

Attachment 2

Technical Memorandum: FERC Staff Recommendations Regarding Modification to the Recreation Facilities Plan; Removing Construction Related Debris from the Sidecast Slide Location

Technical Memorandum

To:	Klamath River Renewal Corporation	Project:	Lower Klamath Project
From:	Morton D. McMillen, P.E.	cc:	File
Date:	March 27, 2022	Job No.:	
Subject:	FERC Staff Recommendations Regarding Modification to the Recreation Facilities Plan; Removing Construction Related Debris from the Sidecast Slide Location		

Purpose

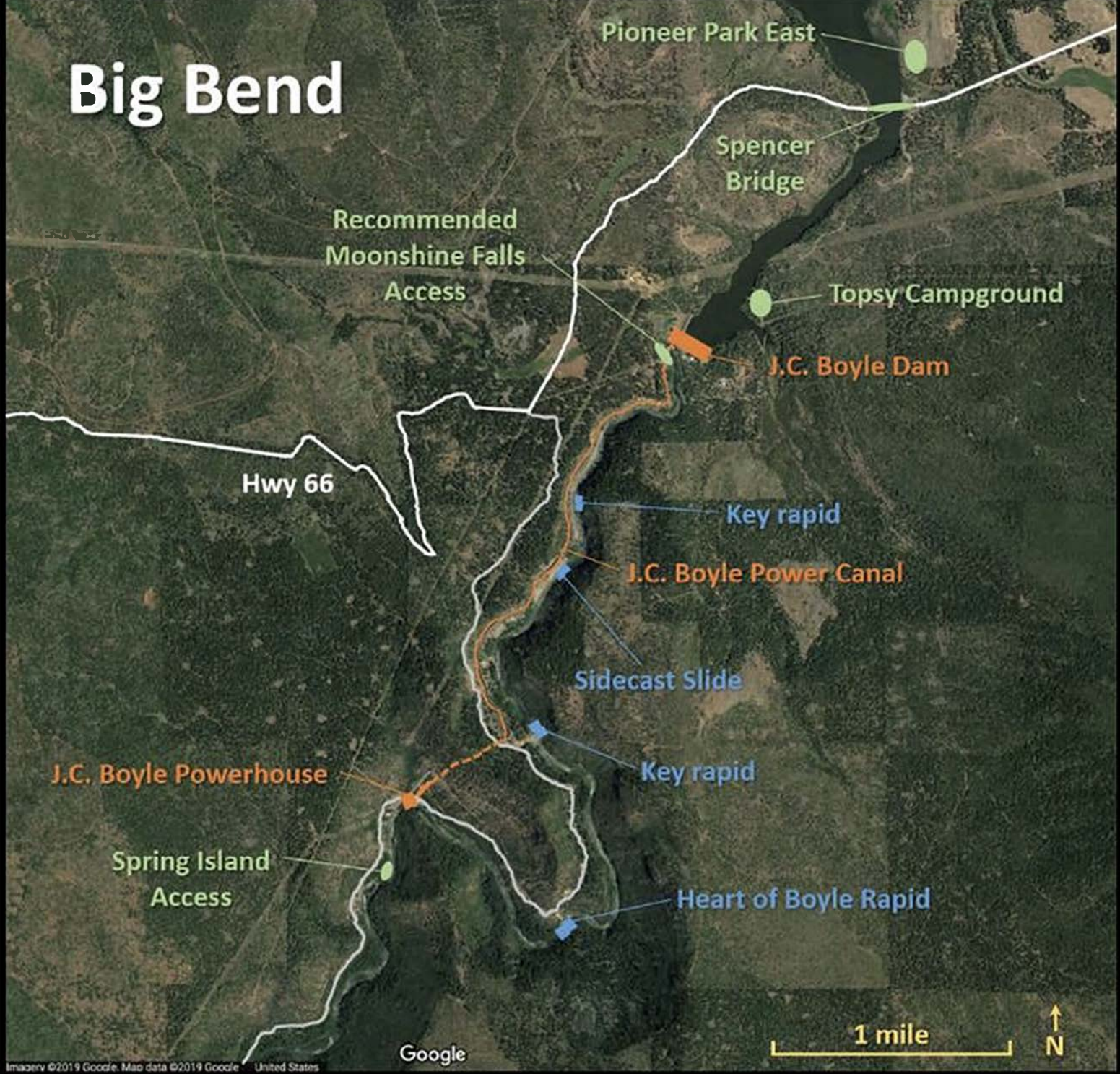
This technical memorandum is intended to support the Renewal Corporation's comment on the Commission Staff Recommendation related to, "Modifying the Recreation Facilities Plan to include removal of remaining construction-related debris in the river at the Sidecast Slide location."

Proposed Action

The J.C. Boyle Power Canal was constructed by excavating rock and removing boulders to required rock to develop a flat bench upon which the concrete power canal was constructed. The excavated rock material which included larger boulders was discarded along the downhill slope of the power canal alignment. Over time, the boulders have migrated down the hillside and into the active river corridor at a location approximately 1 mile downstream from the J.C. Boyle Dam. This area is referred to as the Sidecast Slide location (see Figure 1).

The Renewal Corporation proposes to split up to 10 boulders which reside in the river at the Sidecast Slide. This work would occur during the Pre-Drawdown work period. The boulders will be split using an expansive grout method which consists of drilling a line of 1.5 inch diameter holes at approximately 12 inches on center into the boulder. The number and arrangement of holes will depend on the size of the boulder. The grout product is then mixed with water and poured into the drilled holes. The grout expands creating up to 18,000 psi expansive forces which break the boulder apart within approximately 24 hours. The split boulder pieces will reside in the river to be re-distributed during the next season spring freshet flows. A helicopter will be used to fly a small rock drill, small tools, and the grout material to the base of the Sidecast Slide area. Construction workers will access the site daily by rappelling down the existing slope on the upstream side of the work area, then moving downstream along the river bank. All construction materials will then be flown out of the river canyon once the boulder splitting work effort is complete.

Big Bend



Map 3. Big Bend Segment.

Sidecast slide



*In-channel portage
on river left*



Running center line

Kayakers found a boatable line in Sidecast Slide at Proposed Action summer flows (1,100 cfs), but there are several non-natural hazards. Although one rafter (with no passengers) ran this rapid, it was marginal to unacceptable and the other rafters decided to portage. Boulder fragmenting techniques used for the fish passage modifications would probably be successful.



25
22

Crossing

Sidecast Slide



Sidecast Slide

Kenai River

Image Landsat / Copernicus

167 ft



Crossing

Sidecast Slide

1000

1000