Water Supply Reserve Fund
Water Activity Summary Sheet
September 19, 2018
Agenda Item 12(j)

Applicant & Grantee:	Grand Valley Water Users Association
Water Activity Name:	Grand Valley Roller Dam Electrical Upgrade Project
Water Activity Purpose:	Agricultural Implementation
County:	Mesa
Drainage Basin:	Colorado
Water Source:	Colorado River
Amount Requested:	$60,000 Colorado Basin Account
Matching Funds:	Applicant Match (cash & in-kind) = $77,080 • 77.8% of the Basin Account request (meets 25% min) • 26.8% of the total project cost of $224,098

Staff Recommendation:

Staff recommends approval of up to $60,000 from the Colorado Basin Account to help fund the project titled: Grand Valley Roller Dam Electrical Upgrade Project.

Water Activity Summary: WSRF grant funds, if approved, will contribute to "Task 1" of the Roller Dam Electrical Upgrade Project which is part of the Grand Valley Water Users Association (GVWUA) and project partners' Master Plan Phase 2 Dam and Canyon Facilities Master Plan Project. This project aims to improve an existing water supply system [the Roller Dam and associated Government Highline Canal (GHC)] by improving the electrical and control systems that operate the Roller Dam and GHC diversion structure headgates. Specifically the objectives of this project are to: 1) improve water delivery system operations, capacity and reliability of the Roller Dam and canal headgates; 2) sustain the ecological health of the river; and 3) preserve the agricultural economy of the Grand Valley.

Task 1 will extend the utility system, bury the overhead service lines, replace the service equipment at the dam, and install an on-site standby generator. Other sub-tasks include adding new service entrances at all buildings except the dam tender's house and new branch circuits and lights in the machine room. Note there are two tasks that make up the overall Electrical Upgrades Project.

The Roller Dam diverts water into the Government Highline Canal for irrigation and hydropower purposes under very senior water rights that collectively make up the "Cameo Call." The irrigation water is provided to four irrigation entities, which provide irrigation water to approximately 41,000 acres of lands in the Grand Valley. The hydropower water is used to produce hydropower at the Grand Valley Power Plant (GVPP), which has a capacity of approximately 800 cfs and an electrical generation capacity of about 3.5 megawatts. Return flows from the GVPP return to the Colorado River at the head of the 15-Mile Reach, which help maintain flows in that reach for the endangered fish. The existing electrical power systems were installed at the Roller Dam at the time of

construction, nearly 100 years ago. Utility power was not available and the electrical power was provided by on-site generators and stored in batteries.

Discussion: As described in the Colorado Basin Roundtable (BRT) chair's recommendation letter, this project was supported and recommended for approval by the roundtable on May 21, 2018. The CBRT Basin Implementation Plan (BIP) cites the Dam and the Government-Highline Canal, managed by the Grand Valley Water Users Association, as a top concern that addresses directly two of our six BIP themes: Sustaining Agriculture and assure Dependable Basin Water Rights Administration. Continued operations of the Roller Dam supports critical agricultural, non-consumptive, municipal and industrial needs and aligns with the Colorado BIP and other objectives of Colorado's Water Plan, local and regional watershed, and water supply planning efforts, to name a few. This project will improve the operations and reliability of the Roller Dam headgates and rollers and essentially enables everything else that will lead to increased efficiency savings and improve the management of Pre-Compact water rights. The Roundtable recognizes that these water rights are important beyond irrigation with attendant benefits to the environment, recreation and municipal uses not only in the Grand Valley but on the entire mainstem of the Colorado.

Issues/Additional Needs: No additional needs have been identified.

Eligibility Requirements: The application meets requirements of all eligibility components.

Evaluation Criteria: Staff has determined this activity satisfies the Evaluation Criteria.

Funding Summary / Matching Funds:

Funding Source	**Cash**	**In-Kind**	**Total**
GVWUA / Orchard Mesa Irrigation District	$50,000	$27,080	$77,080
Colorado River District	$50,000	$0	$50,000
Other NGO	$37,018	$0	$37,018
WSRF Colorado Basin Account	$60,000	n/a	$60,000
Totals	**$197,018**	**$27,080**	**$224,098**

CWCB Project Manager: Anna Mauss

THE COLORADO BASIN ROUNDTABLE
C/O P.O. BOX 1120
GLENWOOD SPRINGS, COLORADO 81602

May 24, 2018

Colorado Water Conservation Board
WSRF Grants
1313 Sherman Street
Denver CO
(303) 866-3441
megan.holcomb@state.co.us

Dear Staff:

The Colorado Basin Roundtable voted unanimously at its May 21, 2018 meeting to approve the basinwide WSRF request ($60k) for the Grand Valley Roller Dam Electrical upgrade project.

The CBRT Basin Implementation Plan cites the Dam and the Government-Highline Canal, managed by the Grand Valley Water Users Association, as a top concern that addresses directly two of our six BIP themes: Sustaining Agriculture and assure Dependable Basin Water Rights Administration. This project is some 100 years old and it diverts senior irrigation water to three other irrigation entities besides GVWUA.

The Roundtable recognizes that these water rights are important beyond irrigation with attendant benefits to the environment, recreation and municipal uses not only in the Grand Valley but on the entire mainstem of the Colorado. Maintenance of the Roller Dam is necessary for sustaining continued deployment of these important water rights.

Sincerely yours,

Jim Pokrandt
Chair, Colorado Basin Roundtable

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Last Update: August 3, 2017

Colorado Water Conservation Board

Water Supply Reserve Fund Grant Application

Instructions

All WSRF grant applications shall conform to the current 2016 WSRF Criteria and Guidelines.

To receive funding from the WSRF, a proposed water activity must be approved by a Roundtable(s) **AND** the Colorado Water Conservation Board (CWCB). The process for Roundtable consideration and recommendation is outlined in the 2016 WSRF Criteria and Guidelines. The CWCB meets bimonthly according to the schedule on page 2 of this application.

If you have questions, please contact the current CWCB staff Roundtable liaison:

Arkansas	**Gunnison | North Platte | South Platte | Yampa/White**	**Colorado | Metro | Rio Grande | Southwest**
Ben Wade	Craig Godbout	Megan Holcomb
ben.wade@state.co.us	craig.godbout@state.co.us	megan.holcomb@state.co.us
303-866-3441 x3238	303-866-3441 x3210	303-866-3441 x3222

WSRF Submittal Checklist (Required)

	I acknowledge this request for funding was recommended for CWCB approval by the sponsoring Basin Roundtable(s).
	I acknowledge I have read and understand the 2016 WSRF Criteria and Guidelines.
	I acknowledge the Grantee will be able to contract with CWCB using the Standard Contract.(1)
Exhibit A	
X	Statement of Work(2) *(Word – see Exhibit A Template)*
X	Budget & Schedule(2) *(Excel Spreadsheet – see Exhibit A Template)*
	Letters of Matching and/or Pending 3rd Party Commitments(2)
Exhibit C	
X	Map(2)
	Photos/Drawings/Reports
	Letters of Support
	Certificate of Insurance(3) (General, Auto, & Workers' Comp.)
Contracting Documents	
	Certificate of Good Standing(3)
	W-9(3)
	Independent Contractor Form(3) (If applicant is individual, not company/organization)
	Electronic Funds Transfer (ETF) Form(3)

(1) Click "Grant Agreements". For reference only/do not fill out or submit/required for contracting
(2) Required with application if applicable.
(3) Required for contracting. While optional at the time of this application, submission can expedite contracting upon CWCB Board approval.

Last Update: August 3, 2017

Schedule		
CWCB Meeting	**Application Submittal Dates**	**Type of Request**
January	December 1	Basin Account; BIP
March	February 1	Basin/Statewide Account; BIP
May	April 1	Basin Account; BIP
July	June 1	Basin Account; BIP
September	August 1	Basin/Statewide Account; BIP
November	October 1	Basin Account/BIP

Desired Timeline	
Desired CWCB Hearing Month:	September 2018
Desired Notice to Proceed Date:	October 1, 2018

Water Activity Summary	
Name of Applicant	Grand Valley Water Users Association (on behalf of project partners)
Name of Water Activity	Roller Dam Electrical and Control Systems Upgrades Project (Upgrades Project Task 1*) *Note there are two tasks, Tasks 1 and 2, that make up the overall Electrical Upgrades Project.

Approving Roundtable(s)	**Basin Account Request(s)[1]**
Colorado Basin Roundtable	$60,000
Basin Account Request Subtotal	$60,000
Statewide Account Request[1]	$0
Total WSRF Funds Requested (Basin & Statewide)	$60,000
Total Project Costs	$224,098

(1) Please indicate the amount recommended for approval by the Roundtable(s)

Grantee and Applicant Information	
Name of Grantee(s)	Grand Valley Water Users Association (on behalf of project partners)
Mailing Address	1147 24 Road, Grand Junction, CO 81505-9639
FEIN	84-0402700
Grantee's Organization Contact[1]	Mark Harris

Last Update: August 3, 2017

Grantee and Applicant Information	
Position/Title	General Manager
Email	mharris@gvwua.com
Phone	970-242-5065
Grant Management Contact(2)	Angie Fowler
Position/Title	Engineer Consultant (SGM)
Email	angief@sgm-inc.com
Phone	970-384-9027
Name of Applicant (if different than grantee)	
Mailing Address	
Position/Title	
Email	
Phone	

(1) Person with signatory authority
(2) Person responsible for creating reimbursement invoices (Invoice for Services) and corresponding with CWCB staff.

Description of Grantee
Provide a brief description of the grantee's organization (100 words or less).
The Grand Valley Water Users Association (GVWUA) is the managing entity of a portion of the federally owned Grand Valley Project. The Grand Valley Project facilities include the Grand Valley Diversion Dam, also known as the Roller Dam, on the Colorado River in De Beque Canyon, the 55-mile-long Government Highline Canal, 150 miles of project operated laterals, 100 miles of drainage ditches and a hydroelectric power plant. The Roller Dam and upper portions of the Government Highline Canal are the focus elements of the Grand Valley Project included in the Dam and Canyon Facilities Master Planning efforts.

Type of Eligible Entity (check one)	
	Public (Government): municipalities, enterprises, counties, and State of Colorado agencies. Federal agencies are encouraged to work with local entities. Federal agencies are eligible, but only if they can make a compelling case for why a local partner cannot be the grant recipient.
	Public (Districts): authorities, Title 32/special districts (conservancy, conservation, and irrigation districts), and water activity enterprises
X	**Private Incorporated:** mutual ditch companies, homeowners associations, corporations
	Private Individuals, Partnerships, and Sole Proprietors: are eligible for funding from the Basin Accounts but not for funding from the Statewide Account.
	Non-governmental organizations: broadly, any organization that is not part of the government
	Covered Entity: as defined in Section 37-60-126 Colorado Revised Statutes

Last Update: August 3, 2017

Type of Water Activity (check one)	
	Study
X	Implementation

Category of Water Activity (check all that apply)		
	Nonconsumptive (Environmental)	
	Nonconsumptive (Recreational)	
X	Agricultural	
	Municipal/Industrial	
	Needs Assessment	
	Education & Outreach	
X	Other	Explain: Supports the critical and continued operations of the Roller Dam, which, in turn, supports agricultural, non-consumptive, municipal and industrial needs. This project also aligns with the Colorado River Basin Implementation Plan (BIP) and other objectives of the Colorado Water Plan, local and regional watershed and water supply planning efforts, to name a few.

Location of Water Activity	
Please provide the general county and coordinates of the proposed activity below in **decimal degrees**. The Applicant shall also provide, in Exhibit C, a site map if applicable.	
County/Counties	Mesa County
Latitude	39.188990°
Longitude	-108.281816°

Water Activity Overview
Please provide a summary of the proposed water activity (200 words or less). Include a description of the activity and what the WSRF funding will be used for specifically (e.g. studies, permitting, construction). Provide a description of the water supply source to be utilized or the water body affected by the activity. Include details such as acres under irrigation, types of crops irrigated, number of residential and commercial taps, length of ditch improvements, length of pipe installed, area of habitat improvements. If this project addresses multiple purposes or spans multiple basins, please explain. The Applicant shall also provide, in Exhibit A, a detailed Statement of Work, Budget, and Schedule.

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Water Activity Overview

The Roller Dam diverts water into the Government Highline Canal for irrigation and hydropower purposes under very senior water rights that collectively make up the "Cameo Call." The irrigation water is provided to four irrigation entities, which provide irrigation water to approximately 41,000 acres of lands in the Grand Valley. The hydropower water is used to produce hydropower at the Grand Valley Power Plant (GVPP), which has a capacity of approximately 800 cfs and an electrical generation capacity of about 3.5 megawatts (MW). Return flows from the GVPP return to the Colorado River at the head of the 15-Mile Reach, which help maintain flows in that reach for the endangered fish. The existing electrical power systems were installed at the Roller Dam at the time of construction, nearly 100 years ago. Utility power was not available and the electrical power was provided by on-site generators and stored in batteries.

Task 1 will extend the utility system, bury the overhead service lines, replace the service equipment at the dam, and install an on-site standby generator. Other sub tasks include adding new service entrances at all buildings except the dam tender's house and new branch circuits and lights in the machine room.

Measurable Results

To catalog measurable results achieved with WSRF funds please provide any of the following values.

	New Storage Created (acre-feet)	
Enables the conservation and/or management of Pre-Compact water rights.	New Annual Water Supplies Developed or Conserved (acre-feet), Consumptive or Nonconsumptive	
	Existing Storage Preserved or Enhanced (acre-feet)	
	Length of Stream Restored or Protected (linear feet)	
X	Efficiency Savings (indicate acre-feet/year OR dollars/year)	
	Area of Restored or Preserved Habitat (acres)	
	Length of Pipe/Canal Built or Improved	
X	Other	Explain: Continued operations of the Roller Dam supports critical agricultural, non-consumptive, municipal and industrial needs and aligns with the Colorado River Basin Implementation Plan (BIP) and other objectives of the Colorado Water Plan, local and regional watershed and water supply planning efforts, to name a few. This project will improve the operations and reliability of the Roller Dam headgates and rollers and essentially enables everything else that will lead to increased efficiency savings and improve the management of Pre-Compact water rights. The existing utilities and power supply were installed at the Roller Dam at the time of construction, nearly 100 years ago. Utility power was not available and the electrical power was provided by on-site generators and stored in batteries.

Water Activity Justification

Provide a description of how this water activity supports the goals of Colorado's Water Plan, the most recent Statewide Water Supply Initiative, and the respective Roundtable Basin Implementation Plan and Education Action Plan [1]. The Applicant is required to reference specific needs, goals, themes, or Identified Projects and Processes (IPPs), including citations (e.g. document, chapters, sections, or

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Water Activity Justification
page numbers). For applications that include a request for funds from the Statewide Account, the proposed water activity shall be evaluated based upon how well the proposal conforms to Colorado's Water Plan criteria for state support (CWP, Section 9.4, pp. 9-43 to 9-44;) (Also listed pp. 4-5 in 2016 WSRF Criteria and Guidelines).
The Roller Dam Improvements were identified as a project to "Sustain Agriculture" and "Assure Dependable Basin Administration" on page 121 of the BIP. The Roller Dam Electrical and Control System Upgrades project is part of the Grand Valley Roller Dam Rehabilitation Project that was identified as a **top project basinwide** in 2015 (BIP, pg. 127). The larger project identifies with all six Colorado River BIP themes. The Roller Dam Electrical and Control Systems Upgrades Project (Electrical Upgrades Project) is part of the Master Plan Phase 2 Dam and Canyon Facilities Master Plan Project. This Project aims to improve an existing water supply system [the Roller Dam and associated Government Highline Canal (GHC)] by improving the electrical and control systems that operate the Roller Dam and GHC diversion structure headgates, specifically the objectives of this project are to: 1) improve water delivery system operations, capacity and reliability of the Roller Dam and canal headgates; 2) sustain the ecological health of the river; and 3) preserve the agricultural economy of the Grand Valley. These objectives align with several statewide, regional, and local planning documents, including, but not limited to the Colorado River Basin Implementation Plan (BIP) themes and the Colorado Water Plan. Grand Valley Irrigation Ditches and the Roller Dam on the Colorado River were identified as important features that need to be maintained to divert and convey the critical water rights in the Colorado River Basin (BIP, pg. 22). The Colorado River BIP themes (Colorado Water Plan pages 3-20) that the project aligns with are: 1. Sustain agriculture 2. Assure Dependable Basin Administration 3. Supports reliability of the infrastructure through improvements in the electrical power supply and controls of the Roller Dam and Headworks/Diversion.

(1) Access Basin Implementation Plans or Education Action Plans from Basin drop down menu.

Matching Requirements: Basin Account Requests	
Basin (only) Account grant requests require a 25% match (cash and/or in-kind) from the Applicant or 3rd party and shall be accompanied by a **letter of commitment** as described in the 2016 WSRF Criteria and Guidelines (submitted on the contributing entity's letterhead). Attach additional sheet if necessary.	
Contributing Entity	**Amount and Form of Match (note cash or in-kind)**
GVWUA / Orchard Mesa Irrigation District (Cash) – Xcel Energy Utility work	$50,000
GVWUA (In-Kind Services) (trenching and construction oversight)	$27,080
Total Match	**$77,080**
If you requested a Waiver to the Basin Account matching requirements, indicate the percentage you wish waived.	

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Matching Requirements: Statewide Account Requests	
Statewide Account grant requests require a 50% match as described in the 2016 WSRF Criteria and Guidelines. A minimum of 10% match shall be from Basin Account funds (cash only). A minimum of 10% match shall be provided by the applicant or 3rd party (cash, in-kind, or combination). The remaining 30% of the required match may be provided from any other source (Basin, applicant, or 3rd party) and shall be accompanied by a **letter of commitment.** Attach additional sheet if necessary.	
Contributing Entity	Amount and Form of Match (note cash or in-kind):
	$0
	$0
Total Match	$0
If you requested a Waiver to the Statewide Account matching, indicate % you wish waived. (Max 50% reduction of requirement).	

Related Studies

Please provide a list of any related studies, including if the water activity is complimentary to or assists in the implementation of other CWCB programs.

GRAND VALLEY WATER USERS ASSOCIATION STUDIES AND PROJECTS

These projects are complimentary to the water supply reserve account grant program.

- **Master Plan Phase 1**
  - The Colorado Basin Roundtable (CBRT) identified the Roller Dam Rehabilitation project as a Basinwide "Top Priority" in its Basin Implementation Plan (BIP). The Roller Dam Rehabilitation project addressed the rehabilitation needs of the Grand Valley Project Diversion Dam (commonly known as the "Roller Dam") and the portion of the Government Highline Canal immediately below the Roller Dam. This project supports the maintenance of the Cameo Call; improve water delivery system operations, capacity and reliability; sustain the ecological health of the Colorado River; and preserve the agricultural economy of the Grand Valley.
  - The efforts to fully understanding the rehabilitation needs of these facilities are ongoing and dynamic. This Dam and Canyon Facilities Master Plan (Phase 1) was only the first step in assessing and defining these rehabilitation needs. It is anticipated that the conclusions and recommendations of this and future studies will continually provide dynamic input to the rehabilitation efforts. The GVWUA and other partnering agencies received a Water Supply Reserve Account Grant to fund Phase 1 of the Roller Dam and Canyon Facilities Master Plan which:
    - Identified and prioritized the rehabilitation needs of the Roller Dam and Canyon Facilities (structural, cosmetic, environmental, etc.);
    - Developed implementation plans for the top five (5) needs, specifically addressing the project costs, hydropower potential, funding opportunities, schedule, and list of potential teaming partners and sponsors and;
    - Recommended actions for Phase 2 of the Master Planning efforts, including remediation and/or upgrades as appropriate, are underway
- **Water Management Plan**
  - GVWUA received a Water Supply Reserve Account Grant in the amount of $45,000 to fund a comprehensive update to the Water Management Plan (WMP), a critical component to long-term maintenance, asset management, water stewardship, and most importantly, created a funding plan to accomplish those projects – whose costs will be in the millions. The objective of the WMP project was to prepare a conditional assessment and operational analysis of the 50 miles of the canal below the outfall of

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Related Studies

Tunnel No. 3, identify and document water losses, identify priority projects, conduct a benefits analysis, ascertain environmental concerns, determine costs associated with the projects and create a strategic funding plan to implement the priority projects. The WMP project will also allow the GVWUA to implement certain provisions of the Colorado River Cooperative Agreement (CRCA, Section 7, specific to conservation and avoidance of Colorado Compact issues). The WMP project began in fall 2015 and concluded in 2017.

- **Upper Canal Improvements**
  - One component of the Roller Dam Master Plan has already been designed and constructed, the Upper Canal Improvements Project. This project addresses the rehabilitation of the top 500 feet of the canal, immediately below the Roller Dam. Reclamation provided the design work and attendant pricing estimates for reshaping the canal prism and replacing the concrete liner currently in place. SGM developed the technical and professional assistance, construction drawings and specifications, for the final design. Construction was completed March 23, 2018.
- **Reclamation Salinity Program- Government Highline Canal – Reach 1A Lower Section Lining Project**
  - The Reach 1A Salinity Lining Replacement project was undertaken by GVWUA and included approximately $160,000 of replacement work on Stage 1A of the Government Highline Canal. The overall purpose of the Reach 1A Lower Section Lining project was to install approximately 4,774 feet of PVC liner to an unlined and open section of the Government Highline Canal. The lined section of canal was earthen and originally designed with a trapezoidal cross section with a 30-foot bottom and 2:1 side slopes. Over the years the slopes eroded and sloughed. In some sections heavy vegetation grew along the sides down to the high-water surface line in the canal. The improvements included lining with 2 layers of geotextile fabric on either side of a 30 mil PVC liner covered with a protective 3-inch shotcrete layer. A gravel underdrain was installed. The total project award is $3.6 million. GVWUA performed approximately $40,000 of the work in FY 2015, portions of the work in FYs 2016 and 2017.
- **Power Canal Capacity Report (December 2015)**
  - The Power Canal Capacity Report evaluated potential to increase diversions to the Grand Valley Power Plant in the event Conserved Consumptive Use credits, available through a water bank, were needed and could be put to beneficial use through the power plant. The report concluded that in most years some excess capacity of approximately 5,000 AF per irrigation season is available however many operational issues would need to be worked out before implementing this type of a program. The report also highlighted the need for more consistent and accurate flow measurement in the power canal.

BUREAU OF RECLAMATION STUDIES AND PROJECTS

The Reclamation reports are also complimentary studies.

- **Grand Valley Diversion Dam Review of Operations and Maintenance (RO&M) Program Examination Reports**
  - The rehabilitation needs of the Dam and Canyon facilities have been documented by the Reclamation as part of special investigations and their ongoing maintenance and operations obligations. The Roller Dam has been examined approximately every seven (7) years since 1949 as required under the Reclamation's Review of Operation and Maintenance (RO&M) Program.
- **GVWUA RO&M Program Examination Reports**
  - Program examination reports have been prepared by Reclamation since 1954 for the GVWUA system. The examination reports address the existing condition of the "Government Highline Canal from the Grand Valley Diversion Dam (Roller Dam) to the end of the approximately 55-mile long canal system. Other facilities examined include the Price-Stub Pumping Plant, tunnels, facilities added to the system by the Colorado

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Related Studies

River Basin Salinity Control Project, various control gates and checks, the drain system and other features." The reports included years 1991, 1996, 2002, 2008, and 2014.

- **1991 Rehabilitation and Betterment Study**
  - In 1991 Reclamation developed a study to summarize the concerns identified in the previous RO&M reports to support GVWUA with a federal grant application. The study reiterated several of the identified concerns as well as contributed several new concerns, many of which remain a high priority today. A cost estimate was prepared by Reclamation as part of the study. The grant request was ultimately unsuccessful and the projects identified found alternate funding to address the concerns or remained unaddressed.
  - This study identified the following top concerns to be addressed at the Dam and Canyon Facilities including, but not limited to:
    - Repair the concrete surface of the diversion dam
    - Replace two of the roller gates on the left side of the diversion dam with a permanent ogee crest
    - Rehabilitate the roller gates
    - Modify the roller gates to provide additional head on the canal works
    - Upgrade the dc and ac power systems to comply with current codes
    - Repair the river training wall
    - Line the first 600 feet of the canal
    - Replace two spillway radial gates on the canal
    - Repair the concrete on the canal headworks and place a guardrail alongside the gate hoists
    - Miscellaneous work between the dam and the inlets to the Power Canal and Tunnel No. 3 (cleaning and reshaping the canal), investigate the canal prism and remove any obstructions and build-up canal freeboard where necessary to safely carry the maximum canal diversion requirements, and upgrading the canal foot bridge and gauging station.
  - This study also concluded that:
    - The dc electrical system should be upgraded to comply with current codes instead of converted to ac power - most cost effective.
    - Modification to the entrance of the tunnel will not reduce head loss through Tunnel No. 3.
- **March 2011 Hydropower Resource Assessment at Existing Reclamation Facilities**
  - Reclamation evaluated potential hydropower production sites across the United States in 2011. Out of the 530 sites evaluated, the Grand Valley Diversion Dam was identified as the 18th best site for hydropower development based on benefit cost ratio, and the 5th best in the Upper Colorado Region. However, the assessment identified the site had constraints that may impact the cost and viability to construct hydropower including: fish and wildlife, recreation, historical/archaeological.
  - The report stated the Grand Valley Diversion Dam could produce approximately 2.0 megawatts (MW) of installed capacity with a design flow of 2,260 cfs and 14 feet of design head. The cost for construction was estimated at approximately $9 million dollars.

Previous CWCB Grants

List all previous or current CWCB grants (including WSRF) awarded to both the Applicant and Grantee. Include: 1) Applicant name; 2) Water activity name; 3) Approving RT(s); 4) CWCB board meeting date; 5) Contract number or purchase order

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Previous CWCB Grants
GVWUA 2015 **Grand Valley Roller Dam Rehabilitation Master Plan Phase 1** Colorado Basin Roundtable September 28, 2015 CWCB Board Meeting Approval POGGI 2016-394 GV Roller Dam Rehabilitation Phase 1 Project in the Colorado River Basin **GVWUA 2017** **Grand Valley Roller Dam Rehabilitation Phase 2 Master Plan** Colorado Basin Roundtable March 22-23, 2017 Board Meeting Approval POGG1 PDAA 201700000873 **GVWUA 2016** **Grand Valley Project – Government Highline Canal Top 500 Feet Lining Project – Canyon Canal Improvement** Colorado Basin Roundtable September 2016 CWCB Board Meeting Approval CT GG12017-770 **July 2016** **ATM Project (NOT WSRF)** December 2017 CWCB Board Meeting Approval CTGG1 2018-653

Tax Payer Bill of Rights
The Tax Payer Bill of Rights (TABOR) may limit the amount of grant money an entity can receive. Please describe any relevant TABOR issues that may affect the applicant.
NA

Last Update: January 9, 2018

Colorado Water Conservation Board	
Water Supply Reserve Fund	
Exhibit A - Statement of Work	
Date:	**4/17/18**
Water Activity Name:	Roller Dam Electrical and Control Systems Upgrades Project (Upgrades Project Task 1*)
Grant Recipient:	Grand Valley Water Users Association (on behalf of project partners)
Funding Source:	**Basin Account**

Water Activity Overview: (Please provide brief description of the proposed water activity (no more than 200 words). Include a description of the overall water activity and specifically what the WSRF funding will be used for.

The Roller Dam diverts water into the Government Highline Canal for irrigation and hydropower purposes under very senior water rights that collectively make up the "Cameo Call." The irrigation water is provided to four irrigation entities, which provide irrigation water to approximately 41,000 acres of land in the Grand Valley. The hydropower water is used to produce hydropower at the Grand Valley Power Plant, which has a capacity of approximately 800 cfs and an electrical generation capacity of about 3.5 megawatts (MW). Return flows from the power plant return to the Colorado River at the head of the 15-Mile Reach, which helps maintain flows in that reach for the endangered fish. The existing electrical power systems were installed at the Roller Dam at the time of construction, nearly 100 years ago. Utility power was not available and the electrical power was provided by on-site generators and stored in batteries.

Task 1 will extend the utility system, bury the overhead service lines, replace the service equipment at the dam, and install an on-site standby generator. Other sub tasks include adding new service entrances at all buildings except the dam tender's house and new branch circuits and lights in the machine room.

Objectives: (List the objectives of the project)

The Roller Dam Electrical and Control Systems Upgrades Project (Electrical Upgrades Project) is part of the Master Plan Phase 2 Dam and Canyon Facilities Master Plan Project and aims to improve an existing water supply system (the Roller Dam and associated Government Highline Canal). The overarching objectives of the Electrical Upgrades Project is to: 1) improve water delivery system operations, capacity and reliability of the Roller Dam and canal headgates; 2) sustain the ecological health of the river; and 3) preserve the agricultural economy of the Grand Valley. These objectives align with the goals, themes, missions, and objectives of regional, statewide, and local planning documents and policies including, but not limited to:

- Endangered Fish Recovery Program – continued operation of the Fish Passage/Screen at the Roller Dam
- Colorado Water Plan
- Colorado River Basin Implementation Plan
- GVWUA's Water Management Planning efforts
- Continued operation of the Grand Valley Power Plant

Background:

The existing electrical power systems were installed at the Roller Dam at the time of construction, nearly 100 years ago. Utility power was not available and the electrical power was provided by on-site generators and stored in batteries. DC power was distributed to DC motors that operate the roller gates

and the headgates. Over time, AC power was brought to the site and various incremental upgrades to the ***power system*** have been made since original construction but the basic ***power distribution equipment*** and the ***original DC motors*** are still in operation. DC power is converted from AC power using a very old motor-generator. The existing electrical system is well past the expected useful life and in need of replacement to increase the safety and reliability of the Roller Dam and headgate operations.

The existing Roller Dam has an overhead single phase electrical service from Xcel Energy. The largest load on the Roller Dam is a motor-generator which converts AC power to DC power. The DC power is then used to operate the seven ***roller gate*** motors. Each ***roller gate*** motor is 10 hp DC. The ***headgates*** are powered by a single 5 hp AC motor which transmits power to the ***headgates*** via an elaborate bevel gear arrangement. The remainder of the power consumption at the Roller Dam is for house power and tools. There is very little, if any, automation on the ***roller gate*** controls and the ***headgates*** are controlled with a rudimentary mechanical level switch located downstream on the canal. The existing Roller Dam power distribution system and the DC motors powering the gates are obsolete and in need of replacement.

There are also several out buildings at the Roller Dam site, including the dam tender's house, a shop, and two smaller buildings, which have electrical systems. These buildings are also in need of electrical upgrades as they are separate single-phase services where the wiring has been added on to and modified over time.

There is no emergency power at the (very remote) site and as noted previously there are no redundancies in several pieces of critical operations equipment. Independent engineering reviews by the Bureau of Reclamation and SGM indicated that a complete upgrade to the electrical distribution systems is needed. Preliminary planning, identified seven critical needs for achieving the required level of safety and functionality for the Roller Dam and headgates facilities (see Figure attached). The critical needs are identified in Task 1 and Task 2

Construction Documents (including design drawings and technical specifications) for the Upgrades Project are about 75% complete (by SGM). The final Construction Documents will be used to support construction of this project. The development of these Construction Documents is part of the Master Plan Phase 2 budget not part of this grant proposal. It should be noted that initial consultations and conversations have occurred with the United States Fish and Wildlife Service (USFWS), State Historic Preservation Officer (SHPO), and Army Corps of Engineers (ACOE) regarding the final designs.

Tasks

Provide a detailed description of each task using the following format:

Task 1 – Task 1 Initial Upgrades to Roller Dam Electrical System

Description of Task:
The Task 1 Project Upgrades will support the following critical needs:

1. **Extend three phase power** from the end of the Xcel Energy's three phase line to the Roller Dam site – approximately 1000 ft. Provide a single electrical service at the south end of the property.
2. **Bury overhead service lines**: Approximately 800 feet of three phase 480-volt power will be buried starting at the new electrical service south of the Float House to the Roller Dam power house at the right abutment. A new step-down transformer will also be installed to provide single phase power to the ancillary buildings. Telephone lines will also be relocated underground.
3. **Replace service equipment at Roller Dam**: A new service box and breakers will be installed to replace the old fuse boxes. The new box will meet the current code requirements, improve safety

Tasks
for the operators, and provide flexibility to add other circuits as needed. 4. **Install an on-site standby generator**: The Roller Dam and Headgate Facilities have experienced frequent power outages due to high winds or lightning storms. An on-site standby generator will allow the Roller Dam to operate during these periods, some of which could be during vital dam operations. Task 1 includes the following elements: • Extending the existing utility service to the Roller Dam • Setting the main switchgear (includes the transfer switch for the generator) • Pulling new feeders to all on-site facilities/buildings • Installing new service entrances at all buildings (except the dam tender's house) • Installing a new step-down transformer at Roller Dam • Installing new electrical load panel (in machine room) • Installing new branch circuits and lights in machine room • Installing an on-site standby generator Xcel Energy will extend the existing utility line to the Roller Dam. The cost for Xcel Energy to extend the line is included in the budget. GVWUA plans to provide in-kind trenching services for the utility lines and Construction Management oversight.
Method/Procedure:
Advertise the Upgrades Project Task 1 (100% Construction Documents by SGM as part of the Master Plan Phase 2 project). Select a qualified Contractor. GVWUA will trench the utility lines and oversee the project. Construction is anticipated to occur between August 1, 2018 and February 28, 2020.
Grantee Deliverable: (Describe the deliverable the grantee expects from this task)
The completion of Task 1 will have the following items installed: • Utility service extended to the Roller Dam • Main switchgear set • New feeders to all on-site facilities/buildings • New service entrances at all buildings (except the dam tender's house) • A new step-down transformer at Roller Dam • A new electrical load panel installed • A new branch circuits and lights in machine room • New on-site standby generator
CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)
GVWUA will provide photographs of the deliverable items. GVWUA will also provide a signed statement from the engineer and contractor that the deliverables have been completed. GVWUA will also provide a final report to CWCB that summarizes the project and how the project was completed including photographs, summaries of meetings, and engineering reports. As built designs may be excluded for dam safety reasons. The report will also describe any obstacles encountered, and how these obstacles were overcome. The report will also confirm that all matching commitments have been fulfilled.

Last Update: January 9, 2018

Tasks
Provide a detailed description of each task using the following format:
Task 2 – Task 2 Final Upgrades to Roller Dam Electrical System
Description of Task: Task 2 of the Upgrades Project for the Roller Dam Electrical System will complete critical upgrades 4, 5, and 7. Task 2 will be completed after the completion of Task 1 and once additional funding is secured. Task 2 is not included in this grant application but is provided for your reference. 4. **Rewire Canal headgate controls**: New wiring and controls will be included in the design of the canal headgates to allow each headgate to operate individually. The headgates control and power system will be connected to new instrumentation. Upgrading the wiring and controls will bring the headgate control system into code compliance and will lead to increased operational efficiencies as canal flows will be measured and controlled more closely. 5. **Replace Roller Dam wiring and upgrade electrical system**: The wiring across the Roller Dam to each roller will be replaced to meet code requirements. More outlets and lighting may also be added, including 220-volt welder plugs, to facilitate easier maintenance and safety during night operations. 7. **Deliver power to fish passage**: The U.S. Fish and Wildlife currently owns and maintains a 20-kW propane generator that powers hoists and a pump which fills the fish holding tanks. Providing electrical power to the fish passage will reduce the maintenance and overhead costs associated with operating the 20-kW generator. Task 2 deliverables include: - Rewiring the canal headgate controls - Replacing the Roller Dam wiring - Upgrading its electrical system - Delivering power to the fish passage - Replacing AC and DC feeders to the ***roller gate*** motors - Adding controls - Power to ***headgates*** - Lights, switches, receptacles in the Roller Dam
Method/Procedure:
Task 2 is not included as part of this grant application but will be completed once additional funds can be secured.
Grantee Deliverable: (Describe the deliverable the grantee expects from this task)
NA
CWCB Deliverable: (Describe the deliverable the grantee will provide CWCB documenting the completion of this task)
NA

Last Update: January 9, 2018

Budget and Schedule

Exhibit B - Budget and Schedule: This Statement of Work shall be accompanied by a combined Budget and Schedule that reflects the Tasks identified in the Statement of Work and shall be submitted to CWCB in excel format. A separate excel formatted Budget is required for engineering costs to include rate and unit costs.

Reporting Requirements

Progress Reports: The grantee shall provide the CWCB a progress report every 6 months, beginning from the date of issuance of a purchase order, or the execution of a contract. The progress report shall describe the status of the tasks identified in the statement of work, including a description of any major issues that have occurred and any corrective action taken to address these issues. The CWCB may withhold reimbursement until satisfactory progress reports have been submitted.

Final Report: At completion of the project, the grantee shall provide the CWCB a Final Report on the grantee's letterhead that:

- Summarizes the project and how the project was completed.
- Describes any obstacles encountered, and how these obstacles were overcome.
- Confirms that all matching commitments have been fulfilled.
- Includes photographs, summaries of meetings and engineering reports/designs.

Payments

Payment will be made based on actual expenditures, must include invoices for all work completed and must be on grantee's letterhead. The request for payment must include a description of the work accomplished by task, an estimate of the percent completion for individual tasks and the entire Project in relation to the percentage of budget spent, identification of any major issues, and proposed or implemented corrective actions.

The CWCB will pay the last 10% of the entire water activity budget when the Final Report is completed to the satisfaction of CWCB staff. Once the Final Report has been accepted, and final payment has been issued, the water activity and purchase order or contract will be closed without any further payment. Any entity that fails to complete a satisfactory Final Report and submit to CWCB within 90 days of the expiration of a purchase order or contract may be denied consideration for future funding of any type from CWCB.

Performance Requirements

Performance measures for this contract shall include the following:
(a) Performance standards and evaluation: Grantee will produce detailed deliverables for each task as specified. Grantee shall maintain receipts for all project expenses and documentation of the minimum in-kind contributions (if applicable) per the budget in Exhibit B. Per Grant Guidelines, the CWCB will pay out the last 10% of the budget when the final deliverable is completed to the satisfaction of CWCB staff. Once the final deliverable has been accepted, and final payment has been issued, the purchase order or grant will be closed without any further payment.
(b) Accountability: Per the Grant Guidelines full documentation of project progress must be submitted with each invoice for reimbursement. Grantee must confirm that all grant conditions have been complied with on each invoice. In addition, per the Grant Guidelines, Progress Reports must be submitted at least once every 6 months. A Final Report must be submitted and approved before final project payment.
(c) Monitoring Requirements: Grantee is responsible for ongoing monitoring of project progress per Exhibit A. Progress shall be detailed in each invoice and in each Progress Report, as detailed above. Additional inspections or field consultations will be arranged as may be necessary.
(d) Noncompliance Resolution: Payment will be withheld if grantee is not current on all grant conditions. Flagrant disregard for grant conditions will result in a stop work order and cancellation of the Grant Agreement.

Last Update: 10/17/17

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Colorado Water Conservation Board

Water Supply Reserve Fund

EXHIBIT B - BUDGET AND SCHEDULE - Direct & Indirect (Administrative) Costs

Date: 3/21/2018

Water Activity Name: Roller Dam Electrical and Control Systems Upgrades Project (Upgrades Project Task 1*)

Grantee Name: Grand Valley Water Users Association

Task No.[1]	Description	Start Date[2]	End Date	Costs	Matching Funds (cash & in-kind)[3]	WSRF Funds (Basin & Statewide combined)[3]	River District Grant	Other NGO	Total
Task 1a	Task 1 will extend the utility system, bury the overhead service lines, replace the service equipment at the dam, and install an on-site standby generator. Other sub-tasks include adding new service entrances at all buildings except the dam tender's house and new branch circuits and lights in the machine room (materials and equipment = $132,604). Includes equipment and materials and trenching costs and Construction Management and design fee costs ($41,494)	8/1/2018	2/28/2020	$174,098	$27,080	$60,000	$50,000	$37,018	**$174,098**
Task 1b	Xcel Energy will extend the existing utility line to the Roller Dam.	8/1/2018	2/28/2020	$50,000	$50,000				**$50,000**
			Total	**$224,098**	**$77,080**	**$60,000**	**$50,000**	**$37,018**	**$224,098**

(1) The single task that include costs for Grant Administration must provide a labor breakdown (see Indirect Costs tab below) where the total WSRF Grant contribution towards that task does not exceed 15% of the total WSRF Grant amount.

(2) Start Date for funding under $100K - 45 Days from Board Approval; Start Date for funding over $100K - 90 Days from Board Approval.

(3) Round values up to the nearest hundred dollars.

• Reimbursement eligibility commences upon the grantee's receipt of a Notice to Proceed (NTP).

• NTP will not be accepted as a start date. Project activities may commence as soon as the grantee enters contract and receives formal signed State Agreement.

The CWCB will pay the last 10% of the entire water activity budget when the Final Report is completed to the satisfaction of the CWCB staff project manager. Once the Final Report has been accepted, the final payment has been issued, the water activity and purchase order (PO) or contract will be closed without any futher payment. Any entity that fails to complete a satisfactory Final Report and submit to the CWCB with 90 days of the expiration of the PO or contract may be denied consideration for future funding of any type from the CWCB.

• Additonally, the applicant shall provide a progress report every 6 months, beginning from the date of contract execution.

• Standard contracting proceedures dictate that the Expiration Date of the contract shall be 5 years from the Effective Date.

Last Update: Oct 17, 2017

COLORADO
Colorado Water Conservation Board
Department of Natural Resources

Colorado Water Conservation Board

Water Supply Reserve Fund

Exhibit B - BUDGET AND SCHEDULE - Indirect Costs (Grant Administration)

Date:

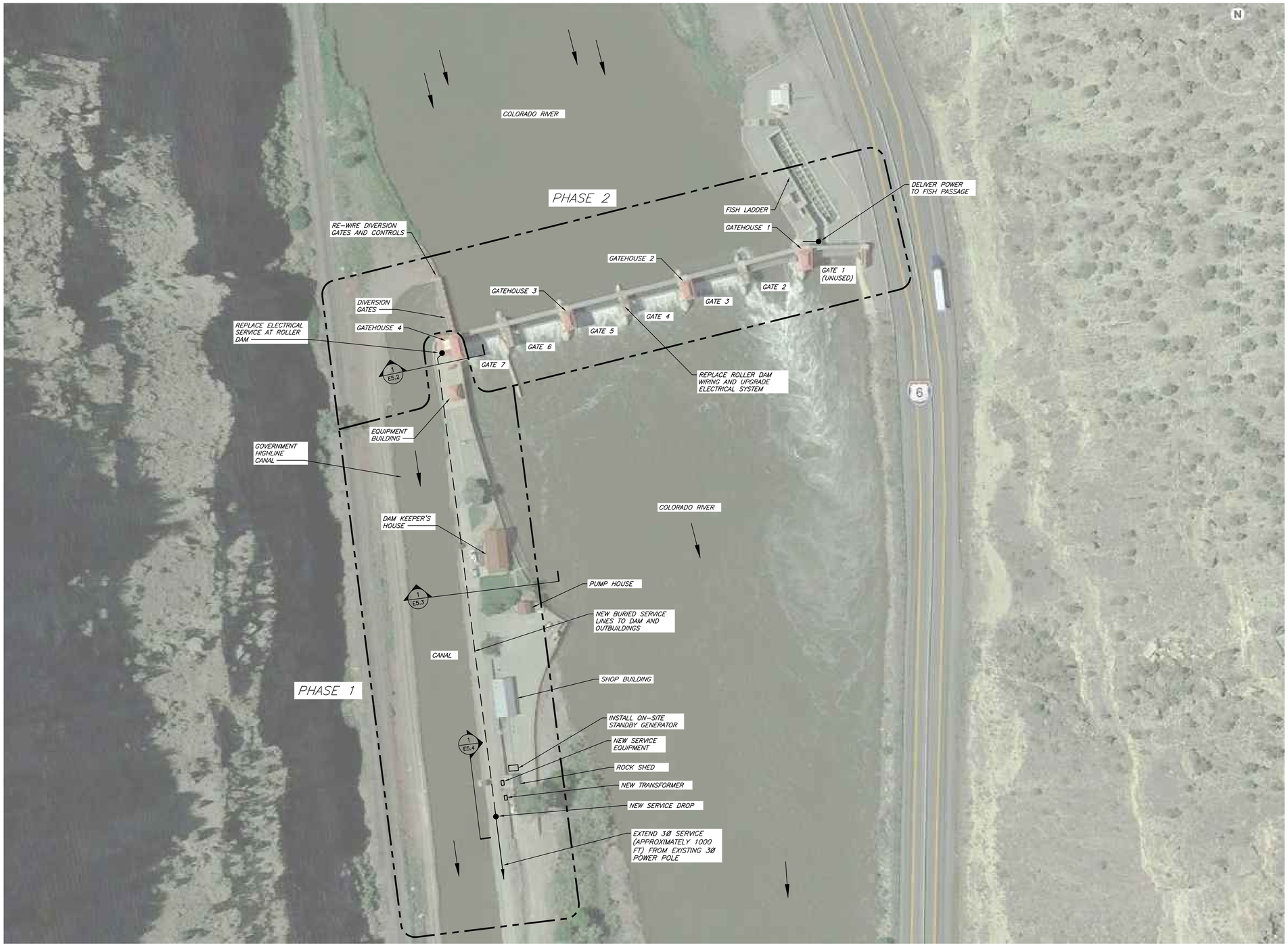
Water Activity Name:

Grantee Name:

Task No. [1]	Title	Description (Grant Administration)	$/hour	Hours	Total
					$0
					$0
					$0
					$0
					$0
					$0
					$0
					$0
					$0
					$0
					$0
					$0
					$0
				Total	$0
				Total WSRF Grant Amount[2]	$0
				Indirect Costs as a percent of Total WSRF Grant amount	#DIV/0!

(1) Grant Administration costs must be submitted as a single task and may not exceed 15% of the Total WSRF Grant amount.

(2) Total WSRF Grant amount equals all Basin Account requests and all Statewide Account requests.



FOR REFERENCE ONLY

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Glenwood Springs, CO 81601
970.945.1004 www.sgm-inc.com

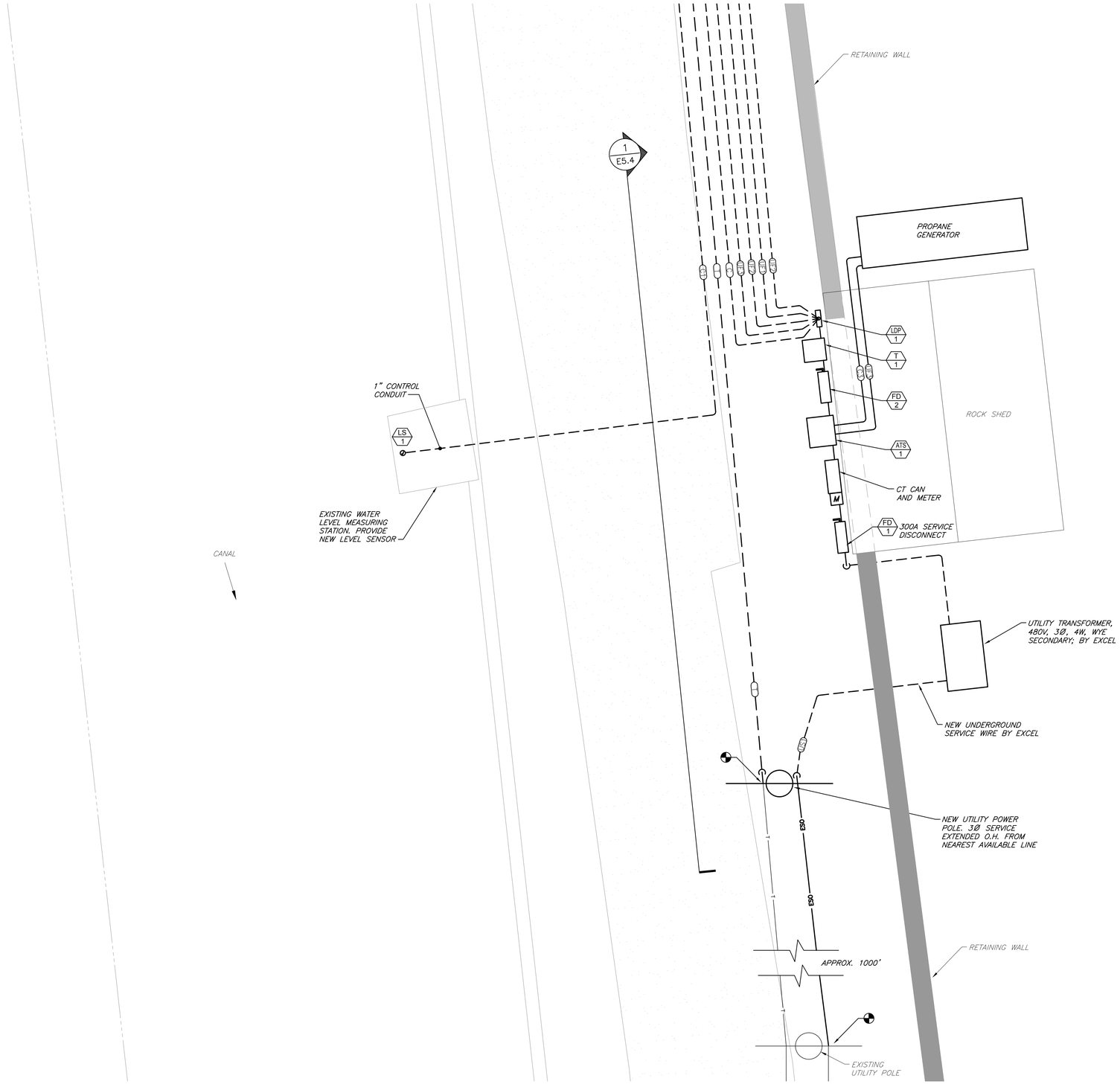
GVWUA
Grand Valley Roller Dam

#	Revision	Date	By
1			

Overall Site Plan

Job No.	2015-514.010
Drawn by:	TC
Date:	10/05/2017
Checked by:	BC
File:	GR_Dam_SITE

E0.0



Graphic Scale
0 4' 8'
Scale: 1/4" = 1'-0"

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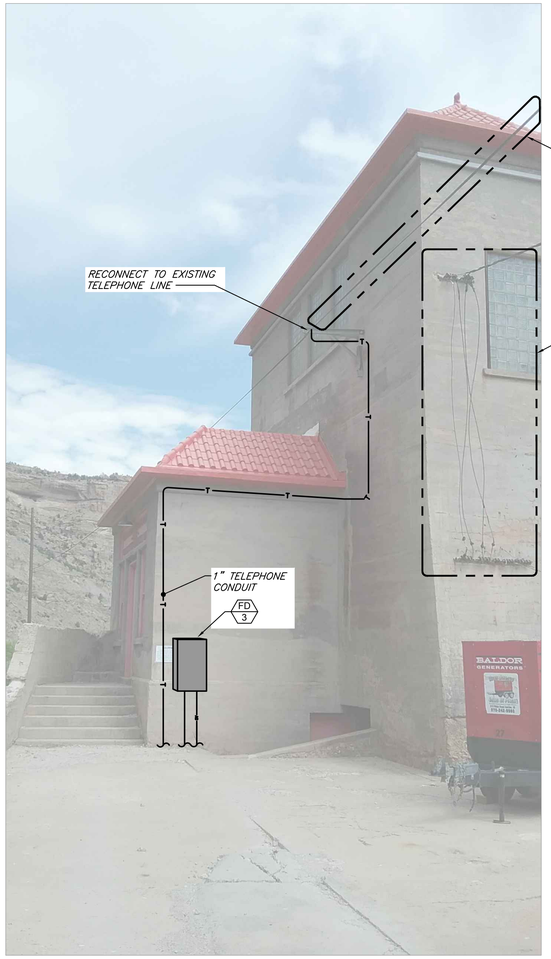
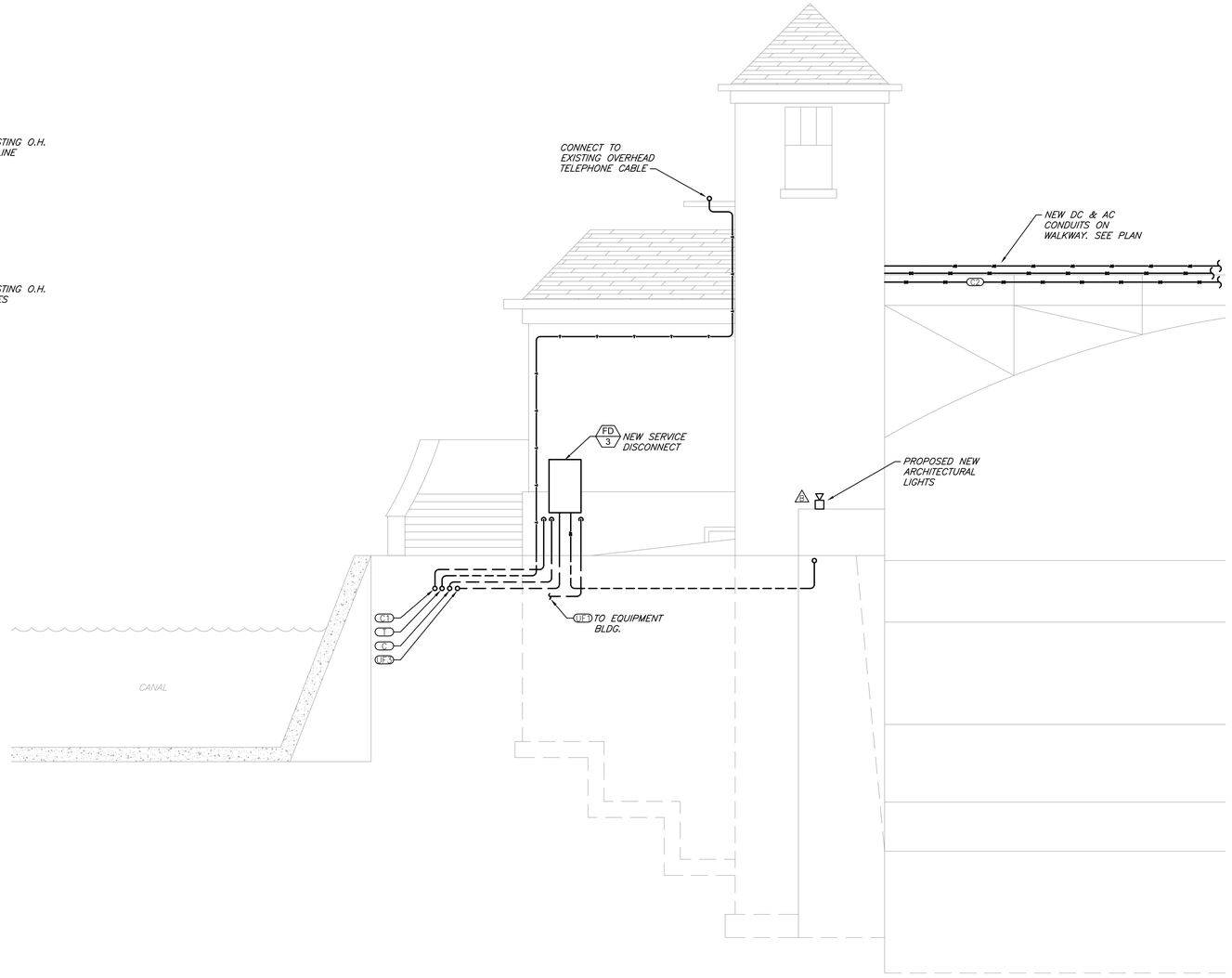
#	Revision	Date	By
1			

Enlarged Electrical Power Plan

Job No.	2015.514.010
Drawn by:	TC
Date:	10/05/2017
Checked by:	BC
File:	GR_Dam_NEW_NT

E1.9





1 **GATEHOUSE #1 SECTION (VIEWING NORTH)**

SCALE: N.T.S.

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#	Revision	Date	By
1			

Electrical Section View

Job No. 2015-514.010
Drawn by: TC
Date: 10/05/2017
Checked by: BC
File: GR_Dam_NEW_NT

E5.2

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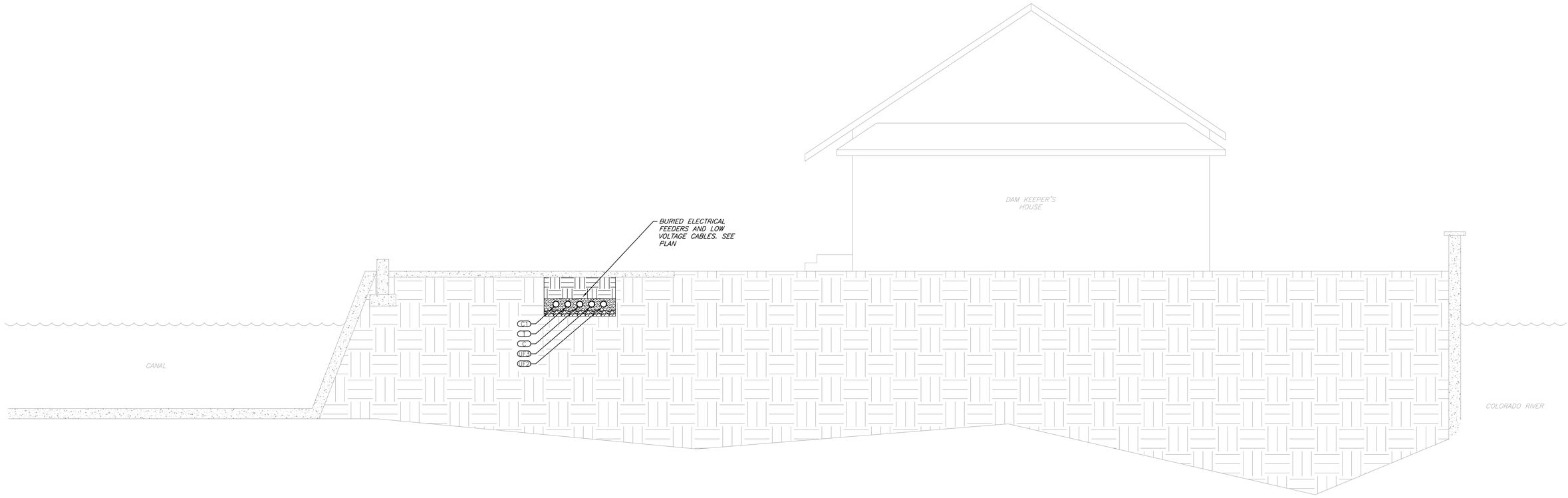

1 **UTILITY TRENCH SECTION (VIEWING NORTH)**
SCALE: N.T.S.

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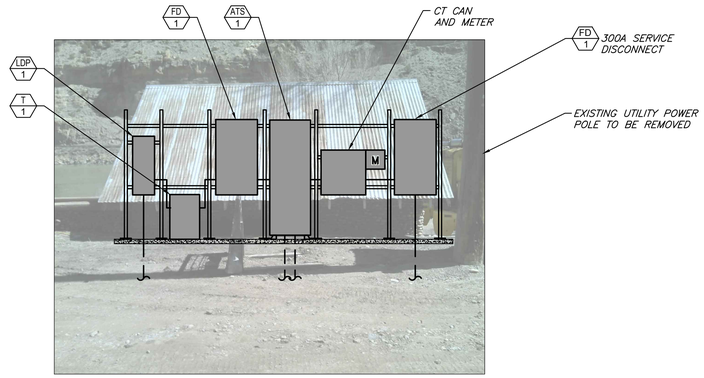
Electrical Section View

Job No.	2015-514.010
Drawn by:	TC
Date:	10/05/2017
Checked by:	BC
File:	GR_Dam_NEW_NT

E5.3



2 **ELECTRICAL POWER AT ROCK SHED**
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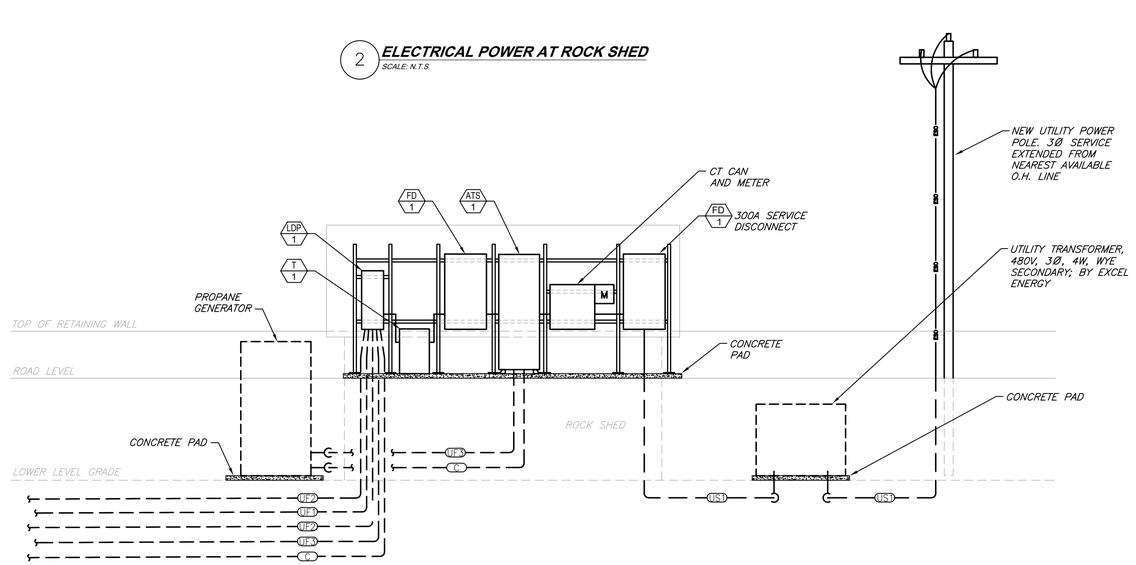
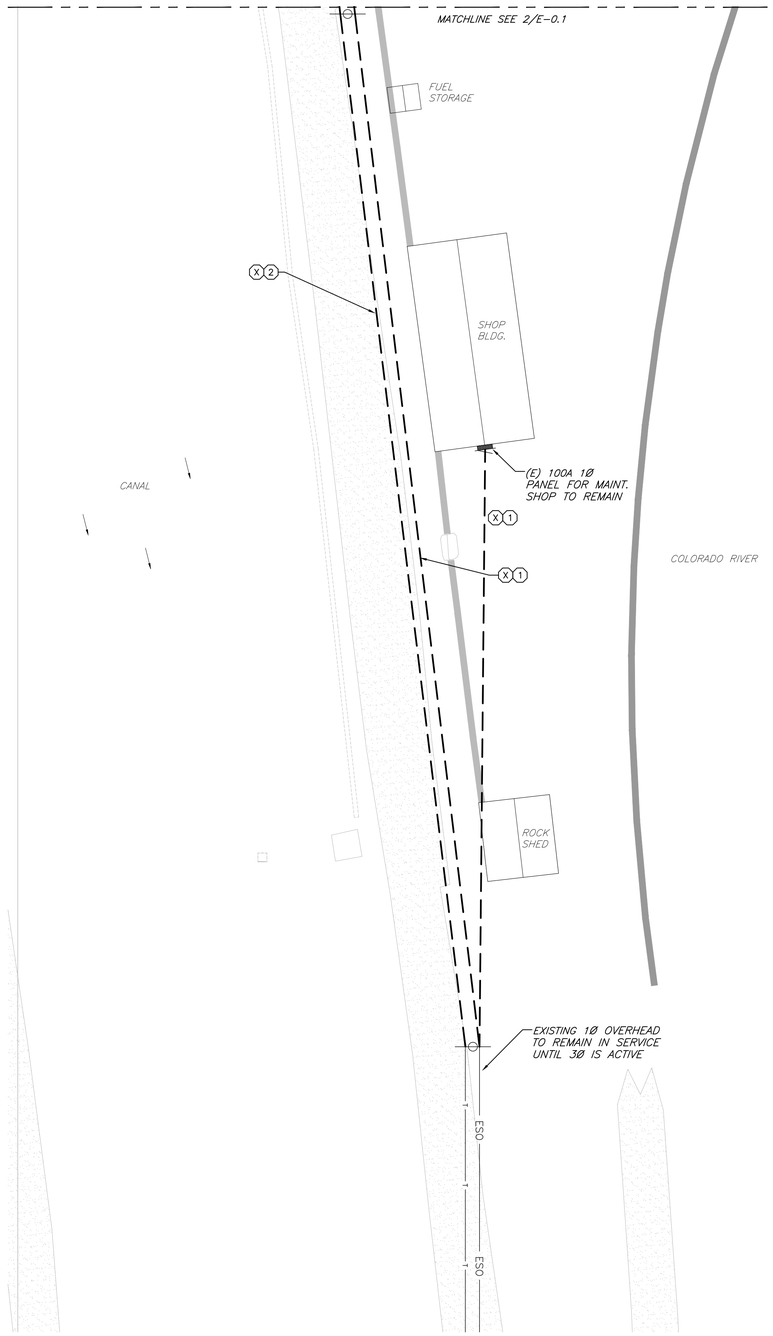
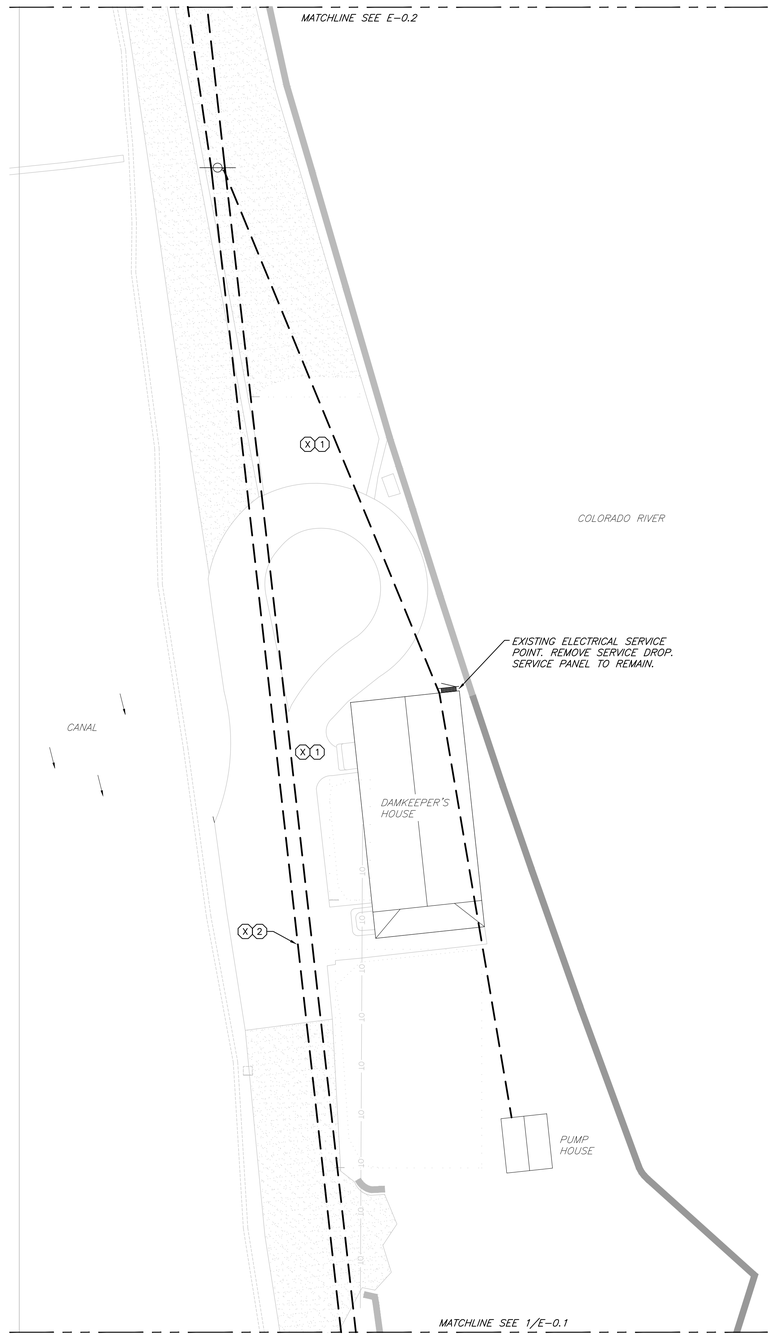




1 E-0.1 STONE BUILDINGS POWER DEMO PLAN

SCALE: 1/16" = 1'-0"



2 E-0.1 RESIDENCE BUILDING POWER DEMO PLAN

SCALE: 1/16" = 1'-0"

KEYNOTES

1. EXISTING OVERHEAD FEEDER TO BE REMOVED AFTER NEW UNDERGROUND SERVICE INSTALLED.
2. EXISTING TELEPHONE TO BE REMOVED AFTER NEW UNDERGROUND SERVICE INSTALLED.

Graphic Scale
0 8' 16' 32'
Scale: 1/16" = 1'-0"

Preliminary
Not For Construction

60% DD

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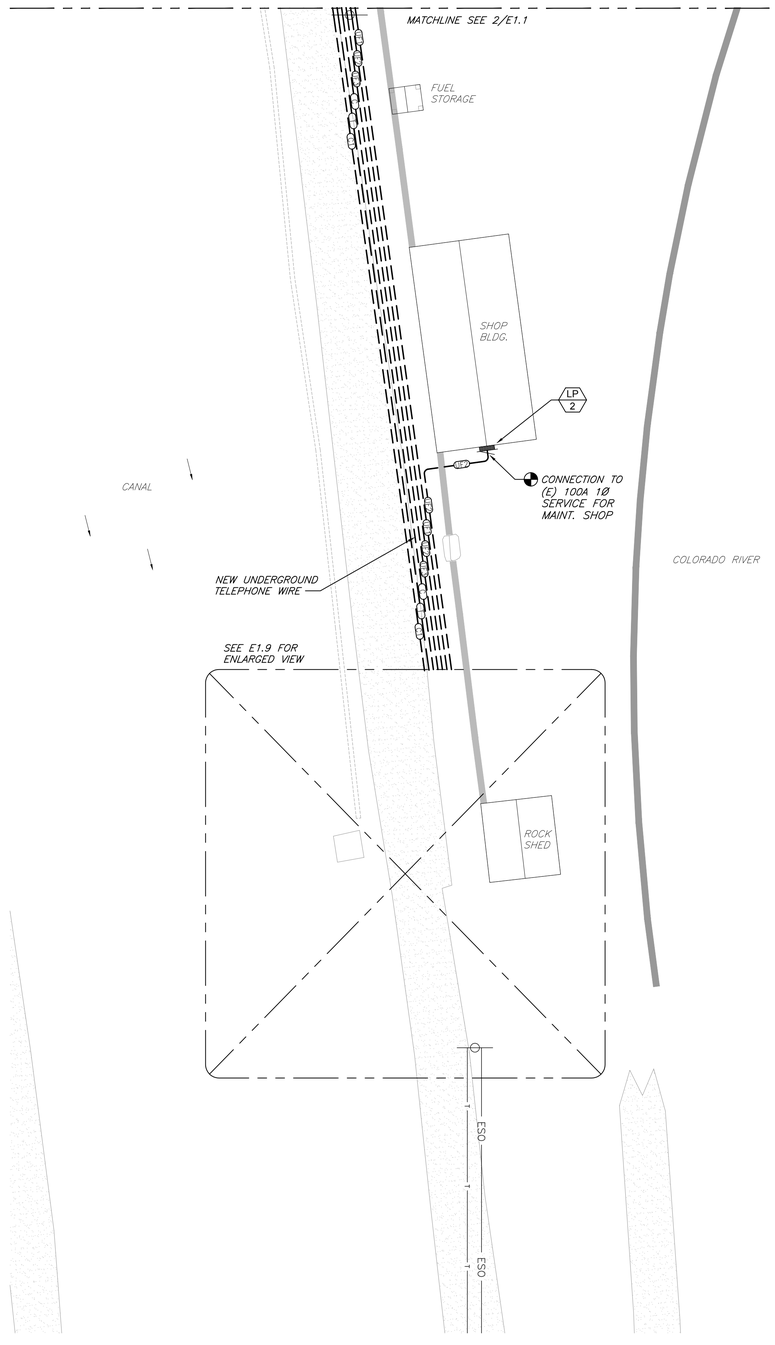
#	Revision	Date	By
1			

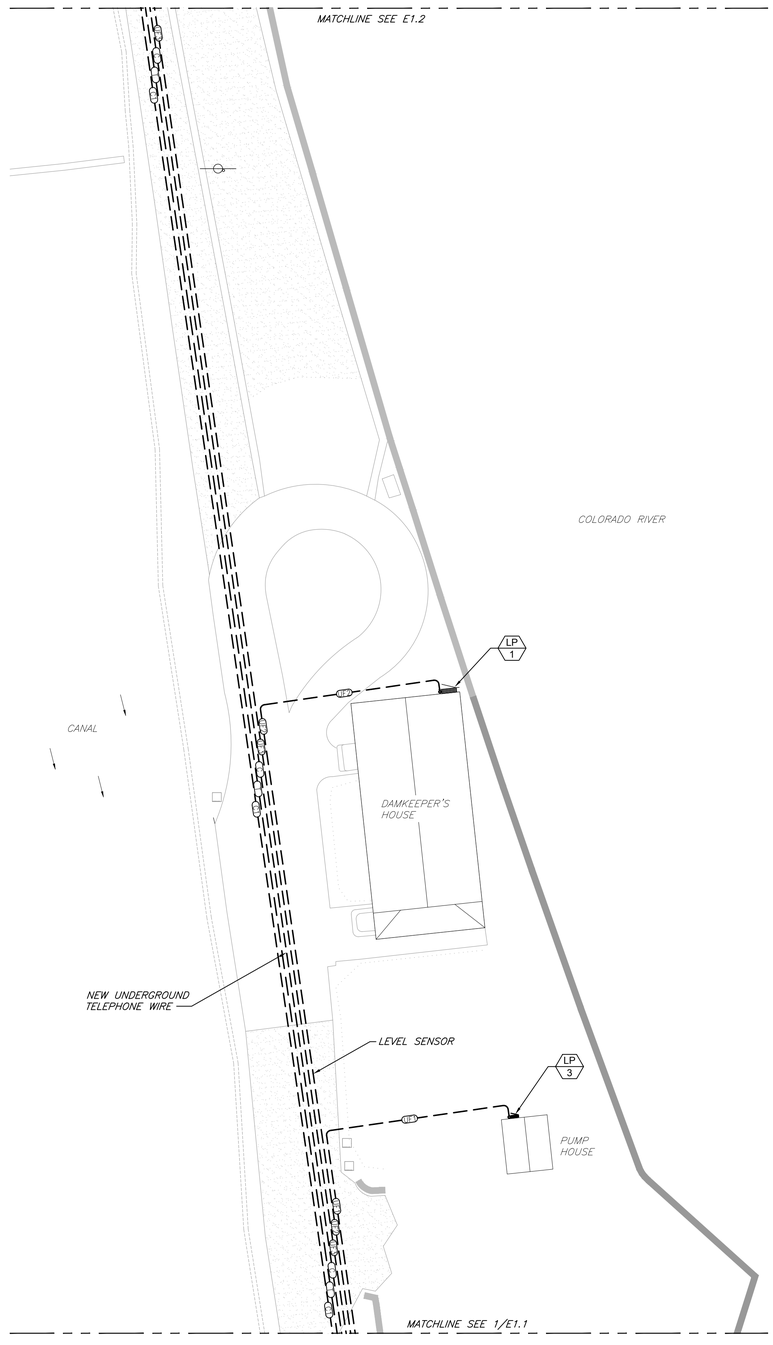
Outbuildings - Electrical Power Demo Plan

Job No.	2015-514.010
Drawn by:	TC
Date:	10/05/2017
Checked by:	JG
File:	GR_Dam_DEMO

E0.1



1 E-1.1 STONE BUILDINGS POWER DISTRIBUTION PLAN
SCALE: 1/16" = 1'-0"



2 E-1.1 RESIDENCE BUILDING POWER DISTRIBUTION PLAN
SCALE: 1/16" = 1'-0"

Graphic Scale
0 8' 16' 32'
Scale: 1/16" = 1'-0"

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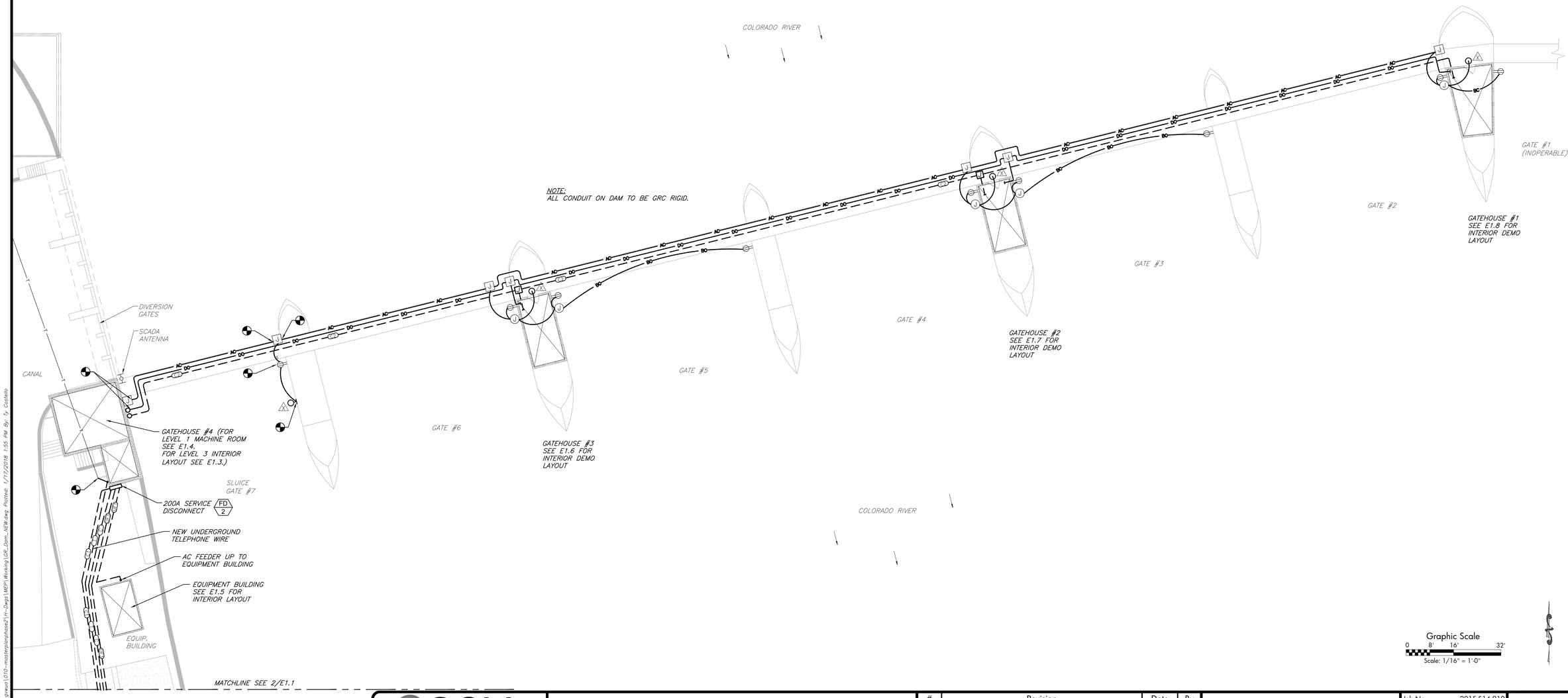
#	Revision	Date	By
1			

Outbuildings - Electrical Power Plan

Job No.	2015-514.010
Drawn by:	TC
Date:	10/05/2017
Checked by:	JG
File:	GR_Dam_NEW

E1.1



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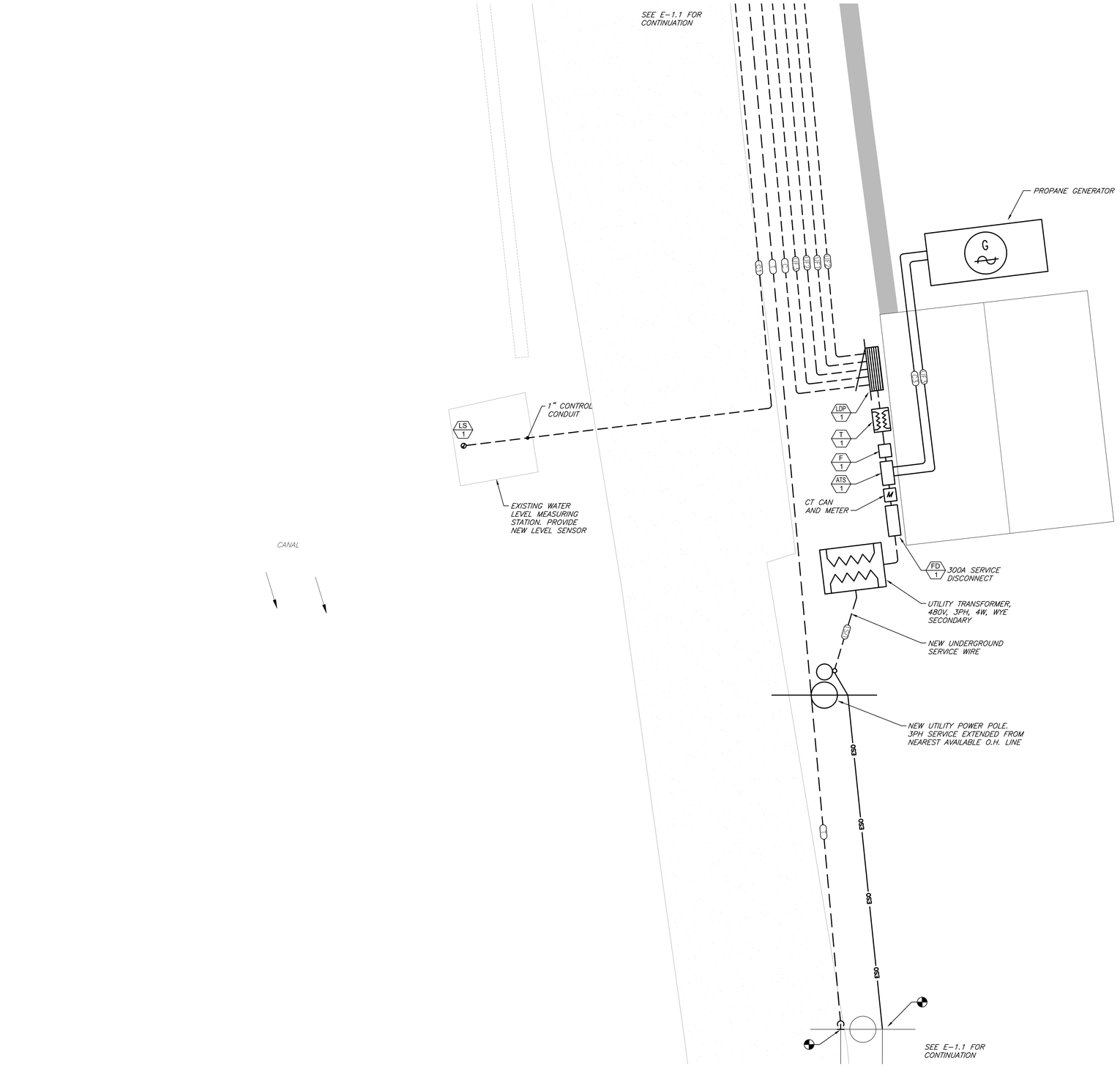
Roller Dam -
Electrical Power Plan

Job No.	2015.514.010
Drawn by:	##
Date:	10/05/2017
Checked by:	##
File:	GR_Dam_NEW

E1.2



Graphic Scale
0 4' 8'
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Enlarged Electrical Power Plan

Job No.	2015.514.010
Drawn by:	TC
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Checked by:	BC
File:	GR_Dam_NEW

E1.9