

**Indian Creek
Ecosystem Restoration Project
Section 206**

Caldwell, Idaho

June 2004

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Indian Creek Ecosystem Restoration Project Section 206

**Caldwell, Idaho
June 2004**

This document represents information gathered regarding the feasibility of an ecosystem restoration project along Indian Creek in Caldwell, Idaho.

SECTION 1.0- INTRODUCTION

This section presents introductory information on the proposed Indian Creek Ecosystem Restoration project. Included is information on the Congressional authority which allows the U.S. Army Corps of Engineers (Corps) to evaluate possible aquatic restoration projects; the purpose and need for the proposed project; the location of the proposed project; the scope of this report; background of the area in which the project is located; and partnerships that have been formed to assist with the project.

1.01 GENERAL

The City of Caldwell, Idaho in their letter dated June 27, 2001, requested assistance from the Corps, Walla Walla District (Appendix-Request Letter). They want to determine the feasibility of improving Indian Creek through downtown Caldwell, by creating a more natural waterway. In response to this request the Corps has developed this Detailed Project Report and Environmental Assessment. The study area encompasses a five-block (2,000-foot) area that is bordered on the north by Main Street, on the south by Cleveland Street, on the east by 10th Avenue, and on the west by 5th Avenue.

Originally a campsite for railroad construction workers, Caldwell was incorporated in 1890. As the city grew, Indian Creek was used as an industrial and agricultural drain, resulting in water quality degradation. The 1930's through the 1960's saw Indian Creek in downtown Caldwell covered by streets and buildings in an effort to rid the town of the undesirable creek. Water quality has continuously improved since the 1970's, stimulating interest in returning the creek to a more natural condition. A restored creek environment would create fish and wildlife habitat, continue improvements to water quality, and provide a natural amenity to the downtown area and the community. In the downtown area, Indian Creek flows generally at 40 to 250 cubic feet per second throughout the year.

1.02 AUTHORITY

This feasibility level Detailed Project Report and Environmental Assessment is being prepared under the authority of Section 206 of the Water Resources Development Act (WRDA) of 1996 and to meet the requirements of the National Environmental Policy Act (NEPA) of 1969.

The NEPA and subsequent implementing regulations promulgated by the Council on Environmental Quality (CEQ) require Federal agencies to evaluate the environmental impacts of proposed Federal actions and prepare written documentation of the analysis. This Detailed Project Report and Environmental Assessment documents whether the actions proposed by the City of Caldwell and the Corps constitutes a ". . . major Federal action significantly affecting the quality of the human environment . . ." and whether an environmental impact statement (EIS) is required.

Section 206 of the WRDA of 1996 provides the Corps authority to ". . . carry out an aquatic ecosystem restoration and protection project . . . if that project will improve the quality of the environment and is in public interest; and is cost-effective". In order for a Section 206 project to be constructed, a non-Federal sponsor must be identified and a detailed study completed that shows the environmental feasibility and that the monetary and non-monetary benefits are justified for the project.

1.03 PURPOSE AND NEED

a. Project Purpose

The purpose of the proposed project is to restore the aquatic ecosystem of Indian Creek located in urban downtown Caldwell. Restoration would be accomplished by creating a healthy, diverse, and sustainable stream condition in Indian Creek through downtown Caldwell, while working with the City to balance their environmental, economic, and social goals.

b. Project Need

Towards the middle of the 20th century, the quality of water in Indian Creek became severely degraded as a result of municipal and industrial discharges and other streamside businesses and activities (Water Quality Status Report, Idaho Department of Health and Welfare, May 1979). The undesirable condition of Indian Creek and increasing urban development prompted the city to channelize and cover the stream. Streets and buildings were built over Indian Creek between the 1930's and 1960's. Thus, the

aquatic ecosystem was fragmented, altered, and the riparian area reduced, resulting in lost habitat for fish, waterfowl, songbirds, wading birds, birds of prey and small mammals.

1.04 LOCATION OF PROJECT

Caldwell is located in central Canyon County, in southwestern Idaho. It is situated in the Boise River valley, approximately 16 miles east of the Idaho-Oregon state line and approximately 20 miles west of Boise, Idaho. Caldwell is in Idaho's U. S. Congressional District 1, with representation from Representative C.L. "Butch" Otter, Senator Larry Craig, and Senator Mike Crapo.

Indian Creek flows from its northern Elmore County source, in the mid-southern portion of the lower Boise River watershed through rangelands, agricultural lands and urban areas. It drains 320 square miles and is 56 miles long, flowing through Elmore and Canyon Counties and the cities of Kuna, Nampa, and Caldwell upstream of its confluence with the lower Boise River.

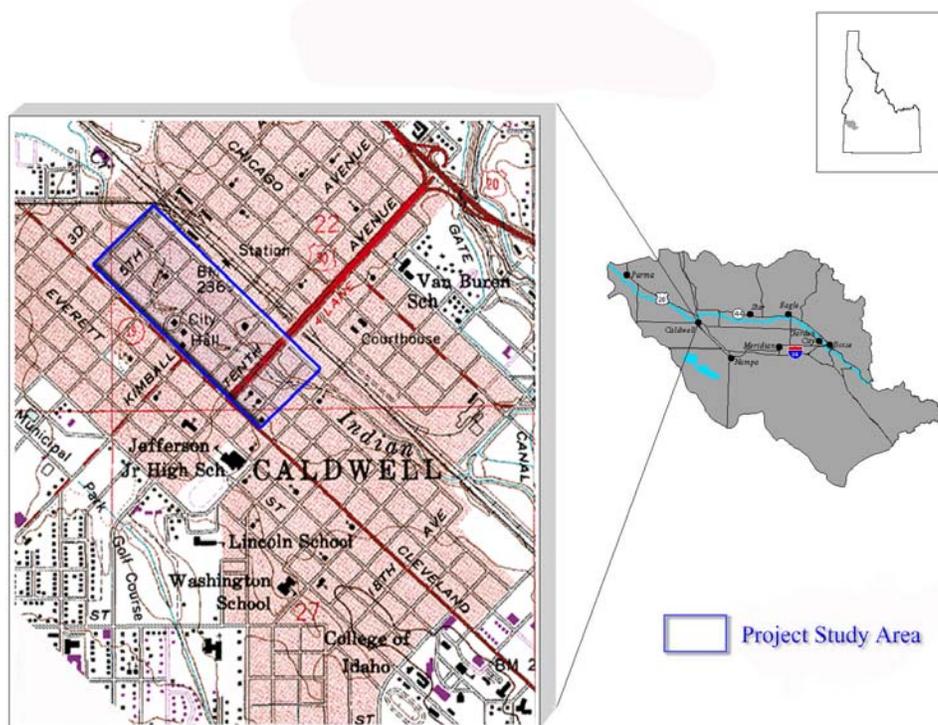


Figure 1-Location Map

A segment of the Indian Creek channel is shared with the New York Canal. Near the Canyon County line the New York Canal is diverted to Lake Lowell at the New York Canal diversion (also known as Callopy Gates). Wilson Drain, a tributary to Indian Creek is located upstream (east) of the downtown area.

1.05 SCOPE OF WORK

This Detailed Project Report and Environmental Assessment identifies and evaluates measures and alternatives that can be used to improve the aquatic ecosystem. The recommended plan would establish a more natural aquatic ecosystem in an urban area that can be balanced with the economic and social goals of Caldwell. This report provides a complete presentation of study results and findings based on environmental, social, and economic criteria.

1.06 BACKGROUND (Prior Studies and Reports)

a. History

Today's Caldwell was originally a campsite for construction employees of the Oregon Short Line Railroad. It was then known as "Bugtown". In August 1883 the Caldwell town site was platted parallel to the Oregon Short Line Railroad (later to become part of Union Pacific). On January 15, 1890 the Board of Commissioners of Ada County issued an order incorporating the town of Caldwell. In 1892 Canyon County was established from a portion of Ada County. Caldwell was subsequently named the Canyon County seat.

In the early part of the 20th century, as Caldwell grew, Indian Creek became polluted, as a result of municipal and industrial discharges into the creek (Water Quality Status Report, Idaho Department of Health and Welfare, May 1979). By mid-century the creek was being covered by streets and buildings in order to rid the town of the unsightly and smelly creek and in order to make room for the developing community. Maximizing space for development meant that space for the creek had to be held to a minimum. Therefore, the creek was channelized and confined by culverts and riprap prior to construction of buildings, streets, parking lots, etc. Since that time water quality in Indian Creek has improved due to a heightened awareness of our environment and clean water standards set forth in the Clean Water Act of 1972. However, the fragmented and degraded creek corridor has never had a chance to recover.

Caldwell is the western gateway to what is known as the Treasure Valley. Historically, Caldwell has been the center of regional and community activities for the smaller communities located west of Boise. Residents in communities such as Notus, Middleton, Greenleaf, and Parma come to Caldwell to shop and play. This was evidenced at the 2003 winter parade held in Caldwell.

The water quality of the ecosystem surrounding Indian Creek has been a concern to Caldwell citizens for many years. In 1980 the students and

faculty of Albertson College of Idaho sponsored a teach-in event. The purpose was to educate the general population of current environmental conditions, specifically Indian Creek. Since that time local civic groups such as the Rotary and Kiwanis Clubs have undertaken waterway improvement projects along Indian Creek that are on going. Currently Canyon County Fairgrounds is considering an ecosystem improvement project on Wilson Drain. Wilson Drain runs along one side of the fairgrounds and is an upstream tributary to Indian Creek.

b. Prior Studies, Reports, and Actions

Several studies, reports and actions affecting Caldwell and lower Indian Creek have been completed in the past several decades. These studies address issues specific to water quality, flooding potential, restoration of Indian Creek, and restoration of Caldwell's downtown area.

Water quality concerns of Indian Creek have been documented since as early as 1943 when municipal and industrial discharges were identified as contributing to the sludge banks along the stream with the existence of an odor nuisance and reduction of dissolved oxygen (Idaho Department of Health, 1943). A 1958 study depicts Indian Creek at possibly the creek's worst condition. In this study meat scraps, paunch, manure, and blood coloring were noted in the creek along with great amounts of slime growth and sludge (Water Quality Status Report, Indian Creek 1976-1977). Today Indian Creek does not support its beneficial uses of supporting cold-water aquatic life (such as trout) and secondary contact recreation (such as wading, where swallowing water is not likely). Indian Creek does not meet these beneficial uses because of low dissolved oxygen, high levels of nutrients, oil and grease, and sediment (The Idaho Department of Environmental Quality's report on Total Maximum Daily Loads (TMDL's).

The Flood Insurance Study, City of Caldwell, Idaho, Canyon County, Community Number 160036, published in 1980 and revised in 1988 shows a one percent chance flood flow of 1,230 cubic feet per second (cfs). The same one percent chance flood flow is indicated in the Flood Insurance Study, Canyon County, Idaho, unincorporated areas, Community Number 160208, December 3, 1993. (Note: Both of these flood insurance studies are presently being updated to reflect current developments in the area.) The flood hydrology for Indian Creek was restudied as part of this current proposed Ecosystem Restoration Project and it is likely that the Indian Creek flood frequency curve for the new flood insurance study will reflect the one derived for this current restoration study, with a one percent chance flood flow of 1,540 cfs. (See Hydrology Appendix)

In 1990 Caldwell requested and received assistance from the American Institute of Architects for a Regional/Urban Design Assistance Team

(R/UDAT) to study Caldwell. The citizens of Caldwell developed a list of critical items for the R/UDAT to study. The final report, Caldwell Renaissance 1990, contained recommendations and proposed projects. Many of their recommendations and projects have been completed. One, yet to be completed recommendation was to “uncover” Indian Creek in downtown Caldwell, restore the creek, and include it in the proposed Caldwell Greenbelt (Caldwell Renaissance, 1990).

Other studies that address Indian Creek and the downtown Caldwell area include:

- The Historic Building Survey (2003)
- Caldwell Comprehensive Plan, draft (2004)
- Canyon County Comprehensive Plan (1995)
- Indian Creek (Canyon County) 1976-1977 by the Idaho

Department of Health and Welfare, Division of Environment, published May 1979, Report No. WQ-42.

1.07 PARTNERSHIPS

The City and the Corps are developing plans to study the feasibility of restoring Indian Creek. Besides the City’s partnership with the Corps, they have also developed partnerships with the National Park Service under their Rivers, Trails, and Conservation Assistance Program; Idaho Department of Fish and Game (IDFG); Albertson College of Idaho; the Environmental Protection Agency (EPA); and interested citizens groups. These partnerships will help the city to realize their vision of restoring the stream through historic downtown Caldwell. Working together these partnerships have resulted in several successful events – a design charette (a charette in this case, was a group of professionals and non-professionals who spent two days designing small aquatic restoration projects for Indian Creek in downtown Caldwell), a water quality monitoring celebration, a trail system master plan, an Indian Creek festival, and an Earth Day 2003 event that included picking up debris along Wilson Drain. These events have brought a heightened awareness and support of Indian Creek and the proposed project.

A celebration (Eyes on Indian Creek) occurred on the first annual National Water Quality Monitoring Day, October 18, 2002. This day was selected by America’s Clean Water Foundation to celebrate the 30th anniversary of the Clean Water Act. The City, Corps, National Park Service, Idaho Department of Environmental Quality (IDEQ), and Albertson College of Idaho organized and participated in this community-wide event. The water from Indian Creek was tested for water temperature, nutrients, pH, etc. and Albertson College of Idaho’s Environmental Sciences Department saved the results for comparisons to future years. Collected data is also stored in a database maintained by America’s Clean Water Foundation.

The National Park Service's Rivers, Trails, and Conservation Assistance program, (Rivers and Trails) awarded a grant for technical assistance to the City of Caldwell in 2001. The program helps local communities develop concept plans, build partnerships to achieve community-set goals, and engage the public's imagination. For two years, two staff persons worked with the City to involve the community in the stream restoration and community revitalization efforts.

Rivers and Trails worked in partnership with the American Society of Landscape Architects (ASLA) and the City of Caldwell to conduct a design charette. The charette resulted in plans for two restoration demonstration sites on Indian Creek and a pathways and trail system along the creek and throughout the city. An extensive trail system already exists along the lower Boise River. The new trail system would start at Albertson College of Idaho (upstream of the proposed project area) and run through historic downtown Caldwell continuing to the lower Boise River greenbelt. This charette was the inaugural partnership project between the Rivers and Trails program and the Idaho-Montana Chapter of ASLA.

The design charette took place in September 2003 and included City officials and citizens, the Corps, the National Park Service, architects from the Treasure Valley area, and the Caldwell Downtown Core Committee. Two sites were selected; the first was the block between 9th and 10th Avenues and the second just downstream of Fourth Avenue at Arthur Street.

Also through the Rivers and Trails program, two nationally recognized artists, artists-in-residence with the Pacific Northwest, were assigned to work with the community. The artists-in-residence worked with the community to develop public art as a catalyst for environmental awareness and action at the community level. This Art and Community Landscapes program is a partnership with the National Park Service, New England Foundation for the Arts, and the National Endowment for the Arts. The artists worked with local artists in the community to develop two public art pieces with a native flora/fauna theme. One piece is a metal sculpture that was placed on a pedestrian bridge that crosses Indian Creek and the other, a tile mural, was placed in a city park adjacent to the creek.

The first Indian Creek festival, sponsored by the City, was held in October 2003. It was an opportunity to bring the community together and to display proposed improvements to Indian Creek. The public artwork was dedicated to the city, the Corps brought their robotic sea dragon, Seamoor, to teach about water safety, and the U.S. Fish and Wildlife Service set up a booth demonstrating the many ways that environmental restoration projects benefit fish and wildlife.

Albertson College and the City organized Earth Days 2003 and 2004 with help from Idaho Department of Water Resources (IDWR), EPA, and Corps volunteers. Volunteers cleaned up a 2,000-foot section of Wilson Drain, a major tributary to Indian Creek. In 2003 the City, Albertson College, and Corps volunteers cleaned a 1,500-foot section of Indian Creek. Albertson College students in the

environmental studies program have continuing projects related to water quality monitoring and restoration opportunities along the creek in Caldwell.

Caldwell and the EPA will be working together to conduct assessments of any possible petroleum based contaminants in the downtown area.

SECTION 2.0 – PLANNING OBJECTIVES AND CRITERIA

This section sets forth both the local and regional planning objectives for this ecosystem restoration project. Additionally, it identifies the primary and secondary criteria against which each alternative will be evaluated. The planning objectives and criteria were developed from local interest group meetings, local governmental and non-governmental meetings, public meetings, consults with the project sponsor and their planning contractor, as well as by the Corps' study team.

2.01 PLANNING OBJECTIVES

The local objective for this project is to create a healthy, diverse, and sustainable condition for Indian Creek, while seeking balance between the natural ecosystem, human quality of life and development activities. This would be accomplished in a manner that maximizes benefit for both aquatic restoration and the community while remaining within identified constraints.

Specific objectives for this project have been broken down into primary and secondary objectives. The primary objectives are the main focus of the project. Environmental outputs will be determined based on the primary objectives. Secondary objectives help to create balance between the more natural ecosystem in the area and human development activities. Secondary objectives are not considered in the incremental cost analysis, although they would add more diversity to the project, therefore promoting ecological integrity, economic vitality, quality of life, and a sense of community.

Primary Objectives

- a.) Eliminate/minimize creek corridor fragmentation
- b.) Improve aquatic habitat
- c.) Re-establish riparian/upland habitat
- d.) Improve water quality

Secondary Objectives

- a.) Preserve and interpret the historic resources of the area
- b.) Assure public safety
- c.) Improve the aesthetics and quality of life in the area
- d.) Create an opportunity for recreation and education related to the water resource

2.02 PLANNING CONSTRAINTS

At the beginning of the study, the project sponsor and the Corps worked together to identify resource, legal, and policy constraints. Those identified constraints are:

- Caldwell's Historic Downtown area is listed on the National Register of Historic Places. The proposed project should avoid adverse impacts to all buildings listed on the National Register.
- Do not reduce the flood flow capacity of the Indian Creek channel.
- Do not take any action that would impact the existing (I-84) truck route (Blaine Street).
- Do not take any action that would impact the parking lot of the fire station located at Blaine Street and 7th Avenue.
- Minimize real estate acquisitions.
- Do not exceed the \$5 million dollar federal limit for Section 206 projects.

2.03 PROBLEMS AND OPPORTUNITIES

This section describes the identified needs in the context of problems and opportunities that can be addressed through water and related land resource management. Problems and opportunities that are identified in this section are based on without project conditions.

a. Problems

The existing condition of Indian Creek in downtown Caldwell interrupts the natural habitat corridor between Caldwell and the confluence of Indian Creek and the Boise River. This fragmentation restricts and/or eliminates travel corridors for fish and wildlife.

- **Corridor Fragmentation**
Indian Creek has been channelized and covered which contributes to the fragmented habitat corridor and the degraded creek condition. These limit aquatic habitat diversity and biological productivity.
- **Limited Vegetation**
Minimal riparian vegetation exists along Indian Creek in downtown Caldwell. Lack of riparian vegetation limits natural shading and protective cover.
- **Water Quality**
IDEQ identifies Indian Creek downstream of the New York Canal as exceeding water quality standards. Although water quality has improved significantly in the past two decades, it still does not meet all the established standards.
- **Historic Buildings**
Many of Caldwell's historic resources located in the downtown area are minimally maintained. Many historic structures are in danger of being lost.
- **Lack of Aesthetics**
Indian Creek in the downtown area is mostly invisible to the public. Because the creek is not readily visible there is little or no understanding of the aquatic system and how it works.

- Economic Challenges
The downtown area struggles economically. Many buildings are vacant or house second hand stores or provide low-income housing.

b. Opportunities

- Improved In-Stream Habitat
Current in-stream habitat is nearly non-existent. Improvements related to in-stream habitat and water quality would increase the amount and quality of aquatic habitat. Opening the creek to natural light and adding diversity to the creek would create a more natural condition. This would likely improve fish populations and fish passage.
- Continuous Habitat Corridor
Re-establishment of a more continuous creek and riparian corridor
The downtown area is a major contributor to the Indian Creek corridor fragmentation. There is an opportunity to re-establish the riparian area and connectivity of the project area with the downstream reach of Indian Creek. Thus improving shade, cover, and food sources for both fish and wildlife.
- Establish an Upland Buffer Zone
The upland vegetation would provide a natural way to purify storm-water run-off and reduce sediment up-slope of the ordinary high water mark. Thereby, eliminating added pollutants from entering Indian Creek.
- Education
A restored aquatic system in an urban setting provides an excellent means to interpret the value of creek corridors. Experiencing the benefits of a healthy creek may promote restoration opportunities in other segments of Indian Creek.
- Development of a Greenbelt
For several years the greenbelt along the lower Boise River has been developing. Due to the proximity of the Indian Creek Project to the Boise River (within one half mile) the proposed project would encourage the City to develop an Indian Creek greenbelt that could be connected to the existing Boise River greenbelt.

2.04 PLANNING CRITERIA

A range of criteria was used to screen and evaluate each alternative's contribution to Environmental Quality (EQ), Regional Economic Development (RED), and Other Social Effects (OSE) for the proposed project.

a. Environmental Quality/Biological Improvement Criteria

The EQ criteria that follow consist of ecological resources and ecosystems that are applied to each alternative to maximize the project's contribution to environmental quality, while working within identified constraints.

- Stream and riparian corridor connectivity
- Re-establishment of riparian vegetation
- Re-establishment of upland vegetation
- Improved water quality
- In-stream habitat improvements

b. Regional Economic Development (RED) Criteria

The following RED criteria consist of elements related to increased economic efficiency within the study area (or region), but do not necessarily benefit the Nation as a whole.

- Connect the community with the creek
- Provide recreational and educational opportunities
- Begin the establishment of a connected greenbelt
- Bring the community back to the downtown area

c. Criteria of Other Social Effects, including National Register of Historic Places

The OSE/Human Communities criteria listed below relate to the well being of the public. This includes public health and safety, aesthetics, and the preservation of past and present human activities.

- Improve safety for the public
- Enhance aesthetic values in the project area
- Preserve and/or interpret history of the area
- Enhance the quality of life in the study area

SECTION 3.0 – PLAN FORMULATION AND ALTERNATIVE DEVELOPMENT

This section identifies existing conditions of the environment in the proposed project area and outlines the plan formulation process. A wide variety of management measures were developed that would address one or more of the planning objectives. Alternative plans were developed which comprise one or more of the management measures.

The formulation of management measures for this project was developed from several collaborative efforts. Federal, State, and local government resource agencies, as well as national and local non-profit organizations, such as Trout Unlimited, provided suggestions for management measures. The faculty, staff, and students from Albertson College of Idaho have been instrumental in developing background information, management measures, and public outreach associated with the project.

3.01 EXISTING CONDITIONS

Starting at the upstream study area limit, the channel is open for approximately 85 feet in the block between 10th and 9th Avenues and Blaine and Arthur Streets. The channel crosses under 9th and is open along Blaine Street between 9th and Kimball Avenues. The channel flows through a covered culvert between Kimball and 7th Avenues. It remains covered and culverted as it crosses from the northeast side of Blaine Street to the southwest side of Blaine Street at the intersection of Blaine and 7th Avenue. The channel is open at the southwest corner of Blaine and 6th Avenue. It flows underground across Blaine and is open again in the block from Blaine to Arthur Streets and 5th to 6th Avenues.

Existing Condition



Figure 2 - Existing Condition

The itemized listing and explanation of specific existing resources/features that may be affected by the proposed project is provided as an existing condition baseline of the project study area.

a. Creek Habitat Corridor Connectivity

Urbanization and industrialization that have occurred over the last century have led to a condition that creates a fragmented habitat corridor for fish and wildlife along Indian Creek. The portion of Indian Creek that flows through downtown Caldwell is in a totally urban environment. A condition that allows only intermittent pockets of riparian vegetation and exposed creek segments. Traveling up Indian Creek from the lower Boise River, the first area of severe degradation and fragmentation is experienced in downtown Caldwell where Indian Creek seems to have simply disappeared.

b. Riparian Habitat/Vegetation

Almost all of the native vegetation and riparian habitat along Indian Creek in downtown Caldwell has been significantly reduced over the last 75 years. Vegetation has been displaced by channelization methods, including the placement of riprap, gabions, and sheet pile. The channel in the five-block area between 5th and 10th Avenues supports a fraction of the riparian vegetation it once did. Approximately 90 to 95% of what would normally be a riparian area is totally void of vegetation. The 5 to 10% of existing vegetation consists of exotic plant species and is confined to small isolated pockets located adjacent to Blaine Street (a high traffic volume street).

c. Fisheries

The types and numbers of fish in Indian Creek have likely changed because of the many human-caused changes that have taken place over the years. Prior to construction of the New York Canal in the 1890's, Indian Creek would have carried much less water during the summer and fall. Sections of the creek may have even gone completely dry some years in late summer. Indian Creek may support more fish now than it did historically, but habitat conditions have degraded.

Very little information exists on the existing conditions of the fishery in lower Indian Creek. The highly modified stream does not provide very much public access so determining the condition of its fishery has not been a high priority for fishery managers. Prior to 1986 there was a healthy population of resident rainbow trout and other native fish in Indian Creek above the Callopy Gates. It is likely that some fish from the upper section migrated into the lower section periodically. It is also likely that fish from the Boise River sometimes used the lower section of Indian Creek for rearing and as a migration corridor. In 1986 there was a chemical spill into Indian Creek near Nampa. Over 1000 rainbow trout and countless other fish were killed. The native fisheries are still recovering from that incident. In 1996 several large rainbow trout and other fish were found dead, because of unknown causes, in lower Indian Creek.

The IDFG operates the Nampa Fish Hatchery which is a resident trout rearing facility located in Nampa (upstream of the proposed Indian Creek Restoration Project). Kamloops and rainbow trout comprise about 90% of the trout production at the Nampa . Lahontan cutthroat and fall Chinook are also reared at the hatchery. Hatchery IDFG website www.fishandgame.idaho.gov). In recent years IDFG has identified hatchery fish that have returned via the Boise River and lower Indian Creek IDFG, personal conversation with Eric Leitzinger).

d. Waterfowl and Wildlife

Poor waterfowl and wildlife habitat in the area is a result of extensive urbanization over and along Indian Creek. In spite of the poor habitat conditions small to medium sized mammals, various songbirds, and herptiles use the area. Due to the urban setting and the degraded condition big game occurrences are non-existent. The South Central Idaho area, specifically the Treasure Valley is a contributing route for the migrating bird Pacific Flyway (“Wings over the West” by Lora J. Finnegan and Jim McCausland, Sunset magazine, November 2002). Places such as Lake Lowell provide an important waterfowl wintering area. A wide variety of waterfowl can be found at Lake Lowell and the adjacent river systems during the winter.

e. Threatened and Endangered Species

There are three species listed under the Endangered Species Act (ESA) for Canyon County (US Fish and Wildlife Services’ species list # 1-4-04-SP-243). These species include gray wolf (experimental/nonessential), bald eagle (threatened), and Idaho springsnail (endangered). Although all of these species occur in Canyon County, none of them are currently present in the proposed project area.

f. Water Quality

Indian Creek originates in the Danskin Mountains and drains a total of 320 square miles. It flows through Elmore and Canyon Counties and the cities of Nampa, Kuna, and Caldwell before its confluence with the lower Boise River. The creek at the project location normally maintains year around flow of 40 to 250 cfs, as determined by limited flow data. This flow is artificially maintained by irrigation flows. Flows from the Boise River are diverted into the New York Canal, which shares a channel with Indian Creek for approximately 8.3 miles. At the Callopy Gates, located near the Canyon County line, up to 1,200 cubic feet per second of irrigation water is diverted from the shared New York Canal/Indian Creek channel into Lake Lowell. Below the Indian Creek diversion, Indian Creek drains 44 square miles, including Wilson Drain. Wilson Drain is a major drainage on the outskirts of Caldwell.

IDEQ lists lower Indian Creek as a Section 303(d) stream. This means that the IDEQ considers lower Indian Creek, a creek for which existing pollution control or requirements are deemed inadequate to provide for the attainment and maintenance of water quality standards (IDEQ website www.deq.state.id.us). Lower Indian Creek was placed on the Clean Water Act, Section 303(d) list because of low dissolved oxygen, high levels of nutrients, oil and grease, and sediment. Run-off containing residual fertilizer from agricultural operations along Indian Creek is a significant contributor to the high levels of nutrients. Untreated storm water run-off contributes to the high levels of gas and grease. Suspended soils occur, at least partially, due to the altered condition of the creek downstream of the Callopy Gates. (“Rediscovering Indian Creek: The Story of Our Region”, 2004)

g. Stormwater

Indian Creek flows from its origins approximately 56 miles to its confluence with the lower Boise River. It flows through three urban areas (Kuna, Nampa, and Caldwell) before reaching the Boise River. Accumulations of stormwater run-off contamination would be most evident in the lower reaches of Indian Creek, including downtown Caldwell. Untreated stormwater contributes to the factors that influence lower Indian Creek being listed as a creek for which existing pollution controls or requirements are deemed inadequate to provide for the attainment and maintenance of water quality standards (IDEQ website www.deq.state.id.us).

h. Sedimentation

Indian Creek has been surveyed twice, once in the late 1970's and again in 2002, so that topography and changes to this topography could be evaluated for the existing creek alignment. Upon review of these two surveys, aggregation of sediment was evident. Sediment accumulations over the past 30 years range from 1 foot 2 inches to 3 feet 6 inches. A description of the sedimentation and table on this deposition is included in the Hydrology Appendix. Deposition of sediment not only minimizes the capacity of the creek but it also adds to the degrading habitat of Indian Creek.

i. Hazardous Waste

The proposed project area is located in the oldest part of Caldwell. At the time when Caldwell was first expanding, common building materials consisted of items such as lead based paint and asbestos. These items would have been used during the construction of many of the buildings that are still located in downtown Caldwell.

The IDEQ database does not identify any hazardous spills, under ground storage tanks or leaking underground storage tanks in the downtown Caldwell area. However, conversations with long-time residents indicate that under ground storage tanks from old gasoline stations may exist. In an effort to verify the presence or absence of under ground storage tanks, the City has applied for an EPA grant (personal conversation with Dennis Cannon, Caldwell's downtown development director June 1, 2004) to conduct test borings in the downtown area.

j. Flooding

There are numerous crossings over Indian Creek. Many reaches of the channel, some up to 900 feet in length are covered. These crossings work to restrict high flows and can increase the flooding potential within the City of Caldwell. The flood magnitudes on Indian Creek in Caldwell are affected by operation of the New York Canal (primarily used for irrigation purposes). The events most likely to cause flooding in Indian Creek would occur during the winter or early spring, when New York Canal is not being used for irrigation-water distribution and could be operated for the greatest flood control.

k. Aesthetics

Currently Indian Creek adds little visual quality to downtown Caldwell except where the channelized water is visible. However, because the banks of the creek are steep and hardened (with concrete, rip rap, or gabions) the visual quality at these sites is less than it would be if the stream appeared natural looking. The creek, although mostly covered, runs through a landscape of streets, sidewalks, and buildings, some of which are abandoned or deteriorating. The visual quality of the stream where it is covered is not measurable, except to say that because it may not be seen, the visual quality is extremely low. Due to the deteriorating condition of many of the buildings along the stream channel, litter, and the empty quality of the streetscape, the visual quality of the stream corridor is rated low.

l. Historic Resources

Caldwell is rich in historic resources. Many of those resources are located in the downtown area. In the early 1900's downtown Caldwell was a hub of activity that centered around Indian Creek. The local Historic Society was successful in having "Caldwell's Historic Downtown District" listed on the National Register of Historic Places. The District is located within a 6-block section of town adjacent to the proposed ecosystem restoration project. Some of the buildings have been lost to fire or are in need of extensive restoration.

The condition of many of the buildings of downtown Caldwell does not currently possess a very high scenic quality due to the need for restoration.

m. Public Safety

In the downtown area, Indian Creek is perceived as a public hazard. The perception is due to the stream being partially covered, partially channelized, and partially open, a condition perceived as a dangerous situation where someone could fall in and become trapped in the stream. Additionally the banks of the open sections of the creek are steep and lined with riprap, concrete or other forms of containment. Structures that support the covered sections of the creek restrict flows. Restricted flows increase water velocities, a dangerous condition if someone were to fall into the creek and become trapped. To compound the issue, rescue efforts could be hampered by the same characteristics.

n. Structures

Within the study area, several segments of Indian Creek are "covered" by bridges, culverts, buildings, or a combination of structures. Wooden beams, roof trusses, and railroad cars support many of these structures. Some are deteriorating to a point that they could collapse into the creek causing further degradation to the creek and habitat corridor. There has already been one instance of a building collapsing into Indian Creek.

o. Socio-Economics

Although much of Caldwell and Canyon County are growing and thriving, the original downtown Caldwell area (that includes about 1 mile of Indian Creek) is in a

constant state of degradation. There is very little the downtown area can offer that would attract economic development and tourism. The existing buildings are old and many house second hand stores, thrift stores, and low-income housing. No longer the business hub for the small communities in the Treasure Valley, the few businesses that are located in the downtown area struggle to survive.

Current social and economic information for Canyon County include:

- Population - Canyon County is Idaho's second most populous county. Most people are drawn to Canyon County because of its proximity to Ada County, Idaho's largest urban area, where many resident commute to work in Ada County. The population growth rate for Canyon County from 1990-2000 was an increase of 45.9%. In comparison, the city of Caldwell grew from a population of 18,400 in 1990 to 25,970 in 2000; a population growth rate of 41.1 percent.

- Income - In 2001, Canyon County's per capita income was \$18,690 while the per capita income for the state of Idaho was \$24,506 and \$30,413 for the United States (Idaho Department of Commerce).

- Employment - While trade and service employment is high, agriculture, food processing, and electronics manufacturing form major components of the economy.

- Education - Canyon County contains twelve separate public school districts, one of which is the Caldwell School District Number 132. Other schools that are located in Caldwell are Albertson College of Idaho and the University of Idaho Caldwell Business Incubator, which is a non-profit business incubation program for early expansion of a small business.

- Transportation - Several State and Federal highways, county and city roads, rail lines, and an industrial airport serve as the main facilitators of transportation in the Caldwell area. Interstate I-84, which provides the main traffic into Caldwell, is estimated to have a daily volume of 5,000+ travelers

The Caldwell Industrial Airport is the second largest in the Treasure Valley and is located three miles from downtown Caldwell, adjacent to I-84. It serves as a reliever airport to Boise International Airport.

3.02 FUTURE WITHOUT PROJECT CONDITION

The future of the area without the proposed project was determined based on historic photographs, field investigations, previous studies, consultations with area residents, and local resource agencies.

a. Creek Habitat Corridor Connectivity

Until the covered and channelized condition of Indian Creek is returned to a more natural condition, fragmentation of the habitat corridor will continue. Some of the riparian and in-stream structures both upstream and downstream of the proposed federal project area are included in the City's Revitalization Plan for restoration. However, the challenge of the proposed urban restoration project would most likely not be undertaken by local interests without federal assistance. Therefore, fragmentation of the habitat corridor along Indian Creek would continue.

b. Riparian Habitat/Vegetation

Structures that cover and channelize Indian Creek in the proposed project area will continue to limit the amount and variety of vegetation along exposed sections of the creek, so long as the creek continues to be covered. The non-native vegetation that have established themselves along exposed areas of the creek would continue to increase in density.

c. Fisheries

In the near future, types and numbers of fish in Indian Creek would most likely remain the same without construction of the proposed project. However, as the human population increases so would traffic and other means of possible contamination that could impact current fish populations.

d. Waterfowl and Wildlife

Over time the vegetation that is present along Indian Creek would mature increasing habitat for waterfowl, songbirds, and mammals. However, existing habitat is sporadic and would do little if anything to promote a continuous habitat corridor.

e. Threatened and Endangered Species

Without the proposed project there would most likely be no change in available habitat for species listed as threatened or endangered.

f. Water Quality

The future of water quality in Indian Creek will continue to be affected by channelization, covering, irrigation return water and urban storm water run-off. With or without the proposed project, water quality would likely remain on the IDEQ's Section 303(d) list. It would take several projects such as the proposed project to effectively improve water quality in Indian Creek.

g. Stormwater

Untreated stormwater in the downtown area will continue to be discharged directly into Indian Creek. Stormwater discharges from urban areas upstream of Caldwell are not expected to change in the near future. The City received a DEQ grant to explore stormwater treatment methods.

h. Sedimentation

Sedimentation is expected to continue at the same rate so long as the flows and irrigation return water are managed in the same manner.

i. Hazardous Waste

Some of the older buildings in downtown Caldwell are deteriorating and without maintenance could collapse into Indian Creek, similar to the car wash that collapsed into Indian Creek in 2001. This would place contaminants such as lead based paint and/or asbestos into the creek system. The City received an EPA Brownsfield Grant that will be used for testing to verify the presence or absence of underground storage tanks. If underground storage tanks were located the city would pursue removal of the tanks.

j. Flooding

The City has no plans to remove any of the crossings over Indian Creek without the proposed project. These crossings would continue to restrict high flows and increase the flooding potential within the City.

k. Aesthetics

Without the proposed project, Indian Creek would continue adding little visual quality to downtown Caldwell. The deteriorating condition of many of the buildings along the stream channel, litter, and the empty quality of the streetscape, is anticipated to remain unchanged, therefore the visual quality of the stream corridor and downtown Caldwell would continue to be rated low.

l. Historic Resources

Caldwell's Historic Downtown area is located within a 6-block area adjacent to the proposed ecosystem restoration project. Some of the buildings have been lost to fire or are in need of repair. Without the proposed project the buildings listed are more likely to continue deteriorating and may lose the significant features that made them eligible for listing on the National Register of Historic Places.

m. Public Safety

In the downtown area, Indian Creek is currently perceived as a public hazard. This perception would most likely stay the same or worsen in the future without the proposed project.

n. Structures

The existing condition of the structures that have been built over Indian Creek within the study area, leads to the assumption that some of those structures would collapse into the creek in the future. This situation would continue to further degrade the creek corridor by displacing vegetation that may develop.

o. Socio-Economics

Without the proposed project the poor economic condition of the downtown area would continue. Most of the buildings in the downtown area would likely continue to be used as they are today. Although, the social and economic condition of the rest of Canyon County would not notice much of an affect whether or not the proposed project is constructed.

3.03 ALTERNATIVES CONSIDERED

A broad range of alternative approaches were considered in the development of the proposed project. Alternatives for this project were developed from management measures recommended by the local sponsor, local interest groups, public meetings, input from other governmental resource agencies, non-governmental organizations, and recommendations from the Corps project delivery team.

Management measures that would lead to minimizing creek corridor fragmentation, maximizing vegetation, improving in-stream habitat, and improving water quality include:

- Daylighting or uncovering the creek by removing the artificial coverings (e.g. streets, parking lots, buildings, etc.) from sections of the creek. This provides more natural lighting conditions to the creek channel, which can improve fish passage through the area and allow plants to grow along the creek.
- Creek realignment changes the creek's path in order to create more desirable habitat conditions.
- Increased sinuosity increases the channel length between the starting point and the ending point. This creates more creek length in which to provide a variety of aquatic habitat conditions (e.g. slow water, fast water, shallow water, and deep water).
- Improved in-stream habitat increases the diversity of aquatic habitat types found in the creek. Aquatic organisms need different types of places to feed, hide, rest, and spawn.
- Establishment of a vegetated riparian zone provides shade, cover, and food to organisms in the creek as well as contributing to creek bank stability and the uptake of excess nutrients.
- Establishment of upland vegetation provides a buffer between the riparian zone and highly developed areas. Upland vegetation areas would also provide an additional habitat type for some wildlife in the area.

Planning objectives, constraints, problems and opportunities, and planning criteria served as the basis for developing alternatives. Variations of the management measures were used to develop six alternatives not including the “No Action” alternative. The Corps is required to consider the option of “No Action” as one of the alternatives. The seven alternatives encompass various combinations of geographic areas within the project footprint. That footprint is inclusive of the area between Cleveland & Main Streets and 5th & 10th Avenues. The seven alternatives are generally described below:

Alternative 1 would daylight two sections of covered creek in their existing locations: between 10th and 9th and between Kimball and 7th as well as realigning the creek between 7th and 6th Avenues maximizing sinuosity. The old channel would be abandoned where the creek is realigned. Establishment of vegetation would be all-inclusive for one block and include portions of the four blocks between 9th and 5th Avenues. This alternative would locate the creek totally to the northwest of Blaine Street. Two bridges would be installed, one at 7th Avenue and one at 6th Avenue.

Alternative 2 would daylight the stream in its existing location except where it crosses under Blaine Street between 7th and 6th Avenues. Vegetation would be established along portions of the four blocks where the creek is visible. No new bridges/streets would be built over the creek.

Alternative 3 would daylight two sections of covered creek in their existing locations: between 10th and 9th and between Kimball and 7th as well as realigning the creek between 7th and 6th Avenues. Where the creek is realigned the old channel would be abandoned. Establishment of vegetation would include portions of each block in the project area (five blocks). This alternative would locate the creek totally to the northwest of Blaine Street. Two bridges would be installed, one at 7th Avenue and one at 6th Avenue.

Alternative 4 would daylight two sections of covered creek in their existing locations: between 10th and 9th and between Kimball and 7th as well as move and daylight the creek between 7th and 6th Avenues. The old channel would be abandoned where the creek is realigned. Where the creek is realigned the old channel would be abandoned. The entirety of four blocks and ½ of the fifth block between 10th and 5th Avenues would be utilized for creek realignment and vegetation establishment. Two bridges would be installed, one at 7th Avenue and one at 6th Avenue.

Alternative 5 would daylight the stream in the existing alignment except where it is covered by streets. Vegetation would be established within portions of each block along the creek. No new bridges would be needed.

Alternative 6 would restore the creek in its current location from 10th Avenue to Kimball Avenue. From Kimball to 5th, the creek would be realigned to flow diagonally in a northeasterly direction between Kimball and 6th Avenue and then reconnect to its existing alignment in the block between 6th & 5th Avenues and Arthur & Main Streets. Where the creek is realigned the old channel would be abandoned and a sheet pile wall would become a barrier between the proposed alignment and the abandoned channel. Two pedestrian bridges would be installed: one at 6th Avenue and one at 7th Avenue.

Alternative 7 – would do nothing more than routine maintenance. The “No Action” alternative would be reflective of the “Future Without Project Condition” that is detailed in Section 3.02 of this report. With the “No Action” alternative, the Federal Government would not participate in the project.

3.04 ALTERNATIVES REMOVED FROM FURTHER CONSIDERATION

The Corps’ project delivery team and the project sponsor worked together to determine alternatives that would be carried forward into detailed analysis. The first screening of alternatives included whether or not each alternative would contribute to the project objectives (Table 3-1) and whether or not each alternative violated identified constraints (Table 3-2).

Cost estimates were developed for alternatives that were carried forward after the first screening. Cost estimates were completed for separate creek reaches (geographic area), 10th to 9th Avenue, 9th to Kimball Avenue, and Kimball to 5th Avenue. The reaches are identified as options within each alternative. The creek reaches were used in developing an incremental cost analysis that was used to further screen alternatives with options.

a. Objective and Constraint Screening

Simple yes/no matrices were used to initially screen the full array of alternatives. The objective matrix distinguishes whether or not each alternative would make a positive contribution to the project’s primary objectives. The constraint matrix distinguishes whether or not each alternative avoids identified constraints. One or more “No’s” for any one alternative eliminates it from further consideration.

Table 3-1. Objective Matrix

	Alt. 1	Alt. 2	Alt. 3	Alt 4	Alt. 5	Alt. 6	Alt. 7
OBJECTIVE							
Reduce fragmentation	Yes	Yes	Yes	Yes	Yes	Yes	No
Increase aquatic habitat	Yes	Yes	Yes	Yes	Yes	Yes	No
Increase riparian/upland vegetation	Yes	Yes	Yes	Yes	Yes	Yes	No
Improve water quality	Yes	Yes	Yes	Yes	Yes	Yes	No

All of the alternatives would contribute to the improvement of the ecosystem in the proposed project area except Alternative 7, “No Action”. However, the “No Action” alternative will be carried forward because the Corps is required to consider the option of “No Action” in order to comply with the requirements of the NEPA. The “No Action” plan forms the basis for which all other alternative plans are measured. NEPA requires that the “No Action” plan is included among those carried forward.

Table 3-2. Constraint Matrix

	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5	Alt. 6	Alt. 7
CONSTRAINT							
Maintain flood flow capacity	Yes						
Avoid I-84 business route (Blaine St)	Yes						
Avoid National Historic Preservation Act Listed Bldgs.	Yes						
Avoid Fire Station / Parking	Yes	Yes	Yes	Yes	No	Yes	Yes
Stay within the Federal Dollar Limit	Yes	Yes	Yes	No	Yes	Yes	Yes
Minimize Real Estate Acquisitions	No	Yes	Yes	No	Yes	Yes	Yes

Alternative 1 would require the purchase of the entire block between 10th and 9th Avenues and Blaine and Arthur Streets. The assessed value of this real estate is high; therefore it has been eliminated from further consideration due to costs exceeding the Federal dollar limit.

Alternative 4 would provide extensive environmental benefit along Indian Creek. However, it would require the purchase of a significant amount of real estate. The excessive amount of real estate required eliminates Alternative 4 from further consideration due to exceedance of the Federal dollar limit.

Alternative 5 would daylight the stream in its existing location. This alternative would require the demolition of the fire station and its parking area. Due to the impacts to the fire station, Alternative 5 has been eliminated from further consideration.

b. Geographic Options and Remaining Alternatives

Cost estimates were developed for study Alternatives 2, 3, and 6 using the micro computer-aided cost engineering system (MCACES). Quantities were broken down by stream reaches – 10th to 9th Avenues, 9th to Kimball Avenues, and Kimball

to 5th Avenues. In order to develop the incremental cost analysis, geographic areas (creek reaches) have been identified as measures (A through H). Measure C (restore the block from 7th to Kimball) is identified in Table 3-3, below as a “Combinable Geographic Measure”. However, restoring only one block of Indian Creek does not constitute a viable alternative, therefore it is not a stand-alone alternative.

Table 3-3 below is presented to show the relationships between “Study Alternatives” defined as alternatives developed from management measures, “Combinable Geographic Measures” defined as single blocks that could be combined to create economic alternatives, “Best-Buy Economic Alternatives” defined as the single block combinations that represent the most cost efficient combinations, and “Description” defined as the physical description of the single block combinations. The various combinations of the geographic measures are presented as options within each study alternative.

Table 3-3. Relationships Between Study Alternatives, Geographic Measures, and Economic Analysis Alternatives

Study Alternative	Combinable Geographic Measures	Best-Buy Economic Alternatives	Description
Not a stand alone alternative	C	4	Restore 7 th to Kimball
Alt. 2 Option A	A+C+D+E	12	5 th to 7 th , no action 6 th to 7 th , restore 7 th to Kimball, Kimball to 9 th , and 9 th to 10 th .
Alt 2 Option B	A+C+D	9	5 th to 7 th , no action 6 th to 7 th , restore 7 th to Kimball, and Kimball to 9 th .
Alt. 2 Option C	B+C+D	7	5 th to 7 th , new alignment 6 th to 7 th , restore 7 th to Kimball, and Kimball to 9 th .
Alt. 3 Option A	B+C+D+E	15	5 th to 7 th , new alignment 6 th to 7 th , restore 7 th to Kimball, Kimball to 9 th , and 9 th to 10 th .
Alt. 3 Option B	B+C+E	14	5 th to 7 th , new alignment 6 th to 7 th , restore 7 th to Kimball, and 9 th to 10 th .
Alt. 6 Option A	D+E+F+G+H	19	Restore Kimball to 9 th and 9 th to 10 th , new alignment from 5th to 6 th , 6 th to 7 th , and Kimball to 7 th .
Alt. 6 Option B	E+F+G+H	18	Restore 9 th to 10 th , new alignment from 5th to 6 th , 6 th to 7 th , and Kimball to 7 th .
Alt. 6 Option C	D+F+G+H	17	Restore Kimball to 9 th , new alignment from 5th to 6 th , 6 th to 7 th , and Kimball to 7 th .
Alt. 6 Option D	F+G+H	16	New alignment from 5th to 6 th , 6 th to 7 th , and Kimball to 7 th .
Alt. 7	No action	1	No action

Alternative 2 would encompass daylighting the creek in its current alignment except where it crosses under Blaine St. in the block between 6th and 7th Avenues. This section of the creek would remain covered. The majority of the restoration would take place from 10th to 9th, Kimball to 7th, and 6th to 5th Avenues. The creek and limited riparian would be restored in the block between Kimball and 7th Avenue, although the proximity of the creek to Blaine Street would limit riparian and upland habitat to only one side of the creek. The other side would remain hardened and run parallel to Blaine Street. A total of 2.73 acres would be restored

including 0.64 acres of open water, 1.33 acres of riparian area, and 0.76 acres of upland area. Alternative 2 will be carried forward into the second screening as Alternative 2, Options A, B, and C.

- Option A as described above is depicted in the photo below.
- Option B would eliminate restoration of the block between 10th and 9th, which would limit total restored acres to 1.85 including 0.35 acres of open water, 0.89 acres of riparian area, and 0.70 acres of upland area.
- Option C would eliminate restoration of the blocks between 10th and Kimball, which would limit total restored acres to 1.62 including 0.35 acres of open water, 0.60 acres of riparian area, and 0.67 acres of upland area.

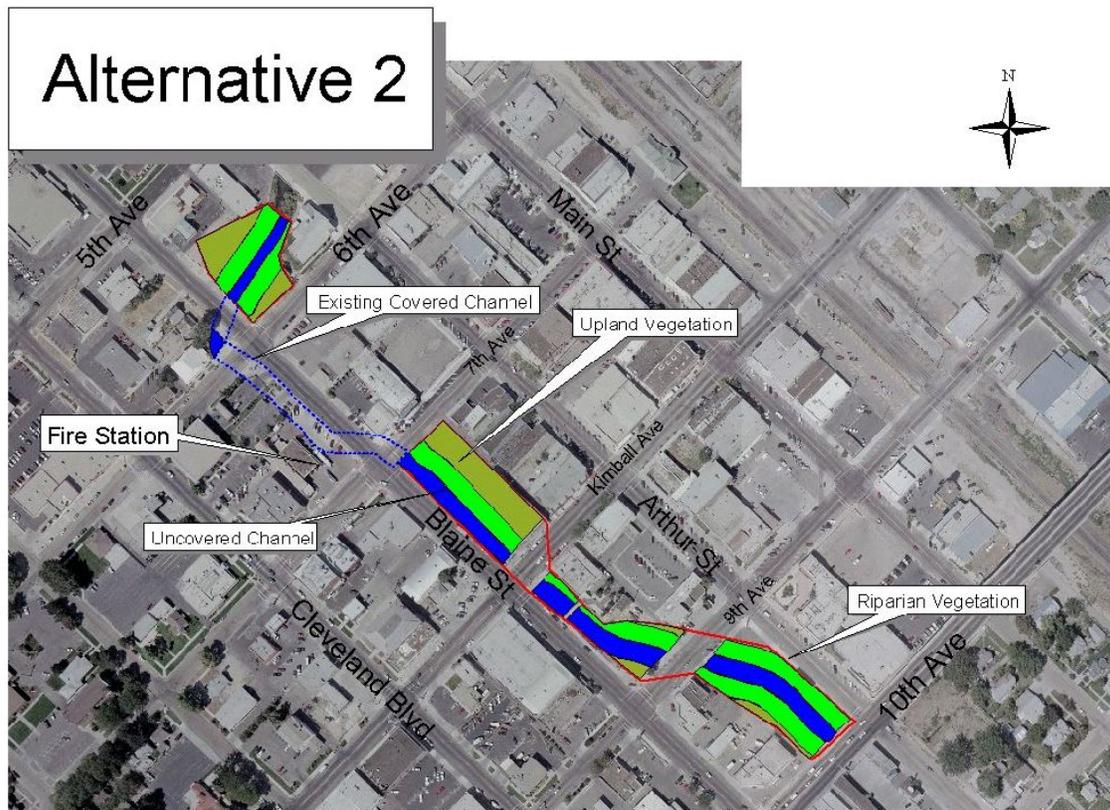


Figure 3 - Alternative 2

Alternative 3 would encompass daylighting the stream in its existing alignment between 7th and 10th Avenues. In the area between 6th and 7th Avenues, the creek would be moved to the northeast side of Blaine Street. Where the creek is realigned the old channel would be abandoned and a sheet pile wall would become a barrier between the proposed alignment and the abandoned channel. It would reconnect to the existing alignment at the corner of 6th and Blaine. This alignment allows for minimal riparian habitat due to the proximity of the alignment to Blaine Street on the left side (looking downstream) of the channel. A majority of the creek would be primarily linear with minimal sinuosity. This alternative would include replacement/establishment of three two-lane traffic bridges. A total of 3.48 acres would be restored including, 1.03 acres of open water area, 1.76 acres of riparian area, and 0.70 acres of upland area. Alternative 3 will be carried into the second screening as Alternative 3, Options A and B.

- Option A as described above is depicted in the photo below.
- Option B would eliminate restoration of the block between 10th and 9th Avenues, which would limit restored acres to a total of 2.61 including 0.74 acres of open water, 1.23 acres of riparian area, and 0.64 acres of upland area.

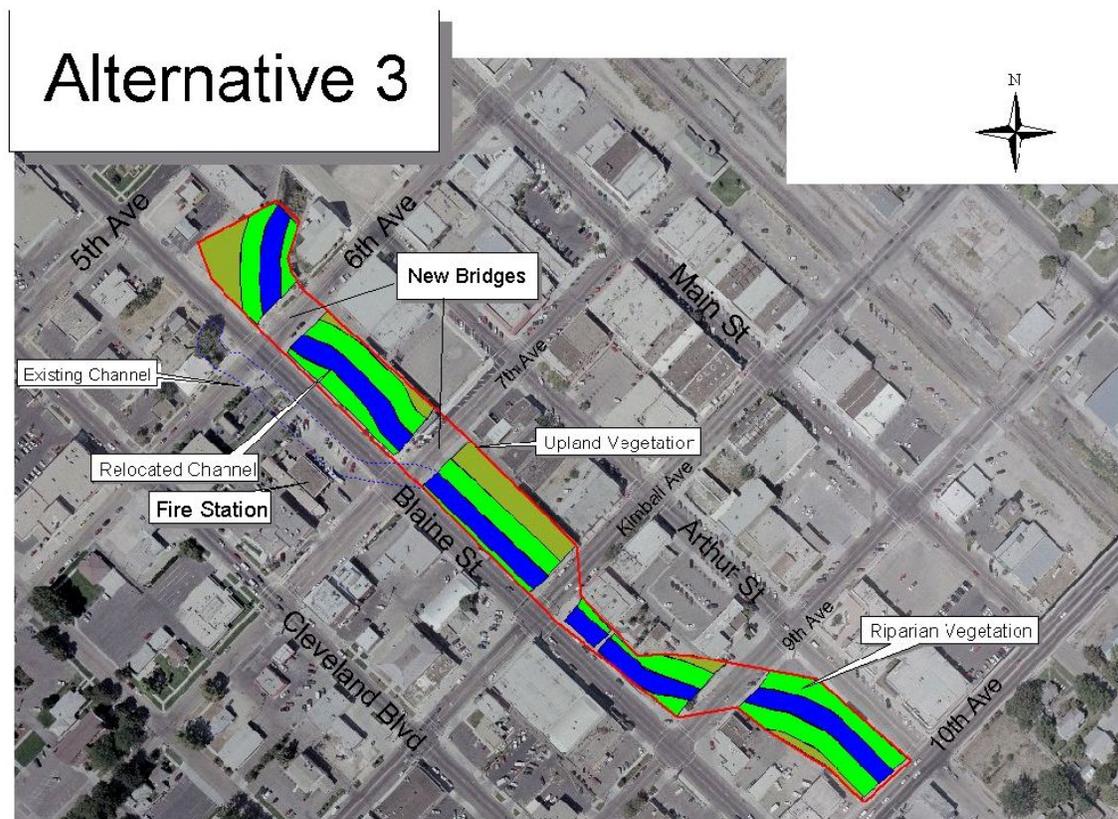


Figure 4 - Alternative 3

Alternative 6 would restore the creek in its current location for two blocks from 10th to Kimball. At Kimball, the creek alignment would be relocated and flow diagonally in a northwest direction through the blocks between Kimball and 6th. Where the creek is realigned the old channel would be abandoned and a sheet pile wall would become a barrier between the proposed alignment and the abandoned channel. In the block between 5th and 6th, the creek would then reconnect to its existing alignment. Two pedestrian bridges would be installed; one at 6th Avenue and one at 7th Avenue. This alternative maximizes the use of available real estate, thereby maximizing available space for an improved creek corridor with riparian and upland vegetation development on both sides of the creek. The downtown area around the creek would become a pedestrian area therefore minimizing adverse impacts from traffic. A total of 5.79 acres would be restored including 1.51 acres of open water area, 2.35 acres of riparian area, and 1.93 acres of upland area. Alternative 6 will be carried into the second screening as Alternative 6, Options A, B, C, and D.

- Option A as described above is depicted in the photo below.
- Option B would eliminate restoration of the block between Kimball and 9th, which would limit the total restored area to 5.56 acres including, 1.51 acres of open water, 2.15 acres of riparian area, and 1.90 acres of upland area.
- Option C would eliminate restoration of the block between 9th and 10th, which would limit total restored area to 4.91 acres including, 1.22 acres of open water, 1.82 acres of riparian area, and 1.87 acres of upland area.
- Option D would eliminate restoration of two blocks between Kimball and 10th, which would limit total restored area to 4.68 acres including, 1.22 acres of open water area, 1.62 acres of riparian area, and 1.84 acres of upland area.



Figure 5 - Alternative 6

With Alternative 7, the No Action alternative, the creek would remain channelized and covered. It is likely that some of the structures that currently cover the creek will continue to degrade and collapse into the creek. Little or no chance of restoring a continuous creek and habitat corridor would exist. See the “Existing Condition” photo on page 14 for an aerial photo depicting the “No Action” alternative.

c. Incremental Cost Screening

The cost effectiveness analysis and incremental cost analysis procedures provide a structured framework to assist in evaluation of the alternatives. The analysis was accomplished by utilizing the planning methodology incorporated in the Institute of Water Resources/Waterways Experiment Station’s Cost Effectiveness and Incremental Cost Analysis program. Every possible combination of solutions (geographic areas) was derived and a total cost and total output estimated was calculated for each combination. The program conducts a cost effectiveness analysis; first identifying the least cost combination for every possible level of output, and then identifying the cost effective set of combinations by screening out plans where more output could be provided by another combination at the same or less cost. Once the cost-effective set of combinations is identified, the program calculates the incremental cost and incremental output of moving from each combination to the next larger combination. The program also identifies the subset of the cost effective set which are the most efficient in production, or “best-buys”, as scale increases from the smallest to the largest combination. The study team and project sponsor reviewed the subset of “best buys” to assure the alternatives would contribute to the project objectives and would not violate identified constraints. Economic alternative 4 is part of several study alternatives but is not a stand-alone alternative. Alternative 2, Options A and B, Alternative 3, Options A and B, and Alternative 6 Option C are not identified as “best buy” alternatives in the incremental cost analysis; therefore, they have been eliminated from further consideration. Table 3-4 is replicated from Table 4 of the Incremental Cost Analysis “best buys” (Incremental Costs Analysis Appendix).

Table 3-4. Cost-Effective Least-Cost Combinations with the Incremental Analysis

Study Alternative	Economic Alt.	Cost	Output	Average Cost	Incremental Cost	Incremental Output	Incremental Cost Per Unit
Alt. 7	1	\$0	0.00	\$0	\$0	0	\$0
Not a stand alone alternative	4	\$753,655	0.92	\$819,190	\$753,655	.92	\$819,190
Alt. 2 Option C	7	\$1,370,507	1.63	\$840,801	\$616,852	.71	\$868,805
Alt. 6 Option D	16	\$4,103,452	4.69	\$874,936	\$2,732,945	3.06	\$893,119
Alt. 6 Option B	18	\$4,901,897	5.56	\$881,636	\$798,445	0.87	\$917,752
Alt. 6 Option A	19	\$5,291,631	5.79	\$913,925	\$389,734	0.23	\$1,694,495

3.05 ALTERNATIVES SELECTED FOR FURTHER EVALUATION

Alternatives that were judged to be feasible from an economic, environmental, hydraulic, and engineering standpoint were selected for further evaluation. Consideration was given to the contributions each alternative would provide to protect and restore the quality of the total environment, is in the public interest, and enhances economic development, while staying within identified constraints.

The final array of alternatives includes:

- Alternative 2 Option C,
- Alternative 6 Options A, B, & D, and
- Alternative 7.

Each alternative's effect on environmental resources and the cumulative effects of each alternative are evaluated and compared in Section 4.0, "Affected Environment and Environmental Consequences".

SECTION 4.0 -- AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section provides a comparison of the effects that action alternatives would have on key resources of the environment in the proposed project area. A brief summary of Alternative 7, “No Action”, is presented as a baseline of the affected environment against which the action alternatives can be evaluated.

The action alternatives are:

Alternative 2

Option C would daylight the creek in its current location with the following exceptions: 1) The block from 6th to 7th Avenues would be realigned and the existing channel abandoned and 2) the block from 9th to 10th Avenue would not be restored.

Alternative 6

Option A would restore the creek in its current location from 10th to Kimball Avenues and realign the creek from Kimball to 5th Avenues so that it flows in a northwest direction and then reconnects to the existing alignment at 5th Avenue. The existing alignment from Kimball to 5th Avenues would be abandoned.

Option B would be the same, as Option A except the block from Kimball to 9th would not be restored.

Option D would be the same, as Option A except the blocks from Kimball to 10th Avenues would not be restored.

4.01 ENVIRONMENTAL EVALUATION METHODOLOGY

The evaluation of impacts is based upon a comparison of condition with and without the implementation of the alternative plans. For each environmental resource a discussion follows that summarizes the “No Action” alternative, the impacts of the proposed action and then direct, indirect, and cumulative impacts the alternatives would have on the resource. Adverse and beneficial effects are addressed within each impact to an environmental resource.

Table 4-1 below summarizes the anticipated consequences of alternatives that are detailed in Section 4.02 of this report. Subjective values were given to the anticipated effects on each resource for each of the alternatives. Values from –3 to +3 were assigned based on extrapolations from consultations with team members, the local sponsor, and resource agencies. Negative numbers indicate a long-term adverse effect, 0 indicates no effect, and positive numbers indicate a long-term beneficial effect. These values are used to rank the effect that each alternative would have on specific environmental resources in the proposed project area. The sum of all of the values for each resource gives a general overall comparison of the alternatives.

Table 4-1. Anticipated Environmental Effects

Resource	Alternative 2 Option C	Alternative 6 Option A	Alternative 6 Option B	Alternative 6 Option D	Alt. 7 No Action
Creek Habitat Corridor Connectivity	1	3	1	2	0
Riparian/Vegetation	1	2	2	2	1
Fisheries	1	2	2	2	0
Wildlife/ Waterfowl	1	2	2	2	1
Threatened & Endangered Species	0	0	0	0	0
Water Quality	1	1	1	1	0
Stormwater	1	3	3	3	0
Sediment	0	0	0	0	0
Hazardous Waste	1	1	1	1	0
Flooding	1	1	1	1	-1
Aesthetics	1	2	2	2	-1
Historic Resources	1	2	2	2	-1
Public Safety	1	2	2	3	0
Structures	2	2	2	2	-1
Socio-Economics	1	2	2	3	-1
Total	14	25	23	27	-3

4.02 ENVIRONMENTAL RESOURCES AND CONSEQUENCES

The action alternatives that would restore the ecosystem along Indian Creek in downtown Caldwell are very similar to each other. Each alternative incorporates most, if not all, of the management measures identified in Section 3.03 of this document. The differences in alternatives come with the various combinations of geographic areas to be restored and the total area restored. Since impacts and benefits between the alternatives would be similar, the “No Action” description for each environmental resource will be followed by a brief comparison of the alternatives if there is any difference between them, and then a narrative of direct, indirect, and cumulative impacts.

a. Creek Habitat Corridor Connectivity

(1) No Action – The fragmented creek and habitat corridor of Indian Creek would continue to be affected by confinement, channelization and the covered creek. The existing habitat corridor from the lower Boise River up Indian Creek would stop at the downtown Caldwell area.

(2) Impacts of the Proposed Action - A more continuous habitat corridor along Indian Creek would result from all of the action alternatives. However alternatives differ in the continuous distance that would be restored, so total distance of improved corridor connectivity would vary between alternatives. Alternative 6, Option A would provide the greatest distance restored followed by Alternative 6 Option B and Alternative 6 Option D. Alternative 2 Option C would result in the shortest distance restored.

- Direct Adverse Effects – During construction most of the existing pockets of habitat would be destroyed and the creek corridor altered for the time that work is performed at or near the water.

- Direct Beneficial Effects – Fish and wildlife in the area would benefit from a more continuous creek habitat corridor. Benefits would include a more natural lighting condition to the creek channel, more diversity to the creek structure and the re-establishment of riparian and upland vegetation. These improvements to the continuous creek corridor may improve fish passage and travel corridor conditions for wildlife.

- Indirect Adverse and Beneficial Effects – None anticipated.

- Cumulative Impacts – Improving the aquatic ecosystem in this area further extends restoration efforts completed in areas downstream of the proposed project area and encourages similar projects upstream.

b. Riparian Habitat / Vegetation

(1) No Action– Vegetation along exposed sections of Indian Creek would continue to grow providing increased habitat and vegetation in the isolated pockets of vegetation that currently exist. However, structures that cover and channelize Indian Creek would continue to limit the amount and variety of vegetation available.

(2) Impacts of the Proposed Action- Downtown Caldwell is an urban area and predictions indicate that an ecosystem restoration project would serve to encourage additional development and tourism in the downtown area. The City recently initiated a Landscape Ordinance Plan that would control urban encroachment along Indian Creek in downtown Caldwell.

The limited vegetative community types that currently survive in the area would experience some temporary and permanent impacts related to construction and operation of the project. Adverse impacts would be limited to construction activities while the completed project would have beneficial impacts when riparian and upland areas are re-established along Indian Creek. The various alternatives would provide different amounts of vegetation as shown in Table 4-2, below.

Table 4-2. Restored Vegetation by Alternative

Action Alternative	Riparian Vegetation	Upland Vegetation	Total
Alternative 2, Option C	0.60 acres	0.67 acres	1.27 acres
Alternative 6, Option A	2.35 acres	1.93 acres	4.28 acres
Alternative 6, Option B	2.15 acres	1.90 acres	4.05 acres
Alternative 6, Option D	1.62 acres	1.84 acres	3.46 acres

- Direct Adverse Effects – The existing fragmented pockets of low quality shrub-steppe, and lacustrine/riparian vegetation (less than one acre), as well as the areas that support invasive exotic plant species will be impacted temporarily and/or permanently by construction, excavation and/or filling activities associated with the proposed action. The direct adverse impacts to vegetation would include lack of water, where the alignment is abandoned and destruction of vegetation where new channel segments are excavated.

- Direct Beneficial Effects – A completed project would result in the establishment of between 0.60 and 1.62 acres of riparian vegetation and between 0.67 and 1.84 acres of upland vegetation totaling as much as 3.46 acres of re-established vegetative community. The amount, quality, and diversity of this vegetation would increase as it matures. As this vegetative structure develops, it would provide shade and cover for fish and wildlife species as well as providing additional creek bank stability. Species such as small songbirds and red-winged black birds are currently present. The presence of such birds as the yellow or Wilson warbler would be good indicators, even in an urban setting, that the vegetative community is functional IDFG, personal conversation with Rex Sallabanks, May 24, 2004).

- Indirect Adverse Effects – Increased development and tourism activities in the vicinity of the project area would increase human interaction with the re-established vegetation. Added traffic, walking may create unplanned walking paths within both the upland and riparian areas.

- Indirect Beneficial Effects – A mature and diverse vegetative community, even in an urban setting, would include the food organisms produced from the vegetation that would contribute to the overall health of the aquatic system. Upland vegetation provides a buffer that helps to purify stormwater run-off prior to reaching the creek.

- Cumulative Impacts – Re-establishment of the vegetative community along newly uncovered or realigned sections of Indian Creek would increase the continuous habitat corridor for fish and wildlife traveling upstream from the confluence with the lower Boise River. The proposed project and similar planned projects by private landowners, civic groups, and local governments/agencies would exponentially increase the quality and quantity of riparian vegetation.

c. Fisheries

(1) No Action – Indian Creek supports more fish now that it did historically. Without the project the numbers of fish are not expected to decrease unless habitat conditions worsen. Without the project it is likely that habitat conditions would degrade.

(2) Impacts of the Proposed Project – Temporary impacts from construction would adversely affect fish and other aquatic species, as new alignments are constructed and vegetated or old alignments are uncovered and the banks sloped and vegetated. However, long-term impacts of a daylighted creek and a re-established riparian area would benefit fish and other aquatic species as cover and diversity increase. The various alternatives would provide different amounts of restored open water habitat; the least amount of restored open water would create the least amount of disturbance to the existing condition.

Table 4-3. Added Open Water by Alternative

Action Alternative	Open Water
Alternative 2, Option C	0.35 acres
Alternative 6, Option A	1.51 acres
Alternative 6, Option B	1.51 acres
Alternative 6, Option D	1.22 acres

- Direct Adverse Effects – Temporary impacts to fish during construction may include increased suspended soils (turbidity) in the creek and the stress of being caught and released should the old channel be abandoned (Alternative 6, Options A, B, and D). Turbidity in the creek would result when construction is complete and water is diverted into a newly developed or newly daylighted channel. This impact would be temporary in nature. If the old channel were abandoned fish would be captured and re-released into the new channel. This activity causes stress to the fish.

- Direct Beneficial Effects - Increased sinuosity, channel diversity and in-stream habitat as well as establishment of a riparian area would benefit all aquatic species. These improvements would provide a greater variety of aquatic habitat conditions such as slow water, fast water, shallow water and deep water and more diverse habitat types such as places to feed, hide, rest and spawn. Alternative 6, Options A and B would provide the highest increase in open water with Option D providing a little less. Alternative 2 Option C would increase open water by the least amount, which would also minimize the amount of associated sinuosity, channel diversity, and in-stream habitat improvements.

- Indirect Adverse and Beneficial Effects – None anticipated.

- Cumulative Impacts – As the trend of restoring aquatic ecosystems continues in south central Idaho, the beneficial impacts of those restoration projects to the fishery resource will also continue. The improvement of in-water and riparian habitat may serve to encourage increased numbers of Lahontan cutthroat and fall Chinook as well as Kamloops and rainbow trout from the Nampa Fish Hatchery to return.

d. Waterfowl and Wildlife

(1) No Action – Waterfowl and wildlife that are currently present in the area would continue utilizing the existing areas of habitat for things such as shade and cover. As this habitat/vegetation matures the quality of the vegetation would improve however, existing vegetation is sporadic and provides limited cover.

(2) Impacts of the Proposed Project - The lower Boise River and its tributaries are an important area to waterfowl and wildlife as a travel corridor that provides cover and shade. The ecosystem restoration project may disrupt waterfowl and wildlife that try to utilize the project area during construction, but long-term impacts would be greatly improved. The most natural habitat condition would be one that is restored on both sides of the creek. Therefore, Alternative 6, Options A, B, and D would provide more habitat at a higher quality than would Alternative 2 Option C. See Table 4-2.

- Direct Adverse Effects – Temporary construction activities may impact waterfowl and wildlife if they are within the construction area. The construction activity may cause animals to abandon the area. After the project is complete it is predicted that urban activity would increase, animals that avoid human activity would continue to avoid this area regardless of habitat conditions.

- Direct Beneficial Effects - Development of a quality and continuous habitat corridor between Caldwell and the lower Boise River would benefit species of waterfowl and wildlife that don't mind human activity. Benefits of improved creek, riparian, and upland habitat without sections of degradation provide opportunities for feeding, nesting, and traveling. It is expected that indicator species such as the yellow warbler and other neo tropical birds would be seen as the habitat improves over the 5 years following construction.

- Indirect Adverse or Beneficial Effects – None anticipated

- Cumulative Impacts – Benefits to waterfowl and wildlife would increase in quality as the vegetative communities mature. Based on current trends in the area, it is likely that additional restoration projects would be undertaken and that these would continue to build on the beneficial elements of this project and others that preceded it.

e. Threatened and Endangered Species

(1) No Action – Although there are three species listed for Canyon County none of them are known to exist in the proposed project area.

(2) Impacts of the Proposed Project – It is unlikely that the project would impact any species listed under the ESA.

- Direct Adverse or Beneficial Effects – None anticipated.
- Indirect Adverse Effects – None anticipated
- Indirect Beneficial Effects - Improved aquatic and riparian areas would indirectly benefit future generations of bald eagles due to an increase in food sources. The restoration project would increase habitat for fish, waterfowl, and other aquatic species that are the primary food source for the bald eagle.
- Cumulative Impacts - As additional environmental projects are completed, more and more habitats would be available. Additional habitat would provide additional feeding, roosting, breeding, etc. options for species currently listed or those that may become listed in the future.

f. Water Quality

(1) No Action – The water quality in Indian Creek would continue to be affected by channelization, covering, irrigation return water and stormwater run-off. Irrigation return water would continue affect water quality regardless of whether or not the proposed project is constructed and stormwater run-off would not change until treatment methods for stormwater are initiated.

(2) Impacts of the Proposed Project – Impacts from one environmental restoration project, whether adverse or beneficial, would not have a significant affect on the water quality in Indian Creek. There would be short-term impacts to water quality from construction activities and initial water diversion into a potentially new channel. Alternative 2 Option C would have the least short-term impacts to water quality because no new channel would be excavated. Alternative 6 Options A, B, and D would have greater short-term adverse impacts, but also greater long-term benefits.

- Direct Adverse Effects - During construction, the site may be subject to erosion, which could cause additional sediments to enter existing waters. Increased turbidity may also result from the addition of water to a newly developed channel. These impacts would be temporary in nature and would be minimized by the use of Best Management Practices. Anticipated increased human activity in the area may increase stormwater run-off.
- Direct Beneficial Effects – Improved water quality and overall stream health would be attributed to actions such as increased sinuosity, in-stream diversity, and establishing riparian and upland vegetation. Upland vegetation serves as a buffer zone that provides some filtration of stormwater run-off contaminants prior to entry into Indian Creek.
- Indirect Adverse or Beneficial Effects – None anticipated.

- Cumulative Impacts – Although no single restoration or improvement project would serve to significantly improve water quality there are several planned efforts that could make a difference. The City of Caldwell is exploring possibilities of a stormwater purification system and Albertson College of Idaho is considering the development of a wetland.

g. Stormwater

(1) No Action – Untreated stormwater would continue contributing to the factors that influence lower Indian Creek being listed as a creek for which existing pollution controls or requirements are deemed inadequate to provide for the attainment and maintenance of water quality standards. However, if Caldwell and the Treasure Valley experience rapid growth the existing stormwater issue could be worsened by added traffic, etc.

(2) Impacts of the Proposed Project – The addition of upland vegetation associated with the proposed project would provide a beneficial buffer area between urban activities (including stormwater run-off) and Indian Creek. The buffer zone would provide some natural purification of stormwater prior to its discharge into Indian Creek. The alternatives with the largest amount of planned upland vegetation (See Table 4-2) would provide the greatest benefit to the project. Alternative 6, Option A would provide the most upland vegetation, followed by Alternative 6, Option B then Alternative 6 Option D and Alternative 2 Option C.

- Direct Adverse Effects – Construction equipment used during the implementation of the project may contribute to increased stormwater run-off for the time it takes to construct the project. Best Management Practices would be used to minimize stormwater run-off and to prevent any petroleum spills from equipment during construction.

- Direct Beneficial Effects – The creation of a buffer zone that offers a natural form of pollution purification between urban activities and Indian Creek, would help to minimize further contamination of lower Indian Creek and possibility the lower Boise River.

- Indirect Adverse Effects– None anticipated.

- Indirect Beneficial Effects – With a restored ecosystem in the area, other educational or civic groups in the area may explore the possibilities of additional stormwater treatment methods.

- Cumulative Impacts – The natural treatment of stormwater provided by upland vegetation improves the quality of water discharged into Indian Creek. If other stormwater treatment projects are undertaken upstream of the proposed project it is likely that cumulatively these projects would result in improved overall water quality.

h. Sedimentation

(1) No Action – Sediment aggregation would be expected at a rate similar to that seen over the past 30 years. This rate of deposition would continue so long as New York Canal continues to be operated in the same manner as it has been operated historically.

(2) Impacts of the Proposed Project – None of the alternatives for the proposed project would alter the aggregation of sediment in the project area from the operation of New York Canal. However, sediment up slope of the ordinary high water mark along Indian Creek in the proposed project area would be reduced by the re-establishment of upland vegetation.

- Direct Adverse Effects – None anticipated.
- Direct Beneficial Effects – Sediments that enter the creek from along the slope of Indian Creek would be reduced by the re-establishment of upland and riparian vegetation.
- Indirect Adverse or Beneficial Effects – None anticipated.
- Cumulative Impacts – None anticipated.

i. Hazardous Waste

(1) No Action – Many of the older buildings in downtown Caldwell were constructed using materials that are now considered hazardous. Due to minimal maintenance of some of these buildings there is the possibility that they could collapse into Indian Creek. In 2001 one such building did collapse into the creek, placing contaminants into the water column.

The IDEQ database does not identify any contaminated sites, spills, or underground storage tanks in the area however, accounts from long time residents indicate a possibility of underground storage tanks. In response to this public concern, the City has applied for an EPA grant for the purpose of verifying either the presence or absence of underground storage tanks. This verification would be accomplished by performing test borings throughout the downtown area.

(2) Impacts of the Proposed Project – Construction of the restoration project may impact potentially hazardous waste contained with the building materials originally used to construct buildings located in the downtown area. Insulation that may contain asbestos could become friable (a condition that transforms asbestos into airborne particles). Friable asbestos is a regulated waste and along with possible lead based paint would require controlled removal methods. Regardless of the alternative selected as the preferred plan the impacts of the project to hazardous waste would be the same.

- Direct Adverse Effects – Although the use of Best Management Practices would be used in the removal of hazardous waste, there is a slight chance that asbestos or lead based paint may not be totally contained. Also, if undocumented underground storage tanks were discovered there might be an adverse impact, the extent of which would not be immediately known.

- Direct Beneficial Effects – Future contamination from hazardous waste would be minimized as more contamination sources are removed from the area.

- Indirect Adverse or Beneficial Effects – None anticipated.

- Cumulative Impacts – None anticipated.

j. Flooding

(1) No Action – The numerous crossings over Indian Creek with their underlying structures work to restrict high flows. As structures built over the creek deteriorate and collapse into the creek additional restrictions (at least temporarily) may occur, that may increase the possibility of flooding, depending on the time of year.

(2) Impacts of the Proposed Project – The reduction of crossings over Indian Creek that work to restrict high flows and increase flooding possibilities are the most significant beneficial impact. During construction there may be added restrictions to the floodway however they would be temporary. Alternative 6 Options A, B, or D provide the greatest contribution to the flood carrying capacity of Indian Creek, while Alternative 2 Option C would not include the removal of the 900-foot culvert, and therefore flows would continue to be somewhat restricted.

- Direct Adverse Effects – None anticipated.

- Direct Beneficial Effects - Abandonment of the existing channel would eliminate several areas of potential flood carrying capacity restrictions. Additionally, the added riparian and upland vegetation areas would serve to create a more natural floodplain.

- Indirect Adverse or Beneficial Effects – None anticipated.

- Cumulative Impacts – None anticipated.

k. Aesthetics

(1) No Action – The visual quality of downtown may change over time, but this change would be slow at best. So long as Indian Creek remains mostly covered it would add no value to the aesthetic value of the area

(2) Impacts of the Proposed Project – Aesthetics promote the interaction of people with the natural resources that surround them. The more aesthetic values that can be incorporated into an area the more likely people are to embrace their natural environment. Each alternative would provide a different level of aesthetic value to the area. The more of Indian Creek that is exposed and the more riparian and upland vegetation that is established overall aesthetic values would increase. Alternative 6 Options A and B would provide the largest volume of restoration and therefore aesthetic value as it daylightes the greatest distance of Indian Creek and vegetation would be established on both sides of the creek except in the block from Kimball to 9th. Alternative 6 Option D also provides the opportunity to establish vegetation along both sides of the creek however; the distance the creek is to be daylighted is shorter. Alternative 2 Option C would add the least amount of aesthetic value to the project area.

Table 4-4. Quantity of Total Restoration by Alternative

Action Alternative	Riparian Vegetation	Upland Vegetation	Open Water	Total
Alternative 2, Option C	0.60 acres	0.67 acres	0.35 acres	1.62 acres
Alternative 6, Option A	2.35 acres	1.93 acres	1.51 acres	5.79 acres
Alternative 6, Option B	2.15 acres	1.90 acres	1.51 acres	5.56 acres
Alternative 6, Option D	1.62 acres	1.84 acres	1.22 acres	4.68 acres

- Direct Adverse Effects – Construction impacts to the aesthetic quality of the existing area would be further degraded due to heavy equipment, the development of staging areas, excavation, demolition, and general construction activities. The construction impacts, although severe, would be temporary.

- Direct Beneficial Effects - Water is considered a unique aesthetic feature, adding high visual interest, and contributing auditory benefits. Creating a more natural looking creek channel would significantly raise the visual quality along the Indian Creek corridor. The re-establishment of vegetation along the creek would further contribute to the overall visual experience.

- Indirect Adverse Effects – None anticipated.

- Indirect Beneficial Effects – A restored ecosystem is predicted to spark new interest in downtown Caldwell. One of the benefits could be an interest in restoring buildings in the area that are listed on the National Register of Historic Buildings.

- Cumulative Impacts - Aesthetics associated with an environmental restoration project in an urban setting would include public and private development that brings people to the waterfront for events, to experience culture, shop, eat, and live. This helps to build a sense of connection and stewardship for Indian Creek. Interpretation of creek health, aquatic restoration, connectivity, local history, and fish and wildlife are some of the subjects available for interpretation.

I. Historic Resources

(1) No Action – Caldwell’s Historic Downtown area is located within a 6-block area adjacent to the proposed ecosystem restoration project. Currently the buildings are vacant or have been turned in to rental rooms, taverns, or thrift stores.

(2) Impacts of the Proposed Project - Caldwell’s Historic Downtown District is an important aspect of the living history of the area. Indian Creek and the buildings all contribute to the town’s history. The restoration of the creek in downtown Caldwell may encourage building owners to restore existing buildings, some that are listed on the National Register of Historic Places. Alternative 6 Options A, B, and D would do more to promote building restoration than Alternative 2 Option C due to the different alignment locations.

- Direct Adverse or Beneficial Effects – None anticipated.
- Indirect Averse Effects – None anticipated.
- Indirect Beneficial Effects - The proposed project is adjacent to several properties that are within the Downtown Caldwell Historic area, which is listed on the National Register of Historic Places. The aquatic restoration project may encourage building owners to restore historic buildings, thereby preserving them for future generations. Additionally, portions of the historic landscape could be rebuilt.
- Cumulative Impacts – A restored creek corridor and landscape may provide additional opportunities for the interpretation of the historic components of the Treasure Valley along walking and biking trails.

m. Public Safety

(1) No Action – Indian Creek through downtown Caldwell is currently perceived as a public safety concern. The existing condition of the creek creates a situation where someone could fall in and become trapped in flowing water. This situation also could hamper rescue attempts.

(2) Impacts of the Proposed Project – A creek that is open with banks sloped is generally a safer condition than one that is confined and partially covered. The safest condition would be an open creek with the slowest flows near the waters edge and faster flows towards the middle of the creek. No alternative being evaluated for this project would create the safest condition for the public however; Alternative 6 Option D would create the safest situation related to restoration of the creek and Alternative 2, Option C would contribute least to safer condition along Indian Creek.

- Direct Adverse Effects - The abandoned channel could create a hazard of being trapped in a confined area, depending on the quality and maintenance of methods used to prevent entry.

Initiation of a newly constructed project when water is diverted from one segment of the creek into another could also create an entrapment and drowning hazard.

- Direct Beneficial Effects – A continuous restored creek with in-stream diversity and sloped, vegetated banks would create the safest condition; Alternative 6 Option D. However, there is no replacement for safety education and monitoring.

- Indirect Adverse Effects – An abandoned channel could cause multiple hazards of confinement, collapsing, etc.

- Indirect Beneficial Effects – Restoration of a creek in an urban area would likely promote a continual influx of water safety information and classes.

- Cumulative Impacts – None anticipated.

n. Structures

(1) No Action – Recent events (for example, the car wash that collapsed into Indian Creek) and the existing condition of many of the structures that have been built over Indian Creek indicates that more structures could collapse into the creek in the future.

(2) Impacts of the Proposed Project – Many of the structures currently covering Indian Creek in the project area would be removed as part of the restoration project. The quality of structures remaining would likely improve.

- Alternative 2 Option C would remove five buildings and three parking lots of which one building and one parking area currently are built over the creek. Two new bridges would be installed across 6th and 7th Avenues.

- Alternative 6 Options A and B would remove eleven buildings and eight parking areas of which three buildings and one parking area are built over the creek. Two new pedestrian bridges would be built one 6th Avenue and one at the intersection of Arthur and 7th Avenue.

- Alternative 6 Option C would remove eight buildings and seven parking areas of which one building and one parking area are built over the creek. Two new pedestrian bridges would be built one 6th Avenue and one at the intersection of Arthur and 7th Avenue.

The existing channel would be abandoned and may over time be culverted and then filled by the City.

- Direct Adverse Effects – The removal of structures, i.e. buildings, parking areas, and streets in the project area would temporarily cause disruption to remaining structures in the area. Utilities and other services to existing buildings may also be temporarily interrupted.

- Direct Beneficial Effects – None anticipated.
- Indirect Adverse Effects – None anticipated.

- Indirect Beneficial Effects – Many of the buildings listed on the National register are located adjacent to the project area and would likely undergo some restoration in the future. Possible building restoration of buildings and the creek would help to restore some of the historic landscape of the area.

- Cumulative Impacts – None anticipated.

o. Socio-Economics

(1) No Action – The current condition of the downtown area is expected to continue struggling both socially and economically. Many of the buildings are used for residential rental rooms, taverns, or thrift stores. Few stay in business for any length of time.

(2) Impacts of the Proposed Project – Many of the long time residents of the area remember when downtown Caldwell was the preferred location for social activities and shopping. Restoration of Indian Creek would not only improve the ecosystem, but would also create a condition that balances the environmental, economic, and social goals of Caldwell.

Traffic patterns could be permanently altered depending on the alternative selected as the preferred plan. Alternative 2 Option C would not significantly change traffic patterns in the area however Alternative 6, Options A, B, and D would change downtown traffic patterns significantly.

- Direct Adverse Effects - Temporary impacts to local businesses would occur during construction activities. Impacts would be minimized by signage directing shoppers around the construction to the local businesses. Although these impacts would be temporary they could have a devastating effect on businesses that are already struggling to survive.

Alternative 6, Options A, B, and D would permanently change traffic patterns in the downtown area. A 6-block area would become primarily a pedestrian area. Two existing roadways would be replaced with pedestrian bridges. Emergency vehicles would use alternate routes to access the area

- Direct Beneficial Effects – A daylighted creek and established vegetation would draw more people and businesses to the downtown area. The urban setting, limits the quality and amount of restored habitat available. However,

the opportunity to interpret the areas' natural resources and educate people as to the importance of those resources is beneficial to the overall ecosystem.

- Indirect Adverse or Beneficial Effects – None anticipated.

- Cumulative Impacts – If predictions of a restored ecosystem and re-generated social and economic hub in downtown Caldwell are realized, it is possible that the ecosystem may not maintain the quality originally estimated. However, Caldwell is dedicated to maintaining a balance between the restored environmental condition and socio-economic demands.

4.03 CUMULATIVE IMPACTS

Thousands of individual land use decisions have cumulative effects on flooding, water quality, and habitat. Individual decisions have little measurable impacts but when combined with similar decisions over many years and miles, the impacts can be and have been devastating as has been the case with Indian Creek.

a. Past, Present and Reasonably Foreseeable Future Actions

Over the past 100 years or so human intervention has significantly altered the natural shapes and processes of Indian Creek. These changes have influenced the condition of Indian Creek and will continue to influence changes into the future.

- Past Actions – Euro-American settlement transformed Indian Creek in the early 1900's. What was once a free-flowing, intermittent creek that meandered through the Boise Valley was altered to provide large-scale, canal-based irrigation for agriculture. As the town of Caldwell developed, creek-side businesses used Indian Creek as a dumping ground for various waste products creating a highly polluted condition in the creek. In the 1940' and 1950's typhoid and diphtheria epidemic breakouts in Caldwell ultimately culminated in the city leaders' decision to erase Indian Creek from the public eye ("Rediscovering Indian Creek: The Story of Our Region," draft 2004).

- Present Actions – Since the 1970's when environmental regulations, specifically the Clean Water Act, were passed into law, water quality in Indian Creek has improved. Today, IDEQ permits the point source discharges and compliance to those permit requirements is closely monitored. Currently pollution of Indian Creek primary is attributed to agriculture and stormwater run-off. These mostly occur upstream of the proposed project area.

- Foreseeable Future Actions – The future of Indian Creek looks brighter. Several projects aimed at improving the condition of the creek and in the planning; Albertson College is exploring the possibility of developing an

instructional wetland adjacent to Indian Creek, the City of Caldwell is applying for grants to build an ecosystem restoration demonstration project and a stormwater filtration system, the city and the Corps are in the feasibility phase of an urban ecosystem restoration project.

b. Cumulative Effects Summary

The following matrix builds upon the analysis of the proposed projects' affected environmental for each resource. A comparison is made between construction and the completed project with that of past, present, and foreseeable future actions. This matrix was developed from available resource data and conversations with local resource agencies, and the project sponsor.

Asterisks or zeros denote cumulative impacts, followed by either a plus or negative sign. One asterisk denotes a minimal effect followed by either a plus to indicate a beneficial effect or a minus to indicate an adverse effect. Two asterisks identifies a moderate effect, three asterisks identifies a high effect, and 0 identifies no effect.

Table 4-5. Potential Cumulative Effects of Aquatic Restoration

Potential Impacted Resource	Proposed Action		Other Action			
	Construction	Completed	Past Actions	Other Present Actions	Future Actions	Cumulative Impact
Water Quality	*/-	*/+	***/-	**/+	**/+	*/+
Fisheries	*/-	**/+	**/-	**/+	**/+	**/+
Waterfowl/Wildlife	*	***/+	**	**/+	**/+	***/+
Riparian Habitat	*	*/+	***/-	**/+	**/+	*/+
Upland Habitat	0	**/+	**/-	**/+	**/+	**/+
ESA Species	0	0	**/-	*/+	*/+	0
Aesthetics	*/-	*/+	**/-	*/+	*/+	*/+
Cultural Resources	0	0	0	0	*/+	*/+
Socio-economics	0	**/+	*/-	*/+	**/+	**/+

KEY: 0 = no effect, *= minimal effect, **= moderate effect, *** = high effect followed by += beneficial effect.

Adverse cumulative effects associated with the proposed project were determined to be short-term and minimal. The majority of cumulative effects of the proposed aquatic restoration project would be beneficial. While several resources, may experience minor impacts or temporary losses those would be short lived and ultimately become beneficial to the environment, economic, and social goals of the City of Caldwell.

SECTION 5.0 -- RECOMMENDED PLAN

5.01 SELECTION OF THE RECOMMENDED PLAN

This section summarizes each alternative in table format and recommends a preferred plan for aquatic ecosystem restoration of Indian Creek and its associated riparian and upland habitat in the downtown Caldwell area. The team and the City of Caldwell discussed the pro's and con's of each alternative and proposes that Alternative 6, Option D be recommended as the preferred alternative. Alternative 6 Option D would realign Indian Creek from its current location between Kimball and 5th Avenues to an alignment flowing in a northwest direction and then reconnecting to the existing alignment in the block between 5th and 6th Avenues.

The following table summarizes whether or not each alternative would satisfy the purpose of the proposed project and gives a subjective view of support for each alternative. Support was determined based upon meetings with resource agencies, the local sponsor and public meetings that have been held over the past two years.

Table 5-1. Project Purpose and Support by Alternative

	Alt. 2 Opt C	Alt. 6 Opt A	Alt. 6 Opt B	Alt. 6 Opt D	Alt. 7 No Action
PROJECT PURPOSE	Yes-low	Yes-high	Yes-high	Yes-high	No
SUPPORT					
Resource Agency e.g. IDFG, IDEQ, SHPO, etc.	Yes-med.	Yes-high	Yes-high	Yes-high	No
Sponsor	Yes-low	Yes-high	Yes-high	Yes-high	No
Public	Yes-low.	Yes-high	Yes-high	Yes-high	No
AVERAGES	Yes-Low	Yes-High	Yes-High	Yes-High	No

Project Objectives were evaluated based upon conversations with the team, the sponsor and local resource agencies. Subjective numbers of 1 through 5 were assigned with 1 contributing the least to the objective and 5 contributing the most. Primary objectives were considered twice as critical to the environmental restoration project as secondary objectives therefore primary objectives are rated from 2 through 10.

Table 5-2. Project Objectives by Alternative

PROJECT OBJECTIVES	Alt 2 Opt C	Alt 6 Opt A	Alt 6 Opt B	Alt. 6 Opt D	Alt. 7 No Action
PRIMARY					
Creek Connectivity	1X2= 2	4X2= 8	4X2= 8	4X2= 8	0X2= 0
Aquatic Habitat	1X2= 2	4X2= 8	4X2= 8	3X2= 6	0X2= 0
Riparian / Upland Habitat	1X2= 2	5X2= 10	4X2= 8	3X2= 6	0X2= 0
Water Quality	1X2= 2	2X2= 4	2X2= 4	2X2= 4	0X2= 0
SECONDARY					
Public Safety	1	3	3	3	0
Historic Resource	1	2	2	2	0
Improve Aesthetics	1	4	4	4	0
Recreation/Education Opportunities	2	4	4	4	0
TOTAL VALUE	13	43	41	37	0

Alternative 2, Option C has a lower cost than the other action alternatives; it provides minimal environmental benefits and ranks low in meeting project objectives. This alternative does very little to create a more continuous habitat corridor and the value of restored aquatic and riparian habitat is of low quality due to the proximity of the restoration to a major roadway (Blaine Street). In addition, from a hydraulic standpoint, it does not remove the 900-foot culvert that impedes the flood carrying capacity of Indian Creek through the city. As a result it is not recommended to select Alternative 2, Option C.

Alternative 6, Option A provides the most environmental benefits. Estimated costs for restoration of Alternative 6 between 5th and 10th Avenues are \$8 million and would require a Federal investment of \$5 million and a non-Federal investment of \$3 million. This is higher than the normal 35% cost share required of the non-federal sponsor, but there is a limit of \$5 million for the federal share. The non-Federal sponsor would be responsible for providing any funding required over the Federal limit. This requirement is unacceptable to the sponsor therefore Alternative 6 Option A was eliminated.

Alternative 6, Option B eliminates restoration between 9th and Kimball. The creek is already uncovered within this one block and riparian and upland vegetation would be restricted to only one side of the creek as Blaine Street borders the creek on the left bank. Due to limited environmental outputs and the cost per output, Alternative 6, Option B was eliminated.

Alternative 6, Option D is recommended for the preferred plan. Alternative 6 Option D would best restore the aquatic ecosystem of Indian Creek located in urban downtown Caldwell by creating a healthy, diverse and sustainable creek condition while assisting Caldwell to balance their environmental, economic and social goals. Consideration has been given to project objectives, constraints, problems and opportunities, and planning criteria. This alternative would provide maximum environmental outputs for the least amount of money while not exceeding the federal cost limit.

Alternative 7, No Action, was eliminated because it would not satisfy the project purpose.

5.02 DESCRIPTION OF THE RECOMMENDED PLAN

Alternative 6, Option D is the recommended plan; it would consist of a new channel alignment through three blocks of downtown Caldwell. The existing Indian Creek channel between Kimball and 5th Avenues would be abandoned. This plan would provide a more continuous aquatic and vegetative habitat corridor between Caldwell and the lower Boise River, while providing protection to Caldwell against

the 1-percent chance flood exceedance and bringing the aesthetics of a more natural creek to downtown Caldwell residents, consumers, and tourists. Alternative 6 meets the environmental, engineering, and economic requirements and the non-Federal Sponsor's needs to the greatest extent practical.

5.03 NATURAL FEATURES

The proposed footprint for the new Indian Creek alignment encompasses three blocks of downtown Caldwell between Kimball Avenue and 5th Avenue. The proposed alignment crosses through existing streets, sidewalks, buildings, and parking areas. Topography for the ground surface in this area is generally flat.

The Soil Survey, Canyon County Idaho, issued by the US Department of Agriculture, Natural Resources Conservation Service, provides the following information on the soil type. The soil type along the proposed alignment for Indian Creek is moulton loam. It is described as a somewhat poorly drained and noncalcareous soil that occurs in bottomlands, alluvial fans, lake basins, and in areas on very low terraces along drainage ways. In a typical profile the surface layer is grayish-brown fine sandy loam, which is slightly saline and has a few alkali spots and is approximately 9 to 12 inches thick. The next layer, extending to a depth of about 30 inches, is pale-brown loamy sand and is underlain by gravel and coarse sand. Further investigations of the foundation materials would be conducted within the project footprint during the detailed project design.

5.04 DESIGN FEATURES

a. General

The recommended plan consists of five principle components: demolition of existing infrastructure within the project footprint, one section of earth embankment along both sides of the channel, two sections of sheet pile flood walls, a geocell wall and two pedestrian bridges. The proposed alignment was designed to maximize environmental benefits while minimizing construction and real estate cost. The restoration design takes into consideration both constraints and opportunities that were identified in the early stages of the feasibility study. Sheet pile floodwalls were incorporated in areas where available space was limited and as a barrier between new and abandoned creek alignments. The two new pedestrian bridges shall be constructed to meet Idaho Department of Transportation bridge design standards.

b. Demolition and Excavation

For the proposed alignment, demolition and excavation of a portion of three blocks of downtown Caldwell would occur. A minimum of seven (7) buildings would be demolished as well as sections of Arthur Street and 7th Avenue. Due to the age of the buildings, removal and disposal of asbestos and lead paint would most likely occur. Excavation would also occur on existing elevated pavement, building slabs and foundations. All material from the demolition area would be disposed of in a suitable manner and location. Once demolition and excavation of materials has concluded, excavation of proposed channel would commence.

c. Earth Embankments

The earth embankments would be the main feature for the new channel. The embankments would consist of erosion control mats, riprap, topsoil, and vegetation. The slope of the embankments varies along the channel due to two factors. The first factor is based on providing enough depth in the channel to allow adequate fish passage. A minimum of 6 inches of water depth was used as the design criteria to meet this goal. This requirement controls the design of the base of the channel, which consequently varies from 14 to 40 feet in width. The second factor compromises between maximizing the amount of channel restored and maintaining existing real estate. This design also took into consideration that a maximum slope of 1V:2H must be maintained for vegetation growth and stability. Therefore, with these two factors, the slope along the channel varies from 1V:2H to 1V:3H. In addition to a varying slope, two terraces would be constructed to promote vegetation growth. Terraces would range from 12 to 20 feet in width. Along with the terraces, the majority of the sloped channel would be seeded or planted for habitat and stability. In consideration of this design feature, a high performance erosion control mat was used to protect the grassed or planted section of the embankments. The mat would be covered with three inches of topsoil for the area seeded. Four feet and six inches of riprap would be placed at the toe of the embankments to protect against scour with an additional one foot and six inches of riprap placed along the outer corner of each bend. It is possible over time that the creek may cause impingement points at some locations. Additional erosion protection may be needed during the project life. Also, there is a chance that the erosion control mat might be damaged from debris. Further design specification for the main earth embankment design features are as follows.

1. Erosion Control Mats

Erosion control mats would be used in conjunction with vegetation to stabilize the earth embankments. The mats provide slope and scour protection while retaining soil, moisture, and seeds allowing for vegetation growth. The erosion control mats would have a minimum thickness of ½ inch and a minimum weight of 11 ounces per square yard. The mat would be rated to withstand flow velocities up to 10 feet per second after installation and 15 feet per second after vegetation is established. The mat shall be rated to have a minimum limiting shear stress of 3.0 pounds per square foot on bare soil (24 hour test duration) and a minimum of 7.0 pounds per square foot with vegetation (24 hour test duration).

2. Rip Rap

Riprap, sized to withstand flow velocities ranging from 3.75 to 8 feet per second, would secure the toe of the earth embankments and provide erosion protection. Riprap would be well graded and have a minimum diameter of 9 inches and a maximum diameter of 12 inches. Neither the breadth nor the thickness of any piece of riprap shall be less than one-third of its length. Material for riprap shall consist of angular rock. Riprap would extend from three feet above the mean low water level to the base of embankment slopes. Additionally, riprap would be used to secure erosion control mats at the toe of embankment slopes. Detailed design and depths of riprap are shown on sheet 6.

3. Topsoil

Topsoil would be used as base for vegetation growth and obtained from an approved commercial source. Topsoil would be fine grained material containing not less than 50 percent by weight passing the No. 200 sieve (SM or ML type), a natural, silty-sandy soil or silt. Topsoil would be friable material free of rocks larger than 1 inch, contaminants, trash, ash, brush, clay, toxic substances, weed seeds, frozen materials, roots and sticks larger than 1/2 inch in diameter and 12 inches in length, and excessive quantities of grass, roots, weeds, sticks or other materials that would hinder grading, seeding, and placement of the erosion control mat.

4. Vegetation

The vegetation used for riparian and upland establishment would consist of low maintenance native shrubs, trees, and grasses. To assure the design for the 1-percent chance exceedance flood, vegetation from the base of the stream channel to a height of 7.5 feet would be of a type that folds over and does not prohibit water from moving through the channel during high flows. This area would most likely be seeded with native grasses. The remaining top section of the channel would be planted with native shrubs, trees, and grasses.

d. Sheet Pile Walls

The sheet pile walls would be placed on the left bank at both the entrance and exit of the new alignment. Each section of sheet pile wall would provide protection against scour and high flows as well as become a barrier in between the proposed alignment and the abandoned channel. Design features for the sheet pile walls would be developed in more detail once material and soil type of the area planned for wall placements are verified.

e. Geocell Wall

The geocell wall would provide protection through expandable, layered geocell, honeycomb-like cellular structures at the confined exit of the new channel alignment. Perforated 6-inch deep geocell layers, filled with topsoil and vegetation or granular material would be utilized to construct a 50 foot long gravity retaining wall along the right bank. The wall height would be 10 feet with a 1V:3H slope. The toe of the wall would be protected from scour by a 4-inch concrete filled geocell layer. Guidelines for design are based on the constriction of water flow at Station 0+00. Velocities and scour potential are high at this area due to the tie in to the existing channel.

f. Pedestrian Bridges

Two pedestrian bridges would cross the proposed channel on 6th and 7th Avenues. The bridges would span the restored creek from southeast to northwest and be 100 feet long and approximately 14 feet wide. The bridges would be designed to accommodate pedestrian and bicycle use and therefore, no service vehicles would be allowed on the bridges. Access for emergency vehicles would be rerouted through Blaine Street and Arthur Street via 5th and 9th Avenues. Structural design for bridges would occur during the design phase of the project.

g. Staging and Storage Areas

The construction contractor will require secure space for office setup, equipment staging, material stockpiles and worker parking. One area that has been recommended for staging is the vacant lot on the north side of Arthur between 5th and 7th Avenues and the church parking lot. The Youth Ranch parking lots just west and east (respectively) of 7th Avenue between Blaine and Arthur are also recommended. All contractor staging and material storage areas for this project are expected to occur within the project limits. Additional space may be available from the City of Caldwell upon request.

h. Greenbelt Area

The footprint identified for demolition allows for additional space to be vegetated. Along the upper ridge of both banks, up to 2 acres of land would be vegetated and perhaps turned into a greenbelt. A greenbelt may include such things as pathways, benches, lighting, and informational kiosks. Identification of applicable greenbelt items may be addressed during plans and specifications of the project if funding allows.

i. Utilities

Prior to construction of the preferred alternative, local utilities, including power, water, gas, telephone, and cables would need to be relocated or removed from project area. A list of utilities and their respective owner are contained in the Real Estate Appendix.

i. Traffic Control

Traffic control would be necessary during project construction. The construction contractor would be required to prepare a traffic control plan for the Corps and the City of Caldwell's approval.

k. Care and Diversion of Water

Above grade excavation would be performed in the dry. For channel construction, flow would be maintained in the existing channel and therefore, majority of new channel construction would occur in the dry. During construction of the new channel, seepage and ground water may be encountered. Pumps would control this with discharge directed back into the existing channel as much as possible. After the channel has been constructed (in the dry) to the fullest amount possible, the water barrier shall be breached and water would be directed into new channel. At this time, the upstream sheet pile wall would be installed to block water from flowing back into the existing channel. Once the upstream sheet pile wall is in place and water from the abandoned channel has drained, the downstream sheet pile wall would be installed. As soon as both sheet pile walls are in place, final construction on bank slopes would occur. Flow diversion with sandbags or other similar means would be required for final slope construction.

5.05 REAL ESTATE

Eleven private properties would be affected by the proposed project. In order to facilitate project construction, operation and maintenance, it is recommended that each of the parcels within the project footprint be acquired in fee simple title. As applicable, tenant and owner-occupied businesses would be eligible for relocation benefits under the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended (42 U.S.C.4601). Related implementation guidance is found within 49 CFR, Part 24.

The downstream rerouting of a segment of Indian Creek would necessitate work in the old channel that crosses Blocks 13, 17, and 18 between 5th and 7th Avenues (See Real Estate Appendix). Such work would address storm water runoff, oil/water separation, etc. If the Sponsor does not already possess sufficient rights to conduct such activities in that section of the channel, the area should be secured for project purposes by acquiring an appropriate authorized real estate interest (i.e., channel improvement easement, pipeline easement, etc.) from the affected fee owners. Ownership of the vacated streambed includes the Sponsor, Canyon County and four private parties. Off project locations for staging and storage are not anticipated during construction and, hence have not been

discussed herein. However, if this requirement changes, it is recommended that the standard temporary work area easement set forth within Engineering Regulation 405-1-12, figure 5-6f, be utilized. The project does not require the acquisition of additional real estate interests for either borrow or disposal purposes. Borrow materials needed to construct this project, along with any necessary disposal facilities, would be secured separately from locally available commercial or municipal sources.

5.06 ENVIRONMENTAL REVIEW REQUIREMENTS

The Indian Creek Ecosystem Restoration Project is in compliance with environmental laws and Executive Orders as described below.

a. Federal Statutes

Clean Water Act

The Clean Water Act sets national goals and policies to eliminate discharge of water pollutants into navigable waters, regulate discharge of toxic pollutants, and prohibit discharge of pollutants from point sources without permits. The act also authorizes the EPA to establish water quality criteria that are used by states to establish specific water quality standards.

The proposed project is within the limits of Nationwide Permit (NWP) number 27, Stream and Wetland Restoration Activities. However, IDEQ has denied Section 401 certification of NWP 27 if the project is located on a Section 303(d) listed stream segment. The segment of Indian creek proposed for restoration is listed on the 303 (d) list therefore Section 401 certification will be requested from IDEQ.

Endangered Species Act

The Endangered Species Act (16 U.S.C. 1531-1544), amended 1988, established a national program for the conservation of threatened and endangered species of fish, wildlife, and plants and the habitat upon which they depend. Section 7(a) of the ESA requires Federal agencies to consult with the US Fish and Wildlife Service (USFWS) and National Marine Fisheries Service (NMFS), as appropriate, to ensure that their actions are not likely to jeopardize the continued existence of endangered or threatened species or adversely modify or destroy their critical habitats.

The proposed project would be in compliance with the Act. There are no listed species present in the proposed project location, nor would this project modify or destroy their habitats. It would improve the overall habitat condition in the area. Prior to start of construction, the Corps will re-check the ESA list to assure no species have been added.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) (16 U.S.C. 661 et seq.) requires consultation with USFWS when any water body is impounded, diverted, controlled, or modified for any purpose. The USFWS and state agencies charged with administering wildlife resources are to conduct surveys and investigations to determine the potential damage to wildlife and the mitigation measures that should be taken. The USFWS incorporates the concerns and findings of the state agencies and other Federal agencies into a report that addresses fish and wildlife factors and provides recommendations for mitigating or enhancing impacts to fish and wildlife affected by a Federal project.

The USFWS was contacted by e-mail early in the planning phase of the project, as a result of the early coordination USFWS has determined this project would have no potential damage to fish and wildlife in the area.

Migratory Bird Treaty Act

The Migratory Bird Treaty Act (16 U.S.C. 715 et seq.) requires that lands, waters, or interests acquired or reserved for purposes established under the Act be administered under regulations promulgated by the Secretary of the Interior. The act provides protection to migratory birds and prohibits the destruction of their active nests or nestlings.

Although very little vegetation suitable for nesting is available in the area of the proposed project, care would be taken during construction to avoid any disruption to migratory birds. Should there be nests or nestlings in the area, constructions activities would be modified to avoid disturbance.

National Environmental Policy Act

This environmental assessment was prepared pursuant to regulations implementing the NEPA (42 U.S.C. 4321 et seq.). The NEPA provides a commitment that Federal agencies will consider the environmental effects of their actions.

National Historic Preservation Act

Section 106 of the National Historic Preservation Act requires that Federal agencies evaluate the effects of Federal undertakings on historical, archeological, and cultural resources and consult with the State Historic Preservation Office, consulting entities, and other interested parties regarding cultural resource impacts.

A historic resource survey was conducted under contract. The findings of that survey indicate that no historic property would be adversely affected by the proposed project. A determination will be made by the Corps and forwarded to the Idaho State Historic Preservation Office (SHPO) and other

consulting entities and interested parties. The response from SHPO will be incorporated into the environmental compliance document.

During construction of the project, a qualified archeologist would monitor ground disturbance activities. Should any cultural properties be found, construction would stop until proper evaluation and preservation is finished.

Resource Conservation and Recovery Act (RCRA)

Subtitle C, Section 3001 requires the EPA to promulgate regulations, which identify specific hazardous wastes. It also requires that persons managing such wastes notify EPA of their hazardous waste activities. The “contained-in rule” states that contaminated debris that contains the listed hazardous waste requires proper management. (Environmental Law Handbook, 1993)

The proposed project would be in compliance with the RCRA through requirements placed in the construction contract. The construction contract would specify regulatory requirements for the handling and disposal of hazardous waste generated during demolition of structures. Additionally, the contractor would be required to submit a Best Management Plan for the removal and disposal of hazardous wastes.

b. Executive Orders

Executive Order 11593 outlines the responsibilities of Federal agencies to consider effects to historic properties in consultation with the Advisory Council on Historic Preservation where a Federal undertaking may adversely affect a property.

A qualified historian conducted a survey of the area of potential affect of this project. A report was developed and forwarded to the Walla Walla District Corps. This report will be forwarded to the Idaho State Historic Preservation Office with an accompanying letter that the proposed project would have “No Effect” on historic resources in the area.

Executive Order 11988, Floodplain Management Guidelines, May 24, 1977 outlines the responsibilities of Federal agencies in the role of floodplain management. Each agency shall evaluate the potential effects of actions on floodplains and should avoid undertaking actions that directly or indirectly induce growth in the floodplain.

Based on the determination made in the Hydrology Appendix the proposed project would not reduce the capacity of the floodplain. However, the proposed project location is in an urban area. In order to restrict development in the floodplain the local sponsor has adopted a “Landscape Ordinance Plan”.

c. State and Local Permits

At this time, the only non-federal permit requirement is a Stream Alteration Permit from IDWR. Coordination has been on going with IDWR and their permit requirements are generally incorporated into the restoration plan. The application for a Stream Alteration permit and any additional permits would be coordinated between the Corps, the local sponsor and the contractor.

SECTION 6.0 - IMPLEMENTATION PLAN

6.01 PROJECT COST ESTIMATE

The total estimated implementation cost to execute the recommended plan is \$6,977,000. This includes feasibility study costs, plans and specifications, construction contracts, contingencies, real estate, utility relocations, and construction management. An MCACES cost estimate is included as an appendix.

Table 6-1. Cost Estimate Summary

Program Element	Cost (including contingency) (\$k)	Escalation (\$k)	Total (\$k)
Construction	3058	299	3357
Lands, Relocations	2132	209	2341
Construction management	267	26	293
Planning, Engineering and Design	564	32	596
Detailed Project Report	390	0	390
GRAND TOTAL	6411	566	6977

6.02 DESIGN AND CONSTRUCTION SCHEDULE

Design would begin as soon as funding is available. The City will be required to purchase all necessary properties and relocate existing businesses before construction can commence.

Table 6-2. Schedule

Item	Date (MM/YY only*)
Independent technical review	May 04
Incorporate comments	May 04
Public review	June 04
Incorporate comments	July 04
Prepare FONSI	July 04
Submit Detailed Project Report and Environmental Assessment to NWD for Approval	Aug 04
DPR Approval and Project Approval	Aug 04
Initiate Plans and Specs	Oct 04
Construction Funding Commitment	Jun 05
PCA Execution	Jun 05
Award Construction Contract	Sep 05

6.03 SPONSOR'S FINANCIAL PLAN

The City of Caldwell has strongly supported this feasibility study and intends to support construction of the project under consideration. The City's support is evidenced first by their request to the Corps to explore the possibility of a restoration project and then by the numerous partnerships that have formed and their involvement in local activities that serve to promote the project. An official letter stating their support is forthcoming and will be incorporated as an appendix. The City indicates understanding of the financial and legal responsibilities associated with a Section 206 aquatic ecosystem restoration project and has committed its non-Federal share through Urban Renewal District funding.

The City will perform real estate acquisition.

6.04 OPERATION AND MAINTENANCE CONSIDERATIONS

Presently the channel is accumulating sediment deposits and is losing channel capacity. The design provided is adequate to contain the one percent chance flood with the design channel capacity. The sponsor will need to monitor the channel and potentially remove debris or any deposited material that may cause a potential flooding hazard. Albertson College has expressed an interest in long-term involvement with the project, and this monitoring could be suitable for the environmental studies program. The local community has already shown interest in clearing debris from the channel and it is expected that this interest will continue and possibly increase after the restoration. In addition, monitoring of this stretch of

the creek will provide a social and educational connection to the community for years to come.

If, in future years, the city decides to fill the abandoned channel it is recommended that a culvert be placed in the abandoned channel before it is filled.

6.05 DRAFT PROJECT COOPERATION AGREEMENT

The City of Caldwell has reviewed the model Project Cooperation Agreement (PCA) for Section 206-WRDA 1996, as amended, dated February 1998 and revised September 2002. They understand the cost-sharing requirements for the proposed project as well as the other responsibilities for a non-Federal sponsor and are willing to sign the PCA at the proper time in the future.

The City is aware that no construction will commence until they have entered into a binding agreement to pay the non-Federal share of the costs of construction required by Section 206(b) and to pay 100 percent of any operation, maintenance, replacement, and rehabilitation, agree to perform the following items:

- Provide 35 percent of total project costs.
- Provide all lands, easements, rights-of-way, relocations, and suitable borrow and dredged or excavated material disposal areas that the Government determines the Non-Federal Sponsor must provide for the implementation, operation, and maintenance of the Project, and shall perform or ensure performance of all relocations that the Government determines to be necessary for the implementation, operation, and maintenance of the Project.
- Comply with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, Public Law 91-646, as amended by Title IV of the Surface Transportation and Uniform Relocation Assistance Act of 1987 (Public Law 100-17), and the Uniform Regulations contained in 49 C.F.R. Part 24, in acquiring lands, easements, and rights-of-way required for the implementation, operation, and maintenance of the Project, including those necessary for relocations, borrow materials, and dredged or excavated material disposal, and shall inform all affected persons of applicable benefits, policies, and procedures.
- Hold and save the Government free from all damages arising from the implementation, operation, maintenance, repair, replacement and rehabilitation of the Project, and any Project related betterments, except for damages due to the fault or negligence of the Government or its contractors.
- Perform any investigations for hazardous substances that are deemed necessary to identify the existence and extent of any hazardous substances

regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (hereinafter "CERCLA"), 42 U.S.C. Sections 9601-9675, that may exist in, on, or under lands, easements, and rights-of-way that the Government determines to be required for the implementation, operation, and maintenance of the Project, except for any such lands that the Government determines to be subject to the navigation servitude.

- Not use Federal funds to meet its share of total project costs unless the Federal granting agency verifies in writing that the expenditure of such funds is expressly authorized by statute.

SECTION 7.0 - SUMMARY OF COORDINATION

The Corps has coordinated this project with the Shoshone-Bannock, Shoshone Paiute, USFWS, IDFW, SHPO, IDWR, the general public, non-governmental organizations such as the Audubon Society, the Caldwell Historic Society, Trout Unlimited, Community Planning Organization of Southwest Idaho (COMPASS), and other interested parties. These coordination efforts will continue throughout the public review period.

Meetings were conducted in 2002 and subsequent years with key community leaders. The purpose of these meeting was to identify concerns, opportunities and other considerations the community may have regarding the potential restoration feasibility study. The Corps presented preliminary information and answered questions related to the potential project.

SECTION 8.0 - PUBLIC VIEWS AND COMMENTS

To be completed after public comment period

SECTION 9.0 - CONCLUSIONS AND RECOMMENDATIONS

To be completed after public comment period

SECTION 10.0 – ACRONYMS

Acronyms used in this document.

ASLA – American Society of Landscape Architects

CEO – Council on Environmental Quality

CERCLA – Comprehensive Environmental Response, Compensation, and Liability Act

COMPASS – Community Planning Organization of Southwest Idaho

Corps – U.S. Army Corps of Engineers

EIS – Environmental Impact Statement

EPA – Environmental Protection Agency

EQ – Environmental Quality

ESA – Endangered Species Act

FWCA – Fish and Wildlife Coordination Act

IDEQ – Idaho Department of Environmental Quality

IDFG – Idaho Department of Fish and Game

IDWR – Idaho Department of Water Resources

MCACES – Micro Computer-Aided Cost Engineering System

NMFS – National Marine Fisheries Service

NEPA – National Environmental Policy Act

NWP – Nationwide Permit

OSE – Other Social Effects

PCA – Project Cooperation Agreement

RCRA – Resource Conservation and Recovery Act

RED – Regional Economic Development

R/UDAT – Regional/Urban Design Assistance Team

SHPO – State Historic Preservation Office

TMDL – Total Maximum Daily Load

USFWS – United States Fish and Wildlife Service

WRDA – Water Resources Development Act

SECTION 11.0 REFERENCES

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