



United States
Department of
Agriculture

Forest
Service

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File Code: 2770
Date: September 17, 2003

Ms. Magalie R. Salas
Secretary
Federal Energy Regulatory Commission
888 First Street, NE
Washington, DC 20426

Re: USDA FOREST SERVICE, NOTICE OF APPLICATION TENDERED FOR FILING WITH THE COMMISSION, SOLICITING ADDITIONAL STUDY REQUESTS, AND ESTABLISHING PROCEDURAL SCHEDULE FOR RELICENSING AND A DEADLINE FOR SUBMISSION OF FINAL AMENDMENTS

Hells Canyon Hydroelectric Project, FERC Project No. P-1971-079

Idaho Power Company

Dear Ms. Salas:

Enclosed for filing with the Commission is the USDA Forest Service response to the NOTICE OF APPLICATION TENDERED FOR FILING WITH THE COMMISSION, SOLICITING ADDITIONAL STUDY REQUESTS AND ESTABLISHING PROCEDURAL SCHEDULE FOR RELICENSING AND A DEADLINE FOR SUBMISSION OF FINAL AMENDMENTS for the Hells Canyon Hydroelectric Project, FERC Project No. 1971-079. This response is submitted pursuant to 18 CFR Section 4.32(b)(7) as outlined in the above referenced Federal Energy Regulatory Commission (FERC) Notice issued on July 31, 2003.

Included in this submittal are the following documents:

Enclosure I – USDA Forest Service Additional Study Request and Additional Information Request

Enclosure II – Comments Specific to New Information Provided in the Final License Application (FLA)

Enclosure III – USDA Forest Service Continued Disagreement With The Applicant Regarding Effects to National Forest System (NFS) Lands and Resources



Enclosure I identifies the USDA Forest Service's Additional Study Requests that are needed to address the agency's concerns relative to project impacts to NFS lands and resources. The USDA Forest Service maintains that the identified studies should be conducted in order to form an adequate factual basis for FERC's analysis of the FLA. USDA Forest Service Additional Information Requests from the Applicant are needed by the agency to evaluate the adequacy of the Applicant's conclusions and provide appropriate PM&E measures.

Enclosure II contains the USDA Forest Service's comments specific to new information provided in the FLA. This section addresses the adequacy of new information provided since the release of the Draft License Application (DLA) and to what extent the FLA is responsive to comments provided by USDA Forest Service to the Applicant regarding the DLA.

Enclosure III contains the USDA Forest Service's comments by resource area relative to the FLA where the agencies issues and concerns have still not been addressed and disagreement with the Applicant still exists.

In July 2003, Idaho Power Company (IPC) released its FLA for review and comment. The primary focus of the USDA Forest Service review of the FLA was to evaluate new information or analysis provided in the FLA especially with respect to comments provided to the Applicant regarding the adequacy of the DLA and to identify additional studies needed to address USDA Forest Service concerns relative to project impacts to NFS lands and resources. All the Additional Study requests identified in this filing have been requested of the Applicant prior to or subsequently to release of the DLA. USDA Forest Service will provide detailed comments relative to the adequacy of PME measures proposed by the Applicant when the factual base for the analysis of impacts and development of appropriate PME measures is established and the Ready for Environmental Analysis Notice is published by the Commission.

The Hells Canyon Hydroelectric Project Complex (HCC) is one of the largest non-federal hydroelectric facilities that will be relicensed on NFS lands in the Pacific Northwest. The project occupies and/or potentially effects significant NFS lands and resources including 71.5 miles of Congressionally designated Wild and Scenic River administered by the USDA Forest Service below the Hells Canyon Dam. The 1166-megawatt project provides power over a 20,000 square mile region to over 814,000 potential customers in Southern Idaho and eastern Oregon.

The following table displays the NFS acres that could be affected by the project:

National Forest System Acres Potentially Affected by the Project			
County (Co.) that NFS acres are located in	Acres tied to IPC's associated Tier 2 Study Area	Acres within Project Boundary	Acres with Transmission lines
Baker Co., OR	236	0	0
Wallowa Co., OR	148,350	450 (approximate)	408
Washington Co., ID	29,440	0	<50
Adams Co., ID	64,780	910	126
Idaho Co., ID	110,318	0	0

The following table displays Snake River mileages that could be affected by the project:

Snake River Project Mileage	
Weiser to the northern boundary of the HCNRA	175 miles
Mileage adjacent to NFS lands	90 miles
Wild and Scenic Snake River miles	71.5 miles
Wild section	31.5 miles
Scenic section	40 miles

Congress recognized the significance of the canyon when it established the Hells Canyon National Recreation Area and designated the Snake River below Hells Canyon Dam as a Wild and Scenic River in 1975 (PL 94-199).

The objectives of the USDA Forest Service in a hydropower project licensing or relicensing are:

- “to encourage hydroelectric production where it is compatible with National Forest purposes” and
- “[t]o ensure that planning, construction, and operation of hydroelectric projects are performed in such a manner to protect or effectively utilize National Forest System lands and resources.”

The USDA Forest Service will file a Motion to Intervene at the appropriate time. Therefore, USDA Forest Service is not requesting cooperating agency status in the preparation of the Commission’s environmental document.

In conclusion, the USDA Forest Service will continue to seek to work in a collaborative manner with the Applicant and other interested parties to resolve issues and concerns in the relicensing of the HCC. If you have any questions regarding the response to this Notice, or require additional information, please contact Lynn Roehm, Wallowa-Whitman National Forest Hydropower Coordinator, at (541) 523-1316 or lroehm@fs.fed.us.

Sincerely,

/s/ Carol R. Feider for
MARK J. MADRID
 Forest Supervisor
 Payette National Forest

/s/Karyn L. Wood
KARYN L. WOOD
 Forest Supervisor
 Wallowa-Whitman National Forest

Enclosures

cc: Service List
 Payette NF
 R6-RF
 R4-RF
 IPC

**UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION**

IN THE MATTER OF THE APPLICATION)
FOR A MAJOR NEW LICENSE FOR)
THE HELLS CANYON)
HYDROELECTRIC PROJECT)
_____)

Project No. 1971-079

CERTIFICATE OF SERVICE

I HEREBY CERTIFY that I have this day served the foregoing USDA Forest Service response to NOTICE OF APPLICATION TENDERED FOR FILING WITH THE COMMISSION, SOLICITING ADDITIONAL STUDY REQUESTS AND ESTABLISHING PROCEDURAL SCHEDULE FOR RELICENSING AND A DEADLINE FOR SUBMISSION OF FINAL AMENDMENTS upon each person designated on the official service list compiled by the Secretary in this proceeding, an exact copy thereof.

Dated at Baker City, Oregon this 19 day of September, 2003

/s/ Lynn W. Roehm

USDA Forest Service

Wallo wa-Whitman Hydropower Coordinator

Hells Canyon Hydroelectric Project
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Enclosure I

Additional Study Requests

Operational Scenario Modeling

Baseline Operational Scenario

Basis For Study: This study is needed to evaluate the baseline operational scenario. This analysis should represent how the Applicant actually operated the HCC for the five primary model years.

Who Should Conduct and Participate In The Study: The model run can be made by the Applicant with CHEOPS. It can also be made by FERC or contracted and run on a non-proprietary model. If the second approach were taken, the new model's runs would need to be calibrated to the CHEOP's model for comparison purposes. Interested agencies and tribes need to participate.

Study Methodology: The study should utilize the same concepts presented in DLA Exhibit E.0, "Conceptual Overview of Integration" and the Technical Report Appendix E.1-4. "Project Hydrology and Hydraulic Models Applied to the Hells Canyon reach of the Snake River." The inflow and outflow hydrographs should be represented by actual, not modeled, data. Environmental effects should be based on what occurred for the modeled years 1992, 1994, 1995, 1999, and 1997.

Resource Goals and Objectives: This scenario would establish the existing baseline operations for the HCC. All other alternatives could then be compared to this scenario.

This is needed for agencies to understand the current situation and to analyze impacts that may occur during any new license period. The information is also needed for the EIS's "No Action" Alternative.

Accepted Practices: In any environmental analysis the Baseline Alternative or No Action Alternative describes the existing situation. It is important to describe the baseline for the HCC as how the Applicant actually has operated the complex.

Usefulness of Information: The results of this study will establish the existing baseline operations for the HCC so the effects of the proposed operations can be compared to those of the baseline of the recent operations. With this model run, the Applicant will be required to disclose both positive and negative effect of its proposed action to a true baseline condition. In addition, a range of other operational scenarios meeting specific resource objectives can be developed. Again, the Applicant will be able to compare those

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alternatives to the baseline. From this type of integrated modeling, which the Aquatic Resources Working Group (ARWG), has recommended, potential operational PM&E measures can be developed and trade-offs can be considered.

How Long The Study Will Take: If the model run is made in CHEOPS it should only take several weeks because the set-up is already completed. If it is run on another model it may take several months to get the model set-up and calibrated.

Why The Study Objectives Cannot Be Achieved Using The Data Already Available: The applicant has developed an operational hydrologic flow model for the HCC. The two operational scenarios analyzed by the Applicant are inadequate because they do not fully address the resource issues identified by the agencies and Tribes, nor do they provide details of the current operation at the HCC. Without this additional study, accurate assessment of operational impacts cannot be made.

Request During Pre-Filing: Although this study was requested during pre-filing consultation the Applicant chose not to run this model scenario.

Integrated Resource Operations

Basis for Study: The FLA frequently identifies the importance of balancing power and resource objectives. However, the FLA fails to address the alternative developed by the ARWG that addresses this important relationship. This study is needed to evaluate the environmental effects of an integrated resource operations alternative.

Who Should Conduct and Participate In The Study: The model run can be made by the Applicant with CHEOPS. It can also be made by FERC or contracted and run on a non-proprietary model. If the second approach were taken, the new models would need to be calibrated with CHEOPS for comparison purposes. Interested agencies and tribes need to participate.

Study Methodology: The study would utilize the same concepts presented in DLA Exhibit E.0, "Conceptual Overview of Integration" and the Technical Report Appendix E.1-4. "Project Hydrology and Hydraulic Models Applied to the Hells Canyon reach of the Snake River." This alternative would be exactly the same as the Applicant's "Proposed Operations" but with the following changes:

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Objective 1: Summer flow augmentation for chinook migration

Summer Flow Augmentation (target elevation)	
Date	Maximum Brownlee Elevation
August 10	2,051
August 31	2,049
September 30	2,045

Objective 2: Ramping Rates, December to October

Time	Hells Canyon	Hells Canyon	Johnson Bar	Johnson Bar
Daily	5,000 cfs	2.0 ft	5,000 cfs	1.5 ft
Hourly	1,000 cfs	0.4 ft.	1,000 cfs	0.3 ft.

Objective 3: Brownlee Reservoir will be drafted to meet the 6,500 minimum flow requirement.

Hydrology and environmental effects should be analyzed for the five model years (1992, 1994, 1995, 1999, and 1997).

Resource Goals and Objectives: This alternative incorporates the following critical aquatics flow related resource objectives:

Fall chinook routine: Provide a stable spawning flow for fall chinook from October 21 to December 10. (IPC Proposed Operations)

Minimum Instantaneous Flow: The minimum instantaneous flow volume below Hells Canyon dam is reduced slightly (8,500 – 12,000 cfs) below the fall spawning flow from December 12 to June 1. (IPC Proposed Operations)

After June 1 in the model, the minimum instantaneous flow below Hells Canyon Dam is reduced to 6,500 cfs for navigation purposes. (IPC Proposed Operations)

Provide an instantaneous minimum flow of 100 cfs for the Oxbow By-pass. (IPC Proposed Operations)

Brownlee Reservoir will be drafted to meet the 6,500 minimum flows.

Winter Power Demand: Provide a full pool (2,077) in Brownlee Reservoir by January 1 to meet the Applicant winter power demand. This is accomplished by following the fall

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chinook Routine (Oct 21-Dec 10), where inflow to Brownlee Reservoir exceeds outflow at Hells Canyon Dam. (IPC Proposed Operations)

Flood Control: Provide protection from flooding to Lewiston and Portland by following ACOE Flood Control Rule Curves (revised 1998). (IPC Proposed Operations)

Provide for Brownlee refill, spring and summer flow augmentation, and summer reservoir recreation by not drafting below the upper rule curve level.

The Applicant and ACOE should negotiate the highest reservoir level possible based on projected yearly stream flow forecast. (IPC Proposed Operations)

Flow Augmentation: Provide a sufficient flow (as identified by NOAA fisheries) in the Snake River below Hells Canyon to meet out migration objectives for spring/summer chinook and fall chinook.

Daily Ramping Rates: Daily ramping at Brownlee (35,000 cfs) and Oxbow (28,000 cfs) is not restricted in order to meet seasonal and daily power demands. (IPC Proposed Operations)

Daily ramping rate at Hells Canyon will be 0 cfs/day for the fall chinook spawning routine from Oct 21 through December 10. (IPC Proposed Operations)

With the exception of the fall chinook program provide a moderate daily ramping at Hells Canyon Dam Gage not to exceed 5,000 cfs/day (2.0 ft/day) and provide hourly ramping below Hells Canyon Dam Gage not to exceed 0.4 ft/hr (1000 cfs/hr) for increasing flows and decreasing flows to mitigate resource objectives for recreation boating and floating, beach stability, riparian habitat, aesthetics, aquatic food base, and aquatic habitat.

Hourly Ramping Rates: Hourly ramping at Brownlee (35,000 cfs) and Oxbow (28,000 cfs) is not restricted in order to meet seasonal and daily power demands. (IPC Proposed Operations)

Hourly ramping rate at Hells Canyon will be 0 cfs/day for the fall chinook spawning routine from Oct 21 through December 10. (IPC Proposed Operations)

Provide for Brownlee Reservoir to be refilled to 2069 (or above) by June 1 and to 2077 by July 1. (IPC Proposed Operations)

Reservoir daily fluctuation levels in Brownlee Reservoir will not exceed 3 feet/day from June 21 through May 20. (IPC Proposed Operations)

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Reservoir daily fluctuation levels in Brownlee Reservoir will not exceed 1foot/day from May 21 through June 21 for resident fish spawning. (IPC Proposed Operations)

Reservoir daily fluctuation levels in Oxbow and Hells Canyon Reservoirs will not exceed 5 feet year round to enhance summer recreation and resident fish spawning. (IPC Proposed Operations)

Summer flow augmentation flow targets will be met by drafting Brownlee Reservoir to the level mentioned above.

Accepted Practices: This study is intended to meet the original intent of the collaborative efforts within the ARWG. The CHEOPS model is acceptable for evaluating integrated resources outputs associated with this study.

Usefulness of Information: The recommended integrated resource operational alternative was developed by cooperating federal agencies attempting to balance power needs and resource objectives. This operational alternative incorporates flow related operations that may best meet multiple resource objectives including power production, load following, summer flow migration for chinook salmon, recreation opportunities, riparian and aquatic habitat, and protection of fluvial and alluvial features. The results of this operational scenario should display both the positive and negative effects as compared to the baseline (current) operational alternative.

How Long The Study Will Take: If the model run is made in CHEOPS it should only take several weeks because the set-up is already completed. If it is run on another model it may take several months to get the model set-up and calibrated.

Why The Study Objectives Cannot Be Achieved Using The Data Already Available : The applicant has developed an operational hydrologic flow model for the HCC. The two operational scenarios analyzed by the Applicant are inadequate because they do not fully address the resource issues identified by the agencies and Tribes, nor do they provide details of the current operation at the HCC. Without this additional study, an accurate assessment of operational impacts on resource issues of concern cannot be made.

Request During Pre-Filing: Although this study was requested during pre-filing consultation the Applicant chose not to run this model scenario.

Ramping

Effects of Project Ramping on Resources Below the HCC

Basis For Study: Except for the time period covered under the fall chinook flow program (Oct 21-Dec 11) the Applicant has proposed a liberal ramping rate into the Wild and Scenic Snake River downstream of HCC. The proposed rate is 1 foot per hour with no daily limit except a maximum of 10,000 cfs flow change during the summer months (June 1-Sept. 30)

The proposed ramping rate has the potential to adversely affect the following resources of concern to the USDA Forest Service and other parties:

- Resident and anadromous fish populations downstream of HCC. Time periods of concern: April – June for fall chinook rearing, July – Oct for other species. The proposed ramping rate exceeds recognized standards established for rivers in the Northwest that contain anadromous fish (other Northwest hydropower projects have ramping rates typically on the order of 1-2 inches/hour).
- The ramping rate may also be causing and/or contributing to fish stranding including stranding of Threatened, Endangered and Sensitive species (TES).
- Snake River floaters and powerboaters. Both types of boaters have identified flow fluctuations as the single biggest problem on the river. The Applicant's proposed maximum 10,000 cfs allowable summertime daily flow change exceeds the amount studies have shown is acceptable to boaters.
- Beach/terrace erosion. Rapid stage change (particularly downramping) can increase the rate of bank erosion and exacerbate the already serious beach erosion problem below HCC. These sandbars and beaches are popular recreation sites, important fall chinook rearing areas and also provide a buffer to terraces containing cultural resources of concern.
- Riparian vegetation. Rapid stage change such as that proposed by the Applicant makes it most difficult for riparian vegetation to establish and thrive in the fluctuation zone. This impacts riparian dependent species of animals as well as the plant communities themselves. In addition, excessive daily ramping exposes extensive proliferation of algae species along the river's edge in the Snake River below Hells Canyon Dam resulting in unsafe and unappealing conditions for recreationists in the HCNRA.

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- Historical and cultural properties associated with beaches and terraces along the Snake River. Accelerated erosion and other effects associated with ramping expose cultural resources at these sites to many forms of significant loss.

Who Should Conduct and Participate In The Study: Qualified utility and/or agency researchers or qualified consultants. A detailed study plan will need to be reviewed and approved by the parties interested in this study prior to implementation.

Study Methodologies:

Resident and anadromous fish populations downstream of HCC.

- The Snake River downstream of Hells Canyon Complex provides habitat for three Federally Listed (fall chinook salmon, steelhead and bull trout), and numerous non-listed native fish species. The Applicant's IFIM studies have concluded that there is little difference between the effects on these species of the two modeled operational scenarios (Proposed Operations and ROR Full Pool). These conclusions (particularly regarding effects to fall chinook) need to be validated through field experiments to avoid harm to this Endangered Species through the next license term. Most of the chinook salmon spawning in the Snake occurs upstream of the Salmon River confluence. However, due to the lack of fine sediments in the upper river, most of the identified rearing habitat occurs downstream of the Salmon River. Chinook fry are present in the river from April to June. The Applicant's studies have shown that fry and parr are heavily associated with shoreline/stream margin habitats. These are the habitats most likely affected by project ramping, affects include stranding, increased turbidity and reductions of habitat quality associated with water level fluctuations. In addition, researchers have observed that ramping events initiate downstream movement of chinook fry in affected habitats.
- The Applicant has included some analysis of the effect of ramping in the IFIM studies. However, the USDA Forest Service believes there is enough evidence to suggest that the Applicant's proposed ramping rate of one foot per hour has the potential to negatively affect this endangered species by contributing to existing rearing habitat fragmentation and reducing fry/parr survival above the Salmon River. The USDA Forest Service maintains that ramping operations are eroding rearing habitat and may be causing stranding and premature migration of some age 0 fall chinook salmon which results in lowered egg-to-smolt survival. In this study the Applicant would be required to develop a statistically valid sampling plan for the collection of juvenile chinook salmon and for sampling important habitat areas. The work would be conducted over a 3-4 year period by qualified biologists. Potential resources for conducting the work would include the Applicant's biological staff, US Fish & Wildlife Service (FWS), and US Geological Survey (USGS). This study would be an effort to validate the results of the Applicant's previously completed IFIM.

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- In addition, stranding (and potential for stranding) of chinook fry has been documented in the Snake River below HCC. The Applicant also needs a study to establish a critical flow threshold below the HCC to avoid stranding of fish, including juvenile fall chinook. This critical flow should be established based on measurements and observations at the Pine Bar recreation site.

The ramping study needs to incorporate the following items in order to meet the needs of the resources affected:

Fall Chinook Salmon

- The study would evaluate the impacts of ramping on fall chinook salmon juveniles rearing along the river margins in the Hells Canyon Reach. Studies of potential stranding sites using juvenile fish observation techniques would be required. Snorkeling to observe subyearling habitat utilization during ramping would be conducted on a pre-planned research schedule. Drawdown ground searches during down ramping would be required using a systematic stratified sampling approach.
- Subyearling fall chinook salmon would be captured, marked, and recaptured. Seining techniques and electronic tags would be used. This work would be conducted from the time fall chinook salmon fry emerge from their redd sites until they leave the reach. Past sampling efforts of 1 day per week were adequate to document usage of habitat by juvenile salmon but inadequate to fully characterize overall usage of these important habitats. Daily sampling may be necessary to truly determine the effect of ramping on chinook rearing.
- Measuring and weighing subyearlings' mark/recapture in rearing habitats during the sample period using established statistical methods would determine growth rates of sampled fish.
- Temperature and ramping/flow information would be correlated with migration timing of subyearling from the reach.
- To fully evaluate the effect of ramping on chinook rearing, sampling should be coordinated with operations such that rearing habitats could be sampled during both periods including ramping events and periods with no project-induced water fluctuation. For example: sample continuously April through June. Ramping would occur at proposed operation levels for half of each month sampled and no ramping would occur during the rest of each month. Ramping and non-ramping sampling periods would be blocked up so that representative habitat conditions would exist throughout the sampling period.

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- Field investigations for stranding of juvenile chinook salmon along river margins would include visual observation by snorkeling. The Applicant should identify bars and beaches where potential stranding may occur in cut-off channels and puddles during the down-ramping phase of the hydropower operation. These areas should be inventoried for stranded or deadfall chinook salmon juveniles and other fish species.

Boating

- No additional studies are needed. The issue for boaters (both floaters and jetboaters) is not so much one of at what rate the stage changes, but rather how much daily change is experienced. The USDA Forest Service believes that enough information has presently been collected to set a maximum daily allowable flow change which would be acceptable to boaters during the summer recreational season.

Beach and Terrace Erosion

Sandbars on the Snake River below HC dam are dynamic with both erosion and deposition occurring under any management regime. Additional study is needed on the influence of different ramping rates on erosion of the sandbars because studies conducted for the FLA are inadequate. These specific study needs to identify the influence of ramping rates are identified in the Additional Study Request (ASR) for Sediment – Beach Erosion.

- Expand the 2003 CH2MHill Study to look at the effects of proposed ramping practices in a 1-hour time frame, and down to a flow level that is proposed. Daily ramping generally occurs during flows between 6,500 and 30,000 cfs. The effects of this ramping on sandbar and terrace erosion are unknown. In addition, peak discharges are believed to contribute to sandbar and terrace erosion. The relative contributions of these processes to erosion is currently unknown and needs to be determined to fully assess project impacts to USDA Forest Service resources.

Riparian Vegetation

The Applicant's Technical Report E.3.3-3 identifies the use of the HC_REM (Hells Canyon_River Environment Model). The USDA Forest Service concurs with the use of this model and most of the model components. However, the use of a peak weekly time-step that averages the weekly flow fluctuations does not account for low flow effects to riparian vegetation. To address this concern the study should:

- Expand the HC_REM time-step to account for the effects of hourly flow fluctuations (flows between 6,500 cfs and 20,595 cfs) on riparian vegetation in the fluctuation zone, and

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- Use mean weekly water level to display the Applicant's proposed and run-of-river scenarios to the six vegetation groups.

Historical and Archaeological Resources

No new studies are needed. Monitoring of eligible historic properties within the Area of Potential Effect should be done concurrently with studies for related resource issues, particularly the effects of ramping on beach and terrace erosion.

Resource Goals and Objectives: The USDA Forest Service and other stakeholders to the HCC relicensing have interests and responsibilities associated with aquatic, riparian and other resources in the Hells Canyon River corridor downstream from HCC. These resources are currently impacted by the load following operations of the project. The proposed studies will require the Applicant to gather data specific to the effects of project operations on these resources.

Accepted Practices: All suggested methodologies detailed in this ASR meet standards for accepted practices in their respective fields.

Usefulness of Information: The information provided by these studies will assist the stakeholders in the relicensing in developing ramping rates necessary to protect resources of concern (fish, beaches, riparian vegetation and historic properties) in the Hells Canyon River corridor downstream of the HCC.

How Long The Study Will Take: Estimates include: fall chinook rearing– minimum of one year but could take up to three years to collect sufficient data. Later fieldwork could fall into the monitoring/test/verification category of studies; fall chinook juvenile stranding/critical flow identification – one field season maximum; sediment/beach erosion study – one year; and riparian vegetation – one year.

Why The Study Objectives Cannot Be Achieved Using The Data Already Available :

Fall chinook rearing – The conclusions of this part of the Applicant's IFIM study are based on incomplete data. The Applicant needs to validate the conclusions from the fall chinook-rearing portion of its IFIM study with real data on fish use of river margin rearing habitats under both ramping and nonramping conditions.

Fall chinook juvenile stranding/critical flow identification – the Applicant did not study this project effect.

Sediment/beach erosion – the Applicant's conclusions that ramping is having no effect on beach erosion are based on subjective analysis and needs to be based on quantitative measurements.

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Riparian vegetation - the Applicant's conclusions that ramping is having little effect on the establishment and maintenance of riparian vegetation are based on averages and needs to provide greater detail for low flow fluctuations.

Request During Pre-Filing: Variations of all these issues presented in the ramping ASR have been requested by stakeholders during pre-filing consultation. Requested studies were either not undertaken or resource specific issues were inadequately addressed in completed studies.

Integrated Resources – Sediment Budget

A comprehensive sediment budget is needed to understand the effects of the project structures and operations on the Snake River between the head of Brownlee Reservoir and the Salmon River. The sediment budget needs to include supply, deposits, erosion or recruitment from riverbed, sandbars and riverbanks; and transport out of the system. The size classes of most concern are sand and gravel, but all size classes need to be included in the sediment budget.

Sediment Supply

Complete and accurate estimates of supply of sand and gravel to the HCC, and to the Snake River below HC dam are needed.

- a. Inputs from tributaries – The average annual load of silt, sand and gravel from the tributaries to the 94-mile HCC and the Snake River below HC dam needs to be quantified. In the FLA TR E1.1, Table 15 shows estimates of the average annual load (tons per year) of sediment from tributaries, but the FLA E.3.0.4.2, presents numbers that are one and two orders of magnitude lower than those in Table 15, with no valid explanation as to why the numbers were lowered. A valid explanation of the reduction in magnitude is needed.

Sediment Deposits

- a. From the Snake River entering Brownlee Reservoir: The Applicant's estimates of the amount of sand and gravel deposited in the reservoir need to be verified. At low-pool, large islands of deposits are visible in the delta in the draw down zone at the head of Brownlee reservoir. A survey of the depth and extent of these deposits is needed to verify the sediment inflow from the Snake River. Conduct a survey of the reach between Farewell Bend and Oasis Park, with mapping of the areas of deposits such as islands, and a survey of the longitudinal profile. Use core sampling and historical photographs to estimate the accumulations of sand since Brownlee Dam was constructed.

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- b. Deposits Within HCC reservoirs:
 - i. Estimate the amount of total, sand, and gravel deposition within Oxbow and Hells Canyon Reservoirs.
 - ii. Under riverine conditions – Estimate the amount of total, sand and gravel deposition that would occur in reaches that are inundated if the river was not impounded. This may be based on aerial photographs, or comparative inventories in similar reaches elsewhere.
- c. Deposits through river corridor below HC dam:
 - i. Sand - Deposits of sand form important features along the river below HC dam. Provide a list of the location, aerial extent, depth of sand deposits, and category based on deposition process, such as lateral reattachment, eddy etc. Provide this for sand deposits over 1000 square feet in size. Provide aerial photograph record of the current conditions.
 - ii. Gravel – If information on gravel deposits is available from the Morphological Channel Unit mapping (TR E.2-3. Ch. 2-page 40, Instream Flow Study) it should be integrated into the discussion on Sediment Budget. The sediment budget estimate of gravel deposits should also be consistent with mapping and quantities used in the Technical Report on Spawning Habitat.

Erosion Of Reservoir Slopes, Riverbanks, Sandbars, And Gravel Bars

Erosion rates and locations are important for two reasons: 1) as an estimate of supply from these sources, and 2) to predict the changes to the features being eroded. The proposed action will influence the mechanisms creating erosion, and rates at which erosion occurs. The rates of the three parts of the erosion processes (detachment, entrainment, and transport) should be described for the following areas:

- a) Reservoir slopes – This study needs to provide a prediction of current and future erosion rates from the slopes of the reservoirs. This should build on the information provided in Technical Report 3.2-42 on Shoreline Erosion.
- b) Sandbars erosion - Sandbars on the Snake River below HC dam are dynamic with both erosion and deposition occurring under any management regime. This study would address the mechanisms and rates of erosion to sand deposits: slumping; drag and lift; wave action; rill erosion, and fluvial erosion of sediments that could lead to scouring at the toe of the slope. The sandbars need to be categorized by depositional type, (lateral reattachment, eddy/separation), the types of erosion most likely to occur at specific sites need to be identified; and study sites should be randomly selected from the stratified list.

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- i. Slump erosion – TR E1-1 Appendix H describes a recent study conducted to determine the effects of downramping on the stability of sandbeds. There are several inadequacies of the study that need to be corrected before results can be accepted. The models were based on an operational drawdown of about 4 feet over 12 hours, however in 2003 downramping of 4 feet or more in just 6 hours occurred 46 times; and 3 feet or more in 4 hours occurred 70 times. The model was conducted only down to 12,000 cfs, but the Applicant is proposing to downramp to 6500 cfs, and the study was conducted at the end of summer, many months after the sand had been deposited. The timeframe for analysis should begin immediately following an event larger than 30,000 cfs, and should compare failure rates assuming 1 foot per hour downramping with 0.3 foot per hour downramping.
 - ii. Drag and lift erosion – The Applicant should include a discussion of drag and lift erosion. Following deposition of available sand during high flow events the proposed action will continue to result in higher rates of erosion from the force of gravity pushing of sand downslope off the bars by receding water during more frequent downramping between 30,000 and 6,500 cfs (8.5 feet vertically).
 - iii. Current erosion – An increase in the frequency of changing river levels between 30,000 cfs and 6,500 cfs. Scouring action of current covers the vertical height of the beach more frequently. The Applicant should describe detachment, entrainment and transport from scouring during flows between 20,000 and 30,000 cfs at monitoring site locations. This should be following a depositional event of 40,000 cfs or greater.
 - iv. Rill erosion – The Applicant should include a discussion of rill erosion and its importance in Hells Canyon. Rill erosion can occur where the rapid draining of the subsurface material results in high tractive forces on the surface. Deposition in eddy areas is more susceptible to this type of erosion than lateral reattachment bars because of the depth of the underlying sand.
 - v. Boat Wave Action – The Applicant should quantify the following: the number of boat wakes, the length of time the wakes occur during each passing, the vertical extent of sand entrained by wake action, and the distance sand is transported following the wake. These evaluations should take place at a representative variety of sites along the river.
- c. Erosion or movement of gravel bars – Information on the mobility of gravel bars was presented in the FLA. The conclusion of Technical Report E.1-1 Table 12 shows that 11 to 27 percent of the gravel moved at flows of 30,000 cfs. Additional information is needed on the characteristics of the sites where mobilization was observed at those flows, and on the aerial extent and depth change during mobilizing flows.

Transport Of Sand and Spawning Gravels

Transport of all sizes of sediment through the reservoirs and from HC dam down to the Salmon River was not addressed in the FLA but is an essential part of a sediment budget. Transport of the sand and gravel through the reservoirs is assumed to be negligible, but is not discussed in Exhibit E. If some materials are transported during spill events this should be understood. Additional sampling may be needed.

Coarsening of the streambed below HC dam is an important fisheries management issue. Mobilization of gravels in the reach below HC dam is just the first part of understanding gravel transport. The study needs to address the flows at which sand and gravel are mobilized, the frequency of these flows under different operating scenarios, and the distance of redistribution of sand and gravel at flows of different magnitude and durations. One method for studying this is by recording the quantity and distance that painted rocks are actually moved at different flow levels and locations. Reaches based on slope, containment, and supply should be identified in order to locate representative study sites.

Basis for Study :

- Knowledge of the supply of sand and gravel to the HCC above HC dam is required to understand the balance of sediment throughout the system.
- The effects of the project structures and operations on sediment supply and transport is a major issue of concern to the USDA Forest Service as it has implications for a number of resources. Sediment size classes of most concern are sand (0.063 to 1.99 mm), small gravels, (2 to 25.4 mm.), and spawning gravels (25.4 to 152.4 mm).
- Studies have shown that HCC is partially responsible for reduction of sediment supplies below HC dam, and that this had adverse resource effects.

Who Should Conduct and Participate in the Study: Geomorphologists mutually agreed upon by agencies, the Commission and the Applicant, and paid for by the Applicant should conduct the studies.

Study Methodology: Methods for development of a complete Sediment Budget should be based on developing a mass balance model for supply, deposition, recruitment, and export of sediments between Hells Canyon Dam and the Salmon River. This can be approached by starting with information already provided by the Applicant, compiling new information where needed, based on data collection at the project, or extrapolation from other similar projects. The estimates should be for future predicted conditions after 50 years under the Applicant's proposed action, and should be structured so that FERC can make similar estimates for mitigation measures during the environmental analysis.

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The return frequency of runoff events should be based on the last 50 years of record of inflows to Brownlee Reservoir, and accretion at the tributaries.

A great deal of information has already been compiled by the Applicant, but needs to be integrated into a comprehensive sediment budget to the extent possible. The following information already provided may be useful in developing a sediment budget: Sediment Supply Rates - TR E.1-1 Table 15: Deposition of sand and gravel - TR E.1-2 Appendix C – Geomorphic Classification; and aerial photograph analysis which was referred to in the FLA, by not fully presented in any Technical Report; Deposition: Erosion and mobilization - TR E.3-2-42 Riparian Erosion; and TR E.1-4 MIKE I model: Sediment Transport; Transport models such as used for the Tributaries and described in TR E.1-1.

A fully developed Sediment Budget methodology will be prepared by an interagency group in preparation of a Request for Proposals (RFP) for geomorphologists. The RFP proposals would aid in refining the study procedures. The proposals will be reviewed by a panel comprised of interested agencies, the Commission, and the Applicant.

Resource Goals and Objective: The goals and objectives are to understand the effects of the project operations and facilities on the sediment supply and transport below the HC dam.

Accepted Practices: Sediment Budgets are a basic tool of sediment sciences.

Usefulness of Information: The sand and gravel features in the Snake River below HC dam are important to recreation, aesthetics, heritage resources, aquatic habitat, and terrestrial ecology. The potential for depletion of sand and gravel features under the proposed action needs to be understood.

How Long The Study Will Take: 6 months to 1 year

Why The Study Objectives Cannot Be Achieved Using The Data Already Available: The sediment budget presented in the FLA cannot be used because of numerous gaps in the information. For instance, the Applicant did not integrate information from other studies such as the Sandbar stability study.

Requested During Pre-Filing: The sediment budget study request was filed during the consultation stage. The Applicant responded to only a few points of the requests. The portion of the original study requests that were not addressed is presented in more detail at this time.

This study request would incorporate components from the previously requested Comprehensive Sediment Budget; Ramping and Peak Discharge; and Supply, Stability and Transport of Spawning Gravels.

Water Quality

While Oregon and Idaho State DEQ has jurisdiction over water quality issues, the USDA Forest Service is also concerned with the affects of water quality on TES and aquatic species and their habitats in meeting management direction in Land and Resource Management Plan (LRMP). Poor water quality within the HCC and below HC dam does not meet state standards and will continue to adversely affect fall-chinook salmon and other species (temperature, low DO and elevated TDG).

- Water Temperature - Shift in Thermal Regime in Snake River Below Hells Canyon Dam: Water temperatures continue to exceed the standard for coldwater biota and salmonid spawning where that use occurs. “Fall water temperatures below Hells Canyon Dam are warmer in the fall and cooler in the spring due to the HCC-induced temporal shift.” (IDEQ, December 16, 2002). This shift in thermal regime may affect the timing of fall Chinook spawning and emergence.
- Dissolved Oxygen: This study needs to address 1) low DO in the hypolimnion of Brownlee Reservoir, 2) low dissolved oxygen in the Oxbow Bypass reach, and 3) low dissolved Oxygen levels below Hells Canyon Dam.
- Reduction in Total Dissolved Gas TDG at all HCC Dams: The detrimental effects of supersaturation on aquatic biota are well documented. Elevated TDG levels pose a potential threat to TES species of fish along with other aquatic biota within the Snake River. Opportunities exist to fully meet TDG State water quality standards.
- Processing of inorganic mercury in the HCC due to anoxic conditions: The SR-HC TMDL reach is listed as water quality limited due to human consumption advisories for mercury issued by both Oregon and Idaho. Elevated levels of mercury in fish tissues have been observed in Brownlee Reservoir. Methylation of mercury is a concern within Brownlee Reservoir. Low dissolved oxygen levels and the presence of a substantial amount of organic material near the sediment/water interface can result in higher rates of methyl-mercury production. Methyl-mercury represents a significantly greater threat for bioconcentration and accumulation than inorganic mercury compounds.
- Mitigation of Water Quality Impacts within the Oxbow Bypass: Improve water quality conditions that provide habitat for redband, bull trout and white sturgeon within the Oxbow Bypass reach.

Basis for Study :

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- Evaluate how project modification or a change in project operations could amend the shift in the thermal regime in the Snake River below HC dam.
- Evaluate additional measures to meet State water quality standards for temperature, DO and TDG.
- Evaluate how the HCC affects the accumulation and production on methyl-mercury in the water column. Determine how methyl-mercury production accumulates in fish tissue and is passed up the food chain.

Who Should Conduct and Participate In The Study: The Applicant should conduct this study in consultation with all federal and state agencies, along with tribal governments, who have identified water quality issues and who have requested additional studies to address these issues. The participants will provide overall guidance, be involved in project assessment and assist in the development of appropriate conclusions.

Study Methodology:

Temperature:

- Conduct literature review of existing modifications implemented on large dams. Determine types and feasibility of different types of structures.
- Develop potential engineering design of project modification at Brownlee, Oxbow, and Hells Canyon Dams.
- Model how those project modification alternatives would alter water quality - specifically temperature. Determine if project modification of the HCC facilities could be used to cool fall and warm spring water temperatures in the Snake River below HC dam.
- Model the recommended run-of-river low pool operational scenario to determine if shorter retention time of water passing through the HCC would mitigate the shift in thermal regime.

Dissolved Oxygen:

- Conduct the necessary studies to develop a DO management plan as identified by IDEQ and ODEQ for necessary 401 certification.
- Model the recommended run-of-river low pool operational scenario to assess the affect of Brownlee reservoir on dissolved oxygen.

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Total Dissolved Gas

- Investigate the potential of TDG reduction at Brownlee Dam by designing and modeling a flow deflector at that dam. The same type of study that the Applicant and its contractors from the University of Iowa conducted to evaluate a reduction of TDG through the installation of a flow deflector at HC Dam should be conducted for Brownlee Dam.
- Evaluate the effects of additional winter flood control to reduce the magnitude, frequency and duration of unwanted spills.

Inorganic Mercury

- Conduct the necessary studies to assess the impacts of anoxic conditions of inorganic mercury to fish species and the food chain.

Water Quality within Oxbow Bypass

- The Applicant should evaluate project modification and various operational scenarios to assess the potential of improving water quality in the Oxbow Bypass.

Resource Goals and Objectives: The USDA Forest Service and other stakeholders to HCC relicensing have interests and responsibilities associated with water quality within HCC and below HC dam. Water quality limitations currently affect TES and aquatic species, and their habitats. The proposed studies will require the Applicant to gather data specific to the effects of the project operations on water quality.

Accepted Practices: All suggested methodologies detailed in this ASR meet standards for accepted practices. Some methodologies will be met by complying with the States DEQ 401-certification process and implementation of the SR-HC-TMDL.

Usefulness of Information: The information provided by these studies will enable the stakeholders in the relicensing to identify water quality measures for consideration by Idaho and Oregon DEQ to protect resources of concern (TES and aquatic species and their habitats) within HCC and below HC dam.

How Long The Study Will Take: One to two years

Why The Study Objectives Cannot Be Achieved Using The Data Already Available: The FLA has failed to address the full range of opportunities regarding project operations that may improve water quality within HCC and below HC dam.

Request During Pre-Filing: These studies were requested during pre-filing consultation.

Anadromous Fish

Reintroduction of Anadromous Fish Within and Above the Hells Canyon Complex

Basis For Study: The HCC blocks fall and spring/summer chinook salmon, summer steelhead, and Pacific lamprey from migrating beyond the HC Dam to their historic spawning areas.

Who Should Conduct and Participate In The Study: The Applicant in consultation and coordination with a state and federal agency and Tribal team (interagency team) should participate in the development of this study. The interagency team will provide overall guidance, be involved in project assessment and assist in the development of appropriate conclusions.

Study Methodology: The Applicant needs to provide a more detailed analysis of passage for adult and smolt anadromous fish as related to all aspects of the HCC-caused blockage. A detailed analysis of possible fish passage for all resident native species needs to be presented. The draft application studies of fish passage lacked the detail necessary for independent evaluation.

The Applicant needs to provide a detailed reach-specific analysis of upstream habitat potential that would include the following:

- Analysis of irrigation diversions.
- Stream inventories to determine current quantity and quality of stream habitat for salmonid reintroduction.
- Test releases of smolt in HCC reservoirs and the mainstem Snake River to determine travel time and possible concentration areas from which smolt could be trapped for transport.
- Modeling of upstream habitat productivity to correlate existing and future habitat potential for anadromous fish production.
- Analysis of fall chinook egg-to-fry survival in the Snake River above Brownlee Reservoir.
- Peer review of habitat assessment assumptions.

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- The Applicant needs to field verify habitat estimates in collaboration with agency and Tribal field biologists familiar with current conditions in each sub-basin within and above the HCC.

Resource Goals and Objectives: The Applicant proposes to continue operation of the hatchery mitigation program with no further effort to study possibilities of reintroducing native anadromous fish within or above the HCC. Based on existing information and modeling, the Applicant concluded that reintroduction of anadromous fish to the area within and above the HCC was not feasible at this time. The reintroduction study was not peer reviewed and the Applicant made many assumptions concerning habitat quantity and quality. Many fish passage assumptions are based on information gathered over 40 years ago and may be outdated. New techniques and technologies are now available to test the Applicant's model assumptions. Field-testing of model assumptions using anadromous fish is needed to determine whether passage is feasible.

Accepted Practices: Using modern radio-telemetry techniques to track fish, the Applicant needs to conduct a number of field studies to determine how smolt will move through the HCC. The Applicant needs to test spawning gravel assumptions concerning fall chinook egg-to-fry survival. Additionally, the Applicant needs to evaluate habitat conditions using Hankin and Reeves stream inventory (USDA Forest Service Region 6) and National Riparian Service Team Proper Functioning Condition (USDI BLM) or other similar scientific methodology.

Usefulness of Information: The USDA Forest Service will use this information to determine appropriate mitigation measures for anadromous fish habitat losses on NFS lands.

How Long The Study Will Take: Portions of this study would expand on the Applicants studies and could be completed within 6 months to 1 year. Other study elements could continue for the term of the license or until reintroduction and habitat management direction objectives are achieved.

Why The Study Objectives Cannot Be Achieved Using The Data Already Available: Much of the data used by the Applicant in their analysis is out of date. Some data is 40 years old and new information needs to be collected.

Request During Pre-Filing: This information was requested in pre-filing consultation.

Additional Information Requests

Resource area and specific issues that need additional information from the Applicant.

Recreation

Snake River Sandbar Aerial Photo Interpretation

A number series of photos were identified and used by the applicant in its resource evaluation of sandbars. These aerial photos, the photos of July of 2003 and the analysis should be provided to the USDA Forest Service. All the photos taken in all formats and and/or elevations are requested. The photos will be used by the USDA Forest Service for interpretation of the sediment movement and sandbar numbers during the term of the license.

This information is requested to assist the USDA Forest Service in evaluating project impacts to NFS lands and waters. This will also help in development of appropriate PM&E measures.

Recreation Adaptive Management Plan (RAMP)

The RAMP will be the primary tool used during the license period to determine recreation development needs and implementation. The RAMP measure (E.5.4.4.1.5.) does not provide enough detail to determine potential effects on NFS lands. There are key elements of how the RAMP would work that are still not addressed adequately. In particular, the specific roles, responsibilities, and authorities of the agencies and entities on the RAMP stakeholder group need to be documented and explained in more detail in the Applicant's RAMP PM&E measure. A primary concern is how decisions will be made in establishing triggers for action and in determining the what, where, when, and how much money to spend on future recreation developments. The USDA Forest Service maintains that the stakeholder group should have a decision-making role, not just an advisory role, in the development and implementation of the RAMP, and the parameters of this role should have been well documented in the FLA.

The USDA Forest Service needs this information in order to ensure that the elements and implementation of the RAMP will meet the agencies resource goals and objectives for recreation.

Enclosure II

Comments Specific to New Information Provided in the FLA

This section focuses only on the Applicant made changes to the FLA in response to the USDA Forest Service comments on the DLA. The format in responding to new information provided in the FLA is: FLA text is presented in italics and cited, while USDA Forest Service response is presented in normal text.

Geomorphology and Sediment

The primary sediment issue of interest to the USDA Forest Service has been, and continues to be, the rate of change and reasons for change in the supply, deposit, erosion, and transport of sand and gravel size material below Hells Canyon Dam. Appendix 4 of the Responses to Comments consolidated the Applicant's response to many of the USDA Forest Service comments on sediment. The following subject categories follow the format of that Appendix.

Sediment Budget by Size Class

Several USDA Forest Service comments questioned the estimates of sediment supply from the Snake River into Brownlee Reservoir and their conversion from percentages to tons per acre. The Applicant revised the presentation of their estimates of supply by adding Table 1 in Appendix 4, and TR E.1-1 Table 15. The quantities shown in Table 15 are not clearly stated in the FLA Exhibit E.

Sediment Yields (to Hells Canyon) from Local Tributaries

In response to several USDA Forest Service comments, the quantity of sediment estimated to enter Hells Canyon from tributaries has been reduced by almost 50% in the FLA TR E.1-1, and in Exhibit E.3.0.5.

The FLA E.3.0.5.1 presents new information on the source of sand material through an X-Ray Diffraction analysis. The full study results have been added as section 10.1.2 of TR E.1-1. Again, the wording in Exhibit E 3.0.5 is non-quantitative necessitating the reader to look into the Technical Appendices for the actual information.

Sediment Supplies Directly to (Within) HCC

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“The upper end of the range of total sediment load to the HCC is estimated to be about 207,000 tons per year with sand estimated at 50,000 tons per year and spawning gravels at 48,900 tons per yea” (E.3.0.4.2)

Several USDA Forest Service comments requested that sediment inputs from Tributaries to the three HCC reservoirs be estimated and displayed. The Applicant was responsive to this in TR E.1-1 Table 15, and in Exhibit E.3.0.4. However, the estimates presented in TR E.1-1 are not transferred to the Exhibit E. The source of these numbers is not referenced and the numbers do not match Table 15.

Incipient Motion Estimates for Spawning Gravels

The FLA has no new information about Incipient Motion analysis, although the wording of TRE.1-1 10.2.3 was revised in the FLA.

Sandbar Measurements

In response to comments on sandbar measurement analysis in the DLA, the Applicant conducted an analysis of aerial photographs to evaluate the earlier work done by Grams and Schmidt. The Applicant identified what it considers to be several noteworthy issues dealing with the use of 1964 as a baseline year: influence of flow level, clarity of photographic images, rate of erosion between 1973 and 1977. The Applicant continues to challenge the measurement estimates provided by Grams and Schmidt.

Load Following Effects on Sandbars and Terraces

In Response to comments on the DLA, the Applicant conducted a stability analysis on three sandbar areas downstream of Hells Canyon Dam to evaluate the effects of load following and flow fluctuations. Details of the study are included as Appendix H of TR E.1-1, Stability Analysis of Sandbars. The study design does not adequately respond to comments on the DLA to evaluate several erosional mechanisms. There are also technical flaws in the stability study itself.

Sediment Slug Conceptual Model

Technical Report E.1-2 Appendix A: “Anthropogenic Influences on Sediment Supply in Hells Canyon:” was added, however, no new additional information or analysis was presented.

Sandbar Material

This section of Appendix 4 provides more information on the X-Ray Diffraction study results, discussing the origin of the sandbar and gravel material. The new information on

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source of sandbar material will be reviewed in more depth and comments provided with comments on the FLA.

Ramping Rates

Based upon USDA Forest Service review there are no apparent changes between the DLA and FLA.

Water Quality

Based upon USDA Forest Service review there are no apparent changes between the DLA and FLA.

Fisheries

White sturgeon in Hells Canyon Reservoir

The Applicant provided the white sturgeon plan in response to the agency and stakeholder requests. The plan incorporates 5 new PM&E measures, however they do not specifically mitigate for the continuing loss of white sturgeon and their habitat in the Hells Canyon reservoir.

Snails

The Applicant dropped any further analysis on the Bliss Rapid Snail because it could not positively identify the snails collected in the river reach downstream of HC dam. Proper ESA protocol for a suspected species requires that the Applicant continue to conduct research until the species is properly identified or assume presence and identify appropriate PM&E measures.

Bull Trout

The Applicant proposed to conduct a presence/absence study in Eagle Creek. However, this study does not address connectivity of bull trout populations throughout the HCC.

Terrestrial and Botanical

The USDA Forest Service highlights the Applicant's removal of 12 Transmission lines from analysis in the FLA. The Applicant is responsible to include in the FLA all impacts that the 12 lines have on NFS lands and resources until such time the Commission determines that these lines be removed from the new license order.

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The USDA Forest Service recognizes and appreciates the Applicant's diligence in providing the Terrestrial Issue-Tracking Database – Appendix H in the Final License Application. The matrix (database) lists the USDA Forest Service issues identified in response to the Applicant's FCP and issues enumerated in the USDA Forest Service Information Needs Assessment (INA).

Recreation

In the FLA, the Applicant proposes several PM&E measures in response to stakeholder DLA comments.

In the DLA, the Applicant proposed to cost share with the counties and agencies the cost of implementation of recreation PM&Es. In the FLA, the Applicant agreed to fund all reasonable and agreed upon elements of the PM&E measure. However, it should be noted that the capital costs did not change between the DLA and FLA. The FLA costs need to reflect this change in funding all reasonable and agreed upon elements.

Landscape Aesthetics

The Applicant is to be complimented for incorporating the Recreation and Aesthetics Resource Work Group zone vision statements into the FLA.

Historical and Archaeological Resources

Based upon USDA Forest Service review, there are no apparent changes between the DLA and FLA.

Enclosure III

Continuing Disagreements With the Applicant Regarding Effects to NFS Lands and Resources

The format in responding to this enclosure is: FLA text is presented in italics and cited, while USDA Forest Service response is presented in normal text.

Background

On March 5 and 6, 2003, the Applicant held a joint meeting of resource agencies, tribes and other interested parties pursuant to FERC regulations (18 CFR 16.8 (c) (i)) to attempt to reach agreement on the Applicant's plan for environmental Protection, Mitigation, and Enhancement measures. In a letter from FERC to the Applicant, FERC indicated that the March meeting did not meet the intent of the Commissions regulations. In this letter FERC stated: "Your meeting focused on cataloguing issues and proposed and recommended environmental measures, but no attempt was made to document or resolve any disagreements". In response to FERC's comments, the Applicant scheduled an additional dispute resolution meeting on June 25, 2003. This meeting was deemed by a majority of participants to be more productive and there was general interest in how the Applicant might plan to carry this path forward. The Applicant discussed several steps the participants needed to take to participate in the process including: the parties would need to review any new information and responses to comments in the Final License Application and the parties would need to be as specific as possible in identifying continuing issues and making recommendations.

This section of the report briefly addresses those areas of disagreement that continue to exist between the Applicant and the USDA Forest Service based upon input provided to the DLA and the Applicants response to these issues in the FLA.

Continuing Impacts

"At relicensing, IPC is not required to mitigate for impacts that occurred during the original license term...FERC has determined that where project works already exist...it is not reasonable to analyze the effects of relicensing using a pre-project environmental basis". (FLA response - USFS-51)

18 CFR 4.51 (f) (3) (iv) requires an analysis of "any anticipated continuing impact on fish, wildlife, and botanical resources of the continued operation of the project". The Applicant did not fully disclose all continued impacts to NFS lands and resources by limiting the scope of its analysis.

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In legal opinions discussing the Commission's baseline policy, both the Commission and the Ninth Circuit Court of Appeals recognized the practicality of utilizing information and data regarding on-going impacts to conduct a NEPA analysis that displays a project's impacts in light of the mitigation needed to address those impacts. In the relicensing of the Leaburg-Walterville (FERC Project No. 2496) hydroelectric project, while recognizing that the existing environment was the appropriate "context" for its NEPA analysis, the Commission also determined that its NEPA analysis would be informed by information and data that allow for an assessment of the proposed mitigation in light of past environmental impacts. *Eugene Water & Elec. Bd.*, 81 F.E.R.C. 61,270 at pp. 62,326-27 (1997). The Commission stated, "Of course, the past environmental impacts are relevant in determining what measures are appropriate to protect, mitigate, and enhance natural resources." *Id.* at p. 62, 327.

Moreover, in an appeal of this proceeding, the Ninth Circuit Court of Appeals approved of the Commission's use of past conditions to inform its environmental analysis. *American Rivers v. FERC*, 201 F.3d 1186, 1195-99 (9th Cir. 2000). Recognizing the Commission's need to evaluate the proposed mitigation in light of past impacts, the court stated that, "[t]o the extent a hypothetical pre-project or no-project environment can be recreated, evaluation of such an environment against current conditions . . . serves to describe the current cumulative effect on natural resources of these historical changes." *Id.* at 1197 (citations omitted). In addition, the Court agreed that, "the adoption of an existing project baseline does not preclude consideration and inclusion of conditions in a license that enhance fish and wildlife resources and reduce negative impacts attributable to a project since its construction." *Id.* at 1198 (citations omitted).

The USDA Forest Service asserts that the Applicant, consistent with the direction of the LRMP and 18 CFR 4.51 (f) (3) (iv) identify project impacts to fish, wildlife and botanical resources on NFS lands, which will continue over the term of the new project license.

Operational Scenario/Baseline

The Applicant has only modeled two operational scenarios: 1) proposed operations for the new license term, and 2) run-of-river full pool. Neither of these alternatives adequately addresses USDA Forest Service resource concerns.

The USDA Forest Service disagrees with the Applicant selection of its proposed action as the base case scenario. The base case scenario should be defined by the current operations. The current operations should include how the Applicant was operating the HCC during the last 10 years specifically during the modeled years 1992, 1994, 1995, 1999, and 1997. The base case should include the actual drawdown for spring flood control as well as the actual summer drawdowns in Brownlee Reservoir.

The consultation record indicates that the state and federal agencies and nongovernmental organizations believed it was critical for the Applicant to address several different

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operational scenarios in the DLA process. This defect has not been remedied in the FLA and it is still necessary to evaluate those scenarios when it comes to discussion of project hydrology and how hydrology and operation affect the environment. The failure to conduct this type of analyses has resulted in a lack of critical information needed to adequately evaluate the effects of the proposed operations.

Therefore, additional flow scenarios need to be modeled to adequately evaluate the effects of the proposed operations on the identified environmental and natural resource issues and concerns. As part of the evaluation, the Applicant must include analysis of the additional 5' drawdown to both Hells Canyon and Oxbow reservoirs.

“The differences in impacts of operating at 10 feet versus 5 feet, particularly since they would occur only under atypical conditions on a qualitative basis would be insignificant. On Oxbow and Hells Canyon Reservoirs, in unusual conditions and under conditions which have occurred in the past, drawdown differences between current and modeled proposed operations are insignificant.” (FLA response - USFS2-208)

The USDA Forest Service does not believe the potential effects of an additional 5 feet of allowable daily draw down on Hells Canyon Reservoir have been adequately analyzed by the Applicant. The Applicant's Response to Comment USFS2-208 stated that modeled proposed operations are representative of the Applicant's current operations. Table B-4 of the FLA lists a daily reservoir-level fluctuation of 5 feet for the modeled proposed operations. There is no reference here or in Technical Report E.1-4 (Hells Canyon Complex Operations Modeling) that indicates anything other than a 5 foot fluctuation was modeled.

The USDA Forest Service contends this statement is not supported by any known study result. On the contrary, a recreation study, Technical Report E.5-6 (Reservoir Level Issues in the Hells Canyon Complex), concluded that daily level changes could significantly impact recreation. The impacts of operating, even for a short time period, with a 10 foot fluctuation needs to be analyzed.

Geomorphology and Sediment

The USDA Forest Service disagrees with the conclusions of the Applicant's analysis of the effects of the project on the supply and erosion of sand and gravel in Hells Canyon.

The USDA Forest Service submitted a comprehensive INA and comments on the DLA that included sediment-related issues that needed to be addressed by the Applicant's studies. Some of the key issues that the USDA Forest Service continues to disagree with the Applicant on are as follows:

Supply of sand and gravel supply to Brownlee Reservoir from Snake River

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The Applicant's estimate of sediment supplied from the Snake River to Brownlee Reservoir is based on inadequate sampling of the depositional areas of the reservoir.

“Approximately 1550 acre-feet of fine sediments from upstream of Brownlee Dam would have been transported downstream into Hells Canyon annually if the HCC had not been constructed. Because nearly all the sediments...are of silt and clay sizes, they would largely flush through Hells Canyon reach: Sediments trapped in Brownlee Reservoir could probably not significantly affect bed material or sandbars downstream of the HCC.” (E.3.0.4.1)

The Applicant does not discuss the 215 acre-feet/year of sand and gravel that enters Brownlee Reservoir that would likely be transported to reaches downstream of Hells Canyon Dam. Instead the FLA focuses on what is not transported.

Sediment Supplies Directly to (Within) HCC

Several USDA Forest Service comments requested that sediment inputs from Tributaries to HCC reservoirs be estimated and displayed. Revision to Exhibit E.3.0.4.2 added numbers that are significantly different numbers than TR E1-1 Table 15, so there is still disagreement on the appropriate numbers.

Table 15 of TR E1-1, displays estimates of the total sediment entering the Snake River from the tributaries above HC dam is greater (52%) than the total amount entering from tributaries below HC dam (39%). This is true also for sand size material (61% vs. 33%). Gravel input is slight higher below HC dam (39% above vs. 66% below).

“The watersheds contributing directly to HCC generally...result in lower sediment yields than those found for watersheds downstream of the HCC.” (E.3.0.4.2)

This is contradicted by the supporting information in TR E.1-1 Table 15. These types of discrepancies in information between the License Application and the Technical Reports needs to be looked at closely throughout the submittal. It is an indication of inadequate analysis.

Incipient Motion Estimates for Spawning Gravels

Incipient Motion studies describe the mobilization of gravels but not the transport rate. Information on the transport rate of gravels is needed to understand the gravel budget in the system.

Sandbar Measurements

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Since the DLA was issued, the Applicant conducted an analysis of aerial photographs. This new information has not alleviated the disagreement with the Applicant because the information from the analysis of aerial photographs was not fully disclosed. The FLA does not provide a comprehensive inventory of the locations, size, and type of sandbars below HCC and how these sites have changed since the project was constructed.

Effects of Flow Fluctuations on Sandbars and Terraces

IPC completed an evaluation on three sites downstream of Hells Canyon Dam to evaluate the effects of load following and flow fluctuations. The analyses indicate that the daily load-following operations are unlikely to cause mass wasting or geotechnical failure of the sandbars and terraces. The analyses indicate that the daily load-following operations are unlikely to cause mass wasting or geotechnical instability of the sandbars and terraces.” (Appendix 4, pg. 22) Details of the study are included as Appendix H of TR E.1-1, Stability Analysis of Sandbars.

The Applicant’s conclusions are not supported by the analysis for the following reasons.

- *“In both scenarios, slope failure is assumed to be characterized by mass failure or mass wasting at the sandbar areas due to the action of seepage forces in the slope after conditions of rapid draw down in the water elevations. ...Other processes that could result in erosion of the sandbars were not included in these stability evaluations, such as: drag and lift forces from the river water that tend to detach and entrain surface particles of the sand; weakening and weathering of the sandbar particles due to moisture changes; current and wave action; and fluvial transport and erosion of sediments that could lead to scouring at the toe of the slope.”* (Appendix H, pg. 2) The analysis does not investigate other mechanisms of sand movement.
- The analysis only addressed a drawdown of 5.3 feet over 12 hours at Fish Trap. Under proposed operations these drawdowns would occur much more rapidly than over 12 hours. Historically down ramping rates of 6 inches per hour are not uncommon at HC dam, with some rates being as much as two feet per hour. An analysis of sandbar stability is needed that uses a shorter, more rapid drawdown effect.
- The analysis only examined flows down to 12,000 cfs. The Applicants proposal is to ramp down to 5,000 cfs. At the Johnson Bar gage, the elevation difference between 6000 cfs and 12,000 cfs is 2.5 feet. This lower elevation needs to be looked at because it is at the toe of the slope that failure would be most critical. The study was also conducted after the steady flows of the fall spawning flow regime. Steady flows would tend to make the sandbars flatter than might be there after several months of extreme ramping.

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- The data is not fully interpreted. For example, if two of eleven transects show slope failure, this could amount to 10% of the sandbar that moves with every extreme down-ramp event. However the applicant's interpretation is that most of the sandbar is stable and therefore no additional discussion is needed.
- The frequency of sediment movement needs to be addressed. It is important to know when sediments are mobilized and the frequency to fully understand this effect.

Effects of Flow Scenarios on Sediments

“IPC acknowledges that some flow conditions associated with flow scenarios may influence sediment features in the Hells Canyon reach, but the flows that may influence these features exceed the power plant capacity of the HCD. (Appendix 4. pg. 24)

The USDA Forest Service continues to maintain that sediment features and processes are influenced by flows below the power plant capacity. Operational scenarios that could influence sediment mobility and channel morphology were provided in our comments on the DLA and have been brought forward in Enclosure I – Additional Study Requests: Integrated Resources – Sediment Budget and Ramping.

Sediment Slug Conceptual Model

Technical Report E.1-2 Appendix A was added to the FLA, however, the USDA Forest Service continues to disagree with the Applicants contention that a slug of sediment could have moved through the reach below HC dam, while other sediment input to the reservoirs would not move through the same area.

Calculations of General Bed Mobility/Armoring

No change was made in calculations of Bed Mobility between the DLA and FLA Technical Reports therefore the analysis is still inadequate for the reasons listed in USDA Forest Service comments on the DLA.

Sandbar Material

The USDA Forest Service disagrees with the Applicants analysis of the future erosion potential of sandbars because section E.3.0.5.2 has no description of the current condition of sandbars, discussion of trend since project construction or prediction of future erosion. Sandbar erosion has been identified as a major issue by the USDA Forest Service throughout pre-filing consultation and again in comments provided following review of the DLA. This section of the FLA is deficient on describing the following: a) a temporal context for evaluating the effects of the project on the sandbars; b) a description of

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number of acres, depth, or location, and type of current sandbar deposits; c) the velocity required to entrain particles from the stream's bed and banks, d) a description of the mechanisms and rates of deposition and erosion; e) an estimate of the rate of change during the time of the license.

Although the Technical Reports contain extensive information on sandbars, they are cross-referenced only in the discussions of anthropogenic factors, size of sand materials, and extent of sediment trapped in Brownlee Reservoir. This leaves the reader to sort through the extensive technical information in an effort to piece together the needed analysis of effect. This is the work that IPC needs to do to prepare an adequate Exhibit E analysis of sandbar deposits.

Ramping Rates

The proposed ramping rate has the potential to adversely affect the following resources of concern to the USDA Forest Service and other parties:

Resident and anadromous fish populations downstream of HCC

Time periods of concern: April – June for fall chinook rearing, July – Oct for other species. The proposed ramping rate exceeds recognized standards established for rivers in the Northwest that contain anadromous fish (other Northwest hydropower projects have ramping rates typically on the order of 1-2 inches/hour). The ramping rate may also be causing and/or contributing to fish stranding including TES fish species.

Snake River floaters and power boaters

Power boaters and floaters have identified flow fluctuations as the single biggest problem on the river. The Applicant's proposed maximum 10,000 cfs allowable daily flow change exceeds the amount studies have shown is acceptable to boaters.

Beach/terrace erosion

Rapid stage change (particularly down-ramping) can increase the rate of bank erosion and exacerbate the already serious beach erosion problem below HCC. These sandbars and beaches are popular recreation sites, important fall chinook rearing areas and also provide a buffer to terraces containing cultural resources of concern.

Riparian vegetation

Rapid stage change such as that proposed by the Applicant makes it more difficult for riparian vegetation to establish and thrive. This impacts riparian dependent species of animals as well as the plant communities themselves. Daily ramping is associated with

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the extensive proliferation of algae species along the river's edge in the Snake River below Hells Canyon Dam resulting in unsafe and unappealing conditions for recreationists in the HCNRA.

Historical and cultural properties associated with beaches and terraces along the Snake River

Accelerated erosion and other effects associated with ramping expose historic and cultural resources at these sites to many forms of loss including those related to the accelerated decay of organic matter associated with historic properties.

Water Quality

While the Oregon and Idaho State DEQs have primary jurisdiction, it is also the responsibility of the USDA Forest Service as a Federal land management agency through implementation of the Clean Water Act (CWA), to protect and restore the quality of public waters under our jurisdiction consistent with direction in the LRMP.

The USDA Forest Service recognizes the complexity of water quality issues within the Snake River and the effects associated with the HCC. The USDA Forest Service supports basin wide approaches, such as the Snake River – Hells Canyon TMDL, to improve water quality. The USDA Forest Service maintains that the FLA should have assessed and developed plans to mitigate the water quality violations and impacts caused by the continued operations of the HCC dams.

The FLA clearly discloses that there will be several continuing adverse impacts on water quality including: 1) Temperature violation involving the shift in warmer fall and cooler spring water temperatures below Hells Canyon Dam, 2) Dissolved oxygen level violations in the hypolimnion of Brownlee Reservoir, Oxbow Bypass, and below Hells Canyon Dam, 3) TDG violations below all three HCC dams, and 4) Methyl-mercury processing in Brownlee Reservoir.

Temperature

“IPC disagrees that it should develop and evaluate different operational scenarios or that it should develop potential engineering project modifications to alter downstream releases.” (FLA response – USFS1-278)

The presence and operations of the HCC results in a change of water temperature within and downstream of the complex. The HCC has shifted the thermal regime where water temperatures below HC Dam are warmer in the fall and cooler in the spring. The water column structure in the reservoirs is largely dependent on the elevation of the penstock intakes. The Applicant should have evaluated and described how the Applicant could have mitigated the project induced thermal shift below HC Dam. The Applicant should

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have evaluated different operational scenarios that could have improved temperature conditions to meet State water quality standards and improved aquatic habitat for listed T&E species.

IDEQ has stated that, *“The omission of a strategy to meet the known spawning temperature criteria for fall Chinook below Hells Canyon Dam in the draft license application is not appropriate”* (IDEQ, 16 December 2002, pg 6). ODEQ has stated that, *“The [final] TMDL is likely, however, to establish a load allocation for IPC for the spawning criterion in the early fall”* (ODEQ, 6 January, 2003, pg 4).

Dissolved Oxygen

“IPC was allocated a DO load allocation in the draft Snake River-Hells Canyon TMDL that was appropriate for its level of responsibility for decreased oxygen levels”. (FLA response - USFS1-296)

Dissolved oxygen is higher as water enters the complex near Farewell Bend and lower when water leaves HC Dam. Decreases in dissolved oxygen occur both longitudinally through the complex as well as vertically through the water column of each individual reservoir. In Brownlee Reservoir, during low flow years, there is extensive hypoxia. The Applicant has proposed several mitigation measures to improve low dissolved oxygen conditions. In addition, the Applicant should evaluate different operational scenarios and how project modifications would provide opportunities for improving the low dissolved oxygen conditions. Specifically, the Applicant should have proposed mitigation to improve low DO in the following reaches: 1) the hypolimnion of Brownlee Reservoir, 2) the Oxbow Bypass reach, and 3) below HC Dam.

Total Dissolved Gas

“Relative to TDG, evaluating additional measures is not necessary because there is no site-specific evidence that the current TDG conditions, resulting from spill at Brownlee or Oxbow dams, are having a negative effect on biota downstream of Brownlee Dam.” (FLA response - USFS1-296)

The HCC along with dam operations has resulted in elevated TDG levels. Spills within the HCC in excess of 2,000 to 3,000 cfs result in TDG levels exceeding the state standard of 110% in Oxbow and Hells Canyon Reservoirs and in the Snake River below the HC Dam (Myers and Stute, 1998). Supersaturation from the HCC may be a significant factor to TES fish along with other aquatic biota survival downstream in the Snake River (Idaho Power 1997). The USDA Forest Service supports the construction of flow deflectors at Hells Canyon Dam.

In addition, the Applicant should have evaluated and proposed mitigation for TDG violations below all of the HCC dams. IDEQ (IDEQ, 16 December, 2002, pg7) has

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stated that, “*total dissolved gas violations occur in Oxbow and Hells Canyon Reservoir*”. ODEQ (ODEQ, 6 January, 2003, pg 12) has stated that, “*The 401 Application should include a Total Dissolved Gas Management Plan that provides reasonable assurance that the TDG standard and allocations will be met below each of the project dams....*”

Mercury

“*Additional studies by IPC to address mercury issues are not warranted*”. (FLA response – USFS1-281)

The SR-HC TMDL reach is listed as water quality limited due to human consumption advisories for mercury issued by both Oregon and Idaho. Elevated levels of mercury in fish tissues have been observed in Brownlee Reservoir. Methylation of mercury is a concern within Brownlee Reservoir. Low dissolved oxygen levels and the presence of a substantial amount of organic material near the sediment/water interface can result in higher rates of methyl-mercury production. Methyl-mercury represents a significantly greater threat for bioconcentration and accumulation than inorganic mercury compounds. The Applicant should have addressed potential mitigation to reduce methyl-mercury processing in Brownlee Reservoir.

Idaho (IDEQ, 16 December 2002, pg. 5) and Oregon (ODEQ, 6 January 2003, pg. 13-14)) have stated that they will be addressing the methyl-mercury production during the relicensing process and it may be included in the 401 Certificate.

Fisheries

Anadromous fish (including Pacific lamprey) within and above the HCC

The Applicant does not plan to pursue efforts to introduce anadromous salmonids within or above the HCC. No mitigation for Pacific lamprey is proposed by the Applicant.

- The USDA Forest Service recommends that a reintroduction work group be created and funded by the Applicant that would include resource agencies, Tribes, and stakeholders. The work group would address habitat limiting factors such as: irrigation diversions and de-watered habitat, barrier passage, loss of marine-derived nutrients, and better modeling of upstream habitat productivity with the goal of reintroducing anadromous fish during the term of the license.
- The USDA Forest Service maintains that the reintroduction of Pacific lamprey to streams within and above the HCC needs to be addressed.

Anadromous Fish downstream of the HCC

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USDA Forest Service contends that the Applicant fails to adequately analyze fish habitat requirements downstream of the HCC. The following deficiencies must be addressed by the Applicant:

- Poor water quality in the Hells Canyon Reach, which is caused by the HCC, does not meet State standards, and will continue to adversely affect fall chinook salmon (temperature, low DO, and elevated TDG).
- The Applicant needs to identify the effect of ramping alternatives on juvenile fall chinook salmon in the Hells Canyon Reach.
- Continued trapping of sediment/gravel by the HCC reduces rearing habitat for fall chinook salmon juveniles.
- The Applicant needs to identify the effect of baseline and other flow alternatives on fall chinook salmon smolt migration.

White Sturgeon in Hells Canyon Reservoir

Although the Applicant proposes 5 new PM&E measures associated with the white-sturgeon plan, the Applicant should identify PM&E measures to specifically mitigate for the continued loss of white sturgeon and their habitat in the Hells Canyon Reservoir.

Resident Native Fish

The Applicant partially addresses resident fish mitigation through its Native Salmonid Plan and White Sturgeon Plan. The following PM&E deficiencies in the FLA need to be addressed by the Applicant:

- The Applicant should provide enough detailed information to support a determination that the water quality PM&E measures related to fish and habitat are sufficient.
- Monitoring and adaptive management should include in the Native Salmonid Plan that would address bull trout population size, habitat condition, and genetic integrity throughout the HCC.
- The Applicant should form a stakeholder work group as part of the Native Salmonid Plan. The Applicant must clearly identify the role and authority of the work group.

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- The Applicant should identify a PM&E measure that mitigates for the continued loss of Pacific lamprey marine-derived nutrients within and above the HCC.
- The Applicant should identify PM&E measures to reconnect bull trout, redband trout, and white sturgeon populations throughout the HCC and tributaries.
- Adequate flows through the Oxbow Bypass should be identified to improve water quality and provide habitat for bull trout, redband trout, and white sturgeon.
- The Applicant should identify PM&E measures to mitigate ramping impacts on fish habitat below HC Dam.

Bliss Rapids Snail

The Applicant's analysis of snail specimens initially identified as ESA listed Bliss Rapids snail proved to be inconclusive. Proper ESA protocol for a suspected species requires that the Applicant continue to conduct research until the species is properly identified or assume presence and identify appropriate PM&E measures.

Oxbow Bypass

Based upon USDA Forest Service review there are no apparent changes between the DLA and FLA, therefore the agencies comments on the DLA are still valid.

Fish Monitoring Plan

Based upon USDA Forest Service review there are no apparent changes between the DLA and FLA, therefore the agencies comments on the DLA are still valid.

Lost Riverine Habitat in Hells Canyon Reservoir

Based upon USDA Forest Service review there are no apparent changes between the DLA and FLA, therefore the agencies comments on the DLA are still valid.

Terrestrial and Botanical

The Applicant fails to disclose an explanation of decisions made by, nor the rationale of how the Applicant categorized USDA Forest Service issues into the Applicant's seven issues enumerated in the FCP, DLA and FLA. The Applicant only provides a visual representation of how USDA Forest Service issues are represented in the Applicant's technical reports (Appendix H – Table 2), therefore mitigated in the Applicant's proposed

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PM&E's (Appendix H - Table 4). The seven issues identified in the Applicant's FCP remain unchanged through issuance of the FLA.

As the Applicant's conclusions do not adequately address USDA Forest Service issues, the proposed PM&E measures are incomplete. Specifically:

- The Applicant does not propose to fully mitigate for continued project affects caused by HC reservoir.
- The Applicant does not propose to mitigate continued project affects to low-elevation mule deer winter range around HC reservoir.
- The Applicant's conclusions and mitigation inadequately addresses shoreline erosion and riparian vegetation within the fluctuation zone in the river reach downstream of HC dam.
- The Applicant does not include all transmission lines associated with the HCC in the FLA.

As such, the Applicant's proposed mitigation measures limit USDA Forest Service legal responsibility to manage TES, Regional Forester Sensitive and MIS species habitats in compliance with Federal laws, regulations and policies.

The USDA Forest Service will respond to rare and sensitive plant species, and noxious weed infestations in greater detail at a later date.

Recreation

Recreation Adaptive Management Plan (RAMP)

The RAMP will be the primary tool used during the license period to determine additional recreation development needs and implementation. The RAMP measure (E.5.4.4.1.5.) does not provide enough detail to determine potential effects on NFS lands. There are key elements of how the RAMP would work that are still not addressed adequately. In particular, the specific roles, responsibilities and authorities of the agencies and entities on the RAMP stakeholder group need to be documented and explained in more detail in the RAMP PM&E measure. A primary concern is how decisions will be made in establishing triggers for action and in determining the what, where, when, and how much money to spend on future recreation developments. The stakeholder group should have a decision-making role, not just an advisory role, in the development and implementation of the RAMP, and the parameters of this role should be well documented in the FLA.

Applicants Proposed PM&E Measures

The Applicants proposed PM&E measures do not adequately address project effects on several components of NFS lands and resources related to reservoir recreation. There are several additional PM&Es needed to adequately mitigate for project impacts identified in the USDA Forest Service response to the Applicant's DLA.

Many of the Applicant's PM&E proposals include this statement in the Cost Estimate sections of the FLA: "The Applicant would fund all reasonable and agreed-upon elements of this measure." The USDA Forest Service agrees that the Applicant should fund all reasonable cost elements of the PM&E measures.

Snake River Recreation of Hells Canyon NRA

USDA Forest Service maintains that the applicant should acknowledge and develop plans for mitigation of the projects impacts to downstream river recreation and impacts caused by the present and continued operations of the Hell Canyon Complex.

- The applicants proposed PM&E measures are deficient in providing for and managing recreation impacts to NFS lands by project operations and attraction including those at the Hells Canyon Creek Launch and Visitor Center.
- The Applicant should identify measures that address negative impacts to river recreation and navigability that have been identified in studies conducted by the Applicant.
- The features created and maintained by sediment recruitment in and along the river are important components of the recreation experience and setting. This is an issue that still needs to be addressed.

Landscape Aesthetics

The USDA Forest Service disagrees with the Applicant contention that project operations do not impact any scenic resources below HC Dam. The Applicant should have assessed and developed plans to mitigate the impacts to the continued sediment entrapment and daily flow fluctuations. These impacts directly affect resources such as riparian vegetation and sand beaches that contribute to the aesthetic appearance of Hells Canyon.

Historical and Archaeological Resources

The USDA Forest Service contends that the Applicant has not, to date, completed its obligations under Section 106 of the National Historic Preservation Act. All eligible historic properties within the Area of Potential Effect (APE) must be evaluated for

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determinations of effect. Until effects determinations are complete it is premature for the agency to evaluate the Applicant's proposed PM&E measures.

- The USDA Forest Service does not agree that the APE ends at the confluence of the Snake and Salmon rivers. There may be affects to historic properties related to project operations down to the upstream edge of the Upper Granite pool. Therefore, the area from the confluence of the Salmon River downstream to the northern boundary of the HCNRA needs to be evaluated.
- The Applicant has not provided clear determinations of eligibility for historic properties listed as "potentially eligible".
- The Applicant has not provided for adequate testing to determine historic property non-significance on sites that still require testing as shown in Appendices E.4-D and E.4-E. Therefore, these historic properties are still "potentially eligible."
- The Applicant has not addressed the role and effect of project induced erosion including effects of ramping and the effects of sediment starvation to heritage properties.