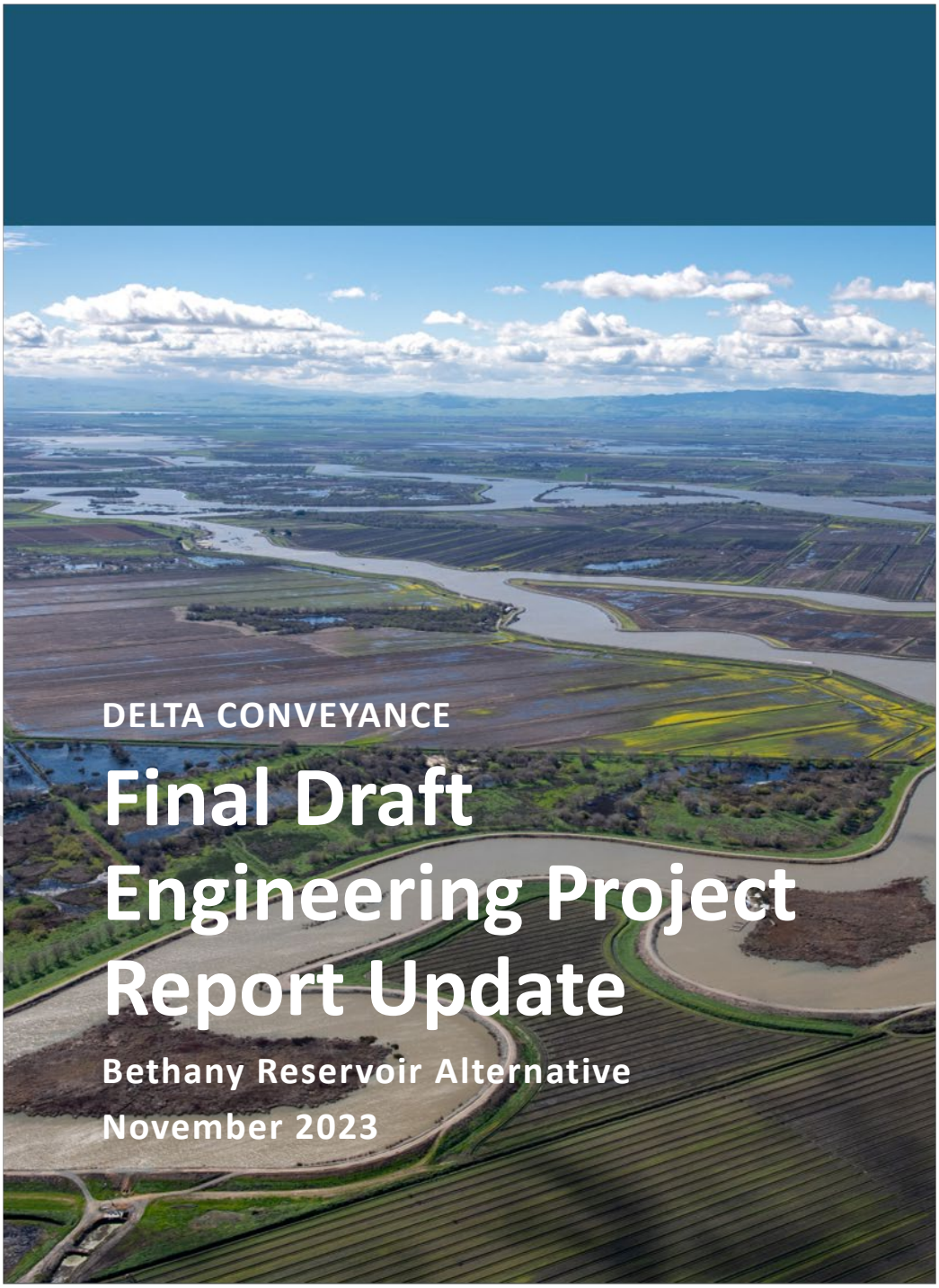
DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY



DELTA CONVEYANCE

Final Draft Engineering Project Report Update

Bethany Reservoir Alternative

November 2023

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Delta Conveyance Final Draft Engineering Project Report Update – Bethany Reservoir Alternative

Project Feature: Project-wide

Prepared for: California Department of Water Resources (DWR) / Delta Conveyance Office (DCO)

Prepared by: Delta Conveyance Design and Construction Authority (DCA)

Date/Version November 2023 / Version 1

Reference no.: EDM_PW_CE_RPT_Bethany-EPR-Update_001275_V01_FD_20231130

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The California Department of Water Resources (DWR) requested the Delta Conveyance Design and Construction Authority (DCA) develop an update to the conceptual engineering information for the Delta Conveyance Project Bethany Reservoir Alternative dated May 2022. This update includes changes due to errata (e.g. errors, mislabeling, etc.) and incorporates minor updated engineering information to support the Delta Conveyance Project Final Environmental Impact Report (FEIR). For the Bethany Reservoir Alternative, updates are only provided for the 6,000 cubic feet per second (cfs) project design flow capacity because this is the project conveyance capacity included in the FEIR for the Bethany Reservoir alignment (FEIR Alternative 5). This update only includes changes and does not reproduce information that has not been updated, unless otherwise noted. Updates are shown in redline strikeout. Removed text is red and crossed out and added text is red and underlined. Because many appendices in the Narrative Report and technical memoranda did not include page numbers, the page numbers listed in the descriptions of updates in this document refer to the overall PDF page numbers from the May 2022 Engineering Project Report (EPR) documents.

Document History and Quality Assurance

Reviewers listed have completed an internal quality review check and approval process for deliverable documents that is consistent with procedures and directives identified by the Engineering Design Manager (EDM) and the DCA.

Approval Names and Roles

Prepared by	Internal QC review by	Consistency review by	Approved for submission by
Karen Askeland/ EDM Environmental Liaison	Phil Ryan / EDM Senior Technical Consultant	Gwen Buchholz / DCA Environmental Consultant Adam Murdock / EDM Design Manager	Terry Krause / EDM Project Manager

This interim document is considered preliminary and was prepared under the responsible charge of Philip K. Ryan, California Professional Engineering License C41087.

Table of Contents

ATTACHMENTS – Air Quality

Attachment A: Air Quality Appendices

Narrative Report Updates

The following updates were made to the narrative report.

Revisions to EPR Narrative Section 1

1.2.1 Development of Facilities Plans in the Bethany Reservoir Alternative

The following revisions are made to EPR Narrative Table 1 (May 2022 Bethany EPR Narrative PDF page 20).

TABLE 1. SUMMARY OF THE BETHANY RESERVOIR ALTERNATIVE PHYSICAL CHARACTERISTICS FOR THE 6,000 CFS PROJECT DESIGN CAPACITY

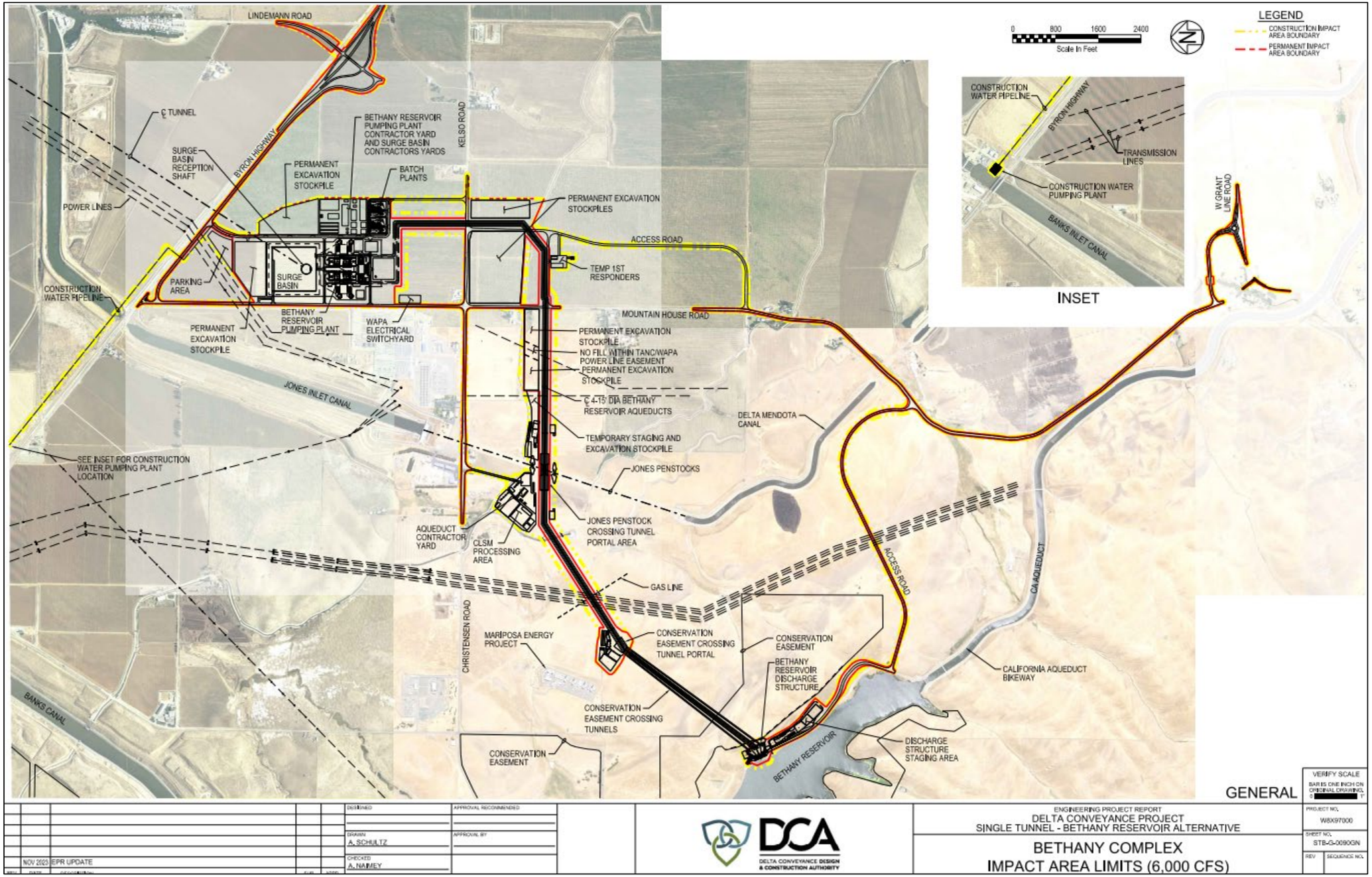
Feature Description	Bethany Reservoir Alternative	Comparison to the Eastern Corridor
Bethany Reservoir Pumping Plant and Surge Basin	• Fourteen pumps at 500 cfs, each, including two standby pumps (Up to twelve pumps would operate at any one time for a total of 6,000 cfs capacity) • Four, 75-foot diameter by 20-feet high one-way surge tanks connected to the BRPP's discharge pipelines (one tank connected to each pipeline) • Two Portable 60 cfs Pumps to dewater main tunnel for inspection and maintenance, as needed • Four rail-mounted 25 ~~100~~ cfs pumps to dewater Surge Basin • One 815-foot by 815-foot Surge Basin with surge overflow capacity	Customized to Bethany Reservoir Alternative
Bethany Reservoir Aqueduct and Discharge Structure	• Number of Pipelines: 4 • Pipeline Inside Diameter: 180-inch (15 feet) • Pipeline Outside Diameter: 182.5-inch +/- • Maximum capacity per pipeline: 1,500 cfs • Each Pipeline Length: Approximately 14,900 ~~13,000~~ feet for each pipeline • Tunnels under Jones Penstocks: 200 feet for each tunnel, 4 tunnels, bottom of the tunnel is approximately 50 feet below natural existing ground • Tunnels under Bethany Reservoir Conservation Easement: 3,064 feet for each tunnel, 4 tunnels, tunnel depth varies from approximately 45-50 from the existing ground to the bottom of the tunnel to approximately 180 feet from existing ground to the bottom of the tunnel • Riser shafts and discharge structure	Unique to Bethany Reservoir Alternative

Revisions to EPR Narrative Section 2

2.3.1 Bethany Reservoir Pumping Plant and Surge Basin

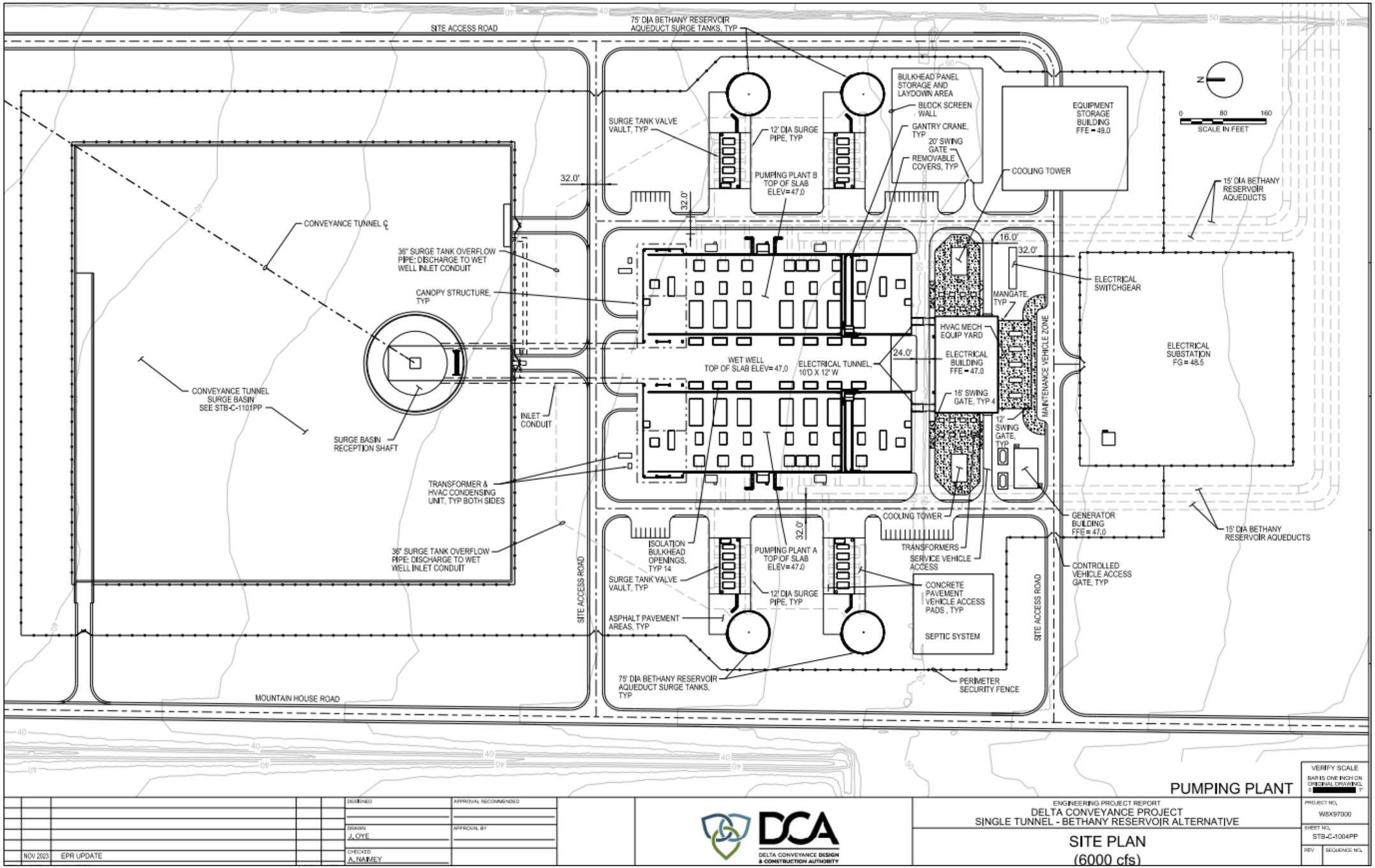
EPR Narrative Figure 6 (May 2022 Bethany EPR Narrative PDF page 37) and Figure 7 (May 2022 Bethany EPR Narrative PDF page 38) have been revised and are provided below.

FIGURE 6. BETHANY COMPLEX FACILITIES SITE PLAN WITH CONSTRUCTION AND PERMANENT BOUNDARIES



(From Engineering Concept Drawings, Volume 2, 01-GN)

FIGURE 7. BETHANY RESERVOIR PUMPING PLANT FACILITIES: POST-CONSTRUCTION SITE PLAN



(From Engineering Concept Drawings, Volume 2, 04-PP)

2.3.1.5 Bethany Complex Concrete Batch Plants

The following revisions are made to EPR Narrative Section 2.3.1.5 (May 2022 Bethany EPR Narrative PDF page 42).

> The Bethany Complex concrete batch plants would be located north of Kelso Road, adjacent to the Bethany Reservoir Pumping Plant and Surge Basin contractors' yards east of the Bethany Reservoir Pumping Plant ~~near the intersection of Kelso Road and the new Bethany access road east of Mountain House Road~~. The batch plants area would be approximately 5 11.5 acres in size and would include two concrete batch plants where raw materials (e.g., cement, sand, and gravel) would be hauled in by truck to be combined to form ready-mix which would then be hauled to the various Bethany Complex structures.

2.3.2.1 Open-Trenched Portions of the Bethany Reservoir Aqueduct

The following revisions are made to EPR Narrative Section 2.3.2.1 (May 2022 Bethany EPR Narrative PDF page 43).

> The top of the pipelines would be backfilled with about 6 feet of cover using soil produced during the trench construction or imported from the Pumping Plant excavation. Controlled low strength backfill material (CLSM) would be placed around the pipelines below the existing ground surface. A 24-foot-wide permanent gravel-surfaced patrol road would be placed on the completed fill in the center (i. e. Aqueduct control line, as depicted on the engineering concept drawings) of the Bethany Reservoir Aqueduct.

2.3.2.2 Tunneled Portions of the Bethany Reservoir Aqueduct

The following revisions are made to EPR Narrative Section 2.3.2.2 under header, Tunnels under the Bethany Reservoir Conservation Easement, (May 2022 Bethany EPR Narrative PDF page 44) to correct a typographical error.

> At the tunnel portal, the pipelines would be installed within the 20-foot inside diameter 3,064-foot long tunnels that would be separated by 40 feet between the center of each tunnel at the entrance portal end to about ~~70~~ 80 feet at the shaft end.

2.3.3 Bethany Reservoir Discharge Structure

The following revisions are made to EPR Narrative Section 2.3.3 (May 2022 Bethany EPR Narrative PDF page 45) to correct a typographical error.

> The Bethany Reservoir Discharge Structure would be divided into four channels separated by 80-feet between the center of each channel. Each channel width

would range from about 80 ~~55~~ feet at the tunnel reception shaft to approximately half of that width at the bank of the Bethany Reservoir.

Revisions to EPR Narrative Section 4

4.1 Roads

EPR Narrative Section 4.1 (May 2022 Bethany EPR Narrative PDF page 60) is updated to include the following information to be consistent with the Logistics Strategy Technical Memorandum.

> No construction traffic would be allowed on levee roads, including SR 160, except when the highway is re-aligned during intake construction, or for individuals or vehicles traveling from homes or businesses located along levee roads.

EPR Narrative Section 4.1, Table 4, Major Road Improvements for the Bethany Reservoir Alternative (May 2022 Bethany EPR Narrative PDF page 61) is updated to include the following bullet point.

> New temporary driveway from the access road from Mountain House Road to the temporary first responders' site.

Revisions to EPR Narrative Section 6

6.7 Compliance with Environmental Requirements

The following section is added to EPR Narrative Section 6.7, Compliance with Environmental Requirements, (May 2022 Bethany EPR Narrative PDF page 77).

Section 6.7.1 Contra Costa Water District Proposed Interconnection Facilities

As the Delta Conveyance Project Environmental Impact Report (EIR) was being prepared, DWR requested that the DCA conduct a preliminary analysis of a potential new interconnection facility as part of the Bethany Reservoir Alternative that would allow water to be conveyed from the proposed Union Island Tunnel Maintenance Shaft through a pump station, a raw water conveyance pipeline, and interconnection valve to the existing Contra Costa Water District (CCWD) existing Middle River Pipeline (a.k.a Victoria Island Pipeline). A description of the proposed Interconnection Facilities for the CCWD is provided in Appendix A-1.

6.8 Construction and Long-term Site Space Requirements

Table 7 in EPR Narrative Section 6.8 (May 2022 Bethany EPR Narrative PDF page 78) is updated as follows.

TABLE 7. SUMMARY OF CONSTRUCTION AND POST-CONSTRUCTION SITE REQUIREMENTS AT MAJOR FEATURES FOR PROJECT DESIGN CAPACITY OF 6,000 CFS

Key Feature	Acreage within Construction Boundary (acres)	Acreage within Post-Construction Boundary (acres)	Acreage Restored for Agriculture or Habitat (acres)
Bethany Reservoir Pumping Plant and Surge Basin Site	213 ~~228~~	184 ~~175~~	29 ~~53~~ (agriculture or habitat) 70 ~~59~~ (excavated material stockpile planted with native grasses)
Bethany Reservoir Aqueduct and Bethany Reservoir Discharge Structure	143 ~~153~~	81 ~~76~~	60 ~~75~~ (agriculture or habitat)

Narrative Report Update – Appendices

The following updates were made to the EPR Narrative appendices.

APPENDIX A - Summary of Information for the Project Design Capacity of 6,000 cfs with Cylindrical Tee Fish Screens

EPR Narrative Appendix A Table A1 (May 2022 Bethany EPR Narrative PDF page 102) was updated to correct a typographical error.

TABLE A1. TUNNEL REACH LENGTHS AND SHAFT INVERT ELEVATIONS AND DEPTHS FOR BETHANY RESERVOIR ALTERNATIVE BETWEEN INTAKES AND BETHANY COMPLEX FOR A PROJECT DESIGN CAPACITY OF 6,000 CFS

Shaft Location	Shaft Invert (Bottom) Elevation (feet)	Shaft Invert Depth from Ground Level (feet)	Tunnel Length from Upstream Shaft (feet)	Stream Crossings Over the Tunnel from Upstream Shaft
Tunnel Reception Shaft at Intake C-E-3	-140	143	Not Applicable	Not Applicable
Tunnel Maintenance Shaft at Intake C-E-5	-142	150	13,200	Not Applicable
Tunnel Launch Shaft Site on Twin Cities Complex	-150	160	29,600	Snodgrass Slough
Tunnel Maintenance Shaft on New Hope Tract	-152	158	24,300	Snodgrass Slough Mokelumne River
Tunnel Maintenance Shaft on Canal Ranch Tract	-154	157	15,800	Beaver Slough
Tunnel Reception Shaft on Terminous Tract	-157	153	26,900	Hog Slough Sycamore Slough
Tunnel Maintenance Shaft on King Island	-159	147	20,600	White Slough
Tunnel Launch Shaft on Lower Roberts Island	-161	150	29,600	~~White~~ Disappointment Slough San Joaquin River
Tunnel Maintenance Shaft on Upper Jones Tract	-164	157	26,900	Whiskey Slough Hayes Slough Old River
Tunnel Maintenance Shaft Site on Union Island	-166	160	22,200	Middle River Victoria Canal
Tunnel Reception Shaft Site at Surge Basin within Bethany Complex	-169	209	27,500	West Canal Jones Pumping Plant Approach Channel
TOTAL TUNNEL LENGTH			236,600	

Notes: Values listed are approximate; refer to GIS or Engineering Concept Drawings for more precise values.

The following revisions are made to EPR Narrative Appendix A Table A7 (beginning on May 2022 Bethany EPR Narrative PDF page 116).

TABLE A7. CONSTRUCTION CONDITIONS AND CONSTRUCTED FACILITIES SUMMARY FOR THE BETHANY RESERVOIR PUMPING PLANT AND SURGE BASIN FOR PROJECT DESIGN CAPACITY OF 6,000 CFS

Items	Quantities
Earthwork	Pumping Plant: The total excavation volume for the Bethany Reservoir Pumping Plant dry pits, wet well, valve pit, mechanical/electrical pit, surge tank valve vaults, and ancillary site grading total approximately 1,270,298 ~~1,300,000~~ cubic yards of excavation. 7,000 cubic yards will be needed as fill associated with site grading. Surge Basin: The total excavation volume of the surge basin is approximately 1,171,060 ~~985,000~~ cubic yards. An access ramp will be constructed with an MSE wall with free draining backfill and drainage stone behind the wall. Excavated soil will be placed in permanent stockpiles located immediately to the east and south of the Bethany Reservoir Pumping Plant in up to 5 (five) ~~4(four)~~ separate stockpiles totaling approximately 70 ~~60~~ acres.
Excess Excavation Stockpiles	Excess excavated material from all portions of the Bethany Complex would be stockpiled at 5 (five) ~~4 (four)~~ stockpile locations within the Bethany Reservoir Pumping Plant and Surge Basin portion of the Bethany Complex, as described below. A five percent buffer for sloping sides and perimeter access roads was used to estimate the height of each stockpile. Location 1: 12 ~~28~~ acres, 450,185 ~~1,345,517~~ cubic yards, 33 feet tall Location 2: 12.75 ~~14~~ acres, 586,660 ~~655,533~~ cubic yards, 33 feet tall Location 3: 8.5 ~~12~~ acres, 261,335 ~~568,193~~ cubic yards, 33 feet tall Location 4: 30.75 ~~6~~ acres, 307,145 cubic yards, 33 feet tall Location 5: 8 acres, 180,072 cubic yards, 33 feet tall The stockpiles are located immediately to the east and south of the Bethany Reservoir Pumping Plant. Each stockpile area would be cleared, grubbed, and stripped of topsoil before stockpiling. Topsoil from these locations, plus excess topsoil from other portions of the Complex, would be respread over the completed stockpiles upon completion. The stockpiles would be hydroseeded upon completion.
Electrical Substation on Pumping Plant Site during Construction and Operation Phases	Area = 400 ~~344~~ feet wide by 400 ~~186~~ feet long, within a separately fenced area.
Excavated Material Stockpiles	Approximately 70 ~~60~~ acres of the site would be used for permanent excavated material stockpiles for future projects by other agencies that are not identified at this time.

The following revisions are made to EPR Narrative Appendix A Table A8 (beginning on May 2022 Bethany EPR Narrative PDF page 120).

TABLE A8. CONSTRUCTION CONDITIONS AND CONSTRUCTED FACILITIES SUMMARY FOR THE BETHANY RESERVOIR AQUEDUCT FOR PROJECT DESIGN CAPACITY OF 6,000 CFS

Items	Quantities
Additional Work Areas	In specific reaches, the available work area will extend beyond the 400-foot width. Specifically, from approximately STA 115+00 to 140+00 ~~between the Pumping Plant and STA 185+00~~ (as included in the revised engineering concept drawings), the work area west and north of the aqueduct will extend north to Mountain House Road west to Kelso Road on both the north and south side of the ~~and to the~~ BBID Canal 70 to provide space for soil stockpiling ~~batch plants~~ and other contractor operations ~~facilities~~ and to utilize space otherwise isolated between the canal and the pipeline construction work.
Main Yard	
Miscellaneous Material Storage – Open Space	Area approximately 200-feet-wide and 200-feet-long for open storage of miscellaneous construction materials (rebar, shoring, concrete forms, etc.)
CLSM Processing Area	
Batch Plants (2) for Trench CLSM	Two immediately adjacent plants on same site, each approximately 100-feet wide by 100-feet long by 50-75 feet in height.
Runoff Containment and Surface Water Treatment	Small containment area and temporary water treatment facility.

The following information is revised and added to EPR Narrative Appendix A Table A10 (May 2022 Bethany EPR Narrative PDF page 129).

TABLE A10. ACCESS ROADS TO CONSTRUCTION SITES FOR THE BETHANY RESERVOIR ALTERNATIVE

Purpose of Access	Road	Starting Location	Ending Location	Existing Roadway	Action	Modification	Asphalt Overlays
Twin Cities Complex Road Improvements	Twin Cities Road	0.83 miles west of Franklin Boulevard	0.17 miles east of Franklin Boulevard	22-feet wide: Two 10-foot paved lanes with 1-foot shoulders	Widen 1-mile paved road	32-feet wide: two 12-foot paved lanes with 4-foot wide shoulders and a 44-foot wide portion with three 12-foot paved lanes (including left-turn merge lane) with 4-foot wide shoulders	Mid-Construction & End of Construction
Access Road Pumping Plant and Surge Basin (Part of Bethany Complex South Access)	New temporary access road to first responders' site	Access road from Mountain House Road	Temporary first responders' site		0.1 miles New Road	24-feet wide: two 12-foot paved lanes with 4-foot shoulders	

The following information is revised in EPR Narrative Appendix A Table A11 (May 2022 Bethany EPR Narrative PDF page 130).

TABLE A11. PILES AND PIERS FOR ACCESS ROADS FOR PROJECT DESIGN CAPACITY OF 6,000 CFS

Purpose of Access	Bridge	Crossing	Modification	Piles/Piers	Installation Notes
Access Road Lower Roberts Island Tunnel Double Launch Shaft ~~Reception Shaft and Launch Shaft~~	Described in Table A24 of the C/E EPR				
~~Access Road Lower Roberts Island Tunnel Reception Shaft and Launch Shaft~~	~~New bridge over Turner Cut~~	~~Turner Cut~~	~~New bridge: 32 feet wide x 70 feet long: two 12-foot lanes with 4-foot shoulders.~~	~~20 permanent driven piles for bridge 50 feet deep, 16 inch diameter~~	~~Install 6 piles/day~~

The following appendix is added to the EPR Narrative appendices.

Appendix A-1 Proposed Interconnection Facilities – Contra Costa Water District (CCWD)

Introduction

The purpose of this document is to present a narrative summary and description of the proposed Interconnection Facilities for the Contra Costa Water District (CCWD). The document outlines the basis of schematic design and lists some of the assumptions used for the conceptual development of the Interconnection Facilities along with schematic design sketches.

Background

The California Department of Water Resources (DWR) and CCWD previously entered into a settlement agreement on March 24, 2016, where, unique to CCWD and DWR, the settlement agreement addressed disagreements related to CCWD's potential adverse water quality and water supply effects from the Bay Delta Conservation Plan/ California WaterFix Project. While the California WaterFix Project approvals were withdrawn in 2019, there remained some question as to the applicability of the 2016 agreement on future project proposals, including the proposed Delta Conveyance Project (DCP). As the DCP Environmental Impact Report (EIR) was being prepared, DWR requested that the Delta Conveyance Design and Construction Authority (DCA) conduct a preliminary analysis of a potential new interconnection facility as part of the Proposed Project, Bethany Reservoir Alternative. This interconnection would allow water to be conveyed from the proposed Union Island Tunnel Maintenance Shaft through a pump station, a raw water conveyance pipeline, and Interconnection valve into the existing CCWD existing Middle River Pipeline (a.k.a Victoria Island Pipeline). The proposed facilities would divert and convey up to 150 cubic feet/second (cfs) of water managed by CCWD under existing water rights, Central Valley Project contracts, or water transfer or sales agreements. The raw water to be supplied to CCWD through this interconnection would be diverted from the Sacramento River at the DCP intakes with fish screens in the north Delta and can, therefore, be combined with CCWD water diverted at the existing Middle River Intake that includes fish screens.

For the basis of schematic design described in this summary, the proposed pump station and connecting pipelines were sized to deliver three maximum firm design flow capacity options, including 150, 100 and 50 cfs. The maximum firm design flow capacity associated with each option would be established with all pumps in operation (i.e., no standby pumps would be included).

The Interconnection Facilities would consist of an Interconnection Pump Station with water intake from the DCP's proposed Union Island Maintenance Shaft on the main DCP tunnel, and a new 1.6-mile conveyance pipeline that would extend from the pump station and connect to the existing CCWD Victoria Island Pipeline just downstream of the CCWD's existing Middle River Intake and Pumping Plant. An isolation valve would be provided on the new conveyance pipeline at the

connection to the existing Victoria Island Pipeline. Pumped flow from the new Interconnection Pump Station would convey raw water from the DCP's proposed Union Island shaft to CCWD's existing Transfer Pumping Station through the new conveyance pipeline and subsequently though CCWD's existing Victoria Island and Old River Pipelines. During periods when CCWD's existing Middle River and Old River Pumping Plants are in simultaneous operation with the proposed Interconnection Pump Station, a maximum combined pumped flow of up to 250 cfs could be conveyed through the Victoria Island Pipeline and a maximum combined flow of up to 320 cfs could be conveyed through the Old River Pipeline. The proposed Interconnection Pump Station and conveyance pipeline route along with existing CCWD infrastructure and the proposed DCP infrastructure are shown in Figure 1.

FIGURE 1. LOCATION OF INTERCONNECTION FACILITIES RELATIVE TO EXISTING CCWD AND PROPOSED DCP FACILITIES

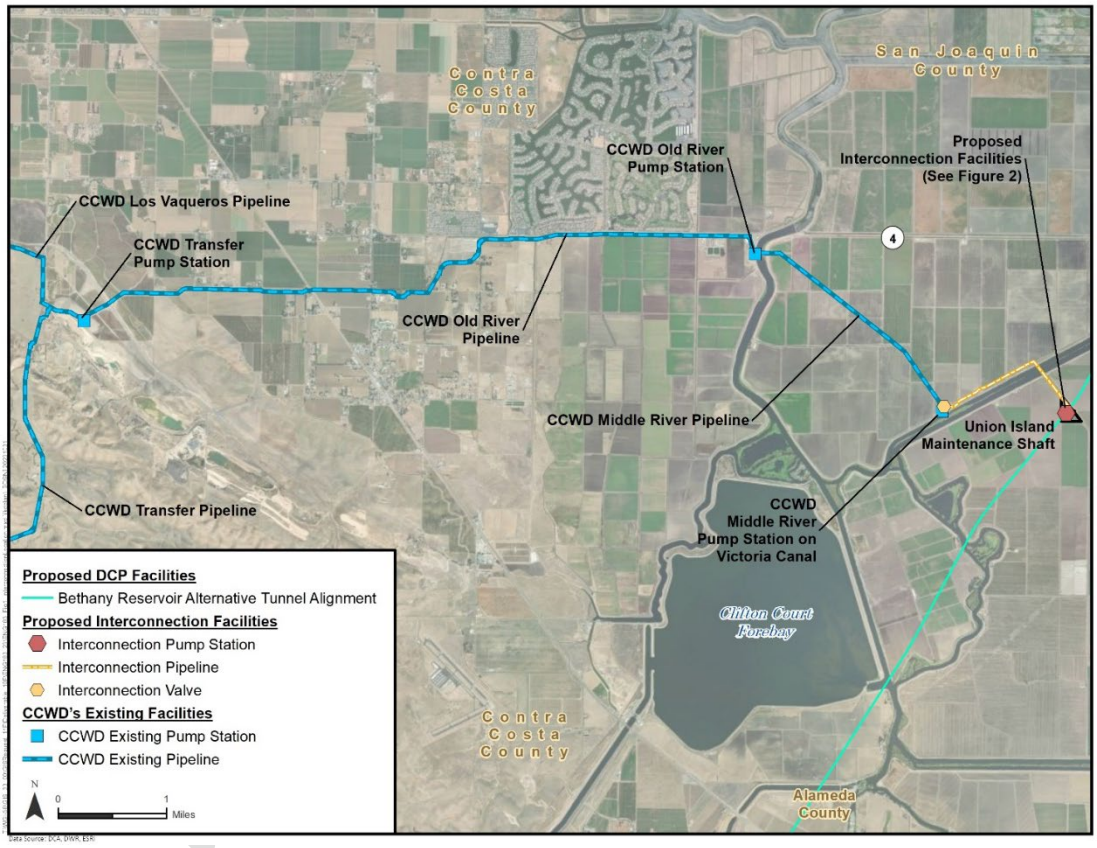
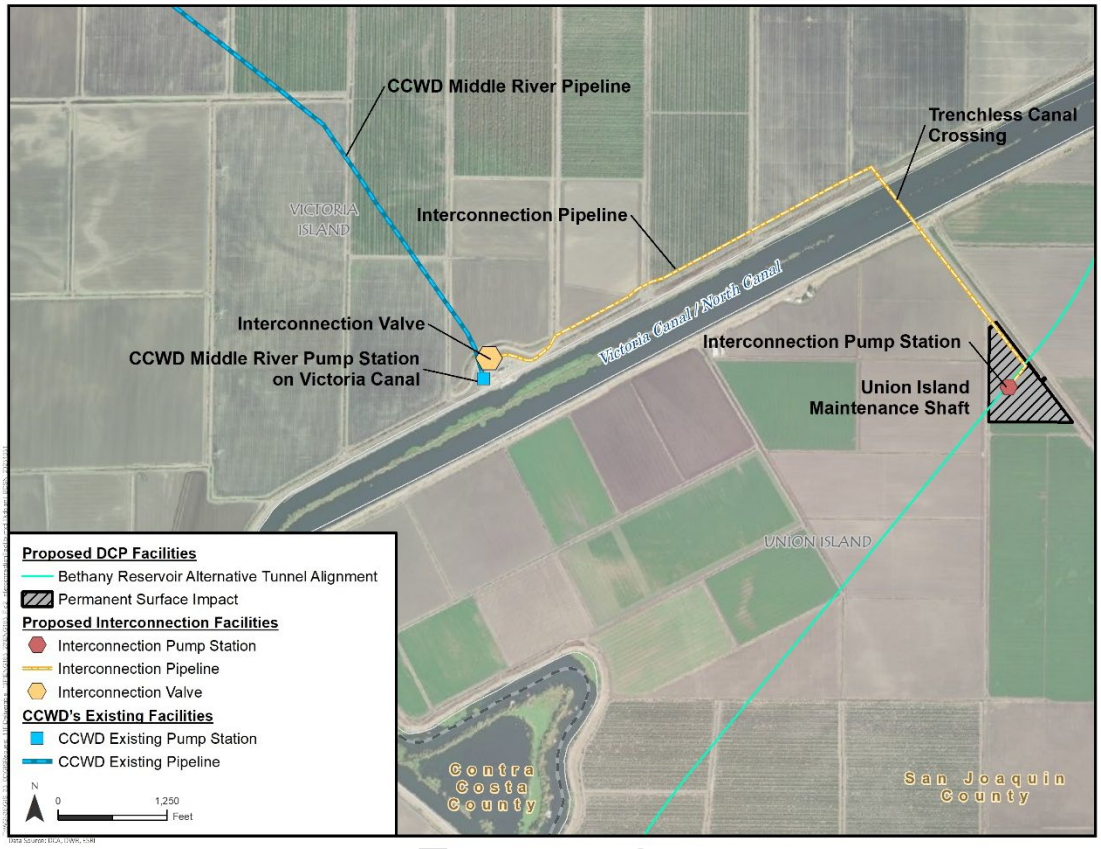


Figure 2 shows the details of the Interconnection Facilities that include the Interconnection Pump Station, Interconnection Pipeline, and Interconnection Valve. While not shown in Figure 2, it is assumed that the Interconnection pipeline would have a permanent easement of 70 feet with an additional 30 feet of temporary construction easement for a total 100 foot wide construction limits along the length of the pipeline. The crossing of the Victoria Canal would be trenchless. A map depicting the footprint disturbance areas is provided in Exhibit A.

FIGURE 2. INTERCONNECTION FACILITIES INCLUDING INTERCONNECTION PUMP STATION, INTERCONNECTION PIPELINE, AND INTERCONNECTION VALVE



Basis for Schematic Design

The schematic design for the proposed Interconnection Pump Station would be based on utilizing submersible vertical turbine pumps, suspended within casings installed within the DCP's proposed Union Island Maintenance Shaft. Identically sized pumps (all duty with no standby) operating in parallel would be used. Each pump would have a rated capacity of 25 cfs per pump at the maximum total dynamic head condition. Each pump would be connected to a variable speed drive (VFD) to facilitate effective operation for the design flow and system head conditions and the wide variation of water level within the DCP tunnel shaft system. Each pump would discharge through a separate vertical discharge pipe and would be connected to its own dedicated flowmeter, pump control valve and discharge isolation valve. Each parallel pump discharge pipe would be 24-inch diameter and connected to a proposed buried pipeline that would then be interconnected to CCWD's existing Transfer Pumping Station system via connection to the Victoria Island Pipeline and Old River Pipeline as shown in Figure 1. A hydro-pneumatic surge tank system would be connected to the proposed buried pipeline near the discharge header of the pump station to protect against damage from hydraulic transient-surge conditions. Isolation butterfly valves within buried vaults would be included at the point of interconnection to CCWD's existing Victoria Island Pipeline and at the buried conveyance pipeline at the proposed pump station site.

Maximum pump discharge pressures were estimated assuming the maximum firm design flow capacity for each design flow option (150, 100 and 50 cfs) would be conveyed through the Interconnection Pipeline and existing conveyance system using a maximum hydraulic gradeline elevation (HGL) boundary condition of 226.0 feet, which was assumed at CCWD's existing Transfer Pumping Station. The hydraulic analysis assumed a Hazen-Williams coefficient of friction "C" value of 118 and minor loss coefficients used for the pipeline headloss calculations which are consistent with friction values used in existing calculations conducted by CCWD for the existing CCWD pipelines. Preliminary pipeline headloss analyses included additional conveyance flows in the existing CCWD pipelines that would be pumped at the existing CCWD pumping facilities when additional flow could be combined with flows pumped from the proposed interconnecting pump station. Maximum combined flow capacities used to determine the maximum pipeline headloss conditions were limited to the maximum design flow capacity established by CCWD for their existing pipelines. Maximum design flow conditions assumed a combined flow of up to 250 cfs through the Victoria Island Pipeline and a combined flow of up to 320 cfs through the Old River Pipeline.

The following sections describe the schematic-level configuration of the Interconnection Facilities including the pump station, pipeline, and Interconnection Valve for each design flow option.

Interconnection Facilities

Interconnection Facility configurations were developed for each of the design flow options (150, 100 and 50 cfs). The Interconnection Facilities include three primary components that include the Interconnection Pump Station, the Interconnection Pipeline, and the Interconnection Valve that provides isolation for connection to the existing Victoria Island Pipeline.

Interconnection Pump Station

The Interconnection Pump Station would be at the Union Island Tunnel Maintenance Shaft, and as such, it is assumed that project activities related to construction of the maintenance shaft would need to be complete prior to starting work on the Interconnection Pump Station. Tunnel boring activities within Reach 4 would also be completed prior to installation of pump station equipment because the submersible pumps would be suspended in the shaft along with facilities located on the shaft pad. Therefore, there would be limited excavation and disturbance related to the Interconnection Pump Station at the Union Island shaft site. The pump station would also include a new electrical building adjacent to the pump station. Haul routes for delivering construction related supplies would primarily utilize Clifton Court Road and Bonetti Road, which are the same routes expected for construction of the Union Island Tunnel Maintenance Shaft site.

The schematic design for the Interconnection Pump Station would be based on utilizing submersible vertical turbine pumps, suspended within casings installed inside the proposed Union Island Maintenance Shaft. Each pump would be connected to a VFD to facilitate effective operation for the design flow range and the predicted water level variation within the DCP tunnel system. Each pump would discharge through a separate vertical 24-inch diameter discharge pipe and be connected to its own dedicated flowmeter, pump control valve and discharge isolation valve that

would be located within a buried vault adjacent to the proposed Union Island Maintenance shaft. Each 24-inch diameter parallel pump discharge pipe would be connected to a proposed buried Interconnection Pipeline that would be routed to and connected to the existing CCWD Victoria Island Pipeline immediately downstream of the CCWD's existing Middle River Intake and Pumping Plant as previously shown in Figure 2. Table 1 summarizes the number of submersible pumps, rated flow at the maximum total dynamic head condition and rated motor horsepower required per pump for each design flow option.

TABLE 1. NUMBER OF DUTY PUMPS AND CORRESPONDING RATED CONDITIONS

Maximum Project Design Flow Capacity (cfs)	Number of Duty Pumps Required	Total Dynamic Head Condition (feet)	Rated Motor Horsepower per Pump (HP)
50	2	453	1,750
100	4	455	1,750
150	6	451	1,750

A hydro-pneumatic surge tank system, located at the shaft site, would be connected to the proposed Interconnection Pipeline to protect the pipeline from damage due to hydraulic transient-surge conditions created by operation of the Interconnection Pump Station. Isolation butterfly valves within buried vaults would be included at the pump discharge valve and meter vault within the proposed Union Island Shaft site and at the Interconnection Pipeline's point of connection to the existing CCWD Victoria Island Pipeline.

The proposed pump station would include a separate electrical building which would be located adjacent to the proposed Union Island shaft and would house the electrical switchgear, VFDs, controls, and an air compressor system for the hydro-pneumatic surge tank(s). Electrical transformers and related equipment yard for permanent power supply would be located next to the electrical building. It is assumed that the power supply would be a new connection to the existing WAPA overhead line running adjacent to the existing CCWD Middle River Intake and Pumping Plant.

Schematic drawings for the Interconnection Pump Station are provided in Exhibit B. The drawings illustrate the overall plan view of the interconnecting pump station facilities located on the raised pad at the Union Island shaft, plan view of the flowmeter and isolation valve vault, and typical section view of the pump and connecting discharge piping for each design flow option.

The construction features of the Interconnection Pump Station are summarized as follows:

Pumping Facility:

- Includes new submersible vertical turbine pumps (all duty pumps with no standby) installed within the proposed Union Island shaft. Pumps would be of identical size and construction each with a rated capacity of 25 cfs. Number of pumps required for each design flow capacity option would be as indicated in Table 1. Based on preliminary evaluation of system hydraulics, each pump would be equipped with submersible motors. Motor rated horsepower for each design flow option would be as shown in Table 1. All pumps would be connected to VFDs located within the proposed electrical building (refer to schematic drawings). Each pump would be installed within a suspended well casing pipe (about 36-inch diameter, installed within the shaft). Well casings would be supported by the 90-degree discharge head assemblies mounted

on top of the Union Island Shaft as shown on the schematic drawings. Pumps would draw water from the wet well at the invert of its well casing pipe at the approximate elevation of -75.00 feet. The well casings would also serve as shrouds for cooling the submersible pump motors when in operation. A structural steel support system would be required to stabilize the well casings within the shaft. Pumps would be arranged as shown in the schematic drawings. Each pump discharge head assembly would include a combination air and vacuum relief valve for the annular space between the well casing and the column discharge pipe and another combination air release and vacuum valve (designed for use with vertical turbine pumps) for each 24-inch discharge pipe (typical each pump). Discharge heads would be mounted on a foundation on the shaft cover. The foundation would include a sole plate and embedded anchor bolts. Discharge heads would be removable for removing/installing each well pump.

Pump Discharge Valves and Meters:

- A pump discharge valve and meter vault would be located adjacent to the Union Island shaft as shown on the schematic drawings. The vault would be buried with an exposed concrete cover. The vault cover would include removable panels to access valves, piping and meters below. The vault would include a ventilation system, lighting and receptacles for operations and maintenance. Access to the vault interior would be through hatches in the vault cover, ladders to a grated platform, and ladders from the platform to the finished floor between each parallel piping train (as shown in the schematic drawings).
- Flowmeters and valves within the vault for each pump discharge assembly:
  - Silent check valves or Cla-Valve style globe type pressure sustaining pump control valves, 24-inch in size, diaphragm actuated pressure sustaining type, with solenoid operated pilot control system, would be selected during future design phases of the proposed project.
  - 24-inch magnetic flowmeters. Meters would be rated for the required pressure and flow rates.
  - Rubber seated isolation butterfly valves with electric motor actuator would be located downstream of the meter and pump check valves.
  - Combination air-release and vacuum valves (as needed and described above).
  - Pipe support systems would be steel saddle type supports with concrete piers located as shown on the schematic drawings.
  - Dismantling joints would be provided in each piping assembly to facilitate installation and removal of components.

Hydro-pneumatic Surge Tank and Valves:

- Above ground hydro-pneumatic surge tank with ring girder supports (size and configuration as shown on schematic drawings). Size shown is approximate and would be confirmed during the design phase.
- Surge Tank isolation butterfly valve with manual actuator located above ground for isolating the hydro-pneumatic tank from the Interconnection Pipeline.

  - A skid-mounted duplex air compressor (25 HP each compressor) with air receiver tank and control panel for hydro-pneumatic surge tank operation would be located inside the electrical building.

Electrical Building:

- A new electrical building would be located adjacent to the Union Island shaft as shown on the schematic drawings. The electrical building was estimated to be block wall construction with mansard type roof. The building would have double door access with removable transom on the east side of the building for moving the electrical equipment into and out of the building. An additional door would be included on the west side of the building to access the HVAC equipment yard. The interior space of the electrical building would be cooled by direct expansion (DX) air handlers located along the exterior of the building. The number of DX air handler units (duty plus standby) for each pump station design flow option is shown on the schematic drawings. A block screening wall would be included around the HVAC mechanical equipment yard with exterior door access for maintenance.

Electrical Features:

- Medium voltage (4160 V, low side) power supply transformers included for each of the pump station's design flow options:
  - two, 10 MVA transformers for the 150 cfs design flow option
  - two, 7.5 MVA transformers for the 100 cfs design flow option
  - two, 3.75 MVA transformers for the 50 cfs design flow option
  - two, low voltage transformers (750 kVA) would be included for all design flow options.
- A new electrical power drop from the existing WAPA transmission line feeding CCWD's Middle River Intake and Pumping Plant would be required for permanent power supply for the proposed Interconnection Pump Station.
- Electrical and mechanical equipment would include:
  - 1,750 horsepower (HP) VFDs:
    - six, VFDs for the 150 cfs design flow option
    - four, VFDs for the 100 cfs design flow option
    - two, VFDs for the 50 cfs design flow option
  - Skid mounted duplex air compressor (25 HP each compressor) with air receiver tank and control panel for hydro-pneumatic surge tank operation.
  - 4160 V switchgear.
  - 480 V motor control center (MCC) and 220/110V low voltage power panel(s).
  - PLC cabinet with control station.
  - Communications cabinet.

Communications:

- A communications cabinet would be located within the Electrical Building. Additional direction would be required during detailed design to determine how CCWD would like to accomplish communications with their operations.

Interconnection Pipeline

The Interconnection Pipeline route would leave the Union Island Tunnel Maintenance Shaft site and proceed generally north on Bonetti Road and cross under the Victoria Canal. After the undercrossing, the pipeline would turn in a generally west direction and proceed along farm roads outside the toe of the levee road to the connection point with the Victoria Island Pipeline at a location just north of the Middle River Intake and Pumping Plant. The connection to the Victoria Island Pipeline would be on the discharge side (immediately downstream) of the Middle River Pumping Plant and an interconnection isolation valve would be provided on the Interconnection Pipeline prior to connecting to the existing pipeline.

A total of 7,500 feet of pipeline construction to the north and south of Victoria Canal would be completed through open cut and backfill methods. It is assumed the pipeline would be buried at least 5 feet below surface elevation.

Approximately 900 linear feet of pipeline beneath Victoria Canal would be constructed using trenchless microtunneling techniques (similar to pipejack excavation) and would be accomplished with a microtunneling boring machine (MTBM). Microtunneling activities would be completed by lowering the MTBM into a shaft or excavation at the launch site to the desired depth below ground surface, prior to tunneling beneath Victoria Canal. The MTBM may require use of small volumes of bentonite slurry to lubricate the MTBM. There would be a launch and retrieval shaft (or excavation) site located on either side of Victoria Canal. These sites would be approximately 35 feet by 50 feet and would occur within the proposed 100 foot construction limit. The top of the pipeline under Victoria Canal would be at least 12 feet below the bottom of Victoria Canal and the tunnel launch and retrieval shafts would be located approximately 40 feet below ground surface outside of the canal banks.

Typical construction means and methods would ensure stability of the tunnel and Victoria Canal during tunneling. These construction means and methods include regularly monitoring pressure in the tunnel, monitoring the Victoria Canal during tunneling. If bentonite slurry is used, the viscosity and pressure would be controlled to avoid breakout, Also, slurry controls would trigger alarms so there is a quick shut off provision in the unlikely event of substantial pressure changes. Microtunneling would take approximately 4 weeks and require nighttime construction activities because the tunneling would be continuous since it would be difficult to restart the boring machine after being shut down due to the geological conditions. To maintain stability of the tunnel at the face of the microtunneling boring machine and to avoid “freezing” of the microtunneling boring machine, the tunneling activities must occur for 24 hours per day and 7 days a week for approximately two or three weeks. Major activities would occur between sunrise to sunset. Between sunset to sunrise, the tunnel boring machine would continue to be operated and pipeline segments would be mounted within the tunneling shaft on Union Island and removed soil material would be placed near the portal for subsequent transport to the Union Island tunnel shaft during the daytime hours. Noise and light shields would be placed around the activities at the shaft site. Downcast lights would be used at the shaft site during construction. In addition, a dark colored tent (e.g., dark blue or black), or other barrier, would be placed around the shaft to minimize light distribution during nighttime construction.

Excavated materials from microtunnel construction, launch and retrieval shafts, and remaining soils from cut and backfill methods would be reused onsite or taken to the Union Island tunnel shaft to be incorporated into the shaft pad.

Dewatering may be required during construction of the pipeline. This water would be collected, treated and reused onsite, using the same facilities as those for the Union Island Shaft site or discharged in Union Island or Victoria Island drains. Volumes of dewatering water have not been determined at this time. Geotechnical investigations would be completed prior to construction to determine the dewatering requirements and estimated volumes.

Access for the construction of the pipeline on Union Island and the Victoria Canal undercrossing would utilize Clifton Court Road and Bonetti Road, identical to access to the main tunnel shaft. Access for the pipeline located to the north of Victoria Canal would use Old Highway 4 and State Route 4 and other existing roads, per CCWD agreements with Victoria Island Farms. This includes limited access by trucks with three or more axles to State Route 4 either across the Old River Bridge or Middle River Bridge.

Table 2 summarizes approximate selected sizes of the Interconnection Pipeline for each project design flow option.

TABLE 2. INTERCONNECTION PIPELINE NOMINAL DIAMETERS

Maximum Project Design Flow Capacity (cfs)	Conveyance Pipeline Nominal Diameter (in)
150	66
100	54
50	42

The construction features of the Interconnection Pipeline is summarized as follows:

Interconnection Pipeline:

- Interconnection pipeline consisting of new 1.6-mile welded steel pipe and fittings in accordance with AWWA C200, sized as described in Table 2 for each design flow option.
- Welded steel pipe and fittings connecting the above ground hydro-pneumatic surge tank to the new conveyance pipeline at the Interconnection Pump Station site.
- Interconnection pipeline would be isolated at each end with isolation valves located in the pump discharge valve and meter vault and then at the other end with a buried valve vault at the connection to the CCWD Victoria Island Pipeline, referred to as the Interconnection Valve.
- Pipeline appurtenance facilities such as air valves, blow offs, and access manways would be included with the pipeline. The location of these appurtenances would be determined during design based on the profile and special crossing requirements of the pipeline.
- Major feature crossings for Interconnection Pipeline include:
  - Victoria Canal (trenchless crossing assumed)
  - Irrigation and drainage pipelines on the north side of Victoria Canal (assumed that restoration would be provided but special crossing construction would not be required)

Interconnection Valve

The Interconnection Valve would be located in a buried vault on the Interconnection Pipeline just prior to connecting to the Victoria Island Pipeline. The valve would be electrically actuated and located in a buried concrete vault with exposed concrete top deck. Access to the vault interior would be through hatches in the vault top deck with ladders to the floor level. The top deck would also include a removable equipment cover such that the valve could be removed for maintenance or replacement.

The construction features of the Interconnection Valve is summarized as follows:

Interconnection Pipeline Isolation Valves:

- Butterfly valve with electric motor actuators located within the buried Interconnection Valve vault, sized to match the Interconnection Pipeline as shown in Table 2 for each design flow option. A dismantling joint would be provided in the vault to allow removal of the valve for maintenance.
- Length, width and depth of the cast in place buried Interconnection valve vault would be approximately 11.5-feet x 15.5-feet x 12.0-feet.

Delta Conveyance Project Construction Features

The following facility features would be assumed to be part of the DCP, as described in "Delta Conveyance Final Draft Engineering Project Report – Bethany Reservoir Alternative" Narrative Report, including Appendix A.

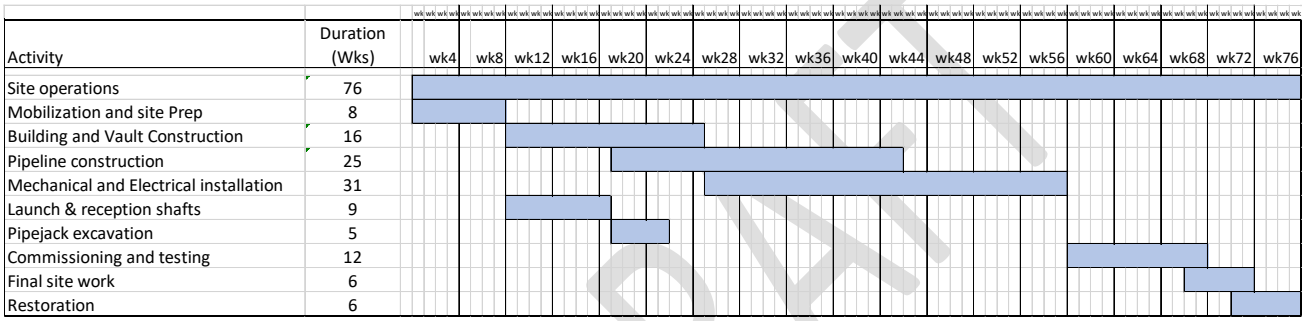
- Land acquisition for Interconnection Pump Station at the Union Island shaft site.
- Off-site DCP environmental mitigation for Interconnection Pump Station
- DCP main tunnel and shaft
- Parking area at the Union Island shaft site.
- Site clearing and grubbing at the Union Island shaft site.
- Site grading for Union Island shaft and all associated perimeter drainage and desilting basin.
- Site restoration not directly related to finish grading of Interconnection Pump Station project components.
- Gravel road and gravel surface at the Union Island shaft site.
- 100 feet by 150 feet maintenance staging area at the Union Island shaft site.
- Pads for generator, fuel containment, and trailers at the Union Island shaft site.
- Area reserved for maintenance activities and office trailers at the Union Island shaft site.
- 40 feet by 40 feet concrete pad for mobile crane located on the raised pad next to the Union Island shaft.
- Site fencing and gates at the Union Island shaft site.
- Removal of all temporary facilities associated with the main tunnel and Union Island shaft construction.

Estimated Construction Duration

Estimated Construction Duration

An estimated construction duration was developed to better understand how the interrelation of the Interconnection Facilities might align with the overall construction of the DCP. The overall construction duration for the Interconnection Facilities is shown in Figure 3 and the minimum time required for construction is approximately 18 months for project design capacities ranging from 50 to 150 cfs.

FIGURE 3. ESTIMATED CONSTRUCTION DURATION



Prior to construction of the interconnection facility, DWR would secure fee title or permanent easements and necessary permits. It is anticipated that in addition to the permanent 70-foot easement for the interconnection pipeline a temporary construction easement of 30 feet would be needed, for a total potential area of temporary of disturbance of 100 feet wide along the pipeline during construction. Once construction is complete, all temporarily disturbed areas would be restored to pre-project conditions.

Since the Interconnection Pump Station would be located on top of the Union Island Tunnel Maintenance Shaft, it is assumed that the construction of this shaft would need to be complete and the Tunnel Boring Machine (TBM), including trailing gear, in Reach 4 would need to have passed through this maintenance shaft prior to starting work on the Interconnection Pump Station. After the maintenance shaft is constructed, the submersible pumps would be installed inside of the maintenance shaft and other facilities would be located on the shaft pad surrounding the shaft. The pumps would need to be installed after the liners were installed in the Union Island shaft. It is expected that only a small amount of work would be required in the main tunnel itself since the submersible pumps would be installed above the crown of the tunnel. Consequently, some coordination with the ongoing use of the tunnel to support tunnel construction would be required. The tunneling contractor may also need to retain limited access to the Union Island Tunnel Maintenance Shaft for emergency access and ventilation provisions. Suitable partitions/barriers would be needed to limit interference between the construction of the Interconnection Pump Station and the Reach 4 Tunnel. Work on the Interconnection Pipeline and Interconnection Valve could be completed at any time but construction sequencing and scheduling will likely have to be coordinated between multiple contractors. The overall conclusion of estimating the construction duration for the Interconnection Facilities suggests that it is feasible to assume construction of the Interconnection Facilities could be completed and overlap the end of the Reach 4 Tunnel

construction and still provide enough time for startup testing and commissioning such that the Interconnection Facilities could be brought online concurrently with the operation of the DCP.

Quantities

Quantities supporting the EIR air quality impact assessment are shown for the for the 150 cfs project design capacity in Tables 3, 4, and 5.

TABLE 3. CCWD INTERCONNECTION FACILITY QUANTITIES (SUPPORTING DATA FOR THE EIR IMPACT ANALYSES)

Item	Unit	150 cfs Project Design Capacity
Submersible Pump and Assembly	Horsepower	10,500
Pump Control Equipment	Pipe Diameter/Number of Pumps	396
Pump Control Vault	Bank Cubic Yards	999
Electrical Building	Square Feet	2775
Electrical Equipment	Square Feet	2775
Power Supply Distribution	Linear Feet	8448
Power Supply Transformers	Kilovolt-Amps	21500
Electrical Building HVAC Units	Each	3
Pipeline along Roads	Linear Feet	2430
Pipeline along Fields and Tracks	Linear Feet	5122
Tie-in Connection/Vaults	Pipe Diameter/Number of Vaults	132
Tie-in Connection/Valves	Pipe Diameter/Number of Valves	132
Surge Tanks and Air Equipment	Pipe Diameter/Number of Surge Tanks	66
Trenchless Canal Crossing	Linear Feet	896.4

TABLE 4. CCWD INTERCONNECTION FACILITY CONSTRUCTION ON-ROAD EQUIPMENT FOR 150 CFS (SUPPORTING DATA FOR THE EIR IMPACT ANALYSES)

Phase	Working Days	Start date	End Date	Equipment Category	Equipment/Vehicle	Hours/ day	Total Hours
Mobilization and Site Preparation	40	Week 1	Week 9	Off-Highway Truck	Truck, Flatbed, 4T, Hwy	21.6	866
Building and Vault Construction	80	Week 9	Week 25	Dumpers	CAT 730 30T,23 CY Articulated End Dump	1.9	153
Pipeline Construction	125	Week 18	Week 42	Dumpers	Truck, End Dump, 10-13cy, Hwy	6.5	811
Launch & Reception Shafts	45	Week 9	Week 18	Dumpers	Truck, End Dump, 10-13cy, Hwy	5.0	224
Pipejack Excavation	25	Week 18	Week 23	Off-Highway Truck	Trucking	4.6	115
Final Site Work	30	Week 67	Week 73	Off-Highway Truck	Truck, Flatbed, 4T, Hwy	11.0	330
Final Site Work	30	Week 67	Week 73	Dumpers	Truck & Bottom Dump, 25cy, 30T	9.4	283
Final Site Work	30	Week 67	Week 73	Dumpers	Truck, End Dump, 10-13cy, Hwy	11.0	329
Restoration	30	Week 70	Week 76	Dumpers	Cat 6 mgal w/ CAT 725 Tractor, 320hp	1.0	30

TABLE 5. CCWD INTERCONNECTION FACILITY CONSTRUCTION OFFROAD EQUIPMENT FOR 150 CFS (SUPPORTING DATA FOR THE EIR IMPACT ANALYSES)

Phase	Working Days	Start Date	End Date	Equipment Category	Equipment/ Vehicle	Hours/ day	Total Hours
Mobilization and Site Preparation	40	Week 10	Week 9	Off-Highway Tractor	Farm Tractor, All Wheel Drive, 115HP	21.6	866
Mobilization and Site Preparation	40	Week 10	Week 9	Rubber Tired Loaders	CAT LOADER/HOE 416 E	21.6	866
Building and Vault Construction	80	Week 9	Week 25	Excavator	CAT 329F Excavator, 2.02 CY, 239HP	0.6	51
Building and Vault Construction	80	Week 9	Week 25	Crawler Tractor	CAT D6T LGPDozer w winch	0.6	51
Building and Vault Construction	80	Week 9	Week 25	Crawler Tractor	CAT D3K2 LGP, Dozer	0.1	10
Building and Vault Construction	80	Week 9	Week 25	Grader	CAT 14 M	0.2	13
Building and Vault Construction	80	Week 9	Week 25	Rollers	Compactor, Trench Roller, Vib 32 inch wide	0.9	71
Building and Vault Construction	80	Week 9	Week 25	Rollers	CAT CS-64, Roller, 13.3 tn, 131HP	0.1	10
Building and Vault Construction	80	Week 9	Week 25	Rubber Tired Loaders	Case 590 SupN Loader/Hoe, 110 hp	0.2	13
Building and Vault Construction	80	Week 9	Week 25	Rubber Tired Loaders	CAT 950 K Wheel Loader	2.0	163
Building and Vault Construction	80	Week 9	Week 25	Off-Highway Truck	Conc Pump, Trlr Mtd, 100 cy/hr, 181hp	1.9	155
Building and Vault Construction	80	Week 9	Week 25	Crane	Grove RT Crane 55T, 247 hp	8.6	690
Building and Vault Construction	80	Week 9	Week 25	Crane	Manitowoc MLC165 182T, 275 ft Boom, 310HP	3.2	255
Building and Vault Construction	80	Week 9	Week 25	Skid Loaders	Bobcat S630 Skid Steer Loader	1.4	109
Building and Vault Construction	80	Week 9	Week 25	Generator	Portable, 100 Kw, Diesel 158hp	1.9	155
Building and Vault Construction	80	Week 9	Week 25	Generator	Portable, 20 Kw, Diesel, 36HP	1.3	102
Building and Vault Construction	80	Week 9	Week 25	Air Compressor	Air Compressor 185 cfm	1.6	127

Phase	Working Days	Start Date	End Date	Equipment Category	Equipment/ Vehicle	Hours/ day	Total Hours
Building and Vault Construction	80	Week 9	Week 25	Air Compressor	Air Compressor 900 cfm	1.9	155
Building and Vault Construction	80	Week 9	Week 25	Air Compressor	Air Compressor 375 cfm	1.3	102
Building and Vault Construction	80	Week 9	Week 25	Pumps	Water Pump, 4 inch Diesel, Submersible	0.6	51
Building and Vault Construction	80	Week 9	Week 25	Plate Compactors	Compactor, Plate, 22 inch wide by 35 inch	0.9	71
Building and Vault Construction	80	Week 9	Week 25	Welder	400A Diesel Welder, Trailer Mounted	3.2	257
Building and Vault Construction	80	Week 9	Week 25	Other Construction Equipment	Pile Vibro Driver/Extractor V20B	1.3	102
Building and Vault Construction	80	Week 9	Week 25	Other Construction Equipment	Bidwell Bridge Deck Screed-Finish, 65 HP	1.8	140
Pipeline Construction	125	Week 18	Week 42	Excavator	CAT 329F Excavator, 2.02 CY, 239HP	4.1	511
Pipeline Construction	125	Week 18	Week 42	Crawler Tractor	CAT D3K2 LGP, Dozer	2.4	300
Pipeline Construction	125	Week 18	Week 42	Rollers	Compactor, Trench Roller, Vib 32 inch wide	0.6	75
Pipeline Construction	125	Week 18	Week 42	Rubber Tired Loaders	Case 590 SupN Loader/Hoe, 110 hp	0.6	75
Pipeline Construction	125	Week 18	Week 42	Rubber Tired Loaders	CAT LOADER/HOE 416 E	6.6	829
Pipeline Construction	125	Week 18	Week 42	Rubber Tired Loaders	CAT 950 K Wheel Loader	2.4	300
Pipeline Construction	125	Week 18	Week 42	Crane	Grove RT Crane 55T, 247 hp	44.1	5,518
Pipeline Construction	125	Week 18	Week 42	Crane	Manitowoc MLC165 182T, 275 ft Boom, 310HP	30.0	3,745
Pipeline Construction	125	Week 18	Week 42	Generator	Portable, 100 Kw, Diesel 158hp	1.2	150
Pipeline Construction	125	Week 18	Week 42	Generator	Portable, 45 Kw, Diesel 85hp	57.1	7,141
Pipeline Construction	125	Week 18	Week 42	Generator	Light Plant, 4 lite, 1000w, Tower/Mast	44.1	5,512
Pipeline Construction	125	Week 18	Week 42	Air Compressor	Air Compressor 185 cfm	6.0	745
Pipeline Construction	125	Week 18	Week 42	Plate Compactors	Compactor, Plate, 22 inch wide by 35 inches	3.0	375
Mechanical and Electrical Installation	155	Week 25	Week 55	Crawler Tractor	CAT D3K2 LGP, Dozer	2.3	350

Phase	Working Days	Start Date	End Date	Equipment Category	Equipment/ Vehicle	Hours/ day	Total Hours
Mechanical and Electrical Installation	155	Week 25	Week 55	Rubber Tired Loaders	CAT LOADER/HOE 416 E	9.0	1,400
Mechanical and Electrical Installation	155	Week 25	Week 55	Crane	Grove RT Crane 55T, 247 hp	10.0	1,548
Mechanical and Electrical Installation	155	Week 25	Week 55	Crane	Manitowoc MLC165 182T, 275 ft Boom, 310HP	4.5	690
Mechanical and Electrical Installation	155	Week 25	Week 55	Generator	Portable, 45 Kw, Diesel 85hp	7.2	1,119
Mechanical and Electrical Installation	155	Week 25	Week 55	Generator	Light Plant, 4 lite, 1000w, Tower/Mast	5.5	858
Mechanical and Electrical Installation	155	Week 25	Week 55	Air Compressor	Air Compressor 185 cfm	4.5	690
Mechanical and Electrical Installation	155	Week 25	Week 55	Forklifts	Fork Lift, 8000LB, RT, 4 by 4	4.2	650
Launch & Reception Shafts	45	Week 9	Week 18	Rubber Tired Loaders	Case 590 SupN Loader/Hoe, 110 hp	2.5	112
Launch & Reception Shafts	45	Week 9	Week 18	Off-Highway Truck	Conc Pump, Trk Mtd, 117 cy/hr, 210hp	1.3	58
Launch & Reception Shafts	45	Week 9	Week 18	Crane	Grove RT Crane 55T, 247 hp	9.3	417
Launch & Reception Shafts	45	Week 9	Week 18	Crane	Manitowoc MLC165 182T, 275 ft Boom, 310HP	14.3	645
Launch & Reception Shafts	45	Week 9	Week 18	Skid Loaders	Bobcat S630 Skid Steer Loader	1.2	56
Launch & Reception Shafts	45	Week 9	Week 18	Generator	Portable, 100 Kw, Diesel 158hp	2.6	117
Launch & Reception Shafts	45	Week 9	Week 18	Generator	Portable, 20 Kw, Diesel, 36HP	6.7	300
Launch & Reception Shafts	45	Week 9	Week 18	Air Compressor	Air Compressor 185 cfm	2.5	112
Launch & Reception Shafts	45	Week 9	Week 18	Air Compressor	Air Compressor 900 cfm	5.2	233
Launch & Reception Shafts	45	Week 9	Week 18	Pumps	Water Pump, 4 inch Diesel, Submersible	0.5	22

Phase	Working Days	Start Date	End Date	Equipment Category	Equipment/ Vehicle	Hours/ day	Total Hours
Launch & Reception Shafts	45	Week 9	Week 18	Welder	400A Diesel Welder, Trailer Mounted	9.3	417
Launch & Reception Shafts	45	Week 9	Week 18	Other Construction Equipment	Pile Vibro Driver/Extractor V20B	6.7	300
Pipejack Excavation	25	Week 18	Week 23	Rubber Tired Loaders	Case 590 SupN Loader/Hoe, 110 hp	0.8	20
Pipejack Excavation	25	Week 18	Week 23	Rubber Tired Loaders	CAT 980 FEL 8 CY	4.6	115
Pipejack Excavation	25	Week 18	Week 23	Crane	Hydraulic Crane 9 Ton	6.0	150
Pipejack Excavation	25	Week 18	Week 23	Generator	Generator Set 500 KW	3.6	91
Pipejack Excavation	25	Week 18	Week 23	Generator	150 KW Diesel Generator	5.4	136
Pipejack Excavation	25	Week 18	Week 23	Air Compressor	1600 CFM Compressor Diesel	0.4	10
Pipejack Excavation	25	Week 18	Week 23	Welder	Electric Welder 400 AMP	7.3	182
Final Site Work	30	Week 67	Week 73	Grader	CAT 14 M	3.1	94
Final Site Work	30	Week 67	Week 73	Rollers	CAT CS-64, Roller, 13.3 tn, 131HP	3.1	94
Final Site Work	30	Week 67	Week 73	Rollers	Asphalt Rolller, 2 Drum 15tn by 84 inch, 137hp	1.4	41
Final Site Work	30	Week 67	Week 73	Rollers	Asphalt Roller, 17.6 Tn Pneumatic,133hp	1.4	41
Final Site Work	30	Week 67	Week 73	Rubber Tired Loaders	Case 590 SupN Loader/Hoe, 110 hp	43.9	1,316
Final Site Work	30	Week 67	Week 73	Rubber Tired Loaders	CAT LOADER/HOE 416 E	30.2	907
Final Site Work	30	Week 67	Week 73	Rubber Tired Loaders	CAT 950 K Wheel Loader	43.9	1,316
Final Site Work	30	Week 67	Week 73	Rubber Tired Loaders	CAT 962 K Wheel Loader	3.1	94
Final Site Work	30	Week 67	Week 73	Skid Loaders	Bobcat S630 Skid Steer Loader	57.7	1,732
Final Site Work	30	Week 67	Week 73	Pumps	Water Pump, 4 inch Diesel, Submersible	0.6	19
Final Site Work	30	Week 67	Week 73	Plate Compactors	Compactor, Plate, 22 inch wide by 35 inches	21.9	658
Final Site Work	30	Week 67	Week 73	Paver	Asphalt Paver, 10-19 Ft Wide, Cat 225 HP	1.4	41
Restoration	30	Week 70	Week 76	Off-Highway Tractor	Farm Tractor, All Wheel Drive, 115HP	0.2	7
Restoration	30	Week 70	Week 76	Off-Highway Tractor	Farm Tractor, All Wheel Drive, 285 HP	1.4	43
Restoration	30	Week 70	Week 76	Crawler Tractor	CAT D6T LGPDozer w winch	1.2	35

Phase	Working Days	Start Date	End Date	Equipment Category	Equipment/ Vehicle	Hours/ day	Total Hours
Restoration	30	Week 70	Week 76	Crawler Tractor	CAT D9T, Dozer w ripper	1.2	35
Restoration	30	Week 70	Week 76	Grader	CAT Grader 12H	0.6	17
Restoration	30	Week 70	Week 76	Rubber Tired Loaders	CAT 966 M Wheel Loader	0.3	9

Appendix A-1 Exhibit A: Proposed Interconnection Facilities and Delta Conveyance Project Facilities

VICTORIA ISLAND

Interconnection Pipeline

Trenchless Canal Crossing

Interconnection Valve

Bonetti Rd

Interconnection Pump Station

Union Island Maintenance Shaft

UNION ISLAND

Old River

Proposed DCP Facilities
- Road Improvement
- Runoff Discharge Pipe
- Tunnel
- Fuel Storage
- Peat Storage
- Shaft
- Shaft Pad
- Water Treatment and Storage Tanks

Proposed Interconnection Facilities
- Interconnection Valve
- Interconnection Pump Station
- Interconnection Pipeline

Constructability
- Permanent Subsurface Impact
- Permanent Surface Impact
- Temporary Surface Impact

0 500 1,000
Feet

N

Source: DCA, DWR, CCWD, ESRI Basemap Aerial Imagery

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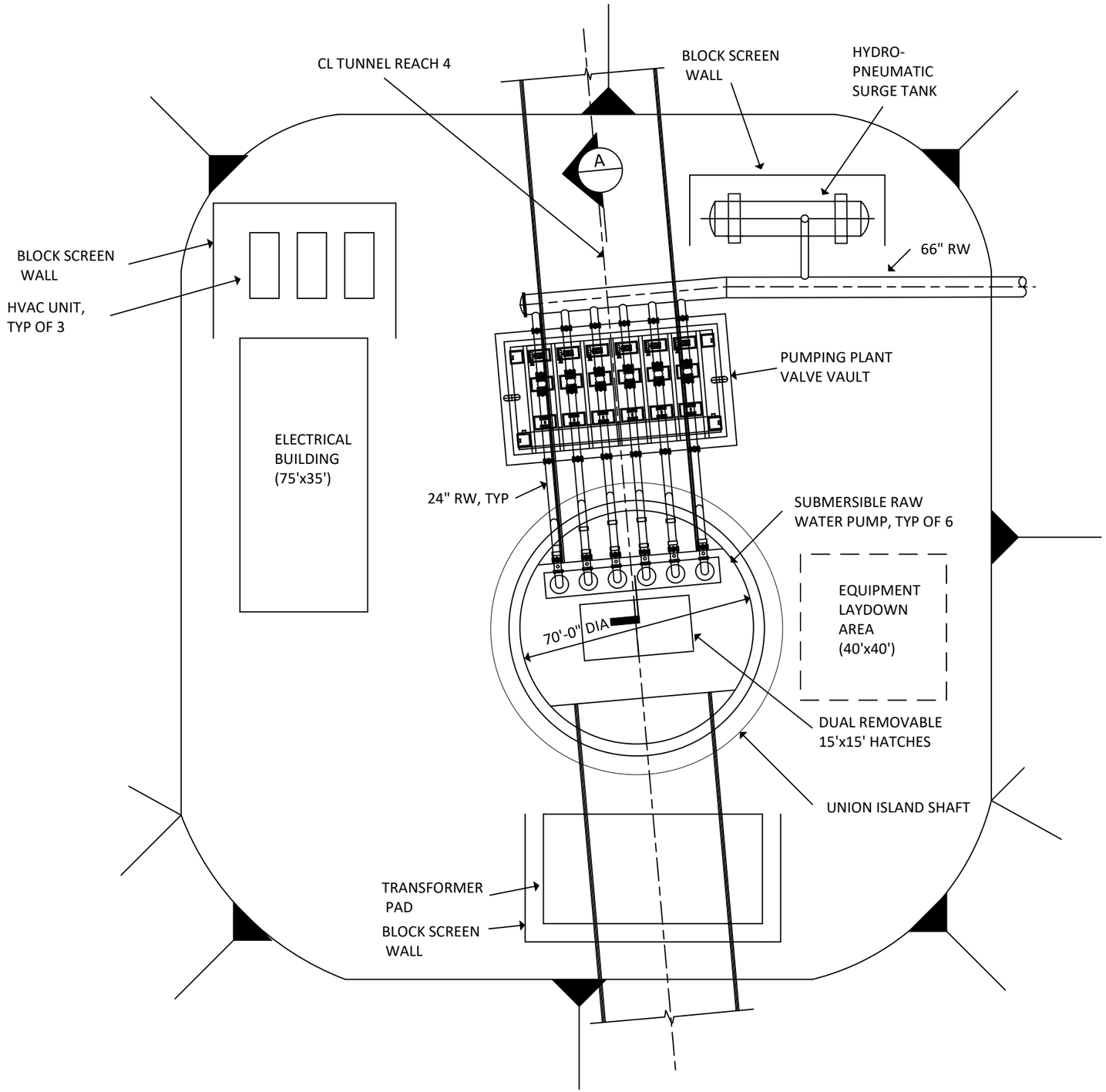
This map is a scaled representation of the GIS data and only shows major facilities. (November 2023)

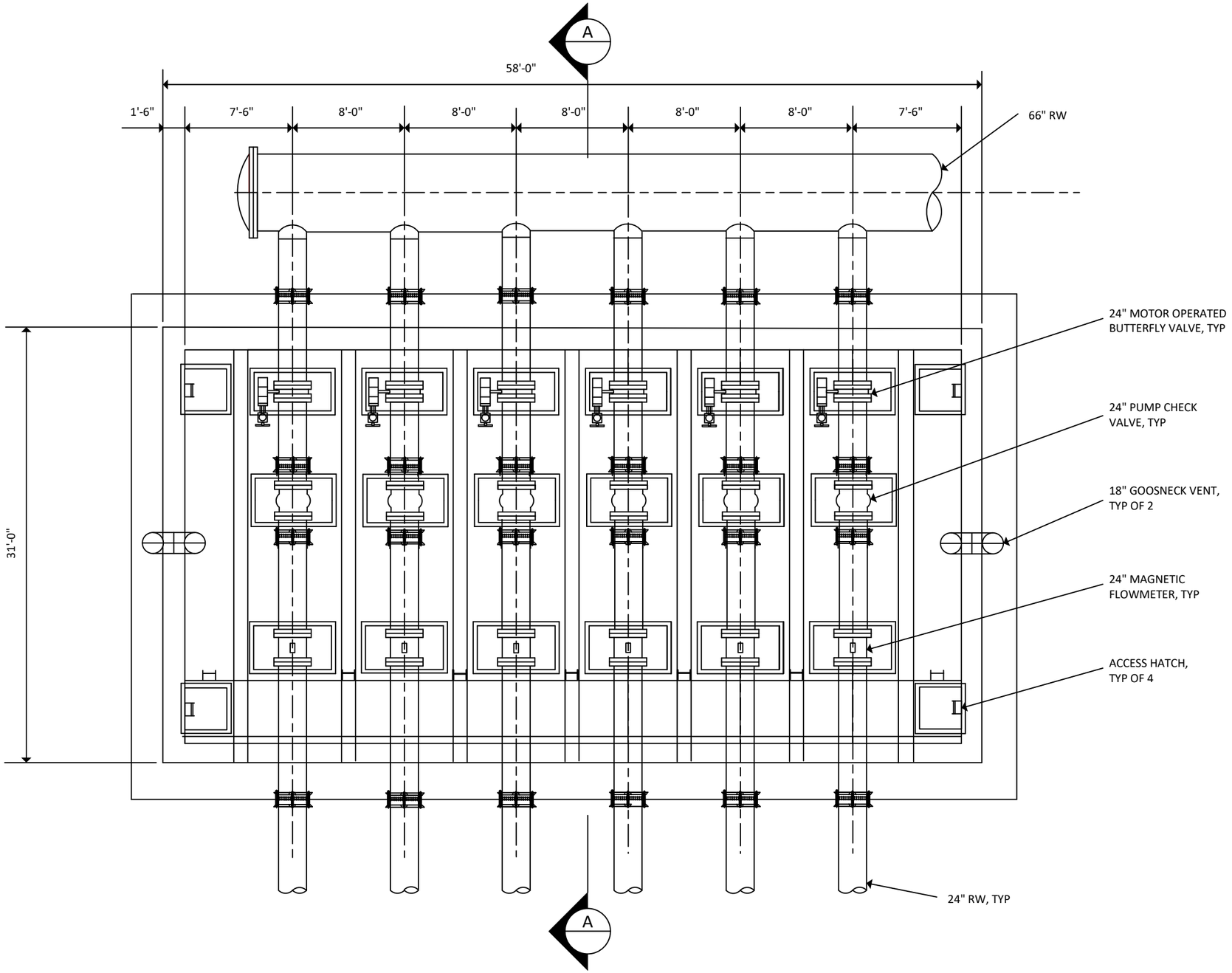
Exhibit A: Proposed Interconnection Facilities and Delta Conveyance Project Facilities

Appendix A-1 Exhibit B: Union Island Interconnection Pump Station Schematic Drawings



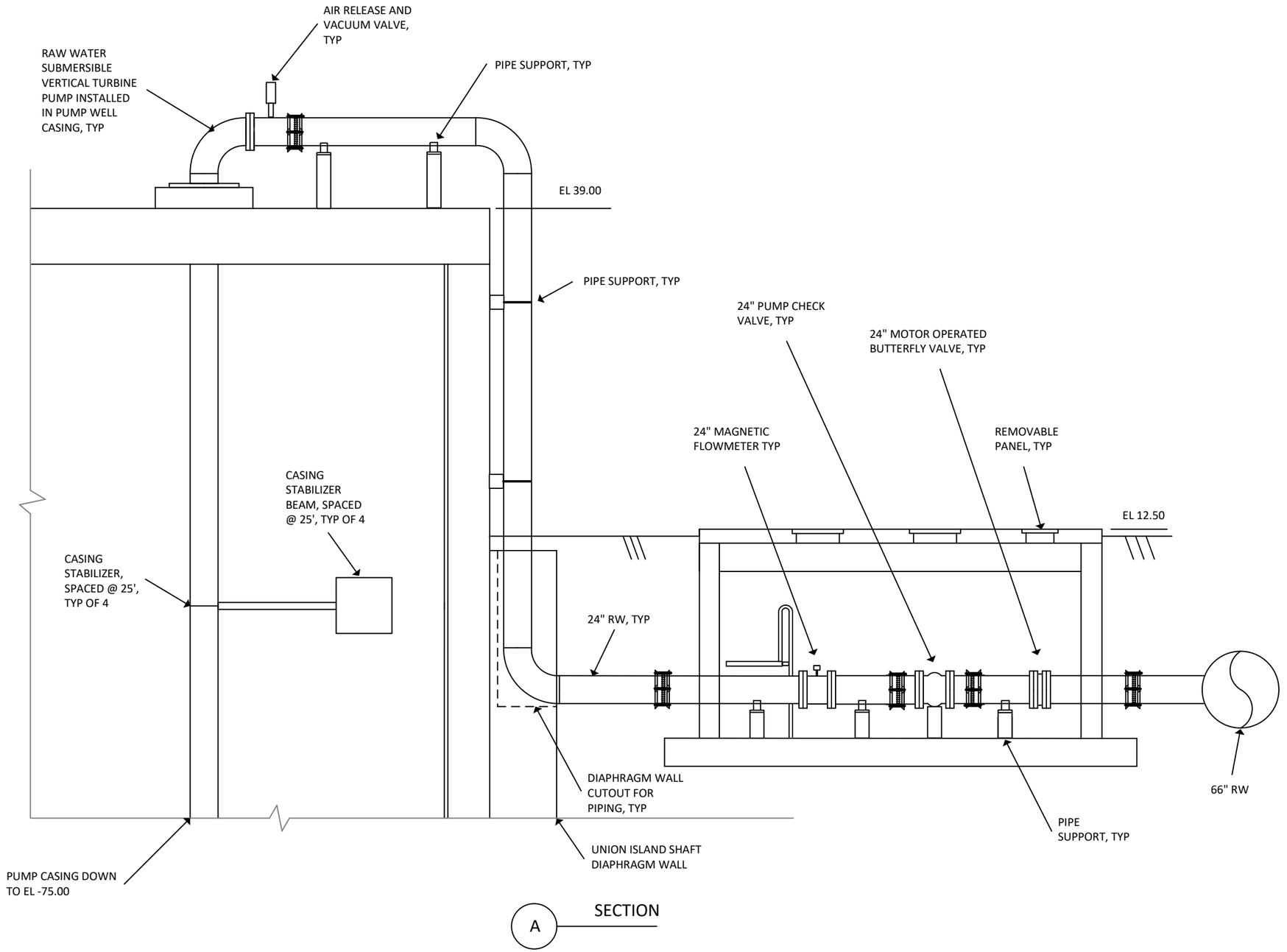
Alternative U1 – Union Island Shaft Pumping Plant Overall Plan
Design Flow Capacity 150 cfs
Approximate Scale: 1" = 32'-0"

Figure U1-1



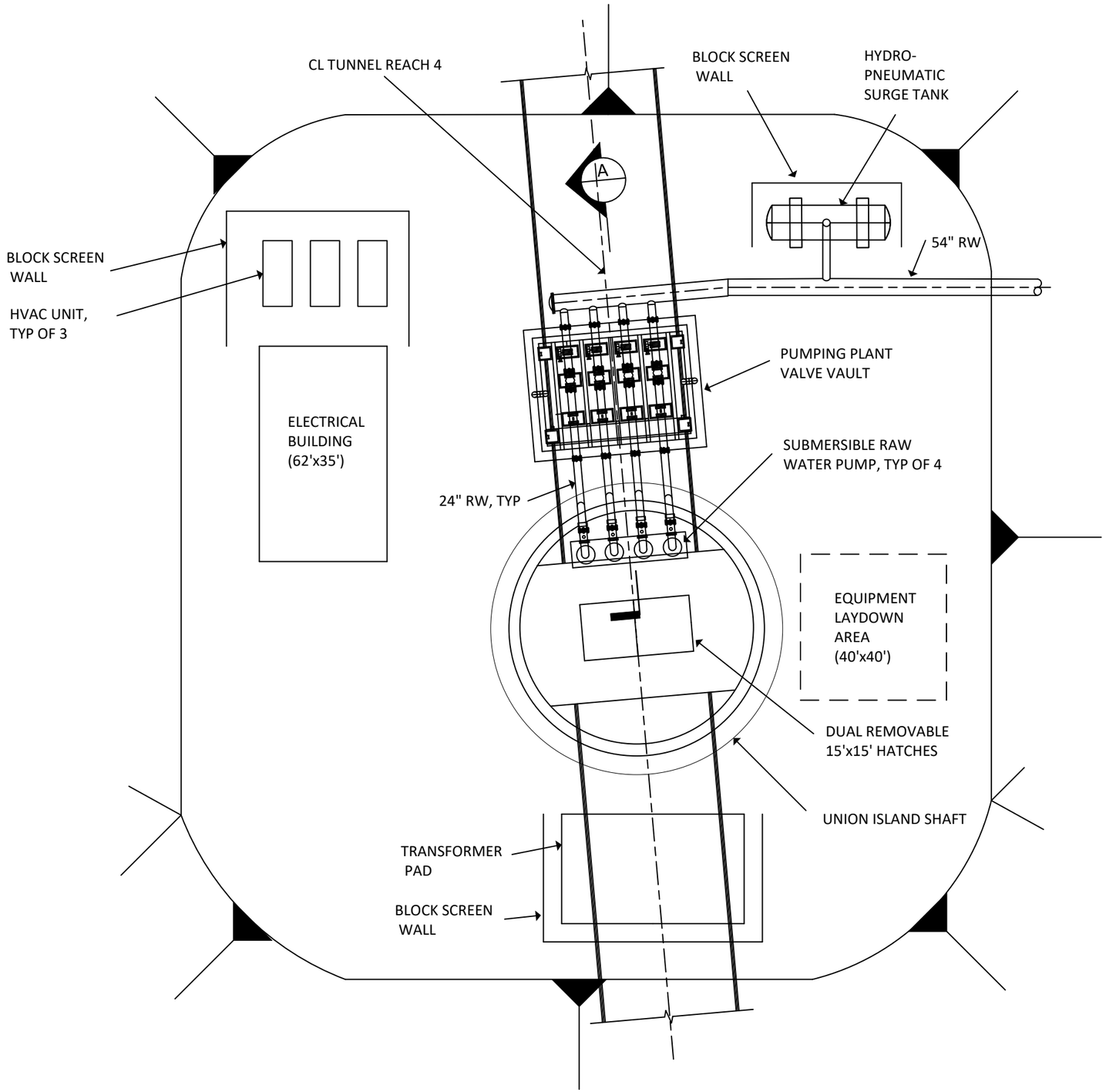
Alternative U1 – Union Island Shaft Pumping Plant Valve Vault Plan
Design Flow Capacity 150 cfs
Approximate Scale: 1" = 32'-0"

Figure U1-2



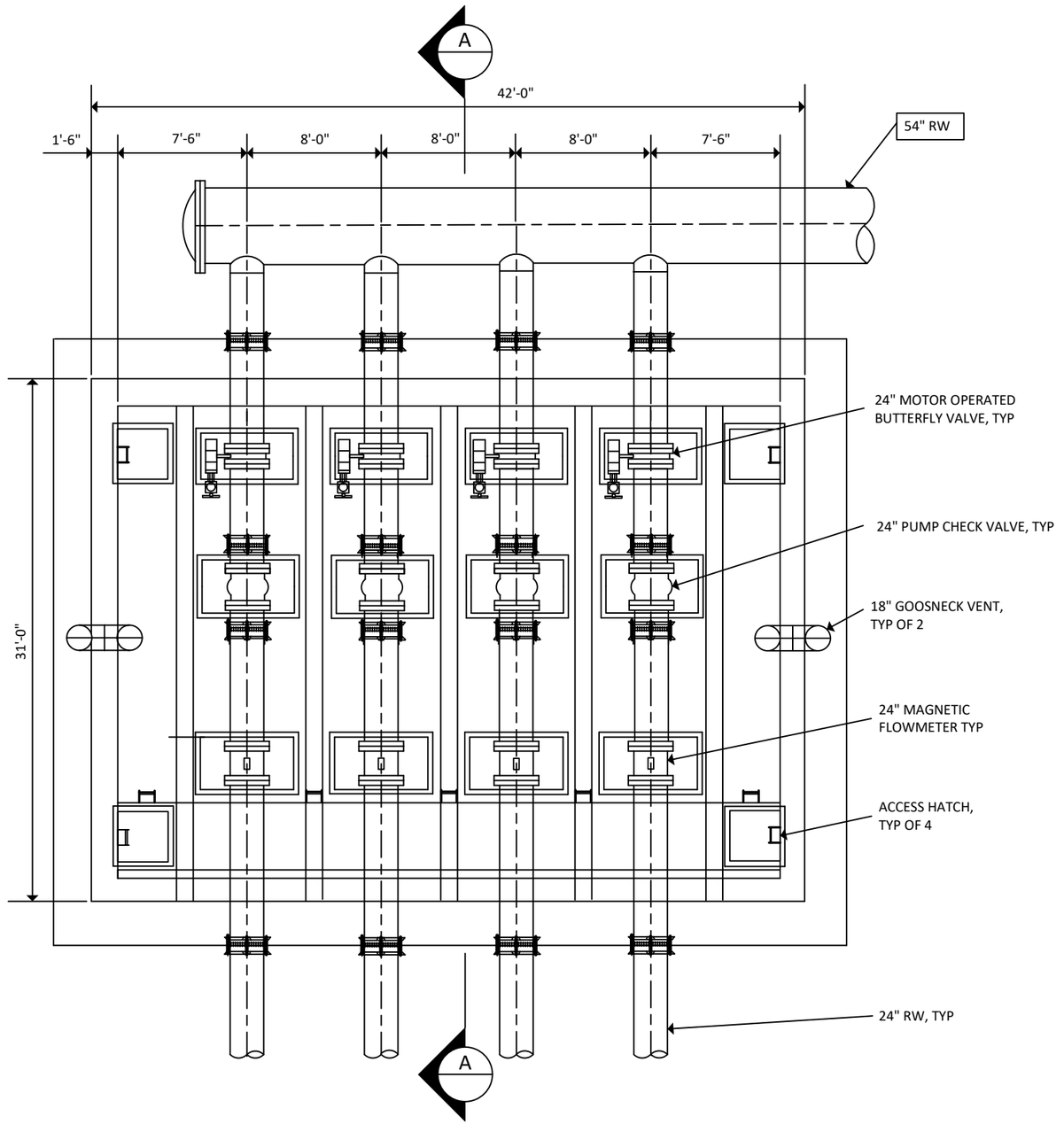
Alternative U1 – Union Island Shaft Pumping Plant Typical Section
Design Flow Capacity 150 cfs
Approximate Scale: 1/8" = 1'-0"

Figure U1-3



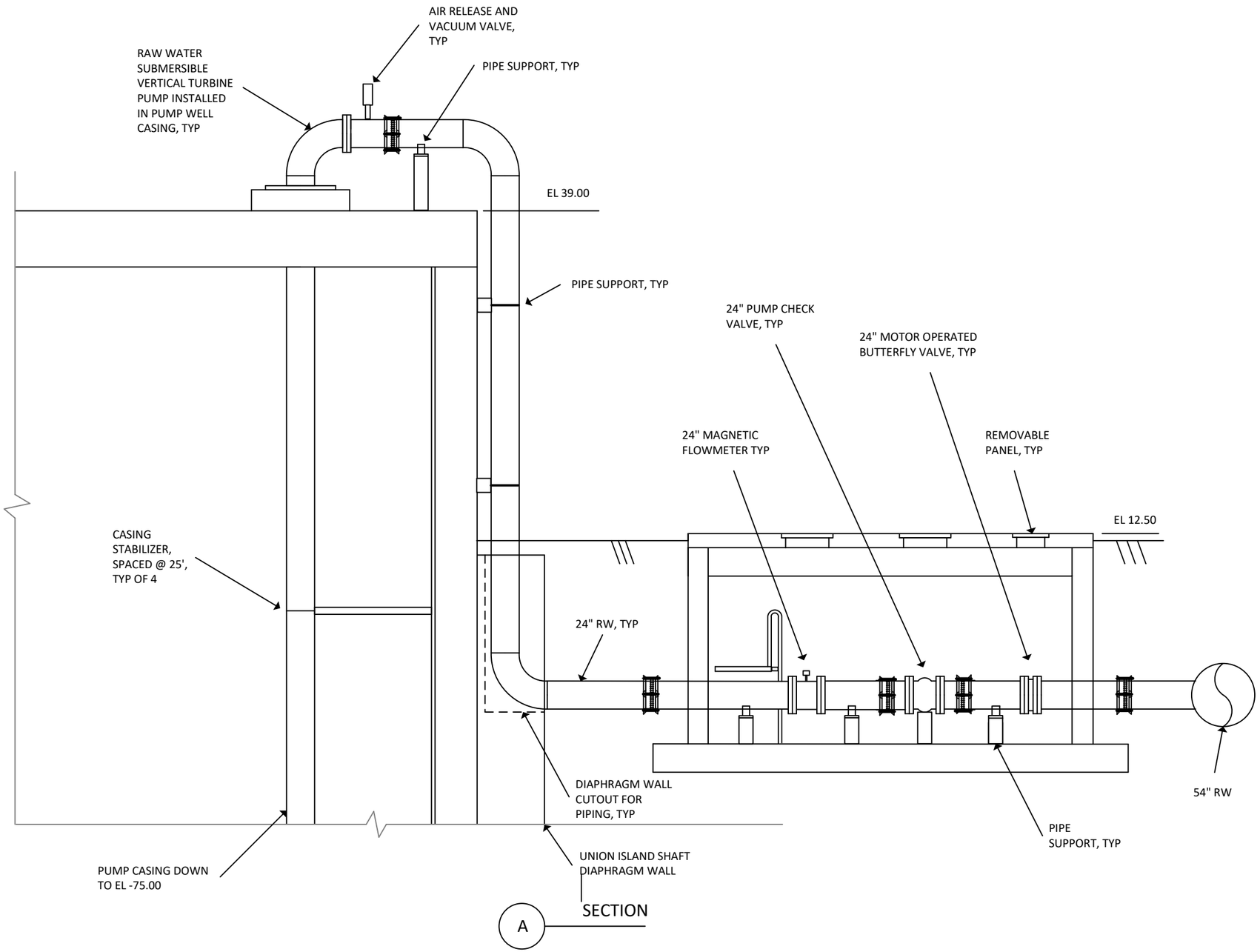
Alternative U1 – Union Island Shaft Pumping Plant Overall Plan
Design Flow = 100 cfs
Approximate Scale: 1" = 32'-0"

Figure U1-4



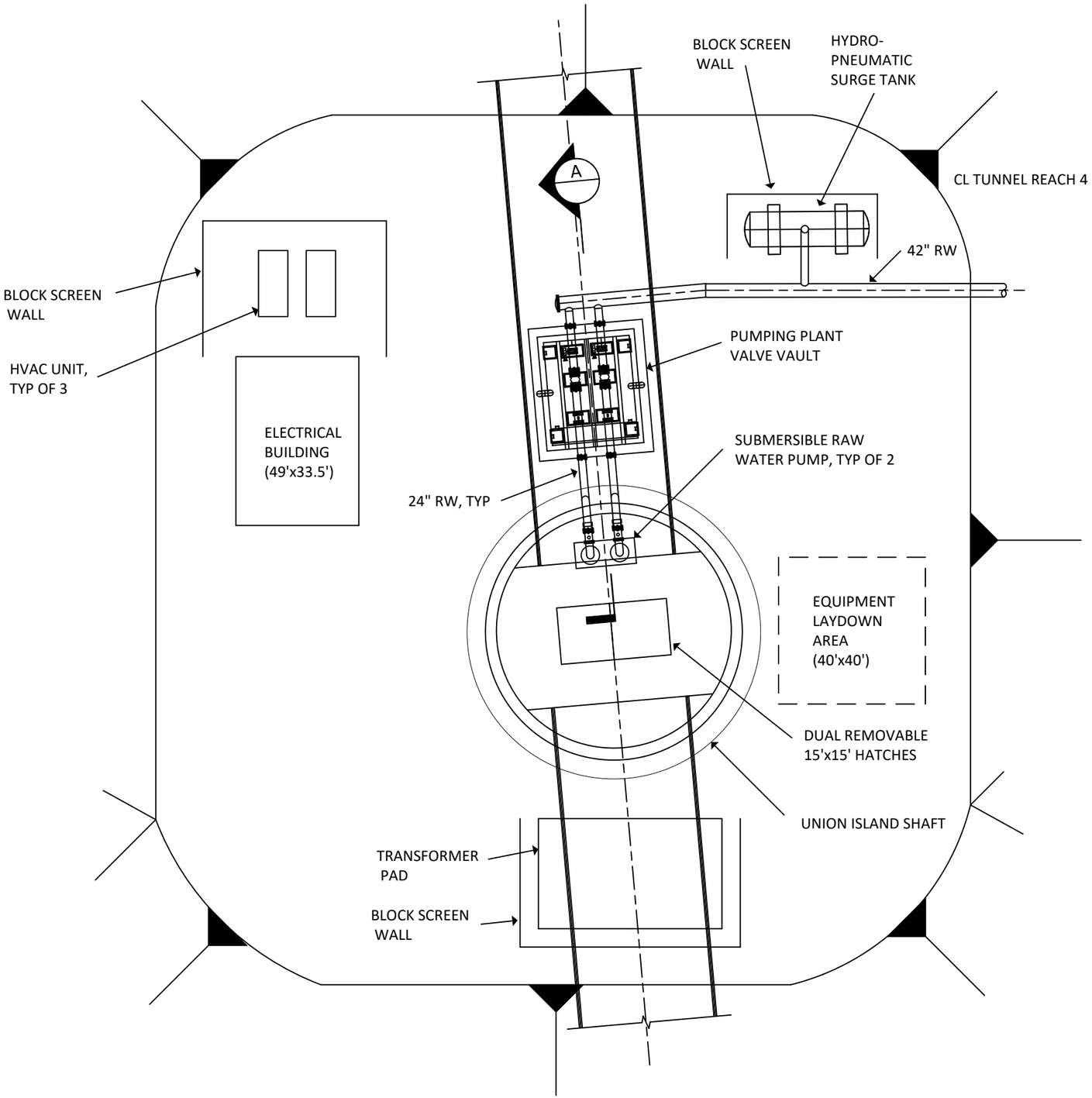
Alternative U1 – Union Island Shaft Pumping Plant Valve Vault Plan
Design Flow = 100 cfs
Approximate Scale: 1/8" = 1'-0"

Figure U1-5



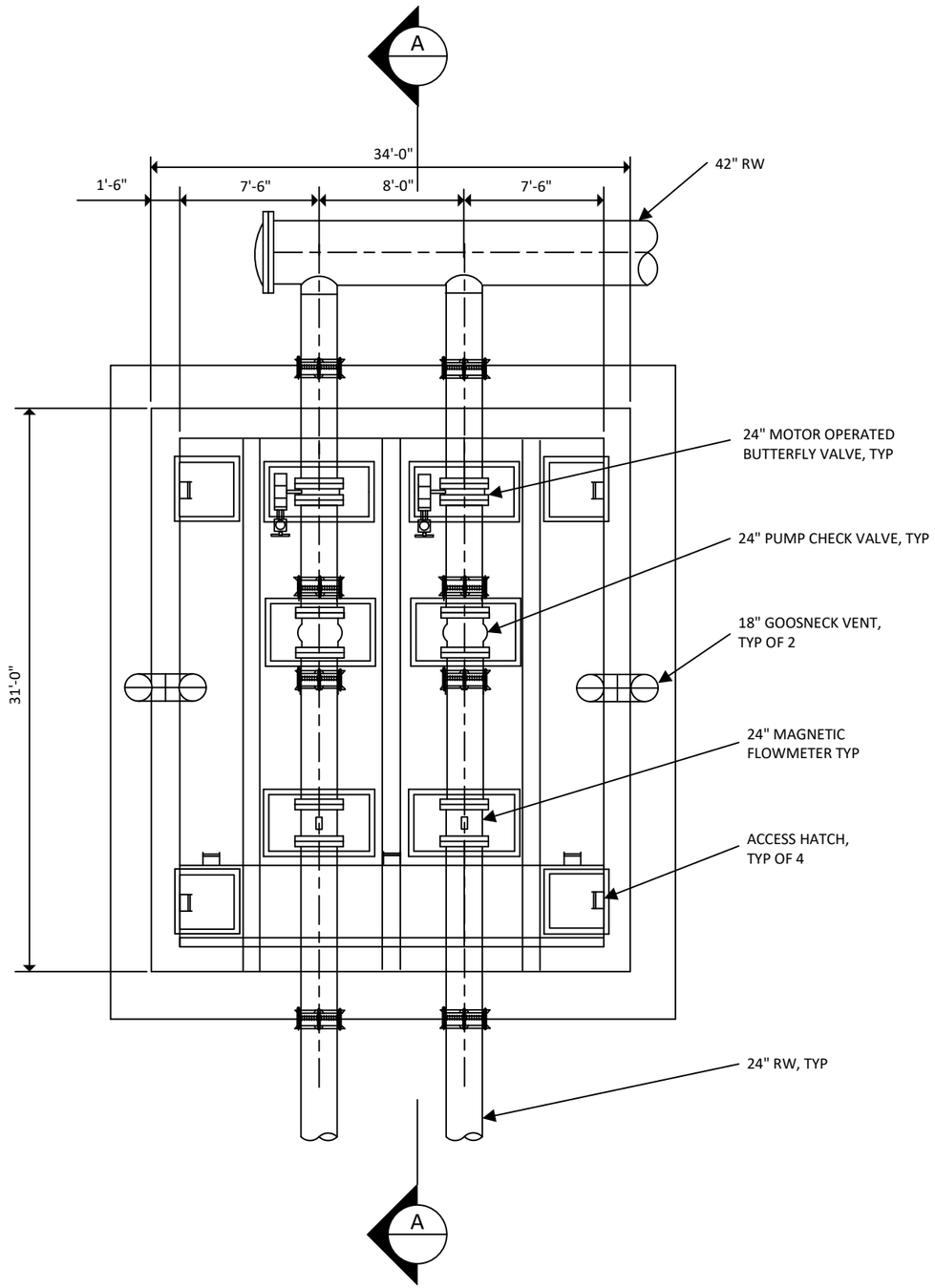
Alternative U1 – Union Island Shaft Pumping Plant Typical Section
Design Flow = 100 cfs
Approximate Scale: 1/8" = 1'-0"

Figure U1-6



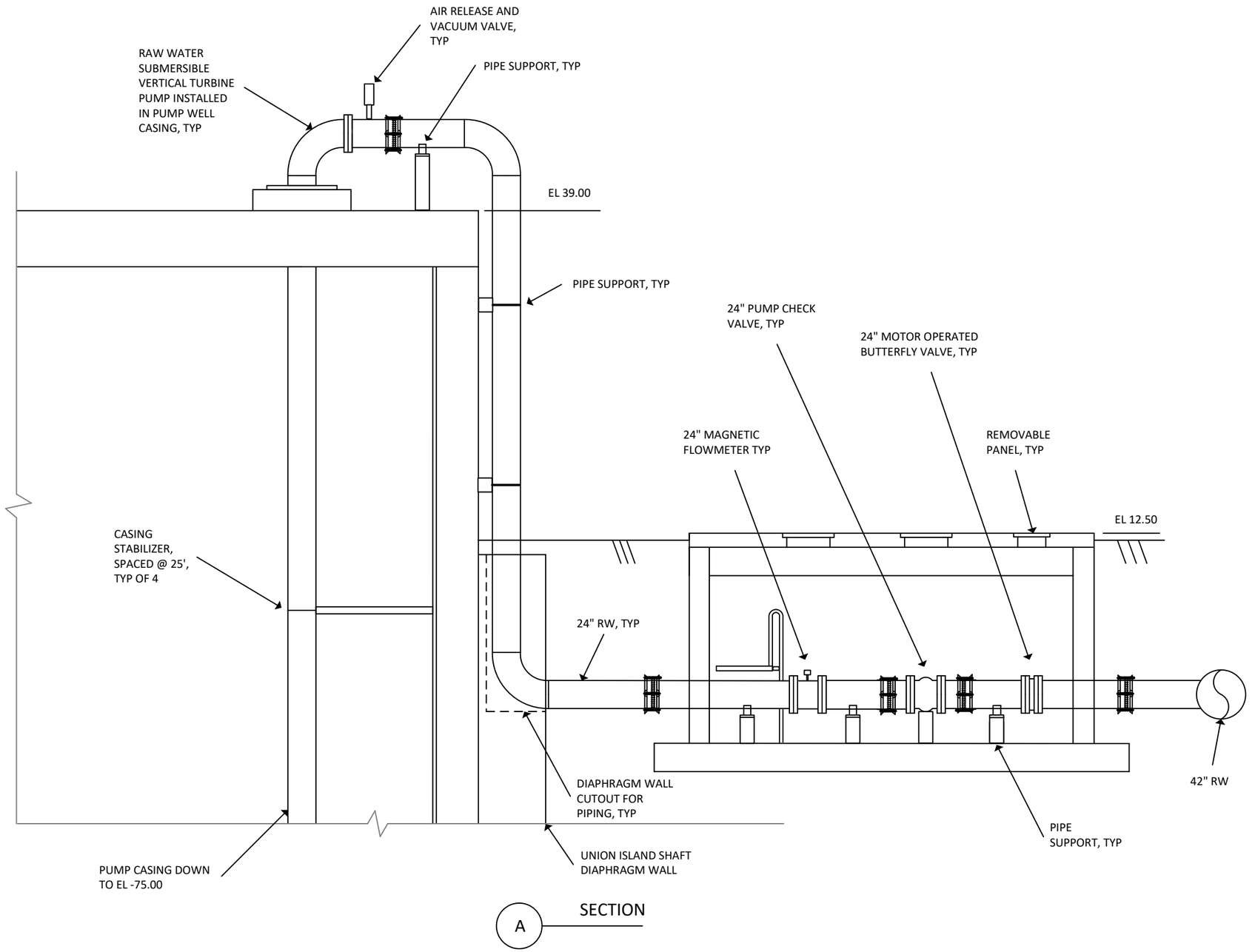
Alternative U1 – Union Island Shaft Pumping Plant Overall Plan
Design Flow = 50 cfs
Approximate Scale: 1" = 32'-0"

Figure U1-7



Alternative U-1 Union Island Pumping Plant Valve Vault Plan
Design Flow = 50 cfs
Approximate Scale: 1/8" = 1'-0"

Figure U1-8



Alternative U1 – Union Island Shaft Pumping Plant Typical Section
Design Flow = 50 cfs
Approximate Scale: 1/8" = 1'-0"

Figure U1-9

The following revisions have been made to the Air Quality Appendices.

Air Quality Appendices – See Attachment A

The revisions to the air quality appendices are provided in Attachment A.

Technical Memoranda Updates

The following EPR technical memoranda have been revised to reflect revisions included in this EPR Update.

- Soil Balance and Reusable Tunnel Material Supplement – Bethany Reservoir Alternative Technical Memorandum
- Bethany Reservoir Pumping Plant Facilities and Site Configuration Technical Memorandum
- Conceptual Development of Aqueduct and Discharge Structure Technical Memorandum
- Electrical Power Load and Routing Study – Bethany Reservoir Alternative Technical Memorandum
- SCADA/Communications Routing and Basic Design Approach – Bethany Reservoir Alternative Technical Memorandum
- Potential Future Field Investigations – Bethany Reservoir Alternative Technical Memorandum
- Post-Construction Land Reclamation Supplement – Bethany Reservoir Alternative Technical Memorandum

Soil Balance and Reusable Tunnel Material Supplement – Bethany Reservoir Alternative Technical Memorandum

Portions of Tables 2-2 and 2-8 from the Soil Balance and Reusable Tunnel Material Supplement – Bethany Reservoir Alternative technical memorandum (TM) have been updated (May 2022 Bethany EPR Soil Balance and Reusable Tunnel Material Supplement PDF Page 8 and 12, respectively).

TABLE 2-2. STOCKPILE SUMMARY-BETHANY ALIGNMENT

Feature	Material	Volume*	Stockpile Duration (years)	Stockpile Area (Acres)	Stockpile Height (ft)
Bethany Reservoir Pumping Plant Complex ~~Bethany Reservoir Pumping Plant and Surge Basin~~ (6,000 cfs)	Excavated Material	2,840,272 ~~2,871,816~~	Permanent	70 ~~59.3~~	33
Aqueduct and Connection to Bethany Reservoir (6,000 cfs)	Topsoil	109,795 ~~144,716~~	4	5.4[a] ~~4.5~~	14 ~~22~~

*Peat and Topsoil are reported in LCY as these stockpiles will not be compacted. Excavated material stockpiles are reported in CCY as these stockpiles will be compacted. Excavated peat soil would be placed in stockpiles and covered with five feet of topsoil to limit oxidation of the organic peat material.

ft = foot (feet)

[a] Temporary topsoil storage will be temporarily stored in permanent storage locations during phased construction, and will be distributed as components are completed.

TABLE 2-8. BETHANY RESERVOIR AQUEDUCT AND BETHANY RESERVOIR DISCHARGE STRUCTURES (6,000-CFS PROJECT DESIGN CAPACITY)

Needs		Volume (CCY)[a]
Bethany Reservoir Aqueduct between Pump Station and ~~to~~ Bethany Reservoir	Onsite	-1,349,489 ~~-1,257,486~~
Sources		**Volume (CCY)[a]**
Bethany Reservoir Aqueduct between Pump Station and ~~to~~ Bethany Reservoir Excavation	Onsite	1,755,403 ~~1,695,064~~
Material Export/Reuse		**Volume (CCY)[a]**
Bethany Pump Station to Bethany Reservoir Surplus	Onsite	-405,914 ~~-437,578~~

[a] All source materials are treated as positive quantities and all material needs and surplus are treated as negative quantities

Bethany Reservoir Pumping Plant Facilities and Site Configuration Technical Memorandum

The following revisions are made to the Bethany Reservoir Pumping Plant Facilities and Site Configuration TM.

The 6,000 cfs Site Plan engineering concept drawing (Sheet Number STB-C-1004PP) in Bethany Reservoir Pumping Plant Facilities and Site Configuration TM Section 3, BRPP and Surge Basin Site Plan Configuration, has been updated (May 2022 Bethany EPR Bethany Reservoir Pumping Plant Facilities and Site Configuration TM PDF page 26). The revised engineering concept drawing is available in the Engineering Concept Drawing section of this EPR Update.

The following text is added to Bethany Reservoir Pumping Plant Facilities and Site Configuration TM Section 3.3, Access Roads (May 2022 Bethany EPR Bethany Reservoir Pumping Plant Facilities and Site Configuration TM PDF page 29).

- A new temporary 0.1 mile driveway would be provided from the Mountain House Road access road to the temporary first responders' site.

The following text from Bethany Reservoir Pumping Plant Facilities and Site Configuration TM Section 3.5, Facility Layout, has been updated (May 2022 Bethany EPR Bethany Reservoir Pumping Plant Facilities and Site Configuration TM PDF page 30).

> The electrical substation has a footprint of 400 ~~250~~ feet by 400 ~~350~~ feet.

Conceptual Development of Aqueduct and Discharge Structure Technical Memorandum

The following revisions are made to the Conceptual Development of Aqueduct and Discharge Structure TM.

Conceptual Development of Aqueduct and Discharge Structure TM Figure 2, Bethany Reservoir Aqueduct and Discharge Structure – Plan and Horizontal Alignment, has been updated (May 2022 Bethany EPR Conceptual Development of Aqueduct and Discharge Structure TM PDF page 3). The revised figure is engineering concept drawing Sheet Number STB-C-1101AQ, Bethany Reservoir Aqueduct Site Plan A, and is available in the Engineering Concept Drawing section of this EPR Update.

Conceptual Development of Aqueduct and Discharge Structure TM Figure 3, Aqueduct Profile between BRPP and Bethany Reservoir, has been updated (May 2022 Bethany EPR Conceptual Development of Aqueduct and Discharge Structure TM PDF page 6). The revised figure is engineering concept drawing Sheet Number STB-C-2101A, Bethany Reservoir Aqueduct Profile and Sections, and is available in the Engineering Concept Drawing section of this EPR Update.

The following text in Conceptual Development of Aqueduct and Discharge Structure TM Section 3.1.1.3, Main Contractor's Yard, has been updated (May 2022 Bethany EPR Conceptual Development of Aqueduct and Discharge Structure TM PDF page 28).

> The contractor's main yard for aqueduct construction would be located south of Christensen Road and west of the Jones Pumping Plant Aqueducts to the west of ~~at the southwest corner of~~ the intersection of Kelso Road and Mountain House Road (see Figure 2).

Electrical Power Load and Routing Study – Bethany Reservoir Alternative Technical Memorandum

The following revisions are made to the Electrical Power Load and Routing Study – Bethany Reservoir Alternative TM.

The following text in Electrical Power Load and Routing Study – Bethany Reservoir Alternative TM Section 7.4, Bethany Reservoir Pumping Plant and Surge Basin, has been updated (May 2022 Bethany EPR Electrical Power Load and Routing Study TM PDF page 13).

> To connect to WAPA's Tracy Substation, new 230-kV switching equipment would be installed in a new switchyard on the Bethany Complex, ~~adjacent to~~ immediately east of Mountain House Road. This facility would span approximately 1.4 ~~8.5~~ acres but is included in the permanent site footprint for the Bethany Reservoir Pumping Plant and surge basin area. The new permanent switchyard would connect to the existing Tracy Substation with a new, approximately 600- ~~300~~-foot, overhead line across Mountain House Road and onto the site. A new approximately 1,100-foot overhead line would connect from the switchyard to ~~a temporary main substation for the Bethany Reservoir Pumping Plant site and to~~ the new, permanent Bethany Reservoir Pumping Plant substation, which would span approximately 3.7 acres. New temporary overhead power lines would also be installed from the ~~temporary substation north~~ switchyard to the Bethany Reservoir Pumping Plant and the Surge Basin contractor's yards ~~near the Bethany Reservoir Pumping Plant and Surge Basin sites, southeast to the Bethany Complex batch plants, and south to the Aqueduct contractor's yard~~. An additional temporary connection to the existing 14 kV overhead distribution line on Mountain House Road, a new metering area, and approximately 1,000 feet of new overhead power would be installed to power emergency responders' area southeast of the intersection of Mountain House and Kelso roads. These electrical facilities would be removed after completion of construction, and the ~~All of these~~ alignments would be contained within the site disturbance boundary and would be removed after construction.

Electrical Power Load and Routing Study – Bethany Reservoir Alternative TM Attachment 1, Bethany Reservoir Alternative Power Supply, has been revised. The key map and Map 24 (May 2022 Bethany EPR Electrical Power Load and Routing Study TM PDF pages 16 and 40, respectively) have been updated and are included in the Mapbooks section of this EPR Update.

SCADA/Communications Routing and Basic Design Approach – Bethany Reservoir Alternative Technical Memorandum

The following revisions are made to the SCADA/Communications Routing and Basic Design Approach – Bethany Reservoir Alternative TM.

SCADA/Communications Routing and Basic Design Approach – Bethany Reservoir Alternative TM Section 3.3, Cost Estimating Guidance, has been deleted (May 2022 Bethany EPR SCADA/Communications Routing and Basic Design Approach TM PDF page 4).

~~3.3 Cost Estimating Guidance~~

~~Refer to the SCADA/Communications Route Design Approach (Revised Final Draft) TM for the Central and Eastern Corridors (DCA, 2021) for Cost Estimating Guidance.~~

The following text in SCADA/Communications Routing and Basic Design Approach – Bethany Reservoir Alternative TM Section 3.4.1, Backbone Group, and Table 2 has been revised (May 2022 Bethany EPR SCADA/Communications Routing and Basic Design Approach TM PDF page 6).

Table 2 summarizes ~~shows relative cost estimates for~~ the Backbone Group fiber routes.

TABLE 1. BACKBONE GROUP FIBER ROUTES ~~AND RELATIVE COSTS~~

Route ID	OH Miles	UGA Miles	UGE Miles	UGN Miles	UGT Miles	Total Miles	Cable Cost	Installation Cost	Total Cost
B01	0	.12	2.69			2.81	~~$ 45,000~~	~~$ 197,000~~	~~$ 242,000~~
B02		.29	3.60	1.58		3.89	~~$ 62,000~~	~~$ 272,000~~	~~$ 334,000~~
B03[1]		3.43		7.7	.17	11.3 (10.84[1])	~~$181,000 ($173,000[1])~~	~~$ 1,139,000 ($1,107,000[1])~~	~~$ 1,320,000 ($1,280,000[1])~~
B04[1]	5.02	3.1	.87	2.30	.12	11.41 (10.95[1])	~~$ 183,000 ($175,000[1])~~	~~$ 823,000 ($791,000[1])~~	~~$ 1,006,000 ($966,000[1])~~
B05[2]			.88			.88[2]	~~$14,000~~	~~$62,000~~	~~$76,000~~
						29.41[3] (30.29[2]) (28.49[1])			~~**$2,902,000[3] ($2,978,000[2]) ($2,822,000[1])**~~

Notes:

[1] For 3,000 cfs project design capacity option only, B03 and B04 would connect to the C-E-5 site versus the C-E-3 site and would therefore each be 0.46 miles shorter than for other project design capacity options. The cost and length of connection to Intake C-E-5 in that case is covered by facility group F02 which as the same length and size of cable required for the backbone group.

[2] 7,500 cfs project design capacity only

[3] 4,500 and 6,000 cfs project design capacity only

The following text in SCADA/Communications Routing and Basic Design Approach – Bethany Reservoir Alternative TM Section 3.4.2, Facilities Group, and Table 3 has been revised (May 2022 Bethany EPR SCADA/Communications Routing and Basic Design Approach TM PDF page 7).

Table 5 summarizes ~~shows the relative cost estimates for~~ the Facilities Group fiber routes.

TABLE 2. FACILITIES GROUP FIBER ROUTES ~~AND RELATIVE COSTS~~

Route ID	OH Miles	UGA Miles	UGE Miles	UGN Miles	UGT Miles	Total Miles	Cable Cost	Installation Cost	Total Cost
F01[1]				.58		.58[1]	~~$ 4,000~~	~~$ 40,000~~	~~$ 44,000[1]~~
F02				2.56		2.56	~~$ 15,000~~	~~$ 179,000~~	~~$194,000~~
F03					~~2.51~~ 2.82	~~2.51~~ 2.82	~~$ 15,000~~	~~$ 02~~	~~$15,0002~~
F04[1]					0.67		~~$3,000~~	~~$02~~	~~$3,0001,2~~
						~~5.07~~ 5.38 **(6.32[1])**			~~$209,000 ($256,0001,2)~~

Notes:

[1] 7,500 cfs project design capacity option only

The following text in SCADA/Communications Routing and Basic Design Approach – Bethany Reservoir Alternative TM Section 3.4.3, Eastern Corridor Group, and Table 4 has been revised (May 2022 Bethany EPR SCADA/Communications Routing and Basic Design Approach TM PDF pages 7 and 8).

Table 4 summarizes ~~provides relative cost estimates for~~ the Eastern Corridor Group.

TABLE 3. EASTERN CORRIDOR GROUP ~~RELATIVE COSTS~~

Route ID	OH Miles	UGA Miles	UGE Miles	UGN Miles	UGT Miles	Total Miles	Cable Cost	Installation Cost	Total Cost
E01		1.11		1.11		2.22	~~$ 13,000~~	~~$ 155,000~~	~~$ 168,000~~
E04	3.53	1.33		2.02	.33	7.21	~~$ 43,000~~	~~$ 1,024,000~~	~~$ 1,067,000~~
E06	1.29	0.00	0.00	5.50	0.00	6.79	~~$ 41,000~~	~~$ 172,000~~	~~$ 213,000~~
						16.22			~~**$1,448,000**~~

The following revisions are made to SCADA/Communications Routing and Basic Design Approach – Bethany Reservoir Alternative TM Section 3.4.4, Bethany Reservoir Alternative Fiberoptic Route Summary. (May 2022 Bethany EPR SCADA/Communications Routing and Basic Design Approach TM PDF page 8).

> The potential media routes with the minimum environmental footprint for the Bethany Reservoir Alternative, which includes portions of the Eastern corridor, establishes the network backbone and SCADA connections to all operations centers, facilities, and selected remote sites. This includes ~~49.78~~ 50.09 to ~~52.83~~ 53.14 miles of new fiberoptic cable, ~~with a total relative cost of $4,479,000 to $4,682,000,~~ depending on project design capacity option.

SCADA/Communications Routing and Basic Design Approach – Bethany Reservoir Alternative TM Attachment 2, Bethany Reservoir Alternative Route Maps, has been revised. The key map, and pages 2, 3 and 10 (May 2022 Bethany EPR SCADA/Communications Routing and Basic Design Approach TM PDF pages 13, 15, 16, and 23, respectively) have been updated and are included in the Mapbooks section of this EPR Update.

Potential Future Field Investigations – Bethany Reservoir Alternative Technical Memorandum

The following sections in the Potential Future Field Investigations – Bethany Reservoir Alternative TM have been updated.

The following revisions are made to Potential Future Field Investigations – Bethany Reservoir Alternative TM Section 2, Geotechnical Investigations to Support 408 Permitting, (May 2022 Bethany EPR Potential Future Field Investigations TM PDF pages 1 and 2).

> The following activities are anticipated to take place between the adoption of the EIR and the start of 65 percent level of design to support the submission of a formal 408 application to the U.S. Army Corps of Engineers (USACE) to address intake construction and the tunneled crossing of the Stockton Deep Water Ship Channel (SDWSC). ~~Geotechnical investigations or the installation of monitoring equipment would begin following the completion of all required permits. These activities would be completed within approximately one year.~~ These activities would require approximately 48 months to be completed, however the activities may not occur concurrently or sequentially and could occur over a longer time period. The duration of individual activities is presented in Attachment C of the Potential Future Field Investigations TM.

The following revisions are made to Potential Future Field Investigations – Bethany Reservoir Alternative TM Section 3, Geotechnical Investigations Prior to Construction Phase, (May 2022 Bethany EPR Potential Future Field Investigations TM PDF page 3).

> The following activities are anticipated to be conducted between adoption of the EIR and the start of construction, exclusive of the previous 408-support explorations. ~~Geotechnical investigations or the installation of monitoring equipment would begin following the completion of all required permits and would be completed within approximately two years.~~ These activities would require approximately 48 months to be completed, however the activities may not occur concurrently or sequentially and could occur over a longer time period. The duration of individual activities is presented in Attachment C of the Potential Future Field Investigations TM.

Post-Construction Land Reclamation Supplement – Bethany Reservoir Alternative Technical Memorandum

The following revisions are made to Tables 4-19 and 4-28 in the Post-Construction Land Reclamation Supplement – Bethany Reservoir Alternative TM (May 2022 Bethany EPR Post-Construction Land Reclamation Supplement TM PDF pages 25 and 34, respectively).

TABLE 4-19. SUMMARY OF LAND RECLAMATION AREAS AT THE BETHANY RESERVOIR PUMPING PLANT AND SURGE BASIN

Tunnel Diameter	Project Design Capacity (cfs)	Base Soil	Proposed Post-Construction Use	Acres
36 ft	6,000	Native Soil	Agriculture	29 ~~53~~
		Excavated Material Stockpile	Stockpile	70 ~~59~~

TABLE 4-28. SUMMARY OF LAND RECLAMATION AREAS AT THE AQUEDUCT

Tunnel Diameter	Project Design Capacity (cfs)	Base Soil	Proposed Post-Construction Use	Acres
36 ft (4 pipes)	6,000/7,500	Native Soil	Agriculture	60 ~~75~~

Engineering Concept Drawing Updates

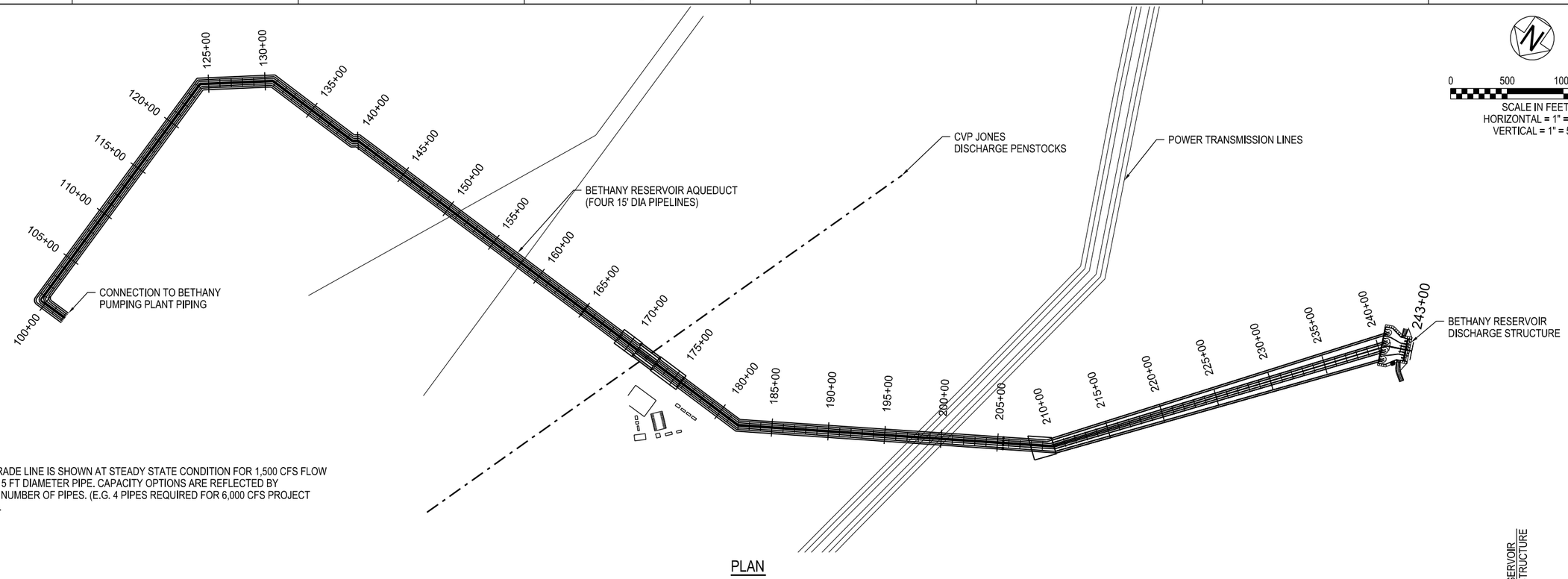
Select Engineering Concept Drawings from the EPR have been updated to reflect adjustments to the Bethany Complex facilities. Drawing changes were applicable for the Bethany Reservoir Pumping Plant and Bethany Reservoir Aqueduct for the project sized for a project design flow capacity of 6,000 cfs only. The following drawings were updated and are provided below:

- General Drawings:
  - Sheet STB-G-0081GN: OVERALL HYDRAULIC PLAN AND PROFILE – AQUEDUCT (6,000 CFS)
  - Sheet STB-G-0090GN: BETHANY COMPLEX IMPACT AREA LIMITS (6,000 CFS)
  - Sheet STB-G-0100GN: BETHANY COMPLEX POST-CONSTRUCTION SITE PLAN (6,000 CFS)
- Bethany Reservoir Pumping Plant Drawings
  - Sheet STB-R-9001PP: SITE PLAN RENDERING 1
  - Sheet STB-R-9002PP: SITE PLAN RENDERING 2
  - Sheet STB-C-1004PP: SITE PLAN (6,000 CFS)
  - Sheet STB-C-1005PP: CONSTRUCTION SITE PLAN
  - Sheet STB-C-3103PP: AQUEDUCT CONNECTION PLAN AND PROFILE
- Aqueduct Drawings
  - Sheet STB-C-1101AQ: BETHANY RESERVOIR AQUEDUCT SITE PLAN A
  - Sheet STB-C-2101AQ: BETHANY RESERVOIR AQUEDUCT PROFILE AND SECTIONS
  - Sheet STB-C-1112AQ: CONSERVATION EASEMENT CROSSING TUNNEL PORTAL PLAN AND PROFILE

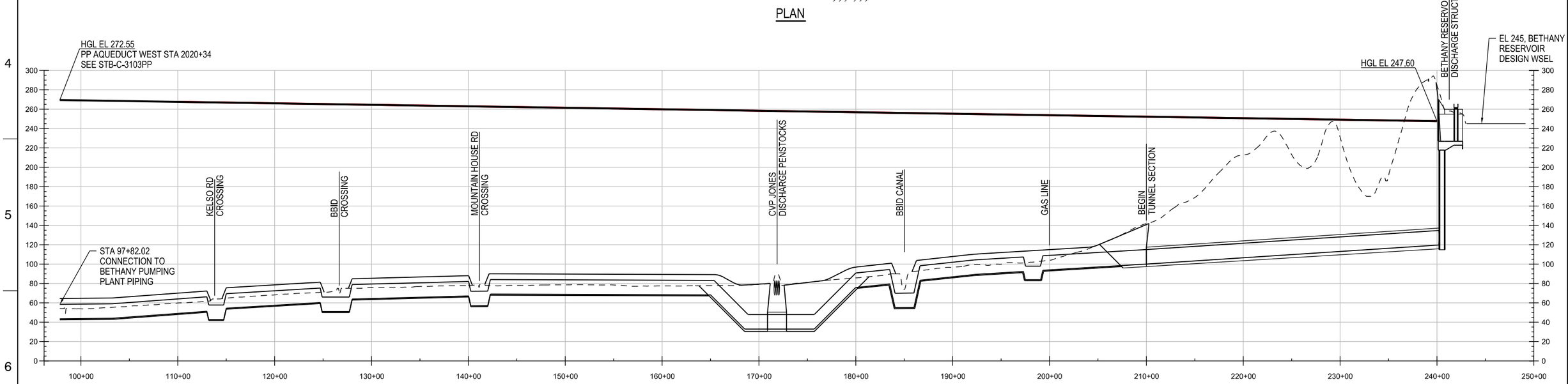
General Drawings

The following General Drawings were updated.

Sheet Number	Drawing Title
STB-G-0081GN	OVERALL HYDRAULIC PLAN AND PROFILE – AQUEDUCT (6,000 CFS)
STB-G-0090GN	BETHANY COMPLEX IMPACT AREA LIMITS (6,000 CFS)
STB-G-0100GN	BETHANY COMPLEX POST-CONSTRUCTION SITE PLAN (6,000 CFS)



PLAN



PROFILE

NOTE:

1. THE HYDRAULIC GRADE LINE IS SHOWN AT STEADY STATE CONDITION FOR 1,500 CFS FLOW RATE IN A SINGLE 15 FT DIAMETER PIPE. CAPACITY OPTIONS ARE REFLECTED BY CONSIDERING THE NUMBER OF PIPES. (E.G. 4 PIPES REQUIRED FOR 6,000 CFS PROJECT CAPACITY OPTION).

0 500 1000 1500
SCALE IN FEET
HORIZONTAL = 1" = 500'
VERTICAL = 1" = 50'

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
	NOV 2023	EPR UPDATE		JJJ

DESIGNED: S DAIGLE
DRAWN: M METZ
CHECKED:
APPROVAL RECOMMENDED:
APPROVAL BY:

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - BETHANY RESERVOIR ALTERNATIVE

OVERALL HYDRAULIC PLAN AND PROFILE - AQUEDUCT (6,000 CFS)

PROJECT NO. W8X97000
SHEET NO. STB-G-0081GN
REV
SEQUENCE NO.

STB-G-0081GN_W8X97000.dgn

PLOT DATE:2023\08\25 PLOT TIME:1:06:57 PM

LINDEMANN ROAD

℄ TUNNEL

SURGE BASIN RECEPTION SHAFT

BYRON HIGHWAY

BETHANY RESERVOIR PUMPING PLANT CONTRACTOR YARD AND SURGE BASIN CONTRACTORS YARDS

KELSO ROAD

PERMANENT EXCAVATION STOCKPILE

BATCH PLANTS

POWER LINES

PERMANENT EXCAVATION STOCKPILES

ACCESS ROAD

TEMP 1ST RESPONDERS

CONSTRUCTION WATER PIPELINE

PARKING AREA

SURGE BASIN

BETHANY RESERVOIR PUMPING PLANT

WAPA ELECTRICAL SWITCHYARD

MOUNTAIN HOUSE ROAD

PERMANENT EXCAVATION STOCKPILE

NO FILL WITHIN TANC/WAPA POWER LINE EASEMENT

PERMANENT EXCAVATION STOCKPILE

PERMANENT EXCAVATION STOCKPILE

JONES INLET CANAL

℄ 4-15' DIA BETHANY RESERVOIR AQUEDUCTS

DELTA MENDOTA CANAL

TEMPORARY STAGING AND EXCAVATION STOCKPILE

SEE INSET FOR CONSTRUCTION WATER PUMPING PLANT LOCATION

JONES PENSTOCKS

JONES PENSTOCK CROSSING TUNNEL PORTAL AREA

AQUEDUCT CONTRACTOR YARD

CLSM PROCESSING AREA

GAS LINE

ACCESS ROAD

CA AQUEDUCT

CHRISTENSEN ROAD

MARIPOSA ENERGY PROJECT

CONSERVATION EASEMENT CROSSING TUNNEL PORTAL

CONSERVATION EASEMENT

BETHANY RESERVOIR DISCHARGE STRUCTURE

CALIFORNIA AQUEDUCT BIKEWAY

CONSERVATION EASEMENT CROSSING TUNNELS

BANKS CANAL

CONSERVATION EASEMENT

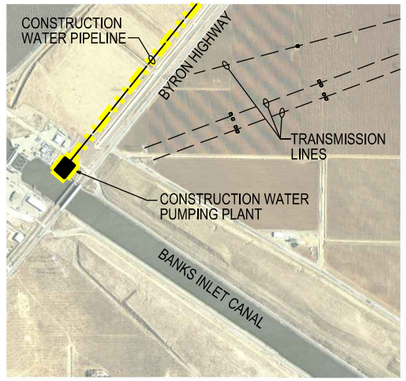
BETHANY RESERVOIR

DISCHARGE STRUCTURE STAGING AREA

0 800 1600 2400
Scale In Feet

N

LEGEND
- CONSTRUCTION IMPACT AREA BOUNDARY
- PERMANENT IMPACT AREA BOUNDARY



INSET

W GRANT LINE ROAD

GENERAL

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
	NOV 2023	EPR UPDATE		

DESIGNED
DRAWN A. SCHULTZ
CHECKED A. NAIMEY
APPROVAL RECOMMENDED
APPROVAL BY

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

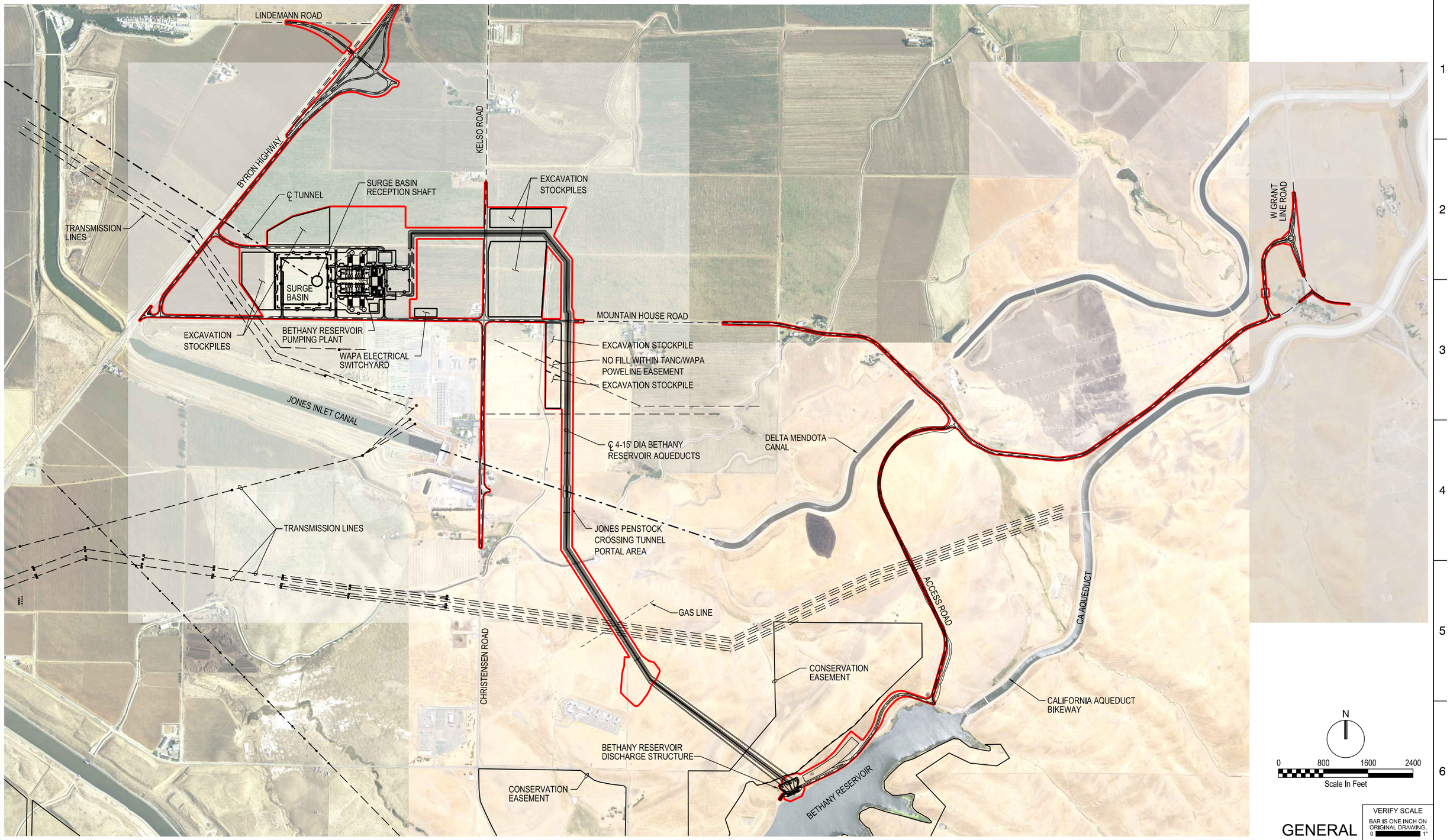
ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - BETHANY RESERVOIR ALTERNATIVE

BETHANY COMPLEX
IMPACT AREA LIMITS (6,000 CFS)

PROJECT NO. W8X97000
SHEET NO. STB-G-0090GN
REV
SEQUENCE NO.

STB-G-0090GN_W8X97000.dgn

PLOT DATE:2023\08\25 PLOT TIME:3:33:33 PM



VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

GENERAL

REV	DATE	DESCRIPTION	SUB.	APPD
	NOV 2023	EPR UPDATE		

DESIGNED
DRAWN A. SCHULTZ
CHECKED A. NAIMEY
APPROVAL RECOMMENDED
APPROVAL BY

DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - BETHANY RESERVOIR ALTERNATIVE

BETHANY COMPLEX
POST-CONSTRUCTION SITE PLAN (6,000 CFS)

PROJECT NO. W8X97000
SHEET NO. STB-G-0100GN
REV
SEQUENCE NO.

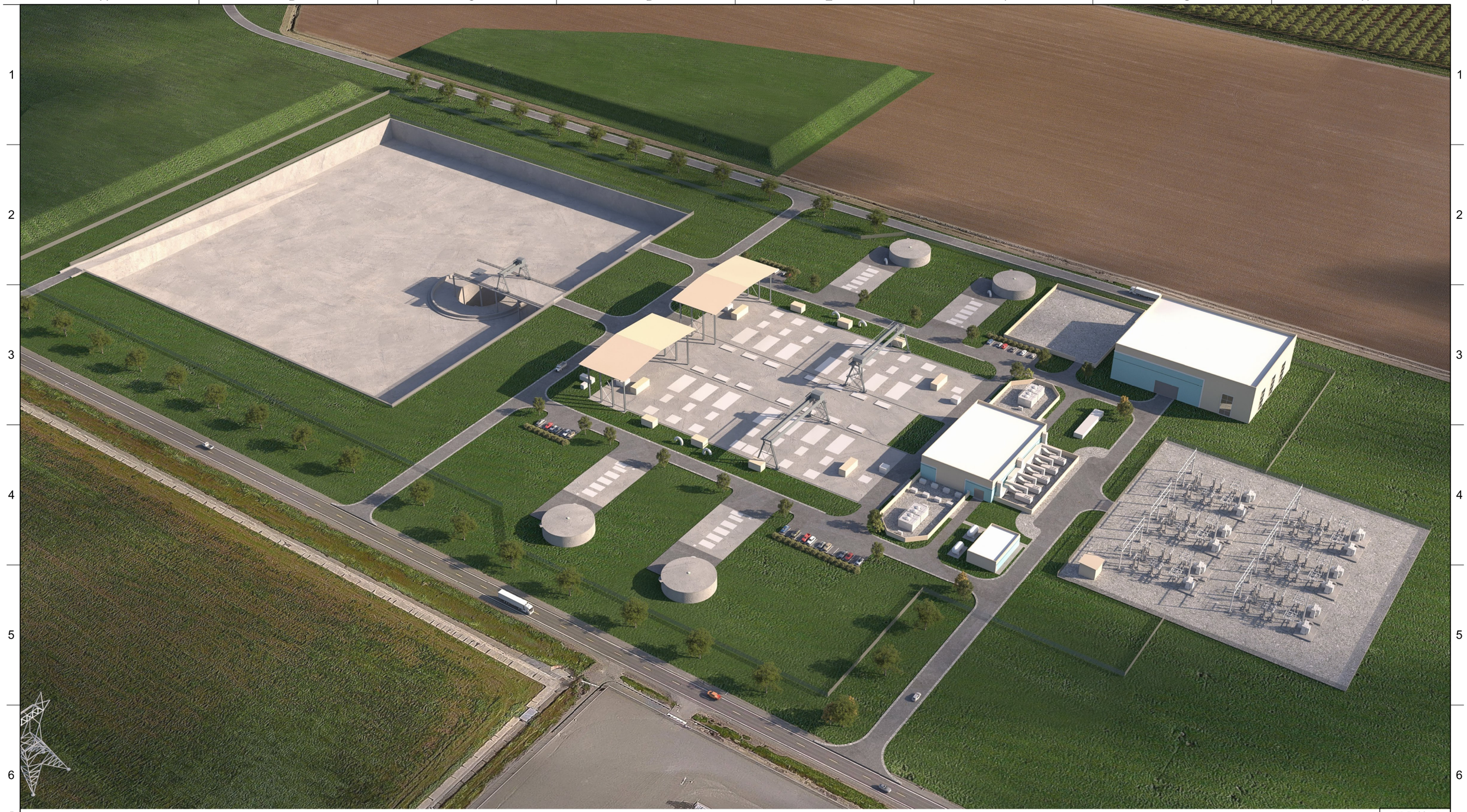
STB-G-0100GN_W8X97000.dgn

PLOT DATE:2023\08\25 PLOT TIME:3:38:26 PM

Bethany Reservoir Pumping Plant Drawings

The following Bethany Reservoir Pumping Plant Drawings were updated.

Sheet Number	Drawing Title
STB-R-9001PP	SITE PLAN RENDERING 1
STB-R-9002PP	SITE PLAN RENDERING 2
STB-C-1004PP	SITE PLAN (6,000 CFS)
STB-C-1005PP	CONSTRUCTION SITE PLAN
STB-C-3103PP	AQUEDUCT CONNECTION PLAN AND PROFILE



BETHANY RESERVOIR PUMPING PLANT

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
	NOV 2023	EPR UPDATE		

DESIGNED: A. NAIMEY
DRAWN: G JAMROS
CHECKED:
APPROVAL RECOMMENDED:
APPROVAL BY:

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

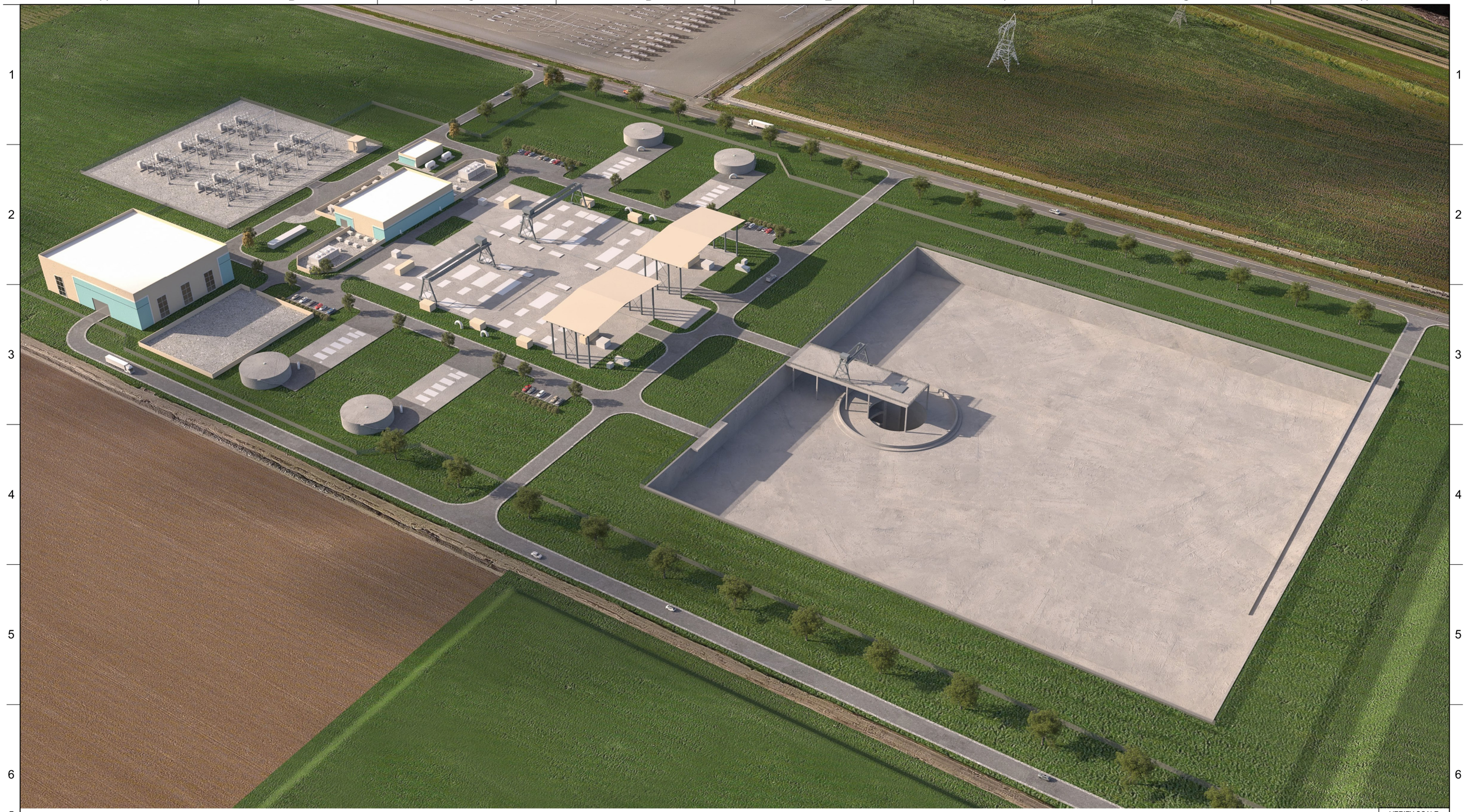
ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - BETHANY RESERVOIR ALTERNATIVE

SITE PLAN RENDERING 1

PROJECT NO. W8X97000
SHEET NO. STB-R-9001PP
REV
SEQUENCE NO.

STB-R-9001PP_W8X97000.dgn

PLOT DATE:8/29/2023 PLOT TIME:11:43:12 AM



BETHANY RESERVOIR PUMPING PLANT

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
	NOV 2023	EPR UPDATE		

DESIGNED: A. NAIMEY
DRAWN: G JAMROS
CHECKED:
APPROVAL RECOMMENDED:
APPROVAL BY:

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - BETHANY RESERVOIR ALTERNATIVE

SITE PLAN RENDERING 2

PROJECT NO. W8X97000
SHEET NO. STB-R-9002PP
REV | SEQUENCE NO.

STB-R-9002PP_W8X97000.dgn

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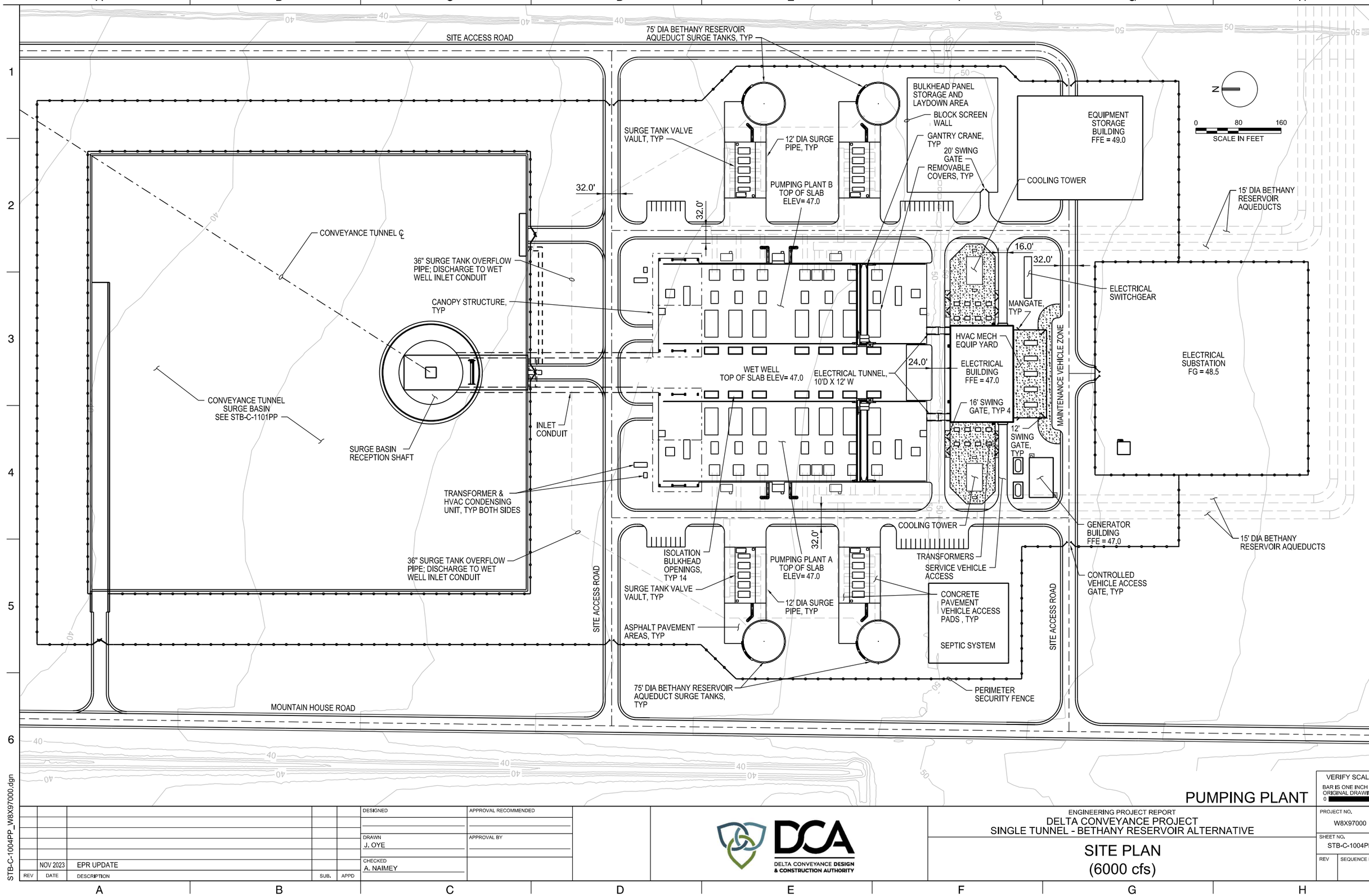


PUMPING PLANT

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
	NOV 2023	EPR UPDATE		

DESIGNED
DRAWN J. OYE
CHECKED A. NAIMEY
APPROVAL RECOMMENDED
APPROVAL BY

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

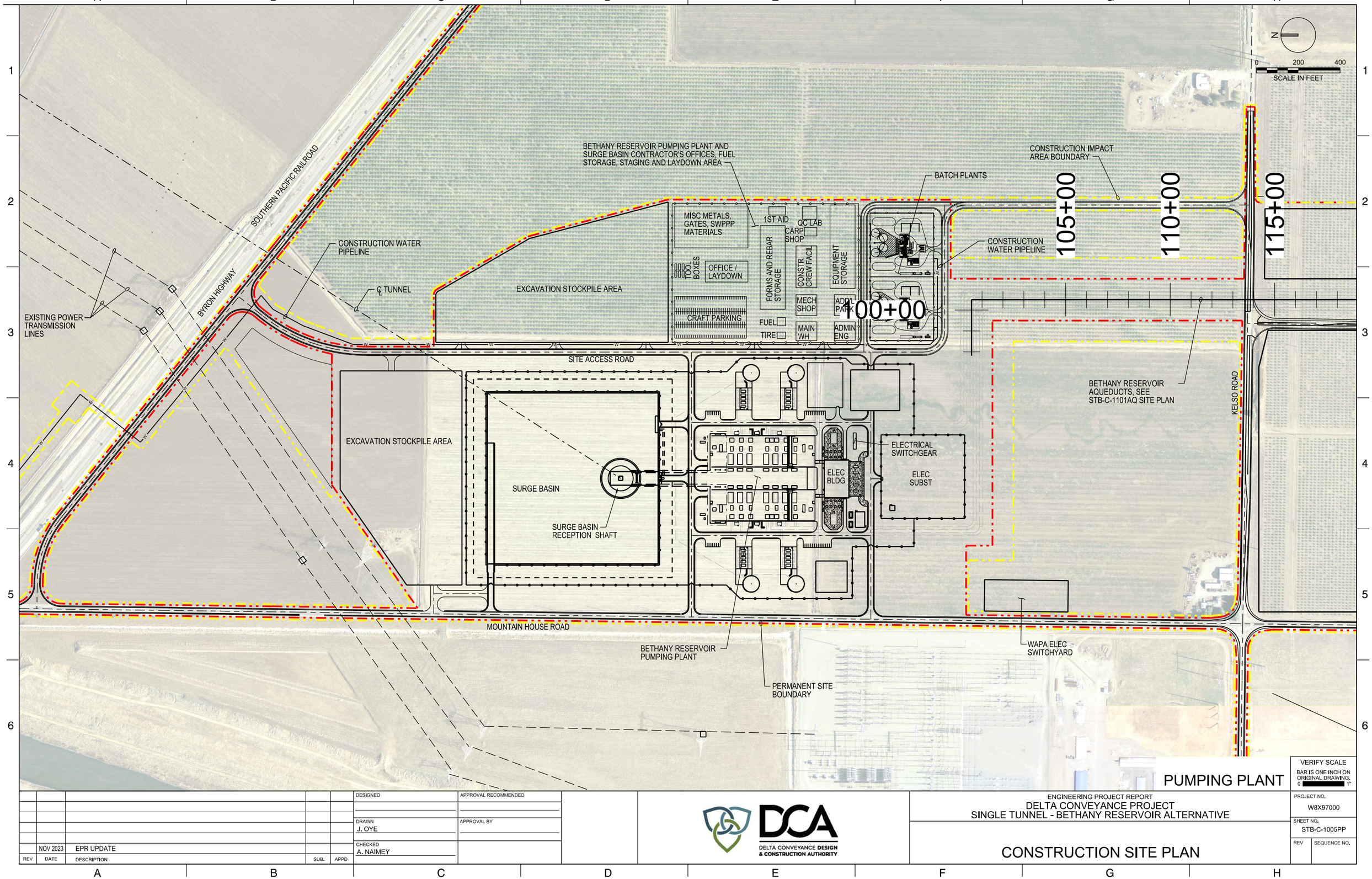
ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - BETHANY RESERVOIR ALTERNATIVE

SITE PLAN
(6000 cfs)

PROJECT NO. W8X97000
SHEET NO. STB-C-1004PP
REV | SEQUENCE NO.

STB-C-1004PP_W8X97000.dgn

PLOT DATE:2023\08\25 PLOT TIME:3:40:50 PM



PUMPING PLANT

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
	NOV 2023	EPR UPDATE		

DESIGNED
APPROVAL RECOMMENDED
DRAWN J. OYE
APPROVAL BY
CHECKED A. NAIMEY

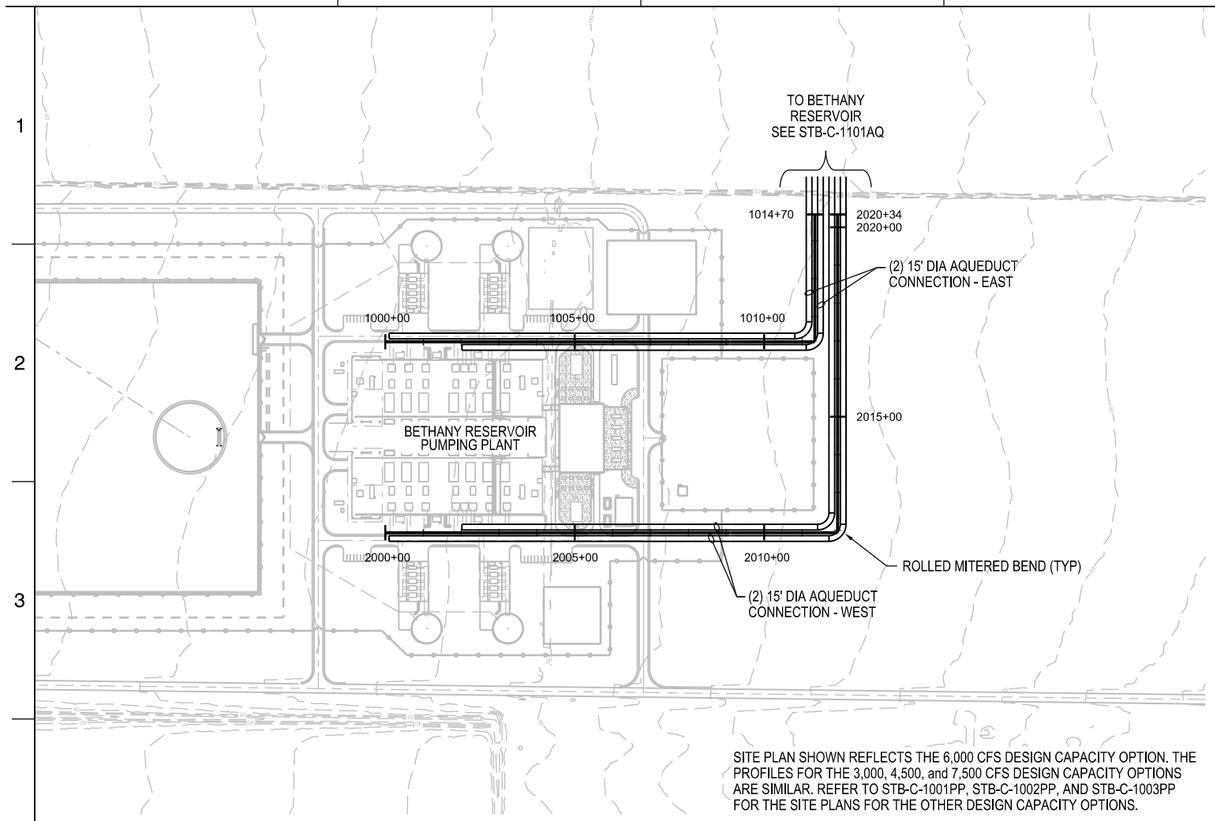
DCA
DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

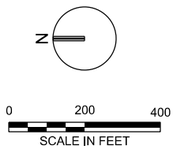
ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - BETHANY RESERVOIR ALTERNATIVE

CONSTRUCTION SITE PLAN

PROJECT NO. W8X97000
SHEET NO. STB-C-1005PP
REV
SEQUENCE NO.

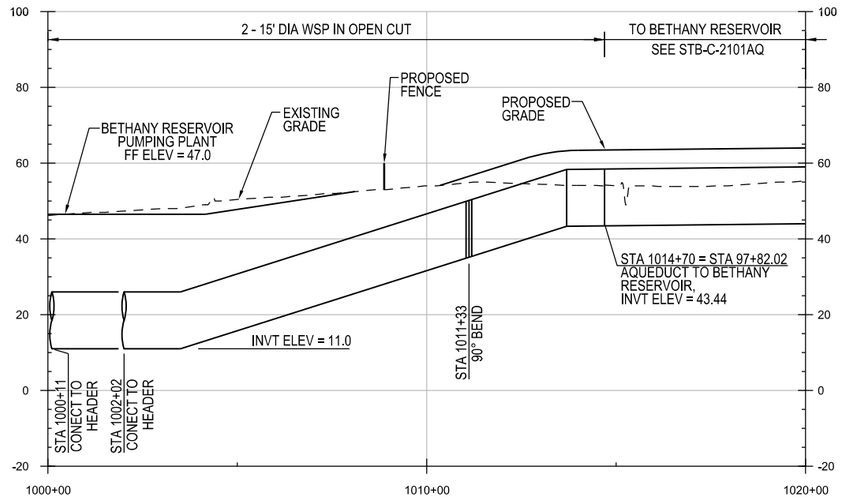
PLOT DATE:2023\08\25 PLOT TIME:3:42:52 PM



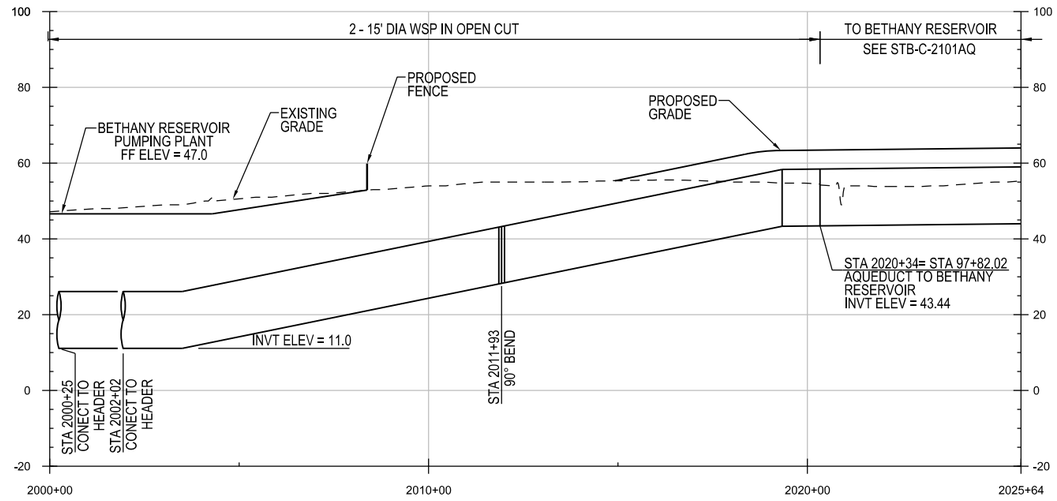


SITE PLAN SHOWN REFLECTS THE 6,000 CFS DESIGN CAPACITY OPTION. THE PROFILES FOR THE 3,000, 4,500, and 7,500 CFS DESIGN CAPACITY OPTIONS ARE SIMILAR. REFER TO STB-C-1001PP, STB-C-1002PP, AND STB-C-1003PP FOR THE SITE PLANS FOR THE OTHER DESIGN CAPACITY OPTIONS.

PLAN
1" = 200'



AQUEDUCT PROFILE - EAST
HORIZ: 1"= 200'
VERT: 1"=20'



AQUEDUCT PROFILE - WEST
HORIZ: 1"= 200'
VERT: 1"=20'

PUMPING PLANT

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
	NOV 2023	EPR UPDATE		

DESIGNED
APPROVAL RECOMMENDED
DRAWN
B. BUTTERFIELD
APPROVAL BY
CHECKED
A. NAIMEY

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - BETHANY RESERVOIR ALTERNATIVE

AQUEDUCT CONNECTION PLAN AND PROFILE

PROJECT NO.
W8X97000
SHEET NO.
STB-C-3103PP
REV
SEQUENCE NO.

STB-C-3103PP_W8X97000.dgn

PLOT DATE:2023\08\25 PLOT TIME:3:44:52 PM

Aqueduct Drawings

The following Aqueduct Drawings were updated.

Sheet Number	Drawing Title
STB-C-1101AQ	BETHANY RESERVOIR AQUEDUCT SITE PLAN A
STB-C-2101AQ	BETHANY RESERVOIR AQUEDUCT PROFILE AND SECTIONS
STB-C-1112AQ	CONSERVATION EASEMENT CROSSING TUNNEL PORTAL PLAN AND PROFILE

BRIDGE SCHEDULE[3]

Bridge Schedule

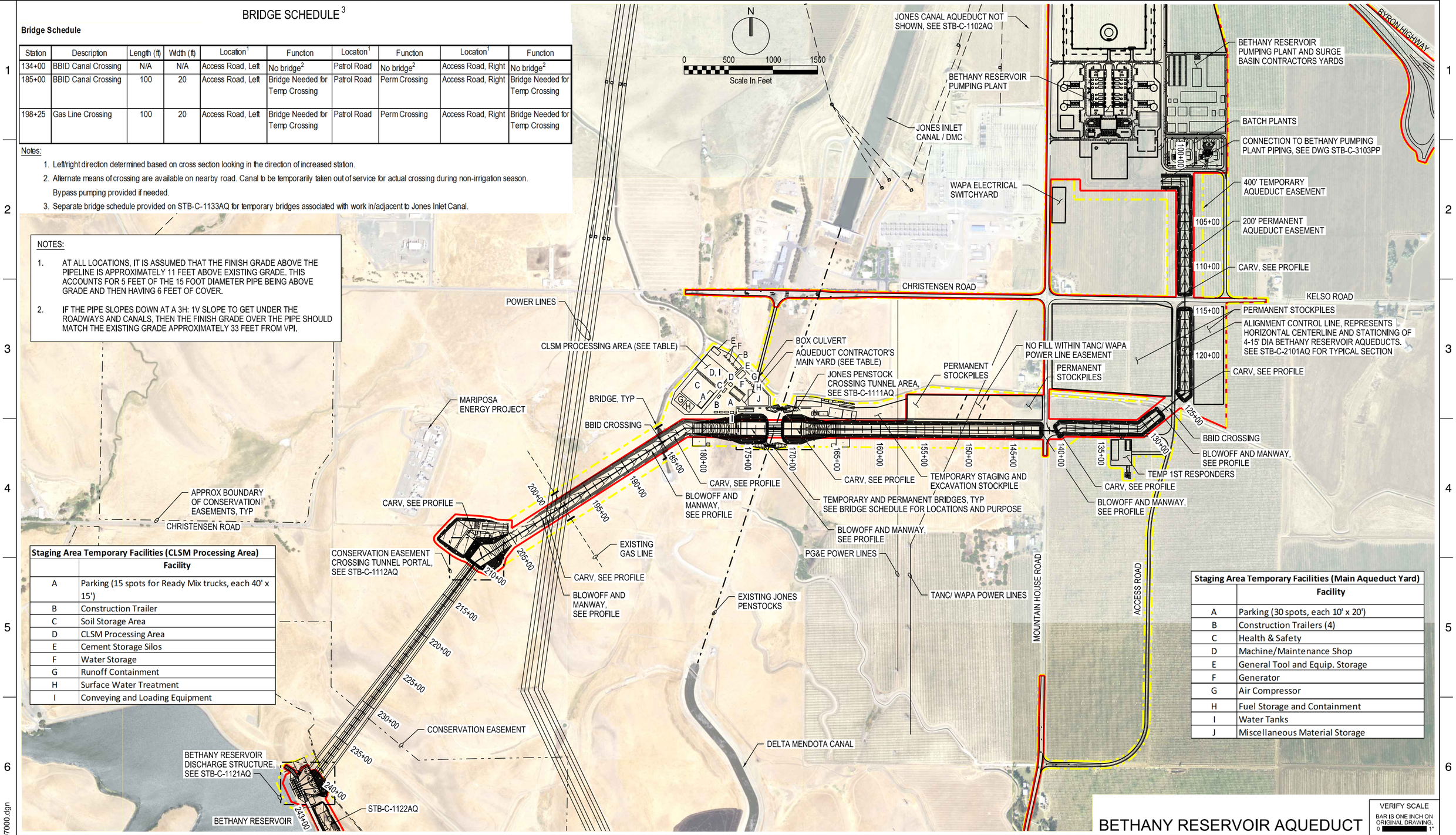
Station	Description	Length (ft)	Width (ft)	Location[1]	Function	Location[1]	Function	Location[1]	Function
134+00	BBID Canal Crossing	N/A	N/A	Access Road, Left	No bridge[2]	Patrol Road	No bridge[2]	Access Road, Right	No bridge[2]
185+00	BBID Canal Crossing	100	20	Access Road, Left	Bridge Needed for Temp Crossing	Patrol Road	Perm Crossing	Access Road, Right	Bridge Needed for Temp Crossing
198+25	Gas Line Crossing	100	20	Access Road, Left	Bridge Needed for Temp Crossing	Patrol Road	Perm Crossing	Access Road, Right	Bridge Needed for Temp Crossing

Notes:

1. Left/right direction determined based on cross section looking in the direction of increased station.
2. Alternate means of crossing are available on nearby road. Canal to be temporarily taken out of service for actual crossing during non-irrigation season. Bypass pumping provided if needed.
3. Separate bridge schedule provided on STB-C-1133AQ for temporary bridges associated with work in/adjacent to Jones Inlet Canal.

NOTES:

1. AT ALL LOCATIONS, IT IS ASSUMED THAT THE FINISH GRADE ABOVE THE PIPELINE IS APPROXIMATELY 11 FEET ABOVE EXISTING GRADE. THIS ACCOUNTS FOR 5 FEET OF THE 15 FOOT DIAMETER PIPE BEING ABOVE GRADE AND THEN HAVING 6 FEET OF COVER.
2. IF THE PIPE SLOPES DOWN AT A 3H: 1V SLOPE TO GET UNDER THE ROADWAYS AND CANALS, THEN THE FINISH GRADE OVER THE PIPE SHOULD MATCH THE EXISTING GRADE APPROXIMATELY 33 FEET FROM VPI.



Staging Area Temporary Facilities (CLSM Processing Area)	
	Facility
A	Parking (15 spots for Ready Mix trucks, each 40' x 15')
B	Construction Trailer
C	Soil Storage Area
D	CLSM Processing Area
E	Cement Storage Silos
F	Water Storage
G	Runoff Containment
H	Surface Water Treatment
I	Conveying and Loading Equipment

Staging Area Temporary Facilities (Main Aqueduct Yard)	
	Facility
A	Parking (30 spots, each 10' x 20')
B	Construction Trailers (4)
C	Health & Safety
D	Machine/Maintenance Shop
E	General Tool and Equip. Storage
F	Generator
G	Air Compressor
H	Fuel Storage and Containment
I	Water Tanks
J	Miscellaneous Material Storage

REV	DATE	DESCRIPTION	SUB.	APPD
	NOV 2023	EPR UPDATE		JJJ

DESIGNED | APPROVAL RECOMMENDED
DRAWN | APPROVAL BY
CHECKED

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - BETHANY RESERVOIR ALTERNATIVE

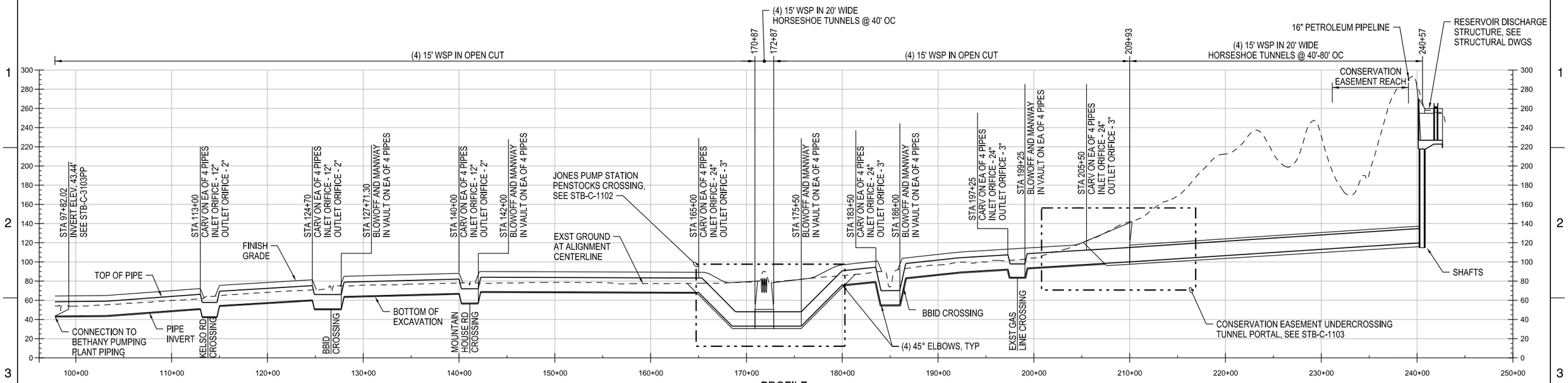
BETHANY RESERVOIR AQUEDUCT
SITE PLAN A

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

PROJECT NO. W8X97000
SHEET NO. STB-C-1101AQ
REV | SEQUENCE NO.

STB-C-1101AQ_W8X97000.dgn

PLOT DATE:2023\08\25 PLOT TIME:12:54:32 PM



PROFILE

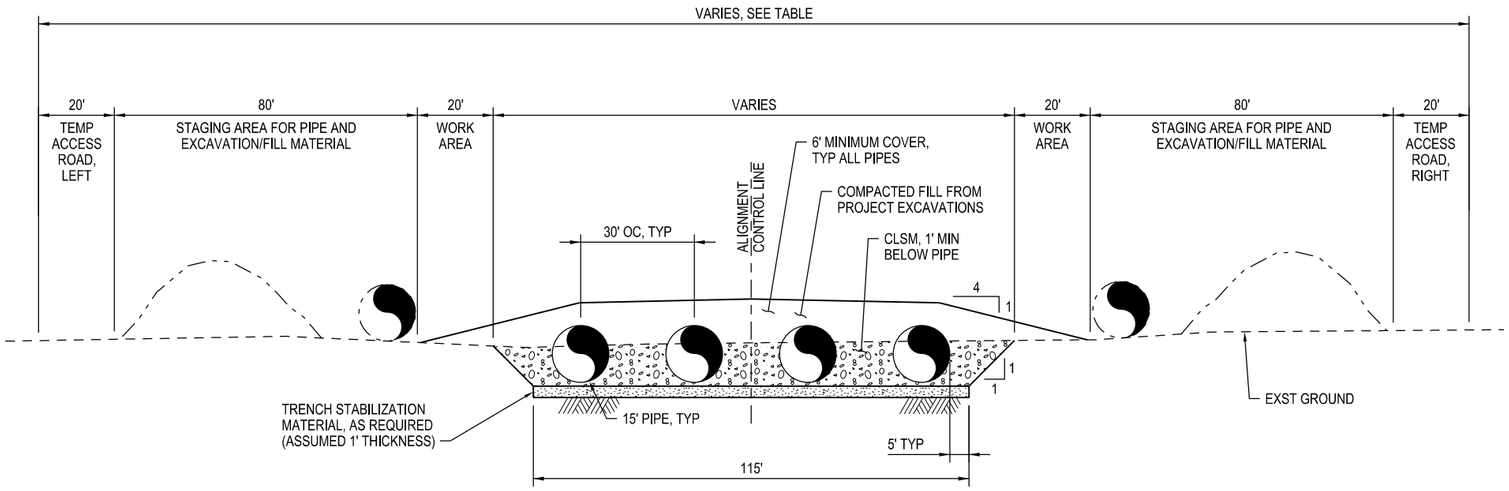
HORZ: 1"=500'
VERT: 1"=50'

NOTES:

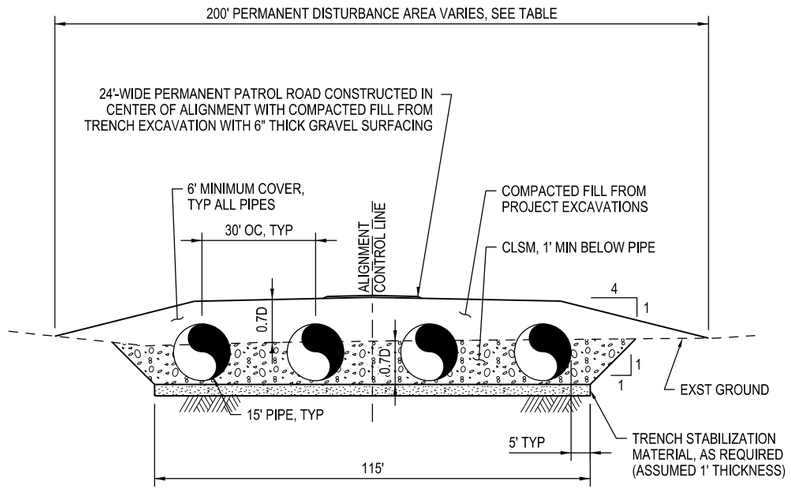
1. AQUEDUCT DEPTH AT CROSSINGS (ROADS, BBID CANALS, JONES PENSTOCKS, EXISTING GAS LINE) TO BE DETERMINED DURING DESIGN.
2. DRAINAGE ACROSS AQUEDUCT AREA TO BE DETERMINED DURING FINAL DESIGN. NATURAL DRAINAGE WILL BE PRESERVED.

AQ PIPELINE QUANTITY & TRENCH DIMENSIONS

Optional Design Capacity (cfs)	Number of Aqueduct Pipelines	Trench Width (Bottom of Trench) (ft)	Permanent Disturbed Width (ft)	Note
7,500	4	115	200	Trench dimensions and number of pipelines same as 6,000 cfs case between pumping plant and reservoir because additional capacity is delivered to DMC in separate pipeline
6,000	4	115	200	
4,500	3	85	170	
3,000	2	55	140	



TYPICAL CONSTRUCTION PHASE TRENCH SECTION FOR OPEN CUT REACHES OF AQUEDUCT ALIGNMENT
1"=20'



TYPICAL FINISHED CONDITION TRENCH SECTION FOR OPEN CUT REACHES OF AQUEDUCT ALIGNMENT
1"=20'

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

BETHANY RESERVOIR AQUEDUCT

REV	DATE	DESCRIPTION	SUB.	APPD
	NOV 2023	EPR UPDATE		

DESIGNED
DRAWN J. SMITH
CHECKED A. NAIMEY
APPROVAL RECOMMENDED
APPROVAL BY A. MURDOCK

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - BETHANY RESERVOIR ALTERNATIVE

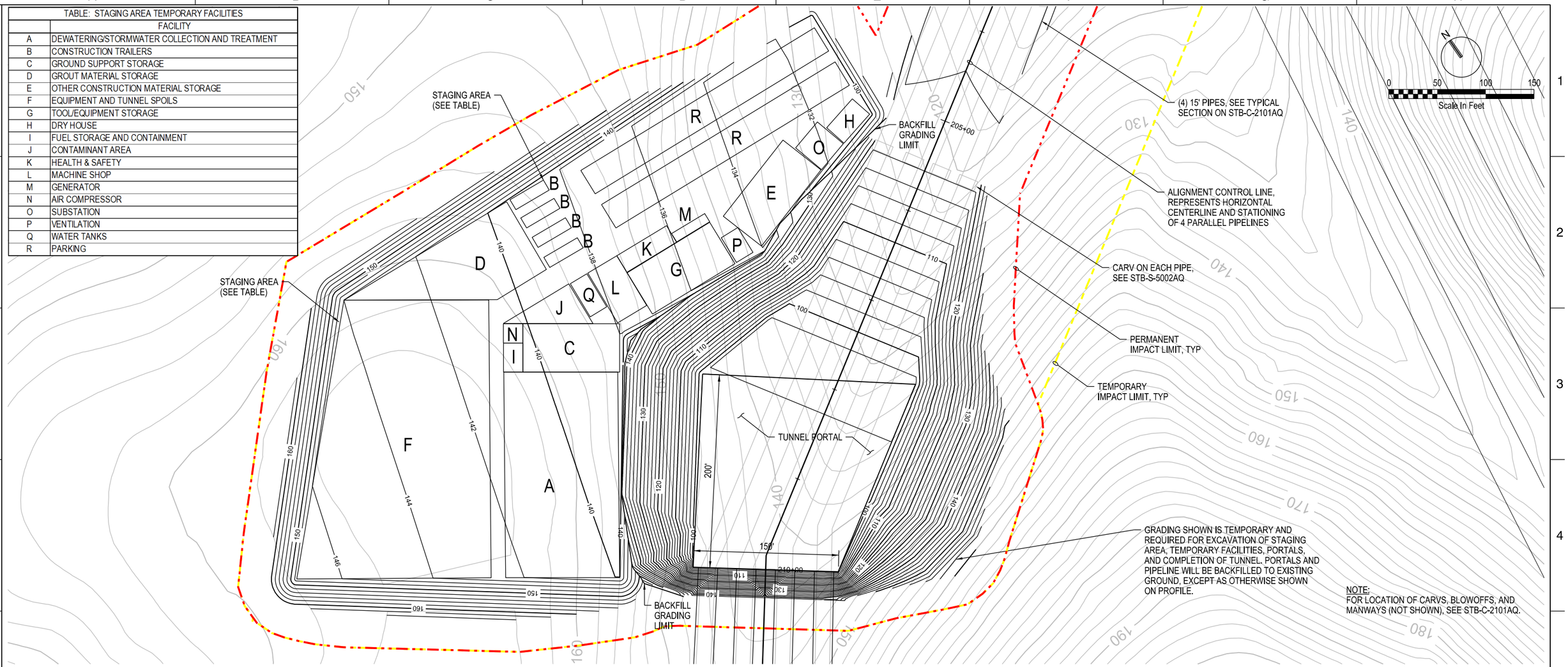
BETHANY RESERVOIR AQUEDUCT PROFILE AND SECTIONS

PROJECT NO. W8X97000
SHEET NO. STB-C-2101AQ
REV
SEQUENCE NO.

STB-C-2101AQ_W8X97000.dgn

PLOT DATE:2023\08\25 PLOT TIME:12:58:05 PM

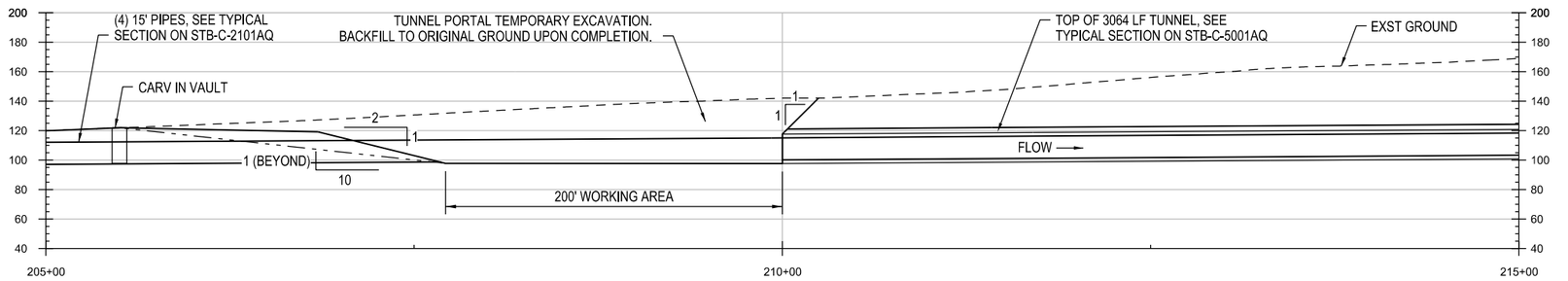
TABLE: STAGING AREA TEMPORARY FACILITIES	
	FACILITY
A	DEWATERING/STORMWATER COLLECTION AND TREATMENT
B	CONSTRUCTION TRAILERS
C	GROUND SUPPORT STORAGE
D	GROUT MATERIAL STORAGE
E	OTHER CONSTRUCTION MATERIAL STORAGE
F	EQUIPMENT AND TUNNEL SPOILS
G	TOOL/EQUIPMENT STORAGE
H	DRY HOUSE
I	FUEL STORAGE AND CONTAINMENT
J	CONTAMINANT AREA
K	HEALTH & SAFETY
L	MACHINE SHOP
M	GENERATOR
N	AIR COMPRESSOR
O	SUBSTATION
P	VENTILATION
Q	WATER TANKS
R	PARKING



GRADING SHOWN IS TEMPORARY AND REQUIRED FOR EXCAVATION OF STAGING AREA, TEMPORARY FACILITIES, PORTALS, AND COMPLETION OF TUNNEL. PORTALS AND PIPELINE WILL BE BACKFILLED TO EXISTING GROUND, EXCEPT AS OTHERWISE SHOWN ON PROFILE.

NOTE:
FOR LOCATION OF CARVS, BLOWOFFS, AND MANWAYS (NOT SHOWN), SEE STB-C-2101AQ.

PLAN
SCALE: 1"=50'



PROFILE
SCALE: 1"=50'

BETHANY RESERVOIR AQUEDUCT

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
	NOV 2023	EPR UPDATE		JJJ

DESIGNED | APPROVAL RECOMMENDED
DRAWN | APPROVAL BY
CHECKED

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - BETHANY RESERVOIR ALTERNATIVE

CONSERVATION EASEMENT CROSSING TUNNEL PORTAL PLAN AND PROFILE

PROJECT NO. W8X97000
SHEET NO. STB-C-1112AQ
REV | SEQUENCE NO.

STB-C-1112AQ_W8X97000.dgn

PLOT DATE:2023\08\28 PLOT TIME:7:24:47 AM

Mapbook Updates

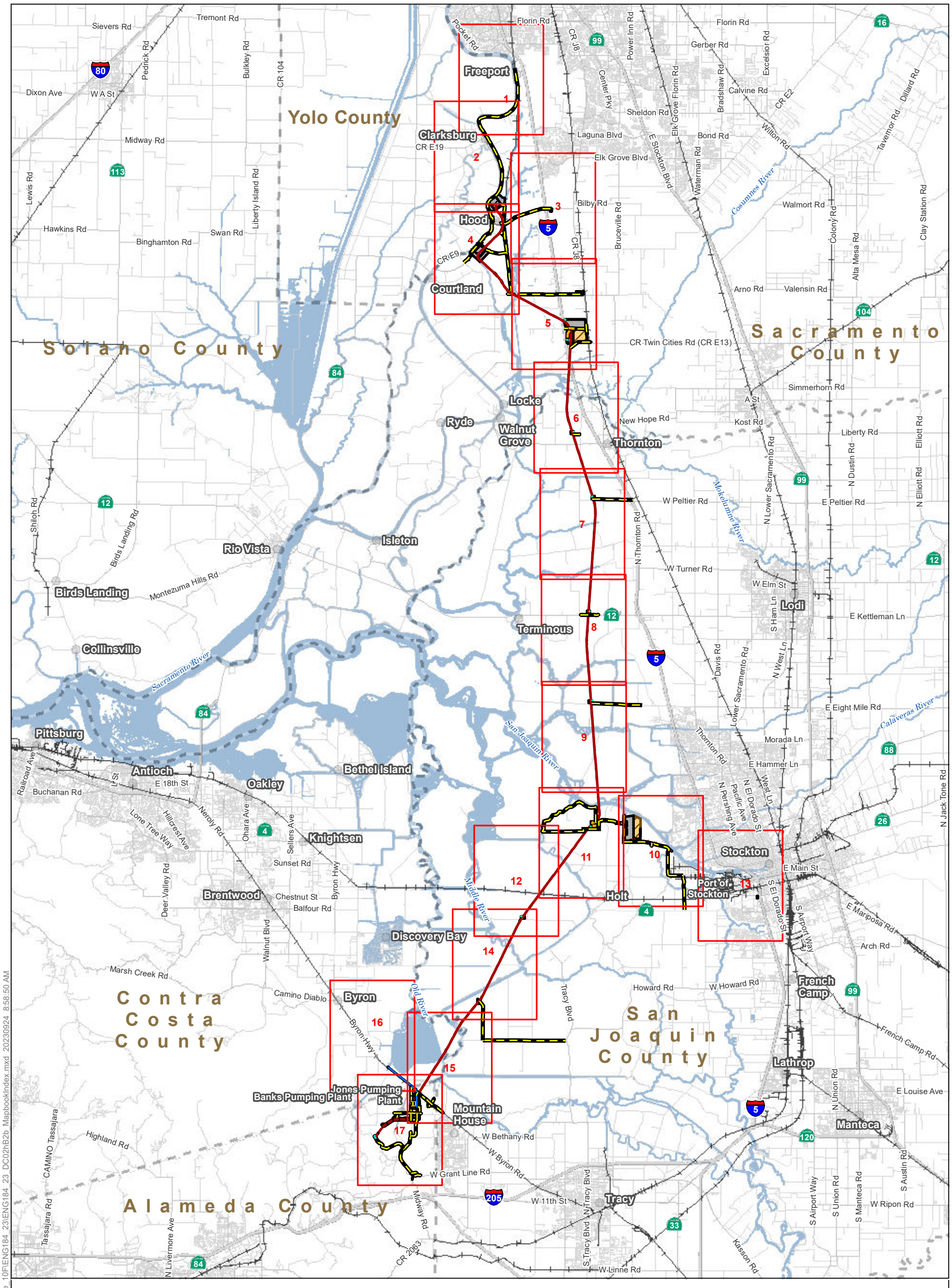
The following mapbook pages have been revised to reflect revisions included in this EPR Update. The revised pages are provided.

- Bethany Mapbook– 6000 cfs Design Capacity with Cylindrical Tee Fish Screens
  - Index Page
  - Sheet 15 of 17
  - Sheet 17 of 17
- Bethany Mapbook– Power
  - Key Map
  - Map 24
- Bethany Mapbook– SCADA
  - Key Map
  - Map 2
  - Map 3
  - Map 10

Bethany Mapbook– 6000 cfs Design Capacity with Cylindrical Tee Fish Screens

The following pages from the Bethany Mapbook– 6000 cfs Design Capacity with Cylindrical Tee Fish Screens were updated.

- Index Page
- Sheet 15 of 17
- Sheet 17 of 17



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Sources: DCA, DWR

This mapbook is a scaled representation of the GIS data and only shows major facilities.
November 2023

Figure: Index
DC02hB Option 2b

CONEY ISLAND

Clifton Court Rd

UNION ISLAND

Herdlyn Rd

Lindeman Rd

Old River

FABIAN TRACT

Kelso Rd

Finck Rd

Bethany Complex

W Byron Rd

Henderson Rd

Project Features

- Road Improvement
- Aqueduct
- Construction Water Pipeline
- Tunnel
- Concrete Batch Plant
- Electrical Building
- Fuel Storage
- Pumping Plant
- Septic System
- Shaft
- Substation
- Surge Basin
- Surge Tank
- Water Treatment and Storage Tanks
- Permanent Subsurface Impact
- Permanent Surface Impact
- Temporary Surface Impact

0 1,000 2,000 Feet

N

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Source: DCA, DWR, ESRI Basemap Aerial Imagery

This mapbook is a scaled representation of the GIS data and only shows major facilities. (November 2023)

Figure : Sheet 15 of 17
DC02hB Option 2b

Byron Hwy
Herdlyn Rd
Old River
Lindeman Rd
Bruns Rd
Jones Pumping Plant
Bethany Complex
Kelso Rd
Christensen Rd
Mountain House Rd
California Aqueduct Bikeway
W Grant Line Rd
Midway Rd

Project Features

- Road Improvement
- Aqueduct
- Construction Water Pipeline
- Runoff Discharge Pipe
- Tunnel
- Concrete Batch Plant
- Discharge Structure
- Electrical Building
- Fuel Storage
- Pumping Plant
- Septic System
- Shaft
- Substation
- Surge Basin
- Surge Tank
- Water Treatment and Storage Tanks
- Permanent Subsurface Impact
- Permanent Surface Impact
- Temporary Surface Impact

0 1,000 2,000 Feet

N

T:\WGI-38\GIS_33_00\GISRequest_11F\Deliverable_10F\ENG184_23\ENG184_23_DC02hB2b_Mapbook.mxd 20230924 9:04:12 AM

Source: DCA, DWR, ESRI Basemap Aerial Imagery

This mapbook is a scaled representation of the GIS data and only shows major facilities. (November 2023)

Figure : Sheet 17 of 17
DC02hB Option 2b

Bethany Mapbook– Power

The following pages from the Bethany Mapbook– Power were updated.

- Key Map
- Map 21

Legend

- Page Index
- Tunnel

Proposed Power

- Underground - Permanent
- Underground - Temporary
- Overhead - Permanent
- Overhead - Temporary
- Abandoned

Yolo County
Solano County
Sacramento County
Contra Costa County
San Joaquin County
Alameda County

Clarksburg
Hood
Courtland
Locke
Ryde
Walnut Grove
Thornton
Isleton
Rio Vista
Terminous
Bethel Island
Oakley
Knightsen
Brentwood
Discovery Bay
Byron
Mountain House
Banks Pumping Plant
Jones Pumping Plant
Holt
Stockton
Port of Stockton
Lodi
French Camp
Lathrop
Manteca
Tracy

CR E19
Elk Grove Blvd
CR J8
Bilby Rd
Bruceville Rd
E Stockton Blvd
Waterman Rd
Bradshaw Rd
CR E2
Wilton Rd
Tavernor Rd
Dillard Rd
Walmort Rd
Colony Rd
Alta Mesa Rd
CR E9
Cosumnes River
Arno Rd
Valensin Rd
CR Twin Cities Rd (CR E13)
Sacramento River
Simmerhorn Rd
A St
Sargent Ave
Kost Rd
Liberty Rd
N Dustin Rd
CR J8
New Hope Rd
CR J11
Mokelumne River
N Lower Sacramento Rd
W Peltier Rd
E Peltier Rd
W Turner Rd
W Elm St
W Lodi Ave
S Ham Ln
S Hutchins St
S Stockton St
S Cherokee Ln
E Kettleman Ln
E Harney Ln
N West Ln
Davis Rd
Lower Sacramento Rd
N Thornton Rd
E Eight Mile Rd
Morada Ln
E Hammer Ln
West Ln
Thornton Rd
Pacific Ave
N El Dorado St
Calaveras River
W March Ln
N Wilson Way
Cherokee Rd
E Fremont St
E Main St
S Lincoln St
S El Dorado St
Navy Dr
E 8th St
E Mariposa Rd
S Airport Way
Arch Rd
Montezuma Hills Rd
Terminous Rd
Howard Rd
W Howard Rd
French Camp Rd
Tracy Blvd
Lathrop Rd
E Louise Ave
W Yosemite Ave
N Union Rd
N Main St
Howland Rd
E 18th St
Hillcrest Ave
Neroly Rd
Ohara Ave
Delta Rd
Lone Tree Way
Sunset Rd
Chestnut St
Balfour Rd
Deer Valley Rd
Fairview Ave
Walnut Blvd
Sellers Ave
Concord Ave
Marsh Creek Rd
Briones Valley Rd
Camino Diablo
Byron Hwy
San Joaquin River
Middle River
Old River
W Bethany Rd
W Byron Rd
W Grant Line Rd
W 11th St
Midway Rd
N Tracy Blvd
Kasson Rd
S Union Rd
S Manteca Rd
W Ripon Rd

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25

This mapbook is a scaled representation of the GIS data and only shows major facilities.
For Illustration Purposes Only

N

0 3.25 Miles

Key Map
Bethany Reservoir Alternative Power Supply
November 2023

Data Source: DCA, DWR

On-site power route to be determined but will be located within site disturbance area

Continued on Map 22

Page Index
Existing Substation
Connection to Existing Substation
Substation

Proposed Overhead Power
New Line and Poles
New Line and Towers

Existing Power
PG&E Low Voltage
11 kV
PG&E High Voltage
60-70 kV
500 kV
PGE High Voltage
230 kV
WAPA
60-70 kV
230 kV
Other
TANC 500 kV

Permanent Subsurface Impact
Permanent Surface Impact
Temporary Surface Impact

This mapbook is a scaled representation of the GIS data and only shows major facilities.

DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

For Illustration Purposes Only

N
0 500 Feet

Map 21
Bethany Reservoir Alternative Power Supply
Bethany Complex
November 2023

Data Source: DCA, DWR

Bethany Mapbook– SCADA

The following pages from the Bethany Mapbook– SCADA were updated.

- Key Map
- Map 2
- Map 3
- Map 10

Legend

Page Index

Proposed SCADA

Underground

Overhead

1 2 3 4 5 6 7 8 9 10

Freeport
Clarksburg
Hood
Courtland
Locke
Ryde
Walnut Grove
Thornton
Rio Vista
Isleton
Terminous
Bethel Island
Oakley
Knightsen
Brentwood
Discovery Bay
Byron
Banks Pumping Plant
Jones Pumping Plant
Mountain House
Holt
Port of Stockton
Stockton
Lodi
French Camp
Lathrop
Manteca
Tracy

Yolo County
Solano County
Sacramento County
Contra Costa County
San Joaquin County
Alameda County

Pocket Rd
Mack Rd
CR E19
Elk Grove Blvd
Laguna Blvd
Sheldon Rd
Calvine Rd
Gerber Rd
Bond Rd
Bilby Rd
Hood Franklin Rd
CR E9
CR J8
Bruceville Rd
Center Pky
Power Inn Rd
Elk Grove Florin Rd
Excelsior Rd
Bradshaw Rd
E Stockton Blvd
Waterman Rd
CR E2
Willton Rd
Dillard Rd
Tavernor Rd
Clay Station Rd
Walmort Rd
Colony Rd
Cosumnes River
Arno Rd
Valensin Rd
Alta Mesa Rd
CR Twin Cities Rd (CR E13)
Sacramento River
Simmerhorn Rd
A St
Kost Rd
New Hope Rd
Liberty Rd
Elliott Rd
Dustin Rd
W Walnut Grove Rd
CR J11
Montezuma Hills Rd
Terminous Rd
W Peltier Rd
E Peltier Rd
Mokelumne River
N Lower Sacramento Rd
W Turner Rd
W Elm St
S Ham Ln
S Hutchins St
E Kettleman Ln
N Thornton Rd
Davis Rd
Lower Sacramento Rd
N West Ln
E Eight Mile Rd
Thornton Rd
West Ln
Morada Ln
E Hammer Ln
Pacific Ave
N El Dorado St
Calaveras River
W March Ln
N Wilson Way
San Joaquin River
E Fremont St
E Main St
Copperopolis Rd
Navy Dr
S Lincoln St
S El Dorado St
E 8th St
E Mariposa Rd
Arch Rd
S Airport Way
French Camp Rd
E 18th St
Neroly Rd
Hillcrest Ave
Lone Tree Way
Empire Ave
Ohara Ave
Delta Rd
Sunset Rd
Sellers Ave
Byron Hwy
Chestnut St
Balfour Rd
Deer Valley Rd
Concord Ave
Walnut Blvd
Marsh Creek Rd
Camino Diablo
Middle River
Old River
Tracy Blvd
Howard Rd
W Howard Rd
W Bethany Rd
W Byron Rd
W Grant Line Rd
W 11th St
N Tracy Blvd
Howard Rd
W Yosemite Ave
N Union Rd
N Main St
E Louise Ave
E Lathrop Rd
S Union Rd
S Manteca Rd
S Austin Rd
W Ripon Rd
S Airport Way
N Dustin Rd
N Elliott Rd
E Peltier Rd

Data Source: DCA, DWR

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N

0 3.5 Miles

Key Map
Bethany SCADA
November 2023

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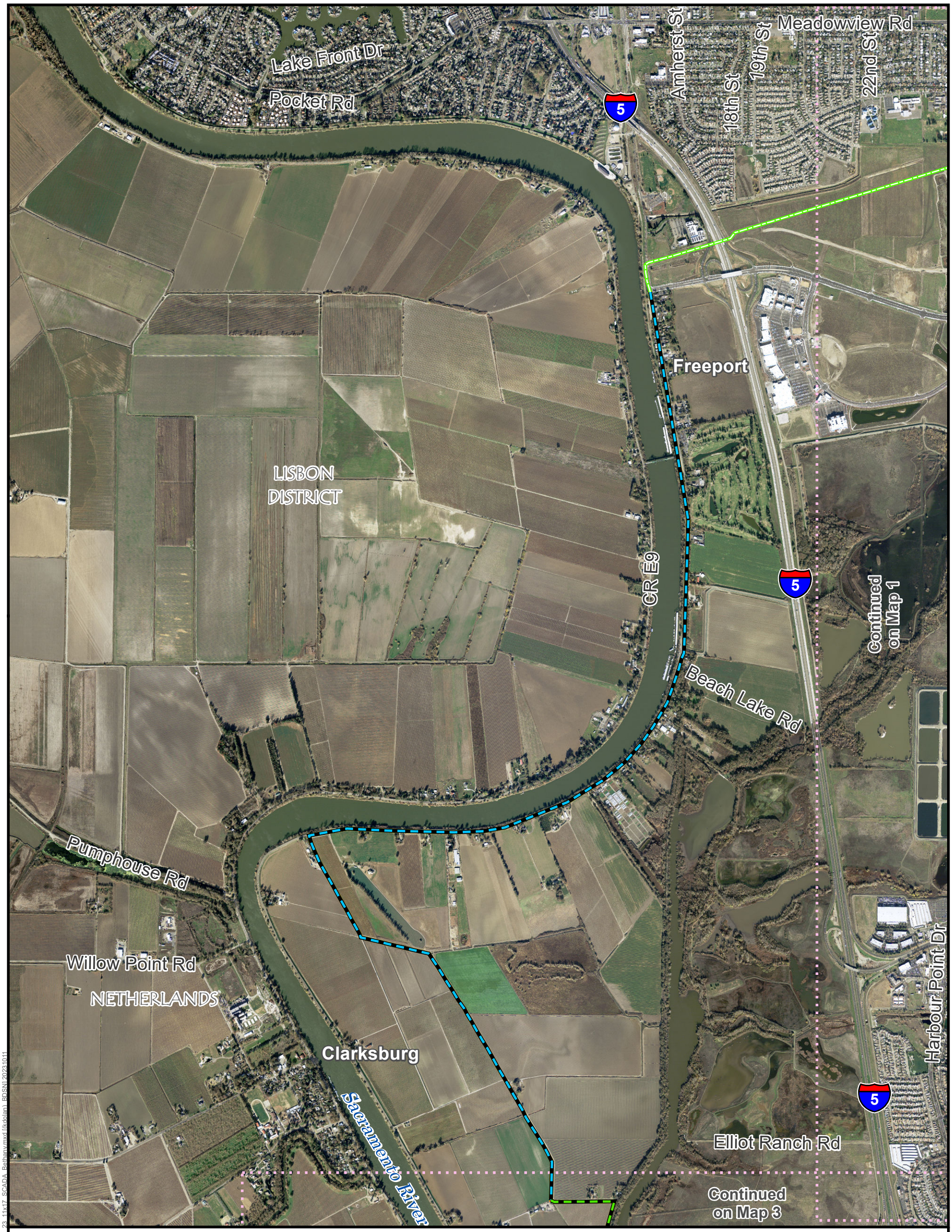

Legend

- Page Index
- **SCADA Proposed Fiber Routes**
- **Proposed Underground SCADA**
  - Within Existing Roadway
  - Outside Roadway
- **Proposed Overhead SCADA**
  - New Line on Existing Poles
- Permanent Subsurface Impact
- Permanent Surface Impact
- Temporary Surface Impact

This mapbook is a scaled representation of the GIS data and only shows major facilities.

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N

0 1,000 2,000 Feet

Map 2
SCADA - Bethany Option
November 2023

Data Source: DCA, DWR

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Legend

- Page Index
- **SCADA Proposed Fiber Routes**
- **Proposed Underground SCADA**
  - Within Existing Roadway
  - Within Proposed Roadway Improvements
  - Outside Roadway
- Permanent Subsurface Impact
- Permanent Surface Impact
- Temporary Surface Impact

This mapbook is a scaled representation of the GIS data and only shows major facilities.

DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 1,000 2,000 Feet

Map 3
SCADA - Bethany Option
November 2023

Data Source: DCA, DWR

TWGI-38\GIS_33_00\GISRequest_11\Deliverable_10\ENG184_23\ENG184_23_11x17_SCADA_Bethany.mxd (fkodan) BDSN1 20231011

Byron Hwy

Herdlyn Rd

Old River

Bruns Rd

Lindeman Rd

Jones Pumping Plant

Christensen Rd

Also connect SCADA facilities at the Bethany Reservoir Discharge Structure to the existing DWR fiber optic cable in the California Aqueduct Bikeway road.

California Aqueduct Bikeway

W Grant Line Rd

Legend

- Page Index
- **SCADA Proposed Fiber Routes**
- **Proposed Underground SCADA**
  - Within Existing Roadway
  - Within Proposed Roadway Improvements
  - Common Trench with Aqueduct
  - Trenchless Installation
- Permanent Subsurface Impact
- Permanent Surface Impact
- Temporary Surface Impact

This mapbook is a scaled representation of the GIS data and only shows major facilities.

DCA DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

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N

0 1,000 2,000 Feet

Map 10
SCADA - Bethany Option
November 2023

Data Source: DCA, DWR

TWG_38\GIS_33_00\GISRequest_16\Deliverable_10\ENG184_23\ENG184_23_11x17_SCADA_Bethany.mxd (ikolan) 20231011