Twin Falls Canal Company

Kinyon Pond Re-regulation Reservoir

Reclamation WaterSMART
Water and Energy Efficiency Grant Proposal

Funding Opportunity Announcement No. R13SF80003

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January 14, 2013

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1.0 Technical Proposal

1.1 Executive Summary

Date: January 14, 2013

Applicant: Twin Falls Canal Company (TFCC)

City/County/State: Twin Falls, Twin Falls County, Idaho

This application is for funding by the Bureau of Reclamation's (Reclamation) WaterSMART: Water and Energy Efficiency Grants for FY 2013 Funding Opportunity Announcement (FOA) No. R13SF80003. This application is seeking $300,000 in federal funding assistance for Federal Funding Group I for implementation of the Kinyon Pond project, a new re-regulating reservoir and appurtenant structures. TFCC proposes to construct the Kinyon Pond project as a means to temporarily store water to meet variable water demands at the tail end of the TFCC system. This project will conserve and use water more efficiently by reducing operational losses. The project will provide benefits within Task Area A – Water Conservation - as defined by Reclamation's FOA. When complete, the project will result in an annual water savings of at least 13,500 acre-feet, as described in this grant application, and improved water management. Pending this award, construction of this project will begin in Summer 2013 and be complete by Fall 2014.

1.2 Background Data

The TFCC is located in south central Idaho in Twin Falls County with the headquarters located in the City of Twin Falls. Irrigated lands are bounded to the north by the Snake River. TFCC lands begin at the Milner Dam diversion on the Snake River and are bounded by Salmon Falls Creek to the east. The total project service area is approximately 50 miles long by 15 miles wide.

The water conserved by constructing the Kinyon Pond will be used to satisfy existing irrigation demands in the Division 4 area of the TFCC system where water shortages often occur. The TFCC serves approximately 202,691 irrigated acres. The acreage has not changed since the mid-1980s. TFCC has not expanded beyond historical service area boundaries and has no intentions to expand.

1.2.1 Area Map and Project Map

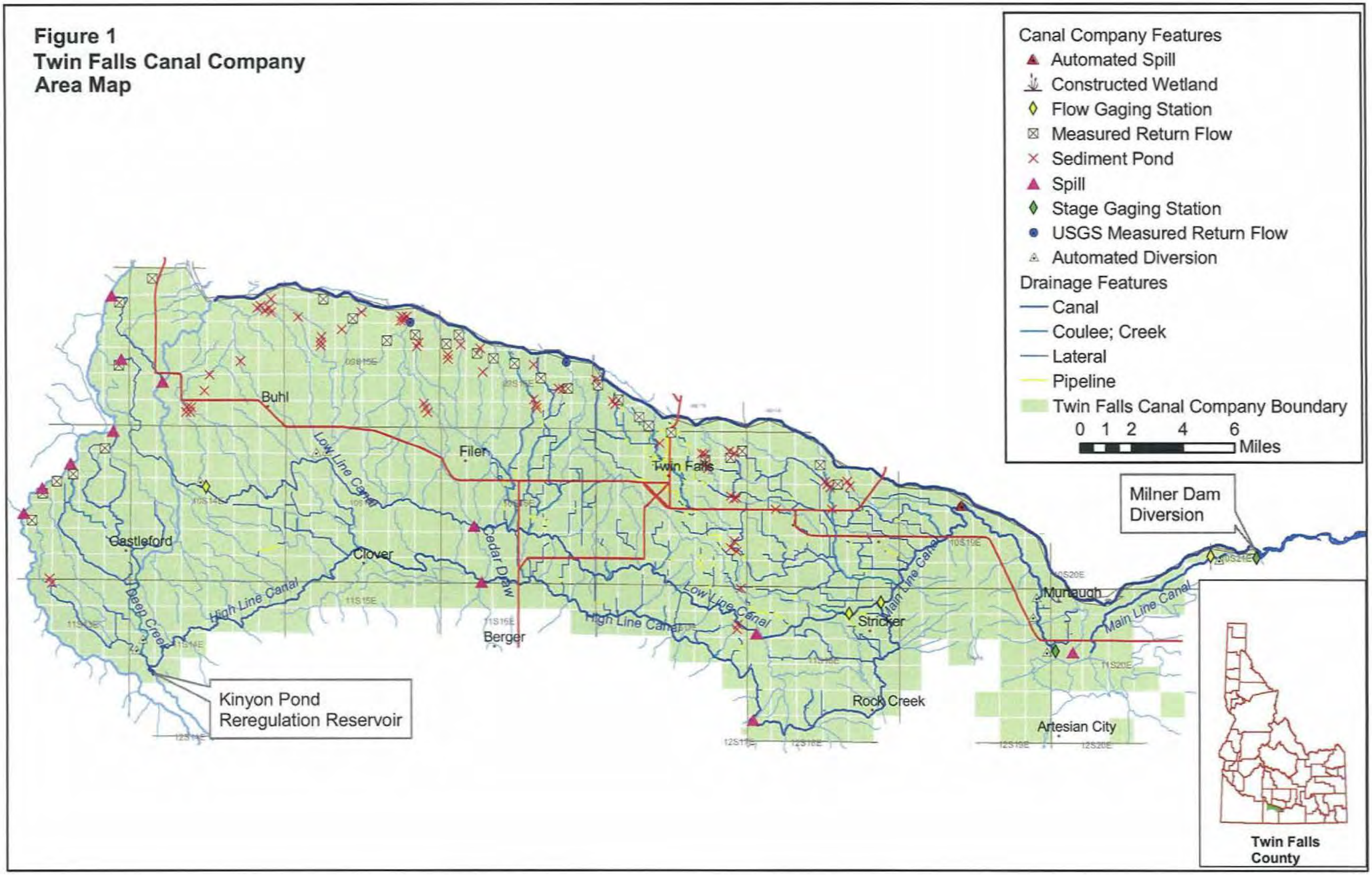
Figure 1 depicts the entire service area which is approximately 50 miles long by 15 miles wide for TFCC and the major facilities. As shown, the total project service area is large and growers at the tail end of the system are 60 or more miles from the diversion headworks at Milner Dam. Figure 2 shows the proposed Kinyon Pond location and the Division 4 area where spills and water shortages occur. The proposed pond is located at Township 11 S, Range 14 E, Section 19 in Twin Falls County, Idaho. The project site is approximately 3.5 miles south and 1 mile east of the town of Castleford, Idaho.

The following is a list of the types of facilities and features shown in Figures 1 and 2:

- **Automated diversion** is used for a lateral or main canal and has been automated to regulate and measure flows. The flow measurements and gate settings can be monitored and adjusted from a remote computer. Some of the diversions are run manually for operational purposes.
- A **flow gaging station** is used for measuring flow and may be monitored remotely.
- A **stage gaging station** is used for measuring stage and may be monitored remotely.

- **Spills** are points in the system at which flows are released for operational purposes.
- **Automated spills** are spill points that have been automated to regulate and measure flows. The flow measurements and gate settings can be monitored and adjusted from a remote computer. Some of the diversions are run manually for operational purposes.
- **Return flows** are flows measured by TFCC that are drainage or excess flows that return to the Snake River.
- **USGS return flows** are flows measured by the U.S. Geological Survey (USGS) that are drainage or excess flows that return to the Snake River.
- **Sediment ponds** are locations at which TFCC has built a pond for treating water and capturing sediment before the water returns to the Snake River.

Figure 1
Twin Falls Canal Company
Area Map



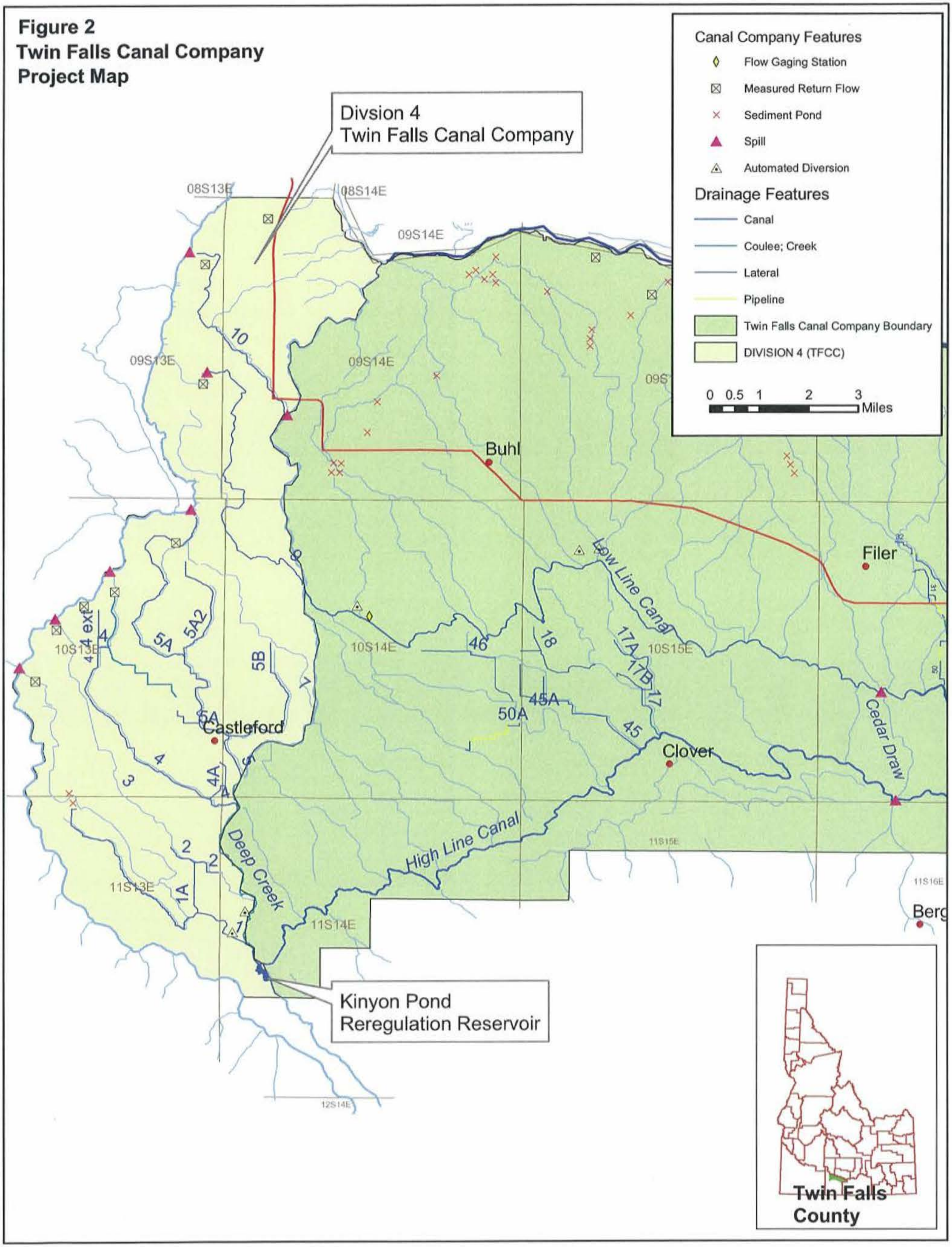


Figure 2
Twin Falls Canal Company
Project Map

1.2.2 TFCC Water Management

The TFCC is comprised of two divisions: the East Division and the West Division. The East Division serves water users in Murtaugh, Kimberly, Hansen, and Twin Falls from the main office building in Twin Falls. The West Division serves water users located near Filer, Buhl, and Castleford from an office located in Buhl. The Division 4 area of the TFCC, where water shortages often occur, is the lands west of Deep Creek (see Figure 2).

The following is general information about the TFCC system:

Area Irrigated	202,691 acres
Length of major canals	187 miles
Length of laterals*	1,200 miles
Number of laterals*	450
Number of turnouts*	5,300
Number of water users	4,355
Number of shares	202,691
Number of service gates*	5,300
Number of watermasters	2
Number of ditchriders	27
Irrigation Season	April 1-October 31
Diversion	Per demand up to 3,800 cubic feet per second (cfs)

Note: Some values are approximations*

The farmland is highly productive with the main crops being corn, wheat, barley, alfalfa hay, potatoes, sugar beets, and dry beans.

1.2.3 TFCC Infrastructure, Water Supply, and Water Rights

Diversion and Storage Facilities

Water is diverted from the Snake River at Milner Dam, regulated at Murtaugh Dam, and split between the Low and High Line Canals at Forks. Milner Dam is part of Reclamation's Minidoka Project. Murtaugh Lake, which is formed by Murtaugh Dam, is located approximately 8 miles downstream of Milner Dam. Murtaugh Lake is a man-made lake that was developed as part of the Southside Irrigation Project and is used to regulate flows for both the TFCC and the Southside Irrigation District.

To supplement natural flow rights, the TFCC has storage rights in American Falls Reservoir and Jackson Reservoir, which are both Reclamation facilities. Table 1 summarizes TFCC storage facilities.

Table 1
TFCC Storage Facilities

Storage Facility	TFCC Storage Rights (acre-feet)	Total Storage Capacity (acre-feet)
American Falls Reservoir	151,185	1,672,590
Jackson Reservoir	97,183	847,000

Conveyance and Distribution Facilities

TFCC conveyance and distribution facilities include approximately 1,387 miles of major canals and laterals. Table 2 summarizes information relative to major conveyance facilities.

Table 2
TFCC Conveyance and Distribution Facilities

Name of Facility	Length (miles)	Approximate Capacity (cfs)
Main Canal	31	3,400
High Line Canal	104	1,500
Low Line Canal	52	1,300

Explanation of Water Right

TFCC has water rights for and delivers up to 3/4 miner's-inch (m-in) per share. This is an obligation to deliver 1/80 cubic foot per second (cfs) of water for each share of stock when the water is available. TFCC delivers a proportionate share of the water supply for each share of stock. TFCC water rights are summarized in Table 3.

Table 3
TFCC Water Rights or Entitlements

Type	Source	Flow Rate or Volume	Priority Date
Natural flow	Snake River	3,000 cfs	October 11, 1900
Natural flow	Snake River	600 cfs	December 22, 1915
Natural flow	Snake River	180 cfs	April 1, 1939
Reservoir storage	American Falls Reservoir	151,185 acre-feet	February 21, 1911
Reservoir storage	Jackson Reservoir	97,183 acre-feet	February 21, 1911

1.2.4 Existing and Previous Bureau of Reclamation Partnerships

Existing partnerships with Reclamation include TFCC's storage rights in American Falls Reservoir and Jackson Reservoir.

Beginning in 1996 the TFCC partnered with Reclamation through their Water Conservation Program to complete numerous automation upgrades. Through this program, projects with a total cost of up to $50,000 qualified for a 50 percent federal cost share. Through 2007, TFCC has completed approximately 30 projects for a total cost of over $1,000,000, with a federal match of over $500,000.

1.2.5 Goals

TFCC's long-term goal is to ensure adequate deliveries while minimizing return flows. Because of the long distribution system and overall size of TFCC's service area, the canal system is unable to adjust to changing weather conditions and demands, which results in spills or water shortages at the tail endof the system. Growers at the tail end of the system are 60 or more miles from the diversion headworks at Milner Dam. With an average water travel speed of 1.5 miles per hour, it takes 40 hours for changes at Milner Dam to be realized in the Castleford and Buhl areas.

Despite careful water management and over 50 automated diversions, spills and water shortages often occur. TFCC is obligated to deliver water users their water right. Currently, TFCC watermasters in the Buhl and Castleford areas increase deliveries by 150 to 200 acre-feet per day (75 to 100 cfs) on a continuous basis to assure adequate deliveries. It is estimated that a fully-functioning Kinyon Pond can buffer these fluctuations and the need for tail spills by at least 50 percent. It is estimated that reducing tail spills by 63 acre-feet per day (32 cfs) will result in annual water savings of at least 13,500 acre-feet (see Section 1.4.1, Subcriterion No. A.1(a) for a detailed water savings calculations and methodology). In addition, Kinyon Pond will have the ability to store 200 acre-feet of immediately available water for water users in the Division 4 area during extreme weather or demand patterns.

1.3 Technical Project Description

This section includes a technical description of the Kinyon Pond project based on schematic engineering work completed to date. The TFCC has contracted with CH2M HILL Engineers, Inc. (CH2M HILL) to provide engineering services during the design and construction of the project. Additional details of CH2M HILL's work to date are provided in Section 1.4. Schematic design of the pond is underway and final design of the pond will be based in part on the outcome of the WaterSMART grant application and resulting funding.

Figure 3 shows a preliminary conceptual layout for Kinyon Pond. Kinyon Pond will function as a re-regulating reservoir drawing water from and discharging to the High Line Canal. Kinyon Pond will have a surface area of approximately 30 acres and a target storage capacity of 200 acre-feet. The pond is located just north of the old Deep Creek channel. Prior to the development of irrigation systems in the Magic Valley, the Deep Creek channel was one of many streams that conveyed flows from the South Hills to the Snake River. Development of the Salmon Falls Canal Company infrastructure (located to the south of the Kinyon Pond project area) effectively eliminated flows in Deep Creek in this area, and there is no longer a discernible channel as a result of agricultural operations over the past century. Currently, what remains of the drainage captures only extreme runoff events (on the order of the 100-year flow or larger). These events will run into the south end

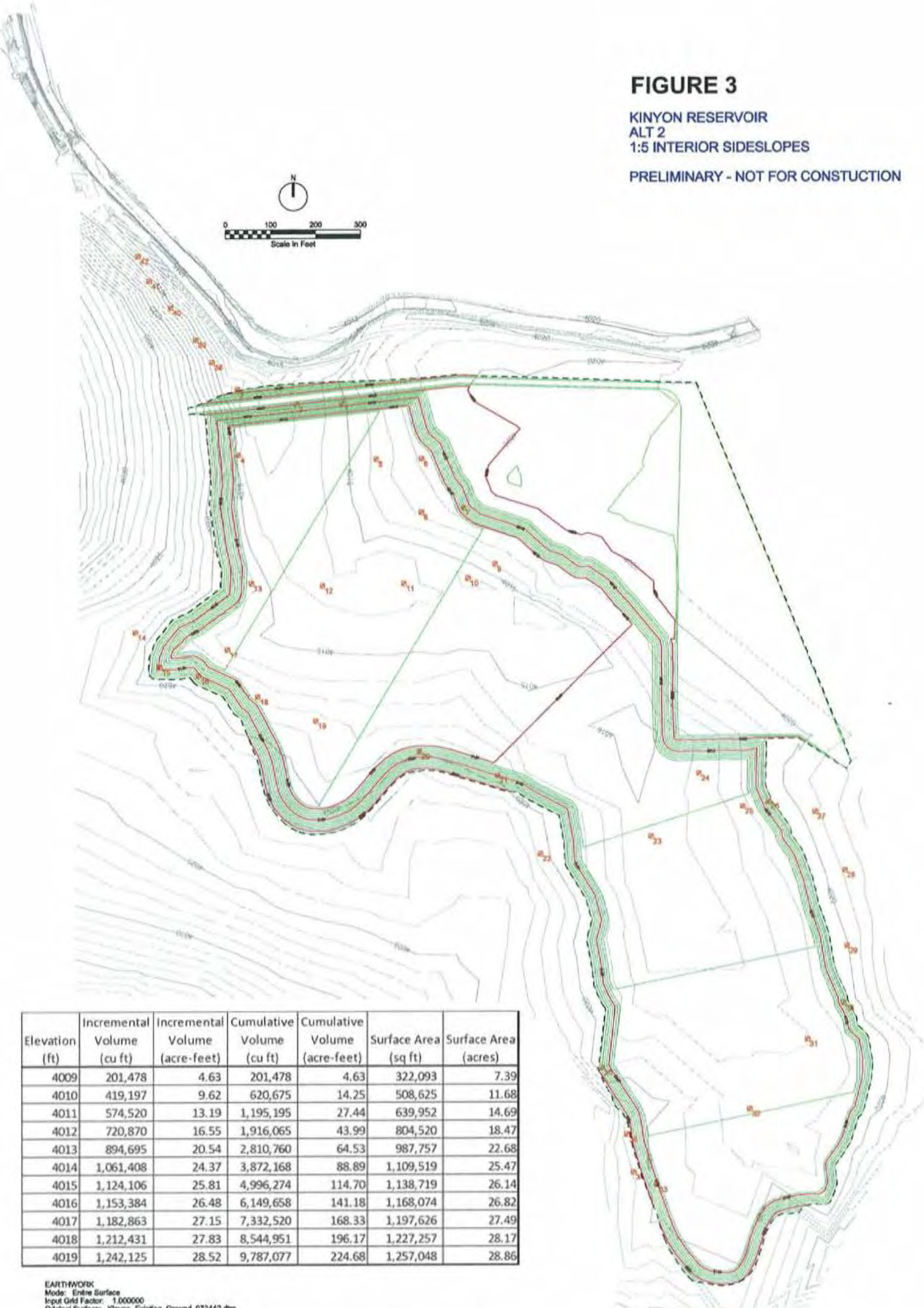


FIGURE 3

KINYON RESERVOIR
ALT 2
1:5 INTERIOR SIDESLOPES

PRELIMINARY - NOT FOR CONSTUCTION

Elevation (ft)	Incremental Volume (cu ft)	Incremental Volume (acre-feet)	Cumulative Volume (cu ft)	Cumulative Volume (acre-feet)	Surface Area (sq ft)	Surface Area (acres)
4009	201,478	4.63	201,478	4.63	322,093	7.39
4010	419,197	9.62	620,675	14.25	508,625	11.68
4011	574,520	13.19	1,195,195	27.44	639,952	14.69
4012	720,870	16.55	1,916,065	43.99	804,520	18.47
4013	894,695	20.54	2,810,760	64.53	987,757	22.68
4014	1,061,408	24.37	3,872,168	88.89	1,109,519	25.47
4015	1,124,106	25.81	4,996,274	114.70	1,138,719	26.14
4016	1,153,384	26.48	6,149,658	141.18	1,168,074	26.82
4017	1,182,863	27.15	7,332,520	168.33	1,197,626	27.49
4018	1,212,431	27.83	8,544,951	196.17	1,227,257	28.17
4019	1,242,125	28.52	9,787,077	224.68	1,257,048	28.86

EARTHWORK
Mode: Entire Surface
Input Grid Factor: 1.000000
Original Surface: Kinyon_Existing_Ground_072412.dtm
Design Surface: KinyonAlt2.dtm

Cut: 260,086 cu yd
Fill: 14,288 cu yd
Net: 245,798 cu yd

of Kinyon Pond; the pond will allow runoff to be conveyed down the High Line Canal via the spillway at the north end of the pond.

The target dam height is approximately 9 feet (measured from embankment crest to original ground surface) with approximately 6 feet of statutory height (measured from maximum pool elevation to the downstream toe elevation). The embankment crest width will be determined in accordance with Idaho Administrative Code (IDAPA 37.03.06, Safety of Dams Rules), Department of Water Resources; the minimum crest width will be 12 feet. The embankment will be constructed using native soils, primarily silt with some clay content, and armored with crushed basalt rock.

Based on the current concept, the inlet structure will be a two-bay concrete structure with a manual head gate in one bay and a set of wood stoplogs in the other bay. A concrete check structure will be added in the High Line Canal to raise the water surface elevation to provide the driving head into the pond. A ditch will be constructed downstream of the inlet structure and run approximately 1,000 feet to the south on the eastside of the pond to distribute flow such that the spillway (described below) does not short circuit and negatively impact water quality. It is estimated that a minimum of 1 foot of driving head into the pond will be required at the head gate.

The outlet conduit will likely be a 36-inch-diameter pipe that will outlet underneath the embankment at the northwest corner of the reservoir (the topographic low point) back into the High Line Canal. The outlet control structure will be located on the upstream face of the embankment and will include a manual head gate as well as an automated head gate. The outlet pipe will travel north approximately 300 to 400 yards, under the High Line Canal, and turn west to discharge into the High Line Canal downstream of an existing check structure. A new broad-crested weir will be constructed in the High Line Canal approximately 50 yards downstream of the outlet discharge, and will serve as the flow control structure for the system. Ultimately flow will be measured at the broad-crested weir and flow out of the pond will be automatically regulated at the outlet structure to match the desired flow. The pond will be operated as a re-regulating reservoir with varying pool elevation, depending on the downstream water users needs, and will not function purely as a storage reservoir.

The pond's spillway will be located between the left abutment (looking downstream) and the inlet structure. It is anticipated that the spillway will be excavated in soil and lined with grouted riprap. The spillway channel entrance will be sized to accommodate the design flood event from the old Deep Creek channel that drops into the pond at the south end.

The pond will be constructed by excavating the native ground and grading the bottom of the pond surface. Material from the excavation will be used to construct the embankment. Excess excavation material will be stockpiled by the TFCC for reuse on other projects. The excavation will consist entirely of soil material in the pond area; however, it is anticipated that some bedrock (basalt) will need to be removed for construction of the outlet pipeline as well as the spillway.

1.3.1 Reservoir Optimization

Using survey data provided by TFCC, CH2M HILL performed iterative developments of the proposed reservoir storage area. Various excavation side slopes, reservoir footprints, and inundation surface elevations were evaluated. Based on the current status of the schematic design, the preferred alternative uses a layout with 5 horizontal:1 vertical (H:V) side slopes and limits the statutory height to 6 feet by keeping the inundation surface elevation at a maximum elevation of 4,018 feet (see Figure 3). Based on our concept reservoir layout, this would provide approximately 196 acre-feet of storage with a surface area of approximately 28 acres. This configuration would result in a net generation of approximately 245,800 cubic yards of material.

An advantage to increasing the statutory height of the dam to greater than 6 feet is the reduction of excavation required to generate the target reservoir capacity. By reducing excavation, the potential for encountering bedrock is minimized, which in turn potentially reduces the amount of reservoir seepage. The final dam height and reservoir layout will be finalized as part of final design.

1.3.2 Hydrologic Analysis

Based on discussions with the Idaho Department of Water Resources (IDWR) (see additional information in Section 3.2), the Kinyon Pond project meets the Size Classification of Intermediate and Downstream Risk Category of Low in accordance with the Idaho Administrative Code. As such, the inflow design flood is the Q100 flow, having a 1 percent chance of occurring in any given year.

The inflow design flood has been developed using StreamStats to generate streamflow statistics. StreamStats is a Web-based, integrated geographic information system (GIS) application developed through a cooperative effort of the USGS and the Environmental Systems Research Institute, Inc. (ESRI). The application incorporates a map-based user interface for site selection; a Microsoft® Access database that contains information for data-collection stations; a GIS program that delineates drainage basins and measures basin characteristics; and a GIS database that contains land elevation models, historic weather data, and other data needed for delineations, for measuring drainage-basin characteristics.

The data indicates the drainage basin is 122 square miles and varies in elevation from 2,984 feet to 7,603 feet. The 100-year peak flow is 998 cfs. We understand that the Salmon Falls Canal Company operates some storage reservoirs within the drainage basin under consideration. These reservoirs, including Deep Creek Reservoir near Rogerson, Idaho, are located upstream of the Kinyon Pond project site and may have an impact on the potential Q100 flow for the Kinyon Pond. A key consideration will be whether or not it can be assumed that these existing reservoirs have available storage capacity at the time that a peak runoff event could occur in the drainage basin. Further consideration of the Salmon Falls Canal Company operational procedures are planned for discussion with TFCC and IDWR prior to finalizing the schematic design of the pond. Further hydrologic evaluation may be incorporated as part of a future phase of work.

1.3.3 Hydraulic Analysis

Preliminary open-channel hydraulic modeling has been performed to size the inlet channel, spillway, and outlet pipe diameter.

1.3.3.1 Inlet Channel

The surveyed water surface elevation near the proposed inlet channel diversion point is 4,019.4 feet. The inlet structure would need to check the water surface elevation up to approximately 4,021 feet at the diversion point; it is anticipated that some fill will be required on the canal banks for an unknown distance upstream of the diversion point.

Capacity of the inlet channel of various bottom widths and associated time to fill reservoir (assuming no natural inflow) is summarized in Table 4. This assumes the inlet channel invert is set to 4,019 feet and the High Line Canal water surface elevation is checked up to elevation 4,021 feet. The type of control structure used at the inlet channel will have some impact on the final system hydraulics.

Table 4
Preliminary Inlet Channel Hydraulic Summary

Inlet Channel Bottom Width (feet)	Side Slopes	Normal Depth (feet)	Flow (cfs)*	Time to fill Reservoir (hours)
5.0	3:1	2.0	86	28.1
10.0	3:1	2.0	136	17.8

*Flow amount is the channel capacity, not the calculated flow

1.3.3.2 Spillway

Table 5 summarizes spillway dimensions given various headwater (or freeboard) conditions. Our interpretation of the Idaho Safety of Dam Rules is that no freeboard is required when passing the 100-year flow, though the top of the berm shall not be overtopped. However, it is anticipated that the spillway will be designed to maintain a minimum freeboard while passing the 100-year flow. For our preliminary analysis, the spillway elevation is set at elevation 4019 feet.

Table 5
Preliminary Spillway Hydraulic Summary

Freeboard (feet)	Headwater Elevation (feet)	Weir Length (feet)*
0.0	4022.0	63
0.5	4021.5	84
1.0	4021.0	120

*Weir length is defined as the bottom width of the spillway in cross section

1.3.3.3 Outlet Pipe

The CH2M HILL hydraulic modeling software Winhydro was used to perform a preliminary hydraulic analysis to size the outlet pipe diameter. Winhydro is a steady-state hydraulic modeling tool that computes the energy grade line elevations on the upstream and downstream sides of hydraulic elements. The analysis included the following assumptions:

- No inlet losses; minor outlet losses
- Pressure flow
- Pipe roughness of 0.013 (concrete pipe)
- Pipe length of 1,095 feet

Table 6 presents the results of the analysis. A range of outlet flows are presented for varying tailwater elevations. The tailwater elevation is the water surface elevation in the High Line Canal at the outlet location. Based on the survey data provided by TFCC, the tailwater elevation downstream of the existing diversion structure for Lateral 1 is 4,009.5 feet; the normal water surface elevation in the High Line Canal immediately upstream of the diversion structure for Lateral 1 is 4,012 feet. Assuming that the proposed broad-crested weir does not raise the water surface elevation above 4,012 feet, the results indicate that at least a 36-inch pipe diameter is required to achieve TFCC's target outlet flows of 25 to 50.

Table 6
Preliminary Outlet Pipe Hydraulic Summary

Pipe Diameter (inch)	Tailwater Elevation (feet)	Headwater Elevation (feet)	Flow (cfs)
	4,009.5		22
24.0	4,010.7	4,019.0	20
	4,012.0		19
	4,009.5		67
36.0	4,010.7	4,019.0	62
	4,012.0		57
	4,009.5		148
48.0	4,010.7	4,019.0	138
	4,012.0		127

1.4 Evaluation Criteria

1.4.1 Evaluation Criterion A: Water Conservation

TFCC's long-term goal is to ensure adequate deliveries while minimizing return flows. Because of the long distribution system, the delivery system is unable to adjust to changing weather conditions and demands, which results in spills or water shortages at the tail end of the system. Despite careful water management and over 50 automated diversions, spills at the tail ends and water shortages often occur.

Subcriterion No. A.1(a) – Quantifiable Water Savings

Describe the amount of water saved. For projects that conserve water, state the estimated amount of water conserved in acre-feet per year (include direct water savings only).

The project is expected to conserve at least 13,500 acre-feet on an annual basis.

What is the applicant's average annual acre-feed of water supply?

The average annual water supply based on an average (1998) water year is 1,023,540 acre-feet (TFCC, 2007). A range of annual water supply based on wet (1997) and dry (2001) water years are 1,092,477 and 1,002,466 acre-feet, respectively.

Where is that water currently going (i.e., back to the stream, spilled at the end of the ditch, seeping into the ground, etc.)?

The water that will be conserved currently spills into the drainage system at the tail end of the system and is ultimately returned to the Snake River. Conserved water will be used to satisfy existing irrigation demands in the Division 4 area of the TFCC where water shortages often occur.

Summary of Water Savings Calculations and Methodology

TFCC is obligated to deliver water users their water right. Currently, TFCC watermasters in the Castleford and Buhl areas increase deliveries by 150 to 200 AF/d (75 to 100 cfs) to assure adequate deliveries.

Table 7 presents daily average water supplies to laterals in the Division 4 area and daily average spills that cannot be recaptured. It is important to recognize that through careful water management the TFCC is often able to recapture spills; however, the spills shown in the water balance below cannot be recaptured because they are at the tail end of the system. For example, there are two locations where water is spilled at Cedar Draw. The water balance uses only the spill at the Low Line Canal and spills from the High Line Canal are often recaptured.

The water balance presented in Table 7 demonstrates how much water could be saved. With a fully functioning Kinyon Pond, it is estimated that TFCC could reduce spills in the Division 4 area by 63 AF/d (32 cfs), and that watermasters could reduce by that same amount the padding previously applied to handle water fluctuations. Over an average irrigation season (April 1 to October 31), the estimated water savings is at least 13,500 AF.

Table 7
Daily Water Balance

Location	2010-2011 Daily Average Supply (AF/d)	2010-2011 Daily Average Spill (AF/d)	Spill Reduction Goal (AF/d)	Estimated Post Re-regulation Pond Spill (AF/d)
Lateral 1	153	8	4	4
Lateral 2	143			
Lateral 3		8	4	4
Lateral 4	117	10	4	6
Lateral 5	182	16	8	8
Lateral 7	69			
Lateral 9	143	12	6	6

Table 7
Daily Water Balance

Location	2010-2011 Daily Average Supply (AF/d)	2010-2011 Daily Average Spill (AF/d)	Spill Reduction Goal (AF/d)	Estimated Post Re-regulation Pond Spill (AF/d)
Lateral 10	137	16	8	8
Deep Creek		60	20	40
Cedar Draw (Low Line Spill)		24	10	14
TOTAL	994	153	63	90

System efficiency is a measure of the diverted volume of water not returned by groundwater recharge that is beneficially used by the crop (total volume delivered/total supply). It indicates how efficiently the TFCC delivers water to its water users. With a fully functioning pond, the system efficiency is further enhanced as less water will be supplied to Division 4 (i.e., TFCC watermasters will not have to increase deliveries by 150 to 200 AF/d on a continuous basis) while maintaining the same delivery to water users.

Subcriterion No. A.1(b) – Improved Water Management

Describe the amount of water expected to be better managed, in acre-feet per year and as a percentage of the average annual water supply.

TFCC's long-term goal is to ensure adequate deliveries while minimizing return flows. Because of the long distribution system and overall size of TFCC's service area, the canal system is unable to adjust to changing weather conditions and demands, which results in spills or water shortages at the tail end of the systems. Despite careful water management and over 50 automated diversions, spills at the tail ends and water shortages often occur. Kinyon Pond will have the ability to store approximately 200 acre-feet of immediately available water for water users in the Division 4 area during extreme weather or demand patterns. Based on the preliminary hydraulic calculations shown previously in Table 4, the estimated time to fill the reservoir is approximately 18-28 hours. Assuming the reservoir is filled and drained every other day, the estimated amount of water better managed over an average irrigation season (April 1 through October 31) is 21,400 acre-feet, or 2 percent of the average annual water supply.

$$\frac{\text{Estimated Amount of Water Better Managed} = (200 \text{ acre-feet} * 107 \text{ days})}{\text{Average Annual Water Supply} = 1{,}023{,}540 \text{ acre-feet}} = 2\%$$

Subcriterion No. A.2 – Percentage of Total Supply

Provide the percentage of total water supply conserved.

The percentage of total water supply conserved as a function of the total annual water supply is approximately 1.3 percent. The total annual water supply is based on an average water year (TFCC, 2007).

$$\frac{\text{Estimated Amount of Water Conserved} = 13{,}500 \text{ acre-feet}}{\text{Average Annual Water Supply} = 1{,}023{,}540 \text{ acre-feet}} = 1.3\%$$

Subcriterion No. A.3 – Reasonableness of Costs

Provide information related to the total project cost, annual acre-feet conserved (or better managed), and the expected life of the improvement.

As described in detail in Section 7, the assembled cost of the project for surveying, engineering, and construction has been estimated to be $1,565,865. The estimated project cost over the expected 50-year life of the project is $2.32/acre-feet.

$$\frac{\text{Total Project Cost} = \$1{,}565{,}865}{13{,}500 \text{ acre-feet Conserved x 50-year Improvement Life}} = \$2.32/\text{acre-feet}$$

1.4.2 Evaluation Criterion F: Implementation and Results

Subcriterion No. F.1 – Project Planning

Does the project have a Water Conservation Plan in place?

The TFCC prepared a Water Management and Conservation Plan in February 2007 with assistance from the Idaho Water Users Association, Inc. and CH2M HILL. Development of the Water Management and Conservation Plan is a voluntary and valuable component in water management to identify opportunities and objectives for water conservation. TFCC is updating their 2007 plan, which is anticipated to be complete in Fall 2013.

Identify and describe any engineering or design work performed specifically in support of the proposed project.

On July 5, 2012, CH2M HILL visited the site to discuss the potential project with TFCC and get a conceptual understanding of the project goals and operation. Since then, the TFCC has contracted with CH2M HILL to complete the following:

- Agency Coordination
- Site Reconnaissance
- Schematic Design of Earthwork and Appurtenance Structures

Describe how the project conforms to and meets the goals of any applicable planning efforts, and identify any aspect of the project that implements a feature of an existing water plan(s).

TFCC's long-term goal is to ensure adequate deliveries while minimizing return flows. The Kinyon Pond will be included in the updated Water Management and Conservation Plan (anticipated completion date is Fall 2013). The Kinyon Pond will provide a means to temporarily store water to meet changing water demands. In addition, this project will conserve and use water more efficiently by reducing operational waste.

Subcriterion No. F.2 – Readiness to Proceed

Describe the implementation plan of the proposed project. Include a project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates.

Because of Kinyon Pond's large footprint, TFCC conducted preliminary investigations prior to the WaterSMART grant process to determine the viability of the re-regulating reservoir project. Preliminary investigations included a topographic survey, site reconnaissance, and preliminary hydraulic design. TFCC is currently contracted with CH2M HILL to complete the schematic design by Spring 2013.

Schematic design plans will not include adequate detail for construction. However, the final design will provide the necessary details that include finalizing the reservoir layout and dam geometry, adding structural details, and providing a grading plan to be used for bidding purposes. Final hydrologic and hydraulic calculations will be performed based on the reservoir topography and design inundation water surface elevation to size appurtenant structures. The final design activities are pending based on the WaterSMART grant process.

If awarded the WaterSMART grant by March 2013, TFCC will obtain permits and have the funding to finalize the design and commence construction by Summer 2013 and complete construction by Fall 2014.

Describe any permits that will be required, along with the process for obtaining such permits.

Federal approvals for the project include the National Environmental Policy Act (NEPA), National Historic Preservation Act (NHPA), and Endangered Species (ESA) compliance. If successful in obtaining a WaterSmart grant, TFCC will work with Reclamation to determine the appropriate level of NEPA compliance. The project site has been cultivated extensively in prior decades and no known environmental or cultural resources of special value exist. Therefore, it is expected that activities required for NEPA, NHPA, and ESA compliance will be minimal. If awarded the WaterSMART grant by March 2013, TFCC is confident that the necessary approvals can be secured by Summer 2013.

As described in Section 3.2, the IDWR has been contacted to determine what type of permits or approvals would be required to complete the project. Based on the meeting with IDWR, no additional State permitting is required.

There are no local permitting requirements.

Subcriterion No. F.3 – Performance Measures

Provide a brief summary describing the performance measure that will be used to quantify actual benefits upon completion of the project (e.g., water saved).

Upon completion of the project, TFCC will prepare a second water balance to show actual supplies and spills in the Division 4 area to complement the water balance analysis presented as part of this grant application (see Table 7). Because water savings results will not be immediately available following completion of the project, it is anticipated that if awarded, the WaterSMART grant agreement may be modified to remain open for one full season until such information is available and until a Final Report is submitted.

1.4.3 Evaluation Criterion G: Additional Non-Federal Funding

The non-Federal Funding portion of the total project cost is 81 percent, assuming a WaterSmart grant in the amount of $300,000.

Non-Federal Funding = $1,265,865
Total Project Cost = $1,565,865

1.4.4 Evaluation Criterion H: Connection to Reclamation Project Activities

How is the proposed project connected to Reclamation project activities?

Water savings through reduced operational losses will lessen the demand on stored water in Reclamation's storage facilities along the Snake River.

Does the applicant receive Reclamation project water?

Yes, TFCC receives stored water from American Falls Reservoir and Jackson Reservoir, both of which are part of the Minidoka Project.

Is the project on Reclamation project lands or involving Reclamation facilities?

No, the project is not on Reclamation project lands, nor does it not involve Reclamation facilities.

Is the project in the same basin as a Reclamation project or activity?

Yes, the project is in the same basin as other irrigation entities that use water stored in Reclamation's storage facilities as part of the Minidoka Project.

Will the proposed work contribute water to a basin where a Reclamation project is located?

The project will indirectly benefit the Minidoka Project by reducing the demand on stored water.

1.5 References

CH2M HILL. 2012. Kinyon Pond – Concept Development Status Report. September.

Twin Falls Canal Company (TFCC). 2007. Water Management and Conservation Plan. February.

2.0 Environmental Compliance

(1) Will the project impact the surrounding environment (i.e., soil [dust], air, water [quality and quantity], animal habitat, etc.)? Please briefly describe all earth-disturbing work and any work that will affect the air, water, or animal habitat in the project area. Please also explain the impacts of such work on the surrounding environment and any steps that could be taken to minimize the impacts.

The project will have minimal impacts on the surrounding environment. All work will occur within lands owned by the TFCC and the TFCC right-of-way. The project site will be accessed using the existing canal right-of-way. During construction, best management practices (BMPs), such as sprinkling the ground surface for dust control, will be maintained in ground disturbance areas.

(2) Are you aware of any species listed or proposed to be listed as a Federal endangered or threatened species, or designated critical habitat in the project area? If so, would they be affected by any activities associated with the proposed project?

No known environmental resources of special value occur, including rivers, streams, lakes, fisheries, threatened plant and animal communities, spawning grounds, or flyways. The project is located on land that has been cultivated for decades and no natural vegetation exists.

(3) Are there wetlands or other surface waters inside the project boundaries that potentially fall under Federal Clean Waters Act jurisdiction as "waters of the United States?" If so, please describe and estimate any impacts the project may have.

No wetlands or other surface waters that could fall under Clean Water Act jurisdiction exist in the project area.

(4) When was the water delivery system constructed?

In 1894 the United States Congress passed the Carey Act, which allowed states to request that large tracts of federal land be set aside for private investors. This prompted the interest of I.B. Perrine and other investors, which led to the construction and development of the TFCC. The TFCC has operated the canal system since 1909.

(5) Will the project result in any modification of or effects to, individual features of an irrigation system (e.g., headgates, canals, or flumes)? If so, state when those features were constructed and describe the nature and timing of any extensive alterations or modifications to those features completed previously.

This project involves construction of the pond adjacent to the existing High Line Canal. The existing High Line Canal will be modified to facilitate construction of a new diversion structure and inlet channel. Additionally, the outlet conduit from the Kinyon Pond will need to be placed beneath the existing High Line Canal. This placement will involve the excavation of soil and rock through the canal and reconstruction of the canal. The canal will be modified to facilitate construction of the outlet pipe returning flow to the High Line Canal. A new broadcrest weir will be constructed downstream of the outlet into the High Line Canal, so that flow may be measured. The High Line Canal, built in 1909 by TFCC, will be modified as described herein for the project. No other existing facilities will be affected.

(6) Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places?

The land associated with this project has been cultivated extensively in prior years and does not likely represent historic conditions. No aboveground structures are present.

(7) Are there any known archeological sites in the proposed project area?

No identified or known cultural resources of significance exist within the TFCC service area.

(8) Will the project have a disproportionately high and adverse effect on low income or minority populations?

The project will not have a disproportionally high and adverse effect on low income or minority populations. No communities exist adjacent to the project area.

(9) Will the project limit access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands?

This project will not limit access to and ceremonial use of Indian sacred sites. TFCC does not expect this project to negatively affect Tribal lands.

(10) Will the project contribute to the introduction, continued existence, or spread of noxious weeds or non-native invasive species known to occur in the area?

The project will not contribute to the spread of noxious weeds or non-native invasive species.

3.0 Required Permits or Approvals

3.1 Federal Permitting

Federal approvals for the project include NEPA, NHPA, and ESA compliance. The project site has been cultivated extensively in prior decades and there are no known environmental or cultural resources of special value; therefore, it is expected that activities required for NEPA, NHPA, and ESA compliance will be minimal.

- Based on conversations with Reclamation's local Snake River Area Office representatives who have visited the site with TFCC, it is anticipated that the project does not have significant impacts on the environment and will fit within a recognized Categorical Exclusion (CE) to NEPA. Environmental impacts will be minimized during construction using BMPs.
- Federal cultural resource laws and regulations, including the NHPA and Native American Trust Assets, must also be reviewed prior to project construction. TFCC will contract with a Registered Professional Archeologist or cost share with Reclamation to conduct all necessary field surveys and literature reviews. It is anticipated that the project does not have the potential to cause effects to historic properties and that the findings will be concluded in the Section 106 process.
- It is anticipated that there are no endangered or threatened species or designated critical habitat in the project area and that no further compliance measures are required.

If awarded the WaterSMART grant by March 2013, TFCC is confident that necessary approvals can be secured by Summer 2013.

3.2 State Permitting

IDWR has been contacted to determine what type of permits or approvals would be required to complete the project. On August 15, 2012, CH2M HILL held a progress meeting to discuss the reservoir optimization progress with the State of Idaho Dam Safety Engineer with IDWR. The goal of the meeting was to both present the concepts and to help establish and gain IDWR endorsement of the key design concepts, including the determination of the inflow design flood event.

Some key items discussed included:

- Size Classification is Intermediate; Downstream Risk Category is Low in accordance with Rules 25.01 and 25.02, respectively, of the Idaho Administrative Code (IDAPA 37.03.06, Safety of Dam Rules – as such, dam break and inundation mapping is not required for the project.
- Inflow Design Flood – In accordance with Rule 50.11, a 100-year event (Q100) is the appropriate design flood for this project. Our preliminary hydrology analysis shows a Q100 of roughly 1,000 cfs based on USGS StreamStats Data. The determination of a Q100 for design is under further investigation and will be discussed with TFCC and IDWR as part of future coordination meetings.
- Maximum Credible Earthquake – The 2,475-year event from the probabilistic approach is reasonable and may be conservative. A deterministic approach would be accepted by IDWR that demonstrates a lower seismic design event than the probabilistic approach.
- All hydraulic barriers are "jurisdictional" to IDWR and the State of Idaho. Depending on size and hazard classification, some may be further exempted from dam safety regulation.

The target dam height is approximately 9 feet (measured from embankment crest to original ground surface) with approximately 6 feet of statutory height (measured from maximum pool elevation to the downstream toe elevation). Based on the meeting with IDWR, it is assumed that the statutory height of the dam may be increased to a maximum of 10 feet before more rigorous review or inspection is required by IDWR. The benefit of keeping the statutory height to 6 feet or less would mean no state agency review.

3.3 Local Permitting

There are no local permitting requirements.

4.0 Funding Plan and Letters of Commitment

(1) How will you make your contribution to the cost share requirement, such as monetary and/or in-kind contributions and source funds contributed by the applicant?

This project will leverage $300,000 of federal investments against $1,265,865 of non-federal investments. TFCC plans to fully fund this project with operating accounts. TFCC will provide $26,925 of match funding through in-kind staff resources (see Detailed Project Budget in Attachment A).

(2) Describe any in-kind costs incurred before the anticipated project start date that you seek to include as project costs. Include:

(a) What project expenses have been incurred

TFCC anticipates that project construction, as funded by Reclamation, will start in Summer 2013. Initial survey, site reconnaissance, and hydraulic calculations necessary to determine the viability of the project were completed in 2012. TFCC is currently contracted with CH2M HILL to complete the schematic design by Spring 2013.

(b) How they benefited the project

Based on the results of the topographic survey, TFCC optimized the layout of the proposed re-regulation reservoir storage area and determined the actual potential storage volume. During the site reconnaissance, TFCC and CH2M HILL further optimized the layout of the proposed re-regulation reservoir based on the anticipated rock profile. By reducing excavation, the potential for encountering bedrock is minimized, which in turn potentially reduces the amount of seepage out of the reservoir from cracks in the basalt bedrock. Geotechnical investigations, likely consisting of test pits, will occur during final design.

(c) The amount of the expense

To date, the cost of contractual expenses in support of the schematic design totals approximately $40,000. In addition, it is estimated that TFCC has provided $2,933 of match funding through in-kind staff resources in support of planning for the project through 2012.

(d) The date of cost incurrence

TFCC contracted CH2M HILL in July 2012 in support of the schematic design. Schematic design activities that have occurred from July 2012 to the present include the following:

- Site reconnaissance
- Reservoir optimization using topographic survey data
- Agency coordination with IDWR to confirm applicable design standards
- Preliminary hydrologic and hydraulic analysis

(3) Provide the identity and amount of funding to be provided by funding partners, as well as the required letters of commitment.

The non-federal portion of the project costs will be funded by the applicant only. No additional funding sources have been identified; therefore, no letters of commitment are included.

(4) Describe any funding requested or received from other Federal partners.

No federal funds have been requested or received from other federal sources aside from Reclamation.

(5) Describe any pending funding requests that have not yet been approved, and explain how the project will be affected if such funding is denied.

No federal funds have been requested or received from other sources. TFCC strongly desires to implement the Kinyon Pond project; if TFCC is not successful in securing a WaterSMART grant in the amount of $300,000, TFCC may continue with final design and construction of the project. However, the schedule of this project to begin in Summer 2013 and to be completed by Fall 2004 is pending receipt of this award.

Table 8
Summary of Non-federal and Federal Funding Sources

Funding Sources	**Funding Amount**
Non-Federal Entities	
TFCC	$1,265,865
Non-Federal Subtotal	$1,265,865
Requested Reclamation Funding	$300,000
Total Project Funding	$1,565,865

5.0 Letters of Project Support

The TFCC plans to fully fund the non-federal portion of project costs; therefore, no letters of project support are included.

6.0 Official Resolution

Please see Attachment B.

7.0 Budget Narrative

7.1 Budget Proposal

The assembled cost of the project for surveying, engineering, and construction has been estimated to be $1,565,865. The project estimate is based on reasonable and allowable costs and rates for comparable projects; input from survey, engineering, and contractor professionals familiar with the Magic Valley area; and historical costs and production rates for the irrigation improvements by the TFCC. These costs were assembled with the intent for project implementation to begin in Summer 2013 with final project construction and completion by Fall 2014. The project cost estimates were developed in connection with review of previous excavation projects and technical memorandums provided by CH2M HILL. The detailed project budget is provided in Attachment A. A summary of non-federal and federal funding sources is shown in Table 9.

The earthwork portion of the project, including excavation, grading, and dam construction, will be put out to bid in Fall 2013; the remainder of the project (inlet structure, check structure, outlet structure, outlet pipeline, and broad-crested weir structure) will be completed by TFCC. Construction of the structures by TFCC will commence in the Fall 2013 and be finalized no later than Fall 2014.

Table 9
Summary of Non-federal and Federal Funding Sources

Funding Sources	Percent of Total Project Cost	Total Cost by Source
Recipient Funding	81%	$1,265,865
Reclamation Funding	19%	$300,000
Total Project Funding	100%	$1,565,865

7.2 Salaries and Wages

As described in the budget table in Attachment A, TFCC expects to make an in-kind investment of $26,925 in salaries and wages. These investments support grant and project management specific to this project, as follows:

- Project Planning and Implementation in 2012 (pre-award), 2013, and 2014 by key personnel (Brian Olmstead, Manager; Louis Zamora, Assistant Manager; Office Manager)
- Construction of appurtenant structures in 2013 and 2014 by the TFCC (inlet structure, check structure, outlet structure, outlet pipeline, and broad-crested weir structure)

In kind investments exclude general administration outside the Kinyon Pond project.

7.3 Fringe Benefits

As described in the budget table in Attachment A, TFCC expects to make an in-kind investment of $10,475 in fringe benefits. These investments provide for FICA taxes, retirement, health insurance, unemployment tax, workers compensation, personal time off, and sick leave. Fringe benefits are applied to the manager, staff, foreman, operators, laborers.

7.4 Travel

As described in the budget table in Attachment A, TFCC expects to make an in-kind investment of $510 in travel expenses related to this project. This cost is based on 20 site visits to and from TFCC's headquarters in Twin Falls at $0.51 per mile. These investments pay for vehicle mileage for staff conducting site visits and inspections.

7.5 Equipment

TFCC expects to use currently owned equipment for construction of appurtenant structures. However, TFCC is not requesting reimbursement for such expenses. As such, no expenses are shown in the detailed budget table provided in Attachment A.

7.6 Materials and Supplies

The price for materials for construction of appurtenant structures is based on historical experience by the TFCC.

7.7 Contractual

Survey and engineering costs were estimated by CH2M HILL, an engineering firm experienced in both similar project designs and construction costs in the Magic Valley area. These costs include pre-award and post-award surveying costs.

7.7.1 Surveying

Survey costs include pre-award and pre-design topographic surveys, construction phase services, and reimbursable expenses.

7.7.2 Engineering

Engineering costs include pre-design, construction, and post-construction engineering costs. TFCC has contracted CH2M HILL to perform schematic design engineering services. Based on the WaterSMART grant approval, TFCC anticipates contracting CH2M HILL to perform final design and project management. These costs are reflected in the budget estimate.

7.7.3 Construction

During development of the grant application, bid tabulations from comparable projects were compiled to provide cost estimates for earthwork activities. In addition, a verbal quote was obtained from a local contractor that supports the best cost estimate obtained from comparable projects. Cost estimates under this line item include the costs to complete the earthwork portions of the project.

7.8 Environmental and Regulatory Compliance Costs

For purposes of this budget proposal, environmental and regulatory compliance costs are estimated at 1 percent of the total project cost. TFCC anticipates minimal environmental and regulatory compliance costs. The total budgeted amount for environmental and regulatory compliance costs for the project is $15,989.

It is anticipated that any environmental costs incurred would be related to the TFCC's consultant time and Reclamation time to: determine level of environmental compliance required for the project; prepare any necessary environmental compliance documents or reports; review any environmental compliance documents; and time required for approvals or permits.

7.9 Other - Reporting

This line item includes costs to be incurred while reporting to federal funders. In accordance with the FOA requirements, the following reports will be prepared by the TFCC and submitted to Reclamation: SF-425 Federal Financial Report, quarterly reports (four reports per year), and a final report.

7.10 Contingency Costs

This line item includes contingency costs of 10 percent of the total project costs. TFCC and their consultant CH2M HILL have extensive experience with designing and implementing water conservation projects. As this project has not had a final design, this line item allows for unexpected design and implementation challenges.

7.11 Indirect Costs

For this project, the recipient will not have any indirect costs. All costs associated with the project are direct and can be documented as such.

7.12 Total Costs

The estimated total project cost is $1,565,865. The requested federal share is $300,000; the total non-federal share is $1,265,865. A copy of the completed SF 424C, Budget Information-Construction Programs is provided in Attachment A.

8.0 Detailed Project Budget

Please refer to the Detailed Project Budget provided in Attachment A. A copy of the completed SF 424C Budget Information – Construction Programs is provided in Attachment A with the Supplemental Document.

ATTACHMENT A

Attachment A - Budget Proposal

Budget Item Description	Computation $/Unit	Quantity	Unit	Total Cost
Salaries and Wages				
PLANNING AND DESIGN				
Brian Olmstead, Manager (2012)	$ 41.39	40	hour	$ 1,656
Brian Olmstead, Manager (2013)	$ 43.05	100	hour	$ 4,305
Brian Olmstead, Manager (2014)	$ 44.77	20	hour	$ 895
Louis Zamora, Assistant Manager (2012)	$ 26.93	40	hour	$ 1,077
Louis Zamora, Assistant Manager (2013)	$ 28.01	100	hour	$ 2,801
Louis Zamora, Assistant Manager (2014)	$ 29.13	20	hour	$ 583
Office Manager (2012)	$ 20.05	10	hour	$ 201
Office Manager (2013)	$ 20.85	20	hour	$ 417
Office Manager (2014)	$ 21.69	10	hour	$ 217
CONSTRUCTION AND CONSTRUCTION MANAGEMENT				
Structure 1 - Check Structure				
Brian Olmstead, Manager (2013)	$ 43.05	10	hour	$ 430
Construction Foreman (2013)	$ 28.01	50	hour	$ 1,400
Equipment Operator 1 (2013)	$ 23.04	50	hour	$ 1,152
Equipment Operator 2 (2013)	$ 19.30	25	hour	$ 483
Structure 2 - Inlet Structure				
Brian Olmstead, Manager (2013)	$ 43.05	20	hour	$ 861
Construction Foreman (2013)	$ 28.01	50	hour	$ 1,400
Equipment Operator 1 (2013)	$ 23.04	50	hour	$ 1,152
Equipment Operator 2 (2013)	$ 19.30	25	hour	$ 483
Structure 3 - Broad-Crested Weir				
Brian Olmstead, Manager (2013)	$ 43.05	10	hour	$ 430
Construction Foreman (2013)	$ 28.01	50	hour	$ 1,400
Equipment Operator 1 (2013)	$ 23.04	50	hour	$ 1,152
Equipment Operator 2 (2013)	$ 19.30	25	hour	$ 483
Structure 4 - Outlet Structure				
Brian Olmstead, Manager (2013)	$ 43.05	10	hour	$ 430
Construction Foreman (2013)	$ 28.01	50	hour	$ 1,400
Equipment Operator 1 (2013)	$ 23.04	50	hour	$ 1,152
Equipment Operator 2 (2013)	$ 19.30	50	hour	$ 965
Subtotal				$ 26,925
Fringe Benefits				
PLANNING AND DESIGN				
Brian Olmstead, Manager (2012)	$ 14.96	40	hour	$ 598
Brian Olmstead, Manager (2013)	$ 15.56	100	hour	$ 1,556
Brian Olmstead, Manager (2014)	$ 16.18	20	hour	$ 324
Louis Zamora, Assistant Manager (2012)	$ 10.70	40	hour	$ 428
Louis Zamora, Assistant Manager (2013)	$ 11.13	100	hour	$ 1,113
Louis Zamora, Assistant Manager (2014)	$ 11.57	20	hour	$ 231

Attachment A - Budget Proposal

Budget Item Description	Computation $/Unit	Quantity	Unit	Total Cost
Office Manager (2012)	$ 8.65	10	hour	$ 87
Office Manager (2013)	$ 9.00	20	hour	$ 180
Office Manager (2014)	$ 9.36	10	hour	$ 94
CONSTRUCTION AND CONSTRUCTION MANAGEMENT				
Structure 1 - Check Structure				
Brian Olmstead, Manager (2013)	$ 15.56	10	hour	$ 156
Construction Foreman (2013)	$ 10.70	50	hour	$ 535
Equipment Operator 1 (2013)	$ 9.53	50	hour	$ 477
Equipment Operator 2 (2013)	$ 8.33	25	hour	$ 208
Structure 2 - Inlet Structure				
Brian Olmstead, Manager (2013)	$ 15.56	20	hour	$ 311
Construction Foreman (2013)	$ 10.70	50	hour	$ 535
Equipment Operator 1 (2013)	$ 9.53	50	hour	$ 477
Equipment Operator 2 (2013)	$ 8.33	25	hour	$ 208
Structure 3 - Broad-Crested Weir				
Brian Olmstead, Manager (2013)	$ 15.56	10	hour	$ 156
Construction Foreman (2013)	$ 10.70	50	hour	$ 535
Equipment Operator 1 (2013)	$ 9.53	50	hour	$ 477
Equipment Operator 2 (2013)	$ 8.33	25	hour	$ 208
Structure 4 - Outlet Structure				
Brian Olmstead, Manager (2013)	$ 15.56	10	hour	$ 156
Construction Foreman (2013)	$ 10.70	50	hour	$ 535
Equipment Operator 1 (2013)	$ 9.53	50	hour	$ 477
Equipment Operator 2 (2013)	$ 8.33	50	hour	$ 417
Subtotal				$ 10,475
Travel				
Site Visits (20 visits @ 50 mi ea.)	$ 0.51	1000	Mile	$ 510
Subtotal				$ 510
Materials/Supplies				
Structure 1 - Check Structure				
Concrete	$ 200.00	25	CY	$ 5,000
Structure 2 - Inlet Structure				
Concrete	$ 300.00	50	CY	$ 15,000
Inlet Pipe--48" HDPE	$ 200.00	100	LF	$ 20,000
Structure 3 - Broad-Crested Weir				
Concrete	$ 300.00	50	CY	$ 15,000
Structure 4 - Outlet Structure				
Concrete	$ 300.00	50	CY	$ 15,000
Outlet Pipe--48" HDPE	$ 200.00	1000	LF	$ 200,000
Subtotal				$ 270,000
Contractual/Construction				

Attachment A - Budget Proposal

Budget Item Description	Computation $/Unit	Quantity	Unit	Total Cost
SURVEYOR - DESIGN AND CONSTRUCTION				
Pre-Award Pre-Design Topographic Survey				
Field Delineate Survey Sites/Features	$ 100.99	54	hour	$ 5,453
Expenses	$ 1,749.00	1	each	$ 1,749
Mapping	$ 100.99	10	hour	$ 1,010
Construction Phase Services				
Construction Coordination	$ 100.99	8	hour	$ 808
Construction Staking Calculations	$ 100.99	16	hour	$ 1,616
Construction Staking	$ 100.99	16	hour	$ 1,616
Reimbursable Expenses				
Mileage, stakes, lathe, paper, etc.	$ 1,000.00	1	LS	$ 1,000
ENGINEER				
Pre-Award Engineering Contract				
Principal Engineer	$ 252.97	4	hour	$ 1,012
Senior Staff Engineer	$ 214.82	4	hour	$ 859
Staff Engineer/Geotechnical	$ 109.65	40	hour	$ 4,386
Contract Administrator	$ 182.92	6	hour	$ 1,098
Project Accountant	$ 90.36	10	hour	$ 904
Administrative Assistant	$ 75.66	10	hour	$ 757
Pre-Award Agency Coordination				
Senior Staff Engineer/Dam Safety	$ 232.30	6	hour	$ 1,394
Staff Engineer/Geotechnical	$ 109.65	10	hour	$ 1,097
Pre-Award Pre-Design Survey				
Senior Staff Engineer/Dam Safety	$ 232.30	12	hour	$ 2,788
Staff Engineer/Geotechnical	$ 109.65	12	hour	$ 1,316
Pre-Award Schematic Design				
Principal Engineer	$ 252.97	6	hour	$ 1,518
Senior Staff Engineer	$ 214.82	22	hour	$ 4,726
Staff Engineer/Geotechnical	$ 109.65	91	hour	$ 9,978
Senior Staff Engineer/Dam Safety	$ 232.30	8	hour	$ 1,858
Senior Staff Engineer/Geotechnical	$ 181.08	40	hour	$ 7,243
Staff Engineer/Geotechnical	$ 152.57	54	hour	$ 8,239
Staff Engineer, EIT/Geotechnical	$ 99.04	48	hour	$ 4,754
Senior Staff Engineer/Structural	$ 173.02	4	hour	$ 692
Staff Engineer/Structural	$ 84.14	10	hour	$ 841
Senior Staff Engineer/Hydraulics	$ 148.19	28	hour	$ 4,149
Staff Engineer/Hydraulics	$ 108.75	74	hour	$ 8,048
Staff Engineer, EIT/Hydraulics	$ 94.59	52	hour	$ 4,919
AutoCAD Technician	$ 69.05	134	hour	$ 9,253
Technical Writer	$ 143.35	30	hour	$ 4,301
Project Accountant	$ 90.36	4	hour	$ 361

Attachment A - Budget Proposal

Budget Item Description	Computation $/Unit	Quantity	Unit	Total Cost
Administrative Assistant	$ 75.66	18	hour	$ 1,362
Reimbursable Expenses	$ 396.00	1	each	$ 396
Geotechnical Lab Testing Expenses	$ 5,745.00	1	each	$ 5,745
Health and Safety	$ 362.61	1	each	$ 363
Profit Markup	$ 287.25	1	hour	$ 287
Post-Award Final Design				
Principal Engineer	$ 252.97	8	hour	$ 2,024
Senior Staff Engineer	$ 214.82	100	hour	$ 21,482
Staff Engineer	$ 109.65	300	hour	$ 32,895
Staff Engineer/EIT	$ 152.57	100	hour	$ 15,257
AutoCAD Technician	$ 69.05	134	hour	$ 9,253
Technical Writer	$ 143.35	30	hour	$ 4,301
Project Accountant	$ 90.36	4	hour	$ 361
Administrative Assistant	$ 75.66	16	hour	$ 1,211
Construction - Bid/Pre-Construction Assistance				
Principal Engineer	$ 252.97	2	hour	$ 506
Staff Engineer	$ 109.65	4	hour	$ 439
Administrative Assistant	$ 75.66	8	hour	$ 605
Construction - Oversight and Inspections				
Principal Engineer	$ 252.97	8	hour	$ 2,024
Staff Engineer	$ 109.65	40	hour	$ 4,386
Administrative Assistant	$ 75.66	16	hour	$ 1,211
CONSTRUCTION				
General Conditions				
Mobilization (2%)	$ 18,000	1	LS	$ 18,000
Bonds and Insurance (1%)	$ 9,000	1	LS	$ 9,000
Demobilization (1%)	$ 9,000	1	LS	$ 9,000
Reservoir Embankment and Access Road				
Site Preparation/Excavation				
Access/Haul Road Construction/Maintenance	$ 50.00	1000	LF	$ 50,000
Stripping and Excavation in Reservoir	$ 2.00	362,484	CY	$ 724,968
Embankment				
Place & Compact Zone 1 Material	$ 2.50	10,000	CY	$ 25,000
Riprap on Side Slopes	$ 55.00	1,000	CY	$ 55,000
Subtotal				$ 1,094,814
Environmental and Regulatory Compliance				
Reclamation Cost Share	$ 143.35	40	hour	$ 5,734
Recipient Cost Share - Compliance Documents	$ 90.36	80	hour	$ 7,229
Recipient Cost Share - Mitigation Measures	$ 75.66	40	hour	$ 3,026
Subtotal				$ 15,989
Other				

Attachment A - Budget Proposal

Budget Item Description		Computation $/Unit	Quantity	Unit	Total Cost
Reporting (8 Reports @ $6/hr)		$ 100.00	48	hour	$ 4,800
	Subtotal				$ 4,800
Contingency					
10% Contingency					$ 142,351
	Subtotal				$ 142,351
Total Direct Costs					**$ 1,565,865**
Indirect Costs - __%					0%
Total Project Costs					**$ 1,565,865**