Project Management Plan
Silver Jackets Interagency Project: South Fork Teton River Updated Flood Insurance Study

Idaho Silver Jackets
USACE Walla Walla District
6 February 2013

1.0 INTRODUCTION

In 1976, the Teton Dam, located between Fremont and Madison counties in eastern Idaho, experienced catastrophic failure as it was filled for the first time. The dam failure resulted in an uncontrolled release of 250,000 acre feet of water that was discharged over a six-hour period at 1,700,000 cubic feet per second (U.S. Department of Interior, Teton Dam Failure Report, January 1980). After the dam break, the U.S. Army Corps of Engineers (USACE) published a Special Flood Hazard Information Report (USACE 1976). This report includes post-dam break surveyed cross sections and unregulated hydrology. Since 1976, the channel of the South Fork Teton River has reportedly changed its geometry as the river has adjusted to a new equilibrium.

The community 1976 Flood Insurance Study (FIS) incorporated survey findings from the 1976 USACE Special Flood Hazard Information Report that was created immediately following the failure. The 1991 current effective Flood Insurance Rate Map (FIRM) incorporated cross sections collected immediately following the dam failure and from the 1976 Special Flood Hazard Information Report when the FIRM underwent Limited Detailed Study. No new topographic, hydraulic or hydrologic data was incorporated into the FIRM. The pilot project restudy of the South Fork Teton River will address any channel migration since the dam failure and provide the community updated technical data that can be submitted for an updated FIRM.

Thirty six (36) years have passed since the Teton Dam failure. The cities and counties downstream of the dam have recovered, rebuilt and continued their lives. The South Fork Teton River regularly floods, and its channel is actively migrating. The Madison County floodplain manager reports that the FIRM is incorrect for the South Fork Teton River and no longer relevant for the reach from the historic dam site downstream to its confluence with the Henry's Fork River, approximately 15 lineal miles.

Communities downstream of the dam failure are in need of new flood information. In July 2012, the Idaho Silver Jackets (ID SJ) team submitted a pilot project proposal to update FIRMs for the South Fork Teton River. The ID SJ pilot project proposal was awarded funding. This Project Management Plan (PMP) describes pilot project scope, schedule, costs, and roles and responsibilities for completing an updated flood insurance study.

2.0 PROJECT DESCRIPTION AND SCOPE OF WORK

Project Location

The project includes an approximate six-mile reach of the South Fork Teton River in Rexburg, Idaho. The study reach extends from the confluence of the Henrys Fork upstream to include the city of Rexburg. The project includes Panel 20 of the Federal Emergency Management Agency's (FEMA) FIRM.

Project Objectives

The pilot project will conduct a detailed flood insurance study for the community of Rexburg, Idaho, including surveys of bathymetry and bridges as needed, hydraulic modeling, and map generation. The mapped results will be used to complete a working-level map for submittal by the local community to FEMA to request an update to Digital FIRMs (DFIRMs).

Work to be Performed

The following agencies will complete the tasks listed below to meet project objectives.

1) The ***USACE, Walla Walla District*** will complete the following:

<u>Cross Section Survey</u>

- Hire a contractor to complete river cross sections.
- Develop the statement of work and administer the contact using current available Indefinite Delivery/Indefinite Quantity (IDIQ) contract options.
- Direct and perform quality control of contractor's work, reviewing all survey cross sections.

<u>Update Hydrology</u>

- Update flood frequency information for the St. Anthony Gage on the Teton River.
- Use existing hydraulic models, flow divide Rating Curves, and/or other hydrologic data to translate the updated St. Anthony Gage frequency data to the project location on the South Fork Teton River.

<u>Hydraulic Modeling</u>

- Enhance an existing one-dimensional Hydrologic Engineering Center River Analysis System (HEC-RAS) version 4.1 model previously developed for forecasting inflows on the Henry's Fork for reservoir operations purposes. This reservoir operations model was completed in December 2012, with 2009 Madison County LiDAR data. Model enhancements will include conversion to steady state, addition of stream bathymetry, increased cross section density, bridges, and floodplain constraints.
- Produce water surface profiles for the 1-percent chance exceedance flood and floodway for the South Fork Teton River reach from approximately river mile 0.0 to river mile 6.0, as described above.
- Incorporate new topography using 2009 LiDAR acquired by Madison County.
- Make one site visit for field verification during hydraulic model development.

- Prepare a report to document hydrologic and hydraulic model development and results.
- Import effective FEMA model to HEC-RAS version 4.1 for LOMR documentation.

Mapping

- Generate a working-level map and supporting documentation that can be submitted to FEMA to request a map revision (Letter of Map Revision - LOMR).
- USACE Walla Walla District Quality Control will assure datum's align.
- LOMR required over plots with Effective Mapping.

Deliverables

- Provide the following technical information to the city of Rexburg and Madison County needed for a LOMR submittal, including:
  - Study report – Two (2) paper copies and electronic files in PDF format
  - Electronic copies of the hydraulic model and Geographic Information System (GIS) files

2) ***FEMA*** will complete the following tasks:

- Participate in coordination meetings with USACE, city of Rexburg and Madison County floodplain administrators, and IDWR, as needed, to complete tasks outlined in this PMP.
- LOMR Review of USACE working-level maps when submitted by city of Rexburg.
- Incorporate mapped analysis into a regulatory DFIRM through a PMR, MT-2 (LOMR form) or other appropriate channel, assuming acceptance by FEMA of submittals.
- Provide technical assistance as needed with respect to FEMA study guidelines and National Flood Insurance Program requirements.

3) ***City of Rexburg and Madison County*** will complete the following tasks:

- Provide 2009 research LiDAR data to the USACE Walla Walla District for use in the detailed flood insurance study. Data is available for download on the Idaho LiDAR Consortium web page (http://www.idaholidar.org/data/155).
- Review draft working-level maps provided by the USACE and provide comment to USACE.
- Complete the non-engineering portions of the LOMR request, and sign and submit the LOMR request with the associated fee. This will include public notice to affected citizens.
- Participate in coordination meetings with the USACE, FEMA and IDWR, as needed, to complete tasks outlined in this PMP.

4) The ***Idaho Department of Water Resources*** will complete the following tasks:

- Provide limited project coordination, if requested, to facilitate discussion between USACE, FEMA, city of Rexburg, and Madison County.
- Provide base map data assembly (aerials, transportation system, available hydrography, etc.) , if needed, and stage geomorphic alluvial fan mapping

deliverables, if applicable. IDWR electronic data is posted and available on the Idaho LiDAR Consortium web page (http://www.idaholidar.org/).

3.0 Project Delivery Team

The Project Delivery Team (PDT) is comprised of staff from USACE Walla Walla District, FEMA Region X Risk Analysis Branch, city of Rexburg, Madison County, and IDWR.

USACE Walla Walla District

USACE Walla Walla District will provide study management and the technical project team to complete the study through a working-level map.

- The ID SJ Coordinator will coordinate with the ID SJ team, and respond to data calls and report progress to the national Silver Jackets Program Manager.
- The USACE Walla Walla District Flood Risk Manager (FRM)/Flood Plain Management Services (FPMS) Program Manager will serve as the technical lead for the study effort and provide technical coordination.
- Either the FRM/FPMS Program Manager or the ID SJ Coordinator will serve as the project manager, to be determined at a later date.
- The project technical team will be comprised of USACE Hydrology Section staff for open channel hydraulics. USACE Walla Walla District staff in General Engineering and Contracting sections will be responsible for developing statement of work, securing the contract, and overseeing the contract to obtain bathymetric data collection and surface topography generation.

Primary point of contact for participating agencies is provided in the table below.

Ellen Berggren, USACE	Idaho Silver Jackets Coordinator	Ellen.M.Berggren@usace.army.mil	(208) 345-2065
Tracy Schwarz, USACE	District FRM/FPMS Program Manager	Tracy.Schwarz@usace.army.mil	(509) 527-7522
Dave Ratte, FEMA Region X	Risk Analysis Branch, Regional Engineer	David.Ratte@fema.dhs.gov	(425) 487-4657
Amanda Engstfeldt, FEMA Region X	Risk Analysis Branch, Risk Analyst	Amanda.Engstfeldt@fema.dhs.gov	(425) 487-4626
Val Christensen, Rexburg	Floodplain Administrator	valc@rexburg.org	(208) 359-3020 Ext. 234
Brent McFadden, Madison County	Floodplain Administrator	bmcfadden@co.madison.id.us	(208) 359-6260
Vacant	State Floodplain Coordinator		(208) 287-4928
Ryan McDaniel, IDWR	Cooperating Technical Partner Coordinator	ryan.mcdaniel@idwr.idaho.gov	(208) 287-4926

4.0 Project Funding

USACE Walla Walla District will use awarded Silver Jackets pilot project program funds of $100,000 to pay for District labor, travel, contract for cross section survey, and materials and supplies needed to produce reports and deliverables. The table below summarizes the distribution of USACE pilot project funding.

	Planning Branch - G4H4C00	***Hydrology & Hydraulics Branch - G4L1H00***	***General Engineering - G4L1DN0***	***Contracting - G4P0000***	***Subtotals***
Labor	$ 6,200	$ 53,500	$ 3,600	$ 3,000	$ 66,300
Travel		$ 3,200			$ 3,200
Contractor			$ 30,000		$ 30,000
Materials & Supplies		$ 500			$ 500
				TOTAL	**$100,000**

The estimated value of in-kind services provided by other agencies as described in Section 2.0 - Work to be Performed includes:

- FEMA - Estimated labor and other associated costs = $7,800
- Rexburg City - Estimated labor and other associated costs = $TBD
- Madison County - Estimated labor and other associated costs = $TBD
- IDWR - Estimated labor and other associated costs = $TBD

The table below summarizes related studies and resources that were leveraged to benefit the pilot project by reducing pilot project costs, developing consistent datasets and reducing development of duplicative data, and/or supplementing future scheduled study efforts.

Agency	**Leveraged Resource**	**Estimated Value (if available)**
USACE Walla Walla District	Henrys Fork (South Fork Teton is a tributary) hydraulic inflow model completed for Water Management Reservoir Operations will be used for pilot project, to reduce costs in hydraulic model development.	TBD
FEMA	Future Risk MAP funds may be allocated to further, supplement, or compliment pilot project objectives as well as Teton Discovery needs.	TBD
Madison County	Research-grade LiDAR covering the proposed study area	~$25,000
US Bureau of Reclamation	South Fork Teton HEC-RAS model developed for reach upstream of pilot project reach.	TBD
IDWR	Base map data (aerials, transportation system, available hydrography, etc.)	TBD

5.0 Project Schedule

Pilot project milestones are summarized below. Project will be initiated in May 2013 and completed in March 2014. Project duration is estimated at 11 months. Site and weather conditions constrain ability to conduct cross section surveys until summer of 2013.

USACE Develop Survey Scope of Work/Award Contract	May - June 2013
USACE Cross Section Survey	July - August 2013
USACE Update Hydrology	June - August 2013
USACE Hydraulic Model and Report	1 August - 1 January 2014
USACE Mapping	1 January - 1 February 2014
City of Rexburg Review of work-maps	1-15 February 2014
USACE Model Adjustments	15-28 February 2014
USACE Submit Final Deliverables to City of Rexburg and Madison County	2 March 2014

6.0 Project Work Breakdown Structure (WBS)

The nature of this work necessitates very few milestones and a simplified WBS. The following Work Items will be set-up in P2 (USACE Project Management Database for scheduling and tracking project status).

PROJECT COORDINATION

Labor - G4H4C00 - $6200

CROSS SECTION SURVEY

Labor - G4L1DN0 - $3600
Labor - G4P0000 - $3000
AESVCS - $30,000

FLOOD INSURANCE STUDY

Labor - G4L1H00 - $53,500
Supplies and Materials – G400000- $500
Travel – G00000 - $3200

7.0 Project Critical Assumptions and Constraints

The study scope, costs and schedule described in this PMP are based on the following assumptions and constraints:

- All parties described in this PMP will perform roles and responsibilities as described, and provide information and comment in a timely manner, as scheduled.
- To ensure efficient collaboration and coordination and message consistency, the USACE Walla Walla District Project Manager will be the central point of communication and coordination for the project.
- The 2009 LiDAR provided by Madison County will require minimal processing for use in the model.
- The main foreseeable constraint for this project will be the availability of staff resources. The schedule assumes that technical resources will be available for a sustained effort to develop deliverables as scheduled.
- Cost estimate and schedule reflects effort required to complete study for the approximate six-mile reach encompassing the city of Rexburg. These assumptions cannot be used to estimate costs for other reaches in the watershed that may have more complex stream geometry and hydraulic and hydrologic characteristics.
- Cost estimate and schedule assumes one review of the draft working-level map by city of Rexburg/Madison County and one round of modifications by the USACE technical team in response to review comments prior to submittal to FEMA. Additional reviews and modifications will impact study cost and schedule.
- Study cost and schedule reflects coordination and communication between USACE, FEMA, community floodplain managers, and IDWR. External communications, such as public or community meetings, are not reflected in the study scope and schedule and would require additional funds. See Section 12.c. for additional information about communications external to the PDT and ID SJ team.
- Study scope and cost estimate assumes one trip will be made to eastern Idaho for field work during development of the hydraulic model. Communication and coordination between the PDT is assumed to occur by e-mail, conference call, web meeting or video teleconference.
- Draft USACAE work products distributed to PDT members for review will not be shared outside the PDT, without written concurrence by USACE.
- Updated hydrology and resulting project floodplain mapping may result in inconsistency with upstream mapping at tie in locations.
- Survey delays may be incurred due to a prolonged or delayed snowmelt season. This may impact overall project schedule.

8.0 Project Quality Management

Deliverables will have three layers of review one internal and two external to the USACE Walla Wall District.

1) Study deliverables will undergo USACE Walla Walla District Quality Control (QC) procedures, encompassing independent review by a District employee not directly performing the hydraulic modeling, before delivered outside the District.
2) Draft work maps will be provided to local floodplain managers for review and USACE will incorporate review comments into work products as appropriate.

3) FEMA Contractor will review USACE work products submitted by city of Rexburg and Madison County, through the LOMR process.

9.0 Project Change Management

This PMP documents scope, schedule and budget for the pilot project. Changes will be coordinated through the USACE Project Manager and local floodplain managers in coordination with FEMA and IDWR. The PMP will be revised to identify any revisions to scope, schedule and budget.

The USACE Project Manager will monitor physical and fiscal progress of all work. PDT members are responsible for performing to budget and schedule. Any potential changes should be raised by the PDT as soon as possible in order to evaluate the impacts to the entire pilot project.

Every three months, the USACE Project Manager will evaluate any changed conditions that may affect schedule and scope to determine if modifications are required. Modifications will be discussed with city of Rexburg, Madison County, FEMA, and IDWR, and options identified. Changes will be documented in writing in the PMP, and forwarded to the national Silver Jackets Program Manager for approval.

10.0 Project Communication Strategy

Within PDT

- To ensure efficient and proper coordination and collaboration, the USACE Walla Walla District Project Manager will serve as the central point of communication for day-to-day activities and coordination between the community and agencies for the study. All pilot project communications will be coordinated through the USACE Project Manager.
- Communication among team members will consist of both formal team meetings and informal day-to-day interaction between technical team members as needed. E-mail is encouraged as the primary means of written communication among all team members.
- Team meetings will be held as needed to discuss study schedule, work requirements, and findings. Team meetings may consist of conference calls to help reduce travel expenses.
- All significant meetings, e-mails, and phone calls will be documented with memos and/or shared by e-mail with the PDT.

Within USACE Silver Jackets Program

- The ID SJ Coordinator or USACE Walla Walla District technical lead will report pilot project progress and activities to the ID SJ team at monthly Core Team meetings.
- Pilot project progress reports will be provided to the national Silver Jackets Program Manager through the ID SJ team's quarterly status update and will document:
    1) Major milestones accomplished;
    2) Any major impediments that might thwart achieving project objectives, schedule, or budget;
    3) Any significant shifts in perspective or involvement by project partners; and

4) Any requests for assistance.

- Semi-annually (October and April), the ID SJ team will assess progress toward program objectives and fill in a short template presentation for use in in-progress reviews.
- The ID SJ Coordinator will alert the national Silver Jackets Program Manager immediately about major issues threatening the conduct of the project.
- The ID SJ Coordinator will provide a final closeout document (See Section 12.0 – Project Closeout.)
- Progress and final results will be posted to the Silver Jackets website, a public forum.

External to the PDT and Silver Jackets program

- The city of Rexburg/Madison County are responsible for coordinating communications external to the PDT or ID SJ team and communicating results to the community.
- FEMA will assist with community outreach through its Risk MAP program.
- ID SJ may assist with community outreach at the request of the floodplain administrators.
- Community outreach was not included in the pilot project PMP, due to funding constraints. However, PDT members may participate in public forums to communicate study results, if other funding is available.

11.0 Project Value Management

Study outcomes will communicate the following:

- Current Flood Risk – Current understanding of flood risk is not fully known as current floodplain mapping is based on information that may no longer be valid. The study will provide the community with more accurate information to more accurately quantify risk. Flood risk as defined by current FIRMs will be compared to flood risk depicted in updated FIRMs to communicate changed flood risk management resulting from this project.
- Improved Information – The city of Rexburg and its residents will have access to updated floodplain mapping information, the improved information will assist the community with land use planning and regulation of the floodway and floodplain.
- Actions Prompted by Project - The State and local communities will use the information to identify and prioritize flood mitigation projects and flood-fight activities. Data from this proposal will later be submitted to FEMA in order to update regulatory flood maps. The information will also assist with update to the County Hazard Mitigation Plan.
- Leveraging - As noted earlier, data and study results from Federal, State, and local agencies are being used to execute the pilot project. A full accounting of costs was not available when the PMP was developed, but will be compiled for Project Close-out.
- Future Expenditures Avoided – The community will be able to regulate the floodplain using information that more accurately reflects flood risk. This will in turn reduce future flood damages as management will reflect true flood risk.

12.0 Project Closeout

The PDT will document project outcomes and accomplishments, quantifiable to the extent possible (including: (1) risks reduced, (2) future transferability and/or expenditures reduced, and (3) actions prompted by the project) and any lessons learned. The PDT will also provide final documentation of actual resources invested in the project, suitable for demonstrating the benefits of interagency collaboration. The documentation will be provided as a stand-alone report to the national Silver Jackets Program Manager in advance of final project closeout to allow adequate time for follow-up questions.

13.0 Project Approvals

The PMP was reviewed and approved by the PDT comprised of representatives for FEMA, city of Rexburg, Madison County, and IDWR.

14.0 Appendices

Letters of support from the pilot project PDT members and ID SJ Core team members are included in the appendices.

LETTERS OF SUPPORT

Brent G. McFadden CFM
Madison County
General Services Director
PO Box 389
Rexburg, Idaho 83440

July 12, 2012

To Whom It May Concern:

Madison County has a need to have the South Fork and North Forks of the Teton River and the Henry's Fork, or the North Fork, of the Snake River be remapped and have new elevations given for areas that have existing elevations, "AE" zones, and get elevations in areas that currently are designated as "A" zones.

This would facilitate in more accureate determinations in Madison County, as in other parts of the country, the populus wants to build next to the waterways. With out known elevations it is deficult to give them an accurate top of bottom floor elevation at which to build.

Madison County 3 years ago had all the areas in the current designated floodplain areas flown with LiDARwith 2' resolution and have turned this information in to the state. Madison County is currently trying to get an area on the south fork of the Teton River remapped with the county pay for a portion of the work and the home owners in the area paying the rest with Williams Engineering doing the work.

We would appreciate having this project considered for any funds availible that would get the remapping done for Madison County.

If you have any questions feel free to contact me at 359-6260 between the hours of 8 am and 5pm.
Sincerely,

Brent G. McFadden CFM
Madison County
Flood plain Administrator

CITY OF
REXBURG
America's Family Community

July 11 2012

Ryan McDaniel, CFM PMP
Cooperating Technical Partner Coordinator Idaho Department of Water Resources Water Compliance Bureau
322 East Front Street
Boise, ID 83720-0098

Ryan,

Thank you for sending me the pilot project proposal for the hydraulic and hydrologic analysis of the South Fork of the Teton River. As Floodplain Administer I am anxious to have maps that identify not only the flood plain and the elevations, but also the flood way. I am in total support of the project. Please let me know if there is anything I can do to help with the process.

Sincerely,

Val Christensen
Community Development Director
City of Rexburg
.

Val Christensen, Community Development Director
City of Rexburg 35 North 1st East Rexburg, ID 83440
Phone: 208.359.3020

STATE OF IDAHO
BUREAU OF HOMELAND SECURITY
4040 W. GUARD STREET, BLDG. 600
BOISE, IDAHO 83705-5004

C.L. "BUTCH" OTTER
GOVERNOR

Maj Gen GARY L. SAYLER
ADJUTANT GENERAL

Brig Gen BILL SHAWVER
DIRECTOR

July 13, 2012

Ms. Jennifer Dunn
Silver Jackets Program
Institute for Water Resources
609 Second Street
Davis, CA 95616

Re: Idaho Silver Jackets Team Pilot Project Proposal - Remapping the Floodplain Following the Teton Dam Failure of 1976

Dear Ms. Dunn:

The Idaho Bureau of Homeland Security supports the proposed pilot project to develop accurate flood risk mapping for Madison County. The Madison County Multi-Jurisdiction All Hazard Mitigation Plan aligns with the State Hazard Mitigation Plan to reduce the impacts of flooding through proper land use management and development. Accurate floodplain mapping has been identified as a needed action item in the county plan and is vital to decisions protecting property and infrastructure.

Your consideration of this proposal is appreciated.

Sincerely,

Susan Cleverley
Senior Mitigation Planner

Phone: (208) 422-3040 • Fax: (208) 422-3044 • 24-Hour Emergency Notification: (208) 846-7610

State of Idaho
DEPARTMENT OF WATER RESOURCES
322 East Front Street • P.O. Box 83720 • Boise, Idaho 83720-0098
Phone: (208) 287-4800 • Fax: (208) 287-6700 • Website: www.idwr.idaho.gov

C.L. "BUTCH" OTTER
Governor

GARY SPACKMAN
Interim Director

July 12, 2012

Ms. Jennifer Dunn
Silver Jackets Program
Institute for Water Resources
609 Second Street
Davis, CA 95616

Re: Idaho Silver Jackets Pilot Project Proposal

Dear Ms. Dunn:

The pilot project proposal to remap the South Fork of the Teton River in the vicinity of Rexburg, Idaho, is eminently worthy. This reach of river was destabilized after the flood caused by failure of the Teton Dam in 1976. The current effective Flood Insurance Rate Map is from 1991. Flood hazard mapping based on recently collected LiDAR and current modeling would give the communities accurate, updated information which would lead to better informed land use decisions and safer development of the area. The highest growth rate counties in Idaho over the last decade have been Madison and Teton Counties, through which the Teton River flows. The proposed project is in Madison County and Rexburg, the county seat, which has been one of the fastest growing cities in the state.

Sincerely,

Mary G. McGown

Mary G. McGown, Ph.D., CFM
State Floodplain Coordinator

U.S. Department of Homeland Security
Region X
130 228th Street, SW
Bothell, WA 98021

FEMA

July 13, 2012

To Whom It May Concern,

I am writing in support of the project proposal that will provide new mapping data for areas downstream of the Teton Dam failure.

It was brought to FEMAs attention during the Teton Watershed Discovery Meeting (part of the RiskMAP process) that floodplain data was inaccurate and out of date due to significant channel migration resulting from the collapse of the Teton Dam. FEMA held the Teton Watershed Discovery Meeting in April of 2011 and the focus of this meeting was to identify mapping needs within the watershed as well as community priority for risk reduction projects. Data issues resulting from the collapse of the Teton Dam were consistently brought up during this meeting. Communities are unable to adequately mitigate any risk due the unavailability of accurate flood risk information.

FEMA supports the funding of this project and will coordinate efforts with project stakeholders.

Sincerely,

Amanda C. Engstfeld
FEMA Region X
Risk Analyst, Mitigation Division
425-487-4626
Amanda.Engstfeld@fema.dhs.gov

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Increasing Resilience Together