Montana Fish, Wildlife & Parks

Region One
490 North Meridian Rd.
Kalispell, MT 59901
(406) 752-5501
FAX: 406-257-0349
Ref: JS036-12
January 27, 2012

Ladies and Gentlemen:

Montana Fish, Wildlife & Parks (FWP), Region One, has written a draft environmental assessment (EA) proposing to examine and make a decision on whether or not to grant approval for a Montana Stream Protection Act (SPA 124) permit application submitted by the City of Kalispell to stabilize 650 l.f. of stream bank at the Buffalo Hill Golf Course on the Stillwater River to arrest erosion and protect several holes and infrastructure of the golf course.

A copy of the draft EA is enclosed for your review. The draft is out for a 15-day public review through 5:00 p.m., Tuesday, February 14, 2012. Please contact Fisheries Biologist Mark Deleray at (406) 751-4543 or e-mail to mdeleray@mt.gov with questions or comments.

Sincerely,

James R. Satterfield, Jr.

James R. Satterfield Jr., Ph.D.
Regional Supervisor

/ni
Enclosure

c: *Governor's Office, Attn: Mike Volesky, PO Box 200801, Helena, MT 59620-0801
*Environmental Quality Council, PO Box 20, Helena, 59620-1704
*Dept. of Environmental Quality, Planning, Prevention & Assist., PO Box 200901, Helena, 59620
*Dept. of Environmental Quality, Permitting Compliance, PO Box 200901, Helena, 59620-0901
*Montana Fish, Wildlife & Parks - Director's Office: Reg Peterson; Fisheries: Bruce Rich; Rebecca Cooper; & Legal Unit: Jessica Fitzpatrick
*DNRC, PO Box 201601, Helena, 59620-1601 (Patty Greene)
*DNRC, Bob Sandman, Kalispell
*Montana Historical Society, SHPO, 225 North Roberts, Veteran's Memorial Bldg., Helena, 59620
*Montana State Library, 1515 East Sixth Ave., Helena, 59620-1800
*Adam McLane, Montana Environmental Information Center, PO Box 1184, Helena, 59624
George Ochenski, 4 Harrison Road, Helena, 59601
*Wayne Hirst, Montana State Parks Foundation, PO Box 728, Libby, 59923
*Montana State Parks Association, PO Box 699, Billings, 59103
*Joe Gutkoski, President, Montana River Action Network, 304 N 18th Ave., Bozeman, 59715
*Representatives Bill Beck, Keith Regier,Derek Skees, Jerry O'Neil, Steve Lavin & Randy Brodehl
*Senators Bruce Tutvedt, Ryan Zinke & Jon Sonju
*Flathead County Commissioners, 800 S Main Street, Kalispell, MT 59901
Interested Parties

* E-mailed

Draft
Environmental Assessment

Buffalo Hill Golf Course
Stillwater River Bank Stabilization

City of Kalispell
124 Permit MISC-124-14-11

January 2012

Montana Fish, Wildlife & Parks

Draft Environmental Assessment
MEPA CHECKLIST

PART I. PROPOSED ACTION DESCRIPTION

1. Type of proposed state action:
Montana Fish, Wildlife & Parks (FWP) proposes to issue a 124 permit to the City of Kalispell for a stream bank stabilization project at the Buffalo Hill Golf Course on the Stillwater River.

2. Agency authority for the proposed action:
87-5-502 Mont. Code Ann. Notice of construction or hydraulic projects. An agency of state government, county, municipality, or other subdivision of the state of Montana, hereafter called applicant, shall not construct, modify, operate, maintain, or fail to maintain any construction project or hydraulic project which may or will obstruct, damage, diminish, destroy, change, modify, or vary the natural existing shape and form of any stream or its banks or tributaries by any type or form of construction without first causing notice of such planned construction to be served upon the department (Fish, Wildlife & Parks) on forms furnished by the department as soon as preliminary plans are completed, but not less than 60 days prior to commencement of final plans for construction. Such notice shall include detailed plans and specifications of so much of said project as may or will affect any such stream in any manner specified above.

87-5-503 Mont. Code Ann. Investigation of construction plans. The department shall promptly examine and investigate all such plans. Should the department determine the plans and specifications furnished with any such application technically insufficient, the department shall so notify the applicant and may render aid in preparing adequate plans and specifications.

87-5-504 Mont. Code Ann. Notice of department findings and alternative plans. Within 30 days after the receipt of such plans, the department shall notify the applicant whether or not such construction project or hydraulic project will adversely affect any fish or game habitat. If the department notifies the applicant that such construction will adversely affect any fish or game habitat, it shall accompany such notice with recommendations or alternative plans which will eliminate or diminish such adverse effect.

3. Name of project:
Buffalo Hill Golf Course Bank Stabilization

4. Project sponsor (if other than the agency):
City of Kalispell
306 First Avenue East
Kalispell, MT 59901
406-758-7703

5. Anticipated schedule:
Estimated construction commencement date: 3/1/2012
Estimated completion date: 6/30/2013
Current status of project design (% complete): 100%

6. Location affected by proposed action:
Flathead County, T28N R21W S6

7. Project size:

	Acres		Acres
(a) Developed:		(d) Floodplain	3,250 sq. ft.
Residential	0		
Industrial	0	(e) Productive:	
(existing shop area)		Irrigated cropland	0
(b) Open Space/	3,250 sq. ft.	Dry cropland	0
Woodlands/Recreation		Forestry	0
(c) Wetlands/Riparian	650 feet	Rangeland	0
Areas		Other	0

8. Permits, funding, & jurisdiction:

(a) Permits (Permits will be filed at least 2 weeks prior to project start.):

Agency Name	Permits
Kalispell Floodplain Administrator	Floodplain
US Corps of Engineers	404
DEQ 318	
DNRC Navigable River	

(b) Funding:

Agency Name	Funding Amount
City of Kalispell	NA
FEMA NA	

(c) Other overlapping or additional jurisdictional responsibilities:

Agency Name	Type of Responsibility

9. Narrative summary of the proposed action:
City of Kalispell submitted a 124 permit application to FWP proposing to stabilize 650 l.f. of stream bank at the Buffalo Hill Golf Course on the Stillwater River to arrest erosion and protect several holes and infrastructure of the golf course. The proposal employs a rock toe and root wad armoring, and a vegetated soil technique from the lower water mark up to flood elevation. The 650 l.f. is divided into four segments on outside bends of meanders. During construction about 3,250 square feet of upland vegetation will be disturbed.

10. Description of alternatives:

Alternative A: No Action

FWP does not issue a 124 permit and bank erosion continues threatening golf course holes and infrastructure.

Alternative B: Proposed Action

FWP issues a 124 permit and the City of Kalispell stabilizes the four sites.

PART II. PREDICTED ENVIRONMENTAL OUTCOMES

1. Evaluation of the impacts of the Proposed Alternative, including secondary and cumulative impacts on the physical and human environment.

A. PHYSICAL ENVIRONMENT

1. LAND RESOURCES Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Soil instability or changes in geologic substructure?				X		1.a.d.e.
b. Disruption, displacement, erosion, compaction, moisture loss, or over-covering of soil, which would reduce productivity or fertility?		X				
c. Destruction, covering, or modification of any unique geologic or physical features?		X				
d. Changes in siltation, deposition, or erosion patterns that may modify the channel of a river or stream or the bed or shore of a lake?				X		1.d. 1.a.d.e.
e. Exposure of people or property to earthquakes, landslides, ground failure, or other natural hazard?				X		1.a.d.e.
f. Other:						

1.d. The proposed bank stabilization at the four sites will reduce sediment introduction and erosion at those sites. The proposal will halt further erosion and allow riparian vegetation to establish at these four sites.

1.a.d.e. Rock riprap may increase velocities and depth along treated bank, with significant impacts up and downstream. Riprap may interfere with natural stream dynamics, shifting problems to adjoining banks. All four of the proposed sites may negatively impact adjacent banks. Site 4 is immediately upstream of Juniper Bend, a housing development perched on the high steep bank on the west side of the river and on the opposing bank. The toe of the high steep bank is currently eroding, threatening the stability of the bank. It appears the bank will continue to erode or waste until stabilized or it reaches a new equilibrium. The proposed bank stabilization on Site 4 may negatively impact the high steep bank downstream.

RLK Hydro, Inc., provided an analysis of impacts at Site 4, Analysis of Impact Potential Along the Stillwater River. This report is included as Appendix A. The authors ran a hydraulic model using HEC-RAS to identify changes in hydraulic behavior of the river as a result of changes imposed on stream flow from the bank stabilization measures. The report concluded that the proposed bank stabilization measure at Site 4 did not yield an adverse impact on adjacent property.

There remains some uncertainty regarding potential negative impacts to adjacent properties. HEC-RAS modeling is a one dimensional model that doesn't fully address three dimensional flow dynamics. The model is often used in engineering to design projects to meet flood event criteria. What the HEC-RAS model doesn't predict is flow deflection, flow path changes, or other changes to stream dynamics that may result from a given bank stabilization treatment. A one dimensional model indicating reduced velocities does not address changes to the direction of the current created by the stabilization features on adjacent banks, or the flow effects on adjacent banks as a result of increased deposition or scour created at the bank/water interface at the stabilization site. The proposed bank stabilizations will obstruct lateral channel migration; the stream will adjust somewhere else in the system to accommodate this new geomorphic input. Stabilization at one site will have some type of effect at another. Unfortunately, in dynamic systems, it is extremely difficult to predict whether this bank stabilization project will have minor impacts or significant impacts to the adjacent landowners. There is potential for some type of impact downstream of the proposed stabilization.

2. AIR Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Emission of air pollutants or deterioration of ambient air quality? (Also see 13c.)		X				
b. Creation of objectionable odors?		X				
c. Alteration of air movement, moisture, or temperature patterns or any change in climate, either locally or regionally?		X				
d. Adverse effects on vegetation, including crops, due to increased emissions of pollutants?		X				
e. For P-R/D-J projects, will the project result in any discharge, which will conflict with federal or state air quality regs? (Also see 2a.)		NA				
f. Other:						

No cumulative or secondary effects on Air Resources were identified in this review.

3. WATER Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Discharge into surface water or any alteration of surface water quality, including but not limited to temperature, dissolved oxygen, or turbidity?			X		X	3.a
b. Changes in drainage patterns or the rate and amount of surface runoff?		X				
c. Alteration of the course or magnitude of floodwater or other flows?				X		3.c.
d. Changes in the amount of surface water in any water body or creation of a new water body?		X				
e. Exposure of people or property to water-related hazards such as flooding?		X				
f. Changes in the quality of groundwater?		X				
g. Changes in the quantity of groundwater?		X				
h. Increase in risk of contamination of surface or groundwater?		X				
i. Effects on any existing water right or reservation?		X				
j. Effects on other water users as a result of any alteration in surface or groundwater quality?		X				
k. Effects on other users as a result of any alteration in surface or groundwater quantity?		X				
l. For P-R/D-J, will the project affect a designated floodplain? (Also see 3c.)		NA				
m. For P-R/D-J, will the project result in any discharge that will affect federal or state water quality regulations? (Also see 3a.)		NA				
n. Other:						

3.a. The proposed construction activity will create short-term turbidity at the site. The turbidity will be of short duration and relatively low volume. The impact will be mitigated by constructing project during low flow period, using clean materials, and installing silt fencing or other techniques to minimize the introduction of sediments during construction. The vegetation once established should reduce sediment inputs.

The proposed bank stabilization will halt erosion and sediment introduction at the four sites, potentially reducing associated turbidity.

3.c. (1.a.d.e. comment) Rock riprap may increase velocities and depth along treated bank, with significant impacts up and downstream. Riprap may interfere with natural stream dynamics, shifting problems to adjoining banks. All four of the proposed sites may negatively impact adjacent banks if the project modifies the course of floodwaters. Site 4 is immediately upstream of Juniper Bend, a housing development perched on the high steep bank on the west side of the river and on the opposing bank. The toe of the high steep bank is currently eroding, threatening the stability of the bank. It appears the bank will continue to erode or waste until stabilized or it reaches a new equilibrium. The proposed bank stabilization on Site 4 may negatively impact the high steep bank downstream, causing increased turbidity and sedimentation.

RLK Hydro, Inc., provided an analysis of impacts at Site 4, Analysis of Impact Potential Along the Stillwater River. This report is included as Appendix A. The authors ran a hydraulic model using HEC-RAS to identify changes in hydraulic behavior of the river as a result of changes imposed on stream flow from the bank stabilization measures.

The report concluded that the proposed bank stabilization measure at Site 4 did not yield an adverse impact on adjacent property.

There remains some uncertainty regarding potential negative impacts to adjacent properties. HEC-RAS modeling is a one dimensional model that doesn't fully address three dimensional flow dynamics. The model is often used in engineering to design projects to meet flood event criteria. What the HEC-RAS model doesn't predict is flow deflection, flow path changes, or other changes to stream dynamics that may result from a given bank stabilization treatment. A one dimensional model indicating reduced velocities does not address changes to the direction of the current created by the stabilization features on adjacent banks, or the flow effects on adjacent banks as a result of increased deposition or scour created at the bank/water interface at the stabilization site. The proposed bank stabilizations will obstruct lateral channel migration; the stream will adjust somewhere else in the system to accommodate this new geomorphic input. Stabilization at one site will have some type of effect at another. Unfortunately, in dynamic systems, it is extremely difficult to predict whether this bank stabilization project will have minor impacts or significant impacts to the adjacent landowners. There is potential for some type of impact downstream of the proposed stabilization.

4. VEGETATION **Will the proposed action result in?**	**IMPACT**					
	Unknown	**None**	**Minor**	**Potentially Significant**	**Can Impact Be Mitigated**	**Comment Index**
a. Changes in the diversity, productivity, or abundance of plant species (including trees, shrubs, grass, crops, and aquatic plants)?			X		X	4.a.b.
b. Alteration of a plant community?			X		X	4.a.b.
c. Adverse effects on any unique, rare, threatened, or endangered species?		X				
d. Reduction in acreage or productivity of any agricultural land?		X				
e. Establishment or spread of noxious weeds?		X				
f. For P-R/D-J, will the project affect wetlands or prime and unique farmland?		X				
g. Other:						

4.a.b. There will be short-term impacts to existing vegetation at the four sites as vegetation is removed to install rock and soil lifts. These sites will be vegetated with native shrubs and grasses and once established will mitigate for removals. In addition, vegetation on other sites where it was previously removed may be improved under the proposed project.

No cumulative or secondary effects on Vegetation were identified in this review.

5. FISH/WILDLIFE Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Deterioration of critical fish or wildlife habitat?		X				
b. Changes in the diversity or abundance of game animals or bird species?		X				
c. Changes in the diversity or abundance of nongame species?		X				
d. Introduction of new species into an area?		X				
e. Creation of a barrier to the migration or movement of animals?		X				
f. Adverse effects on any unique, rare, threatened, or endangered species?		X				
g. Increase in conditions that stress wildlife populations or limit abundance (including harassment, legal or illegal harvest, or other human activity)?		X				
h. For P-R/D-J, will the project be performed in any area in which T&E species are present, and will the project affect any T&E species or their habitat? (Also see 5f.)		NA				
i. For P-R/D-J, will the project introduce or export any species not presently or historically occurring in the receiving location? (Also see 5d.)		NA				
j. Other:						

There is little potential for cumulative impacts to fish and wildlife due to the relatively good condition of stream and riparian habitat in the project area. At the treatment sites, riparian vegetation will be established and improved where currently little or none exists. The sections of rock riprap toe on the structures are relative short in combined length when compared to the combined length of stream banks that are not treated and are in a natural condition.

It is difficult to determine the potential secondary impacts of the proposed project since erosion is currently occurring at the treatment sites and on adjacent banks. Arresting erosion at the treatment sites may increase erosion on other sites, but it is unknown if in total more or less erosion would occur in the project area following the proposed construction.

B. HUMAN ENVIRONMENT

6. NOISE/ELECTRICAL EFFECTS Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Increases in existing noise levels?			X			6.a.
b. Exposure of people to severe or nuisance noise levels?		X				
c. Creation of electrostatic or electromagnetic effects that could be detrimental to human health or property?		X				
d. Interference with radio or television reception and operation?		X				
e. Other:						

6.a. There will be an increase in noise levels in the immediate area during construction activities. This will include noise from heavy equipment operation. The impact will be short-term.

No cumulative or secondary effects on Noise/Electrical Effects were identified in this review.

7. LAND USE Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Alteration of or interference with the productivity or profitability of the existing land use of an area?				X		7.a.c.d.
b. Conflict with a designated natural area or area of unusual scientific or educational importance?		X				
c. Conflict with any existing land use whose presence would constrain or potentially prohibit the proposed action?				X		7.a.c.d.
d. Adverse effects on or relocation of residences?				X		7.a.c.d.
e. Other:						

7.a.c.d. (1.a.d.e. comment) Rock riprap may increase velocities and depth along treated bank, with significant impacts up and downstream. Riprap may interfere with natural stream dynamics, shifting problems to adjoining banks. All four of the proposed sites may negatively impact adjacent banks. Site 4 is immediately upstream of Juniper Bend, a housing development perched on the high steep bank on the west side of the river and on the opposing bank. The toe of the high steep bank is currently eroding, threatening the stability of the bank. It appears the bank will continue to erode or waste until stabilized or it reaches a new equilibrium. The proposed bank stabilization on Site 4 may negatively impact the high steep bank downstream.

RLK Hydro, Inc., provided an analysis of impacts at Site 4, Analysis of Impact Potential Along the Stillwater River. This report is included as Appendix A. The authors ran a hydraulic model using HEC-RAS to identify changes in hydraulic behavior of the river as a result of changes imposed on stream flow from the bank stabilization measures. The report concluded that the proposed bank stabilization measure at Site 4 did not yield an adverse impact on adjacent property.

There remains some uncertainty regarding potential negative impacts to adjacent properties. HEC-RAS modeling is a one dimensional model that doesn't fully address three dimensional flow dynamics. The model is often used in engineering to design projects to meet flood event criteria. What the HEC-RAS model doesn't predict is flow deflection, flow path changes, or other changes to stream dynamics that may result from a given bank stabilization treatment. A one dimensional model indicating reduced velocities does not address changes to the direction of the current created by the stabilization features on adjacent banks, or the flow effects on adjacent banks as a result of increased deposition or scour created at the bank/water interface at the stabilization site. The proposed bank stabilizations will obstruct lateral channel migration; the stream will adjust somewhere else in the system to accommodate this new geomorphic input. Stabilization at one site will have some type of effect at another. Unfortunately, in dynamic systems, it is extremely difficult to predict whether this bank stabilization project will have minor impacts or significant impacts to the adjacent landowners. There is potential for some type of impact downstream of the proposed stabilization.

8. RISK/HEALTH HAZARDS Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Risk of an explosion or release of hazardous substances (including but not limited to oil, pesticides, chemicals, or radiation) in the event of an accident or other forms of disruption?		X				
b. Affect an existing emergency response or emergency evacuation plan, or create a need for a new plan?		X				
c. Creation of any human health hazard or potential hazard?		X				
d. For P-R/D-J, will any chemical toxicants be used? (Also see 8a.)		NA				
e. Other:						

No cumulative or secondary effects on Risk/Health Hazards were identified in this review.

9. COMMUNITY IMPACT Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Alteration of the location, distribution, density, or growth rate of the human population of an area?		X				
b. Alteration of the social structure of a community?		X				
c. Alteration of the level or distribution of employment or community or personal income?		X				
d. Changes in industrial or commercial activity?		X				
e. Increased traffic hazards or effects on existing transportation facilities or patterns of movement of people and goods?		X				
f. Other:			X			9.f.

The stabilization at the four sites will benefit the community by reducing erosion of and threats to the existing golf course.

No cumulative or secondary effects on Community Impact were identified in this review.

10. PUBLIC SERVICES/TAXES/UTILITIES Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. An effect upon or result in a need for new or altered governmental services in any of the following areas: fire or police protection, schools, parks/recreational facilities, roads or other public maintenance, water supply, sewer or septic systems, solid waste disposal, health, or other governmental services? If any, specify:		X				
b. An effect upon the local or state tax base and revenues?		X				
c. A need for new facilities or substantial alterations of any of the following utilities: electric power, natural gas, other fuel supply or distribution systems, or communications?		X				
d. An increased use of any energy source?		X				
e. Define projected revenue sources		NA				
f. Define projected maintenance costs.		NA				
g. Other:						

No cumulative or secondary effects on Public Services/Taxes/Utilities were identified in this review.

11. AESTHETICS/RECREATION Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Alteration of any scenic vista or creation of an aesthetically offensive site or effect that is open to public view?		X				
b. Alteration of the aesthetic character of a community or neighborhood?		X				
c. Alteration of the quality or quantity of recreational/tourism opportunities and settings? (Attach Tourism Report.)			X			11.c.
d. For P-R/D-J, will any designated or proposed wild or scenic rivers, trails, or wilderness areas be impacted? (Also see 11a, 11c.)		NA				
e. Other:						

11.c. The purpose of the project is to protect the golf course and maintain current recreational opportunities. This project will benefit the golfing recreation. Reestablishment of riparian vegetation will improve aesthetics along the river.

No cumulative or secondary effects on Aesthetics/Recreation were identified in this review.

12. CULTURAL/HISTORICAL RESOURCES Will the proposed action result in:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Destruction or alteration of any site, structure, or object of prehistoric, historic, or paleontological importance?		X				12.a.
b. Physical change that would affect unique cultural values?		X				
c. Effects on existing religious or sacred uses of a site or area?		X				
d. For P-R/D-J, will the project affect historic or cultural resources? Attach SHPO letter of clearance. (Also see 12a.)		NA				
e. Other:						

12.a. The site has been previously modified through the construction of a dike along the edge of the river and development of a golf course.

No cumulative or secondary effects on Cultural/Historical Resources were identified in this review.

SIGNIFICANCE CRITERIA

13. SUMMARY EVALUATION OF SIGNIFICANCE Will the proposed action, considered as a whole:	IMPACT					
	Unknown	None	Minor	Potentially Significant	Can Impact Be Mitigated	Comment Index
a. Have impacts that are individually limited, but cumulatively considerable? (A project or program may result in impacts on two or more separate resources that create a significant effect when considered together or in total.)				X		13.a.b.e.
b. Involve potential risks or adverse effects, which are uncertain but extremely hazardous if they were to occur?				X		13.a.b.e.
c. Potentially conflict with the substantive requirements of any local, state, or federal law, regulation, standard, or formal plan?		X				
d. Establish a precedent or likelihood that future actions with significant environmental impacts will be proposed?		X				
e. Generate substantial debate or controversy about the nature of the impacts that would be created?				X		13.a.b.e.
f. For P-R/D-J, is the project expected to have organized opposition or generate substantial public controversy? (Also see 13e.)		NA				
g. For P-R/D-J, list any federal or state permits required.		NA				

13.a.b.e.. Potentially significant impacts were determined in sections 1, 3, and 7 above. Unfortunately, in dynamic systems, it is extremely difficult to predict whether this bank stabilization project will have minor impacts or significant impacts to the adjacent landowners. There is potential for some type of impact downstream of the proposed stabilization. If the proposed project significantly increases the rate of erosion on the toe of the Juniper Bend bank, the housing development may be at additional risk. This may cause concern and controversy regarding potential impacts of the proposed project.

2. Evaluation and listing of mitigation, stipulation, or other control measures enforceable by the agency or another government agency:

Turbidity and sedimentation during construction may be partially mitigated by completing the project during low flow periods and using silt fencing or other techniques that minimize sediment introductions during construction and revegetation. This mitigation will reduce impacts to short term and minimize impact to fish and wildlife habitat.

PART III. NARRATIVE EVALUATION AND COMMENT

The proposed project and environmental assessment indicate that there will be only minor and short term impacts to fish and wildlife habitat. No significant impacts to fish and wildlife habitat were identified in the environmental review. No cumulative or secondary impacts to fish and wildlife habitat were identified in this review.

Potentially significant impacts were identified in sections 1, 3 and 7. These impacts were to Land Resources, Water and Land Use. Unfortunately, in dynamic systems, it is extremely difficult to predict whether this bank stabilization project will have minor impacts or significant impacts to the adjacent landowners. There is potential for some type of impact downstream of the proposed stabilization. If the proposed project significantly increases the rate of erosion on the toe of the Juniper Bend bank, the housing development may be at additional risk. This may cause concern and controversy regarding potential impacts of the proposed project.

PART IV. PUBLIC PARTICIPATION

1. Public involvement for this project:

The public will be notified in the following manners to comment on this draft EA, the proposed action, and the alternatives:

- Two public notices in local newspapers
- One statewide press release
- Public notice on the Fish, Wildlife & Parks web site: *http://fwp.mt.gov*

Copies of this environmental assessment will be distributed to the neighboring landowners and interested parties to ensure their knowledge of the proposed project.

This level of public notice and participation is appropriate for a project of this scope having limited impacts, many of which can be mitigated.

2. Duration of comment period, if any.

In an effort to comply with 87-5-504, the department will notify the applicant within 30 days that the proposed project will not adversely affect fish and wildlife habitat. The public comment period will extend for 15 days. Written comments will be accepted until 5:00 pm on February 14, 2012, and can be mailed to the address below:

Montana Fish Wildlife and Parks
Attn: Mark Deleray
490 N. Meridian Road
Kalispell, MT 59901

PART V. EA PREPARATION

1. Based on the significance criteria evaluated in this EA, is an EIS required? (YES/NO)?

No.

If an EIS is not required, explain why the EA is the appropriate level of analysis for this proposed action:

An EA is the appropriate level of analysis for this action since no significant impacts to fish and wildlife habitat were identified. In an effort to comply with 87-5-504, the department will notify the applicant within 30 days that the proposed project will not adversely affect fish and wildlife habitat. The department received the Analysis of Impact Potential Along the Stillwater River on January 12, 2012. The department will provide recommendations for minimizing short-term impacts to fish and wildlife habitat in a 124 permit, if provided to the City of Kalispell.

2. Person responsible for preparing the EA:

Mark Deleray
Fisheries Biologist
490 N. Meridian Rd.
Kalispell, MT 59901
406-751-4543

3. List of agencies consulted during preparation of the EA:

Montana Fish, Wildlife & Parks
Fisheries Division
Legal Bureau

APPENDICES

A. Analysis of Impact Potential Along the Stillwater River

APPENDIX A

Hydrology, Engineering & Environmental Consulting

Analysis of Impact Potential Along the Stillwater River

Prepared for:

City of Kalispell / Buffalo Hill Golf Course

306 First Avenue East

Kalispell, Montana 59901

Submitted to:

Montana Fish, Wildlife and Parks

Mark Deleray

490 N. Meridian Road

Kalispell, Montana 59901

January 12, 2012

Submitted by:

RLK Hydro, Inc.

484 N. Main Street

P.O. Box 1579

Kalispell, Montana 59903

Tel: (406) 752-2025 Fax: (406) 257-4125

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Introduction

This document has been prepared to present findings of analysis that has been completed to demonstrate the level of impact bank stabilization proposed along the Stillwater River by the City of Kalispell may have on adjacent landowners. The analysis of impact has been constrained to the area identified as Site 4 in the original Joint Application submitted to the Montana Department of Fish, Wildlife, and Parks in November 2012.

Location

The project is located on the Stillwater River on Buffalo Hill Golf Course in Kalispell, Montana in the NW quarter of the NE quarter of Section 6, Township 28N, Range 21W, Flathead County, Montana. Stillwater River is a tributary to the Flathead River. Figure 1 presents a vicinity map of the proposed bank stabilization sites.

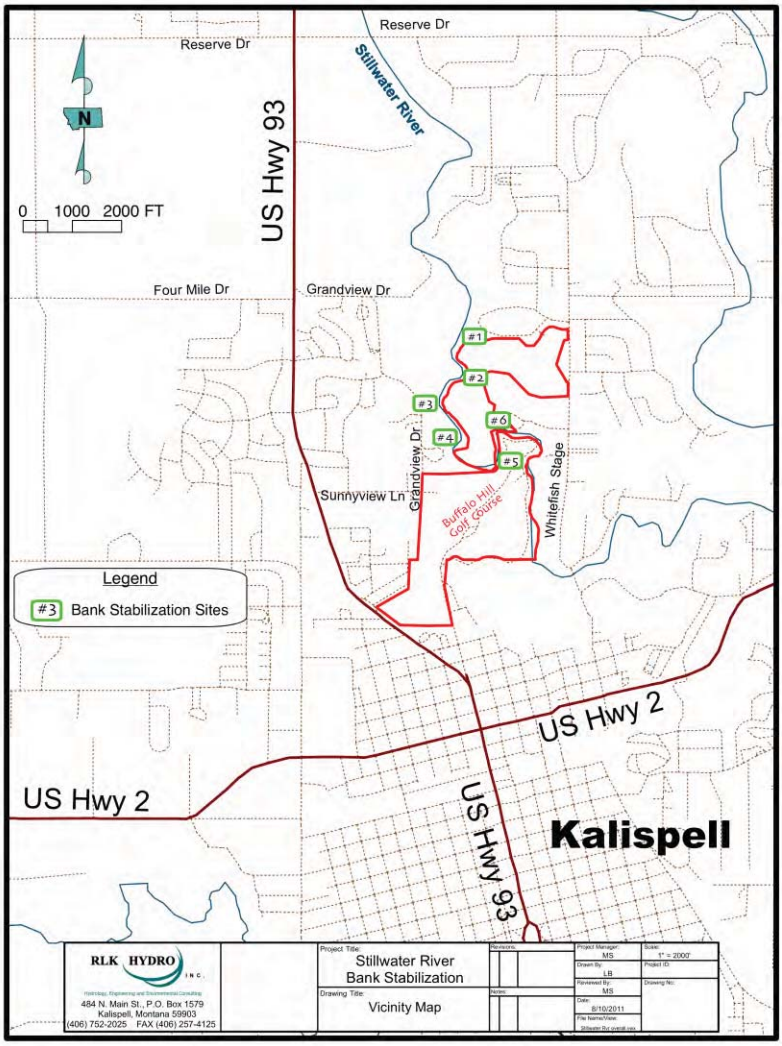

Figure 1. Vicinity map illustrating the locations of proposed bank stabilization along the Stillwater River.

Project description

The project addresses long term bank erosion and incision problems on the Stillwater River. The area affected includes the river bank that parallels the east side of the Stillwater River along the Buffalo Hill Golf Course. The project targets areas of the river bank that have experienced high rates of erosion over the past 5 years and loss threatens either course operations or City of Kalispell infrastructure. The additional analysis has been completed on Site 4 because of the juxtaposition to Juniper Bend, a development perched on the high steep bank to the west of Site 4 on the opposing bank.

Analysis overview

A hydraulic model of the Stillwater River was assembled using HEC-RAS, ver. 4.1.0, to identify changes in hydraulic behavior of the river as a result of changes imposed on stream flow from the bank stabilization measures. The bank stabilization measures change the bank configuration in three manners: 1) the lower toe region of the bank is fortified by rock potentially reducing friction forces leading to increased water velocity, 2) the upper bank is reconstructed using vegetated soil lifts that increase roughness and slow down water velocities, and 3) the geometry of the bank is altered slightly due to the excavation and construction of the vegetated soil lifts. Figure 2 presents a typical illustration of the proposed bank following construction.

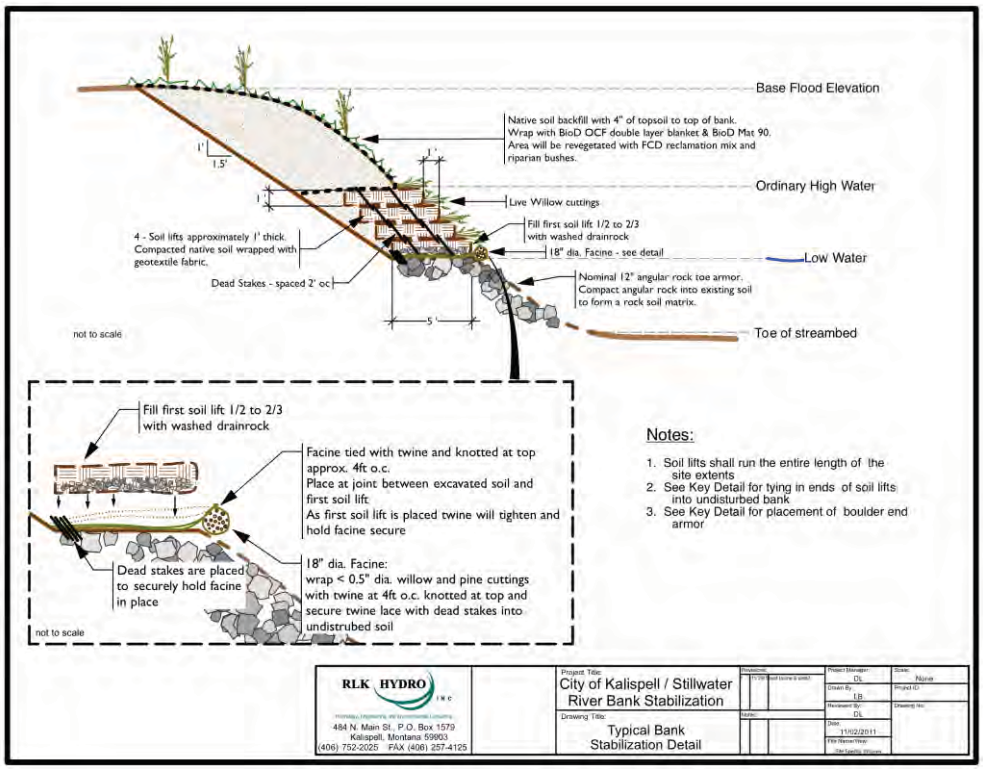

Figure 2. Detailed illustration of the vegetated soil lifts proposed for bank stabilization on the Stillwater River.

The model was assembled using a combination of data from FEMA and on-site surveying to define the channel geometry for the subject and surrounding area. Figure 3 presents an overview

of the analysis area from FEMA cross-section X downstream to FEMA cross-section V. The four cross-sections between FEMA cross-sections W and V are site specific channel cross-sections that were recorded in September 2011.

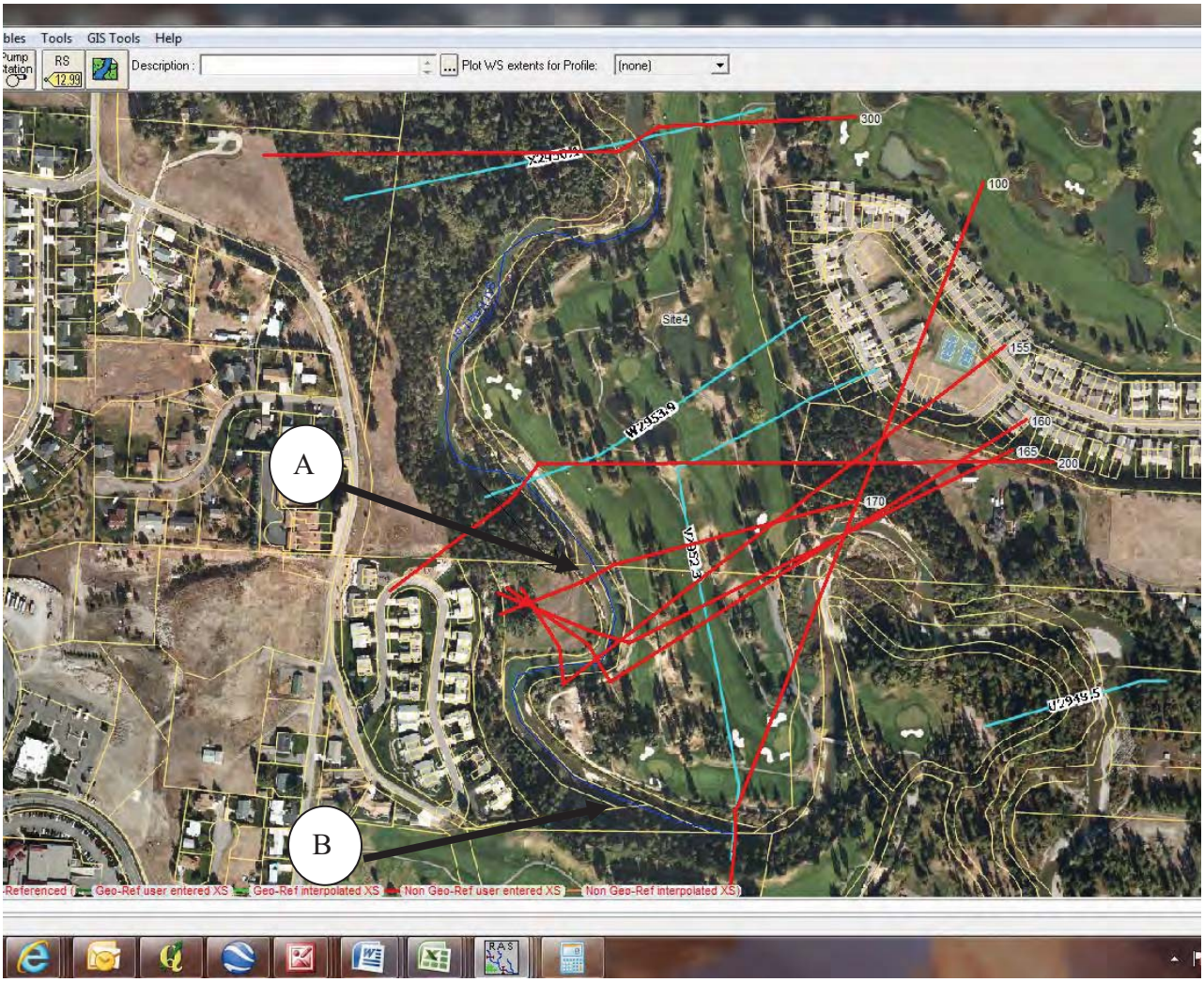

Figure 3. General model overview illustrating the extent of the analysis area and the locations of survey cross-sections employed in evaluating changes in river condition.

The pre-construction river channel Manning's n factor (friction coefficient) was assumed n = 0.050. In post-construction, the channel was divided into segments representing the change in channel materials. The upper 5-6 feet of the bank, which corresponds to the vegetated soil lifts was assigned Manning's n = 0.15. This high value is appropriate for the roughness associated with the integrated willow cuttings and the coarse coir fabric used in wrapping the soil lifts. The remainder of the bank, below the soil lifts, is assumed to be covered with angular rock armoring and assigned a Manning's n = 0.032. The decrease in the Manning's n coincides with the perspective that hard rock armoring potentially smoothes the bank-water interface and decreases roughness.

The modeling was completed at various flow conditions including 6200 cubic feet per second (CFS), 1200 CFS, 600 CFS, and 120 CFS. The range of flows spans the range from low flow to a 100-year flood event.

The impact was assessed as to whether or not changes in the water velocity along the "right" bank along the river reach that encompasses properties owned by Juniper Bend occur as a result of the bank stabilization completed on the "left" bank just upstream. An increase in velocity corresponds to an increase in erosive potential that could be deemed an adverse, or negative, impact.

Analysis results

The section of the river model that was used for evaluation of velocity changes spans from point A to point B in Figure 3. The velocities for the main channel and the right bank were inspected from pre-construction and post-construction conditions at the four identified flow levels. The following plots, Figures 4-7, present the modeling results for the subject area.

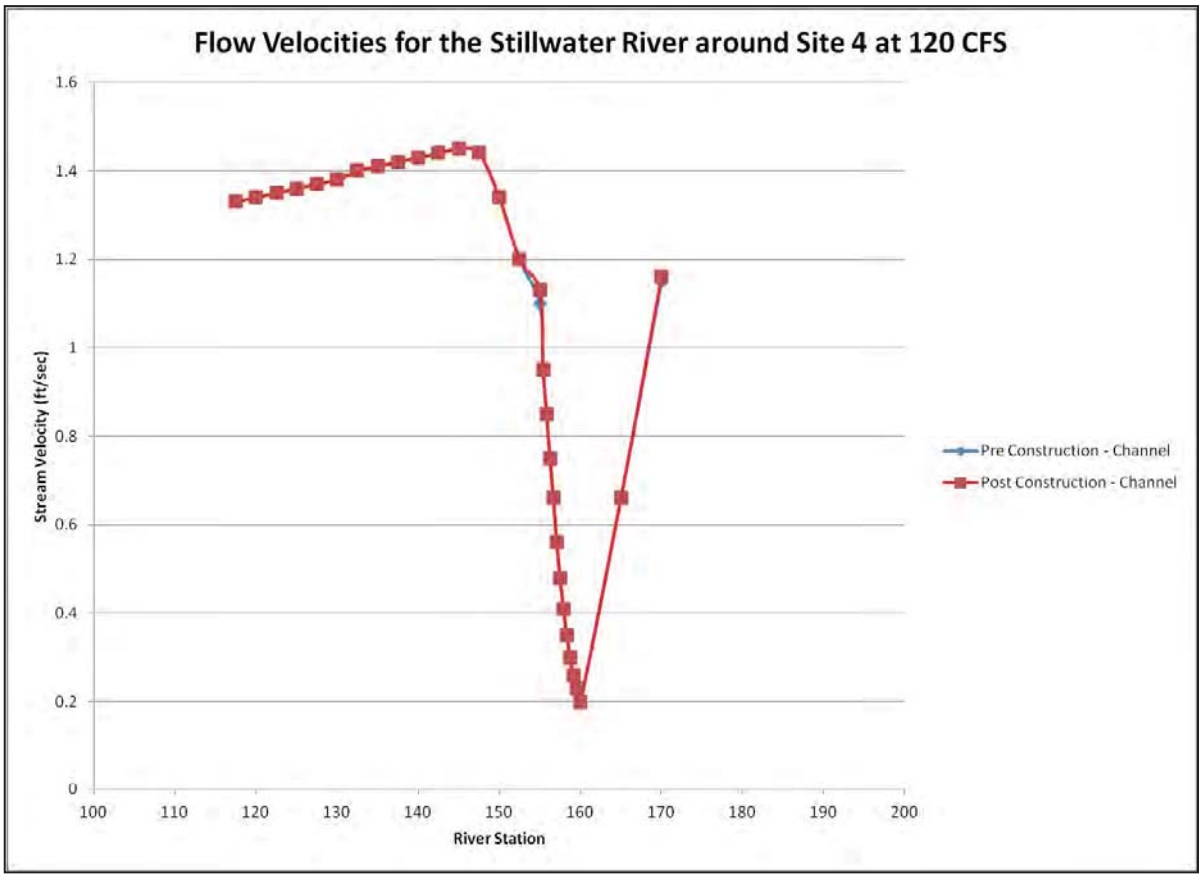

Figure 4. River velocity in the main channel and along the right bank of the Stillwater River at 120 CFS before and after construction of the proposed stabilization structure.

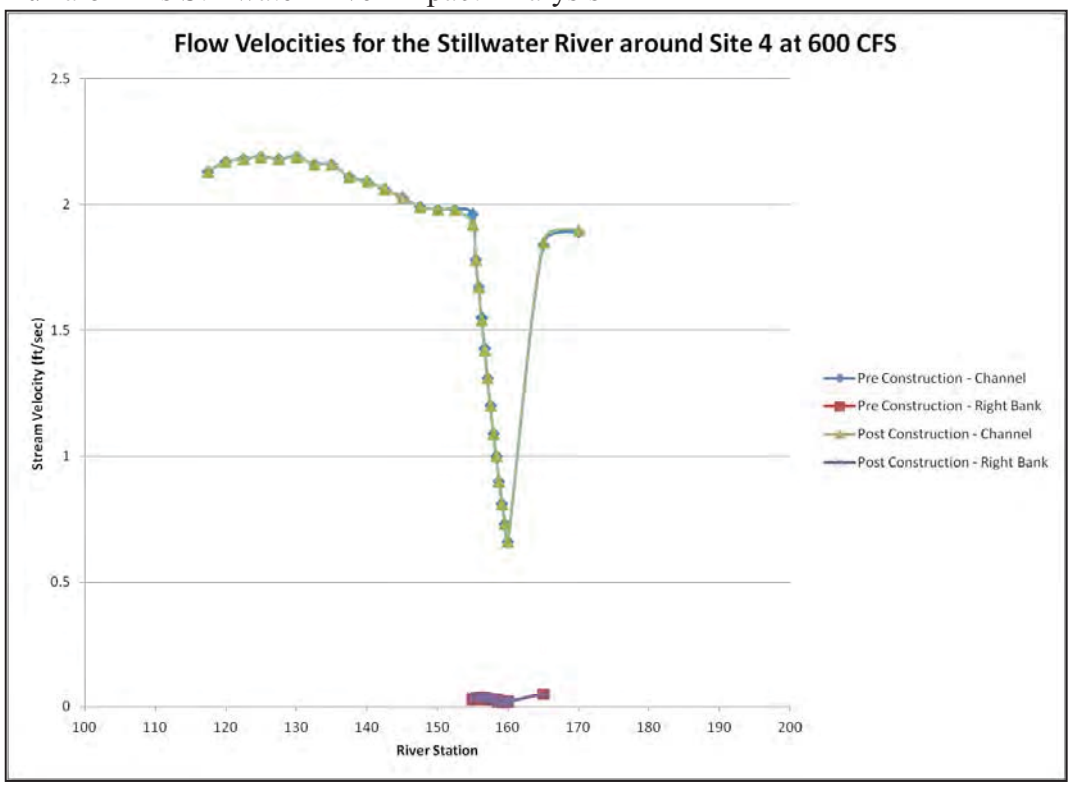

Figure 5. River velocity in the main channel and along the right bank of the Stillwater River at 600 CFS before and after construction of the proposed stabilization structure.

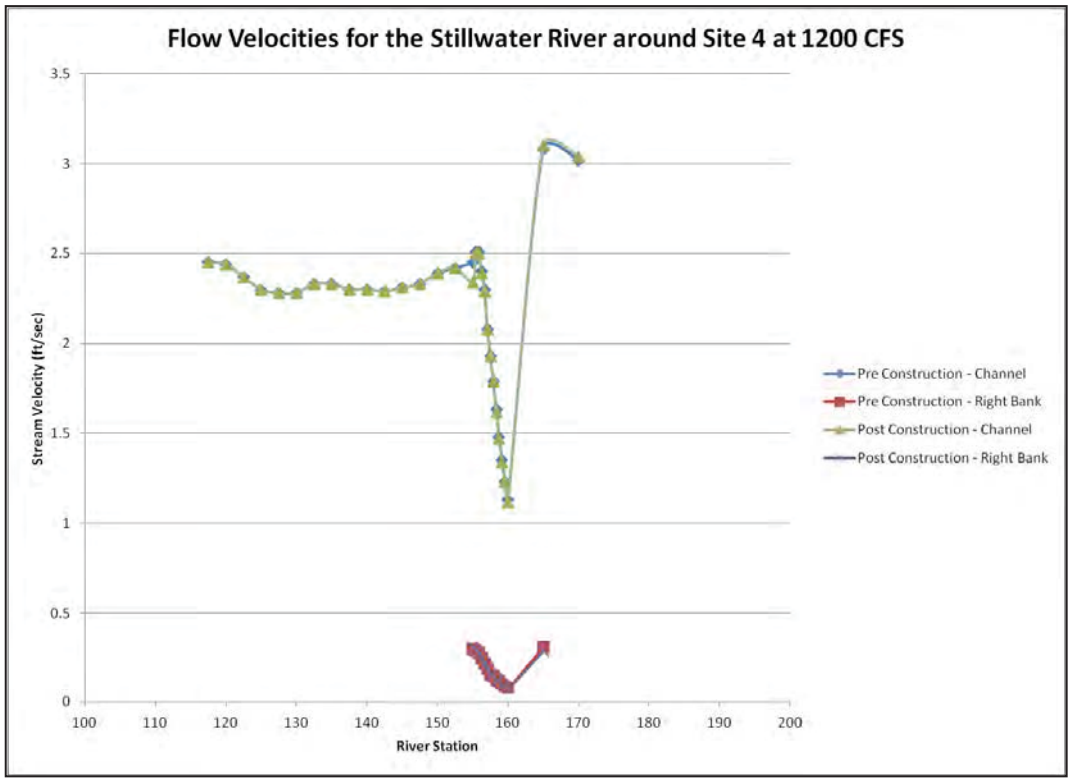

Figure 6. River velocity in the main channel and along the right bank of the Stillwater River at 1200 CFS before and after construction of the proposed stabilization structure.

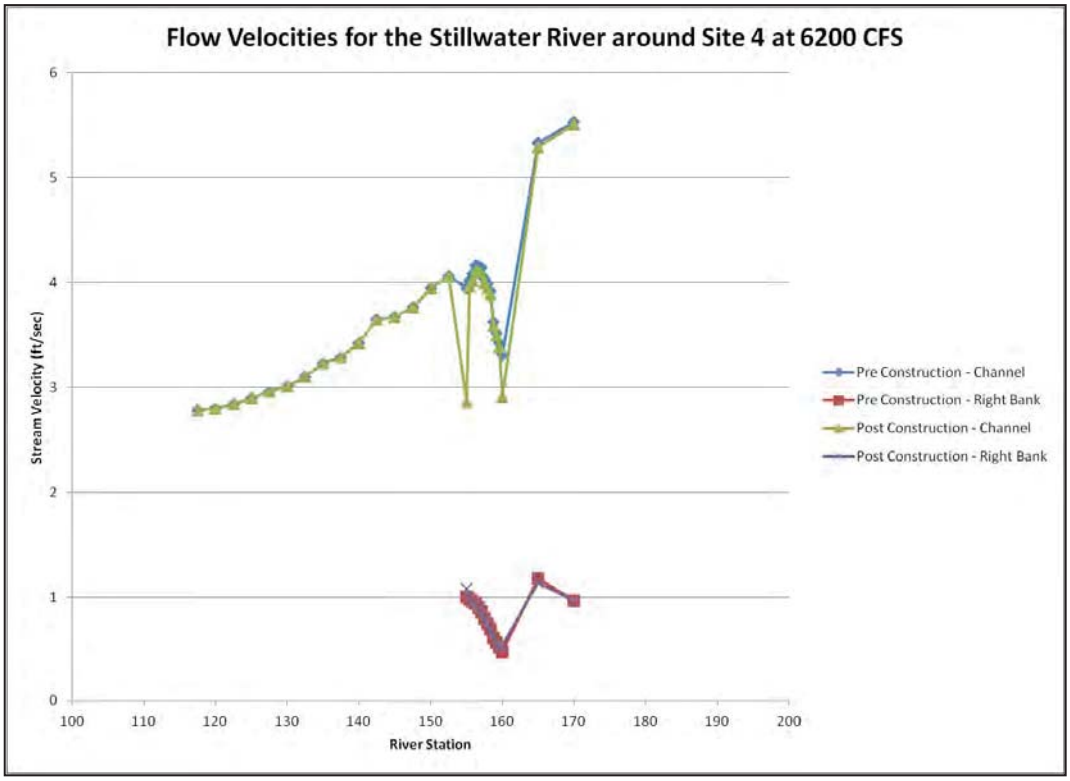

Figure 7. River velocity in the main channel and along the right bank of the Stillwater River at 6200 CFS before and after construction of the proposed stabilization structure.

The result of the analysis is identification of points along the river reach where velocity changes have occurred as a result of the stabilization project. An increase in velocity can result in higher energy working at the bank and eroding soils from vulnerable areas.

From visual study of Figures 4-7, it can be observed that significant changes do not occur in river velocity values for the subject reach. In fact, in some instances the velocity has been decreased which can promote deposition of material in the channel and along the bank. Deposition of material is dependent upon the material and its physical propensity to settle out and remain settled under all conditions of flow. At most, the velocity along the right bank was calculated to increase 0.08 ft/sec at 6200 CFS, the 100-year flow for the Stillwater River. The calculated increase occurred at River Station 155, which is the surveyed cross section immediately downstream from the location of construction. The river does not exhibit any changes in velocity for River Stations 152.5 to 117.5, which is a length of the river that is located at the bank toe below the Juniper Bend development. River Station 117.5 is called out as Point B in Figure 3.

Summary

Based upon applying a mathematical representation of the project area that has been constructed with site specific data and reasonable values for river roughness factors, it can be concluded that the proposed bank stabilization measure at Site 4 does not yield an adverse impact on adjacent property.