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December 12, 2018

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CONTAINS REQUEST FOR CEII TREATMENT

DELIVERY VIA ELECTRONIC FILING

David E. Capka, P.E. Director, Division of Dam Safety and Inspections Federal Energy Regulatory Commission 888 First Street, N.E. Washington, D.C. 20426

FERC Nos. P-2082; P-14803, NATDAM-OR00559, CA00323, CA00234, CA00325; Re: Additional Information Regarding Report of Independent Board of Consultants Meeting No. 1

Dear Secretary Bose:

Klamath River Renewal Corporation ("KRRC") writes regarding the work of the Lower Klamath Project Independent Board of Consultants ("BOC").

BOC ADDITIONAL INFORMATION REQUEST

By separate filing today, KRRC filed with the Federal Energy Regulatory Commission (FERC) the BOC's "Letter Report; Board of Consultants Mtg. No. 1." Following BOC's first formal meeting on October 24, 2018, and after a full review of the data package distributed to the BOC in advance of that meeting, the BOC requested additional information from KRRC. By this letter, we now provide FERC with the BOC's additional information attachments (Attachment A) and the information provided in response to these requests in the following attachments:

- Attach B-08 (Technical Report No. SRH-2011-02).pdf .
- Attach B-09 (KRRP Copco 1 Schedule Draft).pdf .
- Attach B-09 (KRRP Copco 2 Schedule Draft).pdf .
- Attach B-09 (KRRP Entire Schedule Draft).pdf
- Attach B-09 (KRRP General & Prep Schedule Draft).pdf .
- Attach B-09 (KRRP Iron Gate Schedule Draft).pdf .
- Attach B-09 (KRRP JC Boyle Schedule Draft).pdf •
- Attach B-09 (KRRP Post Deconst & Rest Schedule Draft).pdf .
- Attach B-10 (DBA Wage California, Siskioyou County).pdf .

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- Attach C-04.2 CEII (COPCO Rating Curve).pdf
- Attach C-04.2 CEII (Iron Gate Rating Update for BOC).pdf
- Attach C-04.2 CEII (JCBoyle Rating Curve for BOC).pdf

KRRC requests confidential treatment of the CEII contained in the above-referenced attachments pursuant to 18 C.F.R. § 388.113. The CEII has been marked according to the Commission's instructions.

The above-referenced attachments qualify as CEII pursuant to 18 C.F.R. §§ 388.113(c)(1) and (c)(2) because the information included in the above-referenced attachments contains engineering, security, and detailed design information about existing critical generation infrastructure. This generation infrastructure is currently referred to by FERC as the Lower Klamath Project (FERC No. 14803). The CEII being submitted with this filing will continue to be CEII as long as the Lower Klamath Project continues in operation. While KRRC expects the Lower Klamath Project to be removed within the next five years, it is possible the period for removal could be greater than the five-year period set out in 18 C.F.R. § 388.113(e)(1). The critical infrastructure information should therefore be treated as CEII and re-designated as long as the Lower Klamath Project remains in operation.

Per FERC's May 22, 2018 directive, one copy of this letter (with enclosures) is being provided to the D2SI-PRO Regional Engineer, and three copies of this letter (with enclosures) the Director, D2SI, Washington DC. Should FERC require any further information at this time, please direct any such requests to the undersigned. Thank you.

Respectfully submitted,

/s/ Markham Quehrn

Markham Quehrn Perkins Coie LLP Counsel for Klamath River Renewal Corporation

cc: Douglas Johnson, (D2SI) Portland Regional Engineer Mark Bransom (KRRC) Dustin Till (Pacificorp)

BOC- RFI Control Log

A. Meetings Requests	Date Requested	Date of Meeting	Requested by:
1. Meeting on insurance (see Tab B)	10/24/2018 meeting	11/20/2018 Call	SC
2. Meeting with AECOM Risk Manager (see Tab C)	10/24/2018 meeting	11/16/2018 Call	SC
3. Meeting with AECOM estimating	10/24/2018 meeting	11/13 and 11/14 in Denver	DH and TC

KRRC Response	

B. Genei	ral- Questions/Items Requested	Date Requested	Date Received	Requested by:
1	FERC Order Amending License and Deferring Consideration of Transfer Application (3-15-18)	10/24/2018 meeting	10/26/2018	BOC
2	FERC Approval of BOC (5-22-18)	10/24/2018 meeting	10/26/2018	BOC
3	Risk Mitigation and Insurability for the Klamath Restoration Project (11-13-15)	10/24/2018 meeting	10/26/2018	BOC
4	BOC Kick-off Meeting- AECOM PowerPoint (10-23-18)	10/24/2018 meeting	10/26/2018	BOC
5	List of three potential contractors and their responses to RFQ	10/24/2018 meeting		BOC
6	Bid package for contractors (scheduled to be released 11-16)	10/24/2018 meeting		BOC
7	Sign in sheets for 10-22 and 10-23	10/24/2018 meeting	10/26/18; 11/6/18	BOC
8	Section 2: Existing Hydrology Conditions; Hydrology, Hydraulics and Sediment Transport Studies for the Secretary's	11/5/2018	11/9/2018	jeb
9	The CPM schedule for the removal of the four projects	11/15/2018	11/27/2018	DH
10	A breakdown of labor rates, including wage rate, burden, fringes, taxes, perdiem, etc.	11/15/2018	11/26/2018	DH
11	A list of equipment with rates and a brief description of the rates from Equipment Watch	11/15/2018	11/26/2018	DH
12	A total of labor hours by category	11/15/2018	11/26/2018	DH

	KRRC Response
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See	Attach B-08 (Technical Report No. SRH-2011-02).pdf
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See	Attach B-08 (Technical Report No. SRH-2011-02).pdf
	Attach B-08 (Technical Report No. SRH-2011-02).pdf the following files:
	the following files:
See •	the following files: Attach B-09 (KRRP Copco 1 Schedule Draft).pdf
See •	the following files: Attach B-09 (KRRP Copco 1 Schedule Draft).pdf Attach B-09 (KRRP Copco 2 Schedule Draft).pdf
See •	the following files: Attach B-09 (KRRP Copco 1 Schedule Draft).pdf Attach B-09 (KRRP Copco 2 Schedule Draft).pdf Attach B-09 (KRRP Entire Schedule Draft).pdf
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See	the following files: Attach B-09 (KRRP Copco 1 Schedule Draft).pdf Attach B-09 (KRRP Copco 2 Schedule Draft).pdf Attach B-09 (KRRP Entire Schedule Draft).pdf Attach B-09 (KRRP General & Prep Schedule Draft).pdf Attach B-09 (KRRP Iron Gate Schedule Draft).pdf Attach B-09 (KRRP JC Boyle Schedule Draft).pdf Attach B-09 (KRRP Post Deconst & Rest Schedule Draft).pdf Attach B-09 (KRRP Post Deconst & Rest Schedule Draft).pdf Attach B-10 (DBA Wage - California, Siskioyou County).pdf Attach B-10 (Labor Rates and Equipment Rates).pdf
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13 A total of equipment hours by category	of equipment hours by category 11/15/2018 11/26/2018		DH	See Attach B-12 (Labor and Equipment Hours).pdf
8. General- Questions/Items Requested	Date Requested	Date Received	Requested by:	KRRC Response
14 Current draft drawings	11/15/2018	11/27/2018	DH	 See the following files: Attach B-14 - CEII (zip file 01 of 15).zip Attach B-14 - CEII (zip file 02 of 15).zip Attach B-14 - CEII (zip file 03 of 15).zip Attach B-14 - CEII (zip file 04 of 15).zip Attach B-14 - CEII (zip file 05 of 15).zip Attach B-14 - CEII (zip file 06 of 15).zip Attach B-14 - CEII (zip file 07 of 15).zip Attach B-14 - CEII (zip file 09 of 15).zip Attach B-14 - CEII (zip file 09 of 15).zip Attach B-14 - CEII (zip file 10 of 15).zip Attach B-14 - CEII (zip file 10 of 15).zip Attach B-14 - CEII (zip file 12 of 15).zip Attach B-14 - CEII (zip file 13 of 15).zip Attach B-14 - CEII (zip file 14 of 15).zip Attach B-14 - CEII (zip file 15 of 15).zip Attach B-14 - CEII (zip file 15 of 15).zip
15 Latest revised cost spreadsheet	11/15/2018	11/26/2018	DH	See Attach B-15 (Cost Spreadsheets).pdf
16 Revised cost spreadsheet sorted by D-groups D-1 through D-18	11/15/2018	11/26/2018	DH	See Attach B-15 (Cost Spreadsheets).pdf

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C. Definite Plan

Chapter	Title	Questions/Items Requested	Date Requested	Date Received	Requested by:	KRRC Response
	Objectives and Background					
2	Existing Feature Descriptions					
3	FERC Compliance and Dam Safety					
4	Reservoir Drawdown and Diversion Plan					
4.2.1	J.C. Boyle Reservoir		· · · · · · · · · · · · · · · · · · ·			
	a. Figure 4.2-3	Provide diversion tunnel HW-Discharge rating curve supporting calculations	11/5/2018	11/9/2018	jeb	 See the following files: Attach C-04.2 - CEII (COPCO Rating Curve).pdf Attach C-04.2 - CEII (Iron Gate Rating Update for BOC).pdf Attach C-04.2 - CEII (JCBoyle Rating Curve for BOC).pdf
4.2.3	Iron Gate Reservoir					
	a. Diversion Tunnel	Provide diversion tunnel HW-Discharge rating curve supporting calculations	11/5/2018	11/9/2018	jeb	 See the following files: Attach C-04.2 - CEII (COPCO Rating Curve).pdf Attach C-04.2 - CEII (Iron Gate Rating Update for BOC).pdf Attach C-04.2 - CEII (JCBoyle Rating Curve for BOC).pdf

Chapter	Title	Questions/Items Requested	Date Requested	Date Received	Requested by:	KRRC Response
4.3	Flood Frequency Analysis					
	a. Table 4.4-2	Explain significance of detailed plan design flood frequency is 25-yr event	11/5/2018	11/9/2018	jeb	The Detailed Plan calculated return interval flows for the 25-yr event. The Definite Plan calculates for the 20-yr event.
	b. Figure 4.4-2	Legend indicates design flood frequency is 150-yr event	11/5/2018	11/9/2018	jeb	I believe this note refers to Fig 4.4-3. 150-yr is a bit of a misnomer in this case. The design flow for dam removal has a probability of 0.67% for the
	c. Page 101	Paragraph 5 indicates design flood frequency is 100-yr event w/3-ft	11/5/2018	11/9/2018	jeb	The embankment removal elevations are based on 150yr (0.67% propability event). The text that states it is based on a 100-yr event is a typo.
	General Clarification	Clarify design flood frequency for embankment removals	11/5/2018	11/9/2018	jeb	Same as above.
4.6	Reservoir Drawdown Releases					
	a. 4.6.1 Detailed Modeling	Provide USBR's Hydrology, Hydraulics, and Sediment Transport Report (see	11/5/2018	11/9/2018	jeb	See Attach B-08 (Technical Report No. SRH-2011-02).pdf
	b. 4.6.1 Detailed Modeling	Provide SRH1-D reservoir model cross sections for HEC-RAS model (see above)	11/5/2018	11/9/2018	jeb	See the following files: • Attach C-04.6a • Attach C-04.6b
4.6.2	J.C. Boyle Reservoir					
	a. 4.6.2.2 Reservoir Stabilization	Clarify two week stabilization requirement following large flood events	11/5/2018	11/9/2018	jeb	Regarding "The reservoir elevation will be allowed to stabilize and be held for one to two weeks to allow dissipation of pore pressures in the embankment and the reservoir rim.": The reservoir elevation will be maintained at the lowest possible level (depending upon inflow) for a 1 to 2- week period between the opening of the first diversion culvert and the opening of the second diversion culvert.
	b. 4.6.2 Results	Provide rational for assumption for initial sediment mobilization	11/5/2018	11/9/2018	jeb	The results in USBR's Hydrology, Hydraulics, and Sediment Transport Studies for the Secretary's Determination report. See Section 9.2 of that
	c. Figures 4.6-2 through 4.6-7	Explain why all figures indicate reservoir drawdowns in excess of 5-ft per day	11/5/2018	11/9/2018	jeb	For JC Boyle, the restriction of drawdown to 5 ft/d can only be applied to the spillway and power intake facilities because they are the only openings that can be controlled. The 2 diversion culverts are non-operable, and are closed with cemented concrete stop logs. Once a culvert is opened, the drawdown rate is only controlled by the size of the culvert, and this results in drawdown faster than 5 ft/d. The dam stability memo in Appendix D discusses this and notes that the dam embakment is stable at drawdown rates up to 10 ft/d and the hold period is recommended there.
4.6.3	Copco Lake					
	a. Results; paragraph 4	Provide rational for assumption for initial sediment mobilization	11/5/2018	11/9/2018	jeb	See response in Row 47.

Chapter	Title	Questions/Items Requested	Date Requested	Date Received	Requested by:	KRRC Response
4.6.4	Iron Gate Reservoir					
	a. Results; paragraph 3	Provide rational for assumption for initial sediment mobilization	11/5/2018	11/9/2018	jeb	See response in Row 47.
	b. Figures 4.6-15 through 4.6-16	Indicate two week reservoir stabilization following large flood	11/5/2018	11/9/2018	jeb	There is no applicable 2-week hold period for Iron Gate.
4.6.5	Downstream of Iron Gate					
	a. Analysis Setup	Were HEC-RAS steady state profiles used for estimate water surface changes?	11/5/2018	11/9/2018	jeb	No RAS models were used for the analysis of flows downstream of Iron Gate. Section 4.6.5 uses historical gage record data. It is an analysis of hydrographs only.
	b. Results	Dynamic routing would probably show lower flows if gate regulated outflow with two week reservoir level stabilizations; This approach may prevent issues with property owners downstream of Iron Gate.	11/5/2018	11/9/2018	jeb	See responses in Rows 54 and 56.
4.8	Best Management Practices					
	4.8.1 Blockage of Diversion Facilities	Explain rational for removing large debris from diversion tunnel entrance	11/5/2018	11/9/2018	jeb	Our understanding is that the watersheds do not historically bring much large debris into the Copco Lake or iron Gate Reservoir. It is unknown he much large debris may be buried in the sediment. Given the large size o the tunnels, debris that would be of concern would be trees and large lumber. Large debris could block or interrupt the flow through the diver tunnel and would reduce the tunnel's release capacity. A debris screen be required to prevent large debris to enter the diversion tunnels. One concept for a debris screen would be to install a line of anchored H-pile (approximately 6' the center to center spacing) across the channel upstream of the tunnel entrance a sufficient distance to allow debris to trapped and allow sufficient flow to pass through to maintain the desire drawdown rate. The DB contractor will be required to design a debris screen for the Copco 1 and Iron Gate diversion tunnels.
	4.8.1 Blockage of Diversion Facilities	Collapse of tunnel lining from cyclical loadings during transient operations	11/5/2018	11/9/2018	jeb	The effects of cyclical loading will be included in the design of new tunn linings that are required for reservoir drawdown. There is a potential for cyclical loading to cause distress in the existing unreinforced concrete li in the upstream portion of the Iron Gate diversion tunnel. We will evalu this condition and determine if there is a potential for collapse and how mitigate that potential if it exists. The DB contactor will be required to consider this requirement and design accordingly.

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Chapter	Title	Questions/Items Requested	Date Requested	Date Received	Requested by:	KRRC Response
	а Х	Lining drainage, water stops and seepage control required.				New tunnel linings are needed to withstand the internal water pressure that will be equal to the reservoir head prior to reservoir lowering and the high velocities of releases during reservoir lowering. The new linings will be designed to withstand external groundwater pressure without designed lining drainage. The need for water stops will be considered in the design to control seepage from the tunnel into the rock mass. Proper preparation of the rock surface prior to placement of the lining and contact grouting of the crown will be necessary to prevent seepage along the interface between the tunnel lining and the rock. The DB contactor will be required to consider this requirement and design accordingly.
	4.8.2 Stability of Embankments	Explain why reservoir drawdowns and surcharges exceed 5-ft/day, and how two week stabilization requirements could potentially lengthen removal schedules.	11/5/2018	11/9/2018	jeb	The 2-week hold only applies to the JC Boyle diversion culvert openings. JC Boyle is a small reservoir and is easily drawn down within the required timeline. The single 2 week hold will not affect the ability to drawdown JCB Reservoir by March 15 (see Appendix F results plots). The single biggest factor affecting the drawdown duration of JC Boyle reservoir is inflow magnitude; this can draw out the drawdown duration in wet years, but it is beyond the control of the project.
4.10	Potential Downstream Effects					
5	Dam Removal Approach				5	
6	Reservoir and Other Restoration					
7	Other Project Components					
8	Project Costs and Schedule					
Appendi						
A	Risk Management Plan	AECOM Risk Registers for San Clement , Matilija and one other dam removal	10/24/2018	11/6/2018	3 SC	
		See questions in Tabs B and C	11/5/2018		SC	See response in Row 4.
В	Figures					
с	Figures		1			
D	Dam Stability Analysis					
E	Reservoir Rim Stability Analysis	Report(s) of subsequent field and lab investigation; stability analyses	11/5/2018		CF	In progress. Additional drilling work has been delayed due to PacifiCorp operations, the updated rim stability report is in progress, and will be available in Feb 2019.

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Chapter	Title	Questions/Items Requested	Date Requested	Date Received	Requested by:	KRRC Response
F	Reservoir Drawdown Analysis					
	a. Figures 2-1 through 2-49 -	Provide justfication for why unregulated reservoir drawdown rates exceed 5-ft per day	11/5/2018	11/9/2018	jeb	Once the reservoirs are initially drawn down, there will be no further restrictions on drawdown rates. So if a storm subsequent to initial drawdown partially or fully refills the reservoirs, the drawdown following that storm event will not be controlled. Partial refilling of the reservoir that could occur in the event of a large storm event following reservoir lowering, would typically be a relatively short duration event and the pore pressure in the dam embankment would not have sufficient time to build up to the same pore pressure level (to the same phreatic surface) that was present during the first drawdown event. The first cycle of drawdown would represent the worst case-scenario for drawdown stability. Drawdown rates for any partial refilling are unrestricted due to smaller demands (lower height of pool to be drawndown) and lower pore pressures.
G	Copco Foundation Removal					
н	Reservoir Management Plan					
1	Aquatic Resources Measures					
J	Road and Bridge Structure Data and					2
К	Cultural Resources Plan					
L	Water Quality Monitoring Plan					
М	Groundwater Management Plan					

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