CORRESPONDENCE COVER SHEET
WASTE PERMITS DIVISION
TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Date: 30 June 2022
Facility Name: Calaveras Plant Site
Permit or Registration No.: CCR102

Nature of Correspondence:
☐ Initial/New
☒ Response/Revision*

*If Response/Revision, please provide previous TCEQ Tracking No.: 27214483
(Previous TCEQ Tracking No. can be found in the Subject line of the TCEQ's response letter to your original submittal.)

This cover sheet should accompany all correspondences submitted to the Waste Permits Division and should be affixed to the front of your submittal as a cover page. Please check the appropriate box for the type of correspondence being submitted. For questions regarding this form, please contact the Waste Permits Division at (512) 239-2335.

Table 1 - Municipal Solid Waste

APPLICATIONS	REPORTS and RESPONSES
☐ New Notification	☐ Closure Report
☐ New Permit (including Subchapter T)	☐ Groundwater Alternate SRC Demonstration
☐ New Registration (including Subchapter T)	☐ Groundwater Corrective Action
☐ Major Amendment	☐ Groundwater Monitoring Report
☐ Minor Amendment	☐ Groundwater Statistical Evaluation
☐ Limited Scope Major Amendment	☐ Landfill Gas Corrective Action
☐ Notice Modification	☐ Landfill Gas Monitoring
☐ Non-Notice Modification	☐ Liner Evaluation Report
☐ Transfer/Name Change Modification	☐ Soil Boring Plan
☐ Temporary Authorization	☐ Special Waste Request
☐ Voluntary Revocation	☐ Other:
☐ Subchapter T Workplan	
☐ Other:	

Table 2 - Industrial & Hazardous Waste

APPLICATIONS	REPORTS and RESPONSES
☐ New	☐ Annual/Biennial Site Activity Report
☐ Renewal	☐ CfPT Plan/Result
☐ Post-Closure Order	☐ Closure Certification/Report
☐ Major Amendment	☐ Construction Certification/Report
☐ Minor Amendment	☐ CPT Plan/Result
☐ Class 3 Modification	☐ Extension Request
☐ Class 2 Modification	☐ Groundwater Monitoring Report
☐ Class 1 ED Modification	☐ Interim Status Change
☐ Class 1 Modification	☐ Interim Status Closure Plan
☐ Endorsement	☐ Soil Core Monitoring Report
☐ Temporary Authorization	☐ Treatability Study
☐ Voluntary Revocation	☐ Trial Burn Plan/Result
☐ 335.6 Notification	☐ Unsaturated Zone Monitoring Report
☒ Other: CCR Registration Application - Additional information regarding the proposed Plant Drains Pond	☐ Waste Minimization Report
	☐ Other:

Texas Commission on Environmental Quality

Registration Application for Coal Combustion Residuals (CCR) Waste Management

I. General Information

1. Reason for Submittal

Type of Registration Application

☐ New ☐ Major Amendment ☐ Minor Amendment

☐ Notice of Deficiency (NOD) Response ☐ Transfer ☐ Name Change

☒ Other Additional information regarding the proposed Plant Drains Pond (PDP).

NOTE: Information provided in the original submittal is indicated in blue text. Additional information regarding the proposed PDP and any revisions to the original submittal are indicated in green text.

2. Application Fees

☒ $150 Application Fee Included in original submittal

Payment Method

☐ Check ☒ Online through ePay portal <www3.tceq.texas.gov/epay/>

If paid online, enter ePay Trace Number: 582EA000470805

3. Facility Information

Facility information must match regulated entity information on the Core Data Form.

Applicant: ☐ Owner ☐ Operator ☒ Owner/Operator

Facility TCEQ Solid Waste Registration No: 31445

Facility EPA ID: TXD000815019

Regulated Entity Reference No. (if issued): RN 100217975

Facility Name: Calaveras Plant Site

Facility (Area Code) Telephone Number: 210-353-2158 (Gregg Tieken)

Facility physical street address (city, state, zip code, county): 12940 South US Highway 181, San Antonio, Texas 78223

Facility mailing address (city, state, zip code, county): 12940 South US Highway 181, San Antonio, Texas 78223

Latitude (Degrees, Minutes Seconds): 29, 18, 31.53

Longitude (Degrees, Minutes Seconds): -98, 19, 19.12

4. Publicly Accessible Website

Provide the URL address of a publicly accessible website where the owner or operator of a CCR unit will post information.
https://www.cpsenergy.com/content/corporate/en/about-us/environment/coal-combustion-residuals.html

5. Facility Landowner(s) Information

Facility landowner(s) name: CPS Energy

Facility landowner mailing address: 500 McCullough Avenue

City: San Antonio State: Texas Zip Code: 78215

(Area Code) Telephone Number: 210-353-2551

Email Address (optional):

6. CCR Waste Management Unit(s)

☒ Landfill Unit(s) ☒ Surface Impoundment(s)

For each existing landfill, new landfill and lateral expansion, existing surface impoundment, and new surface impoundment and lateral expansion(s) provide information on type of waste, the registered unit(s) in which they are managed, and sampling and analytical methods.

Submit the following tables: See Attachment 6-1 for updated CCR Waste Tables.

Table I.6. – CCR Waste Management Units;

Table I.6.A. – Waste Management Information;

Table I.6.B. – Waste Managed in Registered Units; and

Table I.6.C. – Sampling and Analytical Methods.

7. Description of Proposed Activities or Changes to Existing Facility

Provide a brief description of the proposed activities if application is for a new facility, or the proposed changes to an existing facility or registration conditions, if the application is for an amendment.

CPS Energy owns and operates the Calaveras Power Station that consists of two power plants (J.T Deely and J.K. Spruce) that are subject to regulation under the CCR Rule. At the Power Station, CPS Energy currently operates two CCR surface impoundments (Evaporation Pond and Sludge Recycle Holding (SRH) Pond) and one CCR landfill (Fly Ash Landfill). The units were historically shared by both power plants. Although the J.T. Deely Power Plant ceased operation at the end of December 2018 and sluiced bottom ash is no longer being received at the Bottom Ash Ponds (BAPs); the BAPs will continue to be inspected and monitored until the units have completed the closure process. The J.K. Spruce Power Plant currently utilizes the other CCR units. The proposed Plant Drains Pond (PDP) is being constructed to replace the SRH Pond. Construction of the proposed PDP is scheduled to begin in June 2022 and is scheduled for completion in June 2023.

8. Primary Contact Information

Contact Name: Michael M. Malone Title: Senior Manager – Environmental Management

Contact mailing address: 500 McCullough Avenue; Mail Drop: RT0601
City: San Antonio County: Bexar State: Texas Zip Code: 78215
(Area Code) Telephone Number: 210-353-3625

Email Address (optional): mmmalone@cpsenergy.com

9. Notice Publishing

Party responsible for publishing notice:
☐ Applicant ☒ Consultant ☐ Agent in Service

Contact Name: Walter Zverina Title: Principal Consultant

Contact mailing address: 111 Congress Avenue, Suite 500
City: Austin County: Travis State: Texas Zip Code: 78701
(Area Code) Telephone Number: 512-459-4700

10. Alternative Language Notice

Is an alternative language notice required for this application? For determination, refer to Alternative Language Checklist on the Public Notice Verification Form (TCEQ-20244-Waste-NORI).

☒ Yes ☐ No

11. Public Place Location of Application

Name of the Public Place: Central Library
Physical Address: 600 Soledad Street
City: San Antonio County: Bexar State: Texas Zip Code: 78205
(Area code) Telephone Number: 210-207-2829 (Hailey Holmes)

12. Ownership Status of the Facility

☐ Corporation ☐ Limited Partnership
☐ Sole Proprietorship ☐ General Partnership ☒ Other (specify): Municipally Owned Company

CPS Energy is not a corporation, so it does not have a certificate on file with the Secretary of State. Rather, CPS Energy is a municipally owned gas and electric utility company. CPS Energy is wholly owned by the City of San Antonio and managed and operated by the Board of Trustees of the San Antonio Electric and Gas System. CPS Energy was created by a 1942 City of San Antonio Ordinance and Indenture (See attached document regarding management's authority, Article VI—Management, pg. 96 provided in Attachment 22).

Does the Site Owner (Permittee/Registrant) own all the CCR units and all the facility property?

☒ Yes ☐ No

13. Property / Legal Description Information

Provide a legal description and supporting documents of the property where the management of CCR waste will occur; including a survey plat and a boundary metes and bounds description (30 TAC §352.231(g)).

Submit the following documents:

a. Property Legal Description
b. Property Metes and Bounds Description
c. Metes and Bounds Drawings
d. On-Site Easements Drawings

See documents provided in Attachment 21.

An updated Metes and Bounds description is provided in Attachment 21.

14. Operator Information

Identify the entity who will conduct facility operations, if the owner and operator are not the same. Owner and Operator are the same.

Operator Name:

Operator mailing address:

City: State: Zip Code:

(Area Code) Telephone Number:

Email Address (optional):

15. Confidential Documents

Does the application contain confidential documents?

☐ Yes ☒ No

If "Yes", cross-reference the confidential documents throughout the application and submit as a separate attachment in a binder clearly marked "CONFIDENTIAL."

16. Permits and Construction Approvals

Permit or Approval	Received	Pending	Not Applicable
Hazardous Waste Management Program under the Texas Solid Waste Disposal Act	☐	☐	☒
Underground Injection Control Program under the Texas Injection Well Act	☐	☐	☒

Permit or Approval	Received	Pending	Not Applicable
National Pollutant Discharge Elimination System Program under the Clean Water Act and Waste Discharge Program under Texas Water Code, Chapter 26 TPDES permits authorize discharge from the Bottom Ash Ponds, SRH Pond, and Fly Ash Landfill.	☒	☐	☐
Prevention of Significant Deterioration Program under the Federal Clean Air Act (FCAA). Nonattainment Program under the FCAA	☒	☐	☐
National Emission Standards for Hazardous Air Pollutants Preconstruction Approval under the FCAA	☒	☐	☐
Other (describe)	☐	☐	☐

17. Legal Authority

The owner and operator of the facility shall submit verification of their legal status with the application. This shall be a one-page certificate of incorporation issued by the secretary of state. The owner or operator shall list all persons having over a 20% ownership in the facility.

CPS Energy is not a corporation, so it does not have a certificate on file with the Secretary of State. Rather, CPS Energy is a municipally owned gas and electric utility company. CPS Energy is wholly owned by the City of San Antonio and managed and operated by the Board of Trustees of the San Antonio Electric and Gas System. CPS Energy was created by a 1942 City of San Antonio Ordinance and Indenture (See attached document regarding management's authority, Article VI—Management, pg. 96 provided in Attachment 22).

18. TCEQ Core Data Form

The TCEQ requires that a Core Data Form (TCEQ-10400) be submitted on all incoming applications, unless a Regulated Entity and Customer Reference Number has been issued by the TCEQ and no core data information has changed. For more information regarding the Core Data Form, call (512) 239-5175 or visit the TCEQ Website.

See Core Data Form provided in Attachment 23.

19. Other Governmental Entities Information

Coastal Management Program

Is the facility within the Coastal Management Program boundary?

☐ Yes ☒ No

Local Government Jurisdiction (If Applicable)
Within City Limits of: Not Applicable
Within Extraterritorial Jurisdiction of: San Antonio

Is the facility located in an area in which the governing body of the municipality or county has prohibited the storage, processing or disposal of municipal or industrial solid waste?

☐ Yes ☒ No If "Yes", provide a copy of the ordinance or order as an attachment.

20. Attachments

Does the application include the following?

General Maps	☒ Yes	☐ No
General Topographic Map	☒ Yes	☐ No
Facility Layout Map	☒ Yes	☐ No
Surrounding Features Map	☒ Yes	☐ No
Process Flow Diagram	☒ Yes	☐ No
Land Ownership Map	☒ Yes	☐ No
Land Ownership List	☒ Yes	☐ No
Pre-printed Mailing Labels	☒ Yes	☐ No

Maps and drawings shall be legible and easily readable by eye without magnification. Scales and paper size shall be chosen based on the type of map submitted, the land area covered, and the amount of detail to be shown. See instructions for details regarding maps and drawings to be submitted in application.

See documents provided in Attachment 1. See updated CCR Well Network Location Map, new Contiguous Registration Boundary Map, and updated Process Flow Diagrams in Attachment 1.

21. Verification of Compliance

Does the owner and operator verify that the design, construction, and operation of CCR landfill(s) and surface impoundment(s) meets the requirements of 30 TAC §352.231(f), 30 TAC §352.2, 40 CFR §257.52, and 40 CFR §§257.3-1 – 257.3-3).

☒ Yes ☐ No

30 TAC 352.231(f): *The owner or operator shall verify that the design, construction, and operation of the coal combustion residuals landfill or surface impoundment meets the requirements of §352.2 of this title (relating to Applicability of Other Regulations).*

30 TAC 352.2: *The commission adopts by reference 40 Code of Federal Regulations §257.52 (Applicability of other regulations) as amended through the April 17, 2015, issue of the Federal Register (80 FR 21301).*

40 CFR 257.52: *Applicability of Other Regulations.*

> *(a) Compliance with the requirements of this subpart does not affect the need for the owner or operator of a CCR landfill, CCR surface impoundment, or lateral expansion of a CCR unit to comply with all other applicable federal, state, tribal, or local laws or other requirements.*
>
> *(b) Any CCR landfill, CCR surface impoundment, or lateral expansion of a CCR unit continues to be subject to the requirements in §§257.3-1, 257.3-2, and 257.3-3.*

40 CFR 257.3: *Solid waste disposal facilities or practices which violate any of the following criteria pose a reasonable probability of adverse effects on health or the environment:*

> *3-1: Floodplains.*
>
> *(a) Facilities or practices in floodplains shall not restrict the flow of the base flood, reduce the temporary water storage capacity of the floodplain, or result in washout of solid waste, so as to pose a hazard to human life, wildlife, or land or water resources.*
>
> *(b) As used in this section:*

(b)(1) Based flood means a flood that has a 1 percent or greater chance of recurring in any year or a flood of a magnitude equaled or exceeded once in 100 years on the average over a significantly long period.

(b)(2) Floodplain means the lowland and relatively flat areas adjoining inland and coastal waters, including flood-prone areas of offshore islands, which are inundated by the base flood.

(b)(3) Washout means the carrying away of solid waste by waters of the base flood.

3-2: Endangered Species.

(a) Facilities or practices shall not cause or contribute to the taking of any endangered or threatened species of plants, fish, or wildlife.

(b) The facility or practice shall not result in the destruction or adverse modification of the critical habitat of endangered or threatened species as identified in 50 CFR Part 17.

(c) As used in this section:

(c)(1) Endangered or threatened species means any species listed as such pursuant to section 4 of the Endangered Species Act.

(c)(2) Destruction or adverse modification means a direct or indirect alteration of critical habitat which appreciably diminishes the likelihood of the survival and recovery of threatened or endangered species using that habitat.

(c)(3) Taking means harassing, harming, pursuing, hunting, wounding, killing, trapping, capturing, or collecting or attempting to engage in such conduct.

3-3: Surface Water.

(a) For purposes of section 4004(a) of the Act, a facility shall not cause a discharge of pollutants into waters of the United States that is in violation of the requirements of the National Pollutant Discharge Elimination System (NPDES) under section 402 of the Clean Water Act, as amended.

(b) For purposes of section 4004(a) of the Act, a facility shall not cause a discharge of dredged material or fill material to waters of the United States that is in violation of the requirements under section 404 of the Clean Water Act, as amended.

(c) A facility or practice shall not cause non-point source pollution of waters of the United States that violates applicable legal requirements implementing an areawide or Statewide water quality management plan that has been approved by the Administrator under section 208 of the Clean Water Act, as amended.

(d) Definitions of the terms "Discharge of dredged material", "Point source", "Pollutant", "Waters of the United States", and "Wetlands" can be found in the Clean Water Act, as amended, 33 U.S.C. 1251 et seq., and implementing regulations, specifically 33 CFR Part 323 (42 FR 37122, July 19, 1977).

II. Location Restrictions and Geology

See Instructions and Technical Guidance

22. Location Restrictions

Submit certifications and technical reports demonstrating compliance of CCR unit(s) with applicable location restrictions (30 TAC 352, Subchapter E) and comply with 30 TAC §352.231(d) and 30 TAC §352.4 for submission of engineering and geoscientific information.

See Attachment 2 *Location Restriction Demonstration* (ERM, 2018). Information regarding Fault areas, Seismic impact zones and Unstable areas in proximity to the proposed PDP is provided in Attachment 2 in the original submittal. Additional information regarding Placement above the uppermost aquifer and Wetlands in proximity to the proposed PDP will be incorporated into an updated *Location Restriction Demonstration* after the PDP well network is completely installed in July 2022. Draft versions of the Placement above the uppermost aquifer and Wetlands sections are provided in Attachments 2-1 and 2-2, respectively.

A. **Placement above the uppermost aquifer** (30 TAC §352.601) (40 CFR §257.60). For those CCR units whose base is less than five feet above the upper limit of the uppermost aquifer, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.60(a) – (c).

B. **Wetlands** (30 TAC §352.611) (40 CFR §257.61). For CCR units located in wetlands, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.61(a) – (c).

C. **Fault areas** (30 TAC §352.621) (40 CFR §257.62). For CCR units located within 200 feet of the outermost damage zone of a fault, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.62(a) – (c).

D. **Seismic impact zones** (30 TAC §352.631) (40 CFR §257.63). For CCR units located in a seismic impact zone, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.63(a) – (c).

E. **Unstable areas** (30 TAC §352.641) (40 CFR §257.64). For CCR units located in unstable areas, please submit a copy of the demonstration showing evidence of compliance with 40 CFR §257.64(a) – (d).

23. Geology Summary Report

Submit a summary of the geologic conditions at the facility, including the relation of the geologic condition to each CCR unit. The summary must include enough information and data and include sources and references for the information. Include all groundwater monitoring data required by 40 CFR Part 257, Subpart D, (30 TAC §352.241, §352.601, §352.621, §352.631, and §352.641) and submitted in accordance of 30 TAC §352.4.

Note: Previously prepared documents may be submitted but must be supplemented or updated as necessary to provide the requested information (30 TAC §352.241(b)). (Subchapter C Geology)

See Attachment 3 which contains excerpts from the *Location Restriction Demonstration* (ERM, 2018) and groundwater monitoring data for each of the four CCR units from the most recent *Annual Groundwater Sampling and Corrective Action Reports* (ERM, 2021). Draft versions of the *Geology Summary* and groundwater monitoring data for the PDP are provided in Attachments 3-1 and 3-2, respectively. The *Geology Summary* will be updated after the PDP well network is completely installed in July 2022.

III. Fugitive Dust Control Plan

24. Fugitive Dust Control Plan

A. Submit a copy of the CCR Fugitive Dust Control Plan (30 TAC §352.801) (40 CFR §257.80(b)), or the most recently amended plan. The initial plan or subsequent amended plan must be certified by a qualified Texas licensed professional engineer (Texas P.E.) that the plan meets the requirements of 30 TAC Chapter 352.

See Attachment 4 *CCR Fugitive Dust Control Plan* (ERM, 2015). Information regarding the proposed PDP operations will be incorporated into an updated *Fugitive Dust Control Plan*. The *Fugitive Dust Control Plan* will be updated prior to the operation of the PDP.

B. Submit the most recent Annual CCR Fugitive Dust Control Report (30 TAC §352.801) (40 CFR §257.80(c)) and include the report information.

See Attachment 5 *CCR Units – 2020 Annual Inspection and Fugitive Dust Control Report* (ERM, 2020).

IV. Landfill Criteria

See Instructions and Technical Guidance – No. 30 Coal Combustion Residuals Landfill

25. Landfill(s) for CCR Waste

Provide the following information below if there is a landfill; if there is more than one landfill, separate information is required for each landfill. See Attachment 6 Landfill Tables.

A. Landfill Characteristics

Describe the design, installation, construction, and operation of the landfill and submit a completed Table IV.A. – Landfill Characteristics.

See Attachment 12 Compilation of Construction History (ERM, 2016)

B. Liner Design

1. For existing landfills, provide attachments describing how the facility will comply with 30 TAC 352, Subchapter F (Design Criteria).

   The citation 30 TAC 352, Subchapter F (Design Criteria) adopts by reference 40 CFR 257.70 (Design Criteria for New CCR Landfills and Any Lateral Expansion of a CCR Landfill) and does not apply to existing landfills.

2. For new landfills or lateral expansions of existing landfills, submit pages describing how the facility will comply with 30 TAC §352.261 and 30 TAC §352.701.

   Not Applicable.

3. Complete Table IV.B. - Landfill Liner System and specify the type of liner used for the landfill.
4. Provide attachments describing the design, installation, and operation of the liner and leak detection system. The description must demonstrate that the liner and leak detection system will prevent discharge to the land, groundwater, and surface water. Submit a quality assurance project plan (QAPP) to ensure that each analysis is performed appropriately.

   The existing landfill does not have a leak detection system.

C. Leachate Collection and Removal

Submit design information and description of leachate collection and removal system in accordance with 30 TAC §352.701.

The existing landfill does not have a leak detection system.

Complete Table IV.C. - Landfill Leachate Collection System

D. Design of Liner and Leachate Collection and Removal System.

For a new landfill or lateral expansion of a CCR landfill, provide a qualified Texas P.E. certification and technical report that the design of the liner and the leachate collection and removal system meets the requirements of 30 TAC §352.711.

Not Applicable.

E. Run-on and Run-off Controls

At time of application, attach pages describing how the facility will comply with the run-on and run-off system plan for an existing, new, or lateral expansion of a CCR landfill information. Provide a qualified Texas P.E. certification and technical report that the run-on and run-off control system plans meet the requirements of 30 TAC §352.811.

See Attachment 7 *Run-on/Run-off Control Plan – 5-Year Update* (ERM, 2021).

F. Inspection for Landfills

At time of application, attach pages describing how the facility will comply 30 TAC §352.841 and complete Table IV.D. – Inspection Schedule for Landfills. For existing CCR landfills, provide the most recent inspection report. All CCR landfills and any lateral expansions of a CCR landfill must be inspected for any structural weakness, malfunction, deterioration conditions which are disrupting or have the potential to disrupt the operation or safety of the CCR unit, or any other conditions which may cause harm to human health and environment at a frequency specified in 40 CFR §257.84(a) and (b).

See Attachment 5 *2020 Annual Inspection and Fugitive Dust Control Report* (ERM, 2021).

V. Surface Impoundment Criteria

See Instructions and Technical Guidance – No. 31 Coal Combustion Residuals Surface Impoundment

26. Surface Impoundment(s) for CCR Waste

Provide the following information below if there is a surface impoundment; if there is more than one surface impoundment, separate information is required for each surface impoundment. See Attachment 6 Surface Impoundment Tables. See Attachment 6-3 for updated Surface Impoundment Tables.

A. General Surface Impoundment(s) Characteristics

Provide information about the characteristics of the surface impoundment(s): incised, surface area (acres), storage volume (acres-feet), and depth (feet).

For all surface impoundment(s), include the following information:

1. Complete Table V.A. - Surface Impoundments Characteristics. List the surface impoundment(s) to be registered as a CCR unit(s), the wastes managed in each unit, and the rated capacity or size of each unit.
2. Describe the surface impoundment(s) and provide a plan view drawing with cross-sections, if available.

   See Attachment 13 *Compilation of Construction History* (ERM, 2016). See Attachment 13-1 for the PDP Construction Plans (AECOM, 2022, draft versions).
3. Specify the minimum freeboard to be maintained and the basis of the design to prevent overtopping resulting from normal or abnormal operation; overfilling; wind and wave action; rainfall; run-on; malfunctions of level controllers, alarms, and other equipment; and human error. Show that adequate freeboard will be available to prevent overtopping from a 100-year, 24-hour storm.

   See Attachment 12 *Inflow Design Flood Control Plan – 5-Year Update* (ERM, 2021). See Attachment 12-1 for the PDP *Inflow Design Flood Control Plan* (AECOM, 2022, draft version). The *Inflow Design Flood Control Plan* will be updated prior to the operation of the PDP.
4. Waste Flow
   Describe the means that will be used to immediately shut off the flow of waste to the impoundment in the event of liner failure or to prevent overtopping.

   See Attachment 12 *Inflow Design Flood Control Plan – 5-Year Update* (ERM, 2021). See Attachment 12-1 for the PDP *Inflow Design Flood Control Plan* (AECOM, 2022, draft version). The *Inflow Design Flood Control Plan* will be updated prior to the operation of the PDP.
5. Dike Construction ☒ Yes ☐ No

   If Yes, submit the dike certification (located at the end of the application).

   The structural integrity of the dike system must be certified by a qualified Texas P.E. before the registration is issued. If the impoundment is not being used, the dike system must be certified before it can be put into use. The certification must be sealed by a qualified Texas P.E., along with the engineering firm's name and registration number (30 TAC §352.4).

   A report shall accompany the dike certification which summarizes the activities, calculations, and laboratory and field analyses performed in support of the dike certification. Describe the design basis used in construction of the dikes. A QAPP should be included in the report to ensure that each analysis is performed appropriately and include:

   (1) Slope Stability Analysis

   (2) Hydrostatic and Hydrodynamic Analysis

   (3) Storm Loading

   (4) Rapid Drawdown

   Earthen dikes should have a protective cover to minimize wind and water erosion and to preserve the structural integrity of the dike. Describe the protective cover used and describe its installation and maintenance procedures.

See Attachment 14 *Structural Stability and Safety Factor Assessments – 5-Year Update* (ERM, 2021). The certification for Dike Construction will be submitted prior to the operation of the PDP.

B. Liner Design

For surface impoundment(s), provide information about how the facility will comply with 30 TAC §352.711 for existing CCR surface impoundments. For new and lateral expansion of CCR surface impoundments provide information on how the facility will comply with 30 TAC §352.261, and 30 TAC §352.721, see Instructions and Technical Guidance No. 31 Coal Combustion Residuals Surface Impoundment. The qualified Texas P.E. must certify that the design of the liner complies with the requirements of 30 TAC Chapter 352 and 40 CFR Part 257, Subpart D, where required.

Is the CCR surface impoundment unlined? ☒ Yes ☐ No (BAPs, EP, and SRH Pond)

Is the CCR surface impoundment unlined? ☐ Yes ☒ No See Attachment 13-2 for the PDP *Liner Documentation* (AECOM, 2022).

If "Yes", the CCR unit is subject to the closure requirements under 30 TAC Chapter 352 and 40 CFR §257.101(a) to retrofit or close. A notification must be prepared stating that an assessment of corrective measures has been initiated.

See Attachment 9 *Alternative Capacity Infeasibility Demonstration* for the SRH Pond and the *Alternative Capacity Infeasibility Demonstration* for the Evaporation Pond, prepared for and submitted to EPA on 30 November 2020, to demonstrate that CCR and non-CCR wastestreams must continue to be managed in those surface impoundments based on a lack of alternative capacity.

Also see Attachment 9 for a letter from the EPA dated 11 January 2022 which indicated that EPA has reviewed both demonstrations and determined that both demonstrations are complete. As a consequence of the submission of complete demonstrations, the deadlines for the CCR units covered by the demonstrations to cease receipt of waste is tolled until EPA completes their review and issues a final decision on the demonstrations.

1. Complete Table V.B. - Surface Impoundment Liner System for each surface impoundment to be registered.
2. Describe the design, installation and operation of liner and leak detection components. The description must demonstrate that the liner and leak detection system will prevent discharge to the land and surface water. Submit a QAPP report to ensure that each analysis is performed appropriately.

   The existing surface impoundments (BAPs, EP, and SRH Pond) do not have leak detection systems.
3. For new or laterally expansions of existing surface impoundments, provide a subsurface soil investigation report that must include:

   Not Applicable for BAPs, EP, and SRH Pond. See Attachment 13-3 for the PDP *Geotechnical Engineering Study* (Raba Kistner, 2018) and Attachment 13-4 for the PDP *Geotechnical Engineering Study* (Raba Kistner, 2020) for the PDP.

   a. A description of all borings drilled, at the unit location, to test soils and characterize groundwater;
   b. A unit map drawn to scale showing the surveyed locations and elevations of the borings, including location of permanent identification markers ((30 TAC §352.731) and (40 CFR §257.73(a)(1));
   c. Cross-sections prepared from the borings depicting the generalized strata at the unit;

d. Boring logs, including a description of materials encountered, and any discontinuities such as fractures, fissures, slickensides, lenses or seams;

e. A description of the geotechnical data and the geotechnical properties of the subsurface soil materials, including the suitability of the soils and strata for the intended uses; and

f. A demonstration that all geotechnical tests were performed in accordance with industry practices and recognized procedures.

C. Hazard Potential Classification

Provide the current hazard potential classification assessment and associated documentation, as required by 30 TAC §352.731 or §352.741 and 40 CFR §257.73(a)(2) or §257.74(a)(2). The qualified Texas P.E. must certify that the initial hazard potential classification and any subsequent periodic classification was conducted in accordance with the requirements of 30 TAC Chapter 352, where required.

Hazard Potential Classification:

SRH Pond – Significant Hazard Potential

EP – Low Hazard Potential

PDP – Significant Hazard Potential

See Attachment 10 *Hazard Potential Classification Assessment for Existing CCR Surface Impoundments – 5-Year Update* (CPS Energy, 2021). Information regarding the proposed PDP will be incorporated into an updated *Hazard Potential Classification Assessment for Existing CCR Surface Impoundments.* The *Hazard Potential Classification Assessment for Existing CCR Surface Impoundments* will be updated prior to the operation of the PDP.

D. Emergency Action Plan for High or Significantly High Hazard Potential

Provide the current Emergency Action Plan that has been certified by a qualified Texas P.E. and includes the following requirements from 30 TAC 352, Subchapter F and 40 CFR §257.73(a)(3)(i)(A) - (E) or 40 CFR §257.74 (a)(3)(i)(A) - (E). The qualified Texas P.E. must certify that the written Emergency Action Plan and any subsequent amendment of the plan complies with the requirements of 30 TAC 352, Subchapter F, where required.

Complete Table V.J. - Inspection of Surface Impoundments

See Attachment 11 *Emergency Action Plan* for the Bottom Ash Ponds and SRH Pond (ERM, 2017). Information regarding the proposed PDP operations will be incorporated into an updated *Emergency Action Plan.* The *Emergency Action Plan* will be updated prior to the operation of the PDP.

E. Inflow Design Flood Control System Plan

Describe how the surface impoundment(s) system will manage stormwater run-on away from the surface impoundment(s) (30 TAC §352.821 and 40 CFR §257.82(a) and (c)). Stormwater run-on must be diverted away from a surface impoundment, based on the hazard potential. Where dikes are used to divert run-on, they must be protected from erosion. Include all analyses used to calculate run-on volumes. Provide the inflow design flood control system plan. Provide qualified Texas P.E. certification that the initial and periodic inflow design flood control system plans meet the requirements of 30 TAC §352.821, where required.

See Attachment 12 *Inflow Design Flood Control Plan – 5-Year Update* (ERM, 2021). See Attachment 12-1 for the PDP *Inflow Design Flood Control Plan* (AECOM, 2022, draft version). The *Inflow Design Flood Control Plan* will be updated prior to the operation of the PDP.

F. History of Construction for Existing CCR Surface Impoundment(s), or the Design and Construction Plans for New and Lateral Expansions

Provide information on the history of construction for each existing CCR surface impoundment (30 TAC §352.731 and 40 CFR §257.73(c)) or the design and construction plans for new and lateral expansions of each CCR surface impoundment (30 TAC §352.741) and (40 CFR §257.74(c)).

See Attachment 13 *Compilation of Construction History* (ERM, 2016). See Attachment 13-1 for the PDP Construction Plans (AECOM, 2022, draft versions).

G. Structural Stability Assessment

Provide the most recent structural stability assessment of the surface impoundments. Include the combined capacity of all surface impoundment spillways with calculations; the peak discharge the unit must meet for all combined spillways; probable maximum flood-high hazard, 1,000-yr-significant high hazard, 100-yr-low hazard; identify if there were any structural stability deficiencies in last assessment; identify how these deficiencies were managed and corrected; and qualified Texas P.E. certification. The structural stability assessment must include all information required in 30 TAC §352.731 for existing surface impoundments or 30 TAC §352.741 for new or laterally expanding surface impoundments.

See Attachment 14 *Structural Stability and Safety Factor Assessments – 5-Year Update* (ERM, 2021). Based on the unit dimensions, a *Structural Stability Assessment* is not required for the proposed PDP.

H. Safety Factor Assessment

The current safety factor assessment must be submitted with the application. It must include documentation that demonstrates whether the calculated factors of safety for each CCR surface impoundment achieve the minimum safety factors specified in 30 TAC 352, Subchapter F and 40 CFR §257.73(e)(1)(i) - (iv) and 40 CFR §257.74(e)(1)(i) - (iv) for the critical cross-section of the embankment. The critical cross-section is the cross-section anticipated to be the most susceptible to structural failure based on appropriate engineering considerations, including loading conditions. The safety factor assessments must be supported by appropriate engineering calculations and certified by a qualified Texas P.E.

See Attachment 14 *Structural Stability and Safety Factor Assessments – 5-Year Update* (ERM, 2021). Based on the unit dimensions, a *Safety Factor Assessment* is not required for the proposed PDP.

VI. Groundwater Monitoring and Corrective Action (30 TAC 352, Subchapter H)

See Instructions and Technical Guidance – No. 32 Coal Combustion Residuals Groundwater Monitoring and Corrective Action

27. Groundwater Monitoring System

See Attachment 17 *Groundwater Monitoring System* (ERM, 2017). Also see Attachment 6 Groundwater Monitoring System Tables. Three monitor wells have been installed and sampled, but the remaining two wells to complete the monitoring network for the proposed PDP are scheduled for installation in July 2022. See Attachment 6-4 for updated Groundwater Monitoring System Tables.

A. Complete Table VI.A. - Unit Groundwater Detection Monitoring System.

B. Provide a map showing location of wells, groundwater elevations, and groundwater flow direction.

C. Provide attachments describing how the facility will comply with the requirements in 30 TAC §352.911 and provide a certification by a qualified Texas P.E or qualified Texas P.G. that the groundwater monitoring system design and construction meet the requirements of 30 TAC Chapter 352.

D. Provide a figure showing the geologic units and fill materials overlying the uppermost aquifer, materials comprising the uppermost aquifer, and materials comprising the confining unit defining the lower boundary of the uppermost aquifer, including, but not limited to, thicknesses, stratigraphy, lithology, hydraulic conductivities, porosities and effective porosities.

E. For a multiunit groundwater monitoring system, demonstrate that the groundwater monitoring system will be equally as capable of detecting monitored constituents at the waste boundary of the CCR unit as the individual groundwater monitoring system for each CCR unit by providing at minimum the following information:

1. Number, spacing, and orientation of each CCR unit;
2. Hydrogeologic setting; and
3. Site history.

F. Has there been any sampling concentrations of one or more constituents listed in Appendix IV detected at statistically significant levels above the groundwater protection standard (GWPS)? ☐ Yes ☒ No

All the existing CCR units have only been evaluated for Appendix III constituents under Detection Monitoring. No statistically significant increases have been determined that would require evaluation of Appendix IV constituents.

G. Provide information on how monitoring wells have been constructed and cased in a manner that maintains the integrity of the monitoring well borehole and to prevent contamination of samples and the groundwater.

28. Groundwater Monitoring Sampling and Analysis Program

Provide a sampling and analysis plan that includes procedures and techniques; sampling and analytical methods that are appropriate for groundwater sampling; and that address the requirements of 30 TAC §352.931 and 40 CFR §257.93. Provide a P.E or P.G. certification that describes the statistical method selected to evaluate the groundwater monitoring data and certifies that the selected statistical method is appropriate for evaluating the groundwater monitoring data for the CCR management area. Refer to TG-32 for information and guidance.

See Attachment 18 *Groundwater Sampling and Analysis Program* (ERM, 2022). Sampling at the proposed PDP will follow the procedures identified in the current *Groundwater Sampling and Analysis Program* (ERM, 2022). The *Groundwater Sampling and Analysis Program* document will be updated after completion of the monitoring network for the PDP.

29. CCR Unit(s) in a Detection Monitoring Program

Does the facility have CCR unit(s) in a Detection Monitoring Program? See Attachment 6 Groundwater Monitoring Tables. See Attachment 6-5 for updated Groundwater Monitoring Tables.

☒ Yes ☐ No

If "Yes", Submit the following information:

A. Submit Table VI.C. – Facility CCR Units Under Detection Monitoring.

B. Provide a Background Evaluation Report.

C. Provide a report with the results of semiannual monitoring events.

See Attachment 16 for the most recent *Annual Groundwater Sampling and Corrective Action Report* for each of the four existing CCR units (ERM, 2021).

1. Has a statistically significant increase (SSI) been detected for one or more of the constituents listed in Appendix III at any monitoring well?

   ☐ Yes ☒ No

2. Has a notification to the executive director been sent within 14 days?

   ☐ Yes ☒ No

3. Date assessment monitoring program will start: Not applicable.

4. Do you plan to provide an alternative source demonstration (ASD)?

   ☒ Yes ☐ No

Multiple *Written Demonstrations* (aka *Alternate Source Demonstrations*) have been prepared for the existing CCR units and have documented no statistically significant increases. See Attachment 15 for *Written Demonstration – Responses to Potential Statistically Significant Increases* prepared by ERM in 2018, 2019, 2020, and 2021.

30. CCR Unit(s) in an Assessment Monitoring Program

Does the facility have CCR unit(s) in an Assessment Monitoring Program?

☐ Yes ☒ No

All the existing CCR units have only been evaluated for Appendix III constituents under Detection Monitoring. No statistically significant increases have been determined that would require evaluation of Appendix IV constituents.

If "Yes", Submit information related for units.

A. Complete Table VI.D. – CCR Units Under Assessment Monitoring.

B. Provide, for each well in assessment monitoring status, the recorded concentrations lab sheets and results in a tabulated form.

C. Have the concentrations of all constituents listed in Appendices III and IV been at or below background values, using the statistical procedures in 30 TAC §352.931 and 40 CFR §257.93(g), for two consecutive sampling events for the CCR unit(s)? ☐ Yes ☐ No

If answer to above is yes, detection monitoring may resume. The owner or operator must prepare a notification stating that detection monitoring is resuming for the CCR unit and obtain written approval from the executive director.

D. Are there any concentrations of any constituent in Appendices III and IV above background values? ☐ Yes ☐ No

1. Has a notification to the executive director been sent within 14 days?

   ☐ Yes ☐ No

E. Date assessment of corrective measures will be initiated (must be within **90 days** of finding a statistically significant level above the GWPS) for the CCR unit(s):

F. Will you provide an ASD (see TG-32 for an acceptable submittal)? ☐ Yes ☐ No

G. Date assessment of corrective measures will be initiated if ASD is not accepted?

H. Complete Table VI.D-2. - Groundwater Detection Monitoring Parameters

Note: Refer to TG-32 regarding establishing a GWPS for each constituent in Appendix IV detected in the groundwater and attach as table.

I. Have you completed the assessment of corrective measures? ☐ Yes ☐ No
If "Yes", date assessment of corrective measures was completed:
If "No", date assessment of corrective measures will be completed:
Expected date of submittal of amendment (see note below):
Provide completed assessment of corrected measures materials.

Note: Within **30 days** of completing the assessment of corrective measures, and before remedy implementation, the owner or operator shall submit an application for amendment to the registration. In some circumstances, the assessment of corrective measures and selected remedy may be approved as part of the initial application for the CCR unit registration.

J. Have you selected a remedy? ☐ Yes ☐ No

Provide public meeting documentation under 30 TAC §352.961 and a report under 30 TAC §352.971 and 40 CFR §257.97.

VII. Closure and Post-Closure Care

See Instructions and Technical Guidance

Submit a full closure plan and post-closure plan and all information describing how the owner or operator will comply with 30 TAC 352, Subchapter J and 40 CFR §§257.100 - 257.104. The owner of property on which an existing disposal facility is located, following the closure of a unit, must also submit documentation that a notation has been placed in the deed to the facility that will in perpetuity notify any potential purchasers of the property that the land has been used to manage CCR wastes and its use is restricted (30 TAC §352.1221 and 40 CFR §257.102(i)). For CCR units, closed after October 19, 2015, that were closed before submission of the application, the applicant should submit documentation to show that notices required under 30 TAC 352, Subchapter K and 40 CFR §257.105 or §257.106 have been filed.

See Attachment 19 *CCR Unit Closure and Post-Closure Plan* (ERM, 2020). The proposed PDP will be closed by removal of CCR. Information regarding the proposed PDP will be incorporated into an updated *CCR Unit Closure and Post-Closure Plan*. The *CCR Unit Closure and Post-Closure Plan* will be updated prior to the operation of the PDP.

31. Closure Plan

This section applies to the owners and operators of all CCR units required to be registered. The applicant must close the facility in a manner that minimizes need for further maintenance and controls, or eliminates, to the extent necessary to protect human health and the environment, the post-closure release of CCR waste, chemical constituents of concern, leachate, contaminated rainfall, or waste decomposition products to the groundwater, surface waters, or to the atmosphere.

The type of unit to be closed can determine the level of detail sufficient for a closure plan. CCR units which have been certified closed after October 19, 2015, must provide documentation to demonstrate compliance with state and federal regulations.

For each unit to be registered, complete Table VII.A.1. - Unit Closure and list the CCR Unit components to be decontaminated, possible methods of decontamination, and possible methods of disposal of wastes and waste residues generated during unit closure. All ancillary components must be decontaminated, and the generated waste disposed of appropriately.

See Attachment 6 Closure Tables. See Attachment 6-6 for updated Closure Tables.

Information about CCR units closed or to be closed under alternative closure requirements must be provided in Table VII.A.2. - CCR Units Under Alternative Closure Notification.

Guidance on design of a closure cap and final cover for non-hazardous industrial solid wastes landfills is provided in EPA publication 530-SW-85-014, TCEQ Technical Guidance No. 3 and TCEQ publication, RG-534, “Guidance for Liner Construction and Testing for a Municipal Solid Waste Landfill”.

32. Post-Closure Care Plan

Provide a post-closure care plan that complies with the requirements of 30 TAC §352.1241. Post-closure care of each CCR unit must continue for at least 30 years after the date of completing closure of the unit and must consist of monitoring and reporting of the groundwater monitoring systems, in addition to the maintenance and monitoring of CCR unit. Continuation of certain security requirements may be necessary after the date of closure. Post-closure use of property on or in which waste remains after closure must never be allowed to disrupt the integrity of the containment system. In addition, submit the following information:

- The name, address, and phone number of the person or office to contact about the CCR unit during the post-closure period; and
- A discussion of the future use of the land associated with each unit.

Landfills and surface impoundments which have been certified closed after October 19, 2015, must be included in post-closure care plans, unless they have been determined to have been closed by waste removal equivalent to the closure standards in 30 TAC §352.1221 and 40 CFR §257.102 or 30 TAC §352.1231 and 40 CFR §257.103. If such a demonstration has been made pursuant to 40 CFR §257.102 or §257.103, but an equivalency determination has not been made, please submit a copy of the demonstration documentation. If an equivalency determination has been made, applicant should submit a copy of this determination.

VIII. Financial Assurance

33. Post-Closure Care Cost Estimate

Financial assurance for post-closure care (30 TAC §352.1101) applies to owners or operators of all CCR units, except CCR units from which the owner or operator intends to remove wastes and perform clean closure. Provide a written cost estimate in current dollars of the total cost of the 30-year (or longer, if applicable under 30 TAC §352.1101(d)) post-closure care period to perform post-closure care requirements as prescribed in 30 TAC §352.1241. The cost estimate must be based on the costs of hiring a third party to conduct post-closure care maintenance. See Attachment 6 Post-Closure Tables. The proposed PDP will be closed by removal of CCR. See Attachment 6-7 for updated Post-Closure Cost Table.

Complete Table VIII.A.1. – Post-Closure Cost Summary for Existing Registered Units

Complete Table VIII.A.2. - Post-Closure Cost Summary for Proposed Registered Units

34. Financial Assurance Mechanism

The financial assurance for post-closure care is required in accordance with 30 TAC §352.1101. The applicant shall demonstrate the financial assurance within 90 days after approval of the registration with a financial mechanism acceptable to TCEQ in compliance with 30 TAC §352.1101(c) and 30 TAC §37, Subchapters A through D, except as indicated in 30 TAC §352.1111, in an amount no less than the amount specified in the approved Post-Closure Care Cost Summary. Provide a description of the proposed financial assurance mechanism. See Attachment 6 Post-Closure Period Tables.

Complete Table VIII.B. - Post-Closure Period, for the authorized post-closure period, to meet the requirements of 30 TAC §352.1241(a) through (c).

ATTACHMENT 1 MAPS AND FLOW DIAGRAMS

Environmental Resources Management

DESIGN:	WZ	DRAWN:	EFC	CHKD.:	WZ
DATE:	2022-06-22	SCALE:	AS SHOWN	REVISION:	0

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fig1_0636109_CPSCalv_WellLocs_062222.mxd

CCR WELL NETWORK LOCATION MAP
CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM

Environmental Resources Management

DESIGN:	WZ	DRAWN:	EFC	CHKD.:	WZ
DATE:	2022-06-22	SCALE:	AS SHOWN	REVISION:	0

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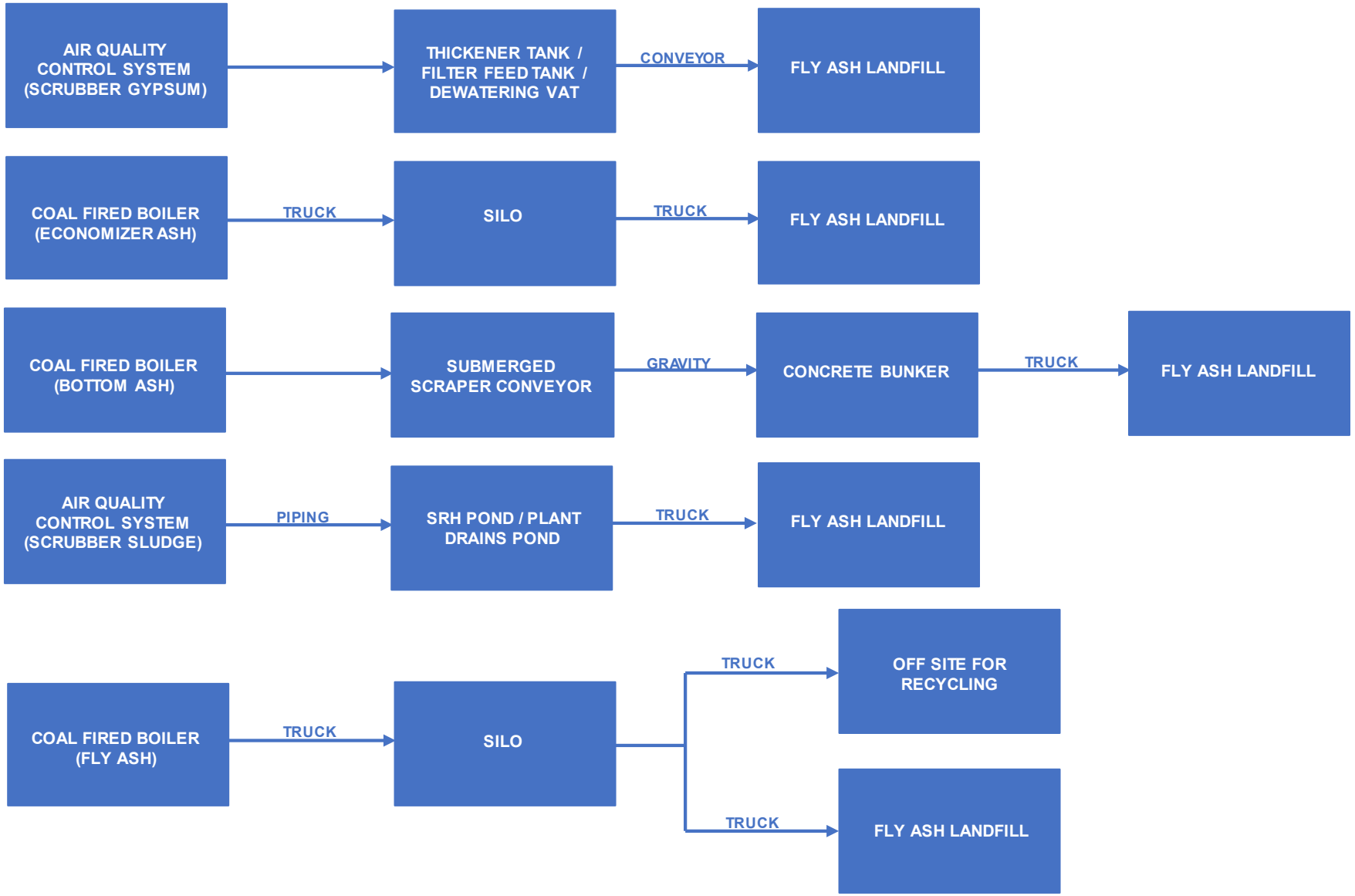
CONTIGUOUS REGISTRATION BOUNDARY MAP
CPS Energy - Calaveras Power Station
San Antonio, Texas

ERM



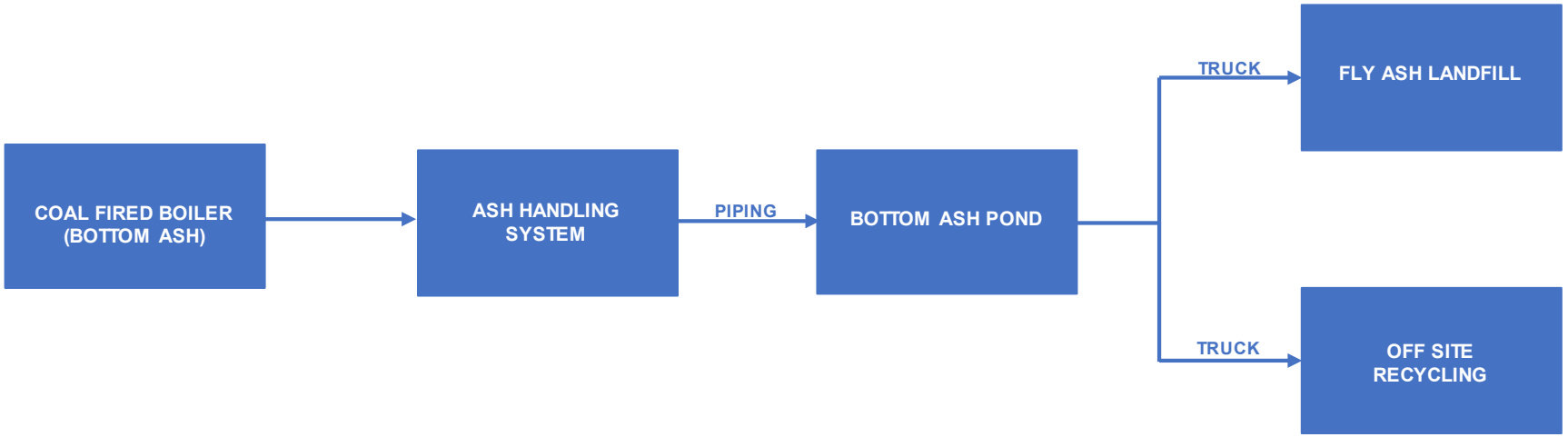
Environmental Resources Management

FIGURE 1
FLY ASH LANDFILL

DATE: June 2022

PROJ.NO.: 0503422

ERM



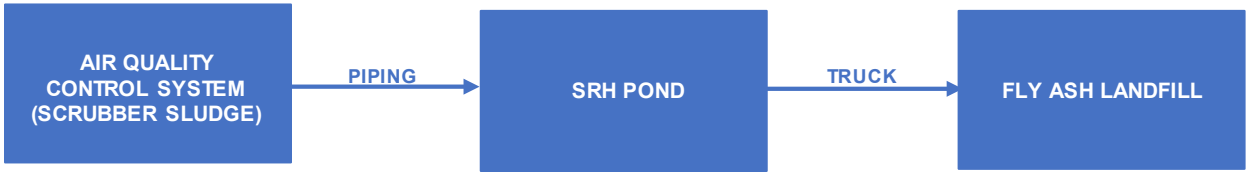
Environmental Resources Management

FIGURE 2
BOTTOM ASH PONDS

DATE: June 2022

PROJ.NO.: 0503422

ERM



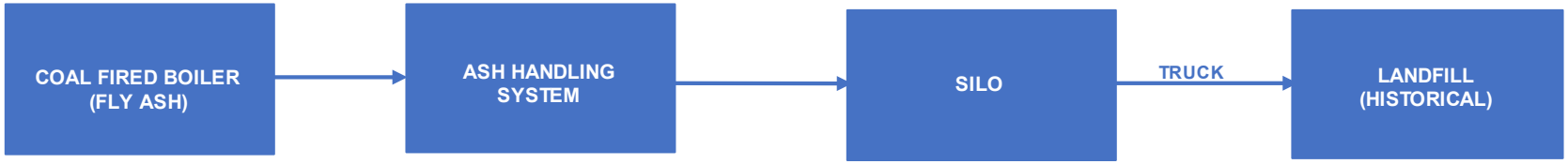
Environmental Resources Management

FIGURE 3
SRH POND

DATE: June 2022

PROJ.NO.: 0503422

ERM



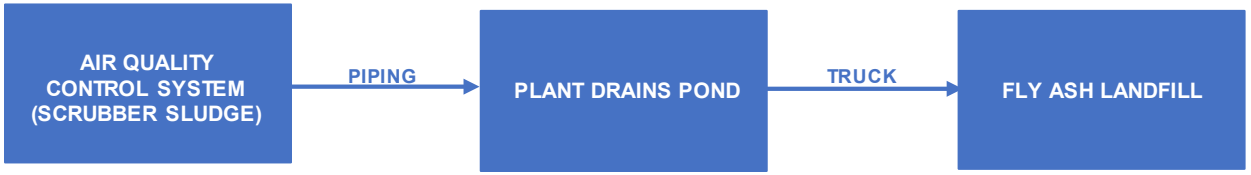
Environmental Resources Management

FIGURE 4
EVAPORATION POND

DATE: June 2022

PROJ.NO.: 0503422

ERM



Environmental Resources Management

FIGURE 5
PLANT DRAINS POND

DATE: June 2022

PROJ.NO.: 0503422

ERM

ATTACHMENT 2 LOCATION RESTRICTION DEMONSTRATION SECTIONS

(DRAFTS – SUPPLEMENTAL GEOLOGIC INFORMATION TO BE INCORPORATED AFTER ADDITIONAL WELL INSTALLATIONS)

PLACEMENT ABOVE THE UPPERMOST AQUIFER (DRAFT)

The CCR Rule defines an aquifer as "a geologic formation, group of formations, or portion of a formation capable of yielding usable quantities of groundwater to wells or springs". The CCR Rule also defines uppermost aquifer as "the geologic formation nearest the natural ground surface that is an aquifer, as well as lower aquifers that are hydraulically interconnected with this aquifer within the facility's property boundary. Upper limit is measured at a point nearest to the natural ground surface to which the aquifer rises during the wet season".

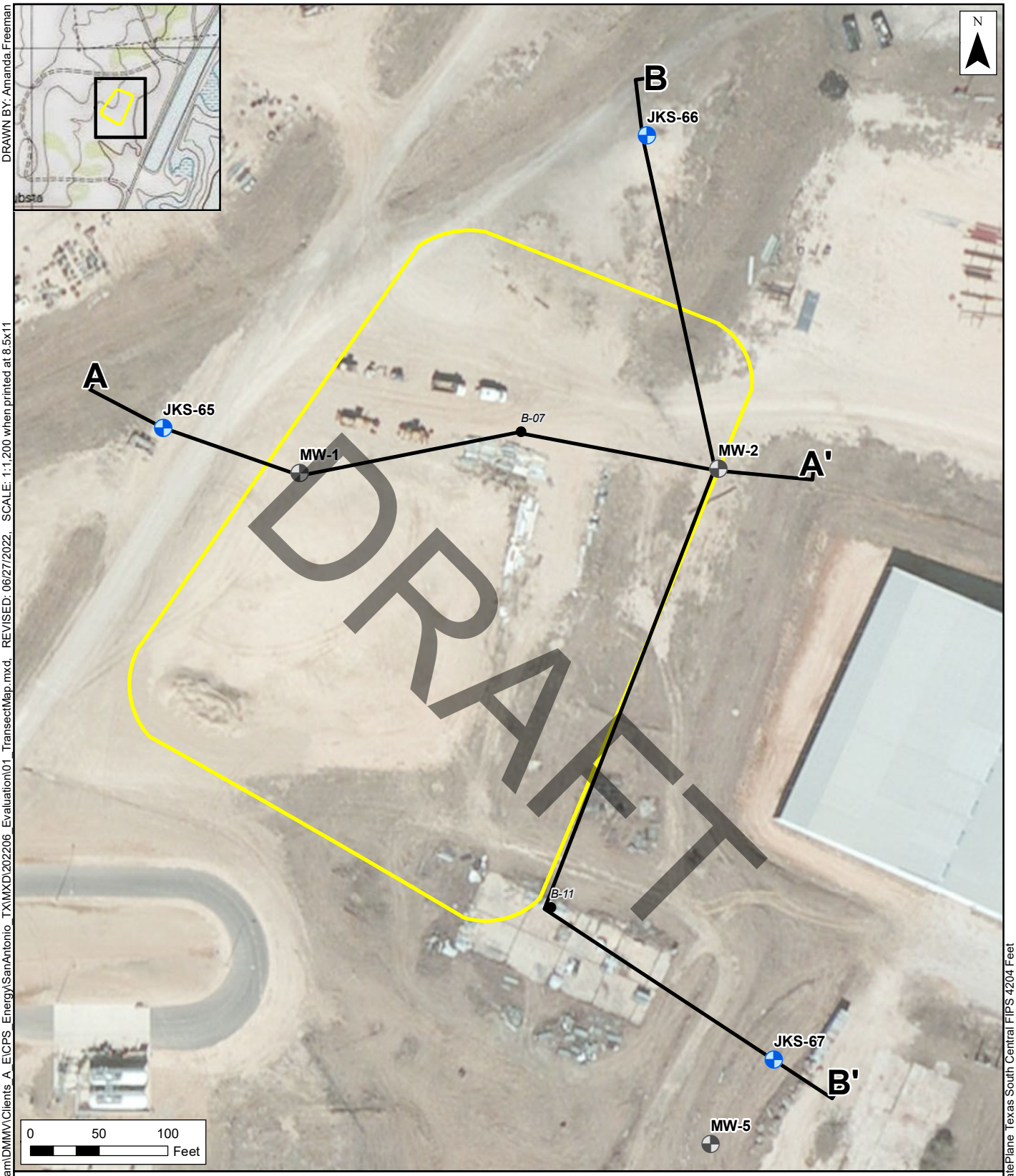
ERM obtained site-specific information from engineering assessments and site investigations to evaluate whether the base of the proposed Plant Drains Pond (PDP) is located more than 1.52 meters (5 feet) above the upper limit of the uppermost aquifer. Information reviewed included the following:

- *Plant Drains Pond Construction Plans* (AECOM, 2022, draft versions)
- *Geotechnical Engineering Study* (Raba Kistner, 2018)
- *Geotechnical Engineering Study* (Raba Kistner, 2020)

The results of this evaluation are presented below for the proposed PDP.

Plant Drains Pond (PDP)

Based on the review of the *Plant Drains Pond Construction Plans (AECOM, 2022, draft versions),* the lowest design elevation is estimated to be approximately 505 feet above mean sea level (msl). Based on the *Geotechnical Engineering Study* (Raba Kistner, 2018), groundwater beneath the proposed PDP was encountered during drilling at approximately 486 to 490 feet above msl, and static water levels ranged from approximately 487 to 491 feet above msl. A transect map and stratigraphic cross sections (Section A-A' and Section B-B') depicting pertinent elevations are provided as Figures 1 through 3, respectively. Based on the above information, the anticipated base of the proposed PDP appears to be greater than 5 feet above the uppermost aquifer and unlikely to be in intermittent, recurring, or sustained hydraulic connection with the uppermost aquifer.



Proposed Extent of Plant Drains Pond CCR Unit

Transect

Permanent CCR Wells

Temporary Wells

Soil Borings

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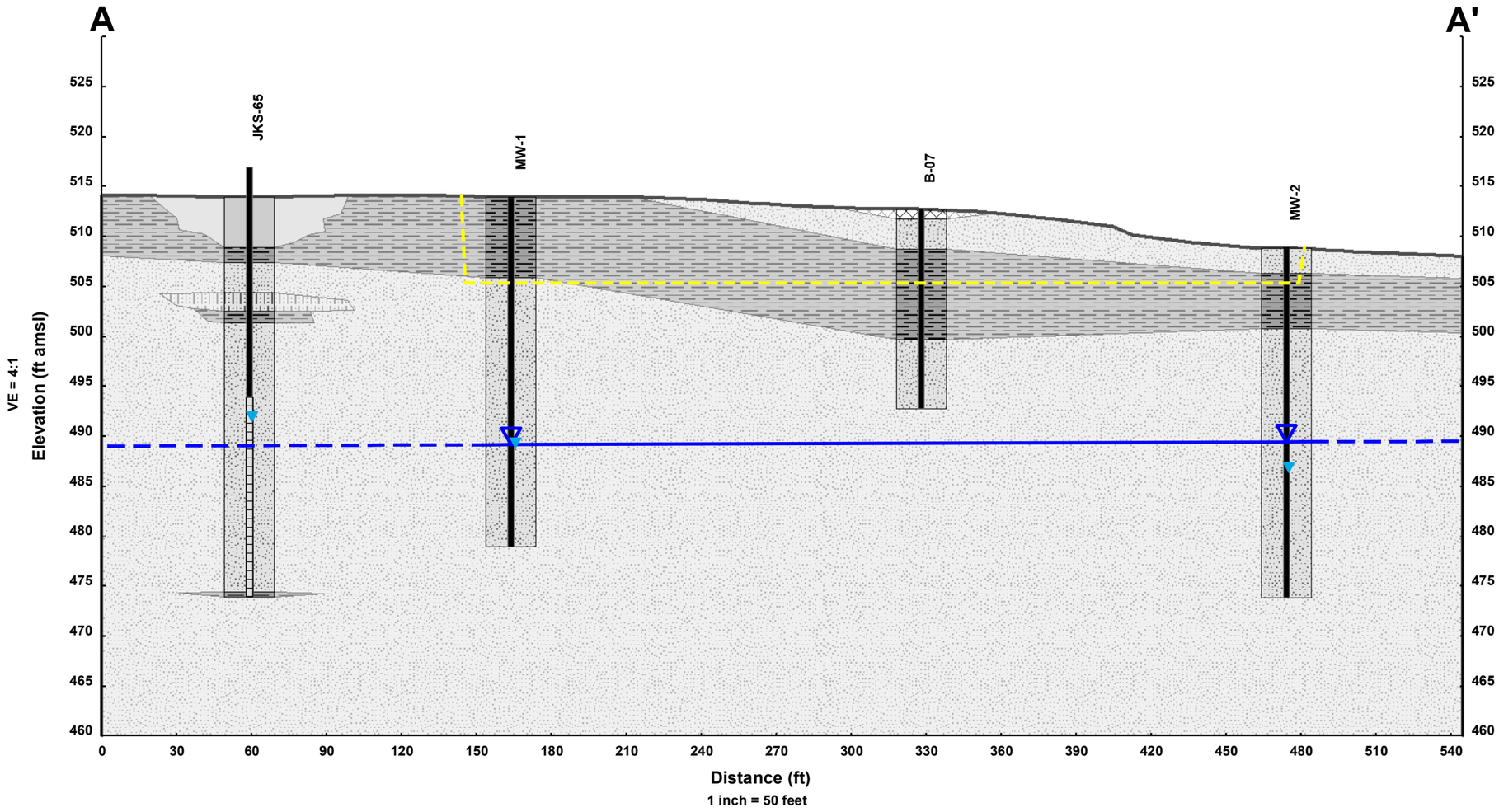
Figure 1
Stratigraphic Cross-Section Transect Map
CPS Energy
Calaveras Power Station
San Antonio, Texas

Source: Copyright:© 2013 National Geographic Society, i-cubed
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

DRAWN BY: Amanda.Freeman

\\OPSBDCFILE01\Data\Boston\Team\DMMV\Clients_A_E\CPS_Energy\SanAntonio_TX\MXD\202206_Evaluation\01_TransectMap.mxd, REVISED: 06/27/2022, SCALE: 1:1,200 when printed at 8.5x11

Coordinate System: NAD 1983 StatePlane Texas South Central FIPS 4204 Feet



Anticipated Lowest Plant Drains Pond Design Elevation

Gauged Water Level - January 9, 2018 (dashed where inferred)

Water Level Encountered During Well / Boring Installation

Well Details

Casing

Screen

Soil Lithology

No Recovery

Fill Material

Sand, Silty Sand, and/or Clayey Sand

Silt, Sandy Silt, and/or Clayey Silt

Low to medium plasticity Clay, Sandy Clay, and/or Silty Clay

Notes:

1. Monitor well JKS-65 installed by ERM on August 2020. Survey data not available for well and have been approximated.
2. Monitor wells MW-1 and MW-2 installed in December 2017 and gauged on January 9, 2018, as documented in the Raba Kistner 2018 Geotechnical Engineering Study Report.
3. Soil Boring B-7 installed in July 2020, as documented in the Raba Kistner 2020 Geotechnical Engineering Study Report.
4. Approximate location of pond based on the Raba Kistner 2020 Geotechnical Engineering Study Report. The anticipated lowest design elevation based on AECOM Design Drawings entitled "Spruce Plant Drains Project", drawing number 2-470-C0005 dated 5/2/2022.
5. Vertical Exaggeration = 4:1

DRAFT

Figure 2
Stratigraphic Cross-Section A-A'
CPS Energy
Calaveras Power Station
San Antonio, Texas

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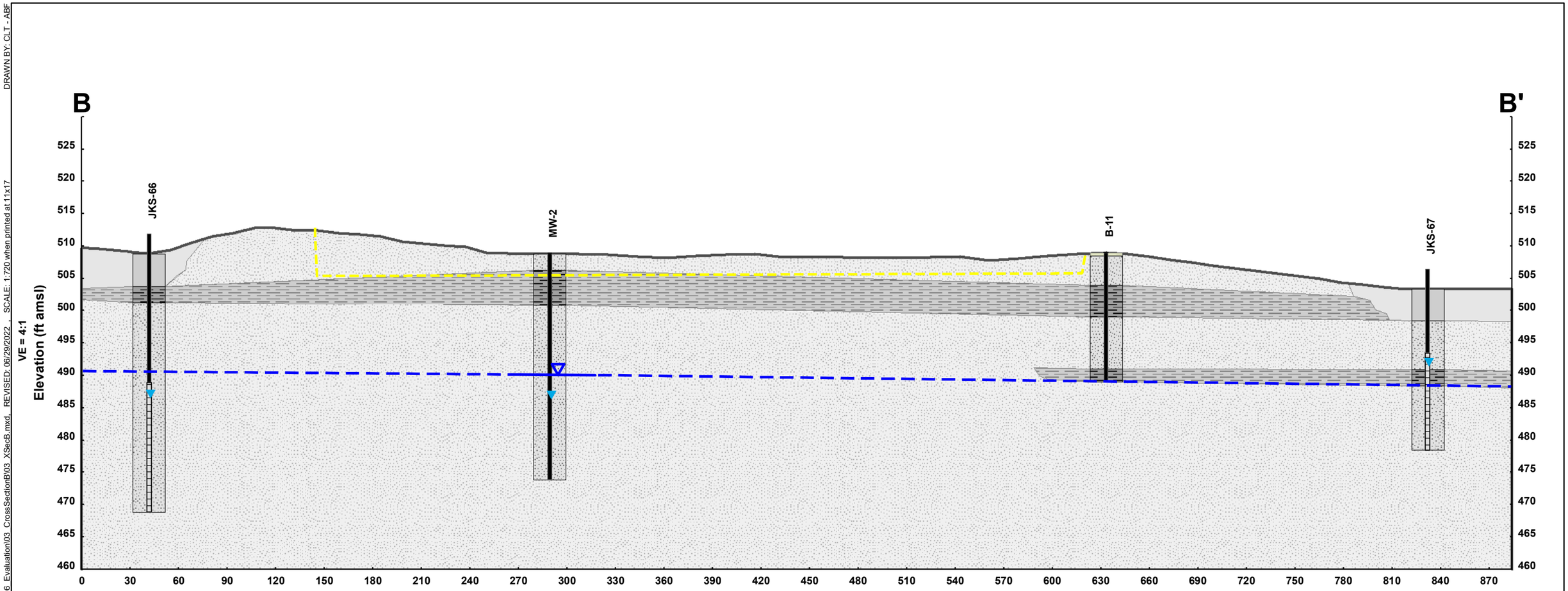

Anticipated Lowest Plant Drains Pond Design Elevation

Gauged Water Level - January 9, 2018 (dashed where inferred)

Water Level Encountered During Well / Boring Installation

Well Details

Casing

Screen

Soil Lithology

No Recovery

Sand, Silty Sand, and/or Clayey Sand

Low to medium plasticity Clay, Sandy Clay, and/or Silty Clay

Notes:

1. Monitor wells JKS-66 and JKS-67 installed by ERM on August 2020. Survey data not available for well and have been approximated.
2. Monitor wells MW-2 and MW-5 (not shown, but gauged water level referenced in cross section) installed in December 2017 and gauged on January 9, 2018, as documented in the Raba Kistner 2018 Geotechnical Engineering Study Report.
3. Soil Boring B-7 installed in July 2020, as documented in the Raba Kistner 2020 Geotechnical Engineering Study Report.
4. Approximate location of pond based on the Raba Kistner 2020 Geotechnical Engineering Study Report. The anticipated lowest design elevation based on AECOM Design Drawings entitled "Spruce Plant Drains Project", drawing number 2-470-C0005 dated 5/2/2022.
5. Vertical Exaggeration = 4:1

DRAFT

Figure 3
Stratigraphic Cross-Section B-B'
CPS Energy
Calaveras Power Station
San Antonio, Texas

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ERM

Source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

WETLANDS (DRAFT)

40 CFR §232.2 (as referenced in the CCR Rule) defines wetlands as "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas". Positive wetland indicators of three environmental parameters including hydrology, hydric soil, and hydrophytic vegetation are normally present within wetlands.

ERM obtained information from a desktop review and a site visit to evaluate whether the proposed Plant Drains Pond (PDP) is located in potential wetlands and waters of the United States. Information reviewed included the following:

- Site Photographs;
- Historical aerial imagery;
- Topographic maps;
- U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Soil Surveys;
- U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI);
- U.S. Geological Survey (USGS) National Hydrography Dataset (NHD);
- USFWS Information for Planning and Consultation (IPAC); and
- Texas Parks and Wildlife Department (TPWD) Calaveras Lake Survey Report.

The results of this evaluation are presented below for the proposed PDP.

Plant Drains Pond (PDP)

The desktop evaluation of the proposed PDP site determined that there are no wetlands or waterbodies mapped in, or within 300 feet of, the proposed PDP by the NWI. Soil survey data indicates that the PDP will be located within soils mapped as Aluf sand, 0 to 5 percent slopes (EuC) and Wilco loamy fine sand 3 to 5 percent slopes, eroded (HkC2). These soils have a hydric rating of "0", indicating that zero percent of the soil components meet the criteria for hydric soils. Review of historical aerial imagery indicated previous existence of what appeared to be a drainage ditch transecting the site from the southwest to the northeast corner towards Calaveras Lake. The drainage ditch is visible on aerial imagery from 1995 to 2006. In 2008, the area is shown to have been leveled and developed with a parking lot and laydown yards, filling the drainage ditch. Historical imagery shows the area was then re-developed in 2012, clearing the former parking lot and laydown yard and leaving a maintained field similar to current conditions.

The site visit conducted on 15 June 2022 confirmed that the proposed PDP will not be located in any wetlands or waterbodies. The site is located over 300 feet from any existing waterbodies. A culvert was observed approximately 150 feet southwest of the site, which connects to a man-made swale located approximately 100 feet south of the site at the nearest point, where it then curves further to the south away from the site. Vegetation observed within the proposed PDP site was comprised of exclusively upland species.

ATTACHMENT 3 GEOLOGY SUMMARY

(DRAFT – SUPPLEMENTAL GEOLOGIC INFORMATION TO BE INCORPORATED AFTER ADDITIONAL WELL INSTALLATIONS)

GEOLOGY SUMMARY (DRAFT)

Plant Drains Pond Geology

The stratigraphic sequence under the proposed Plant Drains Pond (PDP) is generally characterized by approximately 7 feet to 15 feet of consolidated material (sands, silts, and low to medium plasticity clays), underlain by a clayey/silty sand to poorly-sorted sand (groundwater-bearing unit) that is at least 27 feet thick, but may be greater than 40 feet thick. Discontinuous silt and clay material were observed within the groundwater-bearing unit in monitor well JKS-65 (west of the proposed unit) and geotechnical soil boring B-4[1] (north of the proposed unit), and in monitor well JKS-67 and geotechnical soil borings B-10 and B-11[1] (south of the proposed unit). A lower confining unit below the groundwater-bearing unit has not been identified; however, the presence of deeper clay material was noted in geotechnical soil borings B-5 and B-10 and monitor well JKS-65. The presence of a lower confining layer will be investigated when the remainder of the monitoring network for the proposed PDP is installed in July 2022.

Visual classifications of the geologic material described above are consistent with results from the soil materials testing analysis conducted by Raba Kistner[1,2]. The laboratory USCS results classify the groundwater bearing-unit as a silty sand (SM) at geotechnical soil borings B-3 and B-13. Additional soil materials testing will be conducted when the remainder of the monitoring network is installed in July 2022.

Plant Drains Pond Hydrogeology

According to groundwater elevation data collected by Raba Kistner[2], groundwater in the vicinity of the proposed PDP appears to flow towards Lake Calaveras (southeast to east). Seasonal groundwater flow conditions will be interpreted with other site-wide data after the remainder of the monitoring network is installed in July 2022.

The groundwater-bearing unit in the vicinity of the proposed PDP appears to exhibit unconfined conditions based on the potentiometric surface of the groundwater in relation to the first encountered water during drilling for the temporary wells installed by Raba Kistner[2], and the lack of continuous confining units. The potentiometric surface observed by Raba Kistner[2] is within three to four feet of the first water encountered during drilling, and no continuous confining units are observed. The minimal change in elevation and the stratigraphic information indicates that a significant, laterally continuous confining layer is not present above the groundwater-bearing unit. Further investigation of these conditions, and the presence of a lower confining unit, will be conducted when the remainder of the monitoring network is installed in July 2022.

A transect map and stratigraphic cross sections (Section A-A' and Section B-B') depicting pertinent elevations are provided as Figures 1 through 3, respectively.

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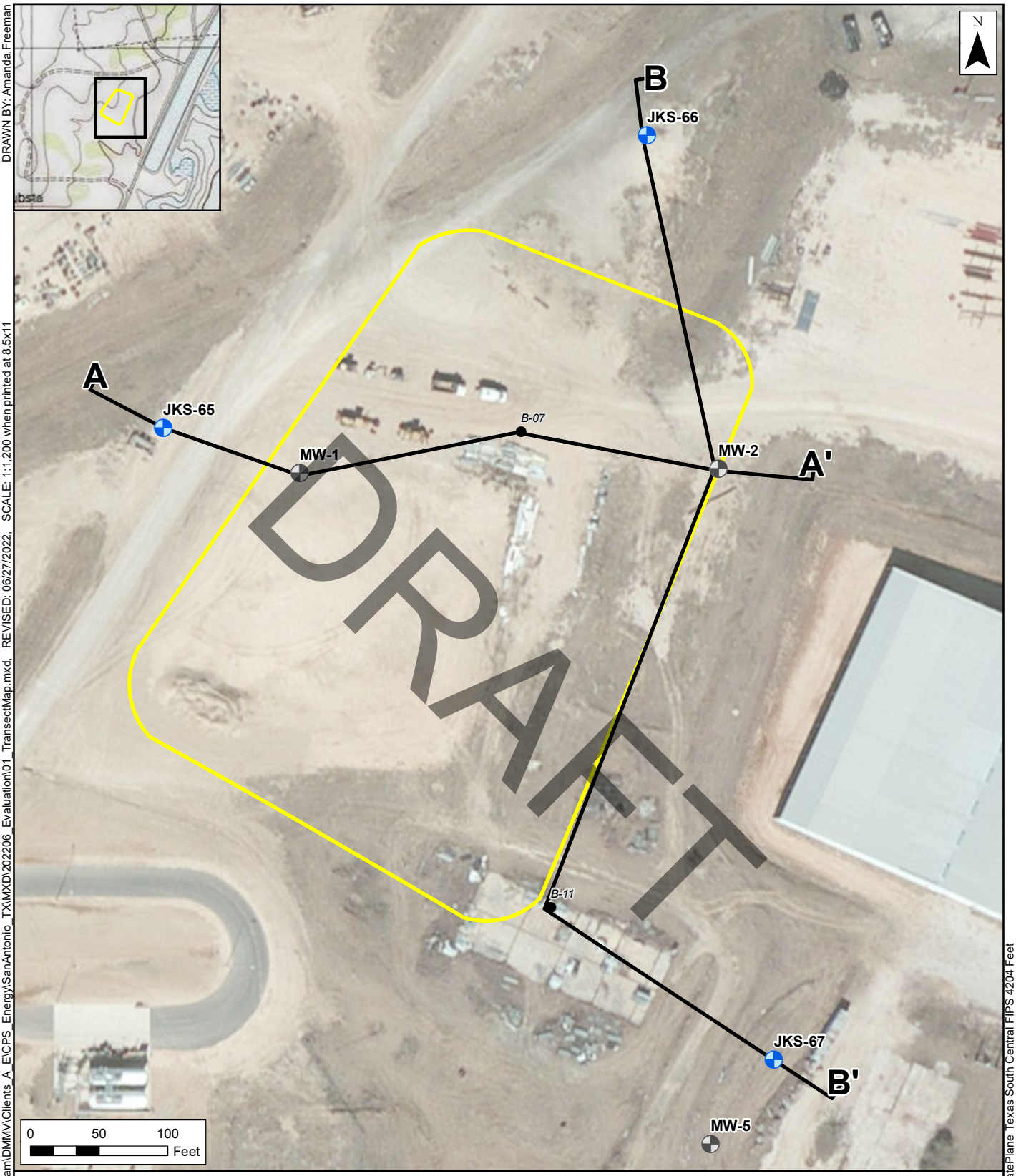
[1] *Geotechnical Engineering Study (*Raba Kistner, 2020)
[2] *Geotechnical Engineering Study (*Raba Kistner, 2018)



Proposed Extent of Plant Drains Pond CCR Unit

Transect

Permanent CCR Wells

Temporary Wells

Soil Borings

Environmental Resources Management
www.erm.com

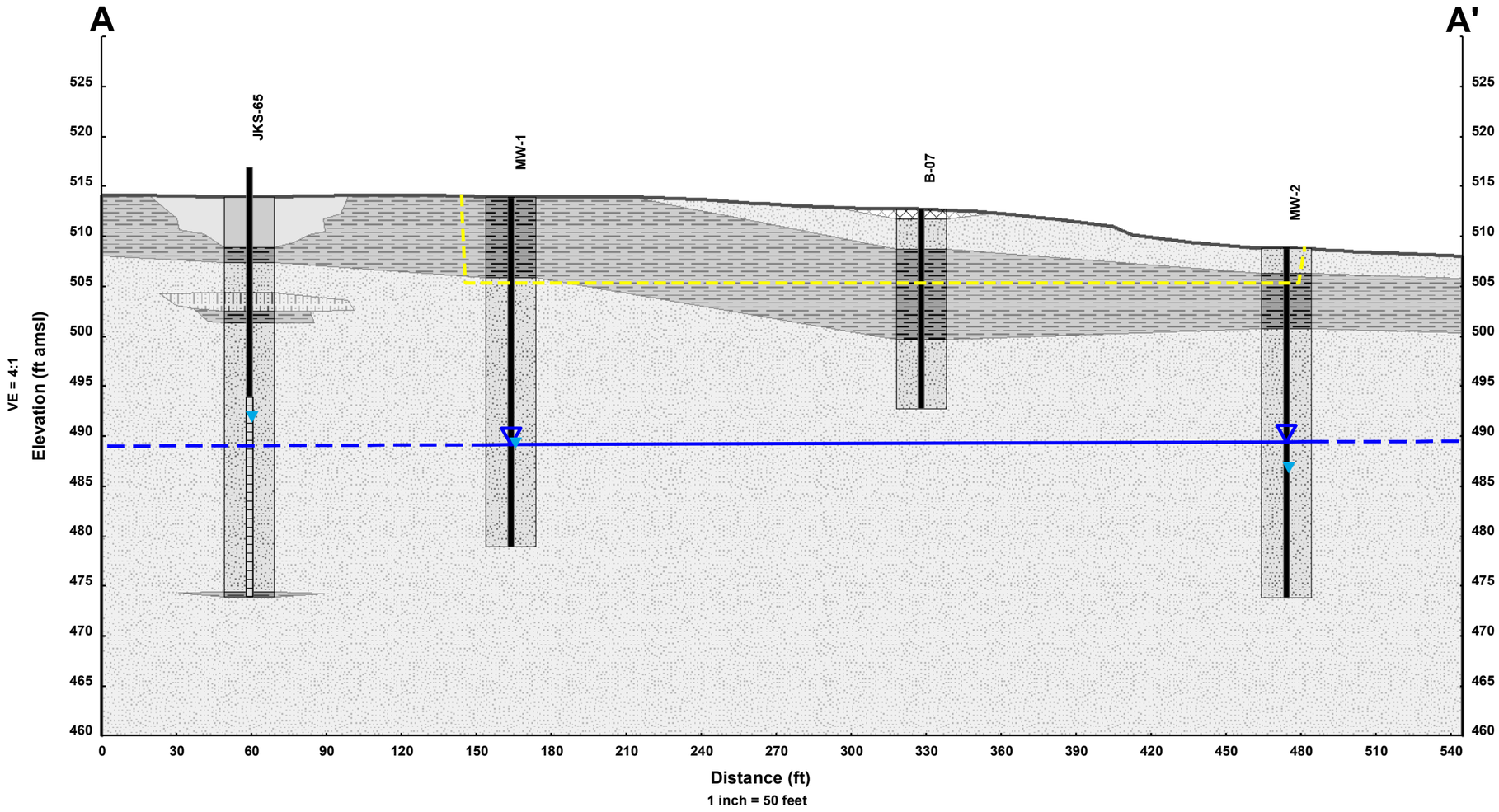
Figure 1
Stratigraphic Cross-Section Transect Map
CPS Energy
Calaveras Power Station
San Antonio, Texas

Source: Copyright:© 2013 National Geographic Society, i-cubed
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

DRAWN BY: Amanda.Freeman

\\OPSBDCFILE01\Data\Boston\Team\DMMV\Clients_A_E\CPS_Energy\SanAntonio_TX\MXD\202206_Evaluation\01_TransectMap.mxd, REVISED: 06/27/2022, SCALE: 1:1,200 when printed at 8.5x11

Coordinate System: NAD 1983 StatePlane Texas South Central FIPS 4204 Feet



Anticipated Lowest Plant Drains Pond Design Elevation

Gauged Water Level - January 9, 2018 (dashed where inferred)

Water Level Encountered During Well / Boring Installation

Well Details

Casing

Screen

Soil Lithology

No Recovery

Fill Material

Sand, Silty Sand, and/or Clayey Sand

Silt, Sandy Silt, and/or Clayey Silt

Low to medium plasticity Clay, Sandy Clay, and/or Silty Clay

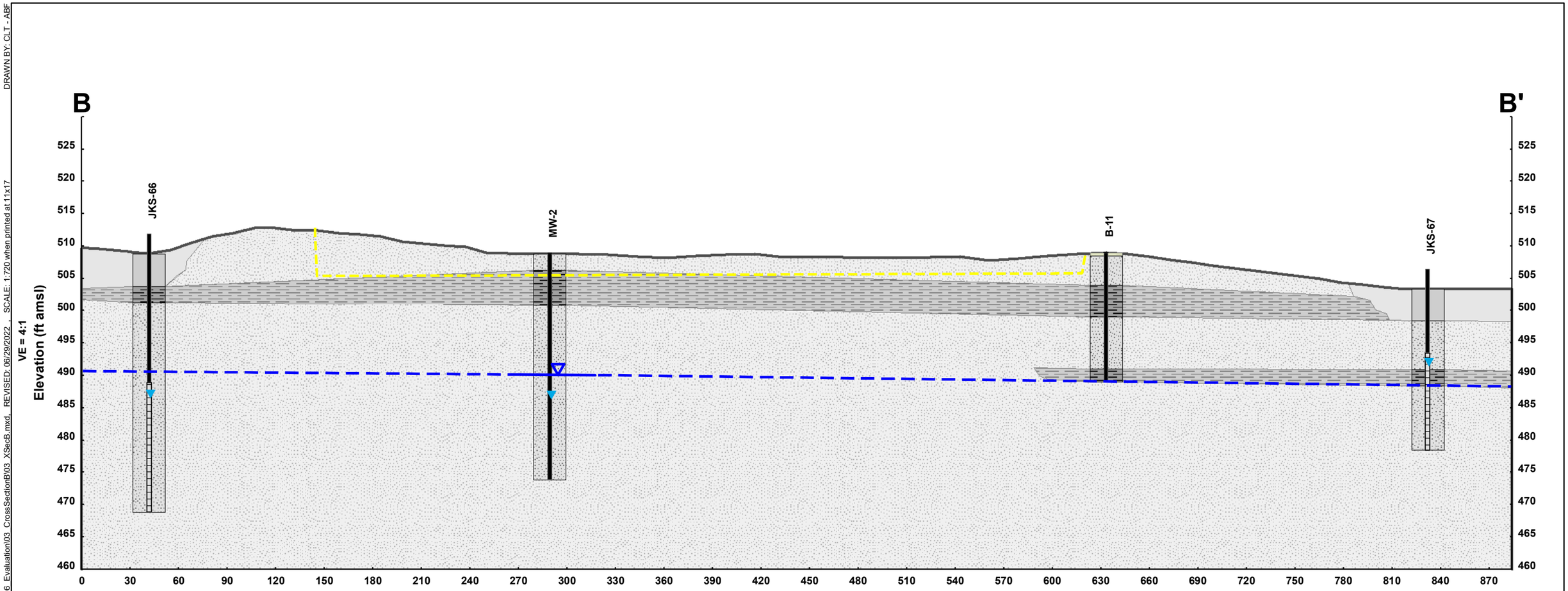
Notes:

1. Monitor well JKS-65 installed by ERM on August 2020. Survey data not available for well and have been approximated.
2. Monitor wells MW-1 and MW-2 installed in December 2017 and gauged on January 9, 2018, as documented in the Raba Kistner 2018 Geotechnical Engineering Study Report.
3. Soil Boring B-7 installed in July 2020, as documented in the Raba Kistner 2020 Geotechnical Engineering Study Report.
4. Approximate location of pond based on the Raba Kistner 2020 Geotechnical Engineering Study Report. The anticipated lowest design elevation based on AECOM Design Drawings entitled "Spruce Plant Drains Project", drawing number 2-470-C0005 dated 5/2/2022.
5. Vertical Exaggeration = 4:1

DRAFT

Figure 2
Stratigraphic Cross-Section A-A'
CPS Energy
Calaveras Power Station
San Antonio, Texas

Environmental Resources Management
www.erm.com
ERM



Anticipated Lowest Plant Drains Pond Design Elevation

Gauged Water Level - January 9, 2018 (dashed where inferred)

Water Level Encountered During Well / Boring Installation

Well Details

Casing

Screen

Soil Lithology

No Recovery

Sand, Silty Sand, and/or Clayey Sand

Low to medium plasticity Clay, Sandy Clay, and/or Silty Clay

Notes:

1. Monitor wells JKS-66 and JKS-67 installed by ERM on August 2020. Survey data not available for well and have been approximated.
2. Monitor wells MW-2 and MW-5 (not shown, but gauged water level referenced in cross section) installed in December 2017 and gauged on January 9, 2018, as documented in the Raba Kistner 2018 Geotechnical Engineering Study Report.
3. Soil Boring B-7 installed in July 2020, as documented in the Raba Kistner 2020 Geotechnical Engineering Study Report.
4. Approximate location of pond based on the Raba Kistner 2020 Geotechnical Engineering Study Report. The anticipated lowest design elevation based on AECOM Design Drawings entitled "Spruce Plant Drains Project", drawing number 2-470-C0005 dated 5/2/2022.
5. Vertical Exaggeration = 4:1

DRAFT

Figure 3
Stratigraphic Cross-Section B-B'
CPS Energy
Calaveras Power Station
San Antonio, Texas

Environmental Resources Management
www.erm.com
ERM

Source: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

Environmental Resources Management

JKS-65
DRILLING LOG

Proj. No. 0503422 Boring/Well ID JKS-65 Date Drilled 2020-08-19

Project Plant Drains Pond CCR Unit Owner CPS Energy

Location Calaveras Power Station Boring T.D. 40.00 ' Boring Diam. 8.25 "

N. Coord. - E. Coord. - Surface Elevation 0.00 Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Sump Length ''0.00 ''

Top of Casing Elevation 0.00' Stickup 3.00'

Depth to Water: 1. Ft. 22.50' (SB Installation) 2. Ft. 0.00 ( )

Drilling Company Vortex Drilling Partners, LP Driller James E. Neal

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

DRAFT

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0.00	0			0	No Samples Collected	0-5.0	NO RECOVERY: Soil removed by hydro-excavation.
-5	5			100		5.0 6.5	SANDY SILTY CLAY: Light brown to light yellowish brown, damp, stiff, low plasticity, sand content very fine grained, black and red silt stringers, abundant wood fragments, no odor.
						6.5-9.5	SILTY SAND: Light yellowish brown, dry, medium dense, very fine grained, minor clay and trace aggregate content, no odor. At 9' bgs: Light grey clay lens (2" thick).
-10	10			100		9.5-11.3	CLAYEY SILT: Light brownish grey, damp to moist, loose, slight plasticity, occasional very fine grained sand content, occasional yellow silt stringers, no odor. At 10' bgs: Increasing clay content, decreasing sand content.
				90		11.3-12.5	CLAY: Light grey, moist, medium stiff to stiff, low to medium plasticity, minor to occasional silt content, some orange/yellow/dark reddish brown silt stringers, no odor.
-15	15			100		12.5-30.0	SAND: Light grey, damp, medium dense to loose (with depth), very fine grained, poorly sorted, sub-angular, minor silt content, no odor. At 13.5' bgs: Abundant orange silt lenses (0.3" thick). At 13.8' bgs: Minor yellow silt stringers.
				100			At 17' bgs: Moist, trace dark brown silt stringers. At 17.5' bgs: Occasional yellow/orange silt stringers. At 18' bgs: Minor clay content.
-20	20			100			At 19' bgs: No clay and deceasing silt content. At 20' bgs: Increasing silt content, occasional yellow silt stringers.

Environmental Resources Management

JKS-65
DRILLING LOG

Proj. No. 0503422 Boring/Well ID JKS-65 Date Drilled 2020-08-19

Project Plant Drains Pond CCR Unit Owner CPS Energy

Location Calaveras Power Station Boring T.D. 40.00 ' Boring Diam. 8.25 "

N. Coord. - E. Coord. - Surface Elevation 0.00 Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Sump Length ''0.00 ''

Top of Casing Elevation 0.00' Stickup 3.00'

Depth to Water: 1. Ft. 22.50' (SB Installation) 2. Ft. 0.00 ( )

Drilling Company Vortex Drilling Partners, LP Driller James E. Neal

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

DRAFT

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-20	20				No Samples Collected		
				100			At 21.8' bgs: Trace to minor clay content, occasional yellow/orange silt stringers.
				75			At 22.5' bgs: Color change to light brown, very moist to wet, orange silt stringers.
-25	25			60			At 25' bgs: Wet.
				100			At 27.5' bgs: Light grey coloring present.
							At 29' bgs: Dark red/orange silt lenses (1" thick).
-30	30			60		30.0-39.5	SILTY SAND: Light brown with minor light grey, wet, loose, very fine grained, minor clay content, occasional red/orange silt stringers, no odor.
				60			At 32.5' bgs: Saturated.
-35	35			100			At 36' bgs: Increasing clay content.
				80			At 37.4' bgs: light grey and orange silty clay lens (1" thick).
						39.5 40.0	SANDY CLAY: Light orangish brown with minor light grey mottling, wet, soft to medium stiff, low plasticity, sand content very fine grained, occasional silt, minor orange/yellow silt stringers, no odor. Color change to light grey at 39.9' bgs.
-40	40						At 40' bgs: Boring terminated

STATE OF TEXAS WELL REPORT for Tracking #551889

Owner:	**CPS Energy**	Owner Well #:	**JKS-65**
Address:	**P.O. Box 2906 San Antonio , TX 78299**	Grid #:	**68-46-5**
Well Location:	**Calaveras Power Station 12940 US 181 San Antonio, TX 78263**	Latitude:	**29° 18' 50.56" N**
		Longitude:	**098° 19' 02.52" W**
Well County:	**Bexar**	Elevation:	**No Data**
Type of Work:	**New Well**	Proposed Use:	**Monitor**

Drilling Start Date: **8/17/2020** Drilling End Date: **8/19/2020**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
8.25	**0**	**40**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
18	**40**	**Sand**	**12/20**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**2**	**Concrete 1.16 Bags/Sacks**
2	**18**	**Bentonite 8 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Sleeve Installed** **Surface Completion by Driller**

Water Level: **22.5 ft.** below land surface on **2020-08-17**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Vortex Drilling Partners, LP**

4412 Bluemel Road
San Antonio, TX 78240

Driller Name: **James E. Neal** License Number: **4868**

Apprentice Name: **Joe Lopez**

Comments: **No Data**

Report Amended on 8/28/2020 by Request #32573

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**5**	**No recovery**
5	**6.5**	**Sandy Silty Clay**
6.5	**9.5**	**Silty Sand**
9.5	**11.3**	**Clayey Silt**
11.3	**12**	**Clay**
12	**30**	**Sand**
30	**39.5**	**Silty Sand**
39.5	**40**	**Sandy Clay**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	**Top Cap (Locking)**	**New Plastic (PVC)**	**40**		
2	**Bottom Cap**	**New Plastic (PVC)**	**40**		
2	**Riser**	**New Plastic (PVC)**	**40**	**-3**	**20**
2	**Screen**	**New Plastic (PVC)**	**40 0.010**	**20**	**40**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

Environmental Resources Management

JKS-66
DRILLING LOG

Proj. No. 0503422 Boring/Well ID JKS-66 Date Drilled 2020-08-18

Project Plant Drains Pond CCR Unit Owner CPS Energy

Location Calaveras Power Station Boring T.D. 40.00 ' Boring Diam. 8.25 "

N. Coord. - E. Coord. - Surface Elevation 0.00 Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Sump Length 0.00'

Top of Casing Elevation 0.00' Stickup 3.00'

Depth to Water: 1. Ft. 22.50' (SB Installation) 2. Ft. 0.00 ( )

Drilling Company Vortex Drilling Partners, LP Driller James E. Neal

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

DRAFT

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0.00	0			0	No Samples Collected	0-5.0	NO RECOVERY: Soil removed by hydro-excavation.
-5	5			100		5.0- 7.5	SANDY CLAY: Orangish brown with trace orange and red mottling, damp to moist, medium stiff, low plasticity, sand content very fine grained, occasional silt content, no odor. At 7' bgs: Occasional light grey clay lenses.
				75		7.-12.5	CLAYEY SAND: Orangish brown, moist, loose, slight plasticity, very fine to fine grained, trace light grey clay lenses (abundant at 9.8' bgs), no odor.
-10	10			90			At 9.5' bgs: Yellowish brown sand lens, fine grained, well sorted (1" thick). At 10' bgs: Minor orange/red/dark brown silt stringers. At 10.3' bgs: Sand lens (similar to above - 1" thick). At 11.5' bgs: Light grey clay lens (1" thick; also observed at 12.3' bgs).
				60		12.5-23.3	SAND: Light brownish grey, damp, loose, very fine to fine grained, well sorted, sub-angular, occasional red/orange silt stringers, no odor.
-15	15			60			At 14.5' bgs: Red silt clay lens. At 15' bgs: Minor yellow silt stringers.
				80			At 17.5' bgs: Minor dark brown silt stringers. At 17.8' bgs: Trace red silty clay lens (0.5" thick). At 19' bgs: Thin, horizontally layered orange/yellow/dark brown silt stringers. At 20' bgs: Occasional yellow/orange silt stringers.
-20	20						

Environmental Resources Management

JKS-66
DRILLING LOG

Proj. No. 0503422 Boring/Well ID JKS-66 Date Drilled 2020-08-18

Project Plant Drains Pond CCR Unit Owner CPS Energy

Location Calaveras Power Station Boring T.D. 40.00 ' Boring Diam. 8.25 "

N. Coord. - E. Coord. - Surface Elevation 0.00 Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Sump Length 0.00'

Top of Casing Elevation 0.00' Stickup 3.00'

Depth to Water: 1. Ft. 22.50' (SB Installation) 2. Ft. 0.00 ( )

Drilling Company Vortex Drilling Partners, LP Driller James E. Neal

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

DRAFT

Elevation (Ft MSL)	Depth (Feet)	Graphic Log	Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-20	20			60	No Samples Collected		
				80		23.3-27.5	At 22.5' bgs: Very moist to wet, abundant orange/yellow silt stringers. CLAYEY SAND: Light brown with abundant orange coloring, moist, loose, non-plastic to slightly plastic, very fine grained, minor silt content, no odor.
-25	25			60			At 25' bgs: Wet to 25.5' bgs, orange/light brown sandy clay lens. At 25.5' bgs: No orange coloring.
				80		27.5-40.0	SAND: Light brown, wet, loose, very fine grained, poorly sorted, sub-angular, minor silt content, trace orange silt stringers, no odor.
-30	30			90			At 30' bgs: Saturated. At 31.8' bgs: Orange silty clay lens (1-2" thick).
				100			At 32.5' bgs: Trace orange silt stringers.
-35	35			100			At 34.3' bgs: Light brown clay lens, medium plasticity (2" thick). At 35' bgs: Trace to minor orang silt stringers.
				100			At 37.5' bgs: Wet, minor clay content, abundant orange silt stringers.
-40	40						At 39' bgs: Some red silt stringers. At 40' bags: Boring Terminated

STATE OF TEXAS WELL REPORT for Tracking #551899

Owner:	**CPS Energy**	Owner Well #:	**JKS-66**
Address:	**P.O. Box 2906 San Antonio , TX 78299**	Grid #:	**68-46-5**
Well Location:	**Calaveras Power Station 12940 US 181 San Antonio, TX 78263**	Latitude:	**29° 18' 52.65" N**
		Longitude:	**098° 18' 58.53" W**
Well County:	**Bexar**	Elevation:	**No Data**

Type of Work: **New Well** Proposed Use: **Monitor**

Drilling Start Date: **8/17/2020** Drilling End Date: **8/19/2020**

Borehole:

Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
8.25	**0**	**40**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

Filter Pack Intervals:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
18	**40**	**Sand**	**12/20**

Annular Seal Data:

Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
0	**2**	**Concrete 1.16 Bags/Sacks**
2	**18**	**Bentonite 7 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Sleeve Installed** **Surface Completion by Driller**

Water Level: **22.5 ft.** below land surface on **2020-08-18**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Vortex Drilling Partners, LP**

4412 Bluemel Road
San Antonio, TX 78240

Driller Name: **James E. Neal** License Number: **4868**

Apprentice Name: **Joe Lopez**

Comments: **No Data**

Report Amended on 8/28/2020 by Request #32574

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**5**	**No recovery**
5	**7.5**	**Sandy Clay**
7.5	**12.5**	**Clayey Sand**
12.5	**23.3**	**Sand**
23.3	**27.5**	**Clayey Sand**
27.5	**40**	**Sand**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	**Top Cap (Locking)**	**New Plastic (PVC)**	**40**		
2	**Bottom Cap**	**New Plastic (PVC)**	**40**		
2	**Riser**	**New Plastic (PVC)**	**40**	**-3**	**20**
2	**Screen**	**New Plastic (PVC)**	**40 0.010**	**20**	**40**

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Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

Environmental Resources Management

JKS-67
DRILLING LOG

Proj. No. 0503422 Boring/Well ID JKS-67 Date Drilled 2020-08-18

Project Plant Drains Pond CCR Unit Owner CPS Energy

Location Calaveras Power Station Boring T.D. 25.00' Boring Diam. 8.25"

N. Coord. - E. Coord. - Surface Elevation 0.00 Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Sump Length 0.00'

Top of Casing Elevation 0.00' Stickup 3.00'

Depth to Water: 1. Ft. 12.00' (SB Installation) 2. Ft. 0.00" ( )

Drilling Company Vortex Drilling Partners, LP Driller James E. Neal

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

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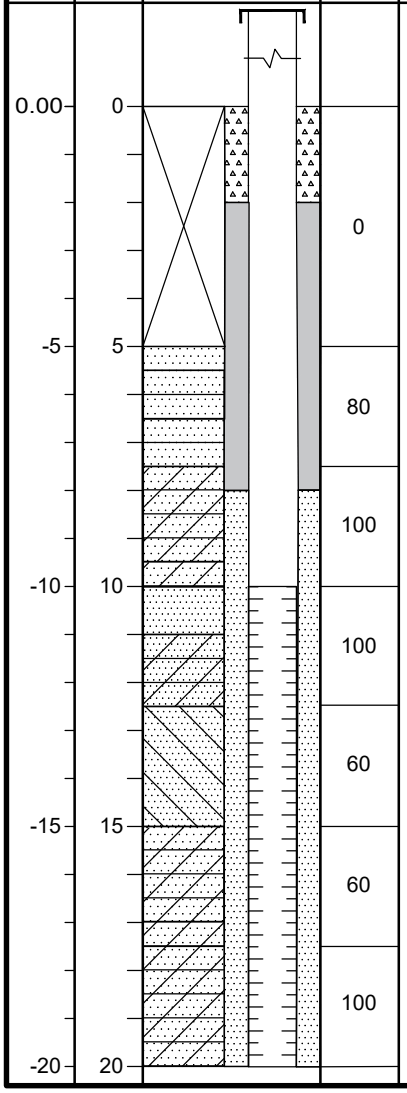

Elevation (Ft MSL)	Depth (Feet)	Graphic Log / Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
0.00	0		0	No Samples Collected	0-5.0	NO RECOVERY: Soil removed by hydro-excavation
-5	5		80		5.0- 7.5	SILTY SAND: Dark brown, dry, loose, very fine grained, abundant gravel content (up to 1") and root material, no odor.
			100		7.5-9.5	SILTY CLAYEY SAND: Brown, damp, dense to very dense (very compact), very fine grained, minor gravel content, abundant dark brown and occasional orange silt stringers, no odor
-10	10		100		9.5-10.0	CLAYEY SAND: Brown, damp to moist, loose to medium dense, slight plasticity, very fine grained, heavily layered with dark brown/orange silt stringers, no odor.
			60		10.0-11.0	SAND: Light brown, very moist, loose, very fine grained, poorly sorted, sub-angular, trace dark brown silt stringers, no odor.
					11.0-12.5	CLAYEY SILTY SAND: Light brown with some dark brown and orange coloring, very moist, loose, slight plasticity, very fine grained, no odor. At 12' bgs: Wet.
					12.5-15.0	SANDY CLAY: Light grey with some orange mottling, wet, soft, slight to low plasticity, sand content very fine grained, no odor.
-15	15		60		15.0-20.0	SILTY CLAYEY SAND: Light brown, wet, loose, very fine grained, minor to occasional dark brown/brown silt stringers, no odor.
			100			At 17.5' bgs: Saturated.
-20	20					

Environmental Resources Management

JKS-67
DRILLING LOG

Proj. No. 0503422 Boring/Well ID JKS-67 Date Drilled 2020-08-18

Project Plant Drains Pond CCR Unit Owner CPS Energy

Location Calaveras Power Station Boring T.D. 25.00' Boring Diam. 8.25"

N. Coord. - E. Coord. - Surface Elevation 0.00 Ft. MSL Datum

Screen: Type Sch. 40 PVC Diam. 2.00 " Length 15.00 ' Slot Size 0.01 "

Casing: Type Sch. 40 PVC Diam. 2.00 " Length 20.00 ' Sump Length 0.00'

Top of Casing Elevation 0.00' Stickup 3.00'

Depth to Water: 1. Ft. 12.00' (SB Installation) 2. Ft. 0.00" ( )

Drilling Company Vortex Drilling Partners, LP Driller James E. Neal

Drilling Method Hollow-Stem Auger Log By Nick Houtchens

SKETCH MAP

NOTES

DRAFT

Elevation (Ft MSL)	Depth (Feet)	Graphic Log / Well Construction	Recovery (%)	Lab Sample Data	Description Interval (Feet)	Description/Soil Classification (Color, Texture, Structure)
-20	20			No Samples Collected	20.3-25.0	SAND: Brown, saturated, loose, very fine grained, poorly sorted, sub-angular, minor silt content, abundant orange fine grained sand stringers and trace dark brown silt stringers, no odor.
			100			
			100			At 24.5' bgs: Sand very fine to fine grained, light brown colored layer (2" thick).
-25	25					At 25' bgs: Boring Terminated.
			60			
			80			
-30	30					
			90			
			100			
-35	35					
			100			
			100			
-40	40					

STATE OF TEXAS WELL REPORT for Tracking #551902

Owner:	**CPS Energy**	Owner Well #:	**JKS-67**
Address:	**P.O. Box 2906 San Antonio , TX 78299**	Grid #:	**68-46-5**
Well Location:	**Calaveras Power Station 12940 US 181 San Antonio, TX 78263**	Latitude:	**29° 18' 45.98" N**
		Longitude:	**098° 18' 57.53" W**
Well County:	**Bexar**	Elevation:	**No Data**

Type of Work: **New Well** Proposed Use: **Monitor**

Drilling Start Date: **8/17/2020** Drilling End Date: **8/19/2020**

	Diameter (in.)	*Top Depth (ft.)*	*Bottom Depth (ft.)*
Borehole:	**8.25**	**0**	**25**

Drilling Method: **Hollow Stem Auger**

Borehole Completion: **Filter Packed**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Filter Material*	*Size*
Filter Pack Intervals:	**18**	**25**	**Sand**	**12/20**

	Top Depth (ft.)	*Bottom Depth (ft.)*	*Description (number of sacks & material)*
Annular Seal Data:	**0**	**2**	**Concrete 1.16 Bags/Sacks**
	2	**8**	**Bentonite 4.5 Bags/Sacks**

Seal Method: **Hand Mixed**

Sealed By: **Driller**

Distance to Property Line (ft.): **No Data**

Distance to Septic Field or other concentrated contamination (ft.): **No Data**

Distance to Septic Tank (ft.): **No Data**

Method of Verification: **No Data**

Surface Completion: **Surface Sleeve Installed** **Surface Completion by Driller**

Water Level: **10 ft.** below land surface on **2020-08-17**

Packers: **No Data**

Type of Pump: **No Data**

Well Tests: **No Test Data Specified**

Water Quality:

Strata Depth (ft.)	Water Type
No Data	**No Data**

Chemical Analysis Made: **No**

Did the driller knowingly penetrate any strata which contained injurious constituents?: **No**

Certification Data: The driller certified that the driller drilled this well (or the well was drilled under the driller's direct supervision) and that each and all of the statements herein are true and correct. The driller understood that failure to complete the required items will result in the report(s) being returned for completion and resubmittal.

Company Information: **Vortex Drilling Partners, LP**

4412 Bluemel Road
San Antonio, TX 78240

Driller Name: **James E. Neal** License Number: **4868**

Apprentice Name: **Joe Lopez**

Comments: **No Data**

Report Amended on 8/28/2020 by Request #32575

Lithology:
DESCRIPTION & COLOR OF FORMATION MATERIAL

Top (ft.)	Bottom (ft.)	Description
0	**5**	**No recovery**
5	**7.5**	**Silty Sand**
7.5	**9.5**	**Silty Clayey Sand**
9.5	**10**	**Clayey Sand**
10	**11**	**Sand**
11	**12.5**	**Clayey Silty Sand**
12.5	**15**	**Sandy Clay**
15	**20.3**	**Silty Clayey Sand**
20.3	**25**	**Sand**

Casing:
BLANK PIPE & WELL SCREEN DATA

Dia (in.)	Type	Material	Sch./Gage	Top (ft.)	Bottom (ft.)
2	**Top Cap (Locking)**	**New Plastic (PVC)**	**40**		
2	**Bottom Cap**	**New Plastic (PVC)**	**40**		
2	**Riser**	**New Plastic (PVC)**	**40**	**-3**	**10**
2	**Screen**	**New Plastic (PVC)**	**40 0.010**	**10**	**25**

IMPORTANT NOTICE FOR PERSONS HAVING WELLS DRILLED CONCERNING CONFIDENTIALITY

TEX. OCC. CODE Title 12, Chapter 1901.251, authorizes the owner (owner or the person for whom the well was drilled) to keep information in Well Reports confidential. The Department shall hold the contents of the well log confidential and not a matter of public record if it receives, by certified mail, a written request to do so from the owner.

Please include the report's Tracking Number on your written request.

Texas Department of Licensing and Regulation
P.O. Box 12157
Austin, TX 78711
(512) 334-5540

Groundwater Analytical Results Summary
CPS Energy - Calaveras Power Station
Plant Drains Ponds

		JKS-65				JKS-66				JKS-67			
	Sample Date	10/21/20	04/13/21	10/19/21	04/13/22	10/21/20	04/13/21	10/19/21	04/13/22	10/21/20	04/13/21	10/19/21	04/13/22
	Task	Event 1	Event 2	Event 3	Event 4	Event 1	Event 2	Event 3	Event 4	Event 1	Event 2	Event 3	Event 4
Constituents	**Unit**	**Oct 2020**	**Apr 2021**	**Oct 2021**	**Apr 2022**	**Oct 2020**	**Apr 2021**	**Oct 2021**	**Apr 2022**	**Oct 2020**	**Apr 2021**	**Oct 2021**	**Apr 2022**
Appendix III - Detection Monitoring													
Boron	mg/L	0.276	0.271	0.280	0.254	0.586	0.524	0.589	0.487	0.503	0.460	0.538	0.472
Calcium	mg/L	39.0	25.2	23.8	22.9	44.0	42.0	42.5	39.5	59.7	56.9	52.2	51.6
Chloride	mg/L	140	119	110	115	22.3	26.2	24.2	21.7	64.4	64.6	49.9	59.3
Fluoride	mg/L	0.495	0.578	0.018 U	0.951	0.128	0.131	0.176 U	0.202	0.267	0.307	0.018 U	0.478
Sulfate	mg/L	82.0	68.5	68.4	63.8	62.0	72.0	76.2	73.2	61.6	56.6	55.5	58.2
pH - Field Collected	SU	6.74	6.47	6.48	6.51	6.41	6.16	6.22	6.22	7.00	6.78	6.73	6.82
Total dissolved solids	mg/L	727	579	575	603	355	352	371	398	516	539	529	560
Appendix IV - Assessment Monitoring													
Antimony	mg/L	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U
Arsenic	mg/L	0.003 J	0.002 J	0.002 J	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 U	0.002 J	0.002 U	0.002 U
Barium	mg/L	0.033	0.026	0.027	0.025	0.060	0.065	0.071	0.070	0.068	0.068	0.079	0.074
Beryllium	mg/L	0.0003 U	0.0003 U	0.0003 U	0.0003 J	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 U	0.0003 J
Cadmium	mg/L	0.0003 J	0.0003 J	0.0004 J	0.0005 J	0.0003 J	0.0003 J	0.0004 J	0.0004 J	0.0003 J	0.0003 U	0.0004 J	0.0005 J
Chromium	mg/L	0.001 J	0.001 J	0.053	0.006 J	0.001	0.002 J	0.006 J	0.043	0.001 J	0.001 U	0.001 J	0.001 J
Cobalt	mg/L	0.0003 U	0.0003 U	0.0003 J	0.0003 U	0.002	0.0003 U	0.0003 U	0.002 J	0.0003 U	0.0003 U	0.0003 U	0.0003 U
Fluoride	mg/L	0.495	0.578	0.018 U	0.951	0.003	0.131	0.176 U	0.202	0.267	0.307	0.018 U	0.478
Lead	mg/L	0.004 J	0.006 J	0.007 J	0.006 J	0.002 J	0.004 J	0.005 J	0.004 J	0.003 J	0.002 J	0.004 J	0.003 J
Lithium	mg/L	0.046 J	0.063	0.054	0.055	0.023 J	0.033 J	0.027 J	0.033 J	0.050 U	0.022 J	0.016 J	0.050 U
Mercury	mg/L	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U	0.0001 U
Molybdenum	mg/L	0.002 U	0.002 U	0.005 J	0.002 U	0.002 U	0.002 U	0.002 J	0.003 J	0.002 U	0.002 U	0.002 U	0.002 U
Selenium	mg/L	0.017	0.015	0.014	0.010 J	0.005 J	0.004 J	0.005 J	0.003 J	0.005 J	0.008 J	0.003 J	0.002 U
Thallium	mg/L	0.0009 U	0.0009 U	0.0009 U	0.0009 U	0.0009 U	0.0009 U	0.0009 U	0.0009 U	0.0009 U	0.0009 U	0.0009 U	0.0009 U
Radium-226	pCi/L	0.422 ± 0.213	0.296 ± 0.128	0.364 ± 0.280	0.0995 ± 0.108	0.457 ± 0.215	0.475 ± 0.159	2.58 ± 0.540	0.0748 ± 0.235	0.325 ± 0.186	0.208 ± 0.111	0.253 ± 0.177	0.127 ± 0.113
Radium-228	pCi/L	1.77 ± 0.366	0.457 ± 0.269	0.331 ± 0.322	1.13 ± 0.395	1.76 ± 0.336	0.403 ± 0.264	4.40 ± 0.699	1.04 ± 0.697	0.711 ± 0.313	0.190 ± 0.241	0.280 ± 0.223	0.252 ± 0.281

NOTES:
mg/L: Milligrams per Liter.
SU: Standard Units.
pCi/L: Picocuries per Liter.
J: Analyte detected above method (sample) detection limit but below method quantitation limit.
U: Analyte not detected at laboratory reporting limit (RL).

ATTACHMENT 6 REGISTRATION APPLICATION TABLES

(DRAFTS – SUPPLEMENTAL GEOLOGIC INFORMATION TO BE INCORPORATED AFTER ADDITIONAL WELL INSTALLATIONS)

Table I.6. – CCR Waste Management Units

CCR Unit No.[1]	Unit Name	N.O.R. No.[1]	Unit Description[3]	Capacity	Unit Status[2]
021	Evaporation Pond	021	Receives boiler chemical cleaning waste and other authorized liquid wastes.	99 acre-feet	Active
010	Fly Ash Landfill	010	Receives fly ash, bottom ash, economizer ash, scrubber sludge from flue gas desulphurization ponds, and flue gas desulphurization gypsum (temporary storage).	900,000 cubic yards	Active
026	SRH Pond	026	Receives flue gas desulphurization scrubber sludge.	28 acre-feet	Active
005	North Bottom Ash Pond	005	Formerly received sluiced bottom ash – currently dewatered and undergoing closure.	72 acre-feet	Inactive
006	South Bottom Ash Pond	006	Formerly received sluiced bottom ash – currently dewatered and undergoing closure.	84 acre-feet	Inactive
TBD[4]	Plant Drains Pond	TBD[4]	Receives flue gas desulphurization scrubber sludge.	18.3 acre-ft	Proposed

[1] Registered Unit No. and N.O.R. No. cannot be reassigned to new units or used more than once.
[2] Unit Status options: Active, Closed, Inactive (built but not managing waste), Proposed (not yet built), Never Built, Transferred, Post-Closure.
[3] If a unit has been transferred, the applicant should indicate which facility/permit it has been transferred to in the Unit Description column.
[4] CCR Unit No. will be determined after the Plant Drains Pond has been added to the facility's N.O.R.

Table I.6.A. – Waste Management Information

Waste No.[1]	Waste Type(s)	Source	Maximum Volume (tons/year)
1	Liquid - Water/glycol-based antifreeze mixture	Cooling System (EP)	25
2	Liquid - Neutralized acid/base tank/vessel clean waste	Tank Vessel Cleaning (EP)	25
3	Liquid - Uncontaminated water	Intake, Pumps, Vaults, etc. (EP)	5
4	Liquid - High pressure boiler related cleaning waste	HP Boiler, Cooling system cleans (EP)	2000
5	Liquid - Condenser cleaning waste	Condenser Cleaning (EP)	1000
6	Liquid - Neutralized acid/base spill waste	Chemical Spills (EP)	5
7	Liquid - Water/soap mixture turbine cleaning waste	Turbine Clean (EP)	50
8	Liquid - Boiler cleaning waste	Boiler Clean (EP)	1000
9	Liquid - Laboratory analyte solution waste	Laboratory Waste (EP)	1

10	Liquid - Waste plasma cutter liquid	Plasma Cutter Waste (EP)	0.5
11	Liquid - High pressure steam turbine cleaning waste	HP Turbine Clean (EP)	1000
12	Liquid - Metal cleaning waste	Metal Cleaning Waste (EP)	1000
13	Liquid - Neutralized ion exchange waste	Water Treatment Waste (EP)	100
14	Liquid - Class 2 lead paint abatement water	Class 2 lead paint (EP)	To be determined
15	Liquid - Lead paint abatement water	Lead paint (EP)	To be determined
16	Solid - Ash, coal, scrubber sludge runoff solids	Stormwater runoff solids (FAL)	5
17	Solid - Fly ash/ economizer ash solids	Coal combustion residual (FAL)	142,000
18	Solid - Spend catalyst	Air emission control systems (FAL)	100
19	Solid - Ion exchange solids	Water Treatment solids (FAL)	5
20	Solid - Coal dust collection bags	Coal combustion dust collection system (FAL)	100
21	Solid - Coal runoff solids removed from ponds	Coal pile runoff solids (FAL)	500

22	Solid - Bottom ash	Coal combustion residual (FAL)	60,000
23	Solid - Solids/silt removed from lake bottom	Lake bottoms (FAL)	100
24	Solid - Solids from air preheated basket	Air emissions control system (FAL)	100
25	Solid - Fly ash collection bags	Dust collection system (FAL)	75
26	Solid - Scrubber sludge (fly ash, bottom ash, coal dust)	Air emissions control system (FAL)	To be determined
27	Solid - Scrubber sludge	Air emissions system (SRHP and PDP)	To be determined
28	Solid - Bottom ash	Bottom ash (BAPs)	25,000

[1] Assign waste number sequentially. Do not remove waste number wastes which are no longer generated.

Table I.6.B. – Wastes Managed in Registered Units

Waste No.[1]	Waste	TCEQ Waste Form Codes and Classification Codes
1	Water/glycol-based antifreeze mixture (EP)	296-2
2	Neutralized acid/base tank/vessel clean waste (EP)	119-2
3	Uncontaminated water (EP)	119-2
4	High pressure boiler related cleaning waste (EP)	119-2
5	Condenser cleaning waste (EP)	119-2
6	Neutralized acid/base spill waste (EP)	119-2
7	Water/soap mixture turbine cleaning waste (EP)	119-2
8	Boiler cleaning waste (EP)	119-2
9	Laboratory analyte solution waste (EP)	119-2
10	Waste plasma cutter liquid (EP)	110-2
11	High pressure steam turbine cleaning waste (EP)	119-2
12	Metal cleaning waste (EP)	114-2
13	Neutralized ion exchange waste (EP)	119-2
14	Class 2 lead paint abatement water (EP)	119-2
15	Lead paint abatement water (EP)	119-2
16	Ash, coal, scrubber sludge runoff solids (FAL)	409-2
17	Fly ash/economizer ash solids (FAL)	304-2
18	Spend catalyst (FAL)	393-2
19	Ion exchange solids (FAL)	403-2

20	Coal dust collection bags (FAL)	409-2
21	Coal runoff solids removed from ponds (FAL)	609-2
22	Bottom ash (FAL)	304-2
23	Solids/silt removed from lake bottom (FAL)	301-2
24	Solids from air preheated basket (FAL)	319-2
25	Fly ash collection bags (FAL)	319-2
26	Scrubber sludge (fly ash, bottom ash, coal dust) (FAL)	392-2
27	Scrubber sludge (SRHP and PDP)	392-2
28	Bottom ash (BAPs)	304-2

[1] from Table I.6.A., first column

Table I.6.C – Sampling and Analytical Methods

Waste No.[1]	Sampling Location	Sampling Method	Frequency	Parameter	Test Method	Desired Accuracy Level
1	Cooling System or spill (EP)	Grab sample	See Note 2	See Note 3	See Note 3	See Note 3
2	Waste collection tank (EP)	Grab sample	See Note 2	See Note 3	See Note 3	See Note 3
3	At source (EP)	Grab sample	See Note 2	See Note 3	See Note 3	See Note 3
4	Waste collection tank (EP)	Grab sample	See Note 2	See Note 3	See Note 3	See Note 3
5	Waste collection tank (EP)	Grab sample	See Note 2	See Note 3	See Note 3	See Note 3
6	At spill or collection drum/tank (EP)	Grab sample	See Note 2	See Note 3	See Note 3	See Note 3
7	Waste collection tank (EP)	Grab sample	See Note 2	See Note 3	See Note 3	See Note 3
8	Waste collection tank (EP)	Grab sample	See Note 2	See Note 3	See Note 3	See Note 3
9	At source (EP)	Grab or Composite	See Note 2	See Note 3	See Note 3	See Note 3
10	At source (EP)	Grab sample	See Note 2	See Note 3	See Note 3	See Note 3
11	Waste collection tank (EP)	Grab sample	See Note 2	See Note 3	See Note 3	See Note 3
12	Waste collection tank (EP)	Grab sample	See Note 2	See Note 3	See Note 3	See Note 3
13	At source (EP)	Grab Sample	See Note 2	See Note 3	See Note 3	See Note 3
14	At source (EP)	Grab Sample	See Note 2	See Note 3	See Note 3	See Note 3
15	At source (EP)	Grab Sample	See Note 2	See Note 3	See Note 3	See Note 3
16	At source (FAL)	Grab	See Note 2	See Note 3	See Note 3	See Note 3
17	At source (FAL)	Grab	See Note 2	See Note 3	See Note 3	See Note 3
18	At source (FAL)	Grab	See Note 2	See Note 3	See Note 3	See Note 3
19	At source (FAL)	Grab	See Note 2	See Note 3	See Note 3	See Note 3

Waste No.[1]	Sampling Location	Sampling Method	Frequency	Parameter	Test Method	Desired Accuracy Level
20	At time of removal (FAL)	Composite	See Note 2	See Note 3	See Note 3	See Note 3
21	At source (FAL)	Grab	See Note 2	See Note 3	See Note 3	See Note 3
22	At source (FAL)	Grab	See Note 2	See Note 3	See Note 3	See Note 3
23	At source (FAL)	Grab	See Note 2	See Note 3	See Note 3	See Note 3
24	At source (FAL)	Grab	See Note 2	See Note 3	See Note 3	See Note 3
25	At source (FAL)	Grab	See Note 2	See Note 3	See Note 3	See Note 3
26	At source (FAL)	Grab	See Note 2	See Note 3	See Note 3	See Note 3
27	At source (SRHP and PDP)	Grab	See Note 2	See Note 3	See Note 3	See Note 3
28	At Source (BAPs)	Grab	See Note 2	See Note 3	See Note 3	See Note 3

[1] from Table I.6.A., first column

[2] Samples are collected if the process has changed and no analytical results are available or at project initiation unless (1) process knowledge dictates no sample is needed or (2) process has remained unchanged and recent analytical results are available that adequately characterize the waste.

[3] This information as identified as incomplete in the 5/20/2022 email received from Chris Shaw (TCEQ). CPS Energy is currently tabulating the required information.

Table V.A. – Surface Impoundment Characteristics

Registered Unit No.	Surface Impound-ment Name	N.O.R. No.	Waste Nos.[1]	Rated Capacity	Dimensions[2]	Distance from lowest liner to ground-water[3]	Action Leakage Rate (if required)	Unit will manage CCR Waste and non-CCR Waste (state all that apply)
021	Evaporation Pond (EP)	021	Currently Managed: 20082962 Water with glycol based antifreeze from cooling systems 10131192 Condenser cleaning waste, neutralized / Removal of scale buildup inside condenser tubes; 10001192 Boiler cleaning waste, 10061192 High pressure steam turbine foam cleaning waste -- ammonium carbonate and aqua ammonia; 10141192 acid/base tank/vessel cleaning/rinsate waste, neutralized; generated when power plant high efficiency boiler water tubes and steam tubes are cleaned 10151192 Neutralized/ Acid or Base/ Liquid / Spill Cleanup/ Low suspended solids10171192 Laboratory analyte solution waste/neutralized. 10241142 Metal cleaning waste generated from air preheater basket cleaning/removal of fly ash to improve boiler efficiency.10271192 Uncontaminated water 10261192 Water/soap used in removal of dirt/dust contaminants from turbines for performance improvement.	83 acre-feet	4.5 surface acreage Average: 500 ft long x 400 ft wide x 22 ft deep	>5 feet	NA	CCR Waste and Non-CCR Waste

Registered Unit No.	Surface Impound-ment Name	N.O.R. No.	Waste Nos.[1]	Rated Capacity	Dimensions[2]	Distance from lowest liner to ground-water[3]	Action Leakage Rate (if required)	Unit will manage CCR Waste and non-CCR Waste (state all that apply)
			10071102 Waste plasma cutter liquid waste (Plasma Quench) 10021192 Neutralized ion exchange waste water / resin regeneration / historical; 10251192 High pressure cleaning of boiler related heat exchanger condenser, cooling water system, etc. to remove scale deposits to improve boiler efficiency. Previously Managed: 30301192 class 2 lead paint abatement water 10101192 lead paint abatement water					
005	North Bottom Ash Pond (North BAP)	005	30093042 Bottom Ash/Burning coal for production of electricity/Historical	56 acre-feet	6.1 surface acreage Average: 525 ft long x 460 ft wide x 12 ft deep	<5 feet	NA	CCR Waste
006	South Bottom Ash Pond (South BAP)	006	30093042 Bottom Ash/Burning coal for production of electricity/Historical	62 acre-feet	6.8 surface acreage Average: 400 ft long x 680 ft wide x 12 ft deep	>5 feet	NA	CCR Waste

Registered Unit No.	Surface Impound-ment Name	N.O.R. No.	Waste Nos.[1]	Rated Capacity	Dimensions[2]	Distance from lowest liner to ground-water[3]	Action Leakage Rate (if required)	Unit will manage CCR Waste and non-CCR Waste (state all that apply)
026	SRH Pond	026	30123922 Scrubber sludge and debris i.e. fly ash, bottom ash and coal / removal of sulfur dioxide from air emissions / historical.	14 acre-feet	Divided pond: 1.5 surface acreage each (3.0 total) Average: 440 ft long x 330 ft wide x 8 ft deep	>5 feet	NA	CCR Waste and Non-CCR Waste
TBD[4]	Plant Drains Pond	TBD[4]	30123922 Scrubber sludge and debris i.e. fly ash, bottom ash and coal / removal of sulfur dioxide from air emissions / historical.	12.2 acre-feet at Maximum Normal Operating Level 18.3 acre-feet at Inside Crest Elevation	Divided pond: 1.7 acres each (3.4 total) Average: 450 ft long x 150 ft wide x 7 ft deep	>5 feet	NA	CCR Waste and Non-CCR Waste

[1] From Table I.6.A., first column
[2] Dimensions should be provided as average length, width and depth, also include the surface acreage for the unit.
[3]. Based on review of Record Drawings and static water levels observed during monitor well installation.
[4] Registered Unit No. will be determined after the Plant Drains Pond has been added to the facility's N.O.R.

Table V.B. – Surface Impoundment Liner System

Registered Unit No.*	Surface Impoundment Name	Geomembrane Liner Material	Geomembrane Liner Permeability (cm/sec)	Geomembrane Liner Thickness	Soil Liner Material	Soil Liner Permeability (cm/sec)	Soil Liner Thickness
021	Evaporation Pond (EP)	PVC	~$1*10^{-11}$ cm/sec	30 mil	Cohesive Soil	Not Documented	12 inches
005	North Bottom Ash Pond (North BAP)	None	NA	NA	Clay	Not Documented	Not Documented
006	South Bottom Ash Pond (South BAP)	None	NA	NA	Clay	Not Documented	Not Documented
026	SRH Pond	HDPE	~$1*10^{-13}$ cm/sec	30 mil	Not Documented	Not Documented	Not Documented
TBD[2]	Plant Drains Pond	HDPE	~$1*10^{-13}$ cm/sec (blank sheet, no defects)	60 mil	New CETCO Resistex 200 FLW9 geosynthetic clay liner	3×10^{-9} cm/sec (ASTM D5887) - Manufacturer published data. 7.59×10^{-10} cm/sec (ASTM D6766) – CPS Spruce representative leachate.	0.8 cm (Manufacturer correspondence).

[1] This number should match the Registration Unit No. given on Table V.A.
[2] Registered Unit No. will be determined after the Plant Drains Pond has been added to the facility's N.O.R.

Table V.J. – Inspection Schedule of Surface Impoundments

Facility Unit(s) and Basic Elements	Possible Error, Malfunction, or Deterioration	Frequency of Inspection
Liner	Liner condition (if visible) showing signs of damage or deterioration.	Weekly
Freeboard	Document sufficient freeboard according to Inflow Design Flood Control System Plan.	Weekly
Embankments	General condition of embankments including grass coverage on exterior embankments, grass height, rutting, erosion, poor drainage, tree growth, cattails or other aquatic plant growth, depressions, bulges, cracks/tears, sinkholes, animal burrows, sloughing, damp/moist areas during dry conditions, and evidence of seepage.	Weekly
Pump System	General condition of pump system including corrosion, concrete spalling and cracking, blockage, missing parts, exposed electrical wiring, and damaged/leaking pipes and valves.	Weekly
Emergency Spillway	General condition of spillway(s) including condition of concrete and reinforcement, indication of blockage, trees, burrows, erosion, access, sinkholes, exposed joints, and displacement, and condition of gates, if present.	Weekly
Instrumentation	None present at the impoundments. If new instrumentation is added it will be monitored and condition inspected monthly.	Monthly

Table VI.A. – Unit Groundwater Detection Monitoring Systems[1]

Evaporation Pond						
Well Number(s):	JKS-36	JKS-47	JKS-61	JKS-62	JKS-63R	JKS-64
Hydrogeologic Unit Monitored	Uppermost	Uppermost	Uppermost	Uppermost	Uppermost	Uppermost
Type (e.g., point of compliance, background, observation)	Point of Compliance	Background	Point of Compliance	Point of Compliance	Background	Background
Up or Down Gradient	Downgradient	Upgradient	Downgradient	Downgradient	Upgradient	Upgradient
Casing Diameter (in.) and Material	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC
Screen Diameter (in.) and Material	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC
Screen Slot Size (in.)	0.01-inch	0.01-inch	0.01-inch	0.01-inch	0.01-inch	0.01-inch
Top of Casing Elevation (Ft, MSL)	508.41	513.63	505.51	509.84	526.86	507.84
Surface Elevation (Ft, MSL)	506.95	510.28	502.52	506.71	523.55	504.38
Well Depth (Ft, BGS)	50.0	40.0	33.0	30.0	50.0	30.0
Well Depth (Ft, BTOC)	51.5	43.4	36.0	33.1	53.3	33.5
Screen Interval From (Ft, BGS) To (Ft, BGS)	40.0-50.0	25.0-40.0	18.0-33.0	20.0-30.0	30.0-50.0	15.0-30.0
Screen Interval From (Ft, BTOC) To (Ft, BTOC)	41.5-51.5	28.4-43.4	21.0-36.0	23.1-33.1	33.3-53.3	18.5-33.5

[1] From Tables in Section I.; MSL: Mean Sea Level; BGS: Below Grade Surface; BTOC: Below Top of Casing

Fly Ash Landfill								
Well Number(s):	JKS-31	JKS-33	JKS-45	JKS-46	JKS-57	JKS-58	JKS-59	JKS-60
Hydrogeologic Unit Monitored	Uppermost	Uppermost	Uppermost	Uppermost	Uppermost	Uppermost	Uppermost	Uppermost
Type (e.g., point of compliance, background, observation)	Point of Compliance	Point of Compliance	Background	Point of Compliance	Background	Observation	Observation	Point of Compliance
Up or Down Gradient	Downgradient	Downgradient	Upgradient	Downgradient	Upgradient	Downgradient	Downgradient	Downgradient
Casing Diameter (in.) and Material	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC
Screen Diameter (in.) and Material	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC
Screen Slot Size (in.)	0.01-inch	0.01-inch	0.01-inch	0.01-inch	0.01-inch	0.01-inch	0.01-inch	0.01-inch
Top of Casing Elevation (Ft, MSL)	507.45	498.71	531.46	499.08	506.91	504.45	496.45	495.7
Surface Elevation (Ft, MSL)	505.27	497.77	528.31	495.75	503.83	500.94	493.53	492.68
Well Depth (Ft, BGS)	65.0	29.0	55.0	25.0	27.0	30.0	27.0	25.0

Well Depth (Ft, BTOC)	67.2	30.0	58.2	28.3	30.1	33.5	29.9	28.0
Screen Interval From (Ft, BGS) To (Ft, BGS)	55.0-65.0	19.0-29.0	40.0-55.0	15.0-25.0	12.0-27.0	20.0-30.0	12.0-27.0	10.0-25.0
Screen Interval From (Ft, BTOC) To (Ft, BTOC)	57.2-67.2	20.0-30	43.2-58.2	18.3-28.3	15.1-30.1	23.5-33.5	14.9-29.9	13-28

[1] From Tables in Section I.; MSL*:* Mean Sea Level; BGS*:* Below Grade Surface; BTOC*:* Below Top of Casing

SRH Pond						
Well Number(s):	JKS-49	JKS-51	JKS-52	JKS-53	JKS-54	
Hydrogeologic Unit Monitored	Uppermost	Uppermost	Uppermost	Uppermost	Uppermost	
Type (e.g., point of compliance, background, observation)	Background	Background	Point of Compliance	Point of Compliance	Point of Compliance	
Up or Down Gradient	Upgradient	Upgradient	Downgradient	Downgradient	Downgradient	
Casing Diameter (in.) and Material	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	
Screen Diameter (in.) and Material	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	
Screen Slot Size (in.)	0.01-inch	0.01-inch	0.01-inch	0.01-inch	0.01-inch	
Top of Casing Elevation (Ft, MSL)	498.63	496.92	493.15	494.74	496.4	
Surface Elevation (Ft, MSL)	495.17	494.04	493.56	491.33	492.69	
Well Depth (Ft, BGS)	17.04	22.0	29.0	25.0	22.0	
Well Depth (Ft, BTOC)	20.5	24.9	28.6	28.4	25.7	
Screen Interval From (Ft, BGS) To (Ft, BGS)	7.0-17.0	7.0-22.0	19.0-29.0	15.0-25.0	12.0-22.0	
Screen Interval From (Ft, BTOC) To (Ft, BTOC)	10.5-20.5	9.9-24.9	18.6-28.6	18.4-28.4	15.7-25.7	

[1] From Tables in Section I.; MSL*:* Mean Sea Level; BGS*:* Below Grade Surface; BTOC*:* Below Top of Casing

North and South Bottom Ash Ponds							
Well Number(s):	JKS-48	JKS-49	JKS-50R	JKS-51	JKS-52	JKS-55	JKS-56
Hydrogeologic Unit Monitored	Uppermost	Uppermost	Uppermost	Uppermost	Uppermost	Uppermost	Uppermost
Type (e.g., point of compliance, background, observation)	Point of Compliance	Background	Point of Compliance	Background	Point of Compliance	Point of Compliance	Point of Compliance
Up or Down Gradient	Downgradient	Upgradient	Downgradient	Upgradient	Downgradient	Downgradient	Downgradient
Casing Diameter (in.) and Material	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC
Screen Diameter (in.) and Material	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC	2-inch PVC
Screen Slot Size (in.)	0.01-inch	0.01-inch	0.01-inch	0.01-inch	0.01-inch	0.01-inch	0.01-inch
Top of Casing Elevation (Ft, MSL)	497.19	498.63	498.48	496.92	493.15	493.81	496.66
Surface Elevation (Ft, MSL)	493.71	495.17	494.87	494.04	494.96	490.13	493.07
Well Depth (Ft, BGS)	28.52	17.04	19.67	22.0	25.08	25.02	25.01
Well Depth (Ft, BTOC)	32.0	20.5	23.0	24.9	28.6	28.7	28.6

Screen Interval From (Ft, BGS) To (Ft, BGS)	18.5-28.5	7.0-17.0	9.7-19.7	7.0-22.0	15.1-25.1	15.0-25.0	10.0-25.0
Screen Interval From (Ft, BTOC) To (Ft, BTOC)	22.0-32.0	10.5-20.5	13.0-23.0	9.9-24.9	18.6-28.6	18.7-28.7	13.6-28.6

[1] From Tables in Section I.; MSL*:* Mean Sea Level; BGS*:* Below Grade Surface; BTOC*:* Below Top of Casing

Plant Drains Pond (Proposed)							
Well Number(s):	JKS-65[2]	JKS-66[2]	JKS-67[2]	JKS-68[3]	JKS-69[3]		
Hydrogeologic Unit Monitored	Uppermost	Uppermost	Uppermost	To be determined	To be determined		
Type (e.g., point of compliance, background, observation)	To be determined	To be determined	To be determined	To be determined	To be determined		
Up or Down Gradient	To be determined	To be determined	To be determined	To be determined	To be determined		
Casing Diameter (in.) and Material	2-inch PVC	2-inch PVC	2-inch PVC	To be determined	To be determined		
Screen Diameter (in.) and Material	2-inch PVC	2-inch PVC	2-inch PVC	To be determined	To be determined		
Screen Slot Size (in.)	0.01-inch	0.01-inch	0.01-inch	To be determined	To be determined		
Top of Casing Elevation (Ft, MSL)	To be determined	To be determined	To be determined	To be determined	To be determined		
Surface Elevation (Ft, MSL)	To be determined	To be determined	To be determined	To be determined	To be determined		
Well Depth (Ft, BGS)	40.00	40.00	25.00	To be determined	To be determined		
Well Depth (Ft, BTOC)	To be determined	To be determined	To be determined	To be determined	To be determined		

Screen Interval From (Ft, BGS) To (Ft, BGS)	20.0-40.0	20.0-40.0	10.0-25.0	To be determined	To be determined		
Screen Interval From (Ft, BTOC) To (Ft, BTOC)	To be determined	To be determined	To be determined	To be determined	To be determined		

[1] From Tables in Section I.; MSL*:* Mean Sea Level; BGS*:* Below Grade Surface; BTOC*:* Below Top of Casing
[2] Wells will be surveyed after the remaining two wells (JKS-68 and JKS-69) have been installed.
[3] JKS-68 and JKS-69 are scheduled to be installed in July 2022 and will then be surveyed.

Table VI.C. – CCR Units Under Detection Monitoring

N.O.R. Unit No.	Unit Description[1,2]	Well(s)	Constituent(s)	Date of SSI Determination	Date of Assessment Monitoring Notification[3]
021	Evaporation Pond	JKS-36 JKS-47 JKS-61 JKS-62 JKS-63R JKS-64	Boron Calcium Chloride Fluoride Sulfate pH TDS	Not Applicable – Written Demonstrations (aka Alternate Source Demonstrations) determined no SSI	Not Applicable
010	Fly Ash Landfill	JKS-31 JKS-33 JKS-45 JKS-46 JKS-57 JKS-58 JKS-59 JKS-60	Boron Calcium Chloride Fluoride Sulfate pH TDS	Not Applicable – Written Demonstrations (aka Alternate Source Demonstrations) determined no SSI	Not Applicable
026	SRH Pond	JKS-49 JKS-51 JKS-52 JKS-53 JKS-54	Boron Calcium Chloride Fluoride Sulfate pH TDS	Not Applicable – Written Demonstrations (aka Alternate Source Demonstrations) determined no SSI	Not Applicable

Registration No.: CCR102
Registrant: CPS Energy Calaveras Plant Site

N.O.R. Unit No.	Unit Description[1,2]	Well(s)	Constituent(s)	Date of SSI Determination	Date of Assessment Monitoring Notification[3]
005 / 006	North Bottom Ash Pond / South Bottom Ash Pond	JKS-48 JKS-49 JKS-51 JKS-50R JKS-52 JKS-55 JKS-56	Boron Calcium Chloride Fluoride Sulfate pH TDS	Not Applicable – Written Demon-strations (aka Alternate Source Demonstrations) determined no SSI	Not Applicable
TBD	Plant Drains Pond (Proposed)	JKS-65 JKS-66 JKS-67 JKS-68 JKS-69	Boron Calcium Chloride Fluoride Sulfate pH TDS	Not Applicable – Monitoring network to be completed in July 2022	Not Applicable

[1] Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been requested pursuant to 40 CFR §257.103.
[2] Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been made pursuant to 40 CFR §257.103.
[3] Enter month, day, and year.

Table VI.D. – CCR Units Under Assessment Monitoring

N.O.R. Unit No.	Unit Description[1,2]	Well(s)	Constituent(s)	Date of SSI Determination	Date of Assessment Monitoring Notification[3]
Not Applicable					

[1] Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been requested pursuant to 40 CFR §257.103.
[2] Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been made pursuant to 40 CFR §257.103.
[3] Enter month, day, and year

Table VI.D-2. – Groundwater Detection Monitoring Parameters

Parameter	Sampling Frequency	Analytical Method	Practical Quantification Limit (mg/L)	Concentration Limit[1]
Boron	Semiannual	6010B	0.05	See Note 2
Calcium	Semiannual	6010B	0.2	See Note 2
Chloride	Semiannual	300.0	0.5	See Note 2
Fluoride	Semiannual	300.0	0.5	See Note 2
Sulfate	Semiannual	300.0	0.5	See Note 2
pH	Semiannual	Field collected	Not Applicable	See Note 2
TDS	Semiannual	SM2540C	5	See Note 2

[1] The concentration limit is the basis for determining whether a release has occurred from the CCR unit/area.

Note 2: Varies by CCR unit each year based on the upper prediction limits (UPLs) and lower prediction limits (LPLs) calculated during the statistical analyses performed for the *Annual Groundwater Monitoring and Corrective Action Reports*. See Attachment 16 for the most recent *Annual Groundwater Sampling and Corrective Action Report* for each of the four existing CCR units (ERM, 2021).

Table VII.A.1. – Unit Closure

For each unit to be registered, list the unit components to be decontaminated, the possible methods of decontamination, and the possible methods of disposal of wastes and waste residues generated during unit closure.

Equipment or CCR Unit	Possible Methods of Decontamination[1]	Possible Methods of Disposal[1]
Evaporation Pond	Closure by leaving CCR in place	Not Applicable
Fly Ash Landfill	Closure by leaving CCR in place	Not Applicable (See Note 2)
SRH Pond	Closure by removal of CCR	Beneficial use and/or placement into Fly Ash Landfill
North Bottom Ash Pond	Closure by removal of CCR	Beneficial use and/or placement into Fly Ash Landfill
South Bottom Ash Pond	Closure by removal of CCR	Beneficial use and/or placement into Fly Ash Landfill
Plant Drains Pond (Proposed)	Closure by removal of CCR	Beneficial use and/or placement into Fly Ash Landfill

1 Applicants may list more than one appropriate method.

Note 2: Some CCR for beneficial use are temporarily stored in the Fly Ash Landfill. Any CCR designated for beneficial use will be removed prior to closure of the Fly Ash Landfill, however, other CCR may remain within the Fly Ash Landfill after closure.

Table VII.A.2. – CCR Units Under Alternative Closure Notification

Registered Unit No.	N.O.R. Unit No.	Unit Description[1,2]	Date of Receipt of Last Waste[3]	Date of Closure Notification[3]
021	021	Evaporation Pond	See Note 4	See Note 4
026	026	SRH Pond	See Note 4	See Note 4

[1] Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been requested pursuant to 40 CFR §257.103.
[2] Indicates a unit for which a 30 TAC Chapter 352/40 CFR Part 257, Subpart D alternative closure determination has been made pursuant to 40 CFR §257.103.
[3] Enter month, day, and year.

Note 4: An *Alternative Capacity Infeasibility Demonstration* for the SRH Pond and the *Alternative Capacity Infeasibility Demonstration* for the Evaporation Pond were prepared for and submitted to EPA on 30 November 2020 to demonstrate that CCR and non-CCR wastestreams must continue to be managed in those surface impoundments based on a lack of alternative capacity. A letter from the EPA dated 11 January 2022 indicated that EPA has reviewed both demonstrations and determined that both demonstrations are complete. As a consequence of the submission of complete demonstrations, the deadlines for the CCR units covered by the demonstrations to cease receipt of waste is tolled until EPA completes their review and issues a final decision on the demonstrations.

Table VIII.A.1. – Post-Closure Cost Summary for Existing Registered Units

Unit	Cost
Evaporation Pond	$3,000,000
Fly Ash Landfill	$1,500,000
SRH Pond (See Note 2)	$0
Bottom Ash Ponds (See Note 2)	$0
Total Existing Unit Post-Closure Cost Estimate	$ (in 2022 Dollar)[1]

Table VIII.A.2. - Post-Closure Cost Summary for Proposed Registered Units

Unit	Cost
Plant Drains Pond (See Note 2)	$0

[1] As units are added or deleted from these tables through future registration amendments, the remaining itemized unit costs should be updated for inflation when re-calculating the revised total cost in current dollars.

Note 2 – Not Applicable – Elected to close the unit by removing and decontaminating all areas affected by releases from the unit (closure by removal of CCR), therefore the unit is not subject to post-closure care.

ATTACHMENT 12 INFLOW DESIGN FLOOD CONTROL PLAN (DRAFT)

J.K. SPRUCE POWER PLANT -

PLANT DRAINS POND -

Initial Inflow Design Flood Control System Plan

June 2022
AECOM Project 60566130

Delivering a better world

Prepared for:

CPS Energy Calaveras Power Station
12940 U.S. Highway 181 South
San Antonio, Texas 78223

Prepared by:

AECOM
12640 Briarwick Drive, Suite 250
Austin, TX 78729
aecom.com

J.K. SPRUCE POWER PLANT
INITIAL INFLOW DESIGN FLOOD CONTROL SYSTEM PLAN
TAC Title 30, Part 1, §352, Subchapter G, §352.821 and 40 CFR § 257.82
PLANT DRAINS POND (PDP)

Hydrologic and Hydraulic Capacity Criteria	Hydrologic and Hydraulic Capacity Documentation
30 TAC §352.821 Hydrologic and Hydraulic Capacity Requirements for Coal Combustion Residuals Surface Impoundments. *The commission adopts by reference 40 Code of Federal Regulations §257.82 (Hydrologic and hydraulic capacity requirements for CCR surface impoundments) as amended through the April 17, 2015, issue of the Federal Register (80 FR 21301).* ***40 CFR § 257.82 Hydrologic and hydraulic capacity requirements for CCR surface impoundments*** *(a) The owner or operator of an existing or new CCR surface impoundment or any lateral expansion of a CCR surface impoundment must design, construct, operate, and maintain an inflow design flood control system as specified in paragraphs (a)(1) and (2) of this section.* *(1) The inflow design flood control system must adequately manage flow into the CCR unit during and following the peak discharge of the inflow design flood specified in paragraph (a)(3) of this section.* *(2) The inflow design flood control system must adequately manage flow from the CCR unit to collect and control the peak discharge resulting from the inflow design flood specified in paragraph (a)(3) of this section.* *(3) The inflow design flood is:* *(i) For a high hazard potential CCR surface impoundment, as determined under § 257.73(a)(2) or § 257.74(a)(2), the probable maximum flood;* *(ii) For a significant hazard potential CCR surface impoundment, as determined under § 257.73(a)(2) or § 257.74(a)(2), the 1,000-year flood;* *(iii) For a low hazard potential CCR surface impoundment, as determined under § 257.73(a)(2) or § 257.74(a)(2), the 100-year flood; or* *(iv) For an incised CCR surface impoundment, the 25-year flood.* *(b) Discharge from the CCR unit must be handled in accordance with the surface water requirements under §257.3-3.* *(c) Inflow design flood control system plan –* *(1) Content of the Plan. The owner or operator must prepare initial and periodic inflow design flood control system plans for the CCR unit according to the timeframes specified in paragraphs (c)(3) and (4) of this section. These plans must document how the inflow design flood control system has been designed and constructed to meet the requirements of this section. Each plan must be supported by appropriate engineering calculations. The owner or operator of the CCR unit has completed the inflow design flood control system plan when the plan has been placed in the facility's operating record as required by §257.105(g)(4).* *(2) Amendment of the Plan. The owner or operator of the CCR unit may amend the written inflow design flood control system plan at any time provided the revised plan is placed in the facility's operating record as required by §257.105(g)(4). The owner or operator must amend the written inflow design flood control system plan whenever there is a change in conditions that would substantially affect the written plan in effect.* *(3) Timeframes for preparing the initial plan -* *(i) Existing CCR surface impoundments. The owner or operator must prepare the initial inflow design flood control system plan no later than October 17, 2016.* *(ii) New CCR surface impoundments and any lateral expansion of a CCR surface impoundment. The owner of operator must prepare the initial inflow design flood control system plan no later than the date of initial receipt of CCR in the CCR unit.* *(4) Frequency for revising the plan. The owner or operator must prepare periodic inflow design flood control system plans required by paragraph (c)(1)*	This Initial Inflow Design Flood Control System Plan (Plan) document has been prepared for the new Plant Drains Pond (PDP) at the J.K. Spruce Power Plant. CPS Energy is the operator of the J.K. Spruce Power Plant. This Plan has been prepared in accordance with the requirements prescribed in §257.82 of the Federal Register, Volume 80, Number 74, dated April 17, 2015 (U. S. Government, 2015) for hydrologic and hydraulic capacity requirements for existing and new Coal Combustion Residual (CCR) surface impoundments. Section §257.82 is reproduced in the column to the left for reference purposes. This document serves as the initial plan described in §257.82 (c). The PDP is a new CCR surface impoundment facility with two cells (identified as "west" and "east") with dikes on all sides. The site of the Pond is located on the east side of the existing landfill haul road and slopes from northwest to south east towards the cooling water canal. The maximum height of embankment, on the east embankment of the east cell, is approximately 15 feet. The inside crest elevation is 514.8 feet above mean sea level (amsl). The PDP only receives inflows from plant discharges and from direct precipitation. The maximum normal operating water surface elevation is set at 512.8 feet amsl, providing 2.0 feet of freeboard as available storage volume for the direct precipitation resulting from Inflow Design Flood (IDF). The elevation-area-capacity relationship information is provided in Table 1. Inflows to the PDP are pumped from the Plant. Wastewater in the PDP is pumped to the PD Pond Clarifiers and then flow by gravity to a distribution/sample box where it can be discharged through new internal Outfall 714 and onto the Station Discharge Canal #2 (Outfall 007) or returned to the PD Pond. In a separate certification dated (***TBD***), a qualified professional engineer certified that the Initial Hazard Potential Classification for the PDP has been conducted in accordance with the requirements of § 257.74(a)(2) and that the PDP has been categorized as a "Significant Hazard Potential CCR Surface Impoundment". Therefore, in accordance with § 257.82(a)(3)(ii), the inflow design flood is the 1,000-year flood. Figure 1, "Plant Drains Pond, Stormwater Diversion Schematic", depicts the drainage improvement to be made upgradient of the PDP site in order to route the 1,000-year flood around the Pond. There are two watersheds tributary to the Pond site, labelled as the "North Culvert Watershed" and "South Culvert Watershed", separated by the existing "North Inlet Channel" that directs flow from the North Culvert Watershed to the existing "North Culvert" under the haul road. The South Culvert Watershed drains south to the existing "South Culvert" under the haul road. The engineering calculations supporting the design of site improvements to route the 1,000-year flood around the new PDP are presented in Attachment 1, "Plant Drains Pond – Drainage Calculations". The improvements can be summarized as follows: North Culvert Watershed: 1. Increase capacity of the existing North Inlet Channel by widening the base and constructing a downstream berm. 2. Extend the North Inlet Channel by 200 feet to a new inlet for a new three-barrel, 24-inch CMP culvert under the haul road. 3. Construct a broad weir to spread channel flows that exceed the 10-year flood across the haul road and into a natural swale that will direct flows away from the PDP. 4. Remove existing North Culverts.

of this section every five years. The date of completing the initial plan is the basis for establishing the deadline to complete the first periodic plan. The owner or operator may complete any required plan prior to the required deadline provided the owner or operator places the completed plan into the facility's operating record within a reasonable amount of time. In all cases, the deadline for completing a subsequent plan is based on the date of completing the previous plan. For purposes of this paragraph (c)(4), the owner or operator has completed an inflow design flood control system plan when the plan has been placed in the facility's operating record as required by §257.105(g)(4). *(5) The owner or operator must obtain a certification from a qualified engineer stating that the initial and periodic inflow design flood control system plans meet the requirements of this section.* *(d) The owner or operator of the CCR unit must comply with the record keeping requirements specified in §257.105(g), the notification requirements specified in §257.106(g), and the internet requirements specified in §257.107(g).*	South Culvert Watershed: 1. Construct a V-ditch parallel to, and on the west side of, the haul road to direct flows south, to the South Culvert, and to avoid localized ponding. 2. Leave as-is the existing South Culverts which have sufficient capacity to pass the peak runoff from the 1,000-year flood. 3. Construct a new two-barrel, 24-inch CMP culvert under the toe of the Clarifier complex on the south embankment of the PDP. 4. Grade the area between the two sets of culverts to direct surface flows towards the downgradient set. Haul Road: 1. The design of the PDP includes a one-foot-high Stormwater Diversion Berm, located between the haul road and the west embankment crest, which prevents incidental run-on into the Pond and collects and channels runoff from the haul road itself to the south and around the pond. Required Plan Contents 1. *"§ 257.82(a)(1) The inflow design flood control system must adequately manage flow into the CCR unit during and following the peak discharge of the inflow design flood specified in paragraph (a)(3) of this section."* Runoff from upstream tributary basins is diverted around the surface impoundment by the enlarged North Inlet Channel, the new North Culverts, the Stormwater Diversion Berm along the west edge of the Pond, and the South Culvert system. There is no run-on inflow to the impoundment during the inflow design flood. 2. *"§ 257.82(a)(2) The inflow design flood control system must adequately manage flow from the CCR unit to collect and control the peak discharge resulting from the inflow design flood specified in paragraph (a)(3) of this section."* The PDP is sized to contain the direct precipitation resulting from the 1,000-year, 24-hour precipitation event, estimated at 19.3 inches based on: "NOAA Atlas 14 Point Precipitation Frequency Estimates: TX." The tributary areas, including half the crest width of the perimeter berms are 1.95 and 1.96 acres for the west and east cells, respectively. The PDP freeboard depth is sufficient to manage the direct precipitation resulting from the inflow design flood without discharge. In addition, the central divider berm of the PDP is equipped with two shallow spillways (invert elevation of 514.3 feet amsl) to allow overflow of water from the more-full cell to the less-full cell during a major storm event. 3. *"§ 257.82(a)(3) The inflow design flood is: . . . (ii) For a significant hazard potential CCR surface impoundment, as determined under § 257.73(a)(2) or § 257.74(a)(2), the 1,000-year flood."* As identified in accordance with § 257.74(a)(2), the PDP has been categorized as a significant hazard potential CCR surface impoundment; therefore, the inflow design flood is the 1,000-year flood. 4. *"§ 257.82(b) Discharge from the CCR unit must be handled in accordance with the surface water requirements under §257.3-3."* The PDP provides hydraulic retention to buffer the flow to the PDP Clarifiers and allow the larger solids to settle. Wastewater flows by gravity within the Pond to the PDP Sump. Wastewater entering the sump is sent to the PDP Clarifiers for fine solids removal and final polishing. Clarified effluent flows by gravity to a distribution/sample box where it can be discharged through new internal Outfall 714 and onto the Station Discharge Canal #2 (Outfall 007) or returned to the PD Pond. Sampling and discharge at outfalls will be in accordance with the guidelines outlined within the TPDES permit. 5. *"§ 257.82(c)(1) Content of the Plan. The owner or operator must prepare initial and periodic inflow design flood control system plans for the CCR unit according to the timeframes specified in paragraphs (c)(3) and (4) of this section. These plans must document how the inflow design flood control system has been designed and constructed to meet the requirements of this section. Each plan must be supported*

	by appropriate engineering calculations. The owner or operator of the CCR unit has completed the inflow design flood control system plan when the plan has been placed in the facility's operating record as required by §257.105(g)(4)." This Plan describes how the system has been designed and constructed to meet the requirement to manage the designated inflow design flood. The engineering calculations supporting the design of site improvements to route the 1,000-year flood around the new PDP are presented in Attachment 1, "Plant Drains Pond – Drainage Calculations". This *Initial Inflow Design Flood Control Plan* serves as the initial plan prescribed herein. 6. *"§ 257.82(c)(2) Amendment of the Plan. The owner or operator of the CCR unit may amend the written inflow design flood control system plan at any time . . . whenever there is a change in conditions that would substantially affect the written plan in effect."* CPS Energy acknowledges this requirement. 7. *"§ 257.82(c)(3) Timeframes for preparing the initial plan - . . . (ii) New CCR surface impoundments and any lateral expansion of a CCR surface impoundment. The owner of operator must prepare the initial inflow design flood control system plan no later than the date of initial receipt of CCR in the CCR unit."* The PDP is a new CCR impoundment at the J.K. Spruce Power Plant. The Initial Inflow Design Flood Control System Plan is included herein. CPS Energy acknowledges this requirement. 8. *"§ 257.82(c)(4) Frequency for revising the plan. The owner or operator must prepare periodic inflow design flood control system plans . . . every five years. . . the owner or operator has completed an inflow design flood control system plan when the plan has been placed in the facility's operating record as required by §257.105(g)(4)."* CPS Energy acknowledges this requirement. 9. *"§ 257.82(c)(5) The owner or operator must obtain a certification from a qualified engineer stating that the initial and periodic inflow design flood control system plans meet the requirements of this section."* Certification by a professional engineer is included as an attachment to this document. 10. *"§ 257.82(d) The owner or operator of the CCR unit must comply with the record keeping requirements specified in §257.105(g), the notification requirements specified in §257.106(g), and the internet requirements specified in §257.107(g)."* CPS Energy acknowledges this requirement.

Certification Statement 40 CFR § 257.82(c)(5) – Initial Inflow Design Flood Control System Plan for a New CCR Surface Impoundment

CCR Unit: CPS Energy; J.K. Spruce Power Plant; Plant Drains Pond

I, Alexander W. Gourlay, being a Registered Professional Engineer in good standing in the State of Texas, do hereby certify, to the best of my knowledge, information, and belief, that the information contained in this certification has been prepared in accordance with the accepted practice of engineering. I certify, for the above-referenced CCR Unit, that the information contained in the initial inflow design flood control system plan dated ***TBD*** meets the requirements of 40 CFR § 257.82.

Alexander W. Gourlay, P.E.
Printed Name

Date

This document is released for the purpose of interim review under the authority of Alexander W. Gourlay, Texas PE No. 143733, on June 29, 2022. This document is not to be used for construction purposes.

FIGURE 1

PLANT DRAINS POND –

STORMWATER DIVERSION SCHEMATIC

Last saved by: SAMIEADELA(2022-06-28) Last Plotted: 2022-06-29
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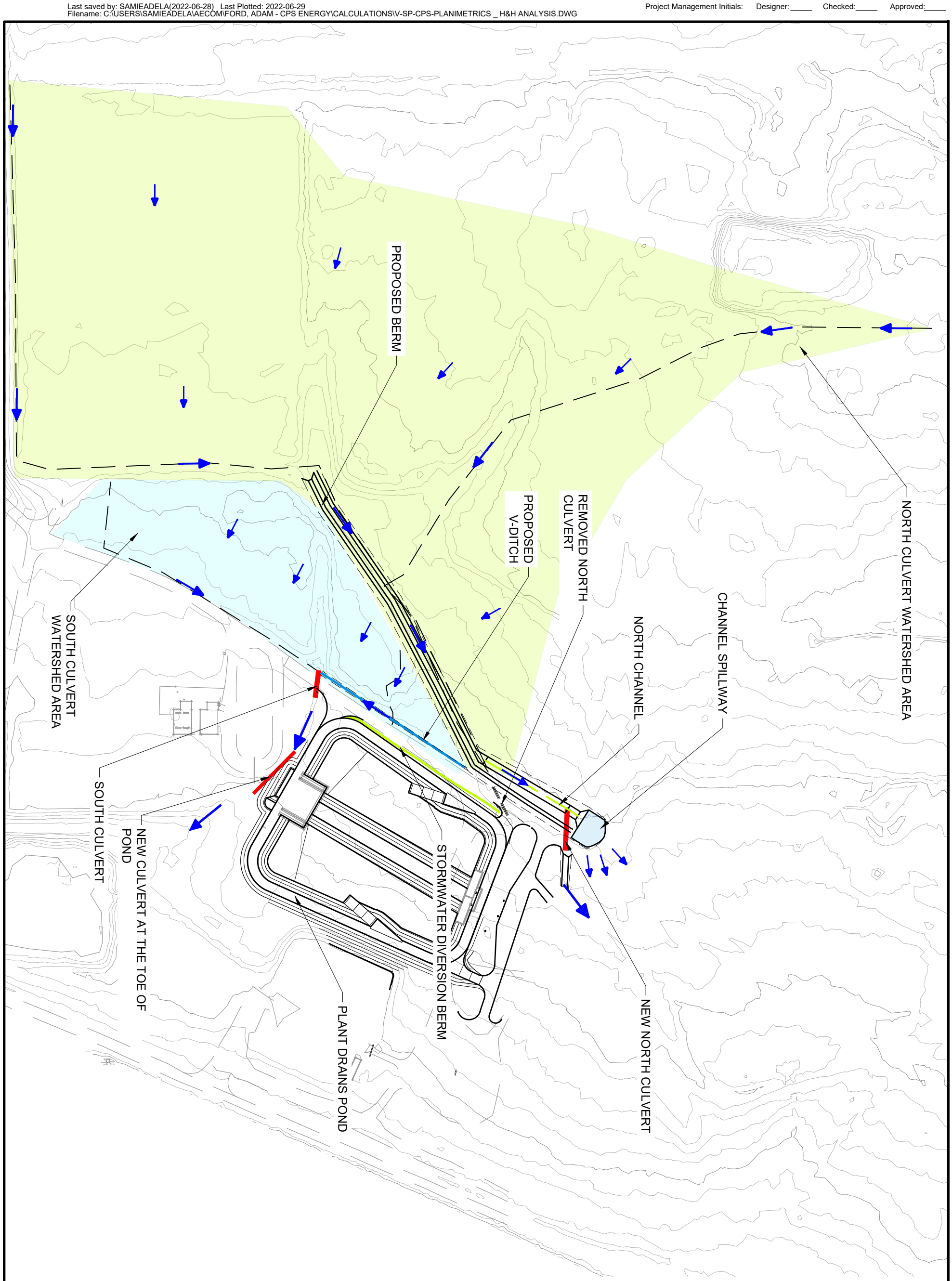
Project Management Initials: Designer:_____ Checked:_____ Approved:_____ ANSI B 1



Issue Status: SUBMITTAL

PLANT DRAINS POND
STORMWATER DIVERSION SCHEMATIC
J K SPRUCE POWER PLANT
AECOM PROJECT NO. 60566130 Date: 2022-06-24

AECOM

Figure: 1

TABLE 1

PLANT DRAINS POND –

ELEVATION-AREA-CAPACITY RELATIONSHIP

TABLE 1 -
ELEVATION-AREA-CAPACITY RELATIONSHIP
J.K. SPRUCE PLANT DRAINS POND

CPS Spruce Drains Pond Project
Pond Capacities for IFC 5/4/22

AECOM Project No. 60566130
Prepared by Alan Proctor 05/09/22
Checked by Sandy Gourlay 05/10/22

POND:	ELEV.	AREA (SF)	AREA (AC)	ELEVATION DIFFERENCE (FT.)	INTERVAL VOLUME (AC-FT.)	CUMULATIVE VOLUME (AC-FT.)	
WEST CELL	507.11	90	0.00	-	-	0.00	Bottom of pond at sump
	508.00	36161	0.83	0.9	0.37	0.37	
	509.00	47107	1.08	1.0	0.96	1.33	
	510.00	50932	1.17	1.0	1.13	2.45	
	511.00	54850	1.26	1.0	1.21	3.67	
	512.00	58941	1.35	1.0	1.31	4.97	
	512.80	61367	1.41	0.8	1.10	6.08	Max normal operating level
	513.00	62952	1.45	0.2	0.29	6.36	
	514.00	66981	1.54	1.0	1.49	7.85	
	514.30	68518	1.57	0.3	0.47	8.32	Spillway invert
	514.80	72968	1.68	0.5	0.81	9.13	Crest Inside Elevation
	515.00	84760	1.95	0.2	0.36	9.49	Crest road crown
EAST CELL	507.11	90	0.00	-	-	0.00	Bottom of pond at sump
	508.00	36087	0.83	0.9	0.37	0.37	
	509.00	47096	1.08	1.0	0.95	1.32	
	510.00	51024	1.17	1.0	1.13	2.45	
	511.00	55040	1.26	1.0	1.22	3.67	
	512.00	59226	1.36	1.0	1.31	4.98	
	512.80	61802	1.42	0.8	1.11	6.09	Max normal operating level
	513.00	63327	1.45	0.2	0.29	6.38	
	514.00	67441	1.55	1.0	1.50	7.88	
	514.30	68972	1.58	0.3	0.47	8.35	Spillway invert
	514.80	72968	1.68	0.5	0.81	9.16	Crest Inside Elevation
	515.00	85429	1.96	0.2	0.36	9.53	Crest road crown

ATTACHMENT A

AECOM, 2022. *Plant Drains Pond – Drainage Calculations*.

Prepared for: CPS Energy

AECOM Job No. 60566130, June 2022.

Project	Job No.
Spruce Plant Drains Project	60566130
Client	**Department/Discipline**
CPS Energy	Civil
Software Name	
FlowMaster, HY8	

Calculation Rev. No.	Originator Self Check (name and signature)	Reviewer/Checker (name and signature)	Independent Peer Reviewer (if used/required) (name & signature)	Approver (name & signature)
1	Alireza Samieadel	Todd Ringsmuth		Alexander Gourlay

Add rows as required

Calculation Objective:
Determine the dimensions for channels and culverts utilized to divert stormwater flows from the 1,000-year storm event around the Plant Drains Pond. The diversion system includes the following: North Channel, North Culverts, South Culverts, South Area Channel, and Pond Culverts. Peak flows will be estimate for each component of the diversion system and used to size the channels and culverts.

Calculation Methodology:
NOAA Precipitation data is utilized to develop precipitation depths and intensities. The Rational Method and TxDOT Hydraulics Manual are used to estimate peak flows. FlowMaster and HY8 computer programs were used to estimate channel and culvert capacities.

References / Inputs/ Field Data:
See calculations

Assumptions: (Include comments on need to revise calculations after more data is collected/confirmed and/or after assumptions have been verified.)
See calculations

Conclusions including confirmations to be obtained:
See calculations

This calculation is complete and ready for Discipline Review:

Alireza Samieadel		06/16/2022
Originator Name	**Signature**	**Date**

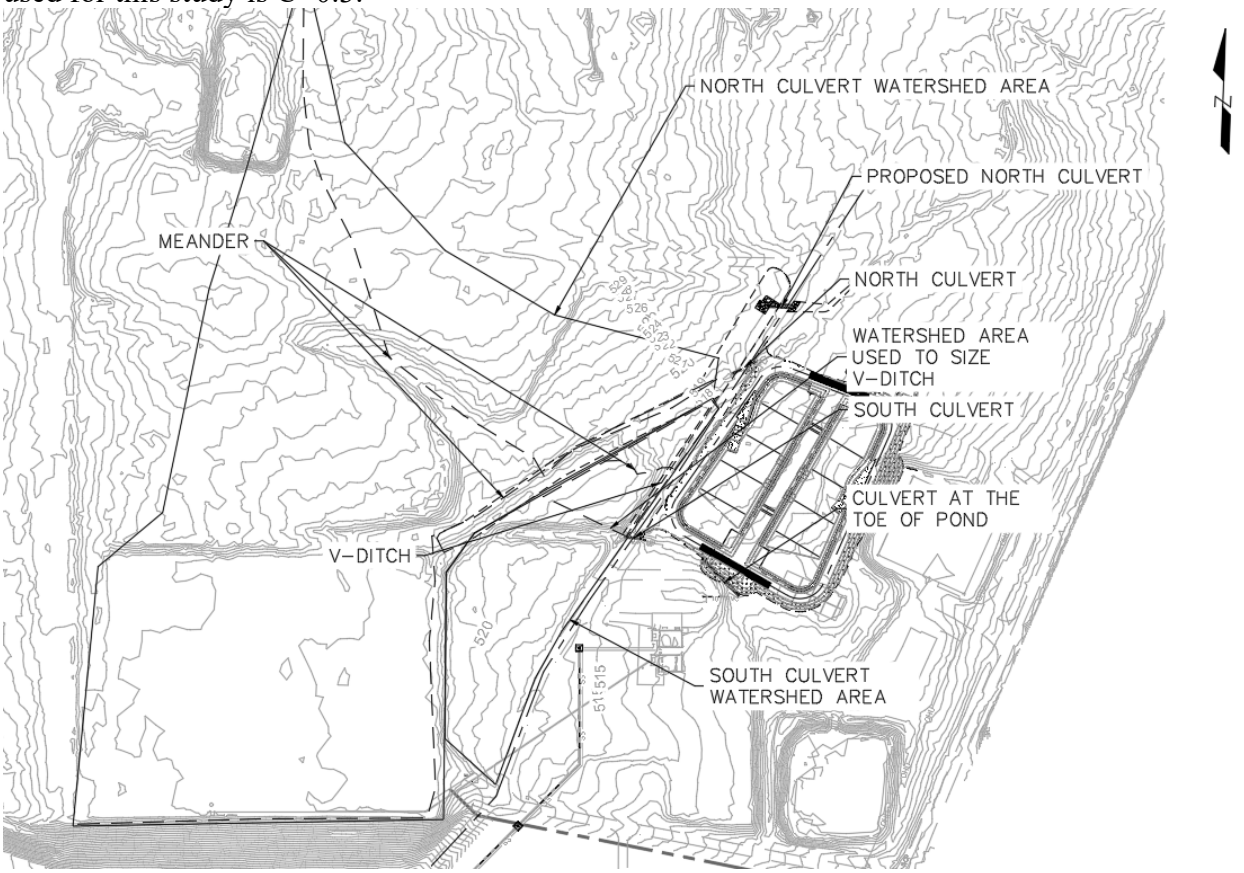
Background and Goal

The purpose of this calculation is to develop sizes for channels and culvert utilized to divert stormwater flows from the 1,000-year storm event around the proposed Plant Drains Pond. Stormwater currently drains from west to east and is managed by the existing North Channel, North Culvert, and South Culverts. With the construction of the proposed Plant Drains Pond, several improvements are required to divert the design stormwater flows around the pond. Those improvements will consist of the following:

- Modifying the North Channel to increase the channel capacity.
- Installing new North Culverts to convey flow in the North Channel under the existing road. The existing North Culverts will be blocked or removed.
- Constructing a new channel (v-ditch) along the roadway in the South Culvert area. The new channel is required to convey stormwater to the existing South Culverts.
- Constructing new culverts and channelization at the south edge of the Plant Drains Pond to convey stormwater from the existing South Culverts to the east.

Site characteristics

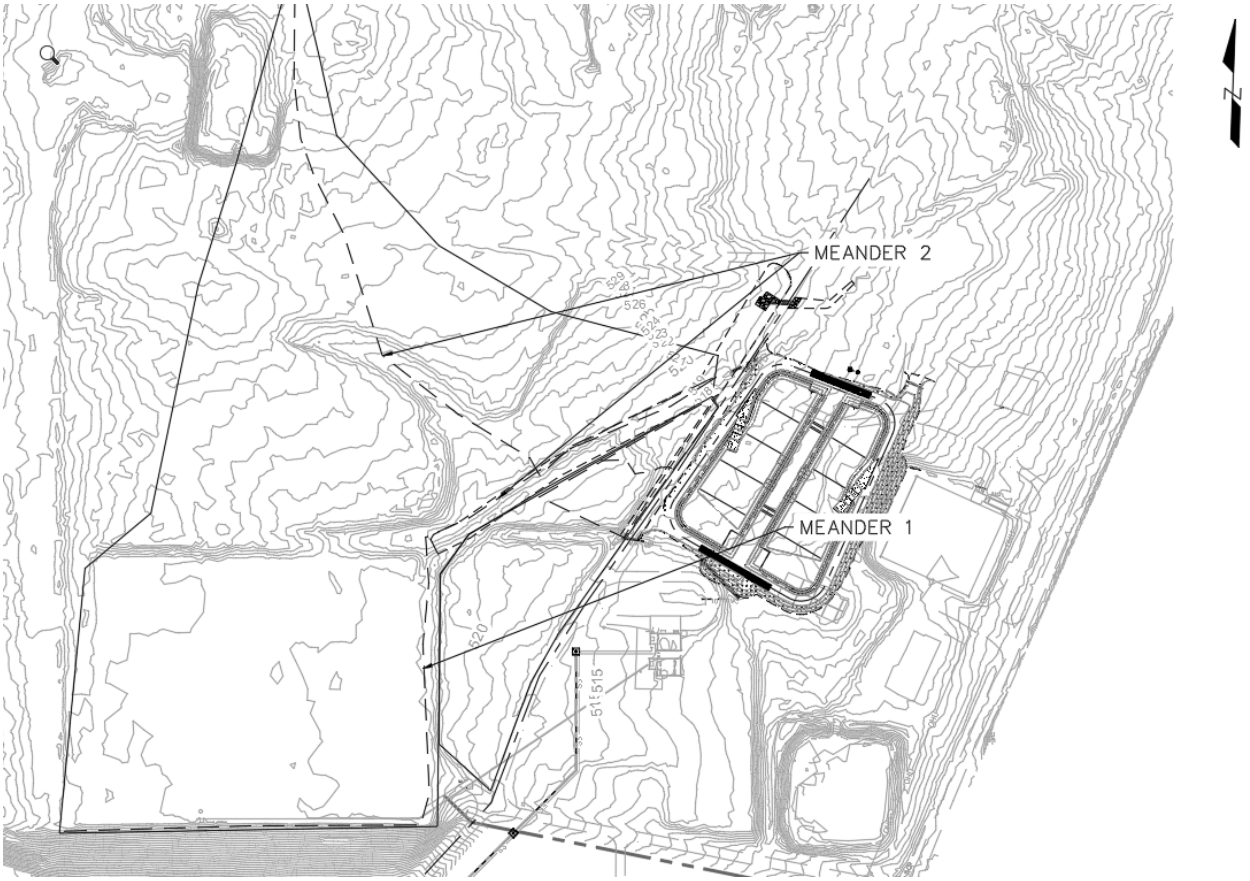
The area west of the pond consists of the North Culvert and South Culvert Watersheds with areas of 30.2 acres and 4.5 acres, respectively. The area tributary to the v-ditch within the South Culvert Watershed is 1.15 acres. The runoff coefficient is a weighted average of sandy soil (substation) with average slope (C=0.1-0.15) and cultivated land (C=0.2-0.5). The weighted average runoff coefficient used for this study is C=0.3.




NORTH CULVERT WATERSHED AREA
PROPOSED NORTH CULVERT
MEANDER
NORTH CULVERT
WATERSHED AREA
USED TO SIZE
V-DITCH
SOUTH CULVERT
CULVERT AT THE
TOE OF POND
V-DITCH
520
515
SOUTH CULVERT
WATERSHED AREA
N

1. North Culvert Watershed Peak Flow Estimation

1.1 Time of concentration



Using Kirpich Method, time of concentration can be calculated using the watershed information. Two meanders were evaluated, as shown below.

Meander 1	
Elevation Drop	From 524.85’ to 517.66
Length	2230 ft
Slope	0.0032 ft/ft

Meander 2	
Elevation Drop	From 542’ to 518’
Length	1856.6 ft
Slope	0.013 ft/ft

The Kirpich Method formula is as follows:

$t_{ch} = KL^{0.770}S^{-0.385}$

Equation 4-15.

Where:

t_{ch} = the time of concentration, in minutes

K = a units conversion coefficient, in which K = 0.0078 for traditional units and K = 0.0195 for SI units

L = the channel flow length, in feet or meters as dictated by K

S = the dimensionless main-channel slope

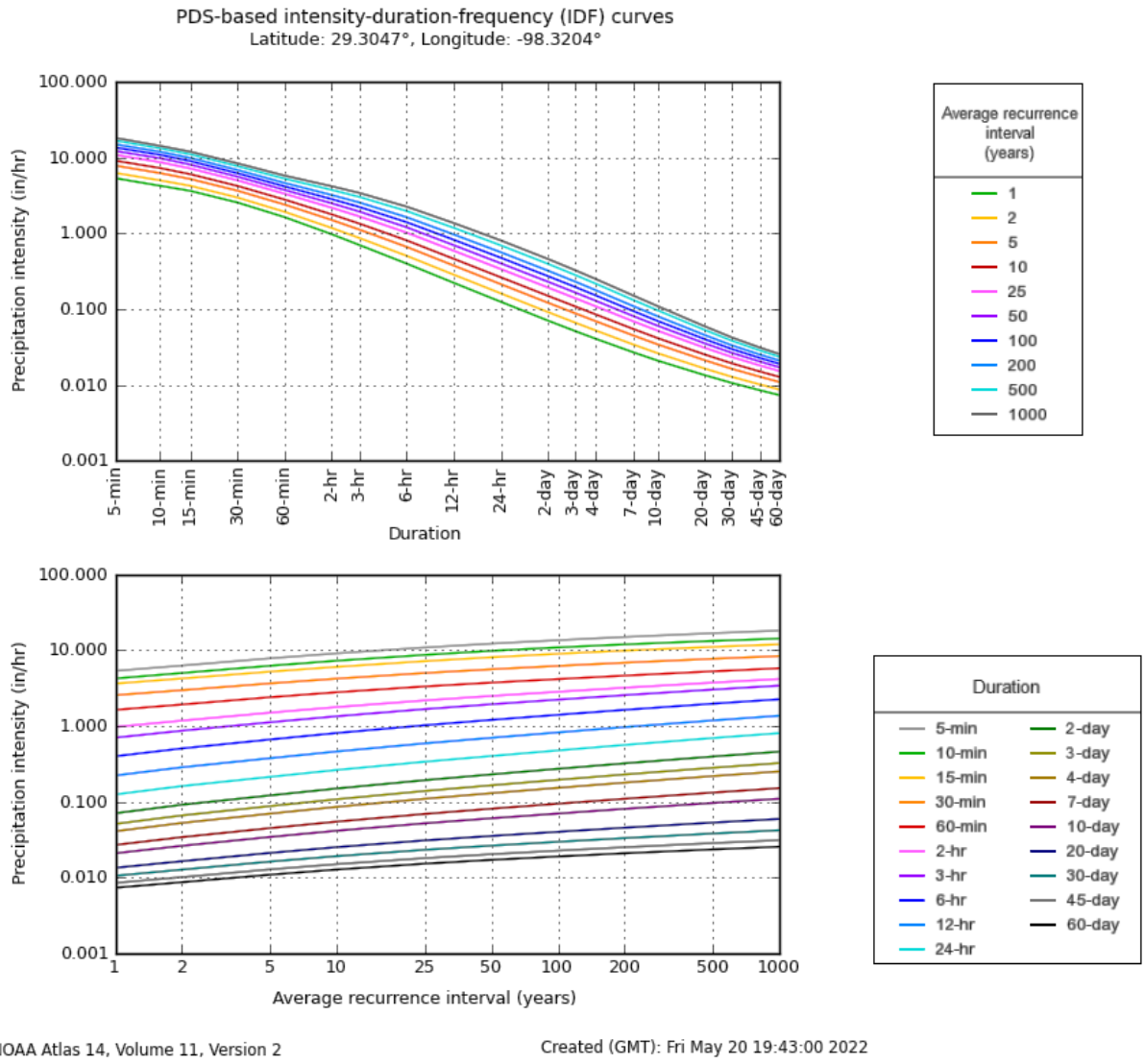
From Hydraulic Design Manual published by TxDOT 2019
http://onlinemanuals.txdot.gov/txdotmanuals/hyd/hyd.pdf

Results are as follow:

Meander	Tc (min)
1	26.97
2	14.08

1.2 Rainfall Intensity

Using data obtained from NOAA's national weather service (https://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=tx) for the coordinates of the, the following figures are IDF Curves 9 (intensity-duration-frequency).



For the calculated time of concentration, the precipitation intensities were estimated for the 10-year and 1,000-year storm events. The data for the 10-year storm event will be used to evaluate alternate culvert capacities and sizing at the North Culvert.

1,000-year Precipitation Intensity

Meander	Tc (min)	Precipitation intensity (in/hr)
1	26.97	9.6
2	14.08	12.5

10-year Precipitation Intensity

Meander	Tc (min)	Precipitation intensity (in/hr)
1	26.97	3.8
2	14.08	5.3

1.3 Peak Flow Estimation

The Rational Method formula estimates the peak flowrate at a specific location in a watershed as a function of the drainage area, runoff coefficient, and mean rainfall intensity for a duration equal to the time of concentration. The Rational Method formula is:

$$Q = \frac{CIA}{Z}$$

Equation 4-20.

Where:

Q = maximum rate of runoff (cfs or m^3/sec.)

C = runoff coefficient

I = average rainfall intensity (in./hr. or mm/hr.)

A = drainage area (ac or ha)

Z = conversion factor, 1 for English, 360 for metric

From Hydraulic Design Manual published by TxDOT 2019
http://onlinemanuals.txdot.gov/txdotmanuals/hyd/hyd.pdf

In this report, units used are A(ac), i(in/hr) and Q(cfs).

The peak flowrates were estimated as follows:

1,000-year Peak Flow

Meander	Runoff Coefficient	Tc (min)	Precipitation intensity (in/hr)	Area (ac)	Peak Flow (cfs)
1	0.3	26.97	9.6	30.2	86
2	0.3	14.08	12.5	30.2	113

10-year Peak Flow

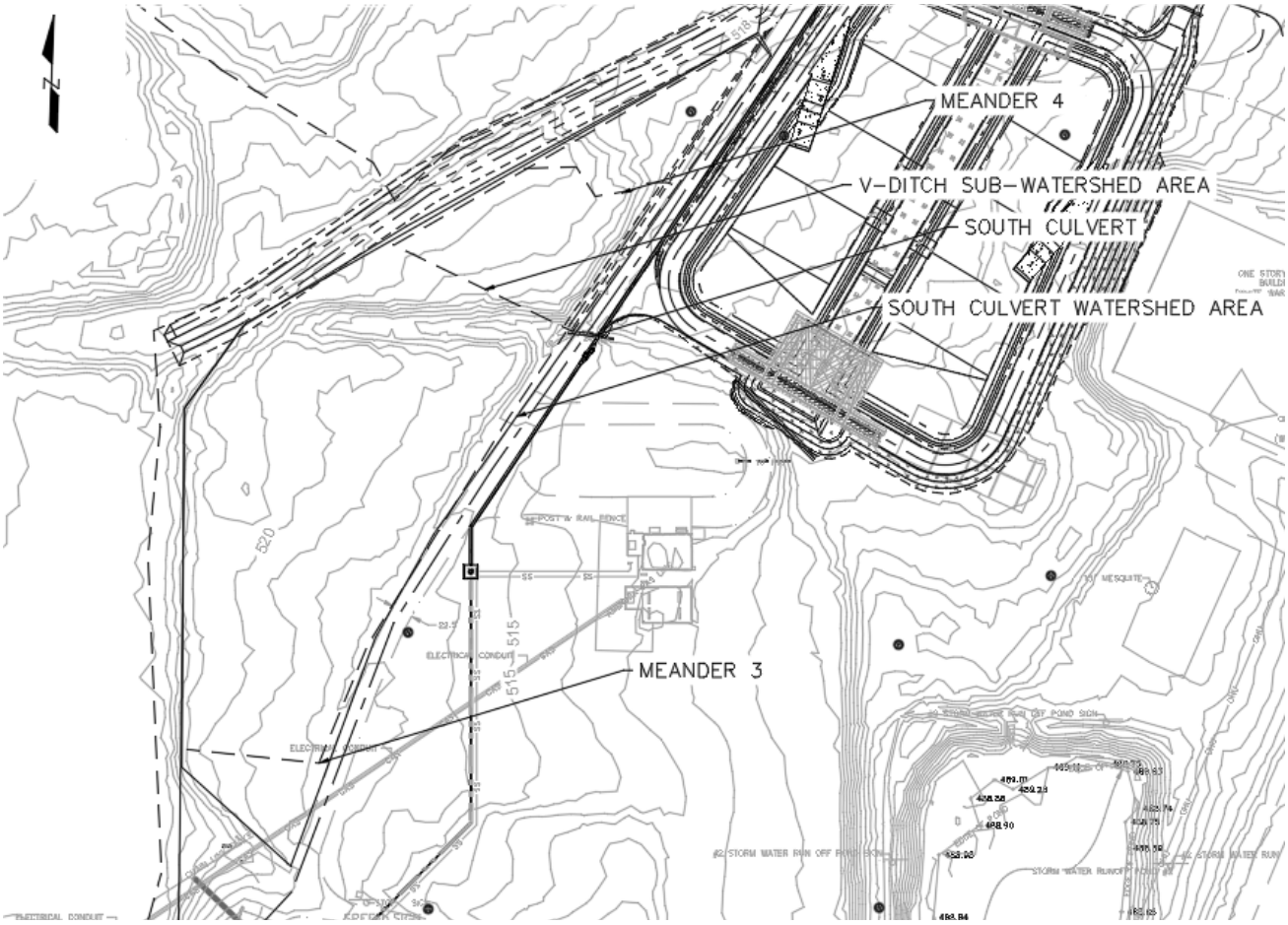
Meander	Runoff Coefficient	Tc (min)	Precipitation intensity (in/hr)	Area (ac)	Peak Flow (cfs)
1	0.3	26.97	3.8	30.2	34
2	0.3	14.08	5.3	30.2	48

For each storm event, the larger estimated peak flow will be used for design: 113 cfs for the 1,000-year storm event and 48 cfs for the 10-year storm event.

2. South Culvert Watershed Peak Flow Estimation

This calculation estimates peak flows for the South Culvert Watershed and the portion of that watershed that drains to the proposed v-ditch located on the west side of the road. The v-ditch will capture and convey stormwater from and area north of the South Culverts to prevent overtopping of the road.

2.1 Time of concentration



Using Kirpich Method, time of concentration can be calculated using the watershed information.

Meander 3 (South Culvert Watershed)	
Elevation Drop	From 517.7 to 514.5
Length	651
Slope	0.005 ft/ft
Time of Concentration based on Kirpich Method	8.8 min >> Use 10 min

Meander 4 (V-Ditch Sub-Watershed)	
Elevation Drop	From 522 to 515.6
Length	180
Slope	0.004 ft/ft
Time of Concentration based on Kirpich Method	3.6 min >> Use 10 min

The time of concentration is limited to no less than 10 minutes for this calculation because shorter times give unrealistic intensities. Many intensity-duration-frequency curves are constructed from curve-smoothing equations and not based on actual data collected at intervals shorter than 15 to 30 minutes. Making the curves shorter involves extrapolation, which is not reliable. Rainfall takes time to generate runoff within a defined basin. [https://wsdot.wa.gov/publications/manuals/fulltext/M23-03/Chapter2.pdf]

2.2 Rainfall Intensity

Rainfall intensity was estimated using the data and methodology presented in section 1.2. For the calculated time of concentration, a precipitation intensity of 11.6 in/hr was estimated for the 1,000-year storm event for a time of concentration of 10 minutes.

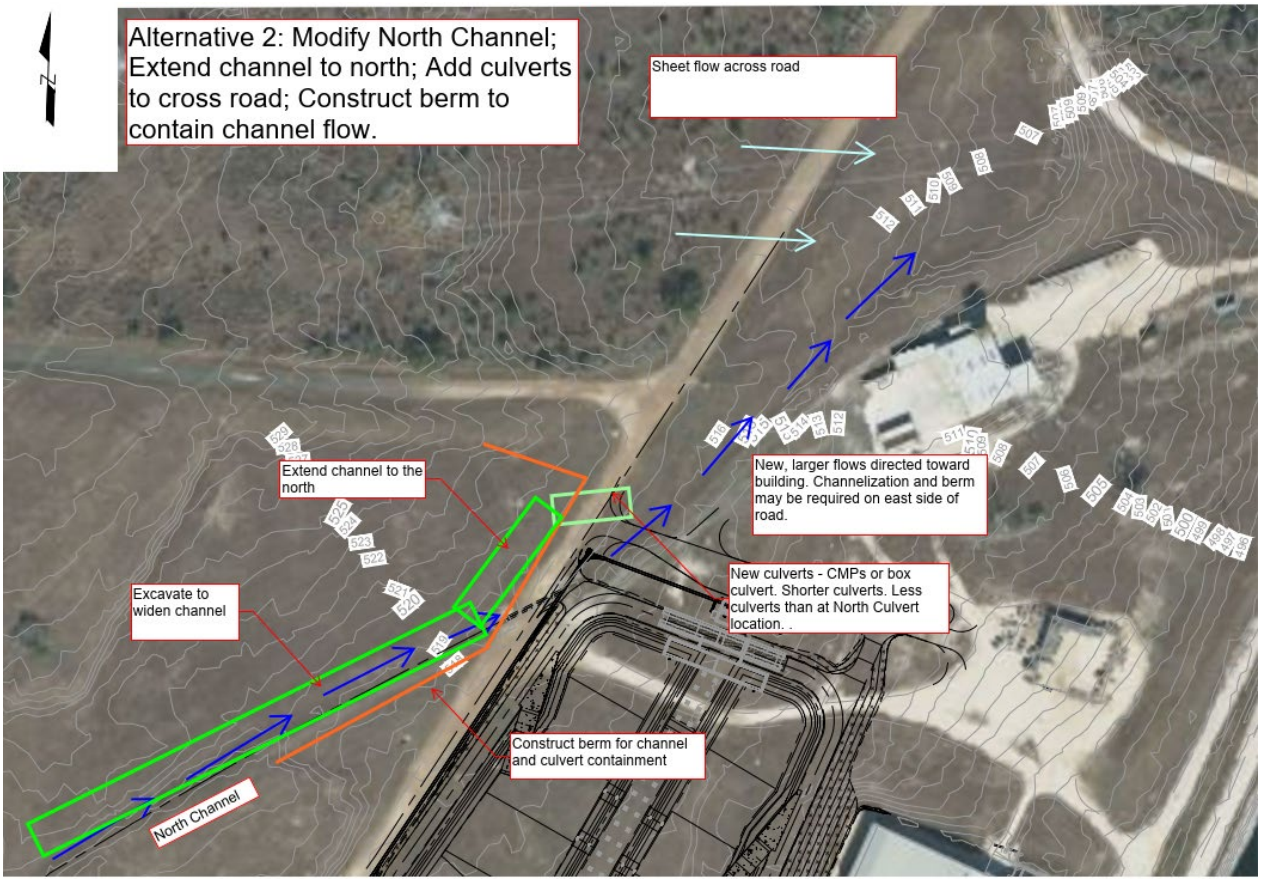
2.3 Peak Flow Estimation

The peak flow was estimated using the Rational Method formula, as discussed in Section 1.3. The estimated peak flows for the referenced watersheds are as follows:

- South Culvert Watershed peak flow is 15.7 cfs (Q=CIA=0.3x11.6x4.5=15.7 cfs)
- V-Ditch Watershed peak flow is 4.0 cfs (Q=CIA=0.3x11.6x1.15= 4.0 cfs)

3. North Culvert Watershed Channel and Culvert Sizing

The stormwater from the North Culvert Watershed is captured by the existing North Channel and conveyed to the existing North Culverts. With the construction of the Plant Drains Pond, the existing North Culverts with be removed or blocked and the culverts will be relocated north of the pond. The North Channel will be improved and extended to the new culvert location. The North Channel is designed to contain and convey the 1000-year peak flow to the new culverts. At the culvert location (end of channel on the west side of the road), the 10-year peak flow will pass through the culverts with no overtopping of the channel. For the 1,000-year storm event, flow above the 10-year peak flow will pass through a "spillway" to the north and cross over the road to the existing channel east of the road.



3.1 North Culvert Hydraulics Analysis

The design will consist of three 24-inch diameter corrugated metal pipe (CMP) culverts crossing from the North Channel to the east beneath the road. The inlet invert elevation will be 515.25 ft; outlet invert elevation will be 515.0 ft, and pipe length is 90 ft. The HY8 computer program was utilized to evaluate the hydraulics. The estimated headwater elevation for the 10-year peak flow is 518.99 ft, as shown on the following table.

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	515.25	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
5.00	5.00	516.02	0.655	0.770	2-M2c	0.689	0.444	0.444	0.272	3.208	1.678
10.00	10.00	516.36	0.948	1.109	2-M2c	1.017	0.636	0.636	0.408	3.881	2.146
15.00	15.00	516.64	1.188	1.388	2-M2c	1.322	0.783	0.783	0.516	4.385	2.465
20.00	20.00	516.89	1.409	1.644	2-M2c	1.717	0.915	0.915	0.608	4.757	2.713
25.00	25.00	517.14	1.620	1.893	2-M2c	2.000	1.028	1.028	0.690	5.124	2.919
30.00	30.00	517.41	1.831	2.155	7-M2c	2.000	1.126	1.126	0.764	5.487	3.096
35.00	35.00	517.75	2.049	2.497	7-M2c	2.000	1.222	1.222	0.833	5.803	3.251
40.00	40.00	518.19	2.280	2.935	7-M2c	2.000	1.311	1.311	0.898	6.107	3.390
45.00	45.00	518.68	2.532	3.427	7-M2c	2.000	1.392	1.392	0.958	6.428	3.516
48.00	48.00	518.99	2.694	3.743	7-M2c	2.000	1.437	1.437	0.993	6.621	3.587

Therefore, to contain the 10-year peak flow within the channel, the “spillway” elevation will be set at elevation 519.0 ft. The North Channel will be constructed with an invert elevation matching the culvert inlet invert elevation (515.25 ft) at the culvert location followed by a constant slope of 0.01 ft/ft towards the north and spillway point. The new channel segment will be excavated to have a 20 ft bottom width, 3.5:1 side slope on both sides, and constructed with a constant slope to match the existing channel bottom elevation. Downstream of the culverts, a channel will be excavated to convey flow from the new culverts into the existing channel east of the road.

The right bank of the channel will also be formed by an earthen berm. The crest elevation of that berm will be based on elevation of flow through the “spillway” using the 1,000-year peak flow. Based on the channel dimensions, the “spillway” will have a crest length of 46 ft. The “spillway” is analyzed as a broad-crested weir using FlowMaster. Assuming the culverts convey the 48 cfs (the 10-year peak flow) during the 1,000-year storm event, the resulting “spillway” flow of 65 cfs (113 cfs minus 48 cfs) results in a headwater elevation of 519.6 ft, as shown in the following figure.

Project Description		
Solve For	Headwater Elevation	
Input Data		
Discharge	65.00	cfs
Crest Elevation	519.00	ft
Tailwater Elevation	518.00	ft
Crest Surface Type	Gravel	
Crest Breadth	30.00	ft
Crest Length	46.0	ft
Results		
Headwater Elevation	519.64	ft
Headwater Height Above Crest	0.64	ft
Tailwater Height Above Crest	-1.00	ft
Weir Coefficient	2.74	ft^(1/2)/s
Submergence Factor	1.000	
Adjusted Weir Coefficient	2.74	ft^(1/2)/s
Flow Area	29.6	ft²
Velocity	2.20	ft/s
Wetted Perimeter	47.3	ft
Top Width	46.00	ft

To prevent overtopping of the channel during the 1,000-year storm event, the berm will be set at elevation 521.25 ft, which provides 1.65 feet of freeboard at the “spillway” location.

3.2 North Channel Hydraulics Analysis

The North Channel needs to have the capacity to contain and convey a 1,000-year peak flow. The existing channel slope was estimated to be 0.007 ft/ft using LiDAR topographic data. The existing channel bottom width varies. For design analysis, a bottom width of 8 ft was used. The design side slopes will be 3.5:1. The Manning’s Roughness Coefficient for the grass-lined channel is estimated to be 0.035. Utilizing FlowMaster, the flow depth was estimated to be 22.5 inches (1.9 ft), as shown on the figure below.

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.007 ft/ft
Left Side Slope	3.500 H:V
Right Side Slope	3.500 H:V
Bottom Width	8.00 ft
Discharge	113.30 cfs

Results	
Normal Depth	22.5 in
Flow Area	27.3 ft²
Wetted Perimeter	21.7 ft
Hydraulic Radius	15.1 in
Top Width	21.13 ft
Critical Depth	17.7 in
Critical Slope	0.018 ft/ft
Velocity	4.15 ft/s
Velocity Head	0.27 ft
Specific Energy	2.14 ft
Froude Number	0.643
Flow Type	Subcritical

The channel should be designed to a depth of 3.0 ft, which provides 1.1 ft of freeboard. At existing channel locations, the design depth can be achieved by increasing the existing berm height. At new channel locations, the design depth can be achieved with a combination of excavation and berm construction. The berm must be constructed with a minimum elevation of 521.25 ft to contain the "spillway" overflow depth, which may result in channel depths greater than 3 ft in the northern portions of the North Channel.

4. South Culvert Watershed Channel and Culvert Sizing

The stormwater from the South Culvert Watershed is directed to the existing South Culverts. With the construction of the Plant Drains Pond, the area downstream of the South Culverts will be modified and require channelization of flows at the toe of the pond embankment and installation of culverts to convey stormwater east of the pond embankment. In addition, a v-ditch will be constructed west of the road to convey stormwater to the existing south culverts.

4.1 V-Ditch Channel Hydraulics Analysis:

The v-ditch channel on the west side of the road needs to have the capacity to contain and convey a 1,000-year peak flow. The existing channel slope was estimated to be 0.008 ft/ft using LiDAR topographic data. The design analysis evaluated a v-ditch (zero bottom width) and bottom widths of 2 and 4 ft. The design side slopes will be 3.5:1. The Manning's Roughness Coefficient for the grass-lined channel is estimated to be 0.035. Utilizing FlowMaster, the following flow depths were estimated:

Bottom Width (ft)	Normal Depth (inches)
0	9.3
2	6.6
4	5

The design will utilize a v-ditch (zero bottom width) and a depth of 2 ft, which provides over 1 ft of freeboard. The FlowMaster data file for the v-ditch hydraulic analysis is shown below.

Project Description	
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data	
Roughness Coefficient	0.035
Channel Slope	0.008 ft/ft
Left Side Slope	3.500 H:V
Right Side Slope	3.500 H:V
Bottom Width	0.00 ft
Discharge	4.00 cfs

Results	
Normal Depth	9.3 in
Flow Area	2.1 ft²
Wetted Perimeter	5.6 ft
Hydraulic Radius	4.5 in
Top Width	5.42 ft
Critical Depth	7.3 in
Critical Slope	0.028 ft/ft
Velocity	1.90 ft/s
Velocity Head	0.06 ft
Specific Energy	0.83 ft
Froude Number	0.539
Flow Type	Subcritical

GVF Input Data	
Downstream Depth	0.0 in
Length	0.0 ft
Number Of Steps	0

GVF Output Data	
Upstream Depth	0.0 in
Profile Description	N/A
Profile Headloss	0.00 ft
Downstream Velocity	0.00 ft/s
Upstream Velocity	0.00 ft/s
Normal Depth	9.3 in
Critical Depth	7.3 in
Channel Slope	0.008 ft/ft
Critical Slope	0.028 ft/ft

4.2 South Culvert Hydraulic Analysis

The existing south culverts consist of one 24-inch and one 30-inch diameter CMP culverts. The 1,000-year peak flow is estimated to be 15.7 cfs (see Section 2.3). The details of the culverts are provided below.

Culvert Data Summary - Culvert 1

Barrel Shape: Circular
Barrel Diameter: 2.50 ft
Barrel Material: Corrugated Steel
Embedment: 0.00 in
Barrel Manning's n: 0.0150
Culvert Type: Straight
Inlet Configuration: Thin Edge Projecting
Inlet Depression: NONE

Culvert Data Summary - Culvert 2

Barrel Shape: Circular
Barrel Diameter: 2.00 ft
Barrel Material: Corrugated Steel
Embedment: 0.00 in
Barrel Manning's n: 0.0150
Culvert Type: Straight
Inlet Configuration: Thin Edge Projecting
Inlet Depression: NONE

Site Data

Site Data Option: Culvert Invert Data
Inlet Station: 0.00 ft
Inlet Elevation: 511.10 ft
Outlet Station: 50.00 ft
Outlet Elevation: 510.39 ft
Number of Barrels: 1

The intent of this analysis is to verify that no changes are required for the South Culverts. The estimated headwater elevation for the 1,000-year peak flow is 512.6 ft, as shown on the following table. This headwater elevation is below the top of the culverts. The existing culverts have sufficient capacity to convey the 1,000-year peak flow without overtopping the road.

Summary of Culvert Flows at Crossing: South Culvert

Headwater Elevation (ft)	Total Discharge (cfs)	Culvert 2 Discharge (cfs)	Culvert 1 Discharge (cfs)	Roadway Discharge (cfs)	Iterations
511.10	0.00	0.00	0.00	0.00	0
511.52	1.60	0.75	0.85	0.00	5
511.71	3.20	1.50	1.69	0.00	6
511.86	4.80	2.24	2.55	0.00	5
511.98	6.40	2.98	3.41	0.00	4
512.10	8.00	3.73	4.25	0.00	4
512.20	9.60	4.45	5.14	0.00	4
512.30	11.20	5.16	6.03	0.00	3
512.39	12.80	5.87	6.93	0.00	3
512.48	14.40	6.57	7.83	0.00	3
512.56	**15.70**	**7.14**	**8.56**	**0.00**	**3**
514.54	48.64	20.01	28.63	0.00	Overtopping

4.3 South Culvert Downstream Channel Hydraulic Analysis

The channel between South Culvert and the new culvert at the toe of pond embankment was modeled using FlowMaster. The channel right bank will be formed by natural ground and left bank will be formed by the new pond embankment slope (looking downstream). The details of the channel configuration, input data, and model results are shown below.

Input Data	
Channel Slope	0.003 ft/ft
Discharge	15.70 cfs

Section Definitions

Station (ft)	Elevation (ft)
0+00	513.41
0+34	513.66
0+50	513.41
0+99	512.00
0+99	511.98
1+00	512.00
1+08	512.80
1+10	512.89
1+15	514.30
1+25	514.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 513.41)	(1+25, 514.50)	0.035

Options	
Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Results	
Normal Depth	9.1 in
Elevation Range	512.0 to 514.5 ft
Flow Area	12.9 ft²
Wetted Perimeter	33.9 ft
Hydraulic Radius	4.6 in
Top Width	33.88 ft
Normal Depth	9.1 in
Critical Depth	6.0 in
Critical Slope	0.028 ft/ft
Velocity	1.22 ft/s
Velocity Head	0.02 ft

CPS Channel Design.fm8
5/15/2022

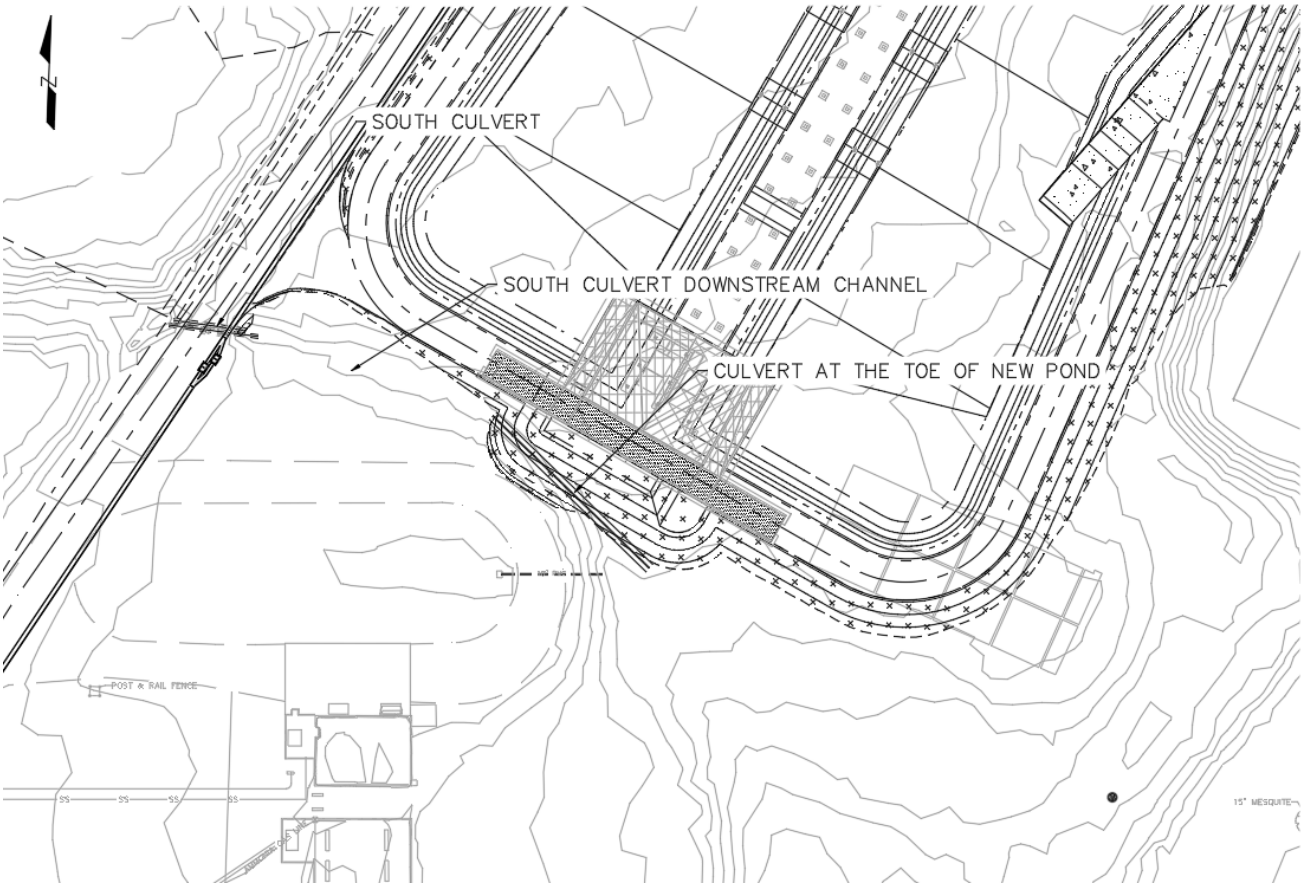
Bentley Systems, Inc. Haestad Methods Solution Center
27 Siemon Company Drive Suite 200 W
Watertown, CT 06795 USA +1-203-755-1666

FlowMaster [10.02.00.01]
Page 1 of 2

The results show an estimated water depth of 9.1 inches. The constructed pond embankment crest will be at elevation of 514.5 ft. The existing roadway to the south is at elevation 513.0 ft. The highest channel invert elevation is 510.4 ft (the same elevation as the outlet of the South Culverts). Therefore, the maximum water surface elevation in the channel during the 1,000-year storm event will be 511.15 ft, which results in approximately 3.2 ft of freeboard to the pond embankment crest.

4.4 Pond Culvert Hydraulic Analysis

The culverts to be installed at the toe of the pond embankment will consist of 2 24-inch CMPs to drain the stormwater from the South Culverts to the east of the pond (see figure below). The 1,000-year peak flow is estimated to be 15.7 cfs (see Section 2.3). The details of the culverts are provided below.



Site Data

Site Data Option: Culvert Invert Data

Inlet Station: 0.00 ft

Inlet Elevation: 510.00 ft

Outlet Station: 120.00 ft

Outlet Elevation: 509.00 ft

Number of Barrels: 2

Culvert Data Summary

Barrel Shape: Circular

Barrel Diameter: 2.00 ft

Barrel Material: Corrugated Steel

Embedment: 0.00 in

Barrel Manning's n: 0.0240

Culvert Type: Straight

Inlet Configuration: Thin Edge Projecting

Inlet Depression: NONE

The analysis shows that the headwater elevation for the new culverts is 511.67 ft, as shown on the following table. The headwater elevation is below the top of the culverts and below the pond embankment crest (elevation 514.5 ft), and below the adjacent roadway (elevation 513 ft).

Total Discharge (cfs)	Culvert Discharge (cfs)	Headwater Elevation (ft)	Inlet Control Depth (ft)	Outlet Control Depth (ft)	Flow Type	Normal Depth (ft)	Critical Depth (ft)	Outlet Depth (ft)	Tailwater Depth (ft)	Outlet Velocity (ft/s)	Tailwater Velocity (ft/s)
0.00	0.00	510.00	0.000	0.000	0-NF	0.000	0.000	0.000	0.000	0.000	0.000
1.60	1.60	510.49	0.442	0.488	2-M2c	0.361	0.302	0.302	0.223	2.683	0.665
3.20	3.20	510.70	0.638	0.700	2-M2c	0.506	0.435	0.435	0.336	3.174	0.853
4.80	4.80	510.87	0.794	0.867	2-M2c	0.624	0.534	0.534	0.425	3.558	0.984
6.40	6.40	511.01	0.923	1.011	2-M2c	0.731	0.622	0.622	0.502	3.838	1.085
8.00	8.00	511.14	1.043	1.141	2-M2c	0.823	0.697	0.697	0.570	4.103	1.169
9.60	9.60	511.26	1.155	1.262	2-M2c	0.914	0.765	0.765	0.633	4.340	1.242
11.20	11.20	511.38	1.264	1.375	2-M2c	0.998	0.833	0.833	0.690	4.520	1.306
12.80	12.80	511.48	1.369	1.484	2-M2c	1.083	0.896	0.896	0.745	4.698	1.364
14.40	14.40	511.59	1.471	1.589	2-M2c	1.166	0.953	0.953	0.795	4.875	1.416
15.70	15.70	511.67	1.553	1.673	2-M2c	1.234	0.997	0.997	0.835	5.017	1.455

****

Straight Culvert

Inlet Elevation (invert): 510.00 ft, Outlet Elevation (invert): 509.00 ft

Culvert Length: 120.00 ft, Culvert Slope: 0.0083

****

aecom.com

ATTACHMENT 13 ENGINEERING DOCUMENTS

SPRUCE PLANT DRAINS POND

OWNER

CPS ENERGY
500 McCULLOUGH
SAN ANTONIO, TX 78215

DESIGN ENGINEER

AECOM TECHNICAL SERVICES, INC
13640 BRIARWICK DRIVE, SUITE 200
AUSTIN, TX 78729

SITE INFORMATION

JK SPRUCE POWER PLANT
12940 US HWY 181
SAN ANTONIO, TX 78223

GEOTECHNICAL ENGINEER

RABA KISTNER CONSULTANTS, INC
12821 W. GOLDEN LANE
SAN ANTONIO, TX 78249

P.O BOX 690287
SAN ANTONIO, TX 78269

SURVEYOR

SURVEY DATA PROVIDED BY:
PAPE-DAWSON ENGINEERS
2000 NW LOOP 410
SAN ANTONIO, TX 78213

SURVEY NOTES

1. ELEVATIONS ARE BASED ON NAVD 88 FROM BENCHMARKS AY0369 AND AY0442

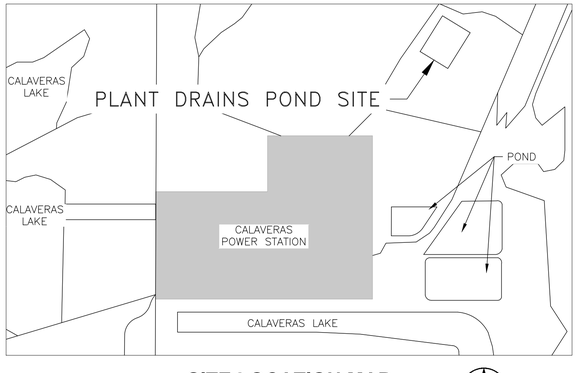
2. COORDINATES AND DISTANCES SHOWN ARE BASED ON A PROJECT COORDINATE SYSTEM ESTABLISHED BY APPLYING A SURFACE ADJUSTMENT FACTOR OF 1.00017 (CSF 0.999830028895) TO STATE PLANE GRID COORDINATES VALUES NAD83 (96), U.S. SURVEY FEET AND SUBTRACTING 13 MILLION FROM THE NORTHING AND 2 MILLION FROM THE EASTING. PROJECT COORDINATES = STATE PLANE GRID VALUES * 1.00017, −13,000,000 TO NORTHING AND −2,000,000 TO EASTING.

BASIS OF BEARING

1. POSITION DATA AS SHOWN HEREON ARE RELATIVE TO THE NORTH AMERICAN DATUM OF NAD83 (NA2011) EPOCH 2010.00, FROM THE TEXAS COORDINATE SYSTEM ESTABLISHED FOR THE SOUTH CENTRAL ZONE

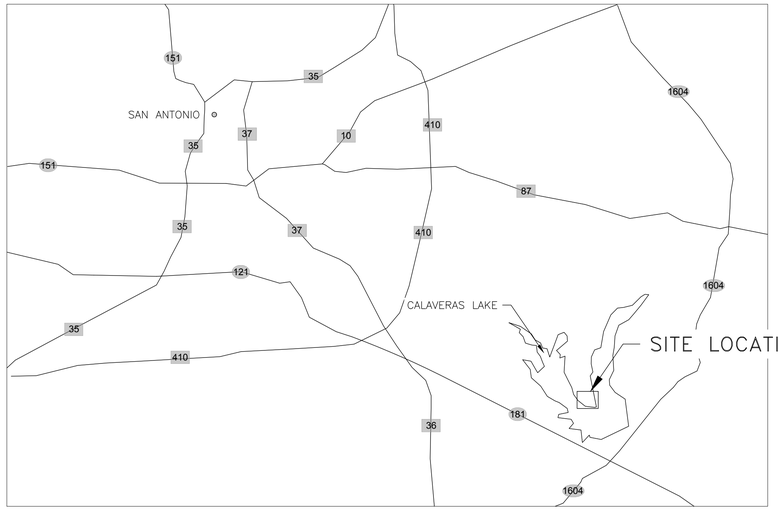
HORIZONTAL AND VERTICAL PROJECT CONTROL POINTS

CONTROL POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
173	666,663.41	186,398.82	513.18	SET MAG NAIL & WASHER (TRAV)
313	666,265.49	187,068.84	493.74	SET I.R. REDCAP (TRAV)
314	666,716.25	186,804.88	507.47	SET I.R. REDCAP (TRAV)
315	666,992.22	186,868.91	508.94	SET I.R. REDCAP (TRAV)



SITE LOCATION MAP
NTS

FOR CPS ENERGY
SAN ANTONIO, TX 78223



VICINITY MAP
NTS

DRAWING INDEX

SHEET NUMBER	REVISION	REV DATE	SHEET TITLE
2-470-C0001	3	06-17-2022	COVER SHEET
2-470-C0002	1	05-02-2022	GENERAL NOTES AND LEGEND
2-470-C0003	2	06-17-2022	OVERALL SITE PLAN
2-470-C0004	2	06-17-2022	SITE PLAN
2-470-C0005	2	06-17-2022	GRADING AND DRAINAGE PLAN
2-470-C0006	1	05-02-2022	SECTIONS AND DETAILS 01
2-470-C0007	1	05-02-2022	SECTIONS AND DETAILS 02
2-470-C0008	1	05-02-2022	SECTIONS AND DETAILS 03
2-470-C0009	1	05-12-2022	SECTIONS AND DETAILS 04
2-470-C0010	0	06-17-2022	STORMWATER DIVERSION PLAN
2-470-C0011	0	06-17-2022	STORMWATER DIVERSION SECTIONS AND DETAILS 01
2-470-C0012	0	06-17-2022	STORMWATER DIVERSION SECTIONS AND DETAILS 02

REVISION 3 MODIFICATIONS OF THIS DRAWING ARE RELEASED UNDER THE AUTHORITY OF ALEXANDER W. GOURLAY, TEXAS PE. 14733

NO	DATE	REVISION	DWN	CHKD	APRV
3	06-17-2022	ISSUE FOR CONSTRUCTION - STORMWATER DIVERSION	AWF	TER	AWG
2	05-12-2022	REVISED C0001 TO REVISION 2 & C0009 TO REVISION 1	AWF	AJP	AWG
1	05-02-2022	ISSUE FOR CONSTRUCTION - POND DESIGN UPDATES	AJP	AWF	AWG
0	12-17-2021	ISSUE FOR CONSTRUCTION	AWF	DEM	DEM

ISSUE FOR CONSTRUCTION

STATE OF TEXAS · ALEXANDER W. GOURLAY · 143733 · LICENSED PROFESSIONAL ENGINEER · 6/17/22

REV. 1, 2, AND 3 ONLY

STATE OF TEXAS · DAVID E. RODGERS · 98648 · LICENSED PROFESSIONAL ENGINEER

12-17-21

AECOM PROJECT NO. 60566130 **AUSTIN, TEXAS**

AECOM

AECOM TECHNICAL SERVICES, INC. TEXAS REGISTRATION NO. 3580

CPS ENERGY
J K SPRUCE POWER PLANT

SPRUCE PLANT DRAINS PROJECT

COVER SHEET
PLANT DRAINS POND

DRAWN BY: A. PROCTOR	DRAWING NUMBER	REVISION
CHKD BY: A. FORD	2-470-C0001	3
APPVD BY: A. GOURLAY		

ARCH D 36x24

Texas 811 Know what's below. Call before you dig.

GENERAL NOTES:

1. ALL WORK SHALL BE PERFORMED IN A WORKMANLIKE MANNER AND IN ACCORDANCE WITH THE BEST RECOGNIZED TRADE PRACTICES.
2. ALL WORK SHALL COMPLY WITH APPLICABLE STATE, FEDERAL, AND LOCAL CODES AND THE PROJECT SPECIFICATIONS. ALL NECESSARY LICENSES AND/OR PERMITS SHALL BE OBTAINED BY THE CONTRACTOR AT HIS EXPENSE.
3. ENGINEER SHALL BE NOTIFIED A MINIMUM OF FORTY-EIGHT (48) HOURS IN ADVANCE OF SITE INSPECTIONS, TESTING VERIFICATIONS, AND FOR ANY OTHER PORTION OF THE WORK REQUIRING ENGINEERS SERVICES AT THE JOB SITE.
4. CONTRACTOR SHALL NOTIFY ENGINEER NOT LESS THAN SEVEN (7) DAYS PRIOR TO STARTING WORK IN ORDER THAT ENGINEER MAY TAKE NECESSARY MEASURES TO PRESERVE OF SURVEY MONUMENTS. CONTRACTOR SHALL NOT DISTURB PERMANENT SURVEY MONUMENTS WITHOUT THE CONSENT OF ENGINEER AND SHALL NOTIFY ENGINEER AND BEAR EXPENSE OF REPLACING ANY THAT MAY BE DISTURBED WITHOUT PERMISSION. REPLACEMENT SHALL BE DONE ONLY BY A TEXAS REGISTERED PROFESSIONAL SURVEYOR. WHEN A CHANGE IS MADE IN THE FINISHED ELEVATION OF THE PAVEMENT OF ANY ROADWAY IN WHICH A PERMANENT SURVEY MONUMENT IS LOCATED, CONTRACTOR SHALL, AT HIS OWN EXPENSE, ADJUST THE MONUMENT COVER TO THE NEW GRADE UNLESS OTHERWISE SPECIFIED.
5. CONTRACTOR SHALL READ AND MAKE CAREFUL EXAMINATION OF THE PLANS, SPECIFICATIONS, QUANTITIES, AND MATERIALS AND SHALL VISIT THE SITE OF THE PROPOSED CONSTRUCTION TO BECOME FAMILIAR WITH SITE CONDITIONS AND LIMITATIONS BEFORE MAKING A PROPOSAL. CONTRACTOR SHALL MAKE ANY INVESTIGATIONS NECESSARY TO DETERMINE THE EXTENT OF THE WORK REQUIRED TO CONSTRUCT THE PROJECT. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY AND ALL ERRORS RESULTING FROM FAILURE TO MAKE SUCH AN EXAMINATION. ANY INFORMATION DERIVED FROM THE MAPS, PLANS, SPECIFICATIONS, PROFILES, DRAWINGS OR FROM ENGINEER, WILL NOT RELIEVE CONTRACTOR FROM ANY RISK OR FROM FULFILLING THE TERMS OF THE CONTRACT.
6. ANY EXISTING OR NEW SITE FEATURES OR OTHER IMPROVEMENTS DAMAGED BY CONTRACTOR DURING CONSTRUCTION SHALL BE REPAIRED BY CONTRACTOR TO EQUAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE OWNER.
7. CONTRACTOR SHALL NOT INSTALL ITEMS AS SHOWN ON THE PLANS WHEN FIELD CONDITIONS ARE DIFFERENT THAN SHOWN IN THE DESIGN. SUCH CONDITIONS SHOULD BE BROUGHT TO THE ATTENTION OF THE ENGINEER. IN THE EVENT CONTRACTOR DOES NOT NOTIFY ENGINEER, CONTRACTOR ASSUMES FULL RESPONSIBILITY AND EXPENSE FOR ANY REVISIONS NECESSARY.
8. CONTRACTOR WILL BE RESPONSIBLE FOR ANY MONUMENTATION AND/OR BENCHMARKS THAT WILL BE DISTURBED OR DESTROYED BY CONSTRUCTION.
9. CONTRACTOR IS RESPONSIBLE FOR THE PROTECTION OF HIS WORK FROM RAINFALL, STORM DRAINAGE, OR FLOOD SO THAT IT DOES NOT DELAY CONSTRUCTION OR DAMAGE COMPLETED WORK OR DOWNSTREAM PROPERTIES THROUGHOUT CONSTRUCTION.
10. NOTE DELETED.
11. CONTRACTOR SHALL BE RESPONSIBLE FOR GENERAL SAFETY DURING CONSTRUCTION. ALL CONSTRUCTION PRACTICES AND PROCEDURES SHALL COMPLY WITH THE PERTINENT PROVISIONS OF THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) STANDARDS (TITLE 29, CODE OF FEDERAL REGULATIONS).
12. CONTRACTOR SHALL MAINTAIN A DEBRIS FREE WORK SITE. PROVIDE TRASH RECEPTACLES FOR ALL WASTE MATERIAL INCLUDING PERSONAL WASTE SUCH AS LUNCH BAGS.
13. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING THE SITE IN A NEAT AND ORDERLY MANNER THROUGHOUT THE CONSTRUCTION PROCESS. ALL MATERIALS SHALL BE STORED WITHIN APPROVED CONSTRUCTION AREAS.
14. ALL NECESSARY LICENSES AND/OR PERMITS SHALL BE OBTAINED BY THE CONTRACTOR AT HIS EXPENSE.
15. CONSTRUCTION ACCESS TO BE AT DESIGNATED LOCATIONS ONLY. CONTACT OWNER'S REP. FOR SPECIFIC INSTRUCTIONS.
16. DISPOSAL OF UNSUITABLE MATERIAL AND ITEMS DESIGNED FOR REMOVAL WITHOUT SALVAGE SHALL BE IN ACCORDANCE WITH LANDFILL (DISPOSAL) SITE REQUIREMENTS.
17. CONTRACTOR SHALL PERFORM HIS OWN SURVEY TO ESTABLISH HORIZONTAL AND VERTICAL CONTROL FOR THE PROJECT. CONTOURS AND ELEVATION INFORMATION SHOWN ARE NOT BASED ON ACTUAL SURVEY DATA.
18. WHERE NOTED ON PLANS OR DRAWINGS, COMPLY WITH THE 2014 EDITION OF THE TEXAS DEPARTMENT OF TRANSPORTATION (TXDOT) STANDARD SPECIFICATIONS FOR CONSTRUCTION AND MAINTENANCE OF HIGHWAYS, STREETS, AND BRIDGES (STANDARD SPECS).
19. ANY DISCREPANCIES BETWEEN DRAWINGS AND SPECIFICATIONS SHALL BE BROUGHT TO ENGINEERS ATTENTION FOR RESOLUTION.
20. SOIL CEMENT SHALL BE IN ACCORDANCE WITH ACI 230.1R-09. SOIL CEMENT SHALL HAVE A 7-DAY UNCONFINED SOAKED COMPRESSIVE STRENGTH BETWEEN 300 TO 600 PSI AND A 28-DAY UNCONFINED SOAKED COMPRESSIVE STRENGTH BETWEEN 400 TO 1,000 PSI.

UTILITY NOTES:

1. CONTRACTOR TO USE EXTREME CAUTION NOT TO DISTURB OR DAMAGE EXISTING STORM DRAIN, PIPELINES, SITE EQUIPMENT, VALVES, MANHOLES AND ALL SUBSURFACE UTILITIES THROUGHOUT CONSTRUCTION. CONTRACTOR SHALL LOCATE ALL SURFACE UTILITY FEATURES PRIOR TO CONSTRUCTION AND SHALL PLACE VISIBLE MARKERS TO MARK UTILITY FEATURES NOT TO BE DISTURBED. IF DAMAGED THEN REPAIR AT CONTRACTORS EXPENSE.
2. CONTRACTOR SHALL NOTIFY ALL APPLICABLE UTILITY COMPANIES AND COORDINATE UTILITY LINE SPOTS AT LEAST SEVEN (7) WORKING DAYS PRIOR TO ANY DIGGING OR EXCAVATION.
4. TWO (2) WORKING DAYS PRIOR TO ANY CONSTRUCTION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICES: TOLL FREE AT 1-800-277-2600 FOR LOCATION OF EXISTING UTILITIES.
5. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING UTILITY LOCATIONS AND SHALL NOTIFY THE ENGINEER IMMEDIATELY OF ANY DISCREPANCIES. ALL ELECTRICAL, TELEPHONE, CABLE TV, GAS AND OTHER UTILITY LINES, CABLES AND APPURTENANCES ENCOUNTERED DURING CONSTRUCTION THAT REQUIRE RELOCATION, SHALL BE COORDINATED WITH THAT UTILITY BE IT PRIVATE OR CITY OWNED. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION OF ALL NECESSARY UTILITY ADJUSTMENTS. CONTRACTOR MAY BE REQUIRED TO RESCHEDULE HIS ACTIVITIES TO ALLOW UTILITY CREWS TO PERFORM THEIR REQUIRED WORK.
6. ALL UNDERGROUND UTILITIES SHOWN ON THESE DRAWINGS SHOULD BE CONSIDERED APPROXIMATE ONLY AND THE CONTRACTOR MUST NOTIFY A UTILITY LOCATOR SERVICE PRIOR TO CONSTRUCTION.
7. THE INFORMATION SHOWN ON THESE DRAWINGS CONCERNING TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL-INCLUSIVE. CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATIONS AS TO THE TYPE AND LOCATION OF UNDERGROUND AND OTHER UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. CONTRACTOR SHALL USE EXTREME CARE WHEN PERFORMING ANY DEMOLITION OR GRADING OPERATIONS IN THE PROXIMITY OF THESE EXISTING UTILITIES. ANY DAMAGE TO EXISTING UTILITIES WILL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. NOTIFY OWNER WHEN ANY UNIDENTIFIED UTILITIES ARE DISCOVERED.
8. OBTAIN WRITTEN AUTHORIZATION FROM THE OWNER'S REPRESENTATIVE AND FROM THE UTILITY OWNERS PRIOR TO INTERRUPTING ANY EXISTING UTILITY (IE: WATER, SEWER, GAS, ELECTRICAL, OR TELEPHONE).
9. CONSTRUCTION SHALL COMPLY WITH GOVERNING CODES AND REQUIREMENTS. CONTRACTOR SHALL CONDUCT ALL REQUIRED TESTS TO THE SATISFACTION OF THE UTILITY COMPANIES AND OWNERS INSPECTING AUTHORITIES.
10. CONTRACTOR SHALL COMPLY TO THE FULLEST EXTENT WITH THE LATEST STANDARDS OF OSHA DIRECTIVES, INCLUDING 29 CFR PART 1926 SUBPART P, OR ANY OTHER AGENCY HAVING JURISDICTION FOR EXCAVATION AND TRENCHING PROCEDURE. CONTRACTOR SHALL USE SUPPORT SYSTEMS, SLOPING, BENCHING AND OTHER MEANS OF PROTECTION. THIS IS TO INCLUDE, BUT NOT LIMITED FOR ACCESS AND EGRESS FROM ALL EXCAVATION AND TRENCHING.

GRADING AND DRAINAGE NOTES:

1. THE SOILS ENGINEER SHALL CERTIFY THAT THE REQUIRED INSPECTIONS AND TESTS HAVE BEEN PERFORMED AND THAT SUCH TESTS COMPLY WITH CODE.
2. EXERCISE SUFFICIENT SUPERVISORY CONTROL DURING GRADING AND CONSTRUCTION TO ENSURE COMPLIANCE WITH THE APPROVED PLANS.
3. POND EMBANKMENT FILLS SHALL BE PLACED IN MAXIMUM 8-INCH THICK LOOSE LIFTS AND COMPACTED THROUGHOUT TO AT LEAST 100% OF THE MAXIMUM DRY DENSITY AS DETERMINED BY ASTM D698, "STANDARD TEST METHOD FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING STANDARD EFFORT." (1)
4. FILL AREAS SHALL BE CLEARED OF ALL VEGETATION AND DEBRIS, PROOFROLLED AND SCARIFIED, HAVE SUBDRAINS INSTALLED (IF ANY) AND APPROVED BY THE GRADING INSPECTOR AND SOILS ENGINEER PRIOR TO THE PLACING OF FILL.
5. NO ROCK OR SIMILAR MATERIAL GREATER THAN 4 INCHES IN DIAMETER SHALL BE PLACED IN THE FILL UNLESS APPROVED BY THE ENGINEER.
6. CONTRACTOR SHALL INCORPORATE ADEQUATE DRAINAGE PROCEDURES DURING THE CONSTRUCTION PROCESS TO ELIMINATE EXCESSIVE PONDING AND/OR EROSION.
7. DEGREE OF COMPACTION OR RELATIVE COMPACTION SHALL BE DETERMINED BY ASTM D698, "STANDARD TEST METHOD FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING STANDARD EFFORT."
8. HAUL PERMITS, WHEN REQUIRED, MUST BE OBTAINED BY CONTRACTOR PRIOR TO WORK.
9. CONTRACTOR SHALL PREPARE SUBGRADE IN ACCORDANCE WITH THE RECOMMENDATIONS IN THE SITE GEOTECHNICAL ENGINEERING STUDY PREPARED BY RABA KISTNER CONSULTANTS DATED FEBRUARY 5, 2018, AND AS INDICATED ON THE DRAWINGS AND SPECIFICATIONS.

GEOSYNTHETICS NOTES:

1. HDPE GEOMEMBRANE SHALL CONFORM TO GEOSYNTHETIC RESEARCH INSTITUTE (GRI) TEST METHOD GM13, "STANDARD SPECIFICATION FOR TEST METHODS, TEST PROPERTIES, AND TESTING FREQUENCY FOR HIGH DENSITY POLYETHYLENE (HDPE) SMOOTH AND TEXTURED GEOMEMBRANES."
2. GEOMEMBRANE SHALL HAVE A 60-MIL MINIMUM AVERAGE THICKNESS.
3. NONWOVEN GEOTEXTILE SHALL CONFORM TO GRI TEST METHOD GT12(a), "STANDARD SPECIFICATION FOR TEST METHODS AND PROPERTIES FOR NONWOVEN GEOTEXTILES USED AS PROTECTION (OR CUSHIONING) MATERIALS" AND/OR GRI TEST METHOD GT13(a), "STANDARD SPECIFICATION FOR TEST METHODS AND PROPERTIES FOR GEOTEXTILES USED AS SEPARATION BETWEEN SUBGRADE SOIL AND AGGREGATE."
4. NONWOVEN GEOTEXTILE USED FOR CUSHIONING/PROTECTING THE GEOMEMBRANE LINER SHALL HAVE A MINIMUM MASS/UNIT AREA OF 16 OZ/YD².
5. NONWOVEN GEOTEXTILE USED FOR SOIL SEPARATION SHALL HAVE A MINIMUM GRAB TENSILE STRENGTH OF 203 LBS AS PER ASTM D4632, "STANDARD TEST METHOD FOR GRAB BREAKING LOAD AND ELONGATION OF GEOTEXTILES."
6. GEOSYNTHETIC CLAY LINER (GCL) SHALL CONFORM TO GRI TEST METHOD GCL3, "STANDARD SPECIFICATIONS FOR TEST METHODS, REQUIRED PROPERTIES, AND TESTING FREQUENCIES OF GEOSYNTHETIC CLAY LINERS (GCL).

LEGEND:

- PREPARED SUBGRADE (SCARIFIED, PROOF-ROOLED, AND COMPACTED)
- SAND
- REINFORCED CONCRETE
- NON-WOVEN GEOTEXTILE
- ANCHOR TRENCH FILL
- ROADWAY GRAVEL
- RIPRAP
- SELECT FILL
- SOIL RETENTION BLANKET
- ROADWAY GRAVEL AT PIPE-CROSSINGS
- SOIL CEMENT
- NON-WOVEN GEOTEXTILE
- 60 MIL HDPE TEXTURED GEOMEMBRANE
- GEOSYNTHETIC CLAY LAYER
- BERM CENTERLINE
- OHU OHU — EXISTING ELECTRICAL LINES
- SS SS — EXISTING SANITARY SEWER
- W W — EXISTING WATER LINE
- GAS GAS — EXISTING GAS LINE
- EXISTING GRADE
- FINISHED GRADE
- FREEBOARD
- GRADE BREAK
- P P — NEW PIPE
- SURVEY CONTROL POINT
- SOIL BORING LOCATION
- EXISTING TREE
- SURVEY MONUMENT POINT
- SLOPE INDICATOR

ABBREVIATIONS:

AC	ACRES
BLD	BUILDING
BOP	BOTTOM OF POND (1)
CC	CENTER TO CENTER
℄	CENTERLINE
COB	CONSTRUCTION OFFICE BUILDING
CPT	CORRUGATED PLASTIC TUBING
CY	CUBIC YARDS
DIA	DIAMETER
DR	DIMENSION RATIO
E	EXISTING
EA	EACH
EL	ELEVATION
ELEV.	ELEVATION
ESB	ENGINEERING SERVICES BUILDING
EW	EACH WAY
FD	FOUND (1)
FT	FEET
HDPE	HIGH DENSITY POLYETHYLENE
HP	HIGH POINT
LCRS	LEAK COLLECTION RECOVERY SYSTEM
LF	LINEAR FEET
ML	MIL
NTS	NOT TO SCALE
O.C.	ON CENTER (1)
PC	POINT OF CURVATURE
PD	PLANT DRAINS
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
R	RADIUS
SIM	SIMILAR
SRB	SOIL RETENTION BLANKET
SF	SQUARE FEET
SY	SQUARE YARDS
TN	TRUE NORTH
TOC	TOP OF CONCRETE (1)
TXDOT	TEXAS DEPARTMENT OF TRANSPORTATION
TYP	TYPICAL

ISSUE FOR CONSTRUCTION

NO	DATE	REVISION	DWN	CHKD	APPV
1	05-02-2022	ISSUE FOR CONSTRUCTION - POND DESIGN UPDATES	AJP	AWF	AWG
0	12-17-2021	ISSUE FOR CONSTRUCTION	AWF	DEM	DEM

AECOM PROJECT NO. 60566130 **AUSTIN, TEXAS**

AECOM

AECOM TECHNICAL SERVICES, INC. TEXAS REGISTRATION NO. 3580

STATE OF TEXAS — ALEXANDER W. GOURLAY — NO. 143733 — LICENSED PROFESSIONAL ENGINEER — 5/4/22 — REV. 1 ONLY

STATE OF TEXAS — DAVID E. MICKANEN — 98644 — LICENSED PROFESSIONAL ENGINEER — 12-17-21

CPS ENERGY

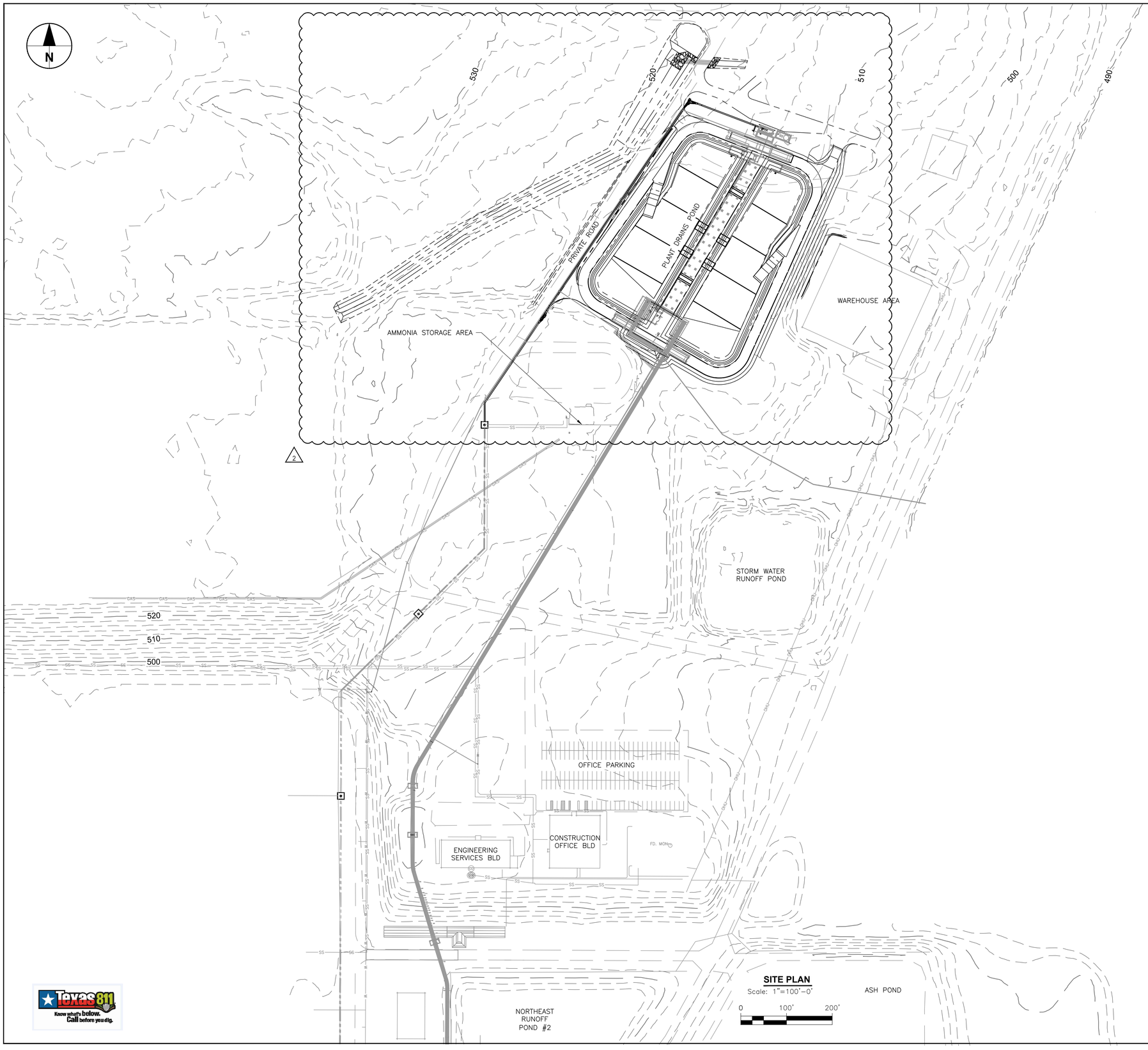
J K SPRUCE POWER PLANT

SPRUCE PLANT DRAINS PROJECT

GENERAL NOTES AND LEGEND
PLANT DRAINS POND

DRAWN BY: A. PROCTOR	DRAWING NUMBER	REVISION
CHKD BY: A. FORD	2-470-C0002	1
APPVD BY: A. GOURLAY		

ARCH D 36x24



SITE PLAN
Scale: 1"=100'-0"
0 100' 200'

Texas 811 Know what's below. Call before you dig.

ISSUE FOR CONSTRUCTION

REVISION 2 MODIFICATIONS OF THIS DRAWING ARE RELEASED UNDER THE AUTHORITY OF ALEXANDER W. GOURLAY, TEXAS PE. 14733

2

NO	DATE	REVISION	DWN	CHKD	APRV
2	06-17-2022	ISSUE FOR CONSTRUCTION - STORMWATER DIVERSION	AWF	TER	AWG
1	05-02-2022	ISSUE FOR CONSTRUCTION - POND DESIGN UPDATES	AJP	AWF	AWG
0	12-17-2021	ISSUE FOR CONSTRUCTION	AWF	DEM	DEM

AECOM PROJECT NO. 60566130 **AUSTIN, TEXAS**

REV. 1 & 2 ONLY

STATE OF TEXAS
ALEXANDER W. GOURLAY
143733
LICENSED
PROFESSIONAL ENGINEER
6/17/22

STATE OF TEXAS
DAVID E. MCGANEN
98644
REGISTERED
PROFESSIONAL ENGINEER
12-17-21

AECOM

AECOM TECHNICAL SERVICES, INC. TEXAS REGISTRATION NO. 3580

CPS ENERGY

J K SPRUCE POWER PLANT

SPRUCE PLANT DRAINS PROJECT

OVERALL SITE PLAN
PLANT DRAINS POND

DRAWN BY: A. PROCTOR	DRAWING NUMBER	REVISION
CHKD BY: A. FORD	2-470-C0003	2
APPVD BY: A. GOURLAY		

ARCH D 36x24

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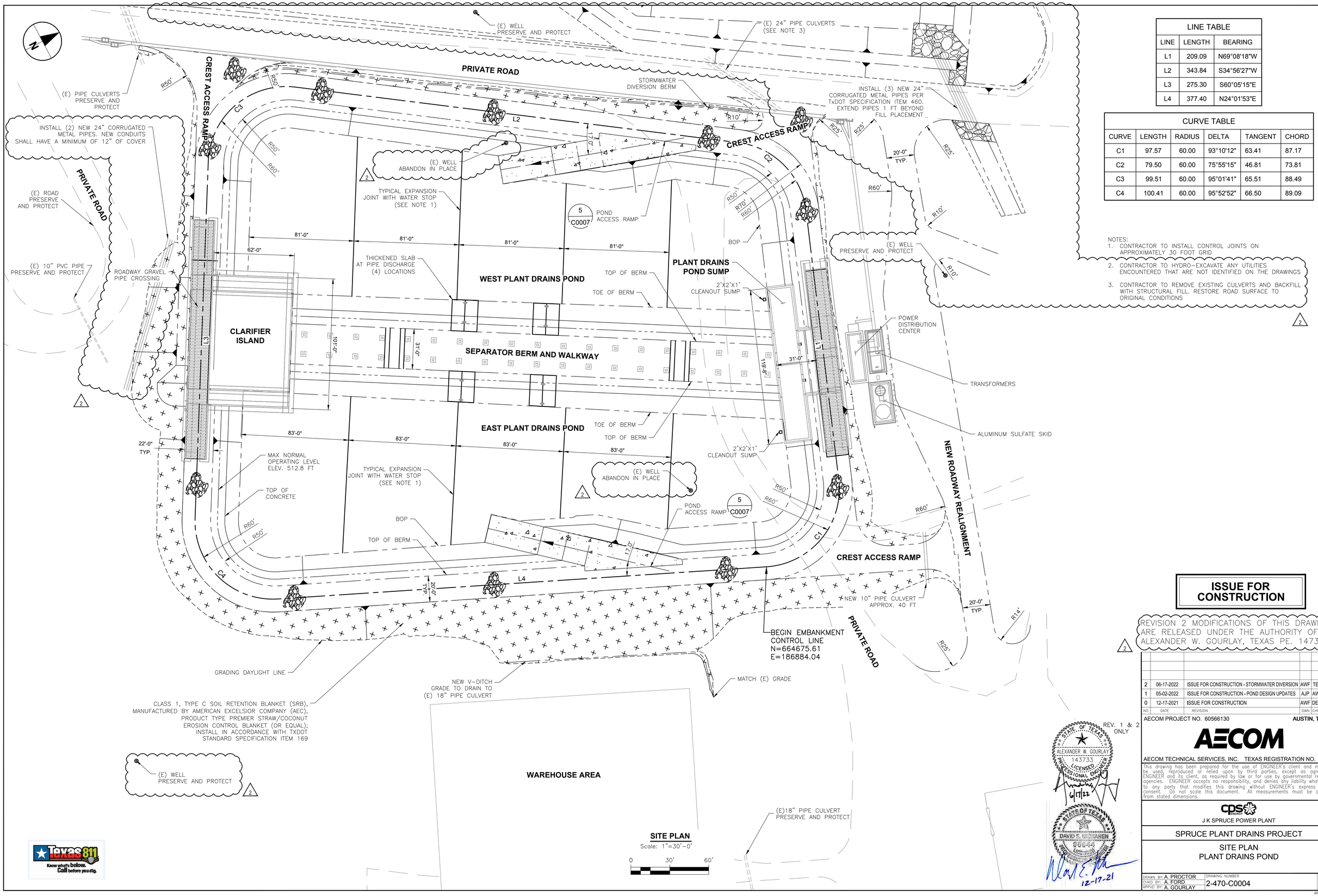

SITE PLAN
Scale: 1"=30'-0"
0 30' 60'

LINE TABLE		
LINE	LENGTH	BEARING
L1	209.09	N69°08'18"W
L2	343.84	S34°56'27"W
L3	275.30	S60°05'15"E
L4	377.40	N24°01'53"E

CURVE TABLE					
CURVE	LENGTH	RADIUS	DELTA	TANGENT	CHORD
C1	97.57	60.00	93°10'12"	63.41	87.17
C2	79.50	60.00	75°55'15"	46.81	73.81
C3	99.51	60.00	95°01'41"	65.51	88.49
C4	100.41	60.00	95°52'52"	66.50	89.09

NOTES:
1. CONTRACTOR TO INSTALL CONTROL JOINTS ON APPROXIMATELY 30 FOOT GRID
2. CONTRACTOR TO HYDRO-EXCAVATE ANY UTILITIES ENCOUNTERED THAT ARE NOT IDENTIFIED ON THE DRAWINGS
3. CONTRACTOR TO REMOVE EXISTING CULVERTS AND BACKFILL WITH STRUCTURAL FILL. RESTORE ROAD SURFACE TO ORIGINAL CONDITIONS

ISSUE FOR CONSTRUCTION

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AECOM PROJECT NO. 60566130 **AUSTIN, TEXAS**

AECOM

AECOM TECHNICAL SERVICES, INC. TEXAS REGISTRATION NO. 3580

REV. 1 & 2 ONLY

STATE OF TEXAS ALEXANDER W. GOURLAY 143733 LICENSED PROFESSIONAL ENGINEER 6/17/22

STATE OF TEXAS DAVID E. MCGANEN 98644 REGISTERED PROFESSIONAL ENGINEER 12-17-21

CPS ENERGY

J K SPRUCE POWER PLANT

SPRUCE PLANT DRAINS PROJECT

SITE PLAN
PLANT DRAINS POND

DRAWN BY: A. PROCTOR	DRAWING NUMBER	REVISION
CHKD BY: A. FORD	2-470-C0004	2
APPVD BY: A. GOURLAY		

ARCH D 36x24

Texas 811 Know what's below. Call before you dig.

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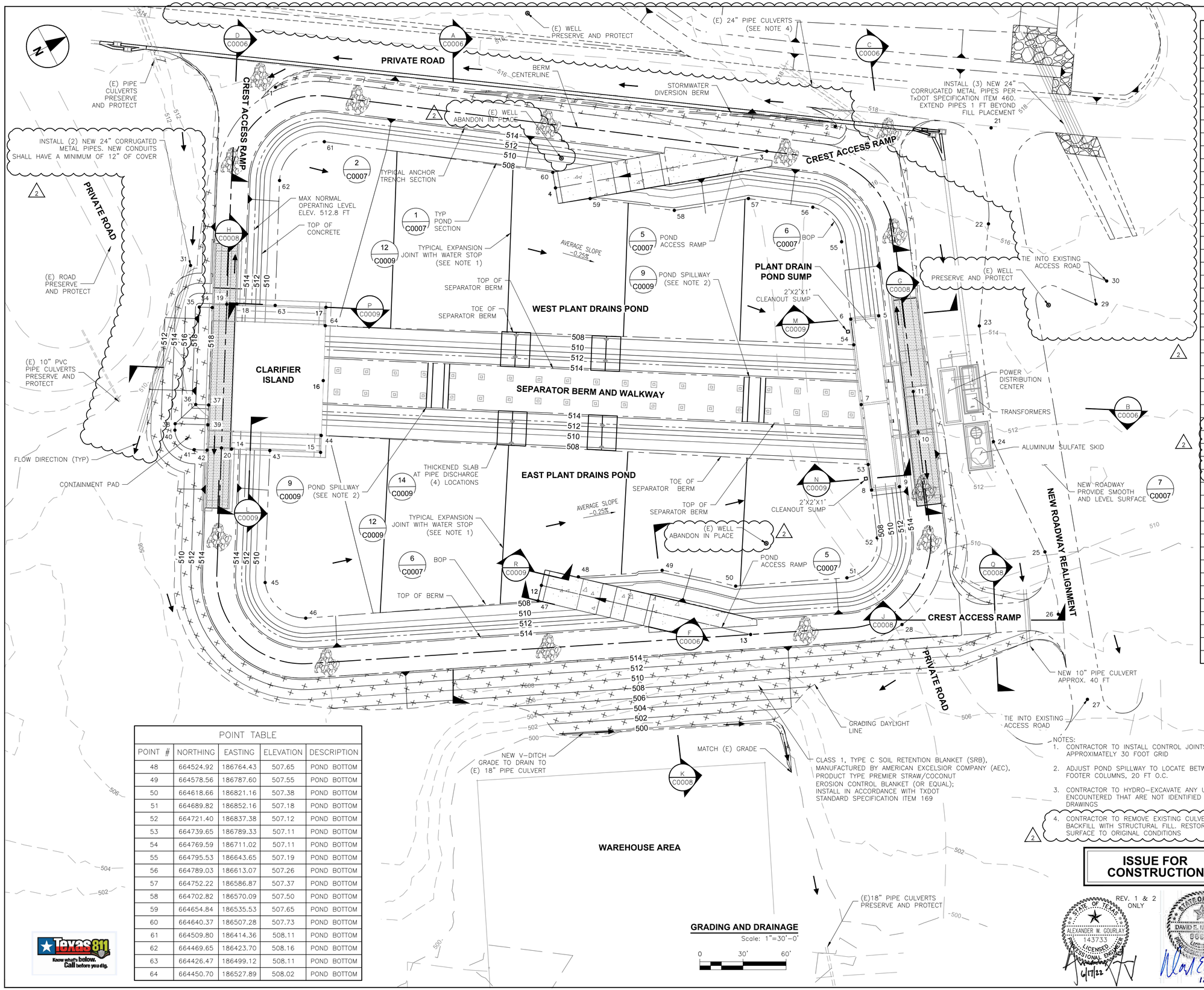

POINT TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	664497.42	186364.96	515.28	BEGIN BERM
2	664829.03	186570.61	518.61	END BERM
3	664778.85	186563.70	515.00	RAMP
4	664636.97	186517.76	507.73	RAMP
5	664794.30	186701.24	514.80	SUMP CORNER
6	664776.08	186694.30	514.80	SUMP CORNER
7	664754.77	186750.21	514.80	WALKWAY
8	664733.47	186806.12	514.80	SUMP CORNER
9	664751.69	186813.07	514.80	SUMP CORNER
10	664780.85	186785.69	519.00	PIPE CROSSING
11	664791.02	186758.99	519.00	PIPE CROSSING
12	664499.41	186757.71	507.72	RAMP
13	664612.19	186855.77	515.00	RAMP
14	664352.99	186573.37	515.00	CLARIFIER
15	664406.74	186604.29	515.00	CLARIFIER
16	664431.66	186560.98	514.80	WALKWAY
17	664457.11	186516.75	515.00	CLARIFIER
18	664403.37	186485.83	515.00	CLARIFIER
19	664397.06	186482.75	519.00	PIPE CROSSING
20	664347.18	186569.45	519.00	PIPE CROSSING
21	664924.43	186622.07	517.45	ROADWAY CL
22	664891.66	186680.27	516.30	ROADWAY TAPER
23	664852.96	186740.11	514.12	ROADWAY TAPER
24	664824.08	186815.88	511.87	ROADWAY TAPER
25	664820.02	186900.38	510.12	ROADWAY TAPER
26	664808.04	186943.09	508.54	RAMP
27	664798.33	187004.91	506.42	ROADWAY CL
28	664708.54	186898.73	514.30	RAMP
29	664931.80	186764.42	514.47	ROADWAY PT
30	664945.87	186753.77	514.88	ROADWAY PT
31	664387.35	186447.10	510.00	PIPE INVERT
32	NOT USED	NOT USED	NOT USED	NOT USED
33	NOT USED	NOT USED	NOT USED	NOT USED
34	664387.08	186480.05	518.75	PIPE COVER
35	664379.26	186475.58	518.75	PIPE COVER
36	664345.45	186534.36	518.75	PIPE COVER
37	664353.23	186538.80	518.75	PIPE COVER
38	664326.55	186539.48	514.80	CONTAINMENT PAD
39	664346.37	186550.81	514.80	CONTAINMENT PAD
40	664324.34	186543.35	514.80	CONTAINMENT PAD
41	664329.82	186561.61	514.80	CONTAINMENT PAD
42	664337.63	186566.08	514.80	CONTAINMENT PAD
43	664376.12	186586.68	508.11	POND BOTTOM
44	664412.60	186594.10	508.01	POND BOTTOM
45	664330.42	186666.39	508.17	POND BOTTOM
46	664343.81	186701.45	508.12	POND BOTTOM
47	664492.31	186766.13	507.72	POND BOTTOM

POINT TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
48	664524.92	186764.43	507.65	POND BOTTOM
49	664578.56	186787.60	507.55	POND BOTTOM
50	664618.66	186821.16	507.38	POND BOTTOM
51	664689.82	186852.16	507.18	POND BOTTOM
52	664721.40	186837.38	507.12	POND BOTTOM
53	664739.65	186789.33	507.11	POND BOTTOM
54	664769.59	186711.02	507.11	POND BOTTOM
55	664795.53	186643.65	507.19	POND BOTTOM
56	664789.03	186613.07	507.26	POND BOTTOM
57	664752.22	186586.87	507.37	POND BOTTOM
58	664702.82	186570.09	507.50	POND BOTTOM
59	664654.84	186535.53	507.65	POND BOTTOM
60	664640.37	186507.28	507.73	POND BOTTOM
61	664509.80	186414.36	508.11	POND BOTTOM
62	664469.65	186423.70	508.16	POND BOTTOM
63	664426.47	186499.12	508.11	POND BOTTOM
64	664450.70	186527.89	508.02	POND BOTTOM

NOTES:
1. CONTRACTOR TO INSTALL CONTROL JOINTS ON APPROXIMATELY 30 FOOT GRID
2. ADJUST POND SPILLWAY TO LOCATE BETWEEN PIPE RACK FOOTER COLUMNS, 20 FT O.C.
3. CONTRACTOR TO HYDRO-EXCAVATE ANY UTILITIES ENCOUNTERED THAT ARE NOT IDENTIFIED ON THE DRAWINGS
4. CONTRACTOR TO REMOVE EXISTING CULVERTS AND BACKFILL WITH STRUCTURAL FILL. RESTORE ROAD SURFACE TO ORIGINAL CONDITIONS

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0	12-17-2021	ISSUE FOR CONSTRUCTION	AWF	DEM	DEM

AECOM PROJECT NO. 60566130 AUSTIN, TEXAS

AECOM

AECOM TECHNICAL SERVICES, INC. TEXAS REGISTRATION NO. 3580

ISSUE FOR CONSTRUCTION

REV. 1 & 2 ONLY

STATE OF TEXAS — ALEXANDER W. GOURLAY — 143733 — LICENSED PROFESSIONAL ENGINEER — 6/17/22

STATE OF TEXAS — DAVID E. MICKANEN — 96643 — LICENSED PROFESSIONAL ENGINEER — 12-17-21

CPS ENERGY

J K SPRUCE POWER PLANT

SPRUCE PLANT DRAINS PROJECT

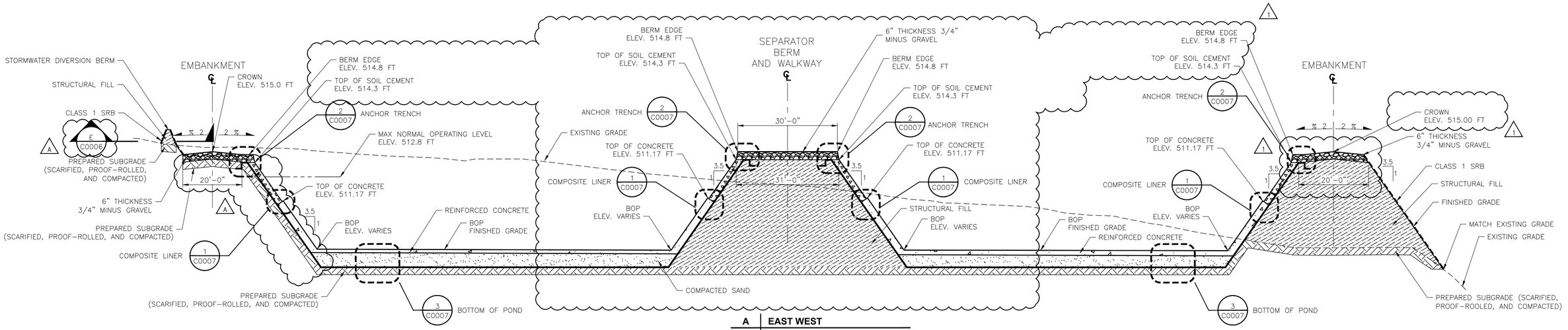
GRADING AND DRAINAGE PLAN
PLANT DRAINS POND

DRAWN BY: A. PROCTOR
CHKD BY: A. FORD
APPVD BY: A. GOURLAY

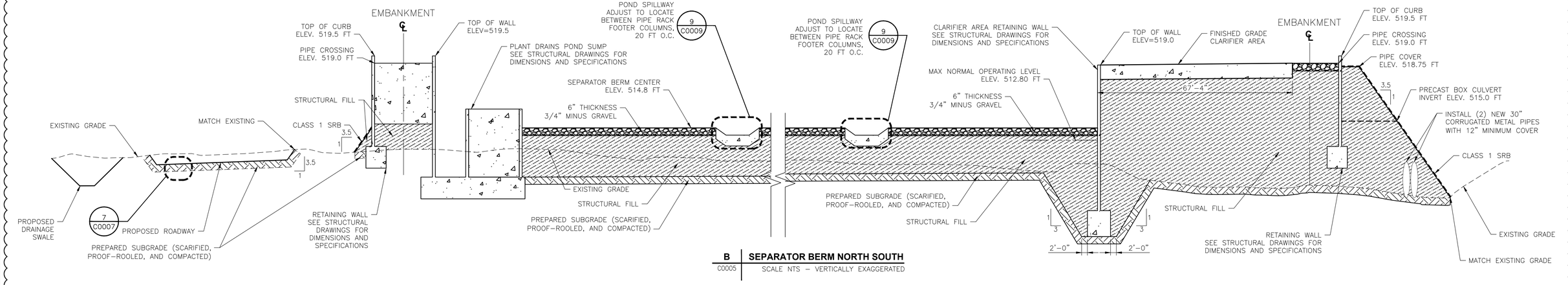
DRAWING NUMBER 2-470-C0005

REVISION 2

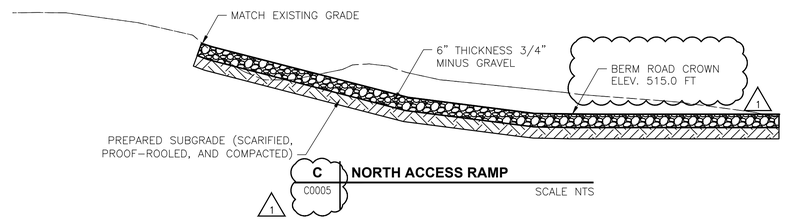
ARCH D 36x24



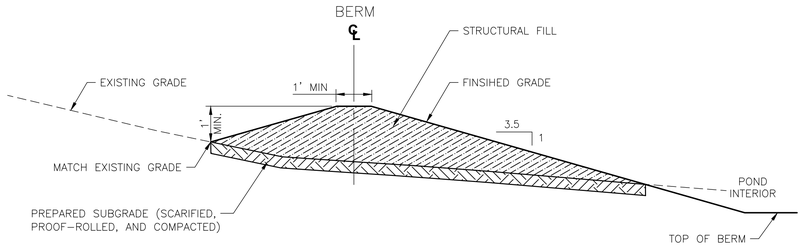
A | **EAST WEST**
C0005 | SCALE NTS – VERTICALLY EXAGGERATED



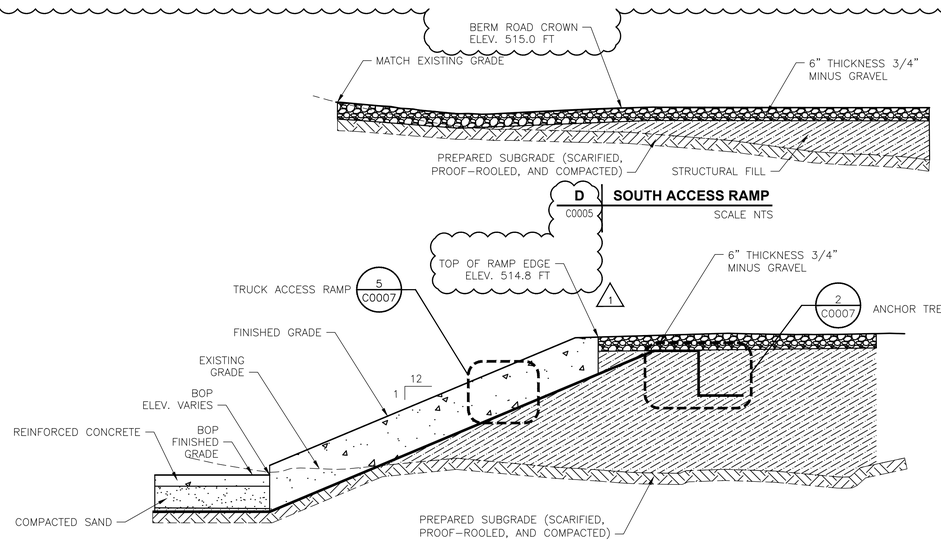
B | **SEPARATOR BERM NORTH SOUTH**
C0005 | SCALE NTS – VERTICALLY EXAGGERATED



C | **NORTH ACCESS RAMP**
C0005 | SCALE NTS



E | **STORMWATER DIVERSION BERM**
C0006 | SCALE NTS



D | **SOUTH ACCESS RAMP**
C0005 | SCALE NTS

F | **TRUCK ACCESS RAMP**
C0005 | SCALE NTS – VERTICALLY EXAGGERATED

ISSUE FOR CONSTRUCTION

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CPS ENERGY

J K SPRUCE POWER PLANT

SPRUCE PLANT DRAINS PROJECT

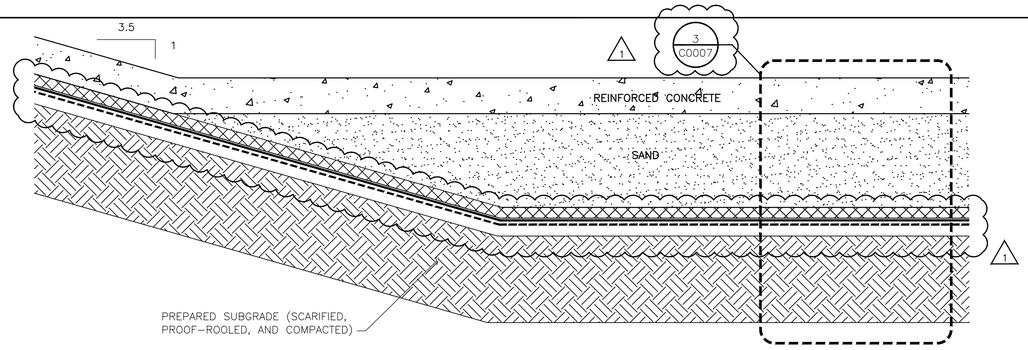
SECTION AND DETAILS 01
PLANT DRAINS POND

DRAWN BY: A. PROCTOR
CHKD BY: A. FORD
APPVD. BY: A. GOURLAY

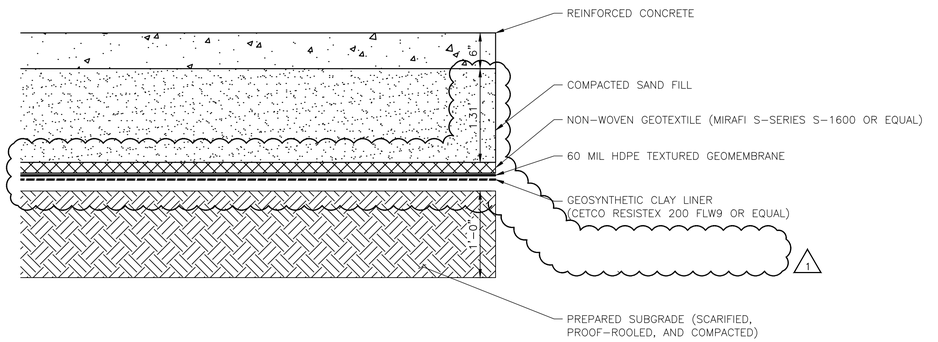
DRAWING NUMBER: 2-470-C0006

REVISION: 1

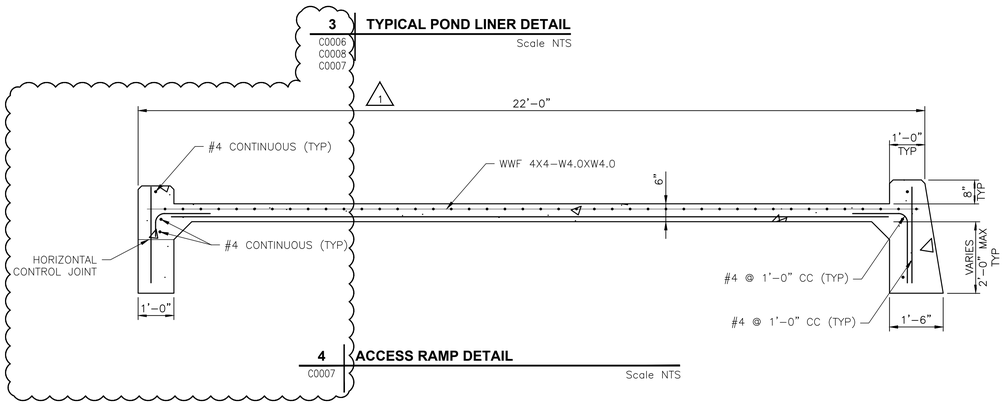
ARCH D 36x24



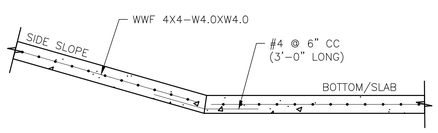
1 TYPICAL PLANT DRAINS POND SECTION
C0005, C0006 — Scale NTS



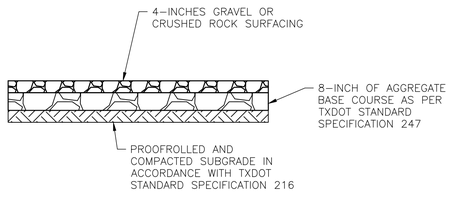
3 TYPICAL POND LINER DETAIL
C0006, C0008, C0007 — Scale NTS



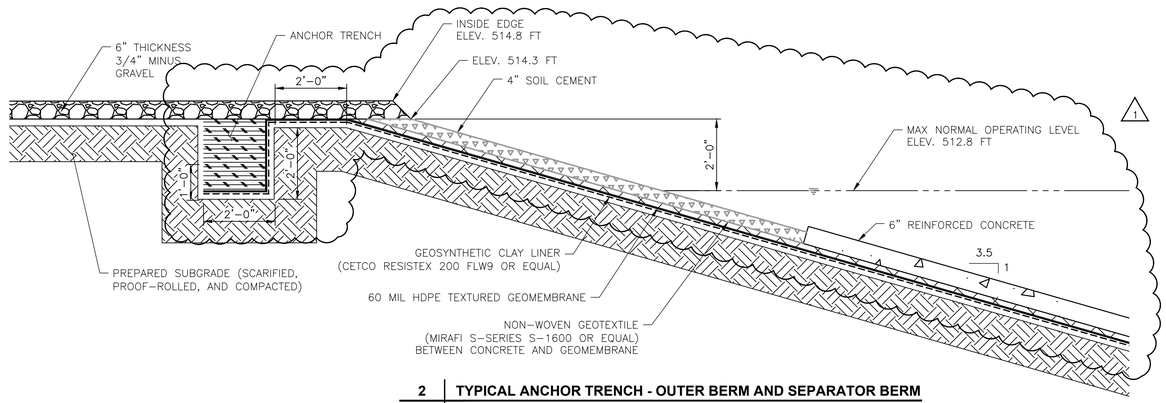
4 ACCESS RAMP DETAIL
C0007 — Scale NTS



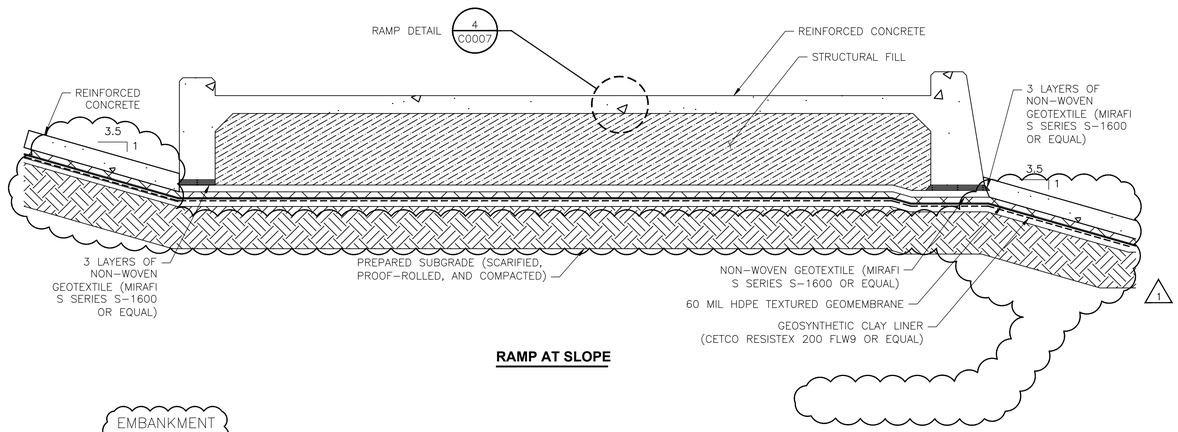
6 SIDE SLOPE TIE TO BOTTOM DETAIL
C0005 — Scale NTS



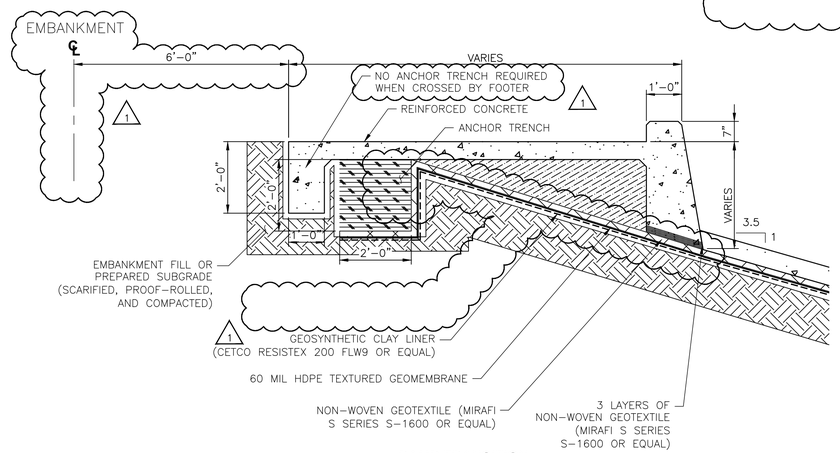
7 GRAVEL ROAD DETAIL
C0005, C0006 — Scale NTS



2 TYPICAL ANCHOR TRENCH - OUTER BERM AND SEPARATOR BERM
C0005, C0006 — Scale NTS



RAMP AT SLOPE



RAMP TRANSITION

5 TYPICAL TRUCK ACCESS RAMP SECTIONS
C0004, C0005, C0006 — Scale NTS

ISSUE FOR CONSTRUCTION

NO	DATE	REVISION	DRWN	CHKD	APRV
1	05-02-2022	ISSUE FOR CONSTRUCTION - POND DESIGN UPDATES	AJP	AWF	AWG
0	12-17-2021	ISSUE FOR CONSTRUCTION	AWF	DEM	DEM

AECOM PROJECT NO. 60566130 — AUSTIN, TEXAS

AECOM

AECOM TECHNICAL SERVICES, INC. TEXAS REGISTRATION NO. 3580

CPS ENERGY
J K SPRUCE POWER PLANT

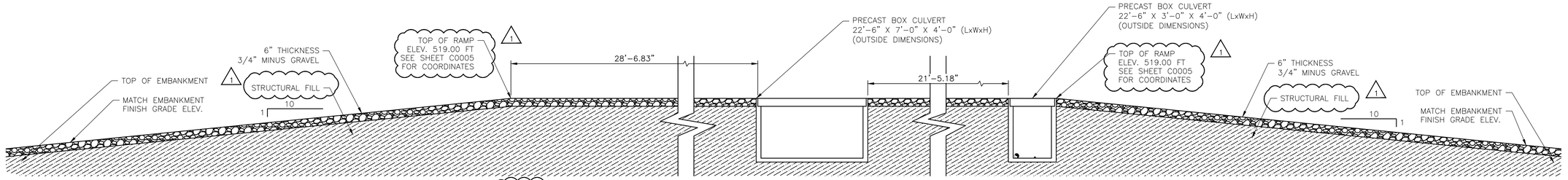
SPRUCE PLANT DRAINS PROJECT

SECTIONS AND DETAILS 02
PLANT DRAINS POND

DRAWN BY: A. PROCTOR
CHKD BY: A. FORD
APPVD. BY: A. GOURLAY
DRAWING NUMBER: 2-470-C0007
REVISION: 1

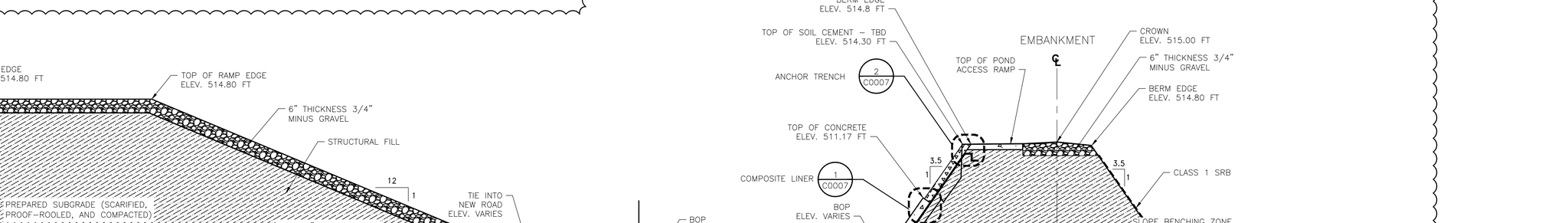
ARCH D 36x24

STATE OF TEXAS — ALEXANDER W. GOURLAY — 143733 — LICENSED PROFESSIONAL ENGINEER — 5/2/22
REV. 1 ONLY
STATE OF TEXAS — DAVID E. MICHANEN — 98644 — LICENSED PROFESSIONAL ENGINEER — 12-17-21



G C0005 **ELECTRICAL CABLE TRAY AND PIPE AT CROSSING AT PLANT DRAINS POND SUMP**

SCALE NTS



H C0005 **PIPE CROSSING AT CLARIFIERS ISLAND**

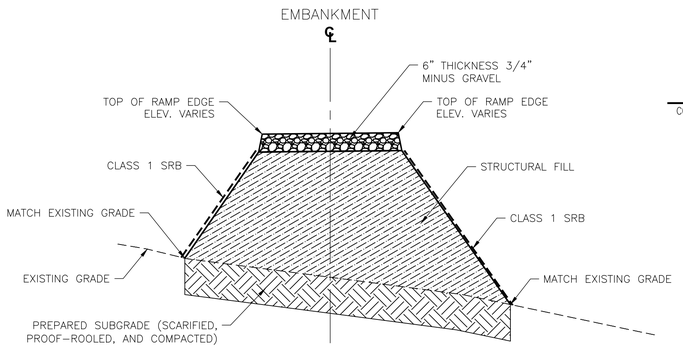
SCALE NTS

J C0005 **NORTH EAST CREST ACCESS RAMP**

SCALE NTS – VERTICALLY EXAGGERATED

K C0005 **EAST EMBANKMENT**

SCALE NTS – VERTICALLY EXAGGERATED



Q C0005 **TYPICAL CREST ACCESS RAMP**

SCALE NTS – VERTICALLY EXAGGERATED

1

ISSUE FOR CONSTRUCTION

NO	DATE	REVISION	DWN	CHKD	APRV
1	05-02-2022	ISSUE FOR CONSTRUCTION - POND DESIGN UPDATES	AJP	AWF	AWG
0	12-17-2021	ISSUE FOR CONSTRUCTION	AWF	DEM	DEM

AECOM PROJECT NO. 60566130 **AUSTIN, TEXAS**

AECOM

AECOM TECHNICAL SERVICES, INC. TEXAS REGISTRATION NO. 3580

STATE OF TEXAS
ALEXANDER W. GOURLAY
143733
LICENSED
PROFESSIONAL ENGINEER
5/2/22

REV. 1 ONLY

STATE OF TEXAS
DAVID E. MCGANEN
98644
REGISTERED
PROFESSIONAL ENGINEER
12-17-21

CPS ENERGY

J K SPRUCE POWER PLANT

SPRUCE PLANT DRAINS PROJECT

SECTIONS AND DETAILS 03
PLANT DRAINS POND

DRAWN BY: A. PROCTOR	DRAWING NUMBER	REVISION
CHKD BY: A. FORD	2-470-C0008	1
APPVD BY: A. GOURLAY		

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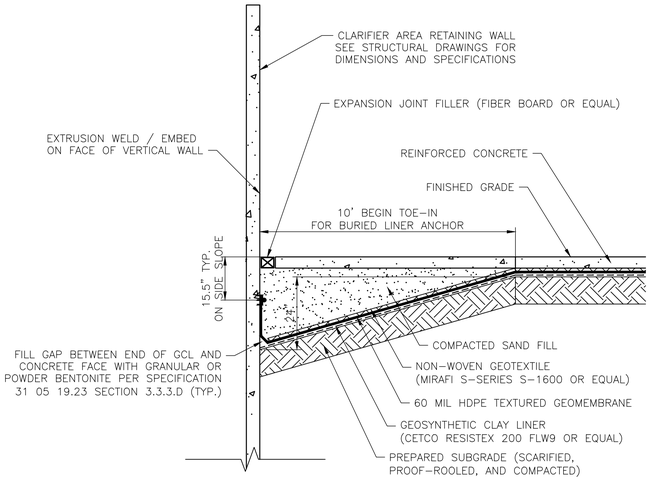
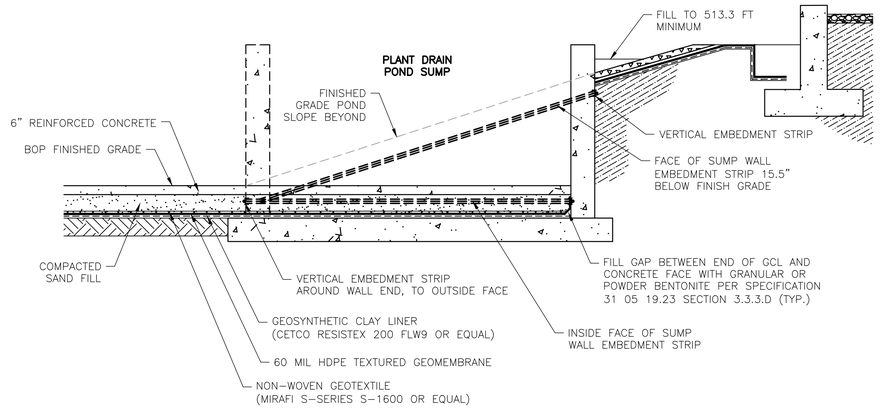
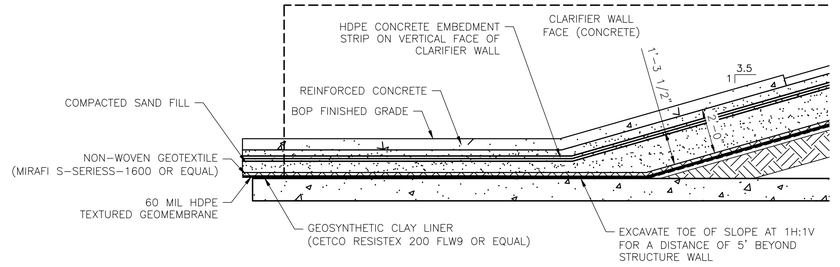


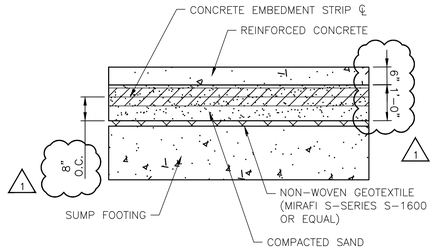
L | **HDPE CONCRETE EMBEDMENT - MID-SLOPE**
C0005 | SCALE NTS – VERTICALLY EXAGGERATED



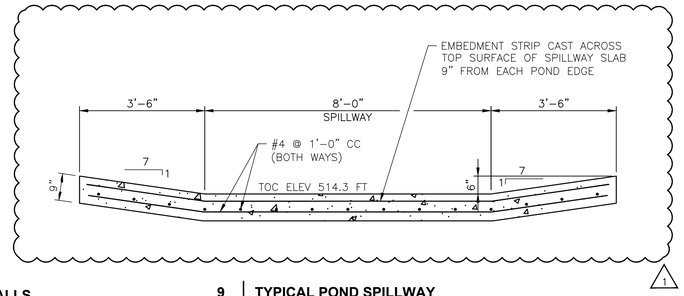
M | **HDPE CONCRETE EMBEDMENT - PLANT DRAINS SUMP**
C0005 | SCALE NTS – VERTICALLY EXAGGERATED



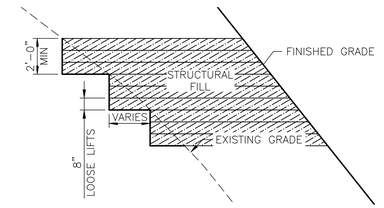
P | **HDPE CONCRETE EMBEDMENT - CLARIFIER AREA**
C0005 | SCALE NTS – VERTICALLY EXAGGERATED



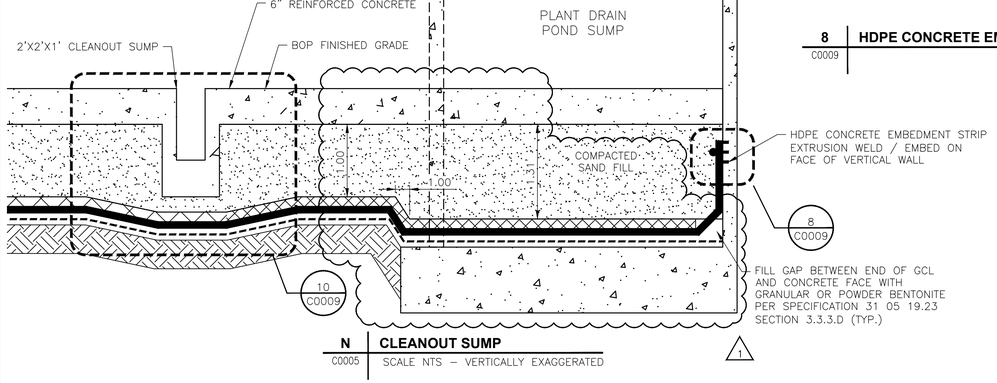
8 | **HDPE CONCRETE EMBEDMENT STRIP ADJACENT TO VERTICAL WALLS**
C0009 | SCALE NTS



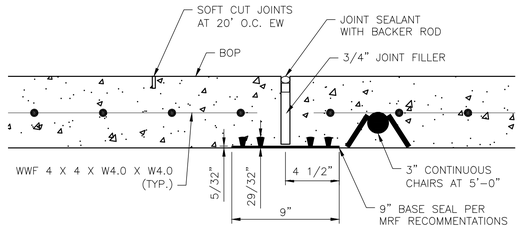
9 | **TYPICAL POND SPILLWAY**
C0005 C0006 | SCALE NTS



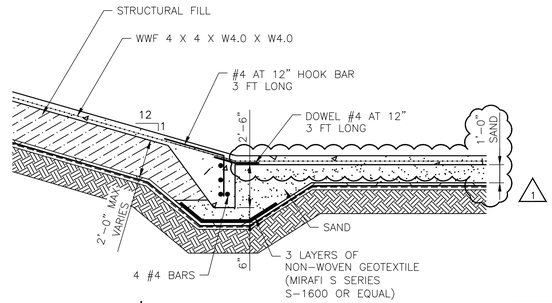
11 | **TYPICAL BENCHING DETAIL**
C0008 | SCALE NTS



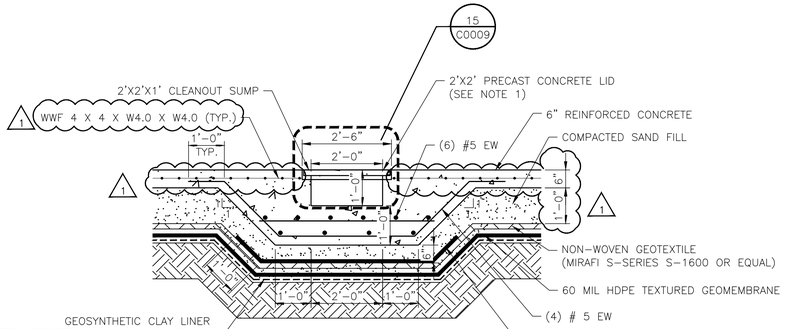
N | **CLEANOUT SUMP**
C0005 | SCALE NTS – VERTICALLY EXAGGERATED



12 | **REINFORCED CONCRETE WITH JOINTS DETAIL**
C0009 | SCALE NTS

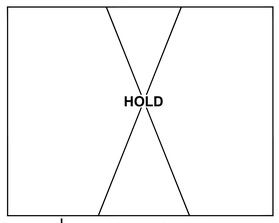


R | **RAMP TOE DOWN AT POND BOTTOM**
C0005 | SCALE NTS – VERTICALLY EXAGGERATED

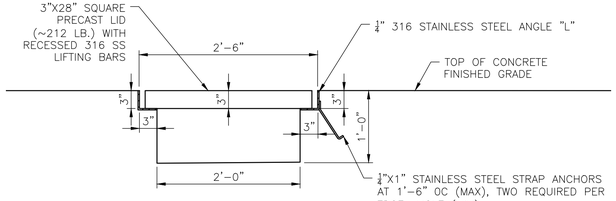


NOTES:
1. LOOSELY PLACED LID IS INTENDED TO BE REMOVED AND SLID ASIDE BY PRY BAR

10 | **CLEANOUT SUMP**
C0009 | SCALE NTS



14 | **TYPICAL THICKENED SLAB**
C0005 | SCALE NTS



15 | **CLEANOUT SUMP LID DETAIL**
C0009 | SCALE NTS

ISSUE FOR CONSTRUCTION

NO	DATE	REVISION	DWN	CHKD	APRV
1	05-12-2022	REVISED DIMENSIONS, REINFORCEMENT, AND CALLOUTS	AWF	AJP	AWG
0	05-02-2022	ISSUE FOR CONSTRUCTION - POND DESIGN UPDATES	AJP	AWF	AWG

AECOM PROJECT NO. 60566130 **AUSTIN, TEXAS**

AECOM TECHNICAL SERVICES, INC. TEXAS REGISTRATION NO. 3580

CPS ENERGY

J K SPRUCE POWER PLANT

SPRUCE PLANT DRAINS PROJECT

SECTIONS AND DETAILS 04
PLANT DRAINS POND

STATE OF TEXAS
ALEXANDER W. GOURLAY
143733
LICENSED
PROFESSIONAL ENGINEER
5/12/2022

DRAWN BY: A. PROCTOR	DRAWING NUMBER	REVISION
CHKD BY: A. FORD	2-470-C0009	1
APPVD BY: A. GOURLAY		

ARCH D 36x24

POINT TABLE				
POINT #	NORTHING	EASTING	ELEVATION	DESCRIPTION
1	664978.34	186574.94	515.25	PIPE INVERT
2	664973.89	186665.01	515.00	PIPE INVERT
3	665000.04	186578.12	515.25	BOTTOM OF CHANNEL
4	664977.87	186564.03	515.25	BOTTOM OF CHANNEL
5	664799.89	186458.97	EXISTING	BOTTOM OF CHANNEL

NOTES:
1. CONTRACTOR TO HYDRO-EXCAVATE ANY UTILITIES ENCOUNTERED THAT ARE NOT IDENTIFIED ON THE DRAWINGS
2. CONTRACTOR TO REMOVE EXISTING CULVERTS AND BACKFILL WITH STRUCTURAL FILL. RESTORE ROAD SURFACE TO ORIGINAL CONDITIONS
3. UTILIZE POINTS 1 AND 2 FOR CULVERT ALIGNMENT
4. GRADE AREA BETWEEN SOUTH CULVERT OUTLET AND POND CULVERT INVERT TO PROVIDE A CONSTANT SLOPE. PROVIDE 3.5:1 BANKS FOR ANY EXCAVATION. MATCH NEW POND SLOPE TO BOTTOM OF CHANNEL EXCAVATION. CHANNEL CAN BE A V-DITCH. ADJUST CULVERT ALIGNMENT TO LOCATE INVERT AT BOTTOM OF POND BERM SLOPE AND MEET LOW POINT OF CHANNEL EXCAVATION

END OF NORTH CHANNEL
BERM END
STORMWATER DIVERSION BERM
GRADING DAYLIGHT LINE
NORTH CHANNEL BOTTOM
TOE OF BERM
TOP OF BERM
8'-0" TYP.
U C0011
NORTH CHANNEL EXTENSION CENTERLINE SLOPE CHANNEL BACK FROM POINT 4AT CONSTANT GRADE IN CHANNEL TO MATCH EXISTING GRADE IN CHANNEL NEAR POINT 5
20'-0" TYP.
T C0011
V C0011
Y C0011
GRADE BREAK ELEV. 515.25 FT
END OF NORTH CHANNEL OUTFLOW
NORTH CHANNEL OUTFALL ELEV. 519.0
RIPRAP 8" THICK D_{50} = 4" EXTEND TO TOP OF BERM
Z C0012
S C0011
5'-0" MIN.
(E) ROAD EDGE
RIPRAP 8" THICK D_{50} = 4" EXTEND 5 FT BEYOND PIPES IN ALL DIRECTIONS AND TO TOP OF CHANNEL BANK AND BERM
W C0011
12'-0"
GRADE CHANNEL TO DRAIN AND MATCH EXISTING CHANNEL GRADE
(E) WELL PRESERVE AND PROTECT
(E) ROAD EDGE
TIE IN TO EXISTING CHANNEL
(E) WELL PRESERVE AND PROTECT
V-DITCH GRADE TO DRAIN
X C0011
PRIVATE ROAD
PRIVATE ROAD
CREST ACCESS RAMP
STORMWATER DIVERSION BERM
START V-DITCH AT TOE OF BERM
(E) 24" PIPE CULVERTS (SEE NOTE 2)
(E) PIPE CULVERTS PRESERVE AND PROTECT
DRAINAGE SWALE (SEE NOTE 4)
INSTALL (2) NEW 24" CORRUGATED METAL PIPES APPROX 122 FT PER PER TXDOT SPECIFICATION ITEM 460. NEW CONDUITS SHALL HAVE A MINIMUM OF 12" OF COVER
INVERT ELEV. 510.0
AA C0012
(E) ROAD PRESERVE AND PROTECT
(E) 10" PVC PIPE PRESERVE AND PROTECT
BA C0012
CA C0012
INVERT ELEV. 509.0
22'-0" TYP.
ROADWAY GRAVEL PIPE CROSSING
THICKENED SLAB AT PIPE DISCHARGE (4) LOCATIONS
TYPICAL EXPANSION JOINT WITH WATER STOP (SEE NOTE 1)
(E) WELL ABANDON IN PLACE
5 C0007
POND ACCESS RAMP
CREST ACCESS RAMP
5'-0" MIN. OFFSET
INSTALL (3) NEW 24" CORRUGATED METAL PIPES APPROX. 90 FT PER TxDOT SPECIFICATION ITEM 460. EXTEND PIPES 1 FT BEYOND FILL PLACEMENT
BOP
TOP OF BERM
TOE OF BERM
WEST PLANT DRAINS POND
2'X2'X1' CLEANOUT SUMP
(E) WELL PRESERVE AND PROTECT
POWER DISTRIBUTION CENTER
TRANSFORMERS
ALUMINUM SULFATE SKID
CLARIFIER ISLAND
31'-0"
SEPARATOR BERM AND WALKWAY
NEW ROADWAY REALIGNMENT
TOE OF BERM
TOP OF BERM
EAST PLANT DRAINS POND
PLANT DRAINS POND SUMP
2'X2'X1' CLEANOUT SUMP
MAX NORMAL OPERATING LEVEL ELEV. 512.8 FT
TOP OF CONCRETE
TYPICAL EXPANSION JOINT WITH WATER STOP
(E) WELL ABANDON IN PLACE
POND ACCESS RAMP 5 C0007
BOP
TOP OF BERM
(E) WELL PRESERVE AND PROTECT
SITE PLAN
Scale: 1"=40'-0"
0 40' 80'

REVISION 0 MODIFICATIONS OF THIS DRAWING ARE RELEASED UNDER THE AUTHORITY OF ALEXANDER W. GOURLAY, TEXAS PE. 14733

NO	DATE	REVISION	DWN	CHKD	APRV
0	06-17-2022	ISSUE FOR CONSTRUCTION	AWF	TER	AWG

AECOM PROJECT NO. 60566130 AUSTIN, TEXAS

AECOM

AECOM TECHNICAL SERVICES, INC. TEXAS REGISTRATION NO. 3580

CPS Energy
J K SPRUCE POWER PLANT

SPRUCE PLANT DRAINS PROJECT

STORMWATER DIVERSION PLAN
PLANT DRAINS POND

DRAWN BY: A. FORD
CHKD BY: T. RINGSMUTH
APPVD. BY: A. GOURLAY
DRAWING NUMBER: 2-470-C0010
REVISION: 0

STATE OF TEXAS
ALEXANDER W. GOURLAY
143733
LICENSED PROFESSIONAL ENGINEER
6/17/22

ISSUE FOR CONSTRUCTION

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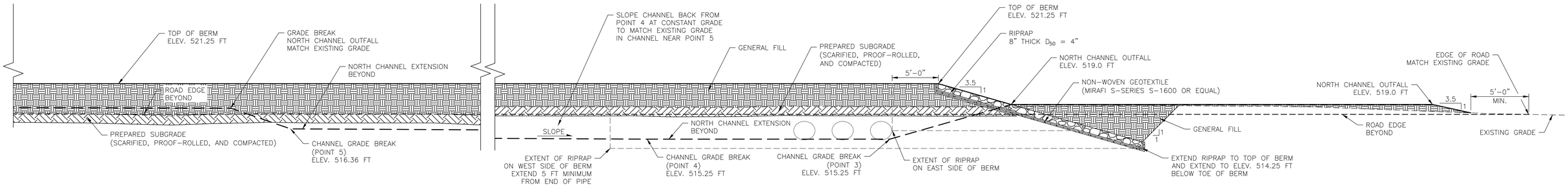
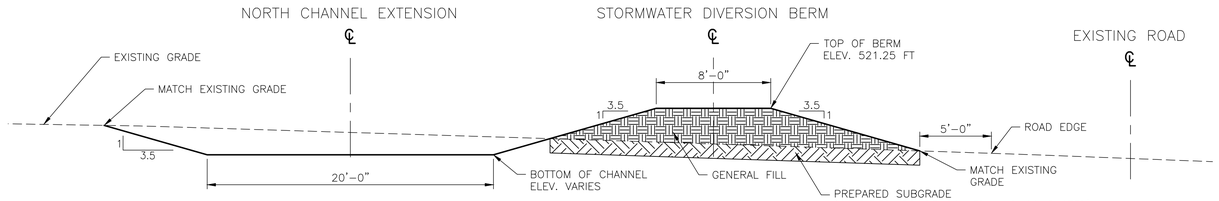
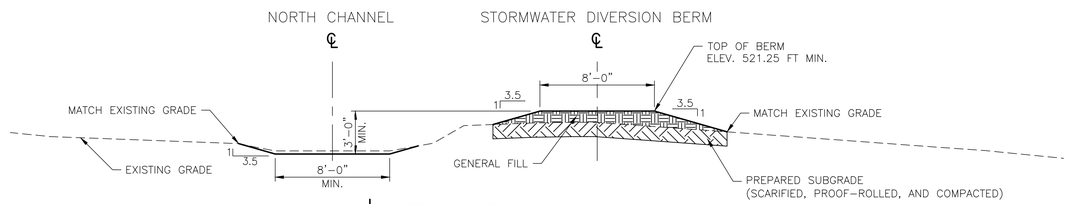
Texas 811 Know what's below. Call before you dig.



S | **STORMWATER DIVERSION BERM**
C0010 | SCALE NTS

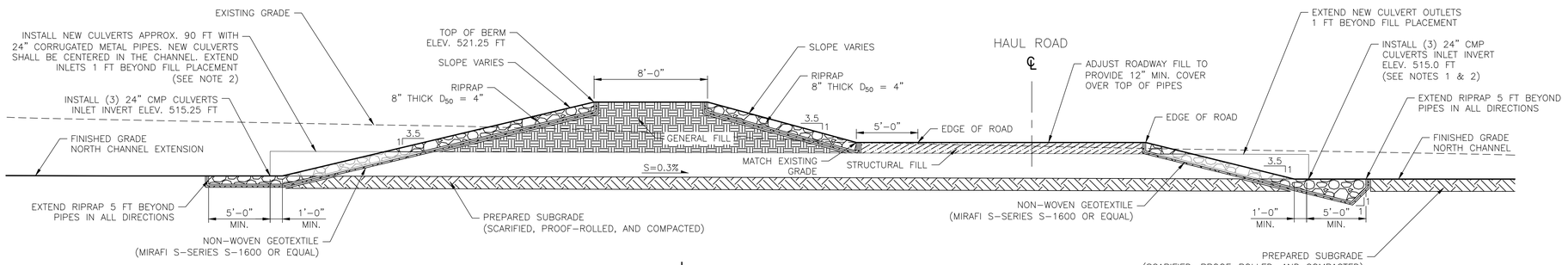


T | **NORTH CHANNEL EXTENSION**
C0010 | SCALE NTS



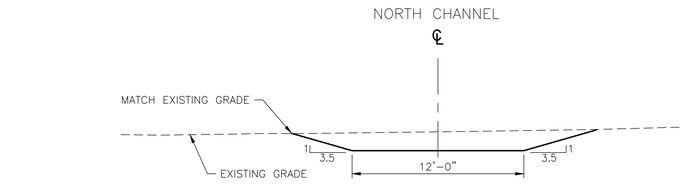
U | **NORTH CHANNEL**
C0010 | SCALE NTS

NOTE:
1. MODIFY EXISTING CHANNEL TO PROVIDE A MINIMUM BOTTOM WIDTH OF 8'-0" AND MINIMUM DEPTH OF 3'-0" BY CONSTRUCTING BERM.



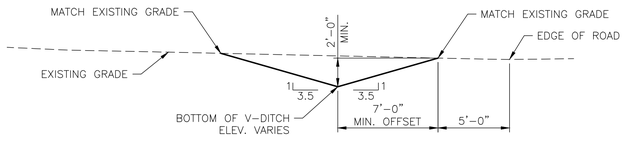
V | **CULVERT EXTENSION - UPSTREAM SIDE**
C0010 | SCALE NTS

NOTE:
1. CONTRACTOR TO SURVEY TOPOGRAPHY AT OUTLET END OF NEW CULVERTS AND VERIFY REQUIRED LENGTH TO DAYLIGHT AT GROUND ELEVATION = 515.0 FT
2. INSTALL CULVERTS PER TxDOT SPECIFICATION ITEM 460

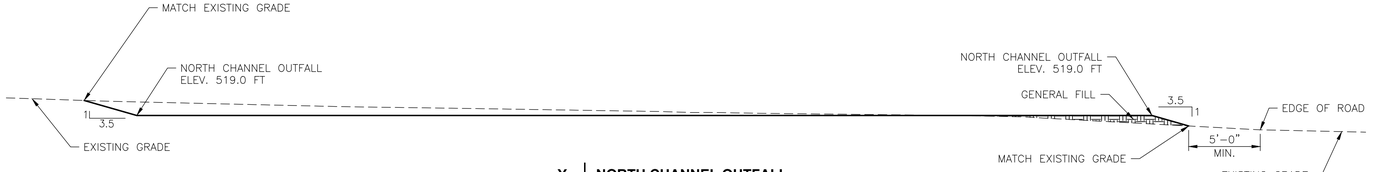


NOTE:
1. MODIFY EXISTING CHANNEL AS NEEDED TO PROVIDE POSITIVE DRAINAGE.
2. MAINTAIN EXISTING BOTTOM WIDTH. DEEPEN EXISTING CHANNEL AND MAINTAIN SLOPE TO PROVIDE POSITIVE DRAINAGE.

W | **CHANNEL EXTENSION - DOWNSTREAM SIDE**
C0010 | SCALE NTS



X | **V-DITCH - TYPICAL**
C0010 | SCALE NTS



Y | **NORTH CHANNEL OUTFALL**
C0010 | SCALE NTS

ISSUE FOR CONSTRUCTION

REVISION 0 MODIFICATIONS OF THIS DRAWING ARE RELEASED UNDER THE AUTHORITY OF ALEXANDER W. GOURLAY, TEXAS PE. 14733

NO	DATE	REVISION	DWN	CHKD	APRV
0	06-17-2022	ISSUE FOR CONSTRUCTION	AWF	TER	AWG

AECOM PROJECT NO. 60566130 AUSTIN, TEXAS

AECOM

AECOM TECHNICAL SERVICES, INC. TEXAS REGISTRATION NO. 3580

CPS ENERGY
J K SPRUCE POWER PLANT

SPRUCE PLANT DRAINS PROJECT

STORMWATER DIVERSION SECTIONS AND DETAILS 01
PLANT DRAINS POND

DRAWN BY: A. FORD
CHKD BY: T. RINGSMUTH
APPVD BY: A. GOURLAY
DRAWING NUMBER: 2-470-C0011
REVISION: 0

STATE OF TEXAS
ALEXANDER W. GOURLAY
143733
LICENSED
PROFESSIONAL ENGINEER
6/17/22

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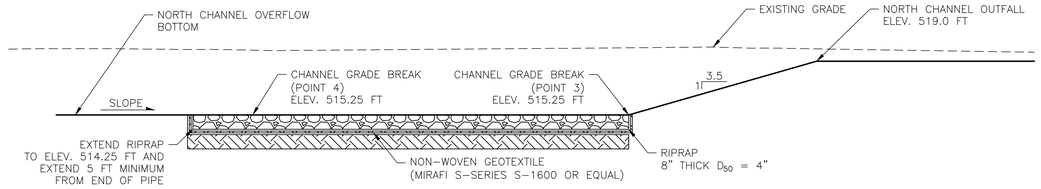
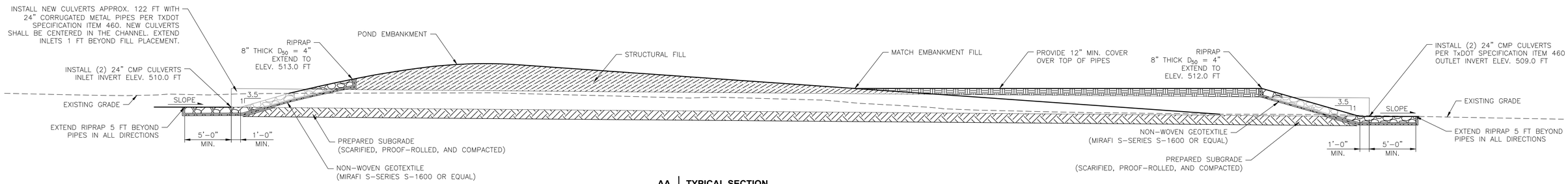
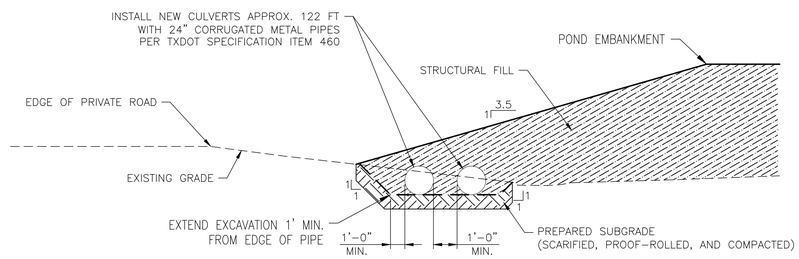


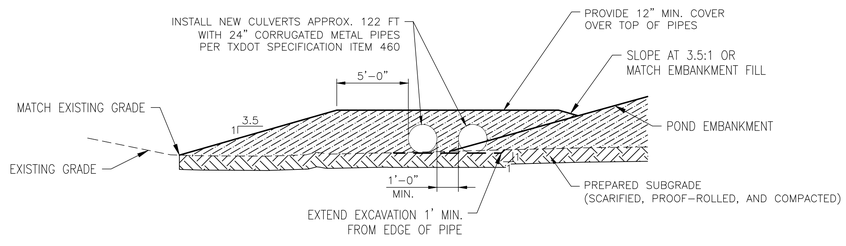
Z | **END OF NORTH CHANNEL OUTFALL**
C0010 | SCALE NTS



AA | **TYPICAL SECTION**
C0010 | SCALE NTS



BA | **TYPICAL SECTION**
C0010 | SCALE NTS



CA | **TYPICAL SECTION**
C0010 | SCALE NTS

ISSUE FOR CONSTRUCTION

REVISION 0 MODIFICATIONS OF THIS DRAWING ARE RELEASED UNDER THE AUTHORITY OF ALEXANDER W. GOURLAY, TEXAS PE. 14733

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0	06/17-2022	ISSUE FOR CONSTRUCTION	AWF	TER	AWG

AECOM PROJECT NO. 60566130 **AUSTIN, TEXAS**

AECOM

AECOM TECHNICAL SERVICES, INC. TEXAS REGISTRATION NO. 3580

CPS ENERGY

J K SPRUCE POWER PLANT

SPRUCE PLANT DRAINS PROJECT

STORMWATER DIVERSION SECTIONS AND DETAILS 02
PLANT DRAINS POND

STATE OF TEXAS
ALEXANDER W. GOURLAY
143733
LICENSED PROFESSIONAL ENGINEER
6/17/22

DRAWN BY: A. FORD	DRAWING NUMBER	REVISION
CHKD BY: T. RINGSMUTH	2-470-C0012	0
APPVD BY: A. GOURLAY		

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