

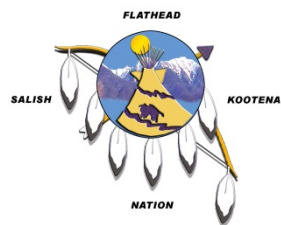
**Volume
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of 5**

**FALLS CREEK DIVERSION REHABILITATION
PROJECT
TABOR FEEDER CANAL FLOWS INTO
FALLS CREEK DIVERSION
CSKT 23-018**

TABOR FEEDER CANAL FLOWS



BY
The Confederated Salish and Kootenai Tribes
Flathead Indian Reservation – Montana



This solicitation/specifications issued by the:

Confederated Salish and Kootenai Tribes

Natural Resources Department

P.O. Box 278

Pablo, Montana 59855

PHONE INQUIRIES

**Regarding this solicitation/specifications should be made to the office
listed below.**

See also provision B.3 of the Instructions and Conditions to Bidders.

Confederated Salish and Kootenai Tribes

**Natural Resources Department/Division of Engineering and Water
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CORRESPONDENCE

**Regarding this solicitation/specifications should reference the
solicitation/specifications number.**

DATE: October 18, 2023

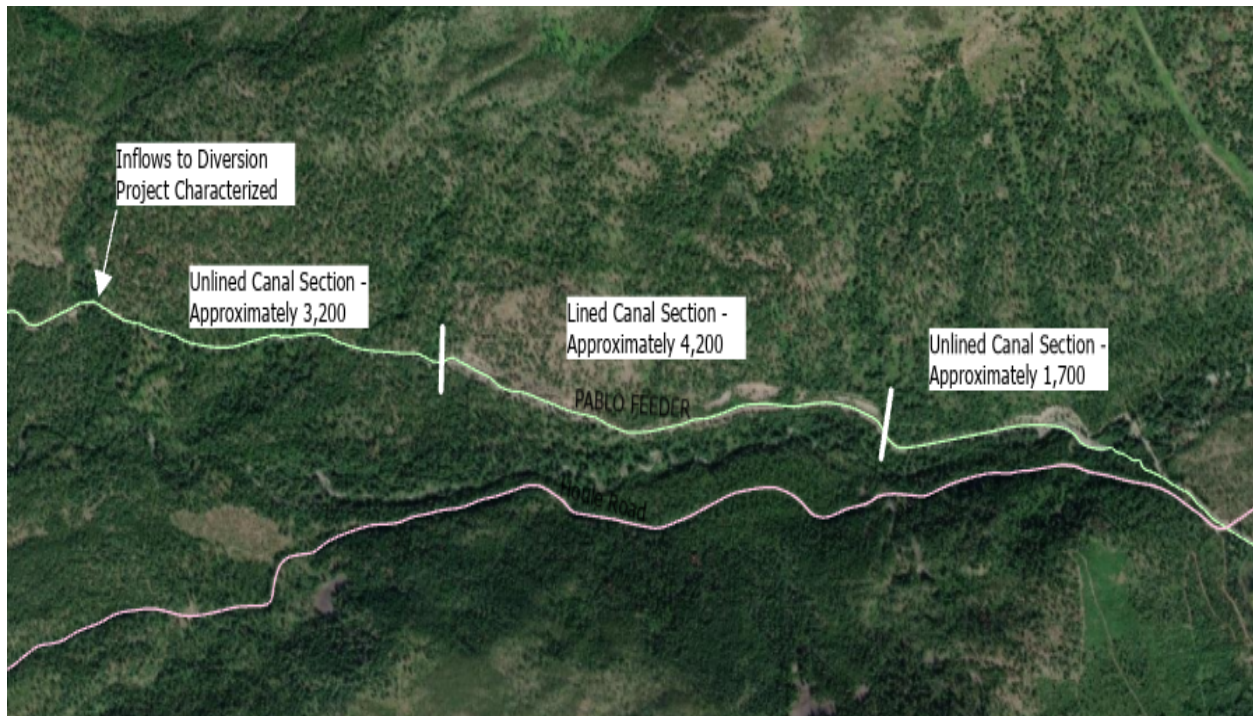
FROM: Brian Hogenson, CSKT Water Management and Planning Program Manager

RE: Tabor Feeder Canal Flows into Falls Creek Diversion

This is a memo on the characterization of flows above the Falls Creek Diversion, to aid in the design of temporary water re-routing to coincide with construction activities.

Based on communications between WWC engineering and Taryn Bushey of CSKT, it was requested that we provide a general understanding of the flows that are encountered at the Falls Creek Diversion structures while FIIP is not actively conveying water. These flows represent numerous small unnamed streams that are intercepted by the cut bank of the channel. Additionally, groundwater lateral flows along the bank provide bank-seepage inflows that are captured by the canal.

A map showing the Tabor Canal reach between the North Fork Jocko and Falls Creek diversions is provided below (Note: The 'Pablo Feeder' name is a labeling feature of the GIS layer, this reach is known as the Tabor Feeder Canal).



CSKT personnel made multiple observations of the subject area between August 1 and October 17, 2023. These observations are summarized below:

August 1, 2023:

CSKT employees Brian Hogenson, Cody Goklish, and Eli Sheridan drove the canal from the North Fork diversion to the Falls Creek Diversion to observe and characterize these flows. There was no active irrigation diversion from North Fork at the time of this observation, and dry canal was observed along the beginning reaches of the canal. The canal alternates between unlined (first 1,700 feet of canal), concrete lined (next 4,200 feet), and back to unlined (last 3,200' of canal leading to the tunnel). Along these ~9,000 feet total, multiple unnamed streams flow into the canal, including at least three with piped overdrains that have either failed or look to be intentionally providing water into Tabor Feeder Canal. Additionally, incoming groundwater flow was observed at various spots of the canal, including into cracks of the lined section. A particularly large inflow was documented draining into the last unlined section, adjacent to a pond of water in the canal.

Total flows entering the tunnel are shown below in Photo #1, on August 1, 2023

Photo #1 – 8/1/23 Conditions above 'tunnel'



August 16, 2023



Eli Sheridan, CSKT Hydrographer, measured discharge above the tunnel using a FlowTracker 2 instrument. The total width of water was measured at 15 feet, while the mean depth was determined to be 0.89 feet. A discharge of **1.19 cubic feet per second (cfs)** was measured. To the left is a picture of the subject area coinciding with the measurement. Eli mentioned that the flows on 8/16 looked very similar to those noted on 8/1. He would estimate that the 8/16 flows would possibly be slightly higher than 8/1, though this is not confirmed with data due to the lack of an 8/1 measurement.

Photo #2 - 8/16/23 Photo which accompanies the Flow Tracker Measurement

September 6, 2023

Brian Hogenson visited the tunnel entrance on 9/6/23 to observe conditions. No physical discharge measurement was made and solely visual flow observations were noted. It appeared that the flow rate was similar to the August 1 and August 16 observations. If making a call, I would estimate that the flows were slightly higher on 9/6/23 than 8/1/23, based on the velocity of water entering the tunnel. The discharge would likely fall between the 1-2 cfs range, based on the physical measurement made on 8/16/23.



Photo #3 - 9/6/23 Photo of Flow Conditions

September 13, 2023

Eli Sheridan drove the length of the subject area and provided the below comments:

"Took some pics of the Falls creek project. I took these pics 9/13/23, all the water starts at 8 tenths of a mile if you're traveling west on Tabor Feeder canal. It doesn't look like there is any more than what was present the day you Cody and I travelled it. I'll continue to monitor this area and keep you posted with findings..."

A series of pictures along the canal are saved on the CSKT database but are not provided in this report. These photos are available upon request.

October 17, 2023

Eli Sheridan drove the length of the subject area and took many pictures moving west from North Fork Diversion to Falls Creek Diversion tunnel. These pictures indicate much of the same conditions noted since August, with ponded sections starting around .8 mile from North Fork. Algal growth does appear to have increased later in the season, as does leaf content. Eli noted that "It never seemed like there was any higher periods of water in the canal. It definitely didn't lose any water either." This is indicated by the picture series of the tunnel conditions in this memo, which show similar conditions across the season. Below is a picture of the tunnel conditions on October 17, 2023.



October 17 Tunnel Conditions

Summary of Falls Creek Diversion Tunnel Observations

CSKT NRD personnel conducted a series of five site visits along the Tabor Feeder Canal between 8/1/23 and 10/17/23. These field observations were conducted to estimate off-season water flows to inform engineering and permitting functions related to 2024 construction activities.

Based on the observations, it appears that the flows at the Falls Creek tunnel remain generally consistent between August-October. A quantitative measurement using FlowTracker 2 instrumentation, made on 8/16/23, indicated that approximately 1.2 cfs were flowing into the tunnel. This discharge rate indicates a reasonable flow value that should be expected during construction activities when active diversions are not occurring at North Fork Jocko, and construction design personnel should prepare for this influent flow rate as they consider de-watering designs.