Memorandum

To: Idaho Water Resource Board (IWRB)

From: Neeley Miller & Rick Collingwood, Planning & Projects Bureau

Date: September 9, 2019

Re: Priest Lake Water Management Project Update

ACTION: Consider Funding Resolution for Priest Lake Water Management Project (Phase 3) – Final Design, Regulatory Permitting Support, Bidding Assistance

---

Background

As a result of limited water supply and drought conditions in northern Idaho in 2015 and 2016 (and 2019) it has been difficult to maintain required lake pool levels and downstream flow in the Priest River during the recreational season.

Phase 1

The Priest Lake Water Management Study was completed in February 2018. The study included the following recommendations:

- Temporarily raising the surface level of Priest Lake up to 6 inches during the recreational season for dry years and integrating real-time streamflow data to allow more operational flexibility
- Outlet dam structural and operational improvements
- Replacing the current existing porous breakwater with an impervious breakwater structure and dredging a portion of the Thorofare channel

Phase 2

As scheduled, the Priest Lake Water Management Project – Preliminary Engineering & Design is concluding in fall 2019. The status of the tasks are as follows:

Task 1 Data Collection – July to August, 2018 - **Completed**

Task 2 Preliminary Engineering Design – September to May, 2019 – **Completed**

Task 3 Regulatory Permitting – August 2018 to October 2019 – **On-going into next phase**

Task 4 Public/Stakeholder Involvement – **Completed**

Permit Status

- IDL Permit – received for Thorofare Improvements Project
- Forest Service Permit – received for Thorofare Improvements Project
- COE Joint permit (Thorofare) – Regional office staffing issues, ongoing coordination, currently taking public comment, anticipated to be completed by end of 2019
- IDWR Dam Safety permit – ongoing coordination, will receive at 90% design

Phase 3

As scheduled Final Engineering & Design (Phase 3), which includes finalizing regulatory permitting and bidding assistance will begin in October 2019. IWRB staff has worked in coordination with the consultant to develop a scope of work for Phase 3.

Schedule

- NTP Sept 23rd and begin work by Oct 1st
- Submit 70% design in late Nov/early Dec for review
- 90% design scheduled to begin early Jan pending permit receipt by IDWR Dam Safety
- Finalize 90% by early March
- Finalize 100% by mid-April

Bidding and Construction

- Bidding is anticipated in 2020 (after 100% design is completed), with construction anticipated in the fall/winter of 2020/2021.

Funding Status

- $2,400,000 (Legislature Approved Funding via HB677) + $2,419,600 (Legislature Repurpose of CREP via HB 677) + $285,000 (Priest Lake Local Contribution) = **$5,104,600 Total Project Funding**
- $600,000 (Phase 2, Preliminary Engineering) + $652,717 (Phase 3, Final Engineering) + $2,128,069 (Outlet Dam Construction and Construction Management w/10% contingency) + $1,985,052 (Thorofare Improvements Construction and Construction Management w/10% contingency) = **$5,365,838 Total Estimated Funding Needed for Design and Construction**
- **$261,238 Funding Deficit (+/- $400K with 10% contingency)**

Outlet Dam Operations Plan

- IDWR hydrologist developing operations plan, including rule curves for use by the 2021 recreational season (post-construction).

Attachment(s):

Funding Resolution

Final Engineering & Design (Phase 3) Scope of Work

Priest Lake Water Management
Phase 3 Fee Proposal

September 11, 2019

Rick Collingwood
Idaho Water Resource Board
322 East Front Street
P.O. Box 83720
Boise, ID 83720

Your Reference
CON001290

Our Reference
376997

Mott MacDonald
1601 5th Avenue
Suite 800
Seattle
WA 98101
United States of America

T +1 (206) 838 2886
mottmac.com

Dear Rick Collingwood,

Mott MacDonald is pleased to present our fee proposal for Phase 3 – Final Design and Permitting of the Priest Lake project.

We have provided a fee budget estimate, scope, and assumptions. It is assumed the work will be authorized under the existing contract agreement between Mott MacDonald and IWRB.

We look forward to continuing work with you on this important project for the IWRB!

Regards,

Mott MacDonald, LLC

Shane Phillips, PE, D.CE, D.PE
Deputy Ports/Coastal Practice Leader Vice President
+1 425.778.6042 (Office Direct)
+1 425.417.6016 (Cell)
shane.phillips@mottmac.com

Attachments: Scope of Work, Fee Proposal Detail

MOTT MACDONALD

PRIEST LAKE WATER MANAGEMENT PROJECT
PHASE 3 – FINAL DESIGN & BIDDING ASSISTANCE
PRIEST LAKE, IDAHO

Scope of Work

INTRODUCTION:

This scope of work describes the tasks, deliverables, and budget for Phase 3 of the Priest Lake Water Management Project. The work includes services through 100-percent final design for improvements at the Thorofare and Outlet Dam facilities and providing bid phase assistance.

The work of Phase 3 is a continuation of the work of the preliminary design conducted in Phase 2. The project goals include Lake Level Management (maintaining a 3-ft level at the USGS outlet gage during the recreational season and developing lake level operational strategies during dry and low water years), maintain minimum flow requirements downstream of the dam, and provide sustainability for the Thorofare (promoting self-sustaining improvements to improve Thorofare access, navigability and water quality).

The Phase 3 final design will develop final 100-percent design Plans, Specifications and Cost (PS&E)

- Outlet Dam. During the Phase 1 and 2 work, it was determined that a 6-inch raise in water level at the USGS gauge would provide a sufficient dry year contingency to lake storage capacity and water level management within the system. To accomplish the increase in pool levels, the radial gate will be extended by 6.6-inches and will be strengthened; J-seal on the side of the gate and trunnion pins will be replaced, and a new concrete apron with new rock armoring of the downstream riverbed will be constructed.
- Thorofare. During the Phase 1 and 2 work, it was determined that full replacement of the existing timber breakwater with a new stone breakwater and the dredging of accumulated sediments from the navigation channel are needed to meet the project goals.

The work will be done by Mott MacDonald (referred to as the Contractor in the main body of the Contract) and its subcontractors for the Idaho Water Resource Board (IWRB). Bonner County is the local government sponsor who will be assisting the IWRB with local outreach.

ASSUMPTIONS:

This scope of work is based on the following assumptions:

- Construction Phase assistance will be conducted under a separate scope of work.
- Contract documents to be assembled by IWRB; MottMac to provide PS&E.
- No public meetings.
- No new data collection.
- NTP 21 September 2019, Start Work no later than 1 October 2019.
- Dam Safety Officials to provide a list of required items for review at the 90% design submittal. Items will be plans, specifications, and calculations.

- No concept changes to those presented in Phase 2. Design for Outlet Dam improvements to be for those modifications outlined in the memorandum from IWRB, dated 9 May 2019. Modifications not listed but previously evaluated are not included in this scope of work.
- Electrical work not included in the scope.
- Automation and controls work not included in scope.
- Computational Fluid Dynamics (CFD) Hydraulic modeling for outlet structure limited to 5 operational scenarios utilizing discharge and downstream rating curve used in Phase 2.
- An over-night stay will not be required to attend the pre-bid meetings.
- Permit assistance will be minor revisions to existing permit application documents and email responses to questions
- Archaeological pedestrian ground survey will not require more than minor hand shovel excavations and screening to identify potential archaeological resources.

EXCLUSIONS:

- All post-construction services.
- Detailed design of temporary works.
- New geotechnical borings.
- Legal surveys and other work associated with property acquisition, temporary easements.
- Traffic planning, engineering and preparation of traffic management plans, traffic control plans.
- Acoustical engineering studies and design related to construction noise impacts, or any additional acoustical engineering studies and analyses.
- BIM or other 3D structural modeling.
- Contract document preparation and bid package assembly.
- Habitat impact mitigation design if required from regulatory permitting process.
- Archeological assessments.
- Legal, financial or other non-technical professional services except as required by Mott MacDonald to fulfill its obligations under the subcontract.
- Attendance at public hearing or other in-person meetings for support of regulatory permit process.
- Permit application fees.
- Interviewing tribal elders to help identify possible traditional cultural properties

SCOPE TASKS:

Task 1- Final Engineering Design

Final engineering design task will consist of refining the preliminary analysis and design conducted in Phase 2 to achieve a complete and biddable set of documents.

Scope:

Task1.1 – Meetings

- An in-person meeting will be conducted with the IWRB to coincide with a site visit.
- A teleconference will be held every three weeks with the MM and IWRB design teams
- MM with attend up to two Steering Committee meetings via teleconference

Task 1.2 – Outlet Dam

- Hydraulic Engineering Analysis– Conduct hydraulic analysis (CFD modeling) to assist with refining final design. Finalize armor rock sizing, concrete apron details (upstand) and define operational conditions during construction for contractor provided cofferdam design.
- Structural Engineering Analysis – Gate improvements, new scour apron and other structural modifications.
- Construction Dewatering & Access Analysis. Develop a work plan and dewatering requirements for project implementation. Develop conceptual plan sheets and technical specification with performance requirements for a contractor designed cofferdam system.
- Design of miscellaneous elements at the outlet dam. Miscellaneous work is limited to the Pier 6 spall repairs, expansion joint at the wingwalls, railing repair, grease fitting replacement, and gauge installations as outlined in the memorandum from IWRB, dated 9 May 2019.
- Armor rock sizing. Selection of final gradation and review with local suppliers.
- Plans, Specifications, and Cost Estimate.
- Geotechnical Analysis and Final Report. Conduct final analysis based on Phase 2 work for seepage pressures, lateral sliding, and evaluation for underdrains to control seepage (if required). Provide recommendation for retaining walls, riprap slopes, and constructability considerations (coffer dam work and sequencing).
- Constructability Review. Review construction phase work sequencing and other site requirements to assist in developing specifications for site use and timing for construction.
- Review meetings at 70 and 90-percent submittals. One in-person & one teleconference.

Task 1.3 – Thorofare

- Thorofare Dredging Analysis. Conduct final dredging analysis and dredge material disposal evaluations to finalize the dredging area, cross section and geometry for aquatic placement of dredged material along the lake shoreline of the breakwater.
- Breakwater Structure Engineering Analysis. Conduct wave and ice loading analysis and finalize stone size and gradation for inclusion into the design package. Finalize the cross section of the breakwater based on final stone gradations.
- Hydraulic Analysis. Conduct limited additional hydraulic analysis to refine the design of the Thorofare improvements utilizing prior phase data and analytical tools.
- Quarry Investigation. Geologist to visit Bear Creek prospective quarry site to evaluate feasibility for use in the project. Conduct limited laboratory tests to evaluate type and quality of stone. Tests limited to three types on no more than two samples.
- Geotechnical Analysis. Conduct final design level analysis and recommendations for the breakwater final design work including slope stability and constructability considerations.
- Plans, Specifications, and Cost Estimate
- Constructability Review. Review construction phase work sequencing and other site requirements to assist in developing specifications for site use and timing for construction.

Review meetings at 70 and 90% submittals. One in-person & one teleconference.

- 70% Submittal
  - Basis of Design.
  - Drawings (Plans, Elevations, Sections, and Typical Details) in 11x17 pdf format.
  - Specification Table of Contents.
  - Cost Estimate Update with Design Contingency.
  - Draft Analysis and Calculation Package for Dam Safety Review (task 1.1 only).
- 90% Submittal
  - Drawings (Complete set with all details and miscellaneous items) in pdf format.
  - Draft Specifications in pdf format.
  - Cost Estimate Update with 0% Design Contingency.
  - Final Analysis and Calculation Package for Dam Safety Review (task 1.1 only).
- 100% Submittal
  - Final Drawings for Bid.
  - Final Specifications for Bid.
  - Bid Item Table, Bid Item descriptions, and Contractor qualifications and experience. requirements in MS Word format.
  - Final Basis of Design.
  - Final Cost Estimate in MS Excel Format.
  - Final Analysis and Calculation Package (task 1.1 only).
  - Meeting notes.

Deliverables:

- Meeting notes.
- Plan, Specifications, and updated construction cost estimates.
- Engineering analysis and design process submittals (PowerPoint, memorandums).
- Engineering Analysis Technical Memorandum summarizing work.
- Geotechnical report addendum (from phase 2 document).
- Basis of Design.

Schedule:

- NTP September 23rd and begin work by October 1st
- Submit 70% design in late November/early December for review by IWRB.
- 70% review by IWRB in December.
- 90% design task would start up in early January pending permit receipt.
- Finalize 90% by early March (1st week). Assumes a 2-week review on 90%.
- Finalize 100% by mid-April.

Task 2 – Regulatory Permitting Support

The following support will be ongoing support of the regulatory permit process.

Scope:

- Miscellaneous Response Development. Assist with development of regulatory agency comment response letters and table summaries. Provide supplementary information to IDL and US Army Corps of Engineers process when needed.
- Land Use/Environmental Permit Application Document Revision. Provided limited level of modification of permit application documents and development of supplementary technical

- memorandum will be developed as needed. Assumed to be not more than 20 hours of support.
- Archaeological Investigation. Conduct a desktop historic review and archaeological investigation with a pedestrian ground survey

Deliverables:
- Archaeological Investigation Report
- No other formal deliverables are associated with this task. Emails and modified documents will be provided as needed.

Schedule: Based on regulatory permit process.

Task 3-Bidding Phase Assistance

This task will provide engineering support services to IWRB during the bid phase of the project up to the point of notice of award. The Thorofare and Dam Modification project elements will be bid through two separate contract documents at different points in time.

Scope:
- Contract Document Review (prepared by IWRB).
- Assistance with Contractor outreach prior to bidding.
- Response to bidders' questions and development of addendum language.
- Attend two pre-bid meetings (one for each project) in location to be determined (either North Idaho or Boise).
- Review bid tabulation and provide recommendations for selection of a responsible bidder.

Deliverables:
- Meeting Notes.
- Reponses to Bidder's Questions.
- Addendums.

Schedule: TBD

Task 4 - Project Management

Mott MacDonald will provide ongoing coordination with the IWRB and management of the project tasks for the subcontractors to provide an effective and efficient distribution of project information ensuring the project remains on schedule. Mott MacDonald will provide monthly reports with invoices and periodic updating of project schedules. Attend 1 steering committee meeting via teleconference.

Mott MacDonald will lead monthly project control meetings with the IWRB and prepare and distribute meeting minutes.

Deliverables:
- Work plan.
- Communications and document control plan.
- Meeting minutes.
- Monthly progress reports.
- Design Schedule with periodic updates.

Project: Priest Lake Water Management Project - Phase 3 - Final Engineering and Design
Prepared for: Idaho Water Resources Board (IWRB)
Prepared by: Mott MacDonald
Date: September 11, 2019
Subject: Fee Estimate

Notes:
Sub-consultants: Geoengineers (geotechnical and permitting)

	Technical Director $240	PM Senior $175	Outlet Dam Task Lead $175	QA/QC Principal $220			Coastal Engineer VI $171	Structures Proj Eng $145	Dredging Engineer V $162	Civil Engineer III $110	Strucutres Engineer III $110	Drafting CAD Designer $129	Admin Admin III $95	Total Hours	UK Office	Sub-Consultants (markup 5%)	Direct Costs (markup 5%)	Sub-Total	Task Total
TASK 1 – Final Engineering Design																			**$ 547,924**
1.1 - Meetings	30	38	34					36		20			9	155				**$ 32,275**	
1.1.1 - Kick-off Meeting (teleconference)	2	2	2					4		4			1	15				$ 2,295	
1.1.2 Clietn/Team Meetings and minutes every 3- weeks (10 total ea, teleconf)	8	16	12					16		16			8	76				$ 11,660	
1.1.3 Steering Committee Meetings (2 teleconferences)	4	4	4															$ 2,360	
1.1.4 In-person Meetings (Boise) and Site Visit (1 trip ea, 2 people ea)	16	16	16					16						64			$ 4,000	$ 15,960	
1.2 Thorofare Final Engineering Analysis	96	58		14			196		108	374		184	4	1034				**$ 173,013**	
1.2.1 Rubblemound Structural Analysis	16	6					16		16	24				78				$ 12,858	
1.2.2 Dredging Analysis & Dredged Material Disposal	16	6					16		16	32				86				$ 13,738	
1.2.3 Thorofare Hydraulic Analysis & technical memorandum	8	4		4			60		4	60				140				$ 21,008	
1.2.4 Geotech for Breakwater Recommendations/Analysis Support (Geo)	2	2		8						2				14		$ 13,000		$ 16,460	
1.2.5 Quarry Investigation (GeoEngineers)	4									8				12		$ 6,500		$ 8,665	
1.2.6 Final Engineering Design																		$ -	
1.2.6.1 Engineering Analysis & Design	16	8					40		40	96		8		208				$ 30,152	
1.2.6.2 Plans & Specifications	16	16		2			50		4	96		160		344				$ 47,478	
1.2.6.3 Cost Estimates & Schedule	4	4					6		16	24		16		70				$ 9,982	
1.2.6.4 Technical Reporting	8	8					2		4	16			4	42				$ 6,450	
1.2.6.5 Contractor Outreach - Constructability/Site Use, etc...	4	2					2		6	8				22				$ 3,504	
1.2.6.6 Design Contingency	2	2					4		2	8				18				$ 2,718	
1.3 Outlet Dam Final Engineering Analysis	10	104	242	34			8	548			344	392		1541				**$ 342,636**	
1.3.1 Hydraulic & Hydrologic Analysis (CFD and Design Loads)	2	8	8	8			8							34	$ 57,400			$ 63,808	
1.3.2 Basis of Design Memo		8	8					24										$ 6,280	
1.3.3 Structural Engineering Analysis and Design		16												16				$ 2,800	
1.3.3.1 Radial Gate Plans and Analysis	1		68	8				136			240	216		620				$ 87,884	
1.3.3.2 Concrete Apron Plans and Analysis	1		30	8				60			80	64		218				$ 33,006	
1.3.3.3 Design Calculations Engineering and Analysis Support			30	2				60						90				$ 14,390	
1.3.3.4 Miscelaneous Improvements	1		10					20			24	32		87				$ 11,658	
1.3.4 Scour Protection, Dewatering, Construction Phasing Plans	4	40						80				80		204				$ 29,880	
1.3.5 Specifications and Bid Item Table	1	24	40					80						120				$ 23,040	
1.3.6 Cost Estimate and Schedule		1	40					80						121				$ 18,775	
1.3.7 Contractor Outreach - Constructability/Site Use, etc...		6	8					8						22				$ 3,610	
1.3.8 Geotechnical for Outlet Dam Recommendations/Analysis		1		8										9		$ 43,400		$ 47,505	
TASK 2 – Regulatory Permitting Support																			**$ 20,667**
2.1 Thorofare Regulatory Permitting Support	6	3					2			8				16				**$ 11,587**	
2.1.1 Regulatory response development	6	2								8				16				$ 2,670	
2.1.2 Archeological Assessment - Thorofare Only		1					2							3		$ 8,000		$ 8,917	
2.2 Outlet Dam Regulatory Permitting Support		8	24					24						56				**$ 9,080**	
2.2.1 Regulatory response development		4	16					16						36				$ 5,820	
2.2.2 Land Use/Environmental Permit Application Revisions (Outlet Dam and Thorfare)		4	8					8						20				$ 3,260	
TASK 3 – Bidding Phase Assistance																			**$ 39,476**
3.1 Thorofare Bidding Phase Assistance	30	16					4		10	38		6	19	123				**$ 20,250**	
3.1.1 Contract Document Review and Contractor Outreach	4	8							6					18				$ 3,332	
3.1.2 Pre-Bid Meeting (1 trip, 2 people, no overnight)	12	2								12			12	38			$ 1,130	$ 6,877	
3.1.2 Respond to Bidder Questions/RFI & Assist with Addendums	8	2					4		4	16		6	4	44				$ 6,516	
3.1.3 Review Bids & Tabulations	2	2								2			3	9				$ 1,335	
3.1.4 Post-Bid Support Prior to Preconstruction Phase	4	2								8				14				$ 2,190	
3.2 Outlet Dam Bidding Phase Assistance	6	34	18					36					24	112				**$ 19,227**	
3.2.1 Contract Document Review and Contractor Outreach	4	8						6					12	30				$ 4,370	
3.2.1 Pre-Bid Meeting (1 trip, 1 rep in-person, 1 rep via teleconf, no overnight)	2	12	4					2					12	32			$ 1,130	$ 5,897	
3.2.2 Respond to Bidder Questions/RFI & Assist with Addendums		4	4					24						32				$ 4,880	
3.2.3 Review Bids & Tabulations		2	8					4						8				$ 2,330	
3.2.4 Post-Bid Support Prior to Preconstruction Phase		8	2											10				$ 1,750	
TASK 4 – Project Management and Coordination	16	72	32	48				8		8			7	149					**$ 44,650**
4.1 Monthly Budget Tracking and Progress Reports (Scope and Schedule)	6	40	24					4		4			4	40		$ 2,450		$ 16,613	
4.2 QA/QC	8	16		48									3	75		$ 4,000		$ 19,765	
4.3 Work plan, communication plan, design schedule	2	16	8					4		4				34		$ 2,450		$ 8,273	
Sub-total Labor:	194	333	350	96			210	652	118	448	344	582	63	3,186					
Labor Cost:	$46,560	$58,275	$61,250	$21,120			$35,910	$94,540	$19,116	$49,280	$37,840	$75,078	$5,985		$57,400				**$562,354**
Subconsultants:																$ 79,800		$83,790	$83,790
Direct Costs:																	$ 6,260.00	$6,573	$6,573
Total:	**$46,560**	**$58,275**	**$61,250**	**$21,120**			**$35,910**	**$94,540**	**$19,116**	**$49,280**	**$37,840**	**$75,078**	**$5,985**						**$652,717**