshes and ponds. These areas must fill to the point that they spill water before appreciable runoff occurs from them into Green Lake. The amount of water required to do this varies based on the amount absorbed by trees (much of the land in the Green Lake drainage area is forested), the prior precipitation experienced by each local marsh or pond drainage area, and on the spill characteristics of each area around the lake. In the summer, after even a short dry spell, the first inch of precipitation is absorbed by trees and causes little or no runoff into Green Lake.

The second unit's main function is to generate power when there is not enough water to run the main turbine—to keep the power meter turning in the “right” direction during times, such as the summer, when water is scarce. The second unit's best operating point (chosen by varying the belt ratio between the turbine and the generator, a process which takes hours or days) is tuned for this operation. While both units can be run at the same time to reduce the need to dump water at the dam with the waste gates, under more moderate conditions the main unit would be run as needed to control the lake level and the second unit run when the main unit is shut down.

The part of the question about impoundment levels and fluctuations makes assumptions that do not reflect a very good understanding of the Project. Running the main unit non-stop, with little runoff into the Green Lake, the lake level drops about 0.05 ft per day when the lake is in the summer level range. The allowed summer lake level range is from 159.7 to 160.7 ft NGVD29 datum. Allowing for buffers against storms and dry spells, the lake level target for the Project during the summer is typically 160.0 to 160.2 ft NGVD29 datum. With no runoff into the lake, it takes about four days of continuous operation for the main unit to drop the lake from the top to the bottom of this range. The summer target range is varied depending on the weather encountered and the forecast for the summer. In practice, with the lake in the 160.0 to 160.2 ft NGVD29 datum range and no runoff expected, the main unit would not be started at all. It is not unusual for the main turbine to be shut down from sometime in June until the beginning of September from lack of water.

The late fall and early winter are different. After the fall drawdown (ideally to 157.5 ft NGVD29 datum), the lake is allowed to refill to a level of 158.0 ft NGVD29 datum or so, then the main unit is started and run continuously. Typically, sometime in the late fall the project area starts to experience increased rain and as the trees go dormant, runoff into the lake increases. These conditions, which refill the lake, often provide enough water to run the main unit non-stop for an indefinite period. It is not unusual for a January thaw to require opening the waste gates to keep the lake from exceeding its maximum allowed level of 160.7 ft NGVD29 datum.

The crest of the spillway is fixed at 160.7 ft NGVD29 datum. If the lake level exceeds the allowed maximum water is spilled. If the lake level is below 160.7 ft NGVD29 datum, it only spills water from wave action. The spillway does not have flashboards, and it is not adjustable (it is a large concrete structure doweled into ledge.) As described above, the gates are opened as needed to keep the lake from exceeding the allowed level of 160.7 ft NGVD29 datum or to quickly return the lake level to the allowed range in the case of an extreme event.

The precipitation forecast is used to predict when the combination of lake level plus expected runoff is likely to push the lake level above the allowed range despite the main unit running continuously. Emphasis is put on predicting waste gate openings and closings early so more moderate gate adjustments can be used. Since the Project's main indicator of impoundment inflow is lake level changes, an early and gradual approach provides more feedback and better control of the lake level. NOAA local forecasting has become much less useful for this in the last 5 years or so. The country wide weather maps and precipitation maps (which extend out three days) are still quite useful, but NOAA appears to have decided that its job is to get people worried about the weather and generate page clicks. An example of this is a typical winter forecast where the precipitation maps show over an inch of rain is expected and the local forecast just says: "little or no snow is expected." During the summer the NOAA forecasts (both local forecasts and precipitation maps) consistently predict rain for this area which does not arrive. This situation with NOAA requires that the Project directly interpret the national weather maps and predict the weather.

Exhibit E - Aquatic Resources

7. Section 5 of Exhibit E of the application states that lake drawdowns within the littoral zone would continue to effect fishery resources. However, the application does not describe the physical aquatic habitat within the littoral zone of the lake. To enable Commission staff to evaluate the effects of continued drawdown operations on Green Lake aquatic habitat and fishery resources that occur within the littoral zone, please describe the following features in the littoral zone of the lake, to the extent the information is already available: (1) the substrate; (2) the presence, location, and an estimate of the area of any beds of aquatic vegetation; and (3) the presence and location of large woody debris.

GLWP Response:

Little of this data is currently available. The fall drawdown is a maximum of 3.2 feet from pond full level (160.7 NGVD29 datum). During the summer the lake is maintained at a level of 160.2 +/- 0.5 feet. Most of the littoral zone subject to dewatering during the fall drawdown is not available for direct inspection until after the fall drawdown.

During the summer 2020 lake studies, the near land underwater substrate experienced by the Project was largely rocky (large cobble to large boulders with no woody debris encountered). Most of the lake perimeter observed was during the lake temperature study,

which only covered a small percentage of the actual shoreline. GLWP plans to do a reasonably simple survey of the lake perimeter after the drawdown this fall to document the amounts of different types of substrate dewatered, and any aquatic vegetation affected by the drawdown. The results of this survey will be compiled and submitted to the FERC by end of year 2022.

8. Section 5.4.5.2 of the application states that landlocked salmon spawn in the tributaries of Green Lake, but provides no other information regarding when and where salmon spawn. So that Commission staff can better understand the potential effects of the annual impoundment drawdown on landlocked salmon spawning, please identify the following information to the extent it is already available: (1) the tributaries where landlocked salmon spawn; (2) the locations within those tributaries where salmon spawning occurs (e.g., near the mouth of the tributary or the approximate distance upstream of Green Lake); and (3) describe any potential barriers to fish passage within the drawdown zone.

GLWP: The Maine Department of Inland Fish and Wildlife has sent us useful information on this. This information has been added to Exhibit E Section 5.4.5.2

9. Section 7.2 of the application discusses multiple sets of data for studies conducted as part of relicensing, but does not provide measured values from the impoundment temperature study. To enable Commission staff to analyze all data relevant to these studies, please provide all data collected for the impoundment temperature study including, but not limited to, data used to create Figures 2-27 through 2-31 in Appendix C of Exhibit E. If similar data have been collected since November 2020, please include this data in your response as well.

GLWP Response:

The complete data behind the impoundment temperature graphs is in the files Logger-*.xlsx included as attachments with this submission. One spreadsheet for each logger.

No similar data has been collected since November 2020.

10. So that Commission staff has sufficient information to analyze project effects on aquatic habitat within the bypassed reach, please provide the data used to create Figures 2-39 through 2-42 in Appendix C of Exhibit E.

GLWP Response:

The data and logic used to create the figures is in the spreadsheet file – Transect-Grid-Full.xlsx – included with this submission.

11. Section 5.5 of Exhibit E does not describe the acreage of upland vegetation types within the project boundary. Please provide an estimate of the acreage of each major upland vegetation type (e.g., forest, grass) present within the project boundary.

GLWP: Exhibit E has been updated to include this data.

12. Section 5.5.2.1 of Exhibit E describes wetland habitats in the project vicinity and includes a map of different wetland types in the project vicinity (e.g., emergent, forested, shrub). However, the application does not provide the acreage of each wetland type located within the project boundary. Please provide the estimated acreage of each wetland type within the project boundary.

GLWP: Exhibit E has been updated to include this data.

13. Section 5.5.1.2 of Exhibit E describes wildlife resources in the project vicinity. The application discusses two pairs of nesting bald eagles in the project vicinity, which seems to contradict a statement in section 5.5.4.2 that there are no bald eagle nesting sites in the immediate vicinity. Please rectify this inconsistency.

GLWP: Exhibit E has been updated with the current data.

14. Section 5.5.2.2 of Exhibit E describes littoral and upland habitat around Green Lake. Much of the existing environment description is provided in the form of excerpts from the original 1983 license application. Please discuss whether any changes to the littoral and upland habitat have occurred since 1983, and provide an updated description that reflects current conditions.

GLWP: Exhibit E has been updated with this information.

15. Exhibit E does not describe any current or proposed vegetation management at the project. So that Commission staff can evaluate the effects of project maintenance activities on terrestrial resources, including the monarch butterfly,¹ please describe any current/proposed vegetation management activities (e.g., mowing conducted weekly around project facilities during the growing season), including methods, total acreage of project land affected, and approximate dates when the activities typically occur.

GLWP: Exhibit E has been updated with this information.

Exhibit E –Recreational Resources

16. Section 5.8.1 of Exhibit E describes recreation use at the project in 1983, but does not provide a current description of project recreation use. Please provide a description of current recreational opportunities and use in the project vicinity.

GLWP: This section in Exhibit E has been updated.

Exhibit E - Historical and Cultural Resources

17. Section 5.10.3 of Exhibit E of the application states that Green Lake Power is not aware of any prior cultural resources investigations in the project boundary. However, section 4.1 of the Revised Study Plan included in Appendix D of Exhibit E refers to the Maine State Historic Preservation Office (Maine SHPO) letter dated June 14, 2019 and filed with the Commission on March 17, 2020 which states that “approximately 5% of the Green Lake impoundment margin has been subjected to professional archaeological survey. One prehistoric archaeological site is already known on the impoundment margin.” Additionally, the Revised Study Plan and section 5.10.6 of Exhibit E of the application refer to the Maine SHPO’s September 14, 1981 letter regarding a field check of the original project area.² This letter states that “there are archaeological sites nearby, but they are outside of the project impact area.” Please obtain and file any previous archeological surveys conducted in the Area of Potential Effects of the project. Please also provide: (1) the proximity of any identified resources to the areas of erosion identified in the results of the Erosion Reconnaissance Survey; and (2) any known and potential project effects on cultural and tribal resources, including but not limited to effects associated with impoundment elevation fluctuation, vandalism, and public access. Any sensitive information about the location, character, or ownership of an historic property should be filed as privileged.³

² In a letter dated March 9, 2020 and filed with the Commission on March 17, 2020, the Maine SHPO states that this 1981 study was specific to the area impacted by proposed modifications to the outlet dam and did not address archaeological resources that could be present at the impoundment or elsewhere within the project boundary.

³ Section 388.112 of the Commission’s regulations describes the procedures for requesting privileged treatment for some or all of the information contained in a particular document. 18 C.F.R. § 388.112 (2021).

GLWP: Exhibit E has been updated.

GLWP Response:

The correspondence between GLWP (Kleinschmidt) and MHPC begins in 1981 with a letter from Earle G. Shettleworth, Jr, State Historic Preservation Officer, alerting Mr. Ayer, at Kleinschmidt & Dutting, that ‘the construction of the proposed penstock and powerhouse

for this dam are in the immediate vicinity of at least two archaeological sites of potential significance to the National Register of Historic Places.’ And requests that he contact Dr. Arthur Spiess at his office at his convenience.

Then on September 14, 1981, the same gentleman, Earle G. Shettleworth, Jr, State Historic Preservation Officer, writes to Mr. Dunlap at Kleinschmidt & Dutting, stating that ‘My staff archaeologist, Dr Arthur Spies, has carefully field checked the project area for the proposed Green Lake Hydroelectric Project. There are archaeological sites nearby, but they are outside the project impact area. I find that this project will have no effect upon any structure or site of historic, architectural, or archaeological significance as defined by the National Historic Preservation Act of 1966.’

Then on October 10, 1986, Frank Dunlap, of Kleinschmidt Associates, wrote to Mr. Arthur Spies at the State Historic Preservation Commission to inform him that ‘The Green Lake Water Power Company is planning to reconstruct the southern 80-foot section of the Green Lake Dam.’ He then requested confirmation of his understanding that ‘the project will not disturb any archaeological or historical resources.’

On October 15, 1986, Earle G. Shettleworth, Jr., wrote to Mr. Frank Dunlap, of Kleinschmidt Associates, and stated ‘My staff has reviewed the plans for substantial reconstruction of the southern wing of the Green Lake Dam. I find that this project will have no effect upon any structure or site of historic, architectural, or archaeological significance as defined by the National Historic Preservation Act of 1966.’

As you can see, the reconstruction of the dam did not come up until 1986 and the letter in 1981 was regarding the ‘the project area for the proposed Green Lake Hydrological Project.’

These letters are included in the MHPC-Files attachment to this submission.

GLWP consulted with MHPC requesting information regarding any previous archeological surveys conducted in the Area of Potential Effects of the project. Dr. Arthur Speiss responded saying “There is one and only one professional archaeological survey of the Green Lake impoundment shoreline, covering a small percentage of the shoreline. A copy is attached.”

The study that Dr. Spiess provided is a phase I survey, done in 2011, of the Nevells Shore Subdivision project by the Northeast Archaeology Research Center, Inc. In the report it says in the first paragraph ‘No archaeological sites were identified, however, and no additional archaeological work is recommended for the project.’ And then in the conclusions paragraph ‘No Native American or historic Euroamerican cultural material was recovered during this work. On the basis of the negative results of the survey, it is unlikely that significant Native American sites are present in the project and no further archaeological work is recommended for the Nevells Shore Subdivision Project.’

The archaeological report is included in the MHPC-Files attachment with this submission.

(1) the proximity of any identified resources to the areas of erosion identified in the results of the Erosion Reconnaissance Survey.

GLWP Response:

One professional archeological survey was performed in 2011 near the project boundary. No archaeological sites were found. The survey area shoreline is across the bay from the largest potential erosion area found during the lake shore Erosion Reconnaissance Survey. The nearest shoreline point of the archaeological survey area is 0.6 miles from the erosion site. Also, the erosion site has much steeper topography than the archaeological survey area

(2) any known and potential project effects on cultural and tribal resources, including but not limited to effects associated with impoundment elevation fluctuation, vandalism, and public access.

GLWP: None known.

18. Section 5.10.4 of Exhibit E of the application states that a “discussion on Tribal resources can be found in detail in Section 5.11.” However, section 5.11 of Exhibit E is the “References” section and no discussion of tribal resources is provided. Please provide the discussion of tribal resources.

GLWP: Exhibit E has been updated with this information.

Exhibit F

19. Section 2.1.2 of Exhibit A of the license application states that the southeast end of the project dam includes an 82-foot-long concrete-gravity section with an 80-foot-long overflow spillway. However, sheet 4 of Exhibit F indicates that the length of the section is 78.75 feet. Please revise the application to rectify the inconsistency and clarify the length of the section of the dam.

GLWP Response:

The length 82-foot section contains a 79.8-foot spillway. Exhibit A has been updated with accurate numbers. Updated Exhibit F drawings are not yet complete (see #4 above for more information).

20. Section 2.1.2 of Exhibit A of the license application states that the northeast end of the project dam includes a 35-foot-long auxiliary spillway with a crest elevation of 162 feet USGS datum. However, the elevation view of the dam shown on sheet 4 of Exhibit F indicates that the length of the auxiliary spillway is 37.08 feet. Section B on sheet 4 of Exhibit F indicates that the crest elevation of the auxiliary spillway is 161.5 feet USGS datum. Please revise the application to rectify the inconsistencies and clarify the length and crest elevation of the auxiliary spillway.

GLWP: The auxiliary spillway mentioned is 35.5 feet long, at an elevation of 162 ft NGVD29 datum. Exhibit A has been updated accurate numbers. Updated Exhibit F drawings are not yet complete (see #4 above for more information).

21. Section 2.1.2 of Exhibit A of the license application states that the Green Lake National Fish Hatchery “draws water from the lake via two concrete lined ductile iron pipes (non-project) beneath the southwest section of the dam.” Please describe the location of the outlets of the pipes and any gates that are used to regulate the flow into the pipes.

GLWP Response:

The project has little knowledge of the outlets of the GLNFH water pipes. GLWP assumes that valves are contained in the Hatchery’s “valve pit” next to the underground penstock near the dam, and that these valves are one of the control mechanisms used to regulate the flow in the Hatchery’s pipes—but this is largely speculation.

Exhibit G

22. The Initial Statement and section 2 of Exhibit A of the license application state that the impoundment surface area is approximately 2,989 acres. However, the electronic project boundary data filed as part of the license application appears to include an approximately 3,310-acre impoundment. Please verify the surface area of the impoundment and revise the application to correct this inconsistency.

GLWP Response:

The area of the impoundment, using current GIS tools and data, is 3310 acres. The Initial Statement and Exhibit A have been updated. Exhibit G files have also been updated for this filing.