Final Environmental Assessment

Teton Creek Restoration Project

Teton County, ID

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APE	Area of Potential Effects
asl	above sea level
BFE	base flood elevation
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CLOMR	Conditional Letter of Map Revision
dbh	diameter at breast height
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FMA	Flood Mitigation Assistance Program
FONSI	Finding of No Significant Impact
FPPA	Farmland Protection Policy Act
FTR	Friends of the Teton River
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDWR	Idaho Department of Water Resources
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NRHP	National Register of Historic Places
OHWM	ordinary high water mark
SHPO	State Historic Preservation Office
TCSC	Teton Creek Subwatershed Committee
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service

Area of Potential Effects (APE): the geographic area or areas within which an undertaking may cause changes in the character or use of historic properties, if such properties exist. The APE is influenced by the scale and nature of the undertaking.

Bankfull channel: where flow causes the water surface elevation to completely fill the active stream channel.

Best Management Practices: environmental protective measures for conducting projects in an environmentally responsible manner.

Brush mattress: a bank stabilization measure consisting of a layer of interlaced live branches placed on a bank face.

Channelization: alterations made to the channels of rivers, streams, or drainageways, usually to improve drainage, relocate the channel, or increase its flood carrying capacity. Channels respond with horizontal movement (lateral migration, avulsion, channel widening, channel narrowing) and vertical movement (incision and aggradation), depending on site-specific circumstances and watershed conditions. Human landscape disturbance can exaggerate or constrain channel migration by affecting local and watershed processes of flooding, erosion, and deposition.

Cross vane: a rock structure built below water level to control the direction of flow within a stream.

Down-cutting: when a stream's channel erodes directly downward. As down-cutting continues, erosion occurs along the streambed and the banks, ultimately widening the stream channel.

Extirpated: also known as "local extinction," is when a species no longer exists in the wild in a certain area, but can be found elsewhere in the world.

Fascines: long bundles of woody shrub cuttings tied together with twine and placed tightly against the edge of the shoreline; used for bank stabilization.

Floodplain: the area adjacent to a river that is susceptible to inundation and often bears geophysical evidence of previous flood events.

Floodway: the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height.

Hardened riffle: short, relatively shallow, and coarse-bedded lengths of stream over which the stream flows at a higher velocity and higher turbulence than normal.

Headcut: an erosional feature where an abrupt vertical drop in the streambed occurs. When flowing, headcuts resemble a small waterfall; when not flowing, the headcut resembles a short cliff or bluff.

Inset floodplain: a constructed floodplain that provides a hydrologic connection to the existing floodplain and an area for overbank flow.

Loam: well-drained soils composed of sand, silt, and clay in relatively even proportions.

Ordinary high water mark (OHWM): the point on a bank or shore up to which the presence and action of the water leaves a distinct mark by erosion, destruction of terrestrial vegetation, or other easily recognized characteristic.

Planform: the outline or morphology of a body of water as defined by the still water line.

Riparian zone: the zone containing a combination of physical and biological characteristics driven by the presence a stream or river.

Soil lift system: a method of bank stabilization that consists of soil and vegetation/seeds wrapped in fabric that are stacked along the stream. This bio-engineering technique is often used when adjacent to existing infrastructure.

SECTION ONE INTRODUCTION

Teton County applied for fiscal year 2011 funding under the Federal Emergency Management Agency (FEMA) Flood Mitigation Assistance (FMA) grant program for a stream restoration project in southeastern Idaho. The objective of the FMA grant program is to reduce or eliminate claims under the National Flood Insurance Program (NFIP) and was created as part of the National Flood Insurance Reform Act of 1994 (42 U.S.C. 4101). FEMA provides FMA funds to assist States, Territories, federally recognized Indian Tribes, and communities with implementing measures that reduce or eliminate the long-term risk of flood damage to buildings, manufactured homes, and other structures insured under the NFIP. The project is consistent with the 2010 State of Idaho Mitigation Plan and the Teton County Multi-Jurisdictional All-Hazard Mitigation Plan. The Teton Creek Restoration Project would include restoring 1.2 miles of Teton Creek in east-central Teton County (Appendix A, Figure 1). This project includes two phases of a more extensive restoration project that was designed to be implemented in four phases. The first phase of the overall project, completed in 2009, replaced a bridge at the downstream end of the current project corridor and included reconstructing a stream channel, stabilizing streambanks, installing grade control features, and planting native vegetation. The second phase completed in 2010; included stabilizing streambanks and planting native vegetation.

The Environmental Assessment (EA) was prepared in accordance with the National Environmental Policy Act (NEPA) of 1969, the President's Council on Environmental Quality (CEQ) regulations to implement NEPA (40 Code of Federal Regulations [CFR] Parts 1500–1508), and FEMA's regulations implementing NEPA (44 CFR Part 10). FEMA is required to consider potential environmental impacts before funding or approving actions and projects. The purpose of the EA was to analyze the potential environmental impacts of completing the final phases (Phases 3 and 4) of the Teton Creek Restoration Project. FEMA used the findings in the EA to determine whether to prepare an Environmental Impact Statement or a Finding of No Significant Impact (FONSI). Much of the information about the project in this EA comes from the FMA grant application package and additional information provided by the subapplicant. Compliance with NEPA was completed for Phase I of the project by the U.S. Fish and Wildlife Service (USFWS).

SECTION TWO PURPOSE AND NEED

The project area includes 1.2 miles of Teton Creek (approximately 4.25 acres) in east-central Teton County, approximately 1.5 miles due east of the City of Driggs (Appendix A, Figure 1). The project reach flows through the Aspen Pointe, Aspens, and Willows subdivisions (with a total of approximately 56 residences) and is adjacent to the Teton County landfill.

Teton Creek has been severely destabilized as a result of channelization and dredging in the stream and floodplain over the past 25 years. Due to manipulation of the stream channel flood conveyance has been compromised (Appendix A, Figure 2). Channelization has destabilized the streambed and banks, increased stream energy, and released sediment into the river system. In total, over 3.5 miles of stream corridor have been significantly affected, resulting in an increased risk of flooding and property loss.

Properties adjacent to Teton Creek near the project area are at high risk of flooding due to bank failures and increases in sediment loads and stream energy. In its current state, the stream channel cannot withstand a moderate flood (a 10-year event). The destabilized stream threatens to cause millions of dollars in damages to public and private property, including the Teton County landfill, the recently replaced (2009) Cemetery Road Bridge, homes, businesses, infrastructure, and utilities. The creek's compromised condition is also expected to further impair water quality, important fish and wildlife habitat, and irrigation delivery systems.

The purpose of FMA is to reduce overall risks to vulnerable flood-insured structures. The need for this action is as discussed in the above background, and its purpose is to stabilize the stream corridor, thereby enhancing flood protection for infrastructure and property, and improving the aquatic ecosystem.

SECTION THREE ALTERNATIVES

This section discusses the No Action Alternative, the Proposed Action, and other alternatives that were considered and dismissed.

3.1 NO ACTION ALTERNATIVE

Under the No Action Alternative, FEMA would not provide funding to stabilize the stream channel in the project area. Stream banks would continue to erode, causing further channel destabilization, bank erosion and failure, and loss of riparian vegetation. Residential structures and nearby infrastructure would continue to be at risk from flooding.

3.2 PROPOSED ACTION

The Proposed Action would stabilize the stream channel along approximately 1.2 miles of Teton Creek (Appendix A, Figure 3). The overall restoration project was designed to be implemented in four phases (Appendix A, Figure 4). The first phase of the project, which was completed in 2009, replaced the Cemetery Road Bridge at the downstream end of the project area to accommodate up to the 100-year flood, reconstructed 500 feet of stream channel, stabilized over 2,000 feet of eroding streambanks, stabilized a portion of channel with two grade-control structures, and revegetated streambanks with native vegetation. The second phase of the project (completed in 2010) stabilized approximately 2,000 feet of stream banks and revegetated streambanks with native vegetation. The Proposed Action would complete the remaining phases (Phases 3 and 4), including the remaining 75 percent of the on-the-ground work, which involves reshaping the remaining 4,200 linear feet of stream channel corridor to create the inset floodplain, stabilizing associated stream banks, and revegetating approximately 4.3 acres of riparian buffer (Appendix A, Figure 5).

The inset floodplain would be constructed along the remaining 4,200-foot length of the project area and include floodplain benches and a bankfull channel to meet the following criteria: 1) convey and contain the 100-year flood ; 2) provide sediment and energy continuity; 3) provide stable streambed and stream banks; and 4) provide fish and wildlife habitat. To stabilize the streambed, approximately 37 hardened riffles would be placed intermittently across the low-flow channel. In addition, one cross vane would be placed at the site of the new Cemetery Road Bridge. The riffles would consist primarily of immobile rocks between 5 and 14 inches in diameter. Pools between the hardened riffles would provide fish habitat and streambed variability. The pools would vary in size and location and consist of lateral and mid-channel scour pools. The floodplain benches would be designed to slow velocities, capture sediment, and propagate native vegetation. The following types of heavy equipment would be used during project construction: dozers, excavators, haul trucks, backhoes, and loaders.

For the project, approximately 4.25 acres would be cleared and grubbed, and about 386 trees (with stumps) would be removed and stockpiled for later use. Approximate cut and fill amounts for the project are 18,825 cubic yards and 9,265 cubic yards, respectively. Excess fill would be stockpiled and used by the County for other projects and would not be sent to the landfill. Seven access points and five staging locations have been identified within previously disturbed areas

(Appendix A, Figure 6). Dump sites for the project would be located on the Teton County landfill property and are shown in Appendix A, Figure 7 as Staging Areas A and B.

Stream banks along the bankfull channel and along the inset floodplain edges would be stabilized using several bio-engineering techniques. Riprap with soil lift systems would be used for floodplain edges along the outside of stream bends adjacent to infrastructure. All other stream banks and floodplain edges would be stabilized using a combination of rootwads, logs, brush mattresses, fascines, clump plantings, and willow and tree revetments. Trees, stumps, and brush that are removed during site preparation would be used to create the bio-engineered features for bank stabilization.

Native vegetation, including aspens (about 262), cottonwoods (about 150), shrubs (about 1,735), and native grass seed (approximately 10.6 acres) would be planted along stream banks, floodplain benches, and floodplain edges to provide fish and wildlife habitat and roughness (Appendix A, Figure 7). Plants and root stock generated from clearing and grubbing would be replanted as grading is completed. A temporary irrigation system consisting of a mainline and laterals would be placed above ground in the project area to provide sufficient moisture to ensure plant establishment. This would be removed once the plants become self-propagating. Excavators and backhoes would be used to install vegetation and irrigation lines.

Project permits have been received from the Idaho Department of Water Resources (IDWR), the U.S. Army Corps of Engineers (USACE), and the U.S. Environmental Protection Agency (EPA). In addition, the subapplicant will be required to obtain a Permit to Develop in a Floodplain Area from Teton County.

The project would take place over a 2-year time frame, with approximately half of the project being completed each year. The project construction window includes July 15 through November 15, 2012 (clearing, constructing the channel, and installing bio-engineering structures), and July 15 through November 15, 2013 (installing vegetation and irrigation lines). All work would occur when the channel is dry.

After project completion, a “total station” (an electronic/optical instrument used in surveying) would be used to monitor changes in channel geometry and planform and a Smith-Root backpack electrofishing unit would be used to monitor trout population trends. Vegetation growth would be monitored using a photograph log of various points in the project area. Annual maintenance of vegetation for the first two years would be conducted by the County and Friends of the Teton River (FTR), and then by homeowners and FTR. The expected useful life of the project is 50 years.

3.3 ALTERNATIVES CONSIDERED AND DISMISSED

At stakeholder meetings in 2007 and early 2008, two other alternatives were considered and dismissed:

Return the channel to historic conditions: returning the channel to historic conditions would cause the base flood elevation of the creek in the project area to increase. This increased flooding risk would require that existing homes and infrastructure within the floodplain be removed.

Vacant but buildable lots would also have to be purchased, as building on these lots would not be permitted once the floodplain was restored. The total cost to purchase the land and residences within the project area's floodplain would be approximately $20.5 million. This alternative was dismissed since it would greatly increase the risks of flooding in the project area and would be cost-prohibitive.

Leave the channel in place and stabilize the stream banks and streambeds: stabilizing the existing channel in place using "hard" engineering techniques such as rock weirs and riprap was considered. After analyzing assessment surveys, channel planform, and gradient it was determined that the channel is fundamentally unstable and could not be stabilized by simply using hard engineering techniques; therefore, this alternative was dismissed.

SECTION FOUR AFFECTED ENVIRONMENT AND POTENTIAL IMPACTS

This section discusses the affected environment by resource and the potential effects of the No Action Alternative and the Proposed Action.

For each resource category, the impact analysis follows the same general approach. When possible, quantitative information is provided to establish impacts. Qualitatively, these impacts will be measured based on the criteria below.

Impact Scale	Criteria
None/Negligible	The resource area would not be affected, or changes would be either non-detectable or if detected, would have effects that would be slight and local. Impacts would be well below applicable regulatory standards.
Minor	Changes to the resource would be measurable, although the changes would be small and localized. Impacts would be within or below applicable regulatory standards. Mitigation measures would reduce any potential adverse effects.
Moderate	Changes to the resource would be measurable and have both localized and regional scale impacts. Impacts would be within or below regulatory standards, but historical conditions would be altered on a short-term basis. Mitigation measures would be necessary, and the measures would reduce any potential adverse effects.
Major	Changes would be readily measurable and would have substantial consequences on a local and regional level. Impacts would exceed regulatory standards. Mitigation measures to offset the adverse effects would be required to reduce impacts, though long-term changes to the resource would be expected.

Impacts are predicted based on the degree of change or loss of the resource from the baseline conditions. Impacts may be direct or indirect. Direct impacts are caused by an action and occur at the same time and place as the action. Indirect impacts are caused by an action and occur later in time or are farther removed from the area, but are still reasonably foreseeable (40 CFR Part 1508). Cumulative impacts are discussed in Section 4.6.

4.1 PHYSICAL RESOURCES

4.1.1 Geology and Soils

Much of the County, including the project area, lies within the Teton Basin valley. The Teton River and its tributaries, of which Teton Creek is the largest, run along nearly the entire length of the valley (Teton County 2008). The valley lies west of the Teton Mountains and northeast of the Big Hole Mountains. The project area and the bulk of the County are underlain by Quaternary sediment, deposited during glaciations in the Pleistocene epoch (2.6 million to 11,700 years ago) (Link 2002).

The topography in Teton County comprises parts of two mountain ranges and one valley. On the east side of the County is the Teton Range, which rises to a height of 12,605 feet above sea level (asl) at Mt. Moran; the County border lies at the foothills of this range. On the southwest are the Big Hole Mountains (part of the Snake River Range), which rise to an elevation of 9,016 feet asl

at Garns Mountain. The elevation of Teton Basin slowly decreases northward toward Driggs, which sits at 6,116 feet asl (Teton County 2008).

Soils in the project area are predominantly very well- to excessively drained loam overlaying stratified sand and gravel deposits. Water and wind typically cause the most erosion in the project area. Major soil types include Wiggleton very gravelly loam, Badgerton loam, and Driggs gravelly loam (USDA 2012). A soil depth inventory conducted in June 2009 indicated that the average soil depth in the project area was 0.74 foot, or about 9 inches (Mainstream 2009).

The Farmland Protection Policy Act (FPPA, 7 U.S. Code 4201 et seq.) requires that Federal agencies minimize the extent to which their programs contribute to the unnecessary conversion of prime farmland, unique farmland, and land of statewide or local important to non-agricultural uses. Farmlands subject to FPPA requirements may be forestland, pastureland, or cropland, but cannot be urban built-up land. There are no lands designated for agricultural use along Teton Creek in the project area (City of Driggs 2007). Because farmlands are not present in the project area, the FPPA will not be discussed further.

4.1.2 Climate Change

The CEQ has recently released guidance on how Federal agencies should consider climate change in their action decision-making. The threshold at which NEPA documents should include quantitative analysis for an action is if it will release over 25,000 metric tons of greenhouse gases per year (CEQ 2010). Given the nature and small scale of the Proposed Action, and its lack of greenhouse gas releases, it would not meet this threshold and no detailed analysis was completed.

The climate in Teton County consists of long cold winters and moderately warm summers. Snow cover is continuous on the valley floor for about 140 days each winter (Teton County 2008). The average annual precipitation is 16 inches of rainfall and 65 inches of snowfall. Temperatures range from highs in the 70s (Fahrenheit [F]) in the summer to the 30s in winter, and lows in the 40s in the summer to the teens in the winter (WRCC 2011).

Over the next century, Idaho's climate may experience changes. Based on projections made by the Intergovernmental Panel on Climate Change and results from the United Kingdom Hadley Centre's climate model, which accounts for both greenhouse gases and aerosols, by 2100, temperatures in Idaho could increase by 5°F in winter and summer and 4°F in spring and fall. Precipitation is predicted to change little in summer, to increase by 10 percent in spring and fall, and to increase by 20 percent in winter (EPA 1998).

4.1.3 Consequences of Alternatives

No Action Alternative

Under the No Action Alternative, FEMA would not provide funding to restore Teton Creek. There would be no impacts on geology or climate change. Soil resources in the project area would continue to be eroded by the creek and would continue to affect downstream areas.

Adverse impacts in the project area and downstream would range from minor to major, depending on the severity of floods and subsequent soil erosion/sedimentation.

Proposed Action

Adverse impacts on geology would not occur because project activities will be limited to surface disturbance. There would be minor short-term impacts on soils in the project area due to ground disturbance associated with the inset floodplain construction, bank stabilization, and vegetation removal/replanting (see discussion in Section 3.2). Approximate cut and fill amounts for the project are 18,825 cubic yards and 9,265 cubic yards, respectively. The revegetation plan for the inset floodplains and streambank would help stabilize riparian areas.

Given the small and localized scale of the Proposed Action, project activities are not expected to affect climate change conditions.

4.2 WATER RESOURCES

4.2.1 Surface Water

Teton Creek within the project area flows from the Teton Mountains westerly into the Teton River and drains approximately 34 square miles (Jenkins and Van Kirk 2005). It is the largest upper Teton River tributary. There are no other surface water bodies or lakes in the project area.

U.S. Geological Survey surface water statistics for Teton Creek were only available for 1946 through 1953, when the average annual discharge was 110.4 cubic feet per second (cfs), with peak streamflows of up to 1,030 cfs (USGS 2012). In spring 2008, the bankfull condition was measured at approximately 400 cfs (Mainstream 2009).

For year-round irrigation, approximately 10 to 350 cfs is diverted from Teton Creek at the Idaho State line into the Grand Teton Canal. Snowmelt-driven runoff into Teton Creek, typically in mid-May, usually exceeds the amount of water diverted for irrigation, resulting in a running stream. Once streamflow decreases in summer (late June to mid-July), all flow in the Teton Creek is diverted to the Grand Teton Canal for irrigation. The stream reach within the project area is typically dry for 10 months between mid-July and mid-May (Mainstream 2009).

As noted in Section Two, Teton Creek has been severely destabilized from channelization and dredging in the stream and floodplain over the past 25 years, especially in the project reach. Due to extensive manipulation of the stream channel, natural hydraulics, flows and flood conveyance have been compromised (Appendix A, Figure 2). Channelization has destabilized the streambed and banks, increased stream energy, and released sediment into the river system. This instability has migrated upstream as a headcut with associated bed down-cutting and lateral channel instability. In this upstream reach, the stream is incised up to 8 feet into the banks, which caused the banks to fail, the channel to widen, and trees to fall into the stream. This headcut has now migrated approximately 2,000 feet upstream and is estimated to be migrating upstream at a rate of 200 feet a year and depositing up to 500 cubic yards of sediment into the stream annually. Eroding stream banks have migrated 2.5 miles downstream from the original disturbance, causing further down-cutting of the channel, massive bank failure, and loss of riparian

vegetation. Thus, tens of thousands of cubic yards of sediment have been deposited downstream, often in the form of center gravel bars that have displaced the channel and caused severe bank erosion and channel destabilization. In total, over 3.5 miles of stream corridor have been significantly affected, resulting in an increased risk of flooding and property loss.

4.2.2 Water Quality

Section 303(d) of the Clean Water Act establishes requirements for States and Tribes to identify and prioritize water bodies that do not meet water quality standards. The Teton Creek is not considered a 303(d) impaired stream.

The Idaho Department of Environmental Quality (IDEQ) was queried to determine whether any streams in the project area are considered impaired or waters of concern. The Teton River is considered a 303(d) impaired stream for sediments and total phosphorous from its headwaters downstream to Bitch Creek, which is south of the confluence of Teton Creek and the Teton River (IDEQ 2003). Portions of the Teton River downstream of the project area are rated Category 4A for nitrogen and total phosphorous (IDEQ 2010a). The Category 4A rating applies to waters where data show that the waterbody is impaired by a pollutant, but a total maximum daily load addressing that impairment has already been developed and approved by the EPA.

4.2.3 Wetlands

Executive Order (EO) 11990, Protection of Wetlands, requires Federal agencies, in planning their actions, to consider alternatives to wetland sites and limit potential damage if an activity affecting a wetland cannot be avoided. Due to past dredging (channel incision) and continued irrigation withdrawals, the duration and elevation of flows in the project area do not support riparian wetlands (J.M. Joyner, USACE, personal communication, February 3, 2012). Therefore, wetlands will not be discussed further.

4.2.4 Floodplains

EO 11988, Floodplain Management, requires Federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with the occupancy and modification of floodplains, and to avoid direct and indirect support of floodplain development wherever there is a practicable alternative.

Portions of the project area are in Zone AE, within the base floodplain (100-year, or 1-percent-annual-chance) and floodway, where Base Flood Elevations (BFEs) (ranging from 6,160 feet above sea level (asl) at the downstream end and 6,275 feet asl at the upstream end of the project area) have been determined; and Zone X, areas determined to be outside of the 500-year, or 0.2-percent-annual-chance floodplain (Flood Insurance Rate Map Panels 16081C0093C and 16081C00941, effective August 4, 1988, revised by Letter of Map Revisions in 2000, 2008, and 2009; Appendix A, Figures 8a and 8b). Portions of these floodplains have been developed with residential structures.

In the project area, the stream corridor is composed of a cottonwood-dominated floodplain approximately 750 feet wide. Annual overbank flooding and floodplain saturation occurs

frequently and lasts for days to weeks, depending on snow pack conditions, melt rates, rainfall, and seasonal air temperatures. At one end of the spectrum, flash and sometimes severe flood flows are commonplace. At the other end of the spectrum, the channel is rapidly and completely dewatered following runoff. Under the current conditions, flows historically peak around mid-June and then are non-existent between early and mid-July. Groundwater levels mirror surface flow and recede rapidly after the creek dries up (Mainstream 2009).

4.2.5 Consequences of Alternatives

No Action Alternative

Under the No Action Alternative, the Phase 3 and 4 restoration of Teton Creek would not be implemented. Moderate to major impacts on water quality in the Teton River would persist due to continued sedimentation downstream of the project area. Adverse impacts to the stream and floodplain functions would continue due to the previous manipulations. The headcut would continue to migrate upstream, potentially exposing even more structures to flood damage. Structures adjacent to Teton Creek would remain at risk of flooding; damage severity would depend on the magnitude of flood events.

Proposed Action

Project construction would occur while Teton Creek is not flowing and would therefore not affect surface waters immediately.

Adverse impacts on floodplains are not anticipated. The project has been designed to alleviate flooding and return Teton Creek to a more natural state. Expected benefits of the project include a reduction of sediment generated in the project area and delivery of sediment to lower reaches of the Teton Creek and the Teton River; and re-establishment of riparian vegetation to create a mosaic of native riparian vegetation capable of supporting a wide range of floodplain ecosystem functions.

As a result of a more natural river coupled with floodplain development of standards prescribed in the County's floodplain ordinance future flood losses would be reduced. The project would decrease the risk of flood loss and minimize the impact of floods by providing better conveyance of the 100-year flood event. Harmony Design and Engineering conducted a hydraulic analysis in 2011 that showed a generally lower base flood elevation throughout the project area (Harmony 2011). A Conditional Letter of Map Revision (CLOMR) was submitted to FEMA for the project in 2011. Review of the CLOMR indicated that the effective BFEs within the project area would both increase and decreased compared to current levels. The maximum increase (2.2 feet) in the BFE would occur approximately 6,210 feet upstream of the Cemetery Road Bridge; and the maximum decrease (2.9 feet) would occur approximately 6,175 feet upstream of the Cemetery Road Bridge (FEMA 2011). Also, the geographic extent of the floodplain and floodway will change as a result of the project. The floodplain and floodway widths will increase and decrease depending on location within the project corridor. Updated floodplain boundaries within the base floodplain and floodway are delineated on Figures 9a and 9b (Appendix A). Appendix B, EO

11988 – Floodplain Management Eight-Step Decision Making Process provides a detailed discussion of floodplain effects and compliance.

The IDEQ supports the project because it will limit sediment loading, decrease the chance for flood events, and increase fish habitat (IDEQ 2010b). Permits from the USACE (Nationwide Permit NWP 27), the IDWR (Stream Channel Operation Permit), and the EPA (Low Erosivity Waiver Certification) have been obtained. In addition, the subapplicant will need to acquire a Permit to Develop in a Floodplain Area from Teton County. Mitigation measures to reduce water resource adverse effects stipulated in these permits are listed in Section 6, Permitting, Project Conditions, and Mitigation Measures.

4.3 BIOLOGICAL RESOURCES

4.3.1 Vegetation

Teton County is predominantly a valley habitat. There are riparian areas of grasses, sedges, and low brushes on the valley floor. Sagebrush communities are common at lower elevations and on south- and southwest-facing slopes. The lower elevations transition to mixed conifer forests in most of the County with mixed fir (*Abies* spp.) at higher elevations on north and east aspects. Spruce (*Picea* spp.)/fir and lodgepole pine (*Pinus contorta* var. *latifolia*) forests are also common at higher elevations (Teton County 2008).

Vegetation along Teton Creek is characterized by drought-tolerant species capable of withstanding brief periods of inundation. The dominant woody shrub species include chokecherry (*Prunus virginiana*), serviceberry (*Amelanchier alnifolia*), hawthorn (*Crataegus* sp.) and aspen (*Populus tremuloides*). Small pockets of dogwood (*Cornus sericea*) exist along the active channel and large cottonwoods (*Populus balsamifera*) dominate the tree canopy. Willows (*Salix* spp.) are almost nonexistent in this reach. The largest tree in the project area is a 42-inch diameter at breast height (dbh) cottonwood; in addition, there are several other large trees greater than 24 inches dbh in the project area (Mainstream 2009).

Noxious and invasive weed species have been identified in the existing natural habitat and disturbed areas around Teton Creek. Canada thistle (*Cirsium arvense*) is the most prevalent weed within this corridor and occurs in most of the disturbed areas. Other common weeds here include, but are not limited to, musk thistle (*Carduus nutans*), bull thistle (*Cirsium vulgare*), yellow toadflax (*Linaria vulgaris*), spotted knapweed (*Centaurea stoebe*), and leafy spurge (*Euphorbia esula*) (Mainstream 2009).

4.3.2 Wildlife and Fish

According to the Idaho Department of Fish and Game (IDFG), the project area is utilized by a variety of species including several species of songbirds and raptors. In addition, moose (*Alces alces*) are present year-round. Teton Creek's riparian area provides significant habitat for winter range mule deer (*Odocoileus hemionus*) and year-round for white-tailed deer (*Odocoileus virginianus*). Gray wolf (*Canis lupus*) packs are known to occur in the Teton Valley. However,

there is no recent documented wolf activity in the project area (R. Cavallaro, personal communication, February 1, 2012).

In addition, Teton Creek is an important spawning and rearing tributary for Yellowstone cutthroat trout (*Oncorhynchus clarkii bouvieri*) in the Teton River watershed. Yellowstone cutthroat trout were historically found in the Yellowstone River drainage in Montana and Wyoming and in the Snake River drainage in Wyoming, Idaho, Utah, Nevada, and probably Washington. Human activities have resulted in a substantial reduction in the historical distribution of this subspecies, and many unique local populations have become extirpated (Gresswell 2009).

Degradation of stream channels contributed to a 95 percent decline in native Yellowstone cutthroat trout numbers in the Teton River between 1999 and 2003. Teton Creek, the largest of the Teton River headwater tributaries, is critical to Yellowstone cutthroat trout recovery since it is one of the only tributaries in Teton Valley that still has a Yellowstone cutthroat trout spawning run. Teton Creek also produces more juvenile Yellowstone cutthroat trout than any other tributary (NFHAP 2012).

The Migratory Bird Treaty Act of 1918, as amended (50 CFR 10.13), provides Federal protections for migratory birds listed in the act, their nests, eggs, and body parts from harm, sale, or other injurious actions, and includes a “no take” provision. The project area provides habitat for a variety of migratory birds, including songbirds and birds of prey. A list of migratory birds with the potential to occur in the project area is included as Appendix C.

4.3.3 Threatened and Endangered Species and Critical Habitat

The Endangered Species Act (ESA) was established to conserve, protect, and restore Threatened and Endangered species and their habitats. Section 7 of the ESA (50 CFR 402) requires Federal agencies to ensure their actions do not jeopardize the continued existence of listed species and do not result in adverse modification to designated critical habitat.

According to the USFWS Idaho office, two federally listed species occur in Teton County: Canada lynx (*Lynx canadensis*) and grizzly bear (*Ursus arctos horribilis*). Designated or proposed critical habitat is not present for any ESA-listed species in the project area.

4.3.3.1 Canada Lynx

The Canada lynx is listed as Threatened under the ESA and is considered Critically Imperiled by the State. In Idaho, critical habitat for lynx has been designated only in the extreme northeast corner of the State, outside of the project area.

The Canada lynx occurs throughout Canada and Alaska, in the extreme northeastern and north-central United States, and in the northern and central Rocky Mountains. Within Idaho, populations exist north of the Salmon River in the west and north of the Caribou Range in the east. The total lynx population size in Idaho is unknown, but it is thought to be less than 100 individuals (IDFG 2005).

In Idaho, the Canada lynx inhabits montane and subalpine coniferous forests, typically at elevations above 4,000 feet. Habitat used during foraging is usually early successional forest, while dens are usually in mature forests. Individuals are wide-ranging and require large tracts of forest. The Canada lynx preys on the snowshoe hare, particularly during the winter, as well as a variety of birds and other small mammals (IDFG 2005).

The Final Environmental Impact Statement (EIS) for the Northern Rockies Lynx Management Direction project (USDA 2007) was reviewed to assess the likelihood that Canada lynx use the project area. According to the Final EIS, the project area is within a core habitat area, but it is not an area that links blocks of lynx habitat. The U.S. Forest Service conducted lynx surveys previously, unrelated to the Final EIS, on the Targhee National Forest from 2000 to 2004; the surveys revealed very low occurrence on the Targhee National Forest, including Teton Valley, with only one detection on the west slope of the Teton Mountains. According to the IDFG, lynx are unlikely to use the project area (R. Cavallaro, personal communication, February 1, 2012).

4.3.3.2 Grizzly Bear

The grizzly bear is listed as Threatened under the ESA and is considered Critically Imperiled in Idaho.

The grizzly bear is found in only about 2 percent of its original range in the lower 48 states in Wyoming, Montana, Idaho, and Washington. Grizzly bears need a very large home range (50 to 300 square miles for females; 200 to 500 square miles for males), encompassing diverse forests interspersed with moist meadows and grasslands in or near mountains. In the spring, bears usually range at lower elevations and go to higher altitudes for winter hibernation (USFWS 2007).

Except for mating and caring for the young, grizzly bears primarily lead solitary lives, spending most of their time foraging for food. The grizzly is North America's largest omnivore, eating both plants and other animals. About 80 to 90 percent of the grizzly's food is green vegetation, wild fruits and berries, nuts, and bulbs or roots of certain plants (USFWS 2007).

Grizzly bear sightings in the project vicinity have been increasing recently. Grizzlies have been observed in the valley reach of the Teton Creek drainage in the last two consecutive years (R. Cavallaro, personal communication, February 1, 2012) and would be expected to pass through the project area occasionally.

4.3.4 Special-Status Species

The wolverine (*Gulo gulo*) and the whitebark pine (*Pinus albicaulis*) are listed in Teton County as Candidate Species under the ESA. Candidate Species are those that have been petitioned and are actively being considered for listing as Endangered or Threatened under the ESA. Candidate Species are afforded no protection under the ESA. The wolverine is also considered Imperiled by the State.

4.3.4.1 Wolverine

The USFWS has determined that the contiguous United States population of wolverine should be protected under the ESA. However, its addition to the endangered species list has been delayed while the agency works on other species in greater need, so the wolverine was added to the list of candidates for ESA protection in 2010. The wolverine is considered Imperiled by the State of Idaho.

The North American wolverine inhabits arctic, boreal, and alpine habitats in Alaska and western Canada. South of the Canadian border, wolverines are restricted to high mountain environments near the treeline, where conditions are cold year-round and snow cover persists well into the month of May. Currently, wolverines appear to be distributed in two regions in the lower 48 states: the northern Cascades in Washington, and the northern Rocky Mountains in Idaho, Montana, and Wyoming (USFWS 2010).

Wolverines are opportunistic feeders and primarily scavenge carrion, but also prey on small animals and birds and eat fruits, berries, and insects. Wolverines require a lot of space; the availability and distribution of food is likely the primary factor in determining wolverine movements and home range size. Wolverines travel long distances over rough terrain and deep snow. Home ranges of wolverines are very large, but vary greatly depending on availability of food, gender, age, and differences in habitat (USFWS 2010).

In 2004, a wolverine sighting and tracks were both observed in the Teton Creek drainage. Wolverines likely use the riparian area as a migration corridor, and do not reside in the area for very long (R. Cavallaro, personal communication, February 1, 2012).

4.3.4.2 Whitebark Pine

Whitebark pine is a small to medium-sized native conifer. Tree height typically ranges from 40 to 60 feet at maturity, reaching up to 5 feet in diameter (Fryer 2002).

Whitebark pine once dominated many of the upper subalpine plant communities of the western United States. It grows in cold, snowy, and generally moist climates, and is most common on rocky, well-drained sites. Whitebark pine was a major component of subalpine forests in the northern Rocky Mountains, the northern Cascades, the Blue Mountains, and the Sierra Nevada. In Idaho, whitebark pine has been observed between 7,300 and 10,500 feet asl (Fryer 2002).

It is unlikely that whitebark pines grow in the project area due to its riparian nature and low elevation.

4.3.5 Consequences of Alternatives

No Action Alternative

Under the No Action Alternative, restoration of Teton Creek would not be implemented. Impacts on channel and floodplain function would continue due to the previous manipulation of the stream channels through channelization and infilling of overflow channels. Eroding stream banks have migrated from the original reach of disturbance 2.5 miles downstream, causing further

down-cutting of the channel, massive bank failure, and loss of riparian vegetation. These impacts would continue.

No effects to ESA-listed species or special-status species are anticipated because, as IDFG has indicated, those species are not likely to occur in the project area (Cavallaro 2012). However, the potential for losses of wildlife and fish habitats due to the previous channel disturbance would remain. Impacts on terrestrial and aquatic habitats would be moderate.

Proposed Action

Vegetation. Adverse impacts on vegetation are anticipated to be negligible to minor during construction of the Proposed Action. Most large trees (greater than 24 inches dbh) would be preserved, as the design of the inset floodplain was adjusted to avoid these trees. The existing tall cottonwoods would be replaced by aspen, which currently co-dominate with cottonwood in many places and are more suited to the current hydrological conditions. In addition to aspen, a mix of tall and low-stature native shrubs would be planted (see Table 1).

Table 1. Vegetation Planting List

Common Name	Scientific Name	Amount (approximate)
Narrowleaf cottonwood	*Populus angustifolia*	150
Quaking Aspen	*Populus tremuloides*	262
Chokecherry	*Prunus virginiana*	1,735
Serviceberry	*Amelanchier alnifolia*	
Red-osier dogwood	*Cornus sericea*	
Douglas hawthorn	*Crataegus douglasii*	
Black twinberry	*Lonicera involucrata*	
Golden currant	*Ribes aureum*	
Woods rose	*Rosa woodsii*	
Common snowberry	*Symphoricarpos albus*	
Mountain big sagebrush	*Artemisia tridentata* var. *vaseyana*	

Topsoil would be salvaged, stored, and replaced throughout the project area. The combination of seeds, roots, and stem fragments contained in the topsoil are expected to perform well when replaced and irrigated.

Because competition for moisture is high, particularly after irrigation has ceased, restoration of the herbaceous layer would consist of planting a wide-ranging but light mixture of native grasses and forbs and a cereal grain crop for quick cover and initial floodplain armoring (see Table 2). Irrigation would be required for at least 2 years to ensure riparian plant establishment. A sustained, long-term weed management plan would be implemented to manage the establishment of undesirable plants in the project area.

Table 2. Seed Mixture and Seed Rate

Common Name	Scientific Name	Seed Rate in approximate pounds/acre
Western yarrow	*Achillea millefolium*	0.204
American sloughgrass	*Beckmannia syzigachne*	0.204
Mountain brome	*Bromus marginatus*	4.28
Tufted hairgrass	*Deschampsia caespitosa*	0.25
Canada wildrye	*Elymus canadensis*	4.94
Slender wheatgrass	*Elymus trachycaulus* ssp. *trachycaulus*	5.5
Meadow barley	*Hordeum brachyantherum*	4.02
Prairie junegrass	*Koeleria macrantha*	0.26
Western wheatgrass	*Pascopyrum smithii*	7.19
Sandberg bluegrass	*Poa sandbergii*	0.34
Cultivated barley	*Hordeum vulgare*	15
Pacific aster	*Aster chilensis*	0.3
Harebell	*Campanula rotundifolia*	0.04
Wild geranium	*Geranium viscosissimum*	0.84
Fowl bluegrass	*Poa palustris*	0.03

The goal of revegetation is to maintain and restore a high level of habitat structure and function. Cottonwood is not expected to persist naturally along Teton Creek unless historic flow regimes are reestablished. The existing cottonwood component is even-aged and relatively old, with the exception of small patches of younger cottonwood suckers in scattered locations. The current design focuses on saving as many cottonwoods as possible; nevertheless, many cottonwoods would be removed for construction of the inset floodplain. It is unknown if partial or incomplete removal of individual cottonwoods would kill the tree and what re-sprouting would occur, if any. All cottonwoods removed would be used either to construct stream bank protection treatments, to create floodplain roughness, or chipped for use as mulch. In addition, a limited quantity of live cottonwood poles would be installed with brush in trenches excavated across the floodplain.

Recently revegetated areas would be monitored monthly for new weeds and treated as necessary. Specific management practices depend on the intensity and duration of disturbance and the surrounding land use. Combinations of cultural, mechanical, biological, and chemical (herbicides) may be used as appropriate for weed management. Weeds in established native vegetation would be managed through mapping, monitoring, and targeted weed control. Examples of weed management approaches include spot spraying with selective herbicides, bio-control agents, and localized grazing with goats.

Wildlife, Fish, and Threatened and Endangered Species. Teton Creek restoration activities are not expected to affect any Threatened and Endangered or special status species. Canada lynx and whitebark pine are not likely to be present in the project area. Grizzly bear and wolverine may pass through the area, but have large territories and likely would not be affected by the Proposed Action. Many of the current threats to the survival of grizzly bears are associated with degradation of habitat due to rural or recreational development, road building, and energy and mineral exploration. Habitat destruction in valley bottoms and riparian areas is particularly

harmful to grizzlies because they use these habitats to travel from one area to another when they are searching for food (USFWS 2007). This project would improve riparian habitat and may have a positive effect on grizzly bears by providing linkage habitat. Letters of support for the project were received from the USFWS and IDFG during early consultation with the subapplicant due to the Proposed Action's benefits to riparian and fish habitat within Teton Creek.

Minor, localized, and scattered impacts on non-listed wildlife, including migratory birds, could occur through habitat restoration under the Proposed Action. Various factors, including changes in food sources, shelter, population density, and dispersal, would determine the severity of impacts on non-listed wildlife. To mitigate potential adverse impacts on migratory birds, vegetation removal would occur in late summer and early fall, outside of the typical migratory bird-nesting season, which ranges from March through August in the project area.

After project completion, 5,600 linear feet of stream corridor and associated stream banks would be stabilized and vegetated, resulting in a 20 percent increase in fish habitat and an 80 percent reduction in fine sediments in Teton Creek. After 4 years, it is anticipated that 20 acres of stream banks and reconstructed floodplain would be covered with woody vegetation and stream temperatures would decrease by 5 percent. Yellowstone cutthroat trout populations would improve in Teton Creek and subsequently in the Teton River due to improvements in water quality, fish habitat, and fish passage. Water quality would improve in Teton Creek and subsequently in the Teton River as sedimentation from the headcut and eroding stream banks and streambed would be reduced, silt would be removed by riparian vegetation, and stream temperature would be lower (Mainstream 2009).

4.4 CULTURAL RESOURCES

Cultural resources consist of locations of human activity, occupation, or use identified through field inventory, historic documentation, or oral evidence. The term encompasses historic properties as defined by the National Register of Historic Places (NRHP), including archaeological and architectural properties, as well as sites of traditional cultural or religious importance to Native American Tribes or other social or cultural groups. Section 106 of the National Historic Preservation Act (NHPA) of 1966 requires that activities needing Federal permits or using Federal funds undergo a review process to consider historic properties that are listed in or may be eligible for listing in the NRHP. The State Historic Preservation Office (SHPO) is the Federal agency's primary Section 106 partner. Because Section 106 is a process by which the Federal government assesses the effects of its undertakings on historic properties, it is the primary regulatory framework used in the NEPA process to determine impacts on cultural resources.

The Area of Potential Effects (APE) for the proposed project consists of a 1.5-mile stretch of Teton Creek that extends north from the Cemetery Road Bridge, including access points and staging areas (Crockett 2009) (See Figures 3 and 7). The Proposed Action is detailed in Section 3.

4.4.1 Ethnographic and Historic Context

The project area is situated in a high mountain basin, along the banks of and within the streambed of Teton Creek as it flows near the City of Driggs, Idaho. Archaeological sites recorded near permanent and seasonal water sources in the Teton Basin demonstrate that plant and game processing was being conducted and large base camps were being utilized for a period of approximately 8,000 years. Good quality sources of obsidian are located in the surrounding mountain ranges (Crockett 2009).

In the early nineteenth century, the market for beaver pelts and the exploration of the Rocky Mountains brought British and American fur traders to the region. The annual Pierre's Hole Rendezvous brought fur trappers and local Indian tribes to Teton Basin between the years 1819 and 1840.

The U.S. National Park Service's Native American Consultation Database lists the following Indian Tribes as having ancestral interest in Teton County: the Confederated Salish and Kootenai Tribes of the Flathead Reservation (Montana), the Shoshone Tribe of the Wind River Reservation (Wyoming), and the Shoshone-Bannock Tribes of the Fort Hall Reservation (Idaho) (NPS 2012).

4.4.2 Identification of Historic Properties

In 2007, archeological staff from the Natural Resources Conservation Service (NRCS) evaluated the need for cultural resources survey for an undertaking in a portion of the APE and determined none was necessary (Vrem 2012). On April 30, 2009, an intensive pedestrian cultural resources inventory was conducted by Ms. Stephanie Crockett of Cultural Resource Consulting to identify, document, and evaluate cultural properties within the APE in accordance with State and Federal statutes and regulations, including Section 106 and its applicable guidelines (36 CFR 800). The survey found that archaeological resources associated with hunter-gatherer subsistence and the annual Pierre's Hole Rendezvous may be present along the banks of Teton Creek, but no cultural materials were expected within the seasonally active stream channel (Crockett 2009). One above-ground property, an irrigation headgate and canal, was recorded as a result of this inventory. The site was recommended ineligible for listing in the NRHP (Crockett 2009).

4.4.3 Consequences of Alternatives

No Action Alternative

Under the No Action Alternative, FEMA would not provide funding to restore Teton Creek. Any unidentified or buried cultural properties, which may be NRHP-eligible, would continue to be at risk from flooding.

Proposed Action

Section 106 consultation for all phases of this project, including the work that has been completed and the work that is proposed in this EA, was conducted in 2007 by NRCS, and in 2009 by the U.S. Army Corps of Engineers – Walla Walla District (Corps), prior to issuing a

permit (Project No. NWW2008-00636-102), via letter to the SHPO with a determination of no historic properties affected.

The SHPO concurrence with the Corps' determination was received for all phases of the project in June 2009 (Appendix D).

Additionally, consultation was initiated in September 2011 with the Confederated Salish and Kootenai Tribes of the Flathead Reservation (Montana), the Shoshone Tribe of the Wind River Reservation (Wyoming), and the Shoshone-Bannock Tribes of the Fort Hall Reservation (Idaho) to help determine project effects on cultural resources of religious and cultural importance to Tribes; no comments were received.

FEMA has therefore determined that the requirements of Section 106 have been met for this project and that the Proposed Action will not affect historic properties.

4.5 SOCIOECONOMIC RESOURCES

4.5.1 Environmental Justice

EO 12898, Environmental Justice, directs Federal agencies to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects on minority and low-income populations resulting from Federal programs, policies, and activities. Socioeconomic and demographic data for residents in the project vicinity were studied to determine if the Proposed Action would have disproportionate impacts on minority or low-income persons.

Detailed data from the 2010 Census is not yet available for Teton County. Data from the 2000 Census for Teton County were used to identify the minority[1] and low-income[2] compositions of the project area, which is located in Block Group 2 of Census Tract 9601. In the project area, the minority population was approximately 13.1 percent. The poverty rate of the study area population was approximately 12.9 percent (U.S. Census Bureau 2000). These levels are consistent with the County and State as a whole.

4.5.2 Consequences of Alternatives

No Action Alternative

Under the No Action Alternative, FEMA would not provide funding to restore Teton Creek and the risk of flooding and property loss would continue. No disproportionally high and adverse

[1] A minority person is "a person who is: (1) Black (a person having origins in any of the black racial groups of Africa); (2) Hispanic (a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race); (3) Asian American (a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands); or (4) American Indian and Alaskan Native (a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition)."

[2] Low-income is identified as "one whose median household income is at or below the Department of Health and Human Services poverty guidelines." Income data based on Department of Health and Human Services guidelines are difficult to gather, so U.S. Census Bureau data are often used for environmental justice analyses.

effect on minority or low-income populations would occur; all residents vulnerable to flood damage in the project corridor would continue to be at risk.

Proposed Action

The project area was chosen as high-priority for mitigation based solely on the need to enhance protection for infrastructure and property, while stabilizing the stream corridor and improving the aquatic ecosystem; demographics were not a factor in the decision. No disproportionally high and adverse effect on minority or low-income populations would occur; all residents in the project corridor would benefit from the Proposed Action.

4.6 CUMULATIVE IMPACTS

CEQ regulations for implementing NEPA require an assessment of cumulative effects during the decision-making process for Federal projects. Cumulative effects are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions" (40 CFR 1508.7). Cumulative effects were determined by combining the effects of these alternatives with other past, present, and reasonably foreseeable future actions.

Previous phases (1 and 2) were completed adjacent to the Proposed Action. These phases included replacing a bridge at the downstream end of the current project corridor, reconstructing a stream channel, stabilizing streambanks, installing grade control features, and planting native vegetation. Future stream bank restoration projects are planned in the greater Teton Creek area. After completion of this project, damaged stream banks are anticipated to be restored downstream of the Cemetery Road Bridge toward Highway 33. Teton County, along with the Teton Creek Subwatershed Committee (TCSC), FTR, and the Teton Creek Flood Control District, would guide these stream bank restoration efforts to ensure collaboration for future activities. These restoration efforts would result in short-term adverse impacts on vegetation and wildlife during clearing activities. However, long-term, beneficial cumulative effects would also occur, as the restoration of downstream areas, in addition to the Proposed Action, would create a lengthy band of riparian vegetation that would provide a migration corridor and habitat for wildlife.

The Proposed Action and other stream bank restoration activities that are planned in the greater Teton Creek area are not expected to have adverse cumulative impacts on geology, soils, and climate; surface water, water quality, wetlands, and floodplains; vegetation, wildlife and fish (including ESA-listed species and critical habitat); historic, archaeological, and cultural resources; or socioeconomic and environmental justice.

SECTION FIVE AGENCY COORDINATION AND PUBLIC INVOLVEMENT

During project development, the FTR formed the TCSC. The intent of the FTR and the TCSC was to develop an approach, based on collaboration and community participation, to improve conditions on Teton Creek. As of February 2012, the TCSC has over 60 active members, including participants from the City of Driggs, Teton County, IDWR, IDFG, IDEQ, EPA, USACE, U.S. Forest Service, Natural Resource Conservation Services, Wyoming Game and Fish, Teton Creek landowners, developers, irrigators, engineering firms, and stream restoration consultants.

The first TCSC meeting was held in November 2006, when the FTR hosted a restoration workshop with local, State, and Federal agencies, landowners, developers, stream restoration specialists, and engineering firms. The attendees of the workshop determined that the highest priority for Teton Creek was to stabilize the previously destabilized section (this project and its previous phases, described in Section 3.2). In all, 32 public meetings have been held. A summary of topics covered at the various meetings is below.

- **Fall 2006:** The TCSC assessed and prioritized restoration projects on Teton Creek. The Teton Creek Restoration Project was determined to be the highest priority project on the stream. Design alternatives and a preliminary hydraulic model for the project area were developed.
- **Spring 2007:** The TCSC met with FEMA to discuss Teton Creek floodplain modeling and open Letter of Map Revision applications.
- **Summer/Fall 2007:** The TCSC reviewed the hydraulic model, decided on a preferred alternative, and discussed conceptual preliminary plans and funding options.
- **Winter/Spring/Summer 2008:** The TCSC developed design criteria for the project and delineated acceptable floodplain boundaries. The TCSC worked with irrigators to ensure that project plans provided appropriate delivery of water rights. Preliminary plans were developed and presented to TCSC. FTR hosted a restoration charrette to discuss the project plans and reported results to the TCSC.
- **Spring 2009:** FTR presented a public forum to discuss the project. Letters were sent to property owners to inform them of the project and invite them to the meeting. The meeting was also advertised in the local newspaper. Landowners were asked to review preliminary plans, comment on plans, and submit letters approving of the plans and granting permission to continue developing the project.
- **Summer 2009:** FTR developed the 90 percent plan iteration and presented to them TCSC. Comments were recorded and incorporated into final plans, and FTR presented the final plans to TCSC. Landowners were asked to review final plans and submit letters approving of the plans and granting permission to begin project construction. The TCSC decided to create a Flood Control District to provide long-term project maintenance oversight and funding.

- **Fall 2009:** FTR developed and presented Phase I construction plans to TCSC for comment. FTR later presented the results of Phase I construction to TCSC. The Phase I project was featured in local newspaper articles and on the local radio station.
- **Fall 2010:** FTR developed and presented Phase II construction plans to TCSC for comment. FTR later presented the results of Phase II construction to TCSC. The Phase II project was featured in local newspaper articles and on the local radio station.
- **Winter 2011:** FTR sent letters and e-mails to all landowners with property along upper Teton Creek, including the project area, inviting them to attend a TCSC meeting to discuss the petition to create a new Flood Control District around the project area and progress with Restoration Project funding. Results of the meeting were featured in two consecutive local newspaper articles.

During preparation of the EA, the SHPO and the following Tribes were also contacted for comment: the Confederated Salish and Kootenai Tribes of the Flathead Reservation (Montana), the Shoshone Tribe of the Wind River Reservation (Wyoming), and the Shoshone-Bannock Tribes of the Fort Hall Reservation (Idaho). The Tribes and SHPO did not have any comments on the draft EA.

A public notice was required for the draft EA (Appendix E). The public, Tribes, and agencies had the opportunity to comment on the EA for 30 days after publication of the notice, from March 15, 2012 through April 16, 2012. A copy of the public notice was sent to nearby landowners and stakeholders. The notice identified the action, location of the proposed site, participants, location of the draft EA, and who to write with comments. No substantive public comments were received.

SECTION SIX PERMITTING, PROJECT CONDITIONS, AND MITIGATION MEASURES

The County will comply with the following project conditions and mitigation measures, as part of the grant award and permit conditions:

- The County shall obtain all required local, State, and Federal permits and approvals prior to implementing the Proposed Action Alternative and comply with all conditions imposed. These include, but are not limited to, the following:
    a. Nationwide Permit NWP 27, USACE
    b. Permit to Alter a Stream Channel, IDWR
    c. Permit to Develop in a Floodplain Area, Teton County
- All construction shall be completed in accordance with descriptions and methods on the IDWR and USACE applications and attachments unless otherwise specified.
- The County is responsible for selecting, implementing, monitoring, and maintaining Best Management Practices to control erosion and sedimentation, reduce spills and pollution, and provide habitat protection.
- All work will be done when the channel is dewatered.
- Excess excavated material shall be hauled offsite and disposed of in an upland area where it will not reenter a “water of the United States” as defined by EPA and the USACE. Excess material shall not be stockpiled below the ordinary high water mark (OHWM) or floodplain, unless part of the project’s design.
- The embankment above rock or log structures shall be planted with native shrubs to provide additional bank stability and to help maintain riparian habitat functions.
- Existing tree and shrub species that currently exist along the riverbank shall be preserved to the maximum extent to help provide additional bank stability and maintain riparian habitat functions.
- Vegetation removal should occur in late summer and early fall, outside of the typical migratory bird-nesting season, which ranges from March through August. If removal activities must take place during the nesting season, a qualified professional will conduct a breeding bird survey before removal activities begin to avoid or minimize disturbance.
- Implement a sustained, long-term weed management plan to manage the establishment of undesirable plants in the project area.
- Disturbed soils shall be reseeded and protected from erosion until the site has stabilized. Reseeding and erosion protection shall be accomplished upon completion of project construction.
- Rock used shall be clean, angular, and of sufficient size and weight to withstand expected erosive energy, to prevent erosion and sedimentation.
- In-stream structures shall be keyed into the streambed and bank to prevent the structures from being undermined.

- The upstream and downstream ends of rock bank treatments shall be trenched into the bank to prevent stream energy from unraveling the riprap.
- Equipment may not be stored below the OHWM overnight or for extended periods.
- All equipment and vehicles will be inspected and thoroughly cleaned prior to being mobilized to the site to limit spread of weeds to newly disturbed areas and adjacent intact native plant communities.
- Fuel, oil, and other hazardous materials shall be stored, and equipment refueled, repaired, and maintained, away from the stream to ensure that a spill cannot enter the waterway.
- In the event that unanticipated cultural resources are discovered during project activities, and in compliance with State and Federal laws protecting cultural resources, including Section 106 of the NHPA, work in the immediate vicinity will cease, the area will be secured, and FEMA and the SHPO will be notified.
- Once the project is complete, in accordance with its compliance with the National Flood Insurance Program and FEMA's October 2011 Conditional Letter of Map Revision, the County must complete the Letter of Map Revision process in a timely manner.
- Any change to the approved scope of work will require re-evaluation for compliance with NEPA and other laws and EOs, before implementation.

SECTION SEVEN CONCLUSION

The draft EA evaluated environmental and historic resources that could be affected by the Proposed Action. The evaluation did not identify any significant adverse impacts associated with the resources of geology, soils, and climate; surface water, water quality, wetlands, and floodplains; vegetation, wildlife and fish (including ESA-listed species and critical habitat); historic, archaeological, and cultural resources; or socioeconomic and environmental justice. Implementing the conditions associated with permits or approvals is expected to avoid or minimize short-term, minor adverse effects associated with the Proposed Action. FEMA will issue a FONSI for the Proposed Action.

SECTION EIGHT LIST OF PREPARERS

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SECTION NINE REFERENCES

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Appendix A

Figures

Figure 1: Project Vicinity Map

Figure 2: Channelization Impacts

Figure 3: Project Area | Aerial

Figure 4: Phasing of the Teton Creek Restoration Project

Figure 5: Conceptual Cross-Section Design

Figure 6: Access and Staging Areas

Figure 7: Revegetation Details

Figures 8a and 8b: FEMA Flood Insurance Rate Map

Figures 9a and 9b: Revised Floodplain and Floodway Boundaries

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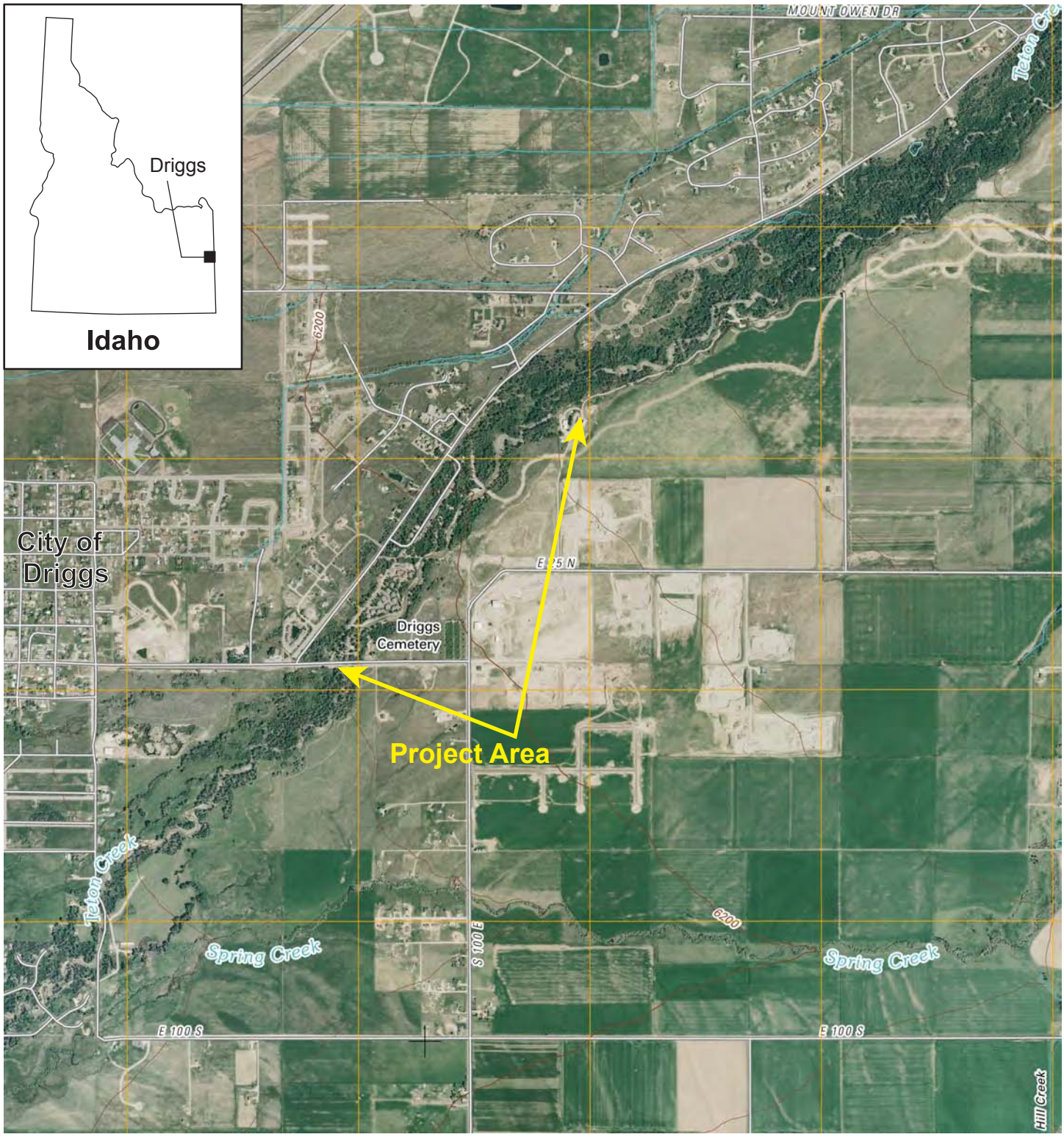

Source: USGS

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Scale in Miles

Figure 1

Project Vicinity Map

Job No. 15702626

Teton County, ID

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View of the reach of stream in the project area (top) impacted by channelization, as compared to an upstream reach (bottom) with more natural conditions.

Source: Mainstream Restoration, Inc.

Job No. 15702626

Figure 2

Channelization Impacts

Teton County, ID