Seattle City Light

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VIA ELECTRONIC FILING

June 9, 2021

MS. KIMBERLY D. BOSE, SECRETARY
FEDERAL ENERGY REGULATORY COMMISSION
888 FIRST STREET, NE
WASHINGTON, DC 20426

Re: Skagit River Hydroelectric Project, FERC Project No. 553-235 – Notice of Certain Agreements on Study Plans for the Skagit Relicensing

Dear Secretary Bose:

On April 7, 2021, the City of Seattle, Washington, through its publicly-owned electric power utility Seattle City Light ("City Light"), filed its Revised Study Plan ("RSP") for the relicensing of the Skagit River Hydroelectric Project ("Project"). Since that time, City Light has been working with the licensing participants ("LPs") to attempt to resolve outstanding areas of disagreement regarding the proposed studies. The LPs have committed significant time and resources over the past two months to narrow contested issues in the studies and attempt to avoid study disputes. City Light acknowledges and appreciates the substantial efforts of the Tribes, federal and state resource agencies, and other LPs to participate in these continued discussions in the short time window before the Federal Energy Regulatory Commission ("FERC" or "Commission") issues its study plan determination ("SPD") on or around June 16, 2021.

The purpose of this filing is to notify the Commission that City Light and the following LPs have reached agreement in principle on a number of City Light's proposed study plans: Swinomish Indian Tribal Community, Upper Skagit Indian Tribe, National Marine Fisheries Service, National Park Service, U.S. Fish and Wildlife Service, Washington State Department of Ecology, and Washington State Department of Fish and Wildlife ("Supporting LPs").

As described below, City Light and the Supporting LPs have resolved their differences on scope and methods for certain studies and request that the Commission adopt those study plans as proposed in the RSP. For other studies, City Light has agreed to implement the study subject to certain modifications, and requests that the Commission include the modified study in the SPD as described in the chart attached as Appendix A. Finally, for certain studies, City Light and the Supporting LPs have reached partial agreement on study modifications, as described in Appendix A. For these studies, City Light and the Supporting LPs request that the Commission adopt those portions of the study as modified and resolve the remaining differences in the SPD. City Light and the LPs agree that the proposed modifications are necessary and appropriate to inform the development of license requirements.

For those modified study plan elements that City Light and the Supporting LPs have agreed to, if an LP identifies a need to modify a study plan goal or objective, City Light and the Supporting LPs agree to work collaboratively to modify the relevant study plan goals and objectives as needed to comport with the revised study plan elements. Also, a number of the agreed-to study plan modifications rely on future workshops to collaboratively refine study scope, methods, and implementation. City Light and the Supporting LPs intend to collaboratively develop and agree to written decision-making and dispute-resolution protocols to govern these workshops within 20 days of this submittal and will submit the protocols to FERC. The Supporting LPs' agreements as described herein and in Appendix A are contingent upon successful development of such protocols. The LPs reserve their rights to challenge any study plan elements subject to modification through future workshops if decision-making and dispute-resolution protocols are not mutually agreed to by City Light and the Supporting LPs within 20 days of this submittal.

Where agreement is not documented below, areas of disagreement remain, and City Light and the Supporting LPs request FERC's resolution of those disagreements. Following the SPD, the parties anticipate making additional efforts to resolve contested issues and may reach additional agreements related to City Light's proposed study plans (including differences related to study goals and objectives), and this filing will be supplemented by additional filings to document and implement such additional agreements.

Thus, City Light is committed to continued engagement with the LPs, after issuance of the Commission's SPD, to further discuss, narrow, and resolve outstanding disagreements on the study plans.

City Light has prepared this letter in close coordination with the Supporting LPs. City Light understands that the Supporting LPs support the representations in this filing, but recognizes that discussions are ongoing as City Light and the LPs continue to attempt to resolve disagreements. City Light and the Supporting LPs reserve their respective rights under applicable law, including with respect to Tribal consultation, the dispute resolution process in 18 C.F.R. §§ 5.13 – 5.14, and further with respect to the implementation process in 18 C.F.R. § 5.15.

Study Plans with Supporting LP Agreement Without Changes to Study Plans

The Supporting LPs and City Light have reached agreement on the following study plans, and request that the Commission adopt these studies in their entirety as proposed by City Light in the RSP:

- CR-01 Cultural Resources Data Synthesis
- CR-03 Gorge Bypass Cultural Resources Survey
- RA-02 Gorge Bypass Reach Safety and Whitewater Boating Study
- RA-03 Project Facility Lighting Inventory

- RA-05 Lower Skagit River Recreation Flow Study
- TR-03 Rare, Threatened, and Endangered Plants Study
- TR-04 Invasive Plants Study
- TR-06 Golden Eagle Habitat
- TR-07 Northern Goshawk Habitat Analysis

The Supporting LPs and City Light have reached agreement on the following study plans, subject to continued dialogue to resolve minor technical details regarding the methodology of the studies. City Light requests that the Commission adopt these study plans in their entirety as proposed in the RSP. If any technical details of the studies change during the implementation phase, those changes will be detailed in appropriate filings, not later than the Initial Study Report:

- CR-02 Cultural Resources Survey Study[1]
- CR-04 Inventory of Historic Properties with Traditional Cultural Significance Study[2]
- TR-02 Wetland Assessment
- OM-01 Operations Model Study
- TR-01 Vegetation Mapping Study
- TR-05 Marbled Murrelet Study
- TR-10 Northern Spotted Owl Habitat Analysis

Study Plans with Supporting LP Agreement Subject to Modifications to Study Plans

The Supporting LPs and City Light have reached agreement on the following study plans, subject to certain clarifications or modifications to the studies as proposed in the RSP. City Light requests that the Commission adopt these study plans in the SPD with the clarifications and modifications described in Appendix A:

- FA-02 Instream Flow Model Development Study
- FA-03 Reservoir Fish Stranding and Trapping Risk Assessment
- FA-04 Fish Passage Technical Studies Program
- FA-05 Skagit River Gorge Bypass Reach Hydraulic and Instream Flow Model Development Study
- FA-06 Reservoir Native Fish Genetics Baseline Study
- FA-07 Reservoir Tributary Habitat Assessment
- GE-02 Erosion and Geologic Hazards at Project Facilities and Transmission Line Right-of-Way Study

[1] CR-02 is a survey of the Area of Potential Effects ("APE") for the relicensing. City Light solicited comments on the proposed APE and is now reviewing comments received during a 30-day review period.

[2] Agreement is pending completion of a Memorandum of Understanding between City Light and the Swinomish Indian Tribal Community regarding hiring of the Tribe's preferred ethnographic consultant.

- GE-03 Sediment Deposition in Reservoirs Affecting Resource Areas of Concern Study (and SR11 Reservoir Sediment)

Study Plans with Partial Supporting LP Agreement

The Supporting LPs and City Light have reached partial agreement on the following study plans, subject to certain modifications described in Appendix A. City Light requests that the Commission adopt aspects of these study plans in the SPD that have been resolved among the parties. The parties recognize that discussions are ongoing and additional aspects of these study plans may be resolved among the parties. For remaining areas of disagreement on these study plans, City Light requests that the Commission resolve those disagreements in its SPD.

- FA-01 Water Quality Monitoring Study
- FA-08 Fish Entrainment Study
- GE-04 Skagit River Geomorphology Between Gorge Dam and the Sauk River Study
- Lower River Studies (including but not limited to SY-01 Synthesis and Integration of Available Information on Resources in the Lower Skagit River)

Remaining Studies

For studies not discussed in this filing, the parties continue to have disagreements with certain aspects of the studies. Prior to and after issuance of FERC's SPD, City Light and the LPs will continue their discussions to attempt to resolve these outstanding disagreements. These studies include:

- GE-01 Reservoir Shoreline Erosion Study
- RA-01 Recreation Use and Facility Assessment
- RA-04 Project Sound Assessment
- TR-08 Special-status Amphibian Study
- TR-09 Beaver Habitat Assessment

City Light and the LPs acknowledge that they have not resolved issues associated with the Gorge Dam Removal Study (USIT-04).

City Light is working with, and will continue to work with, the Swinomish Indian Tribal Community and WDFW outside of study plan process to gather much of the information requested about terrestrial wildlife connectivity and mitigation lands habitat assessment contained in study requests SITC-01 and SITC-02.

LP study requests not addressed in this letter are still outstanding. City Light and the Supporting LPs request FERC's resolution of those outstanding study requests in the SPD.

Timing of Studies

In light of the challenges presented by the pandemic as well as the timing of the SPD, there may be a need for City Light to complete certain studies during the 2023 study season. If that ends up being the case, City Light and the LPs may request that the Commission not issue the "Ready for Environmental Analysis" notice until such studies are completed and submitted to the Commission. This would ensure that City Light and the LPs have enough time to develop a complete record for the mandatory conditioning agencies, Washington Department of Ecology Section 401 Certification, and the U.S. Fish & Wildlife/National Marine Fisheries Service Endangered Species Act consultation.

If you have any questions regarding this filing, please let me know.

Respectfully submitted,

Chris Townsend
Director, Natural Resources and Hydro Licensing
Seattle City Light

CC: Matt Cutlip, FERC

APPENDIX A

Skagit Hydroelectric Project Relicensing

Study Plan Issue Resolution Table: FA-01, FA-02, FA-03, FA-04, FA-05, FA-06, FA-07, FA-08, GE-02, GE-03, GE-04, and SY-01

FA 01 Water Quality Monitoring Study		
Outstanding Issues		Agreed-to Study Plan Modifications[1]
Hydrodynamic Model, CE-QUAL-W2 model development; Impact of cold-water release from Ross reservoir		Seattle City Light ("SCL") will modify FA-01 to include development of a CE-QUAL-W2 model to evaluate temperature impacts from the Project on aquatic resources. SCL will seek and incorporate the input of Scott Wells and the Oregon and Washington U.S. Geological Survey ("USGS") Water Science Centers in the development of the CE-QUAL-W2 model. The model will be developed and implemented within the two-year study timeframe. The CE-QUAL-W2 model will be used to evaluate, among other things, the impact of cold-water releases from Ross reservoir on fishery resources. Action item: SCL will schedule one or more workshops[2] with the licensing participants ("LPs"), as needed, to collaboratively develop this model.
Use of existing water quality monitoring data, Quality Assurance/Quality Control ("QA/QC")		SCL will provide a Quality Assurance Program Plan ("QAPP") that meets Ecology's standards and judge existing data based on the QAPP. If the existing data cannot be confirmed, the data will be reviewed on a case-by-case basis in collaboration with the LPs.

[1] SCL has agreed to carry out the identified studies as modified. The LPs' agreement to modifications that include future collaboration between SCL and the Supporting LPs are contingent upon mutual agreement by SCL and the Supporting LPs to a decision-making/dispute-resolution process to guide the workshops and collaborative efforts described herein.

[2] The terms "workshop" and "workgroup meeting" are used interchangeably herein. Both terms refer to meetings of technical workgroups comprised of subject-matter experts from SCL and the LPs to collaboratively refine and guide implementation of SCL's study plans and analyze the resultant data.

		Action item: SCL to provide provisional data summary by the end of July 2021 to identify gaps and ensure those gaps are addressed through data collection in the study time frame, followed by a full summary in the Initial Study Report. Action item: The existing data will be reviewed to determine data gaps that need to be filled through the implementation of the study plan.
Evaluating measures of biologic productivity (e.g. primary producers and consumers), expanding benthic macroinvertebrate sampling		SCL will modify FA-01 to clarify that SCL will evaluate measures of biological productivity including primary producers and will collaborate with the LPs to develop a sampling study. In addition, SCL will execute an expanded benthic macroinvertebrate sampling program to include the Project reservoirs, Skagit River to the estuary (through reference reach sampling mutually agreed to by SCL and the LPs), varying seasons, varying habitat types, and invertebrate drift. The sampling program will be developed in collaboration with the LPs and informed by National Park Service ("NPS") Appendix A.
Metals sampling associated with mining impacts in reservoirs; evaluate metals concentrations (toxics) (sediment sampling), focus areas include mouths of the Skagit River, Ruby and Thunder Creeks.		Skagit River and Ruby Creek are being addressed by the USGS. With respect to Thunder Creek, SCL and interested LPs will collaborate on future sampling outside of implementation of the study plan.
Evaluate nutrient dynamics		SCL will modify the study plan to conduct an initial assessment of nitrogen and phosphorous in the Project Reservoirs, representative major reservoir tributaries, and Skagit River to the estuary (through mutually agreed sampling program including reference reaches). An assessment for nutrient data collection will be developed in coordination with tributary habitat sampling, water quality modeling, and the food web study. The sampling design will be developed in collaboration with the LPs. SCL will also modify the study plan to initiate modelling of nutrient and productivity components after 1) the CE-Qual-W2 model for

		temperature is developed, and 2) data sources and years available are evaluated against the objectives of the LPs. Concurrently SCL would continue to collect proposed water quality parameter data and develop the CE-QUAL-W2 framework and integration with the Operations model and other modelling tools in order to perform a sensitivity analysis to determine the accuracy and sensitivity of the tool (and data needs) for illustrating nutrient dynamics under alternative operational scenarios. SCL anticipates that this effort will be initiated during the second year of study and completed prior to the filing of the Updated Study Report.
Temporal and spatial frequency of sampling for all water quality parameters. (e.g. more sites, below the Sauk, additional parameters, longer sampling, seasonal/annual conditions, near-shore habitat in reservoirs)		SCL will convene a workshop with concerned LPs to discuss parameters, frequency, monitoring locations, and temporal overlap with existing data. This workshop will occur in August 2021 after the data gaps in the QA/QC analysis are presented by SCL. The workshop will also identify the parameters to be modeled by the CE-QUAL-W2 model, potential gaps in the model, and the approach to filling the gaps. Where the model will not adequately describe the effects of Project operation scenarios on water quality parameters, empirical data collection requirements will be developed by SCL in collaboration with the LPs and informed by NPS Appendix A.
Schedule for submission and analysis of data collected from Dec 2022 to May 2023.		SCL will communicate with FERC on the timing of studies. SCL will consult with the LPs according to a yet to be developed communications protocol and decision-making/dispute resolution process to review the status of the studies prior to FERC's issuance of a Ready for Environmental Analysis ("REA") notice. If necessary, SCL and the LPs may formally ask FERC not to issue the REA notice until after all data is compiled and SCL supplements its application.

FA 02 Instream Flow Model		
Outstanding Issues		Proposed Resolution
Instream flow ("ISF"), passage, and habitat suitability criteria ("HSC") technical meetings have greatly improved.		SCL will use the decision-making/dispute resolution process being developed by SCL and the LPs in implementing the study.
The coordination with data needs from other study plans or as requested from other LPs has not been demonstrated, e.g. gathering other data from flow releases such as temp, DO, nutrients, etc.		As part of its FERC license application, SCL will integrate the results of all models and resource studies, including but not limited to GE-04, FA-01, and FA-02, to inform and evaluate the impacts of Project operations on aquatic habitat. SCL will schedule a workshop during Q4 2021 to develop a roadmap in collaboration with the LPs to guide this integration.
The ISF workgroup appears to have been started, but the LPs have not seen a commitment to maintain the group and use its expertise to guide data needs, analyze the data, and make ISF, passage, process flow, and gravel/wood augmentation recommendations.		At the next workgroup meeting, SCL and the LPs will collaborate to refine the framework and schedule of FA-02 and work together to identify any gaps and additional information needs to ensure collaborative development and implementation of the study.
Wood and Gravel movement reach wide and potential wood and gravel augmentation in the bypass. What flows are necessary to initiate gravel movement. Modeled flows will help determine when side channels and floodplains get inundated, but not movement activation.		SCL will model to determine locations and methods for wood and sediment augmentation no later than 6 months following completion of the instream flow model. Based on the results of the modeling, SCL will implement a wood and sediment augmentation pilot program to be developed jointly by SCL and the LPs no later than 2023 (unless SCL and the LPs mutually determine that such a pilot program is unnecessary). SCL and the LPs expect that the augmentation pilot program will include monitoring, including monitoring downstream of the Sauk confluence, and will result in information to inform development of possible protection, mitigation, and enhancement ("PM&E") measures in the new license. SCL will continue current data collection/tagging of wood that is placed in the river under current programs and will disseminate data from these ongoing programs to the LPs as soon as practicable.

		The pilot program will include appropriate-sized wood to meet the objective of wood augmentation (i.e., representative of the size classes observed in the reservoirs). *See* Wald, A.R. 2009. Report of investigations in instream flow: High flows for fish and wildlife in Washington. Department of Fish and Wildlife, Olympia.
Effectiveness of previous mitigation efforts to guide this license effort		SCL will modify FA-02 to include an evaluation of the effects of the existing flow regime on aquatic resources to inform future flow regimes under the new license. SCL will also provide a qualitative evaluation of the effectiveness of individual mitigation projects on SCL and public lands based on best available data and best professional judgment. The evaluation will include site tours and meetings with the LPs.
Seasonal nutrient load and temperature stratification in Diablo and Ross lake and possible impacts form ISF and process flow releases and potential vertically variable source for discharge water		This issue is resolved through resolutions in FA-01.
Field validation studies needed for HSC target species: a) Details on how the validation studies will be conducted need to be provided and how they will account for variable flow conditions b) Identify 3-4 Focus Reaches in the Skagit River that contain a mixture of macro-habitat types based on habitat mapping – (e.g. main channel, side channel, tributary mouths, slough/backwater habitats, upland slough, and floodplain channels) from which to conduct validation studies c) Both spawning and rearing life stages need to be considered in the validation studies		SCL is working with the Instream Flow technical team (including the LPs) to identify field validation studies. Currently, SCL is implementing a spring spawning field validation effort for steelhead. An upcoming workshop (mid-June) is planned for HSC development that will include the topic of field validation for summer rearing species of interest. SCL will circulate a discussion draft that includes selection of potential sampling sites (shared focus areas), sample methods, etc. in advance of the workshop.
HSC discussion needs to be expanded to include other parameters that may be influencing fish distributions and that may be affected by mainstem flows: a) Potential groundwater upwelling/downwelling, springs and seeps, water temperature, and possibly dissolved oxygen b) Thermal differences often occur in conjunction with groundwater influx and can influence egg and embryo survival		SCL will include continuous stage readers and temperature loggers in the floodplain to validate floodplain connectivity. The location and placement of continuous stage readers and temperature loggers will be agreed upon by SCL and the LPs in a future workshop.

c) Mainstem flows influence groundwater exchange and are hydraulically connected with the hyporheic zone d) Consider a forward looking infrared ("FLIR") mapping survey (perhaps seasonally during periods when greatest differential in temperatures would be expected to occur) throughout the entire Project reach to identify potential groundwater sources/upwelling as detected by thermal differences. Locations of these should be studied further for fish habitat utilization. FLIR could be used to assist in defining locations of Focus Areas.		Action item: SCL will convene workshops to discuss the influence of groundwater and utility of FLIR on hyporheic exchange (see Torgersen et al 1999 for FLIR methodology technique). The workshop will also address: 1) the crosswalk between the CE-QUAL-W2 model and other water quality parameters highlighted in the NPS Appendix A; and 2) the need for additional data collection. The LPs acknowledge they are not seeking installation of groundwater wells as part of this study. If warranted as a result of this study, SCL recognizes that may be necessary.
The instream flow study (and model) needs to explicitly address connectivity with off-channel/floodplain habitats: a) Project operations/mainstem flows/water surface elevations will have a direct influence on whether and the extent to which (i.e. when, duration) off-channel and floodplain habitats have a surface-or sub-surface flow connection with the main channel. Thus, it will be important to locate and survey the entry points (mainstem connections) and lengths of habitat of all off-channel/floodplain complexes within the project reach. These can then be graphically presented longitudinally on a cumulative length basis. b) This work needs to be integrated into the instream flow study and considered in the Operations Modeling.		SCL will modify the study plan to provide topobathymetric field verification and validation at key floodplain areas after the initial model run. The key floodplain areas will be identified by an initial model run with a moderate flow and relative elevation maps. SCL and the LPs recognize that ISF and water quality workgroups will be coordinated to integrate ISF model with off-channel/floodplain water quality parameters to assess habitat quality. As part of its FERC license application, SCL will integrate the results of all models and resource studies, including but not limited to GE-04, FA-01, and FA-02, to inform and evaluate the impacts of project operations on aquatic habitat. SCL will schedule a workgroup meeting during Q4 2021 to develop a roadmap to guide this integration. By relying upon focus areas in application of the 2-D transport model and using the instream flood model, SCL will assess floodplain flow conditions including shear stress and scour (per GE-04). As part of its FERC license application, SCL will integrate the results of GE-04 with the FA-02 hydraulic model and other available information to inform the impacts of process flows on anadromous salmon habitat and population productivities (per GE-04).

Include an adequate assessment of floodplain and off-channel connectivity that addresses specific data needs. Provide written commitment to address floodplains after the mainstem. a) Address issues with proposed grid size for the floodplain and its impacts on assessing hydraulic connectivity with side channels and off-channel rearing habitat b) Monitor the influence of river levels on adjacent side channels that may be blocked with sediment or large wood (Place water level loggers in primary and secondary side channels to address concern about river reaches losing water to ground water)		SCL will clarify the study plan to provide topobathymetric field verification and validation at key floodplain areas after the initial model run. The key floodplain areas will be identified by an initial model run with a moderate flow and relative elevation maps. SCL and the LPs recognize that ISF and water quality workgroups will be coordinated to integrate ISF model with off-channel/floodplain water quality parameters to assess habitat quality.
Depict and describe the interrelationships between and dependencies on the different studies and models (e.g. what is relationship between instream flow model and geomorphic/sediment transport model/studies, water quality studies/model?)		As part of its FERC license application, SCL will integrate the results of all models and resource studies, including but not limited to GE-04, FA-01, and FA-02, to inform and evaluate the impacts of project operations on aquatic habitat. SCL will schedule a workgroup meeting during Q4 2021 to develop a roadmap to guide this integration.
Depict how study results and model outputs will be integrated with the Operations Model. Provide details as to how the different studies are going to feed into the Ops Model and how the results will be used. a) After the Year 1 studies and preliminary models have been developed, City Light provide a Proof of Concept demonstration to show how model results will be integrated with the Operations Model and the types of output information/data/mapping that will result. This should include outputs/inputs from other models. b) Agencies and LPs need to see and understand the modeling tools and outputs and the metrics that will be applied in decision making, BEFORE moving to operational scenario comparisons.		These issues will be addressed in the workgroup meeting during Q4 2021 to develop a roadmap to guide this integration. SCL will develop a projected climate change operations model from the base model. The climate change model will be developed collaboratively with the LPs using downscaled data from the UW climate impacts group and will be used to advise operations.
Closely review and inspect the Effective Spawning Habitat Model and the FSA. a) The entire logic framework specified in the FSA and ESH should be described and discussed and updated as needed. b) Consider a decision support tool to assist in this endeavor.		These issues will be addressed in the workgroup meeting during Q4 2021 to develop a roadmap to guide this integration.

Provide more detail on how the hydraulic model will be used to assess expected habitat outcomes for topics such as sediment and wood augmentation or water quality.		This has been addressed in GE-04.
Address ongoing concerns related to the passage assessment, including higher controlled releases (4000-5000 cfs), how professional judgement will be used, and how velocity along the channel bottom will be assessed.		This is being addressed in FA-05.
Discuss the need for fish species presence surveys in the Study Plan Reach (particularly spawning habitat) or an assessment of existing survey information for species of concern: a) sea-run cutthroat (*Oncorhynchus clarki clarki*) b) Pacific lamprey (*Entosphenus tridentatus*) c) Salish sucker (*Catostomus sp*.) d) Dolly Varden (*Salvelinus malma*) e) western brook lamprey (*Lampetra richardsonii*) f) river lamprey (*Lampetra tridentate*) g) white sturgeon (*Acipenser transmontanus*)		Issue resolved. SCL and the LPs will be treating these species as present. SCL and the LPs will be selecting species for HSC analysis.
Instream flows for below Diablo Dam		This topic will be addressed through the Instream Flow workgroup.
Extending Hydraulic Model below Sauk River confluence		SCL has committed in GE-04 to build a 1-D hydraulic model for areas below the Sauk confluence to the estuary. SCL will engage the LPs on designing and implementing the model. The pros and cons of a 1-D model and appropriateness for assessing habitat, including floodplain connectivity, will be discussed in the Instream Flow workgroup.

FA 03 Reservoir Fish Stranding and Trapping Risk Assessment		
Outstanding Issues		Proposed Resolution
Revise field methods and implement downstream salmonid stranding surveys		SCL will modify a study plan (likely not FA-03) to include a reevaluation of the existing methodology for assessing downstream salmonid and other fish stranding, trapping, and predation risk. Prior to completion of the study, SCL will meet with the LPs to assess whether changes in the existing methodology should be implemented prior to issuance of the new license.

Evaluate stranding at finer spatial scale and cover entire Ross drawdown zone in BC		1) SCL will have a technical meeting with the LPs to review initial information to assess adequacy of that information in informing stranding evaluation (including tree size) and to guide representative sampling during Q4 2021. This technical meeting with occur in Q3 2021; 2) Review 2021 sampling in U.S. for risk assessment to refine and inform the expansion to Canadian drawdown zone in 2022.
Add two objectives to Study Goals and Objectives Section: (1) find a reservoir drawdown rate that avoids, limits, or greatly reduces stranding of fish and juvenile amphibians; and 2) identify reservoir elevations that prove problematic for trapping of fish and juvenile amphibians.		1) SCL will clarify the study plan Objectives and Goals to include this issue; 2) SCL will clarify that the study addresses this objective. Clarification: SCL and the LPs recognize that the study plan report will not include proposed PM&E measures related to stranding. Such PM&E measures will be developed as part of the draft license application with consideration of downstream flow and other impacts.
SCL could learn from the collection of information during maintenance and shutdowns, if they occur during the relicensing study window, to help describe trapping and stranding during worst-case scenarios.		SCL will clarify the study to provide for opportunistic surveys if maintenance drawdowns or lowering of reservoirs beyond normal operations occurs.

FA 04 Fish Passage Technical Studies Program		
Outstanding Issues		Proposed Resolution
		SCL will identify fish passage flow windows at any partial potential impediments, which will be partially identified through modeling in FA-05 (Gorge Bypass Instream Flow Model).
		SCL will provide an opportunity for LPs to identify alternatives and provide input on the fish passage feasibility study.

		SCL will assess overall feasibility of fish passage alternatives but without providing a feasibility engineering design (akin to a 30 percent engineering design level) for fish passage alternatives.
		SCL will modify FA-04 to clarify that the expert panel serves in an advisory capacity only and only for such study products for which review is requested. Protocols for requesting expert panel review, performance of reviews, and responses to reviews will be agreed to during the course of the study. The National Marine Fisheries Service ("NMFS") will not accept unsolicited expert panel advisory opinions.

FA 05 Skagit River Gorge Bypass Reach Hydraulic and Instream Flow Model Development Study		
Outstanding Issues		Proposed Resolution
Assurance of a higher flow (4,000+ cfs) for analysis for fish passage evaluation (and ISF Model calibration/verification) a) Calibrate the model to higher flows that correspond to observed fish passage in the bypass		SCL will provide a planned higher flow event in summer/fall, if opportunistic high flow is not available. The study report will assess impacts to fish migration, both beneficial and detrimental, of certain flow regimes.
Increased species list for flows analysis of potential partial fish barrier passage: a) pink salmon (*Oncorhynchus gorbuscha*) b) chum salmon (*O. keta*) c) sea-run cutthroat (O*. clarki clarki*) d) Pacific lamprey (*Entosphenus tridentatus*)		SCL will clarify the study plan to allow for consideration of additional species.
Discuss the need for fish species presence surveys in the Study Plan Reach (particularly spawning habitat) or an assessment of existing survey information for species of concern: a) Pacific lamprey (*Entosphenus tridentatus*) b) Salish sucker (*Catostomus sp*.) c) Dolly Varden (*Salvelinus malma*)		Issue resolved. SCL and the LPs will be treating these species as present. SCL and the LPs will be selecting species for HSC analysis.
Address Downstream and Upstream Fish Passage at the Plunge Pool		SCL will clarify the study plan to address this comment to the extent necessary.

Address process flows Study Request: a) Which flows activate channel forming, channel maintenance, and channel flushing flows and upstream (probably covered) and outmigration of fish? b) Look at magnitude, duration, frequency, seasonality, and timing (rate of change)		This issue is addressed by GE-04.
Recognize reliance on professional judgment in passage flow assessment.		SCL and the LPs recognize that there is a need for further dialogue about the use of best professional judgment for decision-making and the establishment of objective criteria for evaluating studies as well as implementation of the studies.

FA 06 Reservoir Native Fish Genetics Baseline Study		
Outstanding Issues		Proposed Resolution
Collect juvenile fish at spawning grounds for genetics baseline		SCL will modify study plan to collect juvenile fish at spawning grounds for genetics baseline as part of field sampling program in Year 2. Action item: SCL to modify study plan and circulate to LPs after FERC's issuance of the study plan determination.
Expand sample collection and analysis out of basin and above/below dams		SCL will modify study plan to expand sample collection/coordination of existing samples and activities and analysis out of basin and above/below dams.
Include agency/tribal fisheries biologist/ecologist on expert panel		SCL will clarify study plan to explain the role of the expert panel. The LPs and SCL agree that: 1) the expert panel will serve in an advisory role, and 2) the expert panel will include experts from fields other than genetics.
Evaluate reservoir fish abundance, habitat use, migration timing		SCL will modify FA-06 to provide that SCL will seek input from LPs and advice from an expert panel on whether and how genetics information or other monitoring methods can be used to inform future evaluation of reservoir fish abundance, habitat use, and migration timing.

Project operations and resource effects section is missing from study plan		This issue will be addressed in the draft license application.

FA 07 Reservoir Tributary Habitat Assessment		
Outstanding Issues		Proposed Resolution
Use LiDAR and expand geographic scope of habitat potential modeling (additional streams and tributaries)		SCL will move forward with NetMap and commence scheduling collection of LiDAR during Q4 2021. SCL will collaborate with the LPs to determine where additional LiDAR data is needed in tributaries, including within Canada, based on review of existing LiDAR and existing NetMap information.
Analyze tributary habitat in Canada and on U.S. Forest Service ("USFS") land		SCL will clarify that FA-07 will analyze tributary habitat in Canada and on USFS lands consistent with the list provided by LPs.
Add Gorge reservoir to Food Web Study		SCL will add Gorge reservoir to the Food Web study with the methodology to be determined based on LP discussion with Dave Beauchamp.
Evaluate macroinvertebrate and zooplankton prey availability for all reservoirs		Action Item: SCL will give a presentation on how CE-QUAL modeling in combination with bioenergetics work will be used to address these issues. SCL will modify the study plan to clarify that it will evaluate macroinvertebrate and zooplankton prey availability in all reservoirs for integration in the food web analysis, incorporation into the CE-QUAL or other modeling efforts, and collect additional data to inform that modeling effort based upon input from LPs. See also modifications to FA-01 regarding nutrient dynamics.
Link prey availability and project operations with hydrodynamic or productivity model		See above

Conduct littoral habitat quality surveys in all reservoirs		Action item: SCL will review reports referenced by the Upper Skagit Indian Tribe ("USIT") and evaluate whether there is a proposal it could make based on those reports that would be responsive. SCL will conduct GIS assessment of habitat in the littoral and varial zones in 2021 and evaluate and determine parameters and metrics for representative field sample frames if warranted to evaluate habitat quality in a workshop with the LPs. Meeting proposed for Q3 2021.
Clarify study plan methods that will be used to quantify habitat		SCL will adopt the methodology referenced by NMFS in its study plan request.
Expand species list to include anadromous and non-native species		SCL will modify the study plan to include anadromous and non-native species.
Conduct field verification of a subset of habitat to correct modeling errors		SCL will clarify the study plan to address this issue
Incorporate continuous temperature and drift sampling sites requested in comments of FA-01		SCL will discuss with USGS incorporation of existing data or collection of new data on a subset of tributaries to address this issue. This is consistent with the methodology that will be used by Cooper *et al*. as well (related to the IP and tributary assessment). SCL will collaborate with LPs on next steps after the results of IP modeling are available. SCL acknowledges that in the event that additional sampling is warranted, SCL will develop such sampling in collaboration with the LPs- as informed by NPS Appendix A.
Evaluate competition with redside shiner and juvenile salmonids in reservoirs		SCL will address this in the food web study scope and provide a cross-reference to specific provisions of the study plan, and will revisit with LPs after a plan to evaluate prey resources availability is developed.
Include reservoir habitat conditions at full pool and differing stages of drawdown		SCL will conduct GIS assessment of habitat in the littoral and varial zones in 2021 and collaboratively evaluate and determine parameters and metrics for representative sampling of habitat quality in a workshop with LPs. Meeting proposed for Q3 2021.

Hold workshop with LPs to refine methods of assessing habitat production potential		SCL will hold a workshop to address this issue.

FA-08 Fish Entrainment Study		
Outstanding Issues		Proposed Resolution
Add PIT mark recapture monitoring in Diablo and Gorge		See below.
Water quality information should be collected at Ross Forebay		The CE-QUAL-W2 commitments should address this. SCL will discuss and confirm sampling locations in reservoir forebays with LPs.
Adjust Hydro-acoustic methods and expand N size by size class and species (request for multiple size classes for multiple species)		SCL will collaborate with LPs on the existing acoustic study to include a broader, and inclusive range of fish species, life stages, sizes, and sample sizes at all Project reservoirs.
Desktop analysis used as second phase in Diablo and Gorge for FA-04 target species and new water system for Gorge bypass		SCL will clarify the study plan to specify that the desktop study will be completed during the first year of study and will be used to inform the need for further entrainment studies (including potentially mark recapture and other studies) during the second year of study and potentially a longer-term study. SCL will collaborate with the LPs on study design for future entrainment studies. SCL will convene a workshop with the LPs to address study design issues associated with future entrainment studies during Q4 2021 or Q1 2022. SCL will clarify the study plan to provide that the desktop study will take into account project design (specifically, in the power tunnel below the intakes).
USIT requests that the study goals be revised as follows: "The goal of this study is to assess passage, abundance, and survival through entrainment and entrainment of each potential downstream passage route: turbines, spillway, bypasses or gates, for all size classes of Bull Trout, native fishes, and nonnative fishes at each of the unique structures at all three projects."		SCL will clarify the study plan to provide that a goal of the study is to inform future assessments of passage, abundance, migration, and survival through entrainment and entrainment of each potential downstream passage route: turbines, spillway, bypasses or gates, for all size classes of Bull Trout, native fishes, and

		nonnative fishes at each of the unique structures at all three projects.
USIT requests to include Chinook, Steelhead, Coho, and Sockeye, and depending on the results of the FA-04/FA-05 passage assessment, Pink and Chum into the desktop exercise.		SCL will clarify the study plan to include these species.
		Action item: After FERC issues the Study Plan Determination, SCL to have call with the Washington Department of Fish and Wildlife ("WDFW") and USIT regarding additional technical references.
Fish screens		The LPs and SCL acknowledge that WDFW has identified the need for fish screens at the Project facilities as a potential issue for the relicensing. There is no change to the study plan on this issue.

GE-02 Erosion and Geologic Hazards at Project Facilities and Transmission Line Right-of-Way Study		
Outstanding Issues		Proposed Resolution
Follow WDFW guidelines for determining fish-use potential.		SCL will clarify the study plan to provide that it will follow WDFW guidelines for determining fish-use potential. *See* WDFW, 2019 Fish Passage Inventory Assessment, and Prioritization Manual at 2-4. Olympia, Washington.
Clarify that barrier inventory and assessment will occur on mitigation lands and maintenance areas, including areas no longer actively used by SCL.		SCL will clarify the study plan to include a barrier inventory and assessment on mitigation lands and maintenance areas. With respect to mitigation lands, the inventory will be limited to active roads and will not include abandoned roads (which have been abandoned pursuant to Washington State Forest Practice Standards).
Clarify how barrier status for fill and levees will be determined.		SCL will consult with the LPs to clarify the barrier status for specific fill and levee locations during study implementation (Goodell Creek alluvial fan, Stetattle Creek, and other sites identified by the LPs).

Conduct field-based habitat surveys of blocked habitat following WDFW guidelines.		SCL proposes to develop an inventory of culverts and potential stream miles of habitat (through LiDAR analysis) for consultation with the LPs on the need for habitat surveys. SCL cannot commit to field-based habitat surveys of blocked habitat because of the volume of culverts and uncertainties as to the number of culverts that are fish-blocking barriers and the amount of habitat above those barriers. Because of this, SCL proposes to report on the results of the studies in the Initial Study Report and confer with the LPs on the need for habitat surveys based upon the results of the studies.
The proposed geographic scope for assessing geomorphic impacts along the transmission line ROW and Project facilities is not adequate, particularly for large tributaries (e.g. Goodell Creek, Diobsud Creek, Illabot Creek) and river CMZs (Skagit River and Sauk River).		SCL proposes that the existing geographic scope is adequate to cover relevant geomorphic processes and controls at the reach level in order to screen for geomorphic impacts associated with the Project. SCL will confer with the LPs to determine whether there is a need at specific locations to adjust the geographic scope to implement this screening. At specific locations identified through the study that will require interventional management, SCL will commit to assess the risk to towers and facilities, watershed-scale influences on fluvial processes, potential channel changes, sediment delivery, and other elements through discussion with the LPs towards developing site-specific plans.

GE-03 Sediment Deposition in Reservoirs Affecting Resource Areas of Concern Study		
Outstanding Issues		Proposed Resolution
Assess sediment sequestration quantity and character in all three project reservoirs; add a comprehensive sediment survey in reservoirs		SCL will quantify sediment supply of all size ranges (i.e., grain size distribution estimate) into Ross, Diablo, and Gorge Reservoirs as an annual rate by using the existing DHSVM model, historical contours, and updated bathymetry information. Workgroup will discuss sediment size and characterization available from DHSVM model.

Assess deposition and erosion in the drawdown zone		SCL will clarify that mapping of the sediment and erosion deposition zone and tributaries are part of the existing scope of the study. Any remaining gaps will be addressed during implementation.
Use a 1-D backwater model instead of the geomorphic 'inflection point" to estimate the magnitude and location of the reservoir backwater effect.		SCL will expand the scope of GE-03 to include this modeling. SCL and the LPs recognize that there are limitations on the ability to calibrate aspects of this model.

GE-04 Skagit River Geomorphology Between Gorge Dam and the Sauk River Study		
Outstanding Issues		Proposed Resolution
Extend geographic scope to Skagit Bay		SCL will develop a 1-D HEC RAS model for stream flow from the Sauk to the estuary and work with technical experts and LPs to identify robust sampling of mutually agreed to measurement endpoints within reference reaches within major reach segments. SCL will incorporate Jon Riedel's (NPS) work and the full range of hydrology and operations will be modeled. SCL will convene workshops to address the technical issues such as channel migration, large woody debris ("LWD"), suspended sediment transport and washload, and off-channel habitat associated with the modeling effort or other additional modeling efforts. SCL will modify the study plan to include collaboration with the LPs to look for opportunities to incorporate sediment modeling in reference reaches below the Sauk to the estuary.
Extend the 1-D and 2-D sediment transport models downstream of the Sauk River confluence		The resolution above addresses this issue. Regarding LPs' comments regarding LWD inventory, this is a topic of the lower river synthesis study. To the extent the synthesis study identifies a data gap, SCL will work collaboratively with the LPs to address it (including but not limited to the Watershed Council Middle Skagit River Restoration Plan, aerial photos, etc.).

Measure all LWD debris that enters the three Project reservoirs & describe fate (quantify and characterize) of LWD removed		SCL will provide LPs with its existing inventory of LWD in the three project reservoirs by no later than August 1, 2021 and conduct an annual inventory of inputs during the study period. SCL will convene a workshop with the LPs during the fourth quarter of 2021 to collaboratively develop strategies for short-term and long-term management of woody debris in the reservoirs and transport of woody debris to the lower river. Action item: LPs will work with SCL within the next 30 days to develop protocol for wood crew to enumerate woody debris coming into reservoir.
Clarify expected capabilities of sediment transport and morpho-dynamic models for predicting changes to channel morphology		SCL will convene workgroup meetings to clarify expected capabilities of sediment transport and morpho-dynamic models for predicting changes to channel morphology.
Calibrate sediment transport models to at least the 10-year recurrence interval; calibrate sediment transport model to help predict where sediment would be stored		SCL will calibrate sediment transport models to at least the 10-year recurrence interval (subject to available data) and calibrate sediment transport model to help predict where sediment would be stored. If necessary, SCL will provide controlled releases to assist in calibrating the model. Such controlled releases will be designed in a manner as to not contribute to downstream property damage or risk to health and human safety. The RSP envisions relying upon IHA.
Conduct sediment augmentation as part of the ILP study process; assess feasibility of sediment and wood augmentation.		SCL will model to determine locations and methods for wood and sediment augmentation no later than 6 months following completion of the instream flow model. Based on the results of the modeling, SCL will implement a wood and sediment augmentation pilot program to be developed jointly by SCL and the LPs no later than 2023 (unless SCL and the LPs mutually determine that such a pilot program is unnecessary). SCL and the LPs expect that the augmentation pilot program will include monitoring, including monitoring downstream of the Sauk confluence, and will result in information to inform development of possible PM&E measures in the new license.

		SCL will continue current data collection/tagging of wood that is placed in the river under current programs and will disseminate data from these ongoing programs to the LPs as soon as practicable. The results of GE-04 and the other studies will be used to inform sediment and wood augmentation throughout the Skagit River system. SCL will provide LPs information about current data collection/tagging of wood as soon as practicable. The Federal and state resource agencies will consider what information and permitting is needed to implement the augmentation pilot program. SCL will work cooperatively with LPs to ensure timely implementation of the pilot program with all required permits in place.
Expand the proposed tagging/monitoring of tributary sediment deposits to more tributaries, including downstream of Sauk Confluence		SCL will convene technical workshops with the purpose of expanding the scope, and changing and/or adding proposed tagging/monitoring of tributary sediment deposits to more tributaries, including downstream of Sauk Confluence.
Extend the channel change assessment to include off-channel floodplain habitats and the entire period covered by the historic aerial photograph record; deploy network of piezometers in off channel floodplain habitats		SCL will include continuous stage readers in the floodplain to validate floodplain connectivity. The location and placement of stage readers will be agreed upon by SCL and the LPs in a future workshop. Action item: SCL will convene workshops to discuss the influence of groundwater and utility of FLIR on hyporheic exchange and in the selection of study reaches. The LPs acknowledge they are not seeking installation of groundwater wells as part of this study. If warranted as a result of this study, SCL recognizes that may be necessary.

Assess floodplain flow conditions, including shear stress and scour using the instream flow model		By relying upon focus areas in application of the 2-D transport model and using the instream flood model, SCL will assess floodplain flow conditions including shear stress and scour.
Explain how Project impacts on process flows will be synthesized to determine impacts to anadromous salmonid habitats and population productivity.		As part of its FERC license application, SCL will integrate the results of GE-04 with the FA-02 hydraulic model and other available information to inform the impacts of process flows on anadromous salmon habitat and population productivities.
Describe what metrics available in the IHA software will apply to process flows and in what context or study elements		SCL will clarify the study plan to describe metrics available in the IHA software and will apply it to process flows. *See* Wald, A.R. 2009. Report of investigations in instream flow: High flows for fish and wildlife in Washington. Department of Fish and Wildlife, Olympia.
Include important floodplain areas mainstem channel bars and islands determined in FA-02 as vegetation verification sites		SCL and the LPs will develop in the workshop a suite of metrics to illustrate longitudinal disturbance regimes.
Include flows necessary to inundate habitat features in the validation discharge dataset		SCL will modify the study plan to include flows necessary to inundate habitat features in the validation discharge dataset (off-channel).
Quantify sediment supply into Ross Reservoir as an annual rate		SCL will quantify sediment supply into Ross Reservoir as an annual rate by using the existing DHSVM model and historical contours and bathymetry information.
Incorporate process flows into sediment modeling effort; model and characterize process flows; add a separate process flows study		This issue has been resolved through commitments with respect to integration. That is, as part of its FERC license application, SCL will integrate the results of GE-04 with the FA-02 hydraulic model and other available information to inform the impacts of process flows on anadromous salmon habitat and population productivities.
Examine combinations of flow and sediment and wood; Simulate localized effects of log jams/wood accumulations by adding obstructions in the model mesh		As part of a Q3/4 workshop, SCL will address the simulation of added sediment, flow, and log jams in the model mesh via scenarios developed in coordination with the LPs. Otherwise, this issue is addressed by topic above and via scenarios implemented in the study plan.

Adjust modeling focus areas so they are scaled to channel dimensions (e.g. 10-20x channel width) depending on process to be modeled		This issue will be resolved in a workshop.
Adjust study to characterize sediment supply from the Sauk so that we could assess the potential for bed aggradation in the Skagit at the confluence and the associated changes in dynamics from the upstream reach.		Action item: SCL to contact NPS, USIT, and Skagit River System Cooperative to resolve this outstanding issue.
Link sediment modeling with the development of data on flows.		SCL will link sediment modeling with the development of data on flows.
Explore use of 2-D Hec-Ras model in focus reaches to inform the 1-D model.		This issue will be addressed through workshops.
Hold workshops with those who have recent expertise in sediment-and/or wood-transport modeling (such as Dr. Wes Lauer from Seattle University and Dr. Susannah Erwin from the NPS Water Resources Division in Fort Collins)		SCL will hold workshop with those who have recent expertise in sediment and/or wood-transport modeling.

Need an empirical model to capture dynamic balance between floodplain formation on bars and destruction at eroding banks and avulsions.		Action item: SCL to contact NPS, USIT, and Skagit River System Cooperative to resolve this outstanding issue.
Will vegetation mapping include areas within the bank full? Mapping vegetation age on gravel bars and islands could be used to inform disturbance regime, channel change. Cross reference to TR-01.		SCL will map vegetation areas within the bank full from aerial photography and through a period of record.

SY-01 Synthesis and Integration of Available Information on Resources in the Lower Skagit River		
Outstanding Issues		Proposed Resolution
		SCL acknowledges Project effects in the Lower Skagit River, which includes the area from the confluence of the Skagit River and the Sauk River downstream to the mouth of the Skagit River estuary, can be detected.
		SCL will perform the SY-01 synthesis study as proposed in RSP.
		SCL will perform additional data field studies in year 2 to fill data gaps in SY-01 that are not addressed in the synthesis study or in other studies below the Sauk River (identified above).
		SCL will consolidate results of the synthesis study and baseline data collected in other studies that extended below the Sauk in the SY-01 study report to identify Project effects below the Sauk.
		Results of the study will be shared with the LPs and will inform the long-term ecosystem adaptive management and monitoring program and mitigation for project impacts below the Sauk.

		SCL will clarify the study plan to indicate that data collection in the Lower River will be addressed through other study plans.

CERTIFICATE OF SERVICE

I hereby certify that I have this day caused to be served the foregoing document upon each person designated on the official service list compiled by the Secretary in this proceeding.

Dated at Washington, DC this 9th day of June, 2021.

/s/ Sharon L. White
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