WaterSMART: Water and Energy Efficiency Grant Application for FY2023

Notice of Funding Opportunity No. R23AS00008

The Florida Consolidated Ditch Company

Hess Lateral Improvement Project

Western Colorado Area – Upper Colorado Region

Applicant: Florida Consolidated Ditch Company

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July 28, 2022

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(END OF APPLICATION)

1.0 TECHNICAL PROPOSAL AND EVALUATION CRITERIA

1.1 Executive Summary

Date: July 28, 2022
Applicant Name: Florida Consolidated Ditch Company
City, County, State: Durango, La Plata County, Colorado
Applicant Category: Category A
Federal Funding Amount: Funding Group II

1.2 Project Summary

The Florida Consolidated Ditch Company (FCDC) and the Hess Lateral are located in La Plata County, Colorado (see Figure 1). The Hess Lateral is part of the FCDC's irrigation delivery system that carries United States Bureau of Reclamation (USBR) Florida Project water and adjudicated water to its shareholders for irrigation purposes (see Figure 2). The Hess Lateral provides irrigation water to approximately 938 acres of farmland (see Figure 3). The FCDC is providing this application to request WaterSMART grant funding for the Hess Lateral Improvement Project (the Project) that will replace approximately 4.5 miles of open earth-lined ditch (see Figure 3) with a buried gravity-pressurized pipeline and installation of flow measurement devices at each landowner's pipeline turnout. The Project will also enable at least 233.8 acres of flood irrigated farmland to covert to sideroll or sprinkler irrigation, and at least 283.6 acres of sprinkler irrigated farmland to no longer pump water via on-farm improvements funded through the Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP). In July 2020 the FCDC finalized Issued for Bid level drawings, contract documents and technical specifications (peer reviewed by USBR engineering staff) for the Project and solicited three bids from qualified Contractors in and around the La Plata County area. Based on the bid's received, the FCDC does not currently have enough funding secured for construction of the Project. The FCDC is submitting this WaterSMART application to secure full funding for the Project. The quantified benefits of the Hess Lateral Improvement Project include: 1) calculated total water savings of 557 acre-feet (AF) per year, 2) calculated total energy savings of 137,984 kWH per year, and 3) developing additional sources of water for other beneficial uses in the San Juan River basin including instream flow purposes for Florida River aquatic and riparian habitat.

1.3 Length of Time to Complete Project

The FCDC anticipates the Project will take 30 months to complete (see Table 1), including temporary breaks in construction work to accommodate the irrigation season (May 1st through October 1st). Based on a start date no sooner than June 2023, the anticipated Project completion date is December 2025. The anticipated Project schedule is provided in Table 1, and is based on

the construction schedule provided by the low-bid contractor at the time of Project. A copy of the low-bid contractor's bid package is available upon request. Based on the low-bid contractor's estimated construction schedule, construction of the Project can take place during one non-irrigation season. The overall Project schedule presented in Table 1 considers a construction schedule over three irrigation seasons in consideration of construction during the non-irrigation season only, and to allow sufficient time for final Project reclamation, revegetation, and stabilization.

1.4 Federal Facility Status

This Project is not located on a federal facility, however the Hess Lateral conveys Federal USBR Florida Project water.

1.5 Project Location

The Hess Lateral Improvement Project is located in La Plata County, Colorado approximately 12 miles south of Durango, Colorado along Highway 550 (see Figure 3). The start of Project latitude is 37°8'24.46"Nand longitude is 107°50'53.01"W and the end of Project latitude is 37°5'47.37"N and longitude is 107°51'44.65"W. The Project runs parallel and adjacent to Highway 550 for approximately 4 miles.

1.6 Technical Project Description

If selected as a recipient of a WaterSMART grant, the FCDC will use the funding for construction to replace approximately 3.3 miles of the earth lined, open Hess Lateral ditch, and approximately 1.2 miles of private irrigation ditch with approximately 4.5 miles a pressurized High Density Polyethylene Pipe (HDPE) pipeline ranging in diameter from 27-inches to 10-inches to deliver up to 19 cfs of irrigation water to its users. The Project includes construction of twenty-four irrigation user turnouts from the pipeline. Each user will have the option to receive pressured water to facilitate the use of more water efficient irrigation systems without the need for using electrically powered pumps.

In July of 2020 the FCDC completed Issued for Bid level Construction Drawings, Contract Documents and Technical Specifications for the Project (Project Documents). Due to their size, a full set of Construction Drawings, Contract Documents and Technical Specifications for the Project are not provided with the Application but are available upon request. Prior to bidding, the FCDC provided design plans and specification to the USBR Grand Junction Field office and solicited comments on the Project Documents. The FCDC engineer incorporated the USBR recommendations and comments into the final bid set of plans.

Primary Project components include the following:

- Earthwork including but not limited to excavation, subgrade preparation and backfill for an irrigation pipeline, and associated appurtenances including but not limited to turnouts, valves, cleanouts, etc.

- Construction of a turnout structure to deliver water from the Reservoir Ditch to the Hess Lateral Pipeline intake and settling pond.

- Earthwork including but not limited to excavation, and subgrade preparation for an intake pond.

- Construction of a concrete intake structure and associated appurtenances including but not limited to gates, cast in place concrete, manholes, flow meter, etc.

- Construction of a concrete vault to house the pressure reducing valve and associated appurtenances, pressure reducing valve, pressure relief valve, and strainer.

- Coordination of all utility crossings during construction of the pipeline.

- Pressure testing of the pipelines.

The FCDC received bids from three qualified contractors in the Durango, CO area (see Table 2). Based on the bids received, the FCDC does not have adequate funding to fully construct the Project. Additionally, given the time that has passed since the Project was bid in July 2020, the FCDC worked with the CDOT's local Region 5 Utility Engineering Program Manager to adjust the July 2020 low-bid into 2023 construction costs. CDOT recommended assuming a 30 percent increase to construction costs between 2020 and 2023 based on a comparison of highway project construction bids received by CDOT between 2020 and 2022 (see Table 3). Cost increases are attributable to recent inflation, supply chain issues, Buy-American requirements, and Davis Bacon Wage Act requirements. WaterSMART grant funding is requested to match funding secured from the CWCB and CDOT for the construction phase of the Hess Lateral Improvement Project. The major activities for which Water SMART funding is requested, and the anticipated Fiscal Year (FY) in which these activities are to take place, are described in the following sections.

1.6.1 *Activity 1: NEPA Compliance (FY 2023)*

WWE conducted a preliminary review of environmental impacts as part of the development of a Project Loan Feasibility Study prepared for the CWCB. The environmental review included review of the Colorado Office of Archaeology and Historic Preservation COMPASS online database, the U.S. Fish and Wildlife Service National Wetlands Inventory, The Environmental Assessment (EA) drafted by CDOT for the Highway 550 widening Project, and the U.S. Fish and Wildlife Service Threatened and Endangered (T&E) Species Critical Habitat Mapper. Based on these desktop reviews the Project is anticipated to have minimal impacts to the environment.

The applicants recognize Project compliance with National Environmental Policy Act (NEPA) and National Historic Preservation Act (NHPA) are required under the WaterSmart Program. For NEPA compliance required by the Water Smart Grant, initial environmental permitting process will entail coordination with the USBR and other entities to determine required Endangered

Species Act, National Environmental Policy Act (NEPA), State Historic Preservation Office (SHPO) and other environmental requirements including necessary surveys and reports. Potential environmental and cultural impacts will be assessed with representatives from the USBR. Impacts may include potential habitat loss under the NEPA and identification of archeological and historic sites in collaboration with the SHPO under NHPA.

To meet the Federal Agency environmental requirements the Project team anticipates wetland surveys, cultural surveys, and surveys for T&E species. Coordination with USBR and federal regulatory entities and preparation of the needed information for either a Categorical Exclusion Checklist (CEC) or Biological Assessment (BA) and Environmental Assessment (EA) reports as needed. In addition, the applicants recognize that environmental and cultural resources services may be needed during construction for compliance with NEPA and NHPA.

We understand that additional NEPA and NHPA surveys, evaluation, documentation, and construction services will be required and have earmarked up to $100,000 for this Activity 1.

1.6.2 *Activity 2: Development of Issued for Construction Drawings (FY 2023)*

During and after the bidding process, the engineer worked with the contractors who bid the Project to identify potential cost savings items, including switching from PVC pipe material to HDPE pipe, and providing considerations for allowing screened native backfill for use as pipe bedding. The Issued for Construction Drawings activity includes incorporating potential cost savings items into the Project Documents and issuing them for construction.

Deliverable: Stamped Issued for Construction level Construction Drawings, Contract Documents and Technical Specifications for the Project.

1.6.3 *Activity 3: Engineering Services During Construction (FY 2023 – 2025)*

Engineering services during construction include construction observation, processing requests for information, change orders, and administrative record-keeping. More specifically, the Applicant's Project engineer will:

- Provide regular field visits to the construction site to monitor and document the contractor's progress.
- Provide necessary environmental and cultural services during construction as required by NEPA and NHPA.
- Attend construction progress meetings; weekly meetings are anticipated. The Applicant's representative will coordinate with the FCDC's selected field representative and participate and in construction meetings including preparation of construction meeting agendas and minutes.
- Review, track, and distribute any equipment, materials, and shop drawing submittals necessary.
- Prepare change orders, respond to requests for information, and review contractor pay application requests.

- Assist owner's representative with keeping and providing, as requested, all records of Project activity as required by Federal regulations for Federally funded projects, including fulfilling any reporting requirements.
- An independent geotechnical testing laboratory hired by the Owner will perform quality control testing for all materials, including concrete and earth work.

Other items may include construction contract administration, start-up services, operation, and maintenance manual development, etc.

Deliverables:

The Applicant's engineer will prepare construction progress meeting minutes and distribute to attendees, Project manual including construction Project observation reports, construction photograph log, owner's record set of change orders, payment applications and approval letters, review, and track submittals, etc.

1.6.4 *Activity 4: Project Construction (FY 2023 – 2025)*

Construction activities associated with the Hess Lateral Improvement Project will be performed by the qualified low-bid contractor selected through the competitive bidding process. The FCDC anticipates working with TRC Construction (the qualified low-bidder of the Project) to update their bid based on Issued for Construction Project Documents. Construction will be in accordance with applicable laws, regulations, and pipeline construction practices.

Proposed construction activities for the Hess Lateral Improvement Project are anticipated to consist of the Bid Items as described in the Project Documents. For a detailed breakdown of the bid costs received for each of the Bid Items summarized below, please see Table 2. Adjusted costs for each of the Bid Items are provided in Table 3.

Mobilization/Demobilization: This includes preparatory work and operations, including but not limited to those activities necessary for the movement of personnel, equipment, and supplies to and from the Project site, necessary preconstruction direct costs, and maintenance and clearing of other facilities and appurtenances necessary to undertake the work on the Project.

Permits: Includes the acquisition of necessary permits such as, but not limited to, and implementation of requirements for Stormwater Management Plan (SWMP), Traffic Control Permit, Construction Dewatering, La Plata County Road Crossing Permit, and any other Contractor required permitting.

Earthwork: Includes furnishing and installing all items and equipment necessary for pipeline installation, excavation and disposal and subgrade preparation, fill placement and compaction for the pipeline and associated appurtenances.

Water Control and Dewatering: Includes furnishing and installing all equipment, labor, and materials and performing all construction operations in connection with controlling groundwater, surface water, and stormwater during the excavation and construction of all structures and other appurtenances associated with the Project.

Pipeline Turnout Structure: Includes furnishing and installing all items and equipment, labor, and materials necessary for; the reinforced concrete turnout structure, pipeline from the turnout structure to the intake pond, 3-foot Parshall flume, and associated appurtenances.

Intake Pond: Includes furnishing and installing all items and equipment, labor, and materials necessary for; excavation and disposal, subgrade preparation, surveying, over excavation and fill placement, emergency overflow spillway, rerouting of the Kroeger pipeline, and associated intake pond appurtenances.

Pipeline Intake Structure: Includes furnishing and installing all items and equipment, labor, and materials necessary for; the reinforced concrete pipeline intake structure, flow meter and vault, gates, valves, and all associated pipeline intake structure appurtenances.

Hess Lateral Pipeline: Includes furnishing and installing all items and equipment, labor, and materials necessary for; approximately 21,000 feet of irrigation pipeline with a diameter ranging from 27 inches to 10 inches, surveying, trenching, bedding, backfilling and compaction, thrust blocking, cleanouts, valves and valve vaults, fittings, pressure testing, and associated pipeline appurtenances.

Pressure Reducing Vault: Includes furnishing and installing all items and equipment, labor, and materials necessary for; a reinforced concrete vault to house the pressure reducing valve and associated appurtenances, pressure reducing valve, pressure relief valve, strainer, vents, sump, surveying, excavation, bedding, backfilling and compaction, quality assurance and quality control testing.

Short Pipeline: Includes furnishing and installing all items and equipment, labor, and materials necessary for; approximately 2,900 feet of irrigation pipeline with a diameter ranging from 12 inches to 8 inches, surveying, trenching, bedding, backfilling and compaction, thrust blocking, cleanouts, valves and valve vaults, fittings, pressure testing, and associated pipeline appurtenances.

Turnout Structures: Includes furnishing and installing all items and equipment, labor, and materials necessary for; twenty-two piped turnouts, including connections to the Hess Lateral Pipeline, Short Pipeline, valves, surveying, trenching, bedding, backfilling and compaction, and associated turnout structure appurtenances.

Future Turnout Structures: Includes furnishing and installing all items and equipment, labor, and materials necessary for; two piped future turnouts, including connection to the Hess Lateral Main Pipeline, surveying, trenching, bedding, backfilling and compaction, and associated future turnout structure appurtenances

Seeding and Mulching: Includes furnishing and installing all equipment, labor, and materials for soil preparation, seeding, fertilizing, and mulching, and maintenance.

1.6.5 *Activity 5: Preparation of Final Report and Record Drawings (FY 2023-2025)*

Work performed under this activity will be based on the Project Document package, deliverables for activities 1 through 4, and the contractor's record drawings based on actual field conditions, and will include

- Preparation of record drawings for the Project. As-built drawing information submitted by the contractor will be incorporated into the design drawings.
- Post-Project benefits will be measured, and performance measures identified by the USBR will be addressed in a final report to the USBR.
- Compliance with USBR reporting requirements.

Deliverables

- Set of final construction drawings indicated as "Record Drawings" in digital (AutoCAD) and printed version.
- Permits as required, contract documents, assorted Project documentation, Project progress reports and a final report to the USBR.

1.7 Evaluation Criteria

1.7.1 *Evaluation Criterion A—Quantifiable Water Savings*

1.7.1.1 Describe the amount of estimated water savings.

The Hess Lateral carries an average of approximately 2,300 AF per year of water. The water savings from completion of the Hess Lateral Improvement Project is estimated by the FCDC and the NRCS at 557 AF per year via a combination of ditch loss savings, and on-farm efficiency improvements. Over an expected minimum 50-year life of the pipeline, the Project will save an estimated 27,850 AF of water.

1.7.1.2 Describe current losses

The Project will conserve water currently lost due to ditch seepage and evaporation which occurs when irrigation water deliveries are occurring in the Hess Lateral ditch. The water that is lost by seepage from the 95-year-old ditch goes to three places: 1) back to the river via shallow percolation, 2) re-diverted and consumed by non-Florida Project agriculture and phreatophytes, and 3) into non-tributary aquifers through deep percolation.

On-farm losses are a result of inefficient irrigation. The Hess Lateral services approximately 938 acres of irrigated farmland of which approximately 586 acres are currently flood irrigated. The water that is lost by inefficient irrigation practices goes to four places: 1) back to the river via shallow percolation, 2) re-diverted and consumed by non-Florida Project agriculture and phreatophytes, 3) into non-tributary aquifers through deep percolation, and 4) to evaporation.

1.7.1.3 Describe the support/documentation of estimated water savings

Ditch Loss and Evaporation Water Savings: 206 AF per year

The FCDC determined the estimated average annual water savings that will result from piping the Hess Lateral via a ponding test conducted in July of 2021 in accordance with USBR recommended guidance from Texas A&M (Leigh and Fipps, 2009) and in coordination with its consulting engineer. The ponding test was conducted near the end of the 2021 irrigation season. An early season ponding test could not be conducted due to drought conditions. Three cross sections of the ditch were surveyed prior to impounding the ditch with temporary earthen dams. The ponding test began 24 hours following placement of the impoundment to provide a stabilization and saturation period in accordance with Leigh and Fipps (2009). An FCDC representative visually observed and recorded regular water level measurements from a staff gage placed in the ditch over the following 24 hours. Using the approach outlined in Leigh and Fipps (2009), FCDC's engineering consultant calculated the average seepage loss rate at 17.9 gallons per foot per day or 0.29 AF per mile per day. The Project will replace 4.5 miles of open ditch and the FCDC's irrigation season typically lasts 154 days (May 1st through Oct 1st), equating to a potential seepage loss water savings of 201 AF per year. Photographs and documentation of the ponding test are provided in Appendix A.

The FCDC calculated evaporation losses from the ditch using NOAA Technical Report NWS 33 gross evaporation rates. The FCDC estimates approximately 4.6 AF of water is lost from the Hess Lateral on an annual basis due to evaporation. The FCDC's evaporation losses assume a typical irrigation season between May 1st through October 1st, a ditch replacement length of 4.5 miles, and an average water surface top width of 3 feet. Appendix A provides the basis for FCDC's evaporation loss estimate.

Total ditch loss and evaporation water savings equals approximately 206 AF per year, or approximately 9 percent of average annual flow in the Hess Lateral.

On-Farm Water Savings: 351 AF per year

The FCDC and NRCS worked together to develop an estimate for water savings as a result of on-farm irrigation efficiency improvements. To date, the NRCS has EQIP applications to install irrigation system improvements from landowners representing approximately 233.8 acres of farmland that are currently flood irrigated (50 percent irrigation efficiency). To date, the FCDC has Letters of Intent to participate in the Project from landowners representing approximately 104.2 acres of farmland that are currently flood irrigated. Therefore, at a minimum, a total of approximately 338 acres of farmland are expected to convert from flood irrigation to higher efficiency irrigation systems that require pressure, such as sprinklers or center pivots once the Project is constructed.

Table 4 provides a summary of the basis for the FCDC and NRCS annual on-farm water savings estimate of 351 AF per year. The irrigation water requirement (IWR) for lands irrigated by the Hess Lateral is based on The Florida Mesa Surface Water Budget Report published by the USBR (Dyke. D, 1994), and existing and future irrigation system efficiencies are based on system efficiency guidance provided by the local NRCS office (see Appendix B). Based on

communication with NRCS staff, it is reasonable to assume the EQIP applications are an approximately 50/50 mix of center pivot (92 percent efficiency) and sprinkler - hand line or wheel line (70 percent efficiency) on an area basis; and the estimated on-farm improvements are expected to increase irrigation efficiency from 50 percent to 81 percent (average of 92 percent and 70 percent = 81 percent). Additional information on the basis for the on-farm water savings estimate is discussed in Section 1.7.4.

1.7.1.4 Address the following questions according to the type of infrastructure improvement you are proposing for funding.

1.7.1.4.1 Canal Lining/Piping

How has the estimated average annual water savings that will result from the project been determined? Please provide all relevant calculations, assumptions, and supporting data.

The FCDC determined the estimated average annual water savings that will result from piping the Hess Lateral via a ponding test conducted in 2021 in accordance with USBR recommended guidance from Texas A&M (Leigh and Fipps, 2009) and in coordination with its consulting engineer. The ponding test was conducted in July 2021 near the end of the irrigation season. An early season ponding test could not be conducted due to drought conditions. The FCDC's consulting engineer surveyed three cross sections of the ditch prior to the FCDC impounding the ditch with a temporary earthen clay dam. The ponding test began 24 hours following placement of the impoundment to provide a stabilization and saturation period in accordance with Leigh and Fipps (2009). An FCDC representative visually observed and recorded regular water level measurements from a staff gage placed in the ditch during the 24-hour test period following the stabilization and saturation period. A rain gauge was placed on-site to record precipitation during the test. The FCDC's consulting engineer calculated the seepage loss rate as the average cross-sectional area lost for the three surveyed cross sections over the 24-hour test period. Ponding test calculations and supporting documentation are provided in Appendix A.

How have average annual canal seepage losses been determined? Have ponding and/or inflow/outflow tests been conducted to determine seepage rates under varying conditions? If so, please provide detailed descriptions of testing methods and all results. If not, please provide an explanation of the method(s) used to calculate seepage losses. All estimates should be supported with multiple sets of data/measurements from representative sections of canals.

The FCDC calculated the estimated average annual water savings that will result from piping the Hess Lateral via a ponding test conducted in 2021 in accordance with USBR recommended guidance from Texas A&M (Leigh and Fipps, 2009) and in coordination with its consulting engineer. The ponding test was conducted in July 2021 near the end of the irrigation season. An early season ponding test could not be conducted due to drought conditions. Ponding test calculations and supporting documentation are provided in Appendix A.

What are the expected post-project seepage/leakage losses and how were these estimates determined (e.g., can data specific to the type of material being used in the project be provided)?

Post-Project seepage / leakage losses are expected to be negligible. The existing earth-lined ditch will be replaced with a High-Density Polyethylene Pipe (HDPE) pipeline ranging in diameter from 27-inches to 10-inches to deliver up to 19 cfs of irrigation water to its users. The Project Documents will specify an allowable leakage rate of zero from the pipeline, which is achievable with HDPE pipe due to the butt fusion method that the contractor will use to join sections of pipe. Per the Project Documents, pressure testing of the pipeline is required during construction to ensure water tightness.

What are the anticipated annual transit loss reductions in terms of acre-feet per mile for the overall project and for each section of canal included in the project?

Using the approach outlined in Leigh and Fipps (2009), FCDC's engineering consultant calculated the average seepage loss rate at 17.9 gallons per foot per day or 0.29 AF per mile per day. Ponding test calculations and supporting documentation are provided in Appendix A.

How will actual canal loss seepage reductions be verified?

Actual canal loss seepage reductions will be verified by charging the pipeline with water with all turnout valves closed. Once the pipeline is filled with water, the pipeline's in-line instantaneous and totalizing flow meter located at the start of the pipeline can be monitored over a 24-to-48-hour period. If leakage is occurring from the pipeline, the flow meter should register flow through the pipeline.

Include a detailed description of the materials being used

The existing earth-lined Hess Lateral ditch will be replaced with a High-Density Polyethylene Pipe (HDPE) pipeline ranging in diameter from 27-inches to 10-inches to deliver up to 19 cfs of irrigation water to its users. HDPE pipe joints are fused via a butt fusion method which, if properly fused, do not leak over the useful service life of the pipe. The Project Documents will require the contractor to provide certifications for their HDPE pipe installer, document the field conditions of each butt fused joint, and perform quality assurance testing of the butt fused joints. HDPE effectively eliminates infiltration and exfiltration problems which are more commonly experienced with alternate pipe material joints such as with PVC, and Plastic Irrigation Pipe (PIP).

1.7.2 *Evaluation Criterion B—Renewable Energy*

1.7.2.1 Subcriterion No. B.1: Implementing Renewable Energy Projects Related to Water Management and Delivery

The initial sections of the Project have an 11.5 percent grade, dropping approximately 150 feet in elevation over its first 1,300 feet, which will create much of the pressure in the pipeline. Currently, the Project includes installation of a Pressure Reducing Valve (PRV) to reduce pipeline pressures and delivery pressures to on-farm irrigation sprinkler systems. To mitigate high pressure within the system, and generate renewable energy, the FCDC may seek to incorporate a micro-hydroelectric generation turbine in the future. The Project's PRV is located immediately adjacent to an existing substation that can used to provide renewable energy to the local grid. Renewable energy estimates were not calculated because the proposed Project does not include a hydropower

component at this time, but is designed to allow for installation of a hydropower component in the future.

1.7.2.2 Subcriterion No. B.2: Increasing Energy Efficiency in Water Management

Describe any energy efficiencies that are expected to result from implementation of the water conservation or water efficiency project (e.g., reduced pumping).

The FCDC worked with the local NRCS to develop an estimate of quantifiable energy savings due to the Project. The NRCS estimates it costs Hess Lateral users approximately $2,116 per year to operate a sideroll or pod sprinkler system via a pumping system to irrigate a 40-acre parcel. This equates to an annual unit pumping cost of approximately $53 per acre per year (see Appendix B). Using the NRCS's energy cost of $0.135 per kWH, this equates to 15,674 kWH per year per 40 acres, or 392 kWH per acre per year ($2,116 per year ÷ 40 acres ÷ $0.135 per kWH = 392 kWH per acre per year). The Project will provide pressurized water to Hess Lateral users, eliminating pumping costs and providing energy saving for irrigators who currently irrigate with sprinkler systems.

If quantifiable energy savings is expected to result from the project, please provide sufficient details and supporting calculations. If quantifying energy savings, please state the estimated amount in kilowatt hours per year.

The local NRCS office has EQIP applications from landowners that represent approximately 283.6 acres of currently sprinkler or sideroll irrigated lands. The FCDC has letters of intent to participate in the Project from landowners representing an additional 68.4 acres of currently sideroll or sprinkler irrigated lands. This totals 352 irrigated acres that are currently sideroll or sprinkler irrigated.

Based on the local NRCS estimate of $53 per year per acre in energy costs to operate a sideroll or sprinkler irrigation system, **the Project will save approximately $18,656 per year in energy costs** (352 acres x $53 per acre per year = $18,656 per year).

Based on the local NRCS estimate of 392 kWH per year per acre in energy use to operate a sideroll or sprinkler irrigation system, **the Project will save approximately 137,984 kWH per year in energy use** (352 acres x 392 kWH per acre per year = 137,984 kWH per year).

How will the energy efficiency improvement combat/offset the impacts of climate change, including an expected reduction in greenhouse gas emissions.

According to the United States Environmental Protection Agency (EPA) and using that agency's emission factor[1] of 7.09×10^{-4} metric tons CO_2 per kWh, reductions in electricity use due to the Project will result in approximately **98 metric tons of CO_2 emissions avoided each year**, or 4,900 metric tons over the 50-year life of the Project.

[1] http://www.epa.gov/energy/ghg-equivalencies-calculator-calculations-and-references

If the project will result in reduced pumping, please describe the current pumping requirements and the types of pumps (e.g., size) currently being used. How would the proposed project impact the current pumping requirements and energy usage?

Current pumping requirements vary by landowner, the size of irrigated acreage and the volume of water required for individual crops. According to the NRCS, the Project will provide adequate pressure to operate typical agricultural sprinkler systems. The NRCS estimates that current on-farm pumping requirements to operate a sideroll or sprinkler irrigation system are based on a required lift of approximately 15 feet with a system pressure of 40 psi (see Appendix B). Existing on-farm pump requirements will vary by the size and crop type of each farm. The Project will provide pressurized water to each Hess Lateral users turnout, eliminating the need for pumping.

Please indicate whether your energy savings estimate originates from the point of diversion, or whether the estimate is based upon an alternate site of origin.

The energy savings estimate originates from each applicable farm's turnout point along the existing Hess Lateral.

Does the calculation include any energy required to treat the water, if applicable?

No energy is required to treat the irrigation water, water is delivered to a sedimentation basin, and screened for trash and debris prior to entering the Hess Lateral Pipeline.

Will the project result in reduced vehicle miles driven, in turn reducing greenhouse gas emissions? Please provide supporting details and calculations.

The Project will reduce FCDC operations and maintenance needs for the existing earth lined ditch resulting in less miles traveled by FCDC maintenance staff and a reduced need for operation of heavy equipment, such as track hoes and excavators. The FCDC ditch riders anticipate a cost savings from reduced equipment use of $17,500 per year, or $875,000 over a 50-year life of the Project. An estimate of reduced CO_2 emissions because of reduced maintenance equipment driving/use was not calculated.

Describe any renewable energy components that will result in minimal energy savings/production (e.g., installing small-scale solar as part of a SCADA system).

The Hess Lateral pipeline has an 11.5 percent grade, dropping approximately 150 feet in elevation over its first 1,300 feet, which generates much of the pressure in the pipeline. The Project includes the installation of a pressure reducing valve (PRV) vault to lower the pressure in the pipeline downstream of the PRV. The PRV vault is located immediately adjacent to an existing electrical substation (see Figure 4). This Project is designed to incorporate micro-hydroelectric generation in the future.

1.7.3 *Evaluation Criterion C—Sustainability Benefits*

1.7.3.1 Enhancing Drought Resiliency

Does the project seek to improve ecological resiliency to climate change?

The Hess Lateral Improvement Project addresses the **agricultural water conservation adaptation strategy** developed in the *2012 Colorado River Basin Water Supply and Demand Study* (CRB Study) to help resolve future water supply and demand imbalances within the CRB. According to the CRB Study, "all of the portfolios [of options to resolve water supply and demand imbalances] incorporate significant agricultural water conservation…" (Executive Summary, page 23). The study also found that "for the Upper Basin vulnerability, *Portfolio C* both performs better than *Portfolios B and D* in terms of reducing this vulnerability and has a lower range of costs than *Portfolios A and B*." The agricultural water conservation adaptation strategy is a prominent element of *Portfolio C*.

Specifically, the proposed WaterSMART Grant Project will implement the agricultural water conservation strategy through the **Conveyance System Efficiency Improvements conservation measure** identified in the CRB Study Appendix F-10 by converting open ditch to pipeline and prevent 206 AF per year of delivery system loss. The proposed Project will also implement agricultural water conservation through a second measure identified in Appendix F-10, **On-Farm Irrigation System Improvements**. The FCDC and NRCS calculated 351 AF of annual water savings attributable to this Project from the on-farm changes it would facilitate.

The Project will provide a firmer water supply during climate variability by increasing the efficiency of a canal conveyance system. The water activity also provides additional storage water for other beneficial uses that will help alleviate competition for limited water supplies. The development of storage for augmentation and non-irrigation beneficial uses in the Florida River basin greatly enhances the sustainability of the water supply by using a storage reservoir to supplement the adjudicated water rights that rely on day-to-day natural streamflow, which was not reliable during the very dry year of 2002.

Will water remain in the system for longer periods of time? If so, provide details on current/future durations and any expected resulting benefits (e.g., maintaining water temperatures or water levels).

Water saved due to the proposed Project can be stored in Lemon Reservoir and released for other beneficial uses, including supplemental instream flows. An instream flow (ISF) water right is a non-consumptive, in-channel use of water made by the CWCB for minimum flows between specific points on streams.

During the drought years of 2020 and 2021, the FCDC, in cooperation with FWCD, donated approximately 519 AF of water to the Florida River for aquatic and riparian benefits. These donations occurred over dry years and water savings from ditch lining and efficiency projects provided the water supply for the donations, so project water users were not affected. Reports that document these in-stream donations can be made available upon request.

Will the project benefit species (e.g., federally threatened, or endangered, a federally recognized candidate species, a state listed species, or a species of particular recreational, or economic importance)? Please describe the relationship of the species to the water supply, and whether the species is adversely affected by a Reclamation project or is subject to a recovery plan or conservation plan under the Endangered Species Act (ESA).

The Hess Lateral service area lies within one designated area of Threatened and Endangered (T&E) species Federal oversight: the Florida River is within the San Juan River Watershed. The San Juan River is the subject of a cooperative State/Federal program known as the San Juan River Recovery Implementation Program (SJRRIP). The purpose of the SJRRIP is to promote the recovery of two endangered fish species, the Colorado pikeminnow (*Ptychocheilus lucius*) and the razorback sucker (*Xyrauchen texanus*) while allowing water development and management activities to continue in the San Juan River Basin. Under this program, the U.S. Fish and Wildlife Service (USFWS), under Section 7 of the Endangered Species Act (ESA), typically reviews any actions that may affect streamflows in the San Juan River. In addition to the Colorado pikeminnow and the razorback sucker, the endangered Southwestern willow flycatcher (*Empidonax traillii extimus*) resides within the Florida River basin. There may be other wildlife species of concern present in the Project area.

Supplement Instream Flows: Currently, the CWCB has instream flow (ISF) water rights on two sections of the Florida River. This is a non-consumptive, in-channel use of water made by the CWCB for minimum flows between specific points on streams. The ISF is administered under the Colorado Prior Appropriation system to protect the natural environment of Florida River species. Water saved due to the proposed Project can be stored in Lemon Reservoir and released for other beneficial uses, including these ISF water rights. The FCDC and FWCD has voluntarily donated water to the Florida River for aquatic and riparian habitat during low flow conditions on the Florida River. Additionally, water conserved through this Project could be available for future habitat improvement for the Southwestern willow flycatcher, such as the wetlands proximal to Pastorius Reservoir.

Will the project directly result in more efficient management of the water supply? For example, will the project provide greater flexibility to water managers, resulting in a more efficient use of water supplies?

The Project includes construction of twenty-four irrigation user turnouts from the pipeline. Each user will have the option to receive pressured water to facilitate the use of more water efficient irrigation systems without the need for using electrically powered pumps. The Project will also enable at least 233.8 acres of flood irrigated farmland to covert to sideroll or sprinkler irrigation, and at least 283.6 acres of sprinkler irrigated farmland to no longer pump water via on-farm improvements funded through the Natural Resources Conservation Service (NRCS) Environmental Quality Incentives Program (EQIP). The Project will directly facilitate the use of sprinkler irrigation systems, resulting in more efficient use of water supplies.

Projects that are intended to improve streamflows or aquatic habitat, and that are requesting $500,00 or more in Federal funding, must include information about plans to monitor the benefits of the project. Please describe the plan to monitor improved streamflows or aquatic habitat benefits over a five-year period once the project has been completed. Provide details on the steps to be taken to carry out the plan.

During the drought years of 2020 and 2021, the FCDC, in cooperation with FWCD, donated approximately 519 AF of water to the Florida River for aquatic and riparian benefits. The FCDC was able to quantify the volume of the instream flow donation via the use of existing stream flow monitoring gages located at various points on the Florida River.

For example, during July and August of 2021, Lemon Reservoir released excess water which resulted in 1,000 AF of donated water between Lemon Reservoir and the Florida Canal, of the 1,000 AF, 457 AF was shepherded and delivered to the river as measured at the streamflow monitoring station downstream of the Florida Farmers Canal. The roughly 543 AF of excess water released by Lemon Reservoir, which was not measured at the Gage downstream of the Florida Farmers Canal was likely diverted and consumed by small upstream senior water rights, lost to the stream as transit loss, and diverted by the Florida Canal for filling Pastorius Reservoir. The measured 457 AF of water donated to the stream and shepherded downstream of the Florida Farmers Canal was successful in showing that working voluntarily with the Division of Water Resources coupled with a prudent well timed-release pattern was successful in adding wet water to the Florida River during very dry conditions.

A summary report that further details the process used to quantify this in-stream flow donation can be made available upon request.

1.7.3.2 Addressing a specific water and/or energy sustainability concern(s)

Explain and provide detail of the specific issue(s) in the area that is impacting water sustainability, such as shortages due to drought and/or climate change, increased demand, or reduced deliveries.

As of the date of this application, the United States Drought Monitor (USDM)[2] indicates approximately 63 percent of La Plata County, Colorado in severe drought conditions and 100 percent of the County is in moderate drought conditions. According to Norton and Preston (2022)[3], the combined annual stream runoff from 18 principal rivers/creeks emanating from the San Juan Mountains has decreased from 4,031,185 to 2,946,123 AF, a decline of 1,085,063 AF or 26.9 percent. The magnitude of this decrease varies by river basin: San Juan (34.1 percent); Dolores (29.2 percent); Gunnison (14.5 percent); Rio Grande (20.6 percent).

The Project derives water from the Florida River Basin, which is tributary to the San Juan River Basin. The FCDC system and its users have experienced shortened irrigation seasons in recent years because of declining water supplies in Lemon Reservoir. The "typical" irrigation season for the FCDC system runs between May 1st and October 31st. In drought year 2021, the FCDC ended its irrigation season in mid-July due to reduced water supplies in the Florida River basin.

Explain and provide detail of the specific issue(s) in the area that is impacting energy sustainability, such as reliance on fossil fuels, pollution, or interruptions in service.

The Project intends to provide pressurized water to water users on the Hess Lateral, eliminating the need for pumping. Irrigators who currently utilize center pivots or sideroll's will no longer be required use electrical power to pump water to this irrigation system. The Project provides a clean

[2] https://www.drought.gov/states/colorado/county/La%20Plata

[3] Norton, John, and Michael Preston. 2022. "Trends in Temperature, Precipitation, and Stream Runoff in the San Juan Mountains 2000 – 2021."

and renewable energy source by providing pressurized water via a gravity system to Hess Lateral water users. The

Please describe how the project will directly address the concern(s) stated above. For example, if experiencing shortages due to drought or climate change, how will the project directly address and confront the shortages?

Increasing the efficiency of the Hess Lateral ditch will increase water supply by an estimated 557 AF per year. Of this amount, approximately 45 percent is Florida Project water based on the proportionate amount of Florida Project and adjudicated water carried by the Hess Lateral. This water can be stored in Lemon Reservoir and will be used to close the gaps of other water needs within the FWCD.

Please address where any conserved water as a result of the project will go and how it will be used, including whether the conserved water will be used to offset groundwater pumping, used to reduce diversions, used to address shortages that impact diversions or reduce deliveries, made available for transfer, left in the river system, or used to meet another intended use.

Increasing the efficiency of the Hess Lateral ditch will increase water supply by an estimated 557 AF per year. Of this amount, approximately 45 percent is Florida Project water based on the proportionate amount of Florida Project and adjudicated water carried by the Hess Lateral. This water can be stored in Lemon Reservoir and will be used to close the gaps of other water needs within the FWCD. The FWCD developed a water service contract for 2,500 AF of Florida Project water for a variety of uses including augmentation, municipal and industrial (M&I), fire, fish, and wildlife. The water to supply these water marketing contracts derives from savings from efficiency projects, such as the Hess Lateral Improvement Project.

There are many competing water uses in the Florida River basin including commercial and noncommercial agriculture, other commercial and industrial development, municipal and residential direct use and well augmentation, and environmental. A description of potential beneficiaries and types of water use for marketing the water saved by the proposed Project is provided below:

Noncommercial Agricultural Irrigation: The potential primary user of irrigation water under the proposed junior water right is the Southern Ute Indian Tribe (SUIT) and/or the City of Durango for parks and open space located as part of the Three Springs Development located in the Grandview Area. In addition, there have been, and will continue to be, numerous entities requesting project water for noncommercial agricultural irrigation uses. The City of Durango and/or SUIT are proposing to develop approximately 188 acres of parks and open space in the Grandview Area. Based on an application rate of 2.58 AF per acre, the 188 acres of parks would require roughly 485 AF of noncommercial agricultural irrigation water.

Wetlands: The use of wetlands has been included to cover wetland mitigation projects located in the Florida River basin that currently may not have a decreed water supply associated with them or the water rights are junior to potential calling water rights. Based on discussions with the U.S. Army Corps of Engineers (USACE), there are several mitigated wetlands in the Florida River

basin without associated water rights. A review of the Colorado Water Rights Tabulation did not find water rights associated with the wetland projects.

Florida River Instream Flow Enhancement: An instream flow (ISF) water right is a non-consumptive, in-channel use of water made by the CWCB for minimum flows between specific points on streams. The ISF is administered under the Colorado Prior Appropriation system to protect the natural environment of Florida River species. There are two sections of the Florida River that have decreed CWCB ISF water rights: the Florida River from Lemon Dam downstream to the confluence with Salt Creek (upper reach), and from the Florida River's confluence with Salt Creek to the confluence with the Animas River (lower reach).

During the drought years of 2020 and 2021, the FCDC, in cooperation with FWCD, donated approximately 519 AF of water to the Florida River for aquatic and riparian benefits. These donations occurred over dry years and water savings from ditch lining and efficiency projects provided the water supply for the donations, so project water users were not affected.

Commercial, Industrial and Augmentation: There are numerous commercial developments located along the Highway 160 corridor in the Grandview Area. Many these commercial developments use commercial un-decreed wells as a water supply. Additionally, a portion of the Florida River basin is located within the geologic structure called the San Juan Basin. The San Juan Basin contains both conventional gas and coal bed methane (CBM) resources. There are several oil and gas companies with operations located in the Florida River basin. Both Williams and BP America have major gas processing plants located within the Florida River basin. Florida Project water from the 114 AF pool is currently serving a portion the augmentation water needs of natural and CBM gas production in the Florida River basin, and the demand for Florida Project water for augmentation of CBM wells is expected to grow.

Municipal and Residential: Future municipal and residential water demands in the Florida River basin, based on year 2035 population growth projections, are estimated to range from 2,000 AF to 2,500 AF. Thus, there is a large need to market water saved from the proposed Project for municipal and residential uses. Among the primary water users in the Florida River basin are the City of Durango and residential developments such as Edgemont Ranch. The City of Durango owns the most senior water rights in the Florida River.

According to the Colorado Department of Local Affairs, La Plata County population grew at an average rate of 1.4 percent per year between 2000 and 2010. Since 2006, the growth in the number of Florida Project water users was also 1.4 percent, which mirrored the La Plata County growth rate over a slightly different timeframe. The 1.4 percent average annual population growth within the FCDC service area may be a conservatively low estimate for future population growth projections, given the availability of land for development within the FCDC service area and the proximity of the FCDC to the City of Durango, which has seen an average annual increase of 2.0 percent per year over the same 2000-2010 time period. A 2014 Southwest Basin Roundtable report projects a 2.1 percent average annual population growth rate in the Southwest Basin for the period 2008-2035.

In addition, conversion from agricultural use to residential use is occurring within the FCDC service area north and south of CR 236. Generally, these residential subdivisions consist of lots

greater than 3 acres in size due to the lack of a central water system and the rural nature of the area. Most homes are dependent on private wells as a source of water. The FWCD anticipates supplying an increasing water demand over time for domestic direct use and augmentation water.

Provide a description of the mechanism that will be used, if necessary, to put the conserved water to the intended use.

The mechanism for the marketed water is a third-party contract between the FWCD and individual landowners requesting augmentation water from Lemon Reservoir. This mechanism is already in place with demonstrable results; to date the FWCD is marketing or has reservations to market 62.5 AF per year from its 114 AF pool.

Legal issues pertaining to water marketing include securing water rights in the State of Colorado to facilitate the water market and proper contracting with the USBR to use the Project Facility for new beneficial uses. The FWCD has decreed the water rights from the Colorado State water court for both the 114 AF pool and the 2,500 AF pool. The FWCD has executed a long-term water service contract with the USBR for the 114 AF pool and the 2,500 AF pool.

Indicate the quantity of conserved water that will be used for the intended purpose(s).

Increasing the efficiency of the Hess Lateral ditch will increase water supply by an estimated 557 AF per year. This water can be stored in Lemon Reservoir and will be used to close the gaps of other water needs within the FWCD.

1.7.3.3 Other Applicable Project Benefits

1.7.3.3.1 Combating the Climate Crisis

Does this proposed project strengthen water supply sustainability to increase resilience to climate change?

Yes the Project helps to increase resilience to climate change by providing a mechanism to increase on-farm irrigation efficiency for approximately 338 irrigated acres that are committed or intending to convert from flood to sideroll or sprinkler irrigation once the Project is constructed.

Will the proposed project establish and utilize a renewable energy source?

Yes, the Project will provide gravity based pressure to on-farm irrigation sprinkler systems that are currently using mechanical pumps that draw power to pressurized the on-farm irrigation sprinkler system.

Additionally, the Project includes installation of a PRV to reduce pipeline pressures and delivery pressures to on-farm irrigation sprinkler systems. To mitigate high pressure within the system, and generate renewable energy, the FCDC may seek to incorporate a micro-hydroelectric generation turbine in the future. The Project's PRV is located immediately adjacent to an existing substation that can used to provide renewable energy to the local grid, and is designed to allow for installation of a hydropower component in the future.

Will the project result in lower greenhouse gas emissions?

According to the United States Environmental Protection Agency (EPA) and using that agency's emission factor[4] of 7.09×10^{-4} metric tons CO_2 per kWh, reductions in electricity use due to the Project will result in approximately **98 metric tons of CO_2 emissions avoided each year**, or 4,900 metric tons over the 50-year life of the Project.

1.7.4 *Evaluation Criterion D—Complementing On-Farm Irrigation Improvements*

The FCDC and NRCS worked together to develop the response to this evaluation criteria. Appendix B and section 1.7.4.1 provides an NRCS letter of support summarizing how the Project complements on-farm irrigation improvements. Additional NRCS support documentation is also provided in Appendix B. Letters of intent from Hess Lateral users are provided in Appendix C.

Describe any planned or ongoing projects by farmers/ranchers that receive water from the applicant to improve on-farm efficiencies.

The local NRCS office has EQIP applications from landowners that represent approximately 233.8 acres of currently flood irrigated lands. The FCDC has letters of intent to participate in the Project from landowners representing an additional 104.2 acres of currently flood irrigated lands. This totals approximately 338 irrigated acres that are committed or intending to convert from flood to sideroll or sprinkler irrigation once the Project is constructed. See Figure 4 for a map of the Hess Lateral service area summarizing areas planning to covert from flood irrigation to sideroll or sprinkler irrigation.

The local NRCS office has EQIP applications from landowners that represent approximately 283.6 acres of currently sprinkler or sideroll irrigated lands. The FCDC has letters of intent to participate in the Project from landowners representing an additional 68.4 acres of currently sideroll or sprinkler irrigated lands. This totals 352 irrigated acres that are currently sideroll or sprinkler irrigated that are committed to connecting to the Hess Lateral pipeline to operate their irrigation system with pressurized water, as opposed to pumping. See Figure 4 for a map of the Hess Lateral service area summarizing areas planning to connect to the Hess Lateral Pipeline that are currently sideroll or sprinkler irrigated.

Describe how the proposed WaterSMART project would complement any ongoing or planned on-farm improvement

The Project will provide pressurized water to Hess Lateral users, facilitating the conversion of flood irrigated area to sideroll or sprinkler irrigation systems. As summarized by the NRCS is Appendix B, the local NRCS office has EQIP applications from landowners that represent approximately 233.8 acres of currently flood irrigated lands. These on-farm improvements cannot be installed until the Hess Lateral Improvement Project is installed.

[4] http://www.epa.gov/energy/ghg-equivalencies-calculator-calculations-and-references

Describe the on-farm water conservation or water use efficiency benefits that are expected to result from any on-farm work.

The FCDC and NRCS worked together to develop an estimate for water savings as a result of on-farm irrigation efficiency improvements. To date, the NRCS and FCDC received EQIP applications and or letters of intent to install irrigation system improvements from landowners representing approximately 352 acres of farmland that are currently flood irrigated (50 percent irrigation efficiency).

Table 4 provides a summary of the basis for the FCDC and NRCS annual on-farm water savings estimate of 351 AF per year. The irrigation water requirement (IWR) for lands irrigated by the Hess Lateral is based on The Florida Mesa Surface Water Budget Report published by the USBR (Dyke. D, 1994), and existing and future irrigation system efficiencies are based on system efficiency guidance provided by the local NRCS office (see Appendix B). Based on communication with NRCS staff, the EQIP applications are an approximately 50/50 mix of center pivot - low pressure precision application (92 percent efficiency) and sprinkler - hand line or wheel line (70 percent efficiency) on an area basis; and the estimated on-farm improvements are expected to increase irrigation efficiency from 50 percent to 81 percent (average of 92 percent and 70 percent = 81 percent).

Please provide a map of your water service area boundaries. If your project is selected for funding under this NOFO, this information will help NRCS identify the irrigated lands that may be approved for NRCS funding and technical assistance to complement funded WaterSMART projects.

Please see Figure 4, and Appendix B.

1.7.4.1 Letter From NRCS Summarizing Evaluation Criterion D

USDA
United States Department of Agriculture

Natural Resources Conservation Service
Durango Field Office
31 Suttle Street
Durango, CO 81303

The Natural Resources Conservation Service (NRCS) Durango Field Office , is in full support of the Hess Lateral Project. The Hess lateral serves 1521 acres of cropland and 70 water users and is an important project within La Plata County.

This project will address two main resource concerns; Insufficient Water-- Inefficient Use of Irrigation Water and Water Quality Degradation – Excessive Salt in Surface and Groundwater. The project is area identified has the potential to deliver salt to the Animas River and eventually into the Colorado River.

The WaterSMART project requesting to convert the open ditch to a pressurized pipeline will directly facilitate many on farm improvements in which we have received requests to upgrade on-farm irrigation systems. Specifically, NRCS has had up to 28 applications for financial assistance through the Environmental Quality Incentives Program (EQIP) for on-farm irrigation improvements. Of these applications, six applicants have existing center pivot sprinklers, sideroll sprinkler, etc. requiring pumps. These can be converted to gravity pressure gaining significant energy savings. There are 283.6 acres covered with existing sprinklers. The remaining 22 applicants are flood irrigated either with open ditches or an improved gated pipe irrigation system. There are a total 233.8 acres flood irrigated. The applications submitted covered a total of 517.4 irrigated acres. A map has been included to show the location of these requests.

- Estimated energy savings by converting to gravity pressure is estimated at $2,116 for an average 40 ac. parcel converting to a sideroll or pod sprinkler system.

On-farm efficiency improvements can be seen below for the 233.8 acres:

uncontrolled flood to sprinkler	= 136.5	acres	50% - 70%
uncontrolled flood to controlled flood	= 11	acres	50% - 60%
controlled flood to sprinkler	= 58.5	acres	60% - 70%
sprinkler to sprinkler	= 27.8	acres	70% - 70%

The dominant soil located on Hess Lateral users' fields is falfa clay loam. With these improvements there will be varying degrees of reduced gross irrigation depending on irrigation method and crop grown.

Cody Robertson

Resource Team Lead

1.7.5 *Evaluation Criterion E—Planning and Implementation*

1.7.5.1 Subcriterion E.1 – Project Planning

Does the applicant have a Water Conservation Plan and/or System Optimization Review (SOR) in place? Does the project address an adaptation strategy identified in a completed WaterSMART Basin Study? Please self-certify or provide copies of these plans where appropriate to verify that such a plan is in place. Including a specific excerpt or a link to the planning document may also be considered where appropriate.

The applicant certifies that the FCDC and the FWCD developed a Water Conservation and Management Plan in 2006. The Water Conservation and Management Plan is available upon request from the USBR Western Colorado Area Office in Durango. The applicant also certifies that the FWCD, in collaboration with the FCDC, updated the 2006 Water Conservation and Management Plan with a USBR Field Services grant in 2015. The updated plan is also available from the USBR-Durango office. Implementation of this Project directly relates to and supports the agricultural water conservation strategy developed in the 2012 CRB Study; specifically, the Conveyance System Efficiency Improvements conservation measure identified in the CRB Study Appendix F-10.

Identify any district-wide, or system-wide, planning that provides support for the proposed project. This could include a Water Conservation Plan, SOR, Drought Contingency Plan or other planning efforts done to determine the priority of this project in relation to other potential projects.

System-wide planning documents supporting this Project include the 2006 and 2015 Water Conservation and Management Plans, the 2021 Ditch Loss Study, the FWCD's USBR- CRSP Memorandum of Agreement (MOA) funding list, the 1988 USBR Rehabilitation and Betterment (R&B) Study, and the Southwest Basin Implementation Plan that is part of the state-wide Colorado Water Plan.

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).

The primary goal of all the system-wide planning documents listed above is to address inefficiencies in canal delivery systems and increase the supply of water from the Florida Project and natural streamflow, especially during dry years. To meet this goal, the 2006 Water Conservation and Management Plan and the USBR R&B Study identified approximately $20 million of ditch lining and piping improvements; the 2015 updated Plan and the FWCD MOA list identified approximately $25 million of ditch lining and piping improvements. The development and implementation of a canal lining and ditch piping program was ranked as a highest priority candidate measure in the 2006 Water Conservation and Management Plan; continuation of this program was ranked as a highest priority candidate measure in the 2015 updated Plan. The 2015 Plan ranks the Hess Lateral Improvement Project as the highest priority sub-task to this candidate measure.

Additionally, this Project implements findings from both the Statewide Water Supply Initiative (SWSI) and the Southwest Basin Roundtable's July 2014 Needs Assessment Report and March 2015 Identified Projects and Processes (IPP) list, all of which were created through a public process and incorporated into the Colorado Water Plan. Major recommendations from the SWSI included: (1) actively encouraging projects to address multiple purposes and (2) supporting the implementation of multi-purpose agricultural water projects. The Southwest Basin Roundtable, in its Needs Assessment Report, also observed the importance of projects that address multiple purposes. The Hess Lateral Improvement Project is listed as one of the Southwest Basin Roundtable IPPs (No. 28-A) and recognized by the Southwest Basin Roundtable as a multi-purpose project that has benefits for irrigation efficiency, water quality, firming supply for agricultural producers, reduced operations and maintenance costs, and reduced electricity costs currently incurred by irrigators who are pumping for sprinkler irrigation. A letter of commitment to the Project by the Southwest Basin Roundtable is provided in Appendix D.

With regards to the impact of this Project on rural development: The La Plata County Florida Mesa Planning District's 2001 Land Use Plan and 2006 Land Use Impact and Suitability Analysis report are local planning documents for the Mesa that provide support for this Project. Consistent with development projections from the 2001 and 2006 Planning District documents, historically irrigated acreage within the FWCD and Planning District boundaries has increasingly transferred from irrigated farmland to subdivisions. This Project will potentially protect the conversion of irrigated farmland to subdivisions by firming irrigation water supply and reducing energy costs, thus helping to preserve the agricultural economy in the Florida River basin. Also, the Planning District's 2001 Land Use Plan specifically provides guidance and criteria for highway widening including *"minimal impacts on wildlife, agriculture, rural lifestyles and archaeological sites"* (page 10). This Project, occurring as a result of and in collaboration with CDOT's Highway 550 widening project, will ensure that this local land use criterion is met.

If applicable, provide a detailed description of how a project is addressing an adaptation strategy specifically identified in a completed WaterSMART Basin Study or Water Management Options Pilot (e.g., a strategy to mitigate the impacts of water shortages resulting from climate change, drought, increased demands, or other causes)

Implementation of this Project directly relates to and supports the agricultural water conservation strategy developed in the 2012 CRB Study; specifically, the Conveyance System Efficiency Improvements conservation measure identified in the CRB Study Appendix F-10.

1.7.5.2 Sub criterion E.2 – Readiness to Proceed

Identify and provide a summary description of the major tasks necessary to complete the project. Note: please do not repeat the more detailed technical project description provided in Section D.2.2.4.; this section should focus on a summary of the major tasks to be accomplished as part of the project.

In July of 2020 the FCDC completed Issued for Bid level Construction Drawings, Contract Documents and Technical Specifications for the Project (Project Documents) and publicly solicited three bids from qualified Contractors in and around the La Plata County area. Prior to bidding, the FCDC solicited comments on the Project Documents from the USBR office in Grand

Junction and incorporated their recommendations. A full set of Issued for Bid Construction Drawings are available upon request. Table 2 provides a summary of the bids received for the Project in 2020, and Table 3 provides an adjusted low bid cost estimate.

The Project is effectively "shovel ready." Remaining Project activities to be completed include:

- Activity 1: NEPA Compliance – This activity will evaluate and complete the environmental permitting process and will require coordination with the USBR and other entities to determine required Endangered Species Act, National Environmental Policy Act (NEPA), State Historic Preservation Office (SHPO) and other environmental requirements.

- Activity 2: Development of Issued for Construction Drawings – During and after the bidding process, the FCDC's consulting engineer worked with the contractors who bid the Project to identify potential cost savings items. This activity will incorporate these cost savings items into the Issued for Construction Drawings and Technical Specifications.

- Activity 3: Engineering Services During Construction – Engineering services during construction include construction observation, processing requests for information, change orders, and administrative record-keeping.

- Activity 4: Project Construction – Construction activities associated with the Hess Lateral Improvement Project will be performed by the qualified low-bid contractor selected through the competitive bidding process. The FCDC anticipates working with TRC Construction (the qualified low-bidder of the Project) to update their base bid based on Issued for Construction Project Documents.

- Activity 5: Preparation of Final Report and Record Drawings – Work performed under this activity will be based on the Project Document package, deliverables for Activities 1 through 4, and the contractor's record drawings based on actual field conditions, including development of a final Project report to USBR.

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

The FCDC understands, the following permits may be required for the Project:

1. NEPA and National Historical Preservation Act (NHPA) compliance. Potential environmental and cultural impacts will be assessed with representatives from the USBR. Impacts may include potential habitat loss under the NEPA and identification of archeological and historic sites in collaboration with the SHPO under NHPA.

2. Clean Water Act (CWA) compliance. As requested in collaboration with the USBR, the FCDC will retain a wetlands biologist to evaluate impacts to wetlands and riparian resources. As needed, a wetlands delineation report will be prepared for the Army Corps of Engineers to verify this delineation. No permitting under Section 404 of the CWA is envisioned at this time.

3. Land Use permits. No land use permitting is envisioned at this time, given that the conceptual Project alignment lies within current CDOT or FCDC easements.

4. La Plata County Road Crossing Permit: The pipeline crosses two county roads owned and operated by La Plata County. The selected contractor is responsible for obtaining the necessary La Plata County Road Crossing permits for the Project.

5. CDPHE Construction Stormwater and Dewatering Permits. The selected contractor is responsible for obtaining the Colorado Department of Public Health and Environment (CDPHE) construction stormwater and dewatering permits necessary for the Project.

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

In July of 2020 the FCDC's consulting engineer completed Issued for Bid level Construction Drawings, Contract Documents and Technical Specifications for the Project (Project Documents). The only remaining engineering work items to be completed as part of the Project include:

- NEPA and National Historical Preservation Act (NHPA) compliance,
- develop Issued for Construction level Project Documents,
- provide engineering services during construction, and
- preparation of Final Report and Record Drawings.

Design and engineering work completed to date was performed by Wright Water Engineers, Inc. (WWE) Durango, Colorado office. The FCDC plans to continue to use WWE to complete the activities outlined in this application.

Describe any new policies or administrative actions required to implement the project.

The FCDC does not anticipate any new policies or administrative actions to complete the Project.

Please also include an estimated project schedule that shows the stages and duration of the proposed work, including major tasks, milestones, and dates. Milestones may include, but are not limited to, the following: complete environmental and cultural compliance; mobilization; begin construction / installation; construction / installation (50% complete); and construction / Installation (100% complete).

An overall Project schedule is provided in Table 1. The construction phase portion of the Project schedule is based on the pipeline construction schedule provided by the low-bid contractor at the time of Project bidding. A copy of the low-bid contractor's bid package is available upon request. Based on the low-bid contractor's estimated construction schedule, construction of the Project can take place during one non-irrigation season. The overall Project schedule presented in Table 1 considers a construction schedule over three irrigation seasons in consideration of potential

unforeseen construction delays, and to allow sufficient time for final Project reclamation, revegetation, and stabilization.

1.7.6 *Evaluation Criterion F—Collaboration*

Please describe how the project promotes and encourages collaboration. Consider the following:

Is there widespread support for the project? Please provide specific details regarding any support and/or partners involved in the project. What is the extent of their involvement in the process?

There is widespread support for the Project, including from the following entities: the Colorado Water Conservation Board (CWCB), Hess Lateral water users, the Colorado Department of Transportation (CDOT), the local NRCS office, the FCDC Board, and the Southwestern Basin Roundtable.

A Hess Lateral Steering Committee, made up of members of the Project stakeholders, regularly met throughout development of the Project design. Regular committee meeting attendees included elected Hess Lateral water users and FCDC board members, a CWCB representative, local NRCS representatives, and a local CDOT representative. The Hess Lateral Committee provided guidance and input for specific Project design criteria, including minimum connection pressures, materials, and cost considerations.

What is the significance of the collaboration/support?

The significance of the collaborative support is evidenced by the non-federal funds secured to fund the Project, and the Issued for Bid level Construction Drawings; developed from the guidance and input of the Hess Lateral Steering Committee.

Will this project increase the possibility/likelihood of future water conservation improvements by other water users?

Yes. Currently there are approximately 248 acres of flood irrigated lands that will be serviced by the Hess Lateral Improvement Project that have not submitted EQIP applications to the NRCS or signed letters of intent. In the event the Project is selected to receive WaterSMART funding, the landowners of these area may decide to participate in the Project, increasing the total Project's total on-farm water savings to 609 AF per year (see Table 4).

Please attach any relevant supporting documents (e.g., letters of support or memorandum of understanding).

Appendix D provides letters of support for the Project. Appendix B provides the letter of support from the local NRCS office.

1.7.7 *Evaluation Criterion G—Additional Non-Federal Funding*

Current non-Federal funding sources offered as match for the Project include CDOT, the CWCB, and the FCDC. A summary of the total Project costs, and funding sources are provided in Table 5. The current percentage of **non-Federal funding** is as follows:

$$\frac{Non - Fedral\ Funding}{Total\ Project\ Cost} = \frac{\$2{,}923{,}067}{\$4{,}923{,}067} = 59\%$$

1.7.8 *Evaluation Criterion H—Nexus to Reclamation*

Does the applicant have a water service, repayment, or O&M contract with Reclamation?

The applicant is the Florida Consolidated Ditch Company (FCDC). The applicant does not have a direct water service, repayment, or O&M contract with the USBR.

If the applicant is not a Reclamation contractor, does the applicant receive Reclamation water through a Reclamation contractor or by any other contractual means?

The applicant is the Florida Consolidated Ditch Company (FCDC). The FCDC delivers Florida Project water and adjudicated FCDC water to its shareholders on the Florida Mesa for irrigation purposes. The Florida Project is one of the originally authorized participating projects of the Colorado River Storage Project (CRSP) of 1956, and a portion of the water carried in the Hess Lateral is Florida Project water. The FCDC has carriage contracts with the FWCD, operator of the Florida Project, to carry Project water to its shareholders.

Will the proposed work benefit a Reclamation project area or activity?

As discussed in Section 1.7.3.2 the proposed Project will benefit the USBR's Florida Project. The Water savings realized as a result of the Project will help support the FWCD's water service contract for 2,500 AF of Florida Project water for a variety of uses including augmentation, municipal and industrial (M&I), fire, fish, and wildlife.

Is the applicant a Tribe?

No, the FCDC is not a Tribe.

1.8 Performance Measures

The following performance measures, from *Appendix A: Benefit Quantification and Performance Measure Guidance* of the USBR's Notice of Funding Opportunity No. R22AS00023 are proposed in order to quantify the benefits of the Hess Lateral Improvement Project following completion of the Project:

Performance Measure No. A.1: Canal Lining/Piping

The Project will result in the reduction and/or elimination of an estimated 206 AF per year of water loss occurring from the existing, open, aging, unlined earthen ditch structure by piping the ditch with HDPE pipe. All historical ditch seepage and evaporation losses are expected to be eliminated with an HDPE pipe material and has a life expectancy of 50 years or greater.

Because construction will not begin until after the 2023 irrigation season, the FCDC had the opportunity to develop pre-Project water loss estimates via a ponding test. The FCDC would be willing to participate in a second USBR pre- and post-Project measurement study similar to the one that the USBR conducted pre- and post the Florida Farmers Ditch lining project in 2012-2014.

Following Project completion, a ponding test cannot be replicated, however results can be verified using a ratio of historical and post-Project Hess Lateral diversions and delivery rates. This verification will include a comparison of historical ditch efficiencies and post-Project efficiencies based on historical delivery records and the in-line instantaneous and totalizing flow meter at the start of the proposed pipeline. Also, seepage loss reductions can be verified by verbal reports from FCDC ditch riders and on-site inspections of the newly piped ditch.

Performance Measure No. A.2.b: Irrigation Metering

The Project includes installation of flumes and in-line flow measurement devices per the engineering design. These devices will allow the FCDC to better manage water delivery and record quantify system losses between measurement locations. The Project includes installation of an in-line instantaneous and totalizing flow meter at the start of the proposed pipeline, as well as the installation of instantaneous and totalizing flow meters at each turnout that will receive pressurized water delivery. Parshall flumes will be used to monitor water delivery to each turnout that will not receive pressurized water.

Currently, on-farm efficiency improvement water savings are based on irrigation efficiency estimates from the NRCS and ditch water loss estimates are based on parshall flumes, ponding tests, and observations from the FCDC ditch riders. The Project will provide increased water metering accuracy, allowing the FCDC to accurately quantify the benefits of the Project by comparing post-Project water measurements to historical pre-Project water use.

Performance Measure No. B: Projects with Renewable Energy Benefits

The Project is anticipated to save existing Hess Lateral users approximately $18,304 per year in energy costs and save approximately 137,984 kWH per year in energy use. Pre- and post-Project electricity costs will be compared via a survey of the existing Hess Lateral users that currently rely on pumps to operate a sideroll or sprinkler irrigation system. Post-Project electricity demand to run irrigation system equipment is anticipated to be eliminated.

2.0 PROJECT BUDGET

An overall Project budget and funding summary is provided in Table 5. The FCDC's costs for developing supporting data and preparation of this application are not included.

2.1 Funding Plan and Letters of Commitment

The non-Reclamation share of Project costs will be obtained via three funding sources. Letters of Commitment from each of these sources are provided in Appendix D.

1. CDOT has committed $1,250,000 to the Hess Lateral Improvement Project and secured the right-of-way for portions of the Hess Lateral Project as part of its Highway 550 widening project. These CDOT funds are ready and available for construction of the Hess Lateral Improvement Project. To address the recent increase in construction costs, CDOT has verbally agreed to fund an additional $855,317 of Project costs in the event the Project is awarded a USBR WaterSMART grant in the amount of $2,000,000.

2. The Southwest Basin Roundtable approved the FCDC for Hess Lateral Project funding in the amount of $38,750 from its Basin account and $736,250 from the CWCB Statewide Water Supply Reserve Account on July 17, 2015. Following the Southwest Basin Roundtable's recommendation, the CWCB awarded a grant to the FCDC on September 17, 2015, for a total State commitment of $775,000.

3. The FCDC will take out a low-interest loan from the CWCB for the balance of the Project cost not funded by the Water Supply Reserve Account grants, CDOT, or Reclamation. The FCDC has been approved for a base loan amount of $1,075,000 from the CWCB via FCDC's submission of a loan feasibility study (see Appendix F). As indicated in Table 5, the FCDC board is proposing to take out a total loan amount of $32,750 to help pay for the Hess Lateral Project. The reason that the FCDC board is currently limited in its debt capacity, is that in May of 2021 the FCDC board took out a base loan of $750,000 to pay for the final design and construction of the Florida Canal Diversion Structure Rehabilitation project, a non-USBR facility.

   The Florida Canal is one of two primary FCDC maintained and operated diversion structures that delivers irrigation water to the FCDC's service area and began to fail in early 2017. The FCDC is concerned about its debt capacity to take out a second CWCB loan in excess of 1 million dollars and elected to limit its debt obligation to $32,750 for funding the construction phase of the Hess Lateral Improvement Project.

The FCDC will make its monetary contributions through debt service on a 30-year loan from the CWCB. The debt service will be paid by FCDC reserve funds and by special assessments on the Hess Lateral Project beneficiaries.

As shown on Table 5, the FCDC has incurred costs related to engineering for this Project in the amount of $346,523 and are considered part of the total Project budget. Of the total Funding for these costs, CDOT funded $336,523, and the FCDC funded $10,000. The work associated with these costs and the time period over which they were conducted included:

- Preliminary Project planning (January 2016 to August 2018),

- Development of Issued for Bid Level Project Documents, including FCDC legal contract review services (August 2018 to July 2020),

- Project surveying (January 2019 to December 2019),
- Existing physical utility line locates (February 2020), and
- Engineering services during and after Project bidding (July 2020 to September 2020).

2.2 Budget Proposal

The Total Project Cost, summarized in the table below and further detailed in Table 5, is the sum of all allowable items of costs, including all required cost sharing and voluntary committed cost sharing, including third-party contributions, that are necessary to complete the Project.

2.2.1 *Total Project Cost Table*

Funding Source	Funding Amount
Costs to be reimbursed with the requested Federal funding	$2,000,000
Costs to be paid by the applicant	$42,750
Value of third-party contributions	$2,880,317
Total Project Cost	$4,923,067

Unit costs are provided in the following budget proposal table for all budget items including the cost of services or other work to be provided by consultants and contractors.

2.2.2 *Budget Proposal Table*

Budget Item #	Budget Item Description	Computation		Quantity Type	Total Cost
		$/Unit	Quantity		
	Total Already Spent and Complete to Date				
1	Preliminary Planning	$50,000	1	LS	$50,000
2	Engineering Design / Survey Services / Legal Services (Contracting)	$286,523	1	LS	$286,523
3	Engineering Bidding, Post Bid Services	$10,000	1	LS	$10,000
	Project Engineer Salaries, Wages and Benefits (see Appendix E**)**				
4	Senior Project Manager (Foster)	$231	64	hours	$14,784
	Project QA/QC (Lorenz)	$242	27	hours	$6,534
	Managing Engineer (Lenhart)	$184	255	hours	$46,992
	Field Engineer	$115	402	hours	$46,197
	CAD	$97	36	hours	$3,492
	Project Administration and Reporting	$100	90	hours	$9,000
	Word Processing	$100	44	hours	$4,400
	Expenses (Travel, Phone, etc.)				
5	Engineer Expenses (7.5%) Associated with Activity 3	$4,888	1	LS	$5,342
6	CWCB Loan Origination Fee	$324	1	LS	$324
	Subconsultants				
7	Environmental Consulting Services (NEPA Compliance) John Stewart	$50,000	1	LS	$50,000
8	Endangered Species Study (NEPA Compliance)	$15,000	1	LS	$15,000
9	Archeological Consultant	$10,000	1	LS	$10,000
10	FCDC Legal Contracting Services	$5,000	1	LS	$5,000
11	Geotechnical	$70,000	1	LS	$70,000
9	**Construction (materials and supplies, construction equipment, and construction activities) per adjusted bid received from qualified low-bidder – See** Table 3				
	Mobilization and Demobilization	$30,785	1	LS	$30,785
	Permits	$77,267	1	LS	$77,267
	Earthwork	$93,593	1	LS	$93,593
	Water Control and Dewatering	$23,652	1	LS	$23,652
	Pipeline Turnout Structure	$62,782	1	LS	$62,782
	Intake Pond	$173,278	1	LS	$173,278
	Pipeline Intake Structure	$506,850	1	LS	$506,850
	Hess Lateral Pipeline	$1,917,848	1	LS	$1,917,848
	Pressure Reducing Vault	$252,113	1	LS	$252,113
	Short Pipeline	$118,993	1	LS	$118,993
	Turnout Structures	$400,865	1	LS	$400,865
	Future Turnout Structures	$8,455	1	LS	$8,455
	Seeding and Mulching	$45,079	1	LS	$45,079
	Construction Contingency				
10	15% Construction Costs, Budget Item #11, and Activity 3	$577,918	1	LS	$577,918
				Total Direct Costs	$4,922,743
				Indirect Costs (CWCB Loan Origination Fee)	$324
				Total Project Costs	$4,923,067

2.3 Budget Narrative

2.3.1 *Salaries, Wages and Benefits*

Wright Water Engineers, Inc. (WWE) is the FCDC's district engineering firm and has over 60 years of experience providing water infrastructure design and construction management services. Key WWE personnel associated with the Hess Lateral Improvement Project include:

Peter Foster, P.E., Project Manager (64 hrs @ base rate $170.94, fringe $60.06)

Wayne Lorenz, P.E., QA/QC (27 hrs @ base rate $179.08, fringe $62.92)

Hayes Lenhart, P.E., Managing Engineer (255 hrs @ base rate $136.16, fringe $47.84)

Hours and rates by task for all WWE personnel anticipated to be associated with this Project are provided in Appendix E. This includes estimated labor for compliance with reporting requirements (Activity 5, Project Administration and Word Processing positions). Fringe benefits are included in the hourly rates at 26 percent as indicated above, and include Social Security, Medicare, Federal and State unemployment, retirement, worker's compensation, long-term disability, and life insurance costs. Fringe benefits are fixed rates for billing purposes. There are no proposed hourly rate increases currently.

2.3.2 *Expenses*

Based on previous similar projects performed by WWE, expenses are estimated as 7.5 percent of the cost of engineering services associated with Activity 3, and include telephone, copies, reimbursable vehicle mileage, and travel expenses. The applicant agrees to comply with all associated GSA travel requirements/rules.

2.3.3 *Subconsultants*

The budgeted costs for the subconsultants who will provide legal, and geotechnical testing services were determined to be fair and reasonable based on WWE's previous experience with similar projects. A breakdown of the work that is anticipated to be subcontracted over the course of this Project is as follows:

Archeological Consultant: The FCDC anticipates that an archeological consultant may need to perform an archeological survey within the Project's disturbance area as part of Activity 1 – NEPA Compliance. The FCDC anticipates contracting with Paleowest Consultants to complete this work and issue an archeological survey report.

Endangered Species Study (NEPA Compliance): The FCDC anticipates that a biological scientist may need to perform an endangered species survey and New Mexico Jumping Mouse trapping within the Project's disturbance area as part of Activity 1 – NEPA Compliance. The FCDC anticipates contracting with Jennifer Zahratka of Biological Resources, LLC to issue a report and conduct mouse trapping as necessary.

Environmental Services (NEPA Compliance): The FCDC anticipates that a biological scientist may need to develop the basis for a CEC or BA and EA for the Project as part of Activity 1 – NEPA Compliance. The FCDC anticipates contracting with Stewart Environmental Consulting to complete this work and develop the appropriate documentation to support Project NEPA requirements.

Legal services: FCDC Legal Counsel will provide construction contract review services, and perform tasks associated with loan application and debt service obligations.

Geotechnical Engineering Testing Services: The FCDC intends to hire an independent Geotechnical Engineering firm to perform material quality control testing for soil compaction, and concrete testing. A copy of the local Geotechnical Engineering Firm's proposal to conduct these

services is available upon request. These services will be performed during Activity 4 – Project Construction.

2.3.4 *Construction Materials and Supplies*

On July 31, 2021, the FCDC publicly solicited bids from three general contractors to construct the Project. The bidding process included a mandatory pre-bid conference and a time window to allow perspective bidders to submit questions to the engineer. A summary of the bids received by the FCDC is provided in Table 2. With their bid, contractors were required to submit a bid bond, a cost to construct each of the items listed in the bid tab, a statement of qualifications, and other documentation. The total cost for all construction materials, labor, equipment, and construction activities is based on an adjusted July 31, 2020, bid received from the qualified low bidder to construct the Project in accordance with the Project Documents. Given the time that has passed since the Project was bid in July 2020, the FCDC worked with the CDOT's local Region 5 Utility Engineering Program Manager to adjust the July 2020 low-bid into 2023 construction costs. CDOT recommended assuming a 30 percent increase to construction costs between 2020 and 2023 based on a comparison of highway project construction bids received by CDOT between 2020 and 2022 (see Table 3). The Budget Proposal table provided in Section 2.2 includes the adjusted bid costs based on the original bid received from the qualified low bidder for each construction work item described in Section 1.6.4.

2.3.5 *Environmental and Regulatory Compliance Costs*

As discussed in Section 1.6.1, the FCDC anticipates working directly with the USBR on the NEPA compliance for the Project. The FCDC earmarked up to $100,000 ensure the Project meets Federal Agency requirements, including development of potential wetland surveys, cultural inventories, archeological surveys, work on threatened and endangered species, documentation to support a CEC or a BA and EA, and archeological mapping. In addition, environmental and archeological services may be needed during construction.

2.3.6 *Other Expenses*

Project contingency: A contingency of 15 percent is included for the Project costs associated with construction phase activities. Construction phase activities include engineering services during construction (Activity 3), Project construction (Activity 4), and geotechnical engineering material testing services. This contingency is intended to address the potential increase in construction costs between the bids received on July 31, 2020, and when construction is anticipated to begin in 2023, unforeseen field conditions that necessitate construction change orders, or additional engineering time for construction observation. The 15 percent contingency estimate is based on industry standard contingencies for similar infrastructure construction projects and is considered reasonable and conservative.

2.3.7 *Indirect Costs*

CWCB Loan Origination Fee: The FCDC is required to pay a CWCB loan origination fee upon taking out the loan for the Project. This is a real, and indirect cost to the FCDC for the Project. CWCB Loan approval documents are provided in Appendix F. As discussed in Section 2.1, the

FCDC is limited in its debt capacity due to the ongoing Florida Canal Diversion Structure Rehabilitation Project. The FCDC is concerned about taking out a second CWCB loan in excess of 1 million dollars and elected to limit its debt obligation to $32,750 for funding the construction phase of the Hess Lateral Improvement Project.

2.4 Pre-Award Costs

As shown on Table 5, the FCDC has incurred costs related to engineering for this Project in the amount of $346,523 and are considered part of the total Project budget. Of the total Funding for these costs, CDOT funded $336,523, and the FCDC funded $10,000. The work associated with these costs and the time period over which they were conducted included:

- Preliminary Project planning (January 2016 to August 2018),
- Development of Issued for Bid Level Project Documents, including FCDC legal contract review services (August 2018 to July 2020),
- Project surveying (January 2019 to December 2019),
- Existing physical utility line locates (February 2020), and
- Engineering services during and after Project bidding (July 2020 to September 2020).

3.0 ENVIRONMENTAL AND CULTURAL RESOURCES COMPLIANCE

Will the proposed project impact the surrounding environment (e.g., soil [dust], air, water [quality and quantity], animal habitat)? 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.

WWE conducted a preliminary review of environmental impacts as part of the development of a Project Loan Feasibility Study prepared for the CWCB. The environmental review included review of the Colorado Office of Archaeology and Historic Preservation COMPASS online database, the U.S. Fish and Wildlife Service National Wetlands Inventory, The Environmental Assessment (EA) drafted by CDOT for the Highway 550 widening Project, and the U.S. Fish and Wildlife Service Threatened and Endangered (T&E) Species Critical Habitat Mapper. Based on these desktop reviews the Project is anticipated to have minimal impacts to the environment.

The selected contractor is responsible for obtaining the Colorado Department of Public Health and Environment (CDPHE) construction stormwater and dewatering permits necessary for the Project

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

The FCDC is unaware of any designated critical habitat for T&E species within the proposed Project construction limits.

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

The FCDC is unaware of any wetlands or other surface waters inside the proposed Project construction limits that potentially fall under CWA jurisdiction as "Waters of the United States.

When was the water delivery system constructed?

To the best of the FCDC's knowledge, the Hess Lateral was constructed sometime in or around the 1930's.

Will the proposed 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.

The Project does not anticipate any modifications to the existing FCDC irrigation water delivery system features, other than piping the existing Hess Lateral Irrigation Ditch.

Are any buildings, structures, or features in the irrigation district listed or eligible for listing on the National Register of Historic Places? A cultural resources specialist at your local Reclamation office or the State Historic Preservation Office can assist in answering this question.

There are no known building, structure, or features within the Project area that could be impacted by construction of the Project.

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

There are no known archeological sites within the proposed Project area. The FCDC anticipates that an archeological consultant may need to perform an archeological survey within the Project's disturbance area as part of Activity 1 – NEPA Compliance

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

The FCDC does not anticipate any disproportionately high and adverse effects on low income or minority populations as a result of constructing the Project.

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

The Project does not anticipate limiting access to and ceremonial use of Indian sacred sites or result in other impacts on tribal lands.

Will the proposed 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 does not anticipate contributing to the introduction, continued existence, or spread of noxious weed or non-native invasive species. Seeding and restoration of the area within the construction limits is included as a line item for construction of the Project.

4.0 REQUIRED PERMITS AND APPROVALS

Based on the FCDC experience with other ditch lining projects, the following permits and approvals are required for the proposed Project.

NEPA and NHPA Compliance: The FCDC anticipates working directly with the USBR on the NEPA compliance for the Project. As discussed in Section 1.6.1, the FCDC does not anticipate significant NEPA compliance issues that would significantly delay the Project schedule. Project impacts may include potential habitat loss under the NEPA and identification of archeological and historic sites in collaboration with the SHPO under NHPA.

Clean Water Act (CWA) Compliance: The FCDC anticipates working directly with the USBR and the US Army Corps of Engineers on any required CWA compliance requirements for the Project. As part of Activity 1 (see Section 1.6.1), the FCDC anticipates retaining a wetlands biologist to evaluate Project impacts to wetlands and riparian resources. As needed, a wetlands delineation report will be prepared for the Army Corps of Engineers to verify this delineation. No permitting under Section 404 of the CWA is envisioned at this time.

Land Use Permits: The Project alignment lies within current CDOT or FCDC easements. Locations secured for construction staging, access, and equipment storage are identified on the Project Drawings.

Road Crossing Permits: As required by the Project Documents the Contractor is responsible for obtaining La Plata County Road Crossing permits at the two locations where the Hess Lateral Pipeline crossing County Roads. The FCDC's engineering consultant spoke with La Plata County and does not anticipate any delays in Contractor permit approval once the applications are received.

CDPHE Construction Stormwater and Dewatering Permits. As required by the Project Documents the Contractor is responsible for obtaining a Colorado Department of Public Health and Environment (CDPHE) construction stormwater permit and dewatering permit. The Contractor is required to obtain the permits before land disturbance activities begin.

Existing Utility Crossings: There are numerous existing utilities that cross the Hess Lateral Pipeline alignment. During the engineering design phase of the Project, the FCDC worked with local oil and gas operators, and other utility providers in the area to identify and physically locate known crossing locations. The FCDC hired a surveyor to field locate each utility crossing, and a hydro-excavation company to physically locate and record the depth of each utility line crossing.

The elevation of all known utility line crossings and their elevations are shown on the Project Drawings, which are available upon request.

Colorado Water Conservation Board Loan Approval: The FCDC's CWCB loan approval documents are provided in Appendix F.

5.0 OVERLAP OR DUPLICATION OF EFFORT STATEMENT

The FCDC confirms that there is no overlap between the proposed Project and any other active or anticipated proposals or projects.

Currently, the FCDC does not anticipate applying for any other Federal or Non-Federal Project funding assistance that is not already listed in this application.

6.0 CONFLICT OF INTEREST DISCLOSURE STATEMENT

As of the date of this application the FCDC is unaware of any actual or potential conflicts of interest that exist with respect to Federal financial assistance agreements.

7.0 UNIFORM AUDIT REPORTING STATEMENT

This is not applicable to the FCDC.

8.0 LETTERS OF SUPPORT AND LETTERS OF PARTNERSHIP

Letter of Support are provided in Appendix D and include 1) The Florida Water Conservancy District, and 2) La Plata County Board of Commissioners.

Letter of financial commitment are provided in Appendix D and include 1) The Colorado Department of Transportation, 2) the Southwest Basin Roundtable and 3) the Colorado Water Conservation Board.

9.0 OFFICIAL RESOLUTION

An official resolution of the FCDC Board of Directors committing the applicant to the financial and legal obligations associated with receipt of WaterSMART Grant financial assistance is provided in Appendix G.

10.0 MANDATORY FEDERAL FORMS

Mandatory Federal Forms 1) SF-424 Application for Federal Assistance, 2) SF-424A Budget Information – Construction Programs, 3) SF-424D Assurances – Construction Programs 4) OMB Number: 4040-0019 – Project Abstract summary, are provided immediately following this section.

Appendix D
Letters of Support and Financial Commitment

SOUTHWEST BASINS ROUNDTABLE
Michael Preston, Chair
c/o Dolores Water Conservancy District
P.O. Box 1150
Cortez, Colorado 81321
970-565-7562

July 17, 2015

Mr. Craig Godbout
Water Supply Management Section
Colorado Water Conservation Board
1580 Logan Street, Suite 600
Denver, Colorado 80203

SUBJECT: Hess Lateral Improvement Project, Florida Consolidated Ditch Company - $38,750 from Basin Account, $736,250 from Statewide Account

Dear Mr. Godbout:

The Southwest Basin Roundtable is pleased to recommend funding of $38,250 from the Southwest Basin Account and $736,250 from the Statewide Account for the Hess Lateral Improvement Project. The application was considered in detail and approved at the July 8, 2015 meeting of the Southwest Basin Roundtable. There was a quorum of Roundtable members present.

The proposed project is an IPP. The WSRA funding is part of a package that also includes a CWCB Loan of $775,000 and funding from CDOT of $950,000. This project provides multiple benefits and leverages funding from multiple sources.

The completed Grant Application will be forwarded directly to you by the applicant. Please contact the applicant directly or me at 970-565-7562, mpreston@frontier.net, if you have questions or wish to discuss this application in more detail.

Sincerely,

Michael Preston
Southwest Basin Roundtable Chair

Florida Water Conservancy District
1523 CR 243
Durango, Colorado 81301
970-247-5332

9 December 2015

US Bureau of Reclamation
Financial Assistance Management Branch
Mail Code 84-27852
P.O. Box 25007
Denver, CO 80225

RE: Water SMART Grant Application for the Hess Lateral Improvement Project

To Whom It May Concern:

The Board of Directors of the Florida Water Conservancy District expresses full support of the Florida Consolidated Ditch Company and its proposed piping project for the Hess Lateral.

The Florida Water Conservancy District is a long-time collaborator with the Florida Consolidated Ditch Company in its efforts to improve the water efficiency of its conveyance system. The District has participated in numerous cost-share activities to support the FCDC's water efficiency improvements since the beginning of the Florida Project. This would include the lining of two high-priority canal reaches 2012 – 2014, the installation of automated gates 2007 – 2011 and water measurement telemetry stations 1996 – 2008 to name a few. Each project has effectively decreased water loss and improved FCDC water management, resulting in firming the yield of agricultural deliveries and providing water for other beneficial uses. As with these former projects, the Hess Lateral Improvement Project will also provide multiple benefits for the Florida River watershed. The Florida Water Conservancy District fully supports this endeavor.

Please accept this letter of support for the Florida Consolidated Ditch Company's Hess Lateral Improvement Project. We appreciate your careful consideration of FCDC's grant application and look forward to a positive result. Thank you.

Sincerely,

Philip Craig
President

La Plata County
Colorado
Board of County Commissioners

Bradford P. Blake, Chair • Julie Westendorff, Vice Chair • Gwen Lachelt, Commissioner

[illegible]

January 12, 2016

Bureau of Reclamation
Acquisition Operations Branch
Mail Code: 84-27852
P.O. Box 25007
Denver, CO 80225

To Whom It May Concern:

The La Plata County Board of County Commissioners is happy to support the Hess Lateral Piping and Water Efficiency Project. The Hess Lateral, part of the Florida Consolidated Ditch Company (FCDC) water conveyance system, is located 7 miles south of Durango on Florida Mesa, within the Florida Water Conservancy District. The Hess Lateral serves approximately 75 water users irrigating over 1,500 acres of primarily hay and pasture lands. The Hess Lateral is a 3.3 mile-long open ditch that delivers up to 19 cfs of irrigation water.

This project entails replacing the Hess Lateral open earth-lined ditch with buried gravity-pressurized pipeline and installation of flow measurement devices. This project has many exciting benefits. It will not only improve the efficiency of the canal conveyance system and reduce ditch water loss currently occurring due to seepage and evaporation, but it will also increase water pressure to allow for on-farm efficiency improvements such as sprinklers which will thereby reduce the energy currently required by existing on-farm sprinkler systems. This reduction in energy will decrease cost and help to promote and sustain continued commercial agricultural uses.

This project will also increase water quality by reduction of the salt load into the Animas River; the Natural Resources Conservation Service (NRCS) estimates a load reduction of total dissolved solids from this project of 136.8 tons per year.

There are multiple partners in this project. The Colorado Department of Transportation (CDOT) plans on widening Highway 550 in the near future. This project requires relocating approximately 10,000 feet of the Hess Lateral to outside of the highway right-of-way. CDOT is cooperating with the FCDC on the relocation and has committed $950,000 to the project. The Colorado Water Conservation Board (CWCB) has committed an additional $775,000 from its

Water Supply Reserve Account to this project for preliminary survey and engineering design, final design and construction. The Natural Resources Conservation Service has committed technical assistance to farmers for on-farm irrigation improvements that will be enabled by this project.

U.S. Bureau of Reclamation WaterSMART funding is requested for final engineering and construction to leverage CDOT and CWCB's participation to replace the full 3.3 mile-long open ditch with pressurized pipe and flow measurement devices.

Thank you for your thoughtful consideration of the Florida Consolidated Ditch Company's application.

Sincerely,

LA PLATA COUNTY
BOARD OF COUNTY COMMISSIONERS

Julie Westendorff
Vice Chair

Gwen Lachelt
Commissioner

The Nature Conservancy
Colorado

The Nature Conservancy in Colorado
2424 Spruce Street
Boulder, CO 80302

tel (303) 444-2950
fax (303) 444-2985

nature.org/colorado

US Bureau of Reclamation
Financial Assistance Management Branch
Mail Code 84-27852
PO Box 25007
Denver, CO 80225

December 23, 2021

Re: 2022 WaterSmart Grant Application Letter of Support

To Whom It May Concern:

The Nature Conservancy (TNC) is writing this letter to express its full support of the Florida Consolidated Ditch Company (FCDC) Hess Lateral Improvement Project.

The Hess Lateral is part of the FCDC's irrigation delivery system that carries United States Bureau of Reclamation (USBR) Florida Project water and adjudicated water to its shareholders for irrigation purposes. TNC understands the FCDC is requesting WaterSMART grant funding for the Hess Lateral Improvement Project (the Project) that will replace approximately 4.5 miles of open earth-lined ditch with a buried gravity-pressurized pipeline and installation of flow measurement devices at each landowner's pipeline turnout.

One key benefit of the Project is that it will help develop additional sources of water for beneficial uses in the San Juan River basin, including additional sources of water that can be used for instream flow purposes to enhance aquatic and riparian habitat in the Florida River.

TNC recognizes that the FCDC, in cooperation with the Florida Water Conservancy District, donated approximately 500 AF of water to the Florida River for aquatic and riparian habitat during the drought years of 2020 and 2021. Water conserved through the Hess Lateral Project could be used to help further support future habitat improvements in the San Juan River Basin.

Please accept this letter of support for the Hess Lateral Improvement Project. We appreciate your careful consideration of the FCDC's WaterSMART grant application.

Sincerely,

Diana R Lane

Diana Lane
Director of Sustainable Food and Water Program
The Nature Conservancy

Appendix G
Florida Consolidated Ditch Company Official Resolution

Florida Consolidated Ditch Company

P.O. Box 2138
Durango, CO 81302

floridaditch@gmail.com

October 27, 2021

To Whom It May Concern:

As duly elected officers of the Florida Consolidated Ditch Company (FCDC) and with authority accorded by the Bylaws of the FCDC, we hereby set our signatures to approve the following:

1. A resolution to conduct the business of adopting an official resolution concerning the FCDC's financial and legal obligations under the U.S. Bureau of Reclamation (USBR) WaterSMART: Water and Energy Efficiency Grant by personal signature below on this document.

2. A resolution committing the FCDC to the financial and legal obligations associated with the receipt of financial assistance under the USBR WaterSMART: Water and Energy Efficiency Grant program. The FCDC is able to provide the funding for the financial obligations through available capital funds, the assessments levied on water delivery annually, and contractual funding agreements with the Colorado Water Conservation Board.

3. A resolution to maintain our relationship with the USBR in a fashion that allows the FCDC to meet established guidelines and deadlines set forth by USBR.

BY: Florida Consolidated Ditch Company Board of Directors

Roger Cole, President

Gary Zellitti, Vice-President

Russ Kroeger, Secretary-Treasurer

Mark Short Jr.

Phil Craig

Alton Hess

Doug Thurston