MONTANA DEPARTMENT OF NATURAL RESOURCES AND CONSERVATION

REQUEST FOR QUALIFICATIONS AND PROPOSALS
RFQ/RFP #DNRC-RFQ/RFP 2016-1047

Breach Analysis, Inundation (EAP) Mapping and Loss of Life Analysis For East Fork, Middle Creek, Glacier Lake and Painted Rocks Dams

March 29, 2016

INTRODUCTION

The Montana Department of Natural Resources and Conservation (DNRC) is seeking proposals from engineering firms qualified to perform breach analyses, 2-D inundation (EAP) mapping, and Loss of Life analyses (LOL) for East Fork of Rock Creek Dam, Middle Creek Dam, Glacier Lake (North) Dam and Painted Rocks Dam.

The consultant's work will consist of:

- Obtain existing digital elevation data for each site and downstream areas within the inundation map boundaries.
- Perform field reconnaissance and surveys as needed to appropriately model downstream obstructions that may affect modeling results.
- Develop appropriate breach hydrographs for each dam:
    - Spillway Compliance Breach (reservoir at dam crest elevation, no spillway flows. Follow the guidelines in DNRC Technical Note 2.)
    - Overtopping Breach (reservoir at dam crest elevation, downstream baseflows set to be equivalent to flow rates that are consistent with an extreme storm event
- Perform 2-D inundation modeling using HEC-RAS 5.0 software;
- Prepare new EAP Inundation Maps based upon the results of the 2-D breach analyses
    - The inundated area for each dam is to be mapped downstream as follows:
        - Painted Rocks Dam: To the Clark Fork River immediately downstream from Frenchtown, MT;
        - Glacier Lake (North) Dam: To the Yellowstone River immediately downstream from Laurel, MT;
        - East Fork Dam: To the Clark Fork River, immediately downstream from Missoula, MT; and
        - Middle Creek (Hyalite) Dam: To the Missouri River.
- The EAP maps shall include periodic cross-sections that include relevant information such as flood travel time (initial and peak), peak flow, and maximum depth.
- Perform a Loss of Life (LOL) analysis for all dams using Graham (1999) and USBR (2014); and
- Progress reports and/or meetings will be expected at appropriate times.

The DNRC is soliciting and will evaluate qualifications and proposals from engineering firms desiring to be considered for this project. The work must be done under the direction of a professional engineer licensed in the State of Montana. The anticipated total project budget for engineering services to complete this work is $60,000-$80,000.

BACKGROUND

East Fork, Middle Creek and Glacier Lake Dams and associated reservoirs are located on public land in National Forests administered by the U.S. Forest Service. The projects are operated under U.S. Forest Service special-use permits. Painted Rocks Dam (also known as the West Fork of the Bitterroot Dam) is located in Ravalli County about 22 miles southwest of Darby, Montana. See project information summaries for the various dams in Tables 1, 2 and 3. The dams are owned by the Montana Department of Natural Resources (DNRC) and are managed by the State Water Projects Bureau (SWPB) of the DNRC.

The existing dam breach modeling performed at these sites was done using standard dam breach and hydraulic modeling software that was available during the early 1990's. The software programs used included BOSS DAMBRK, SMPDBK, HEC-1, and even HEC-2 for some local hydraulic structure routing. Overall, the majority of the modeling performed was accomplished using sound practices and techniques, according to the time period they were completed.

This project will bring dam breach mapping up to modern standards of practice and determine LOL for each project dam. LOL information will be used to determine Inflow Design Floods for spillway analysis at a later date (not included in this project's scope of work).

EXISTING INFORMATION

A packet of information will be made available to firms interested in this project. This packet will consist of copies of the following for each project site:

- Relevant original construction drawings.
- Existing EAP maps and EAP tables
- O&M Manual – Statistical Information

SCOPE OF WORK

1. Project Management
2. Monthly Progress Reports

   For each site:
3. Gather existing data/maps. Obtain 5-meter DEM data (or LiDAR where available) for each dam site and downstream areas within the inundation map. Copies of all obtained data shall be given to DNRC with project reports.
4. Conduct onsite assessment of downstream bridges and culverts that may cause backwater issues, or may be potentially overtopped. Field survey as needed for modeling.
5. Conduct breach analyses (overtopping breach). Use HEC-RAS 5.0 modeling software (2-D).
   - Spillway Compliance Breach
   - Overtopping Breach
6. Loss of Life analysis (Only on Spillway Compliance Breach)
   - Graham (1999)
   - USBR (2014)
7. Prepare new EAP Maps (11" x 17" and electronic) based upon the results of the breach analyses.
8. Deliverables:
   a. Preliminary Report (with gathered raw data, draft inundation maps, structure/cross-section surveys, HEC-RAS 5.0 2-D model input/output and review meeting).
   b. Final Report.
   c. New EAP Maps for Overtopping Breach (11" x 17" and electronic).
   d. Shape files of potentially inundated areas including anticipated flood depths and travel times (with Final Report).

Table 1 Project Dam Locations

Dam	County	National Forest	Legal Description	Latitude	Longitude	WUA
East Fork of Rock Creek	Granite	USFS Deer Lodge NF	S6 T4N R14W	46.131° N	113.38° W	Flint Creek
Middle Creek	Gallatin	USFS Gallatin NF	S15 T4S R6E	45.488° N	110.989° W	Middle Creek
Glacier Lake - North	Carbon	USFS Custer NF	S29 T9S R22W	45.050° N	109.532° W	Rock Creek
Painted Rocks (1)	Ravalli		S26 T1S R22W	45.718° N	114.278° W	Painted Rocks

(1) W Fork of the Bitterroot River

Table 2 Project Dam Information

Dam	Year Built	Height ft	Length ft	Active Storage ac-ft	Capacity cfs	Dam Type
East Fork of Rock Creek	1938	87	1,075	16,040	630	Rolled Earthfill
Middle Creek	1951	125	1,900	10,184	1,000	Earthfill
Glacier Lake - North	1937	57	230	4,200	472	Rockfill (2)
Painted Rocks (1)	1939	143	800	31,706	3,025	Earthfill

(1) W Fork of the Bitterroot River (2) With concrete US face

PROJECT SCHEDULE

Proposed DNRC project timeline is as follows:

May 03, 2016	**RFQ/ RFP submittals due**
June 17, 2016	Contract Executed
February 28, 2017	Project closeout

Consultants will prepare and submit a proposed detailed project schedule showing target dates for task completion and deliverable submittals as part of their submitted proposal.

PROPOSAL DEADLINE AND REQUIREMENTS

To enable the State to determine the capabilities of an offeror to perform the services specified in the RFQ/RFP, the offeror shall respond to the following regarding its ability to meet the State's requirements. Firms desiring to be considered for the work must submit their qualifications and proposals through the **Montana Acquisition & Contracting System (eMACS) Vendor Portal** not later than **3:00 p.m., local time, Tuesday, May 3, 2016**. Proposals must be electronically submitted by this time and must include the following information:

1. *Technical Approach.* Provide a fully developed Scope of Work for the project. Provide a description of how the consultant intends to address and approach the tasks identified in the Scope of Work. Identify any special investigations or data requirements necessary to complete the tasks.

2. *Overall and Specialized Experience of the Project Team*. Describe the firm's and project team's overall and specialized experience and qualifications as it relates to

performing a feasibility study for the planning and design of the rehabilitation of, or new construction of an earthen dam. At a minimum, the discussion should demonstrate experience necessary to complete the tasks identified in the "Scope of Work" section.

3. *Project Team Experience on Similar Projects in the Last 10-Years.* Provide a description of the projects that members of the project team have been involved with that are similar in nature to this project. Provide a description of the project, project dates, services provided by the project team, members of the proposed team involved with the project, and contact information (contact name and phone number) for the project Owner.

4. *Office location(s)*. Indicate the location of the office(s) from which the work would be performed. If work would be shared between main and branch offices at different locations, indicate office locations and what work would be directed or performed from each office.

5. *Organization Chart*. An organizational chart that includes the names of the personnel who will actually work on each major component of each task. Show proposed relationships among key personnel, support staff, and any subcontractors who would participate, identifying which aspects of work each person would perform. Work assignments should correspond to work described in the "Scope of Work" section plus additional items identified by the Consultant.

6. *Work Schedule*. Submit a proposed work schedule showing estimated completion dates for each major task, any other milestone dates, and the personnel (and their classification) who will work on each component shown in the schedule. For key personnel, please include a schedule of the time that they will be spending on the project. *(Allow time in the proposed schedule for a 2-week DNRC review/comment period on the Preliminary and Final reports for each site. Preference is for the consultant to stagger submittals for the various sites).*

7. *Man-hour Schedule.* Submit a schedule showing an estimate of the total man-hours for each task, broken down by personnel assigned to the project as required to complete work tasks described in the Scope of Work. Also address the team's capability to meet the schedule and project budget requirements presented in this RFQ/RFP.

8. *Workloads*. Provide information regarding current and projected workloads of the personnel involved. Additionally, indicate the percentage of the total project time that will be completed by the individual. For key personnel, please include a a summary of other coincident projects they may be working on. This section should allow the DNRC to clearly understand the personnel that will actually complete project tasks.

9. *Resumes*. Provide resumes for each employee shown on the organization chart who will perform the work and the supervisory personnel who will be responsible for the work proposed. Include education, professional or technical certifications or licenses, and work history relevant to each person's job assignment on this project. Again, if a main and a branch office would be involved, please identify the offices from which the employees would work. Individual resumes must be limited to no more than four pages each.

10. *Subconsultants.* Clearly identify any subconsultants and provide general information, resumes, and specific qualifications. This information should be included in the sections addressing the project team.

11. *Additional Items.* Identify any additional items not included herein, which should be addressed to perform breach analyses, 2-D inundation (EAP) mapping, and Loss of Life analyses at the four dams included in this RFQ/RFP.

12. *References.* Include a list of references for all projects that were completed in the last 3-years that are similar in terms of magnitude or relevant content. Each reference should include a contact name and phone number as well as a list of key personnel that worked on the project who will also be working on this project.

The DNRC may request additional information, clarification, or references at its discretion.

EVALUATION CRITERIA

DNRC will use the following evaluation criteria (listed with scoring points) to rate firms responding to this request. The criteria will be applied in evaluating the consultant's identified project team and approach methodology.

1. Overall technical approach and creativity demonstrated to complete the work components outlined in the proposal. The technical approach should demonstrate a complete understanding of the issues involved in this RFP/RFQ. Completeness of proposal including additional recommended components or alternative methodologies that were not identified in this RFP/RFQ. The proposal should demonstrate a complete understanding of the project issues. **(30 pts)**

2. Recent related consultant/sub-consultant experience and qualifications on similar projects, in particular as it relates to the Scope of Work. **(20 pts)**

3. Qualifications of the firm and personnel assigned to the project, including managerial ability of the firm and the individual(s) who will supervise the work. Overall and specialized recent technical experience, training and qualifications of the project team as it relates to performing the tasks, or similar tasks, identified in the Scope of Work. **(15 pts)**

4. Historic and current capability to meet time and project budget requirements. The firm must show that they have the resources to complete the work in a timely and efficient manner. Personnel who will actually complete project tasks must be clearly identified. **(15 pts)**

5. Record of past performance of firm and personnel with DNRC or other public agencies/owners on similar projects. Includes, but not limited to quality of work, on-schedule performance and cooperation with DNRC personnel. If DNRC has no recent experience, or limited experience, with Consultant then reference checks will be made. **(15 pts)**

6. Location of firm and personnel to complete the work. Both proximity to the project and co-location of the core team will be considered, particularly as it may relate to improved project efficiencies. **(5 pts)**

7. Presentation/Interview (optional with short-listed firms, at DNRC request). The presentation should be approximately 30 minutes in length and will be followed by a question and answer session by the Committee. Audio/visual materials are encouraged. The presentations will be held at DNRC's Water Resource Division Office in Helena, Montana. **(25 pts)**

GENERAL

The work on this project must be done under the direction of a professional engineer licensed in the State of Montana with specific experience that is relevant to the planning, design and construction of earthen dams: Hydrologic, Hydraulic, Geotechnical and General Civil.

SELECTION PROCESS

A team of evaluators will review the Statements of Qualifications and Proposals using the previously described evaluation criteria. DNRC may determine, as part of the evaluation, that interviews are necessary. Based on DNRC's rating of proposals, the Department will negotiate an agreement with the most qualified firm to conduct the work. The method and schedule of reimbursement will be stipulated in the agreement. If a satisfactory agreement cannot be negotiated with the most qualified firm, negotiations will be terminated and negotiations will be undertaken with the second firm.

DNRC reserves the right to modify the Scope of Work as listed in this RFQ/ RFP.

QUESTIONS AND SUBMITTALS

Please address questions and non-electronic submittals (if not submitting via eMACS) to:

Sanna M. Yost, PE, Project Engineer
State Water Projects Bureau, Department of Natural Resources and Conservation
1424 9th Avenue
PO Box 201601
Helena, Montana 59620-1601
Phone: (406) 444-6665
Email: syost@mt.gov

RECEIPT OF PROPOSALS AND PUBLIC INSPECTION

Public Information

All information received in response to this RFQ/RFP, including copyrighted material, is deemed public information and will be made available for public viewing and copying shortly after the time for receipt of Proposals has passed with the following four exceptions: (1) bona fide trade secrets meeting the requirements of the Uniform Trade Secrets Act, Title 30, chapter 14, part 4, MCA, that have been properly marked, separated, and documented; (2) matters involving individual safety as determined by the State; (3) any company financial information requested by the State to determine vendor responsibility, unless prior written consent has been given by the offeror as set out in section 18-4-308, MCA; and (4) other constitutional protections. See Mont. Code Ann. § 18-4-304.

Procurement Officer Review of Proposals
Upon opening the Proposals received in response to this RFQ/RFP, the procurement officer in charge of the solicitation will review the Proposals and separate out any information that meets the referenced exceptions in **Public Information Section** above, providing the following conditions have been met:

- Confidential information is clearly marked and separated from the rest of the Proposal.
- An affidavit from an offeror's legal counsel attesting to and explaining the validity of the trade secret claim as set out in Title 30, Chapter 14, Part 4, MCA, is attached to each Proposal containing trade secrets. Counsel must use the State of Montana "Affidavit for Trade Secret Confidentiality" form in requesting the trade secret claim. This affidavit form is available on the General Services Division's website at: http://gsd.mt.gov/content/Docs/TradeSecretAffidavit.doc or by calling (406) 444-2575.

Information separated out under this process will be available for review only by the procurement officer, the evaluation committee members, and limited other designees. Offerors must be prepared to pay all legal costs and fees associated with defending a claim for confidentiality in the event of a "right to know" (open records) request from another party.

REFERENCES

Graham, Wayne J. "A Procedure for Estimating Loss of Life Caused by Dam Failure," Dam Safety Office Report DSO-99-06, Bureau of Reclamation, Denver, Colorado, Sept. 1999.

USDI, Bureau of Reclamation. "RCEM - Reclamation Consequence Estimating Methodology (*Interim*) - Guidelines for Estimating Life Loss for Dam Safety Risk Analysis". Denver, Colorado. February 2014.

PROPOSALS - eMACS

If you intend to submit your proposal through eMACS, The PROPOSALS – HARDCOPIES SECTION does not apply and you are not required to submit hardcopies.
Please read the PROPOSAL – HARDCOPIES SECTION if you are unable to submit your proposal through eMACS and intend to submit a hardcopy proposal.
(If your business is not registered with the eMACS system, The State strongly suggests that you register your Business)

For registration assistance:
406-444-2575 General Assistance
emacs@mt.gov Email
vendorportal.mt.gov to register!
Vendor Registration and Data Management Handbooks

PROPOSALS - HARDCOPIES

Failure to include complete contact information may result in proposal disqualification. It is also requested that you contact the procurement officer prior to the bid closing date to notify them of your intention to manually submit a bid.

You must include a bid coversheet with the following information:

- ✓ *Company Name and Address*

- ➢ *Type of Entity (e.g. corporation, LLC, etc.)*
- ➢ *Federal Tax ID #*

✓ *Contact Person's Name*

- ➢ *Title*
- ➢ *Authorized Bidder Signature*
- ➢ *Phone number*
- ➢ *Fax Number*
- ➢ *Email address*

✓ *RFQ/RFP #*

✓ *RFQ/RFP Project Name*

✓

Offerors must submit ***one original proposal and 5 bound copies*** *to the Department of Natural Resources and Conservation.*

EACH PROPOSAL MUST BE SEALED AND LABELED ON THE OUTSIDE OF THE PACKAGE clearly indicating it is in response to RFQ/RFP ***#DNRC-RFQ/RFP2016-1047****. Proposals must be received by the Department of Natural Resources and Conservation, Water Resources Division, State Water Projects Bureau, 1424 9th Ave, PO Box 201601, Helena, MT 59620-1601 prior to 3:00 p.m., Mountain Time, May 3, 2016. Offeror is solely responsible for assuring delivery to the reception desk by the designated time. Offeror is solely responsible for assuring delivery to the reception desk by the designated time.*

Late Proposals. ***Regardless of cause, the State shall not accept late proposals. Such proposals will automatically be disqualified from consideration.*** Offeror may request the State return the proposal at offeror's expense or the State will dispose of the proposal if requested by the offeror. (See Administrative Rules of Montana (ARM) 2.5.509.)