CCR Retrofit Plan

Whelan Energy Center
WEC Temporary Ash Disposal Area

Hasting, Nebraska
June 5, 2023

Contents

APPENDICES

Professional Engineer Certification

"I hereby certify that the activities outlined in this written retrofit plan for the existing WEC Temporary Ash Disposal Area at the Whelan Energy Center, operated by City of Hastings/Hastings Utilities, meets the requirements of the Coal Combustion Residual Rule 40 CFR Section 257.102(k). I am a duly licensed Professional Engineer under the laws of the State of Nebraska."

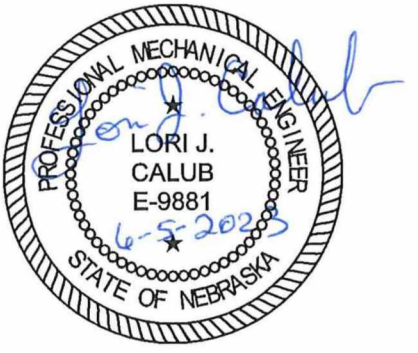
Print Name: Lori J. Calub

Signature: Lori J. Calub

Date: 6-5-2023

License #: E-9881

My license renewal date is December 31, 2023.



1 Introduction

The Whelan Energy Center (WEC), located in Hasting, Nebraska, has two coal fired electric generating units. WEC Units 1 and 2 have capacity ratings of 77 MW and 220 MW, respectively. City of Hastings/Hastings Utilities (Hastings) is the owner and operator of WEC Unit 1 (WEC1) and the operating agent of WEC Unit 2 (WEC2) for Public Power Generation Agency (PPGA). The WEC Temporary Ash Disposal Area is permitted under the Nebraska Department of Environment and Energy (NDEE, formerly NDEQ) Title 132 – Integrated Solid Waste Management Regulations. Original Title 132 permitting efforts began in 1999 pursuant to state regulations.

On April 17, 2015 the U.S. Environmental Protection Agency (EPA) published the final rule for the regulation and management of coal combustion residuals (CCR) under the Resource Conservation and Recovery Act (RCRA). The rule – effective on October 19, 2015 – and as amended, applies to the WEC Ash Disposal Area which is considered an existing CCR surface impoundment. The federal CCR Rule requires existing unlined CCR surface impoundments, if determined in any sampling event that the concentrations of one or more constituents listed in Appendix IV are detected at statistically significant levels (SSL) above the groundwater protection standards (GWPS) established for such CCR unit, to cease placing CCR and non-CCR waste streams into such CCR surface impoundment and either retrofit or close the CCR unit. Pursuant to 40 CFR §257.101(a)(1) as amended July 30, 2018, the deadline for completion of such action is 'within six months of making such determination or no later than October 31, 2020, whichever date is later'. The WEC Temporary Ash Disposal Area is currently in the groundwater assessment monitoring program pursuant to 40 CFR §257.95 as stated in the 2022 Annual Groundwater Monitoring and Corrective Action Report placed in the facility operating record by January 31, 2023. To date, there have been no SSL of Appendix IV constituents.

On November 30, 2020, PPGA and Hastings submitted to EPA an Alternative Closure Deadline Extension Demonstration Plan in accordance with the CCR Part A regulations in 40 CFR §257.103(f)(1). EPA replied in a letter dated January 11, 2022 that the submitted demonstration was complete and further review would occur to make a determination on whether to approve the request. EPA further stated that the deadline for the CCR unit covered by the demonstration to cease receipt of waste is tolled until EPA issues a final decision on the demonstration (40 CFR §257.103(f)(3)(ii)).

The retrofit plan must comply with the requirements of 40 CFR §257.102(k)(2) and may be amended within 30 days of a change or event that requires revision of the written retrofit plan after retrofit activities have commenced. This CCR Retrofit Plan is applied to a designated area of the NDEE permitted WEC Temporary Ash Disposal Area (Permit No. NE0204129, Facility ID 58048), sufficient to provide a working area and storage capacity with a liner system (or alternative liner) meeting CCR rule and Title 132 requirements that allows the WEC to continue placement and temporary storage of CCR in the retrofitted area prior to CCR removal for beneficial uses.

2 Background

The WEC Temporary Ash Disposal Area is located at the same site as the WEC. Fossil fuel ash disposal at this site began in 1981, the same year that WEC1 began commercial operation. Commercial operation of WEC2 began on May 1, 2011. The material stream that currently goes into the WEC Temporary Ash Disposal Area is fossil fuel bottom ash and fly ash mixture (pond ash) in sluice form from WEC1 and scrubber ash and bottom ash from WEC2. Pond ash and scrubber ash are kept apart in the WEC Temporary Ash Disposal Area by a separation berm while bottom ash is stockpiled. PPGA/Hastings contracts for marketing of all CCR products for use in construction projects, soil amendments, beneficial fill, and other beneficial uses. The intent is to manage the CCR within the WEC Temporary Ash Disposal Area, excavate for beneficial use the pond ash, stockpile scrubber ash for removal to soil amendment markets, and remove the bottom ash for beneficial use.

The WEC Temporary Ash Disposal Area is an existing CCR surface impoundment of approximately 23.2 acres that historically received CCR for disposal and storage through sluicing and is a permitted solid waste facility with the State of Nebraska. WEC Temporary Ash Disposal Area continued to receive CCR for disposal/storage both before and after October 19, 2015, which is the date of CCR rule promulgation. The East Area of the WEC Temporary Ash Disposal Area has been managed as a landfill since 2015 when dry handling of scrubber ash began. A site map, provided in **Appendix A**, shows the locations of the power plant, current WEC Temporary Ash Disposal Area and groundwater monitoring wells.

3 Retrofit Description

Specific measures will be taken to retrofit the northeast quadrant of the existing WEC Temporary Ash Disposal Area to a composite liner. Retrofit construction activities will begin after design, bidding, bid reviews, selection, and contract award to the lowest responsive bidder as determined by PPGA. Preliminary retrofit drawings are included in **Appendix B**. Selected contractor will be responsible for the following:

- Removal of remaining CCR from the designated retrofit area of approximately 7 to 8 acres
- Additional soils excavation to grades shown on a CCR Removal Grading Plan
- Removal of miscellaneous CCR and soils identified by construction quality assurance visual observations and soil sampling
- Further excavation, grading and placement of clean structural fill to base grades (i.e., bottom of recompacted clay liner)
- Construction of the composite liner complying with 40 CFR §257.70 for CCR landfill
    - Upper component consisting of 60-mil HDPE geomembrane liner
    - Lower component consisting of 2-foot recompacted clay liner with hydraulic conductivity less than $1x10^{-7}$ centimeters per second
- Liner sampling and testing for construction quality control
- Construction of leachate collection system drainage layer, perforated collection piping and solid discharge pipe into a new lined leachate pond
- Placement of protective cover material (pond ash, pond ash/soil mix, or soil)
- Placement of clean structural fill on perimeter berms provided for run-on and run-off control
- Installation of access road

Prior to the start of retrofit, PPGA/Hastings will continue to cause CCR to be removed from the designated retrofit area by plant staff and the ash marketer. PPGA/Hastings, directly and through engineering contracts, is anticipated to be responsible for the following measures during construction:

- Communications with NDEE
- Communications with contractor
- Shop drawing submittals review
- Progress meetings
- Surveying
- Construction observation
- Construction quality assurance (CQA) activities including sampling, testing, measuring, surveying
- CQA documentation report and submittal to NDEE
- Certification of retrofit completion

The retrofit (i.e., new CCR landfill) cannot receive scrubber ash or other CCR until NDEE completes review and approval of the CQA documentation report.

The West Area of the WEC Temporary Ash Disposal Area will continue to receive CCR until specific plant modifications are completed and WEC1 sluicing ceases. Non-retrofitted portions of the WEC Temporary Ash Disposal Area will continue to remove pond ash, scrubber ash and bottom ash for beneficial use markets. Closure of the remaining CCR surface impoundment will commence within 30 days after the known final volume of CCR is removed for the purpose of beneficial use per 40 CFR §257.102(e)(1)(ii).

4 CCR Removal Procedures

As part of the retrofit operation and prior to any construction of a composite liner, the CCR and contaminated soils and sediments must be removed from the designated retrofit area. Detailed CCR removal procedures are described in the CCR Removal Work Plan (HDR, 2023).

5 CCR Quantities

Based on a March 2023 topographic survey, the maximum quantities of CCR to be removed as part of the retrofit will be approximately 30,000 cubic yards (CY). An approximate 8,500 CY of soils between elevation 1888 feet AMSL and 1887 feet AMSL will also be removed. A topographic survey of the WEC Temporary Ash Disposal Area (March 2023) and preliminary CCR Removal Excavation Grading Plan are included with **Appendix B**.

Actual quantities of CCR to be removed may be less when retrofit construction begins since CCR in the designated retrofit area may be moved to the other stockpiles and continue to be hauled by the ash marketer to beneficial use markets.

6 Retrofit Area

In preparation of the retrofit to a composite liner, the CCR will be removed from an area of approximately 7 to 8 acres in the northeast quadrant of the WEC Temporary Ash Disposal Area. This includes areas for construction of the perimeter berms and ditches to control stormwater run-on and run-off, and grading to tie into existing grades. The composite liner area for the CCR management will be approximately 4 acres. The new lined leachate pond will be approximately 1.5 acres.

7 Schedule

An initial schedule for completing all activities necessary to satisfy the retrofit criteria in 40 CFR §257.102(k) is provided below:

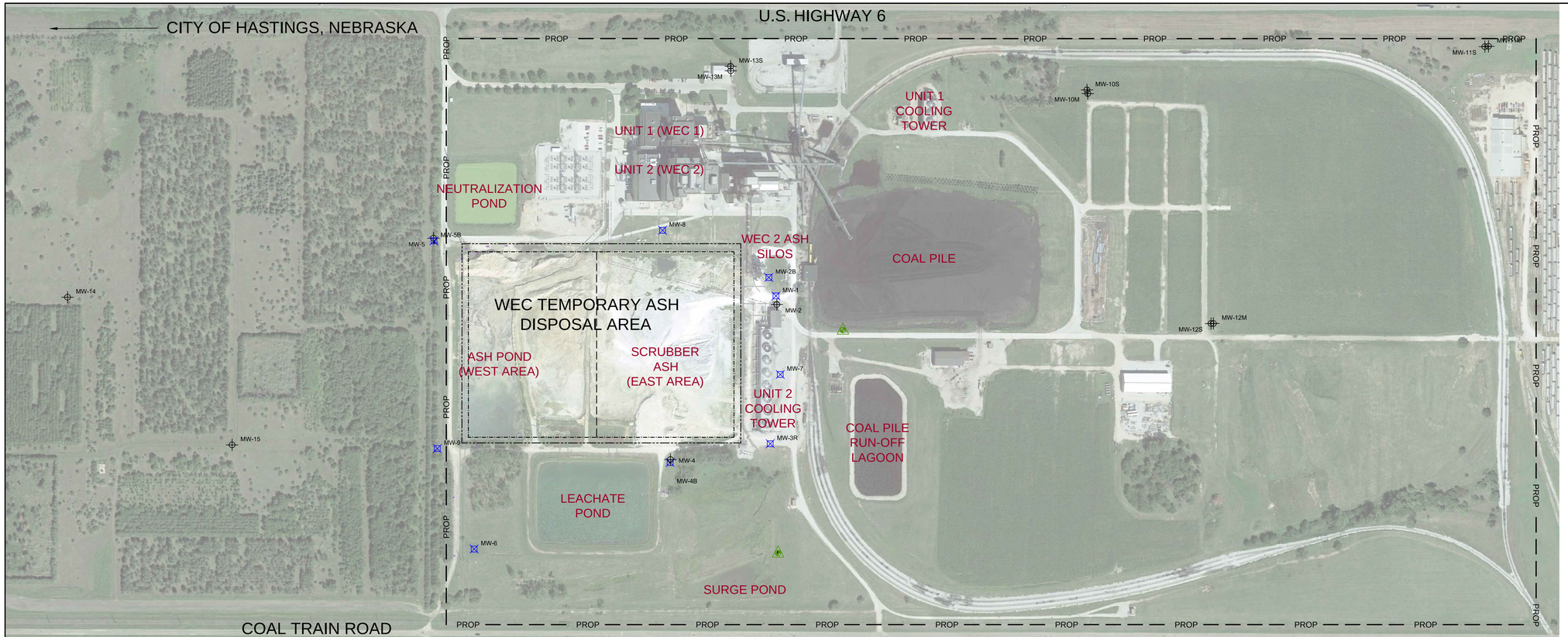
Dates	**Retrofit Activity**
August 2023	CCR removal through selected contractor, including any contaminated soils and sediments, in the retrofit area; CQA observation and soils testing to verify CCR removal
September-October 2023	Structural fill, grading and composite liner construction
November 2023	Leachate drainage layer, protective cover & access road installation
December 2023	Contractor final completion activities, preparation of CQA documentation report and submittal to NDEE
January 2024	Receive NDEE approval to receive waste (i.e., CCR)

Schedule may vary depending upon bidding environment, delays in materials supply, weather conditions impacting construction including possible break in construction for winter, and NDEE regulatory review and approval timelines.

PPGA intends to select a contractor and award the contract by August 2023. As a public agency, the retrofit project must be designed and bid out for competitive bidding.

Appendix A

Site Map



N

1" = 250'

250' 125' 0' 250'

SCALE IN FEET

LEGEND

- MONITORING WELL
- CCR MONITORING WELL
- CONTROL POINT
- ASH DISPOSAL AREA BOUNDARY
- ORIGINAL TOE OF SLOPE
- SEPARATION BERM
- PROP — APPROXIMATE PROPERTY BOUNDARY

GROUNDWATER MONITORING WELLS

WELL DESIGNATION	NORTHING	EASTING	TOP OF CASING ELEVATION*	GROUND ELEVATION*	COMMENT
MW-1	334585.29	2330340.91	1903.16	1900.68	DETECTION MONITORING WELL
MW-2	334549.00	2330345.01	1903.18	1900.93	DRY
MW-2B	334663.85	2330310.77	1903.43	1900.60**	DETECTION MONITORING WELL
MW-3R	333955.95	2330316.80	1900.76	1897.98	DETECTION MONITORING WELL
MW-4	333888.31	2329891.68	1899.21	1895.19	DRY
MW-4B	333876.00	2329890.22	1897.55	1894.69**	DETECTION MONITORING WELL
MW-5	334830.77	2328882.44	1898.90	1897.60	DRY
MW-5B	334819.84	2328884.33	1899.84	1897.21**	DETECTION MONITORING WELL
MW-6	333507.64	2329055.42	1896.88	1893.54	DETECTION MONITORING WELL
MW-7	334250.89	2330359.26	1901.79	1899.14**	DETECTION MONITORING WELL
MW-8	334864.54	2329857.95	1903.93	1901.05**	DETECTION MONITORING WELL
MW-9	333935.57	2328898.85	1897.11	1894.31**	DETECTION MONITORING WELL
MW-10S	334585.29	2330340.91	1904.84	1904.16	DELINEATION WELL
MW-10M	334549.00	2330345.01	1905.18	1902.16	DELINEATION WELL
MW-11S	334663.85	2330310.77	1899.69	1897.13	DELINEATION WELL
MW-11M	333955.95	2330316.80	1899.66	1897.13	DELINEATION WELL
MW-12S	333888.31	2329891.68	1910.39	1907.3	DELINEATION WELL
MW-12M	333876.00	2329890.22	1910.15	1907.56	DELINEATION WELL
MW-13S	334830.77	2328882.44	1904.89	1902.34	DELINEATION WELL
MW-13M	334819.84	2328884.33	1905.04	1902.40	DELINEATION WELL
MW-14	333507.64	2329055.42	1897.46	1894.74	DELINEATION WELL
MW-15	334250.89	2330359.26	1897.64	1895.32	DELINEATION WELL

* TOP OF CASING AND GROUND ELEVATIONS PROVIDED BY HASTINGS UTILITIES JULY 23, 2019.
** DESIGNATED GROUND ELEVATIONS DEPICT THE ELEVATION OF THE TOP OF THE CONCRETE SLAB NEAREST TO THE CASING ON THE NORTH SIDE.
***NORTHING AND EASTING COORDINATES ARE APPROXIMATIONS AND WILL BE UPDATED ALONG WITH TOC AND GROUND SURFACE ELEVATIONS DURING THE NEXT SITE SURVEY.

NOTES:

1. AERIAL DATED 8/27/2017 OBTAINED FROM GOOGLE EARTH.
2. WEC 2 BOTTOM ASH AND SCRUBBER ASH ARE PLACED DRY IN WEC TEMPORARY ASH DISPOSAL AREA.

CONTROLS	NORTHING	EASTING	ELEVATION	LONG DESCRIPTION
25	334815.14	2328892.86	1896.51	BRASS CAP
26	334879.51	2330467.21	1900.86	BRASS CAP
27	333932.07	2330190.86	1894.46	BRASS CAP

*NOTE: STATE PLANE CONTROL IS BASED ON NEBRASKA SOUTH ZONE NAD 27. VERTICAL CONTROL IS BASED ON NGVD29.

public power generation agency

HASTINGS UTILITIES

GERALD T. WHELAN ENERGY CENTER

WEC CCR FACILITIES AND MONITORING WELL LOCATIONS

DATE

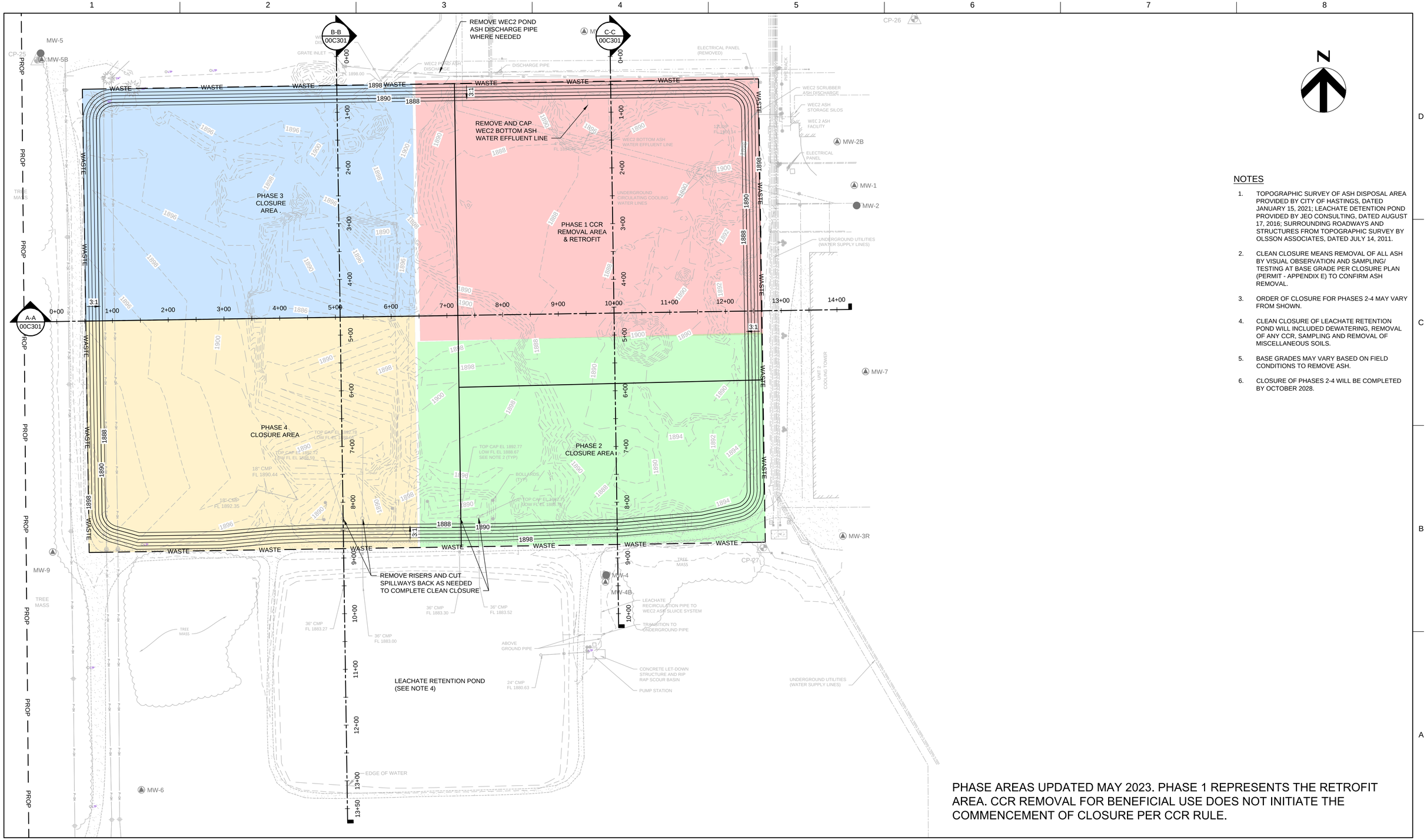
NOVEMBER 2020

FIGURE

2

Appendix B

Retrofit Drawings - Preliminary



NOTES

1. TOPOGRAPHIC SURVEY OF ASH DISPOSAL AREA PROVIDED BY CITY OF HASTINGS, DATED JANUARY 15, 2021; LEACHATE DETENTION POND PROVIDED BY JEO CONSULTING, DATED AUGUST 17, 2016; SURROUNDING ROADWAYS AND STRUCTURES FROM TOPOGRAPHIC SURVEY BY OLSSON ASSOCIATES, DATED JULY 14, 2011.
2. CLEAN CLOSURE MEANS REMOVAL OF ALL ASH BY VISUAL OBSERVATION AND SAMPLING/ TESTING AT BASE GRADE PER CLOSURE PLAN (PERMIT - APPENDIX E) TO CONFIRM ASH REMOVAL.
3. ORDER OF CLOSURE FOR PHASES 2-4 MAY VARY FROM SHOWN.
4. CLEAN CLOSURE OF LEACHATE RETENTION POND WILL INCLUDED DEWATERING, REMOVAL OF ANY CCR, SAMPLING AND REMOVAL OF MISCELLANEOUS SOILS.
5. BASE GRADES MAY VARY BASED ON FIELD CONDITIONS TO REMOVE ASH.
6. CLOSURE OF PHASES 2-4 WILL BE COMPLETED BY OCTOBER 2028.

PHASE AREAS UPDATED MAY 2023. PHASE 1 REPRESENTS THE RETROFIT AREA. CCR REMOVAL FOR BENEFICIAL USE DOES NOT INITIATE THE COMMENCEMENT OF CLOSURE PER CCR RULE.

ISSUE	DATE	DESCRIPTION
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PROJECT MANAGER	L. CALUB
CIVIL	L. CALUB
CIVIL	K. KINLEY
DRAWN BY	M. BICKFORD
PROJECT NUMBER	10298587

PROFESSIONAL MECHANICAL ENGINEER
LORI J. CALUB
E-9881
STATE OF NEBRASKA

public power generation agency

HASTINGS UTILITIES

GERALD T. WHELAN ENERGY CENTER
WEC TEMPORARY ASH DISPOSAL AREA
NDEE TITLE 132 PERMIT RENEWAL
& MAJOR MODIFICATION

CLEAN CLOSURE
PHASE GRADING PLAN

0 1" 2"

FILENAME 00C101.dwg
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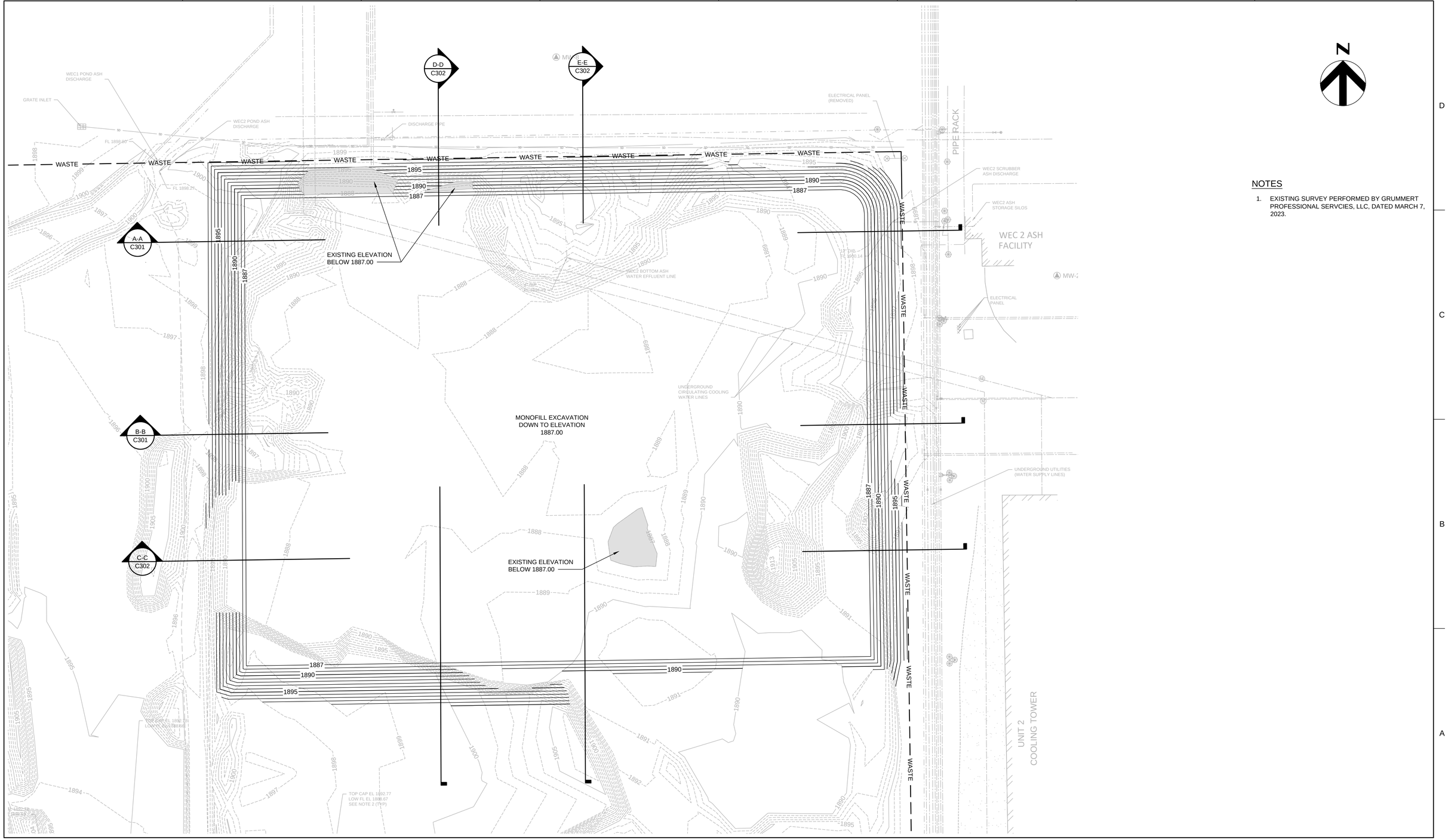
SHEET **00C101**

WHELAN ENERGY CENTER
WEC TEMPORARY ASH DISPOSAL AREA
PRELIMIARY RETROFIT LAYOUT



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NOTES

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PROJECT MANAGER	L. CALUB
CIVIL	L. CALUB
CIVIL	K. KINLEY
DRAWN BY	M. BICKFORD
QC BY	
PROJECT NUMBER	10167167

public power generation agency

HASTINGS UTILITIES

GERALD T. WHELAN ENERGY CENTER
CCR MONOFILL EXCAVATION AND RETROFIT LINER

CCR MONOFILL EXCAVATION GRADING PLAN

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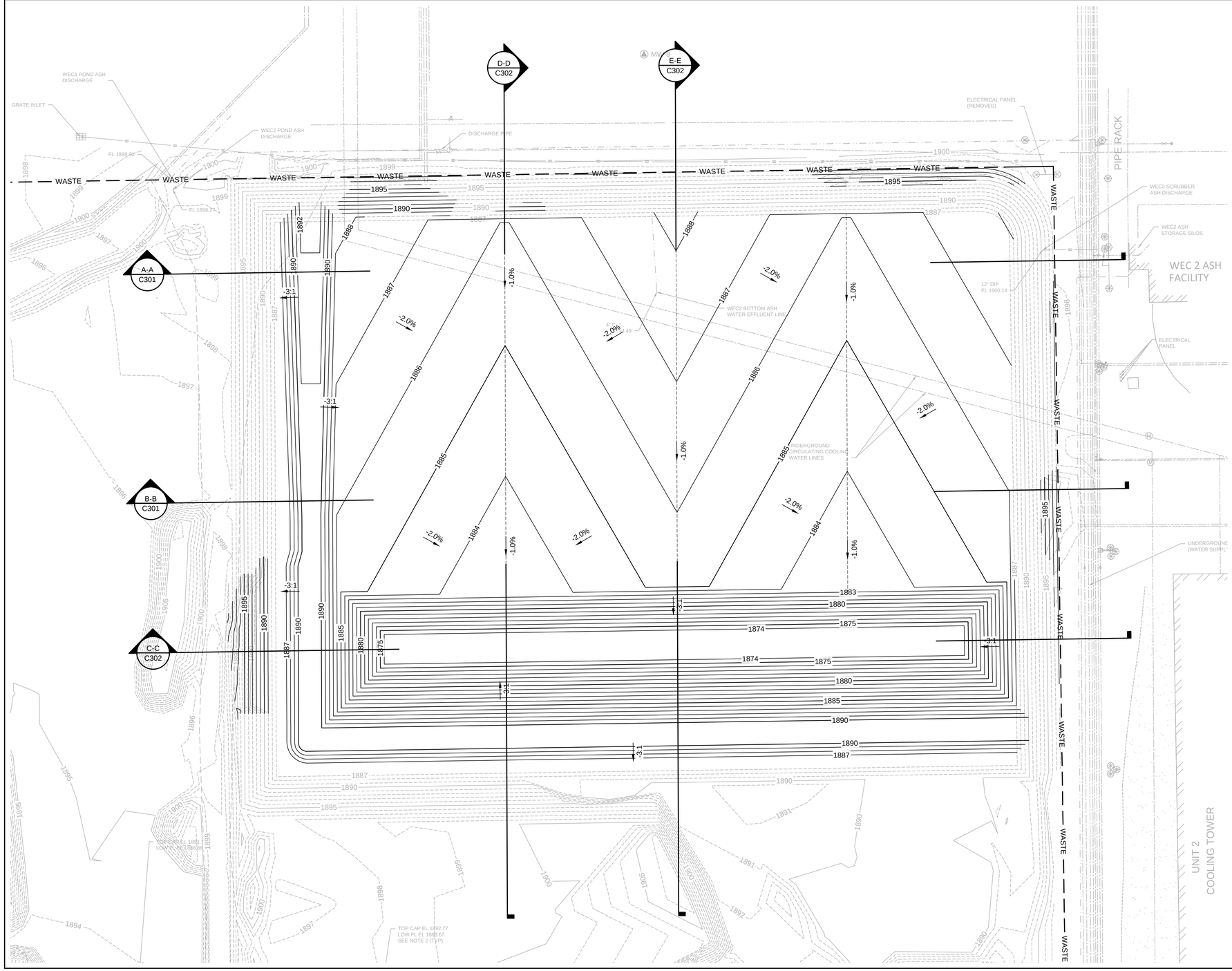

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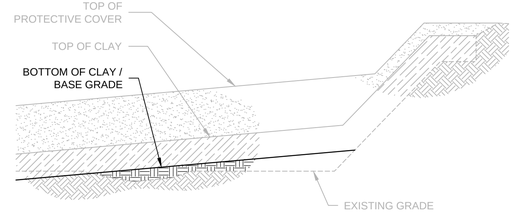

LINER LAYER KEY
NOT TO SCALE

ISSUE	DATE	DESCRIPTION
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PROJECT MANAGER	L, CALUB
CIVIL	L. CALUB
CIVIL	K. KINLEY
DRAWN BY	M. BICKFORD
QC BY	
PROJECT NUMBER	10167167

public power generation agency

HASTINGS UTILITIES

GERALD T. WHELAN ENERGY CENTER
CCR MONOFILL EXCAVATION AND RETROFIT LINER

BOTTOM OF CLAY BASE GRADING PLAN

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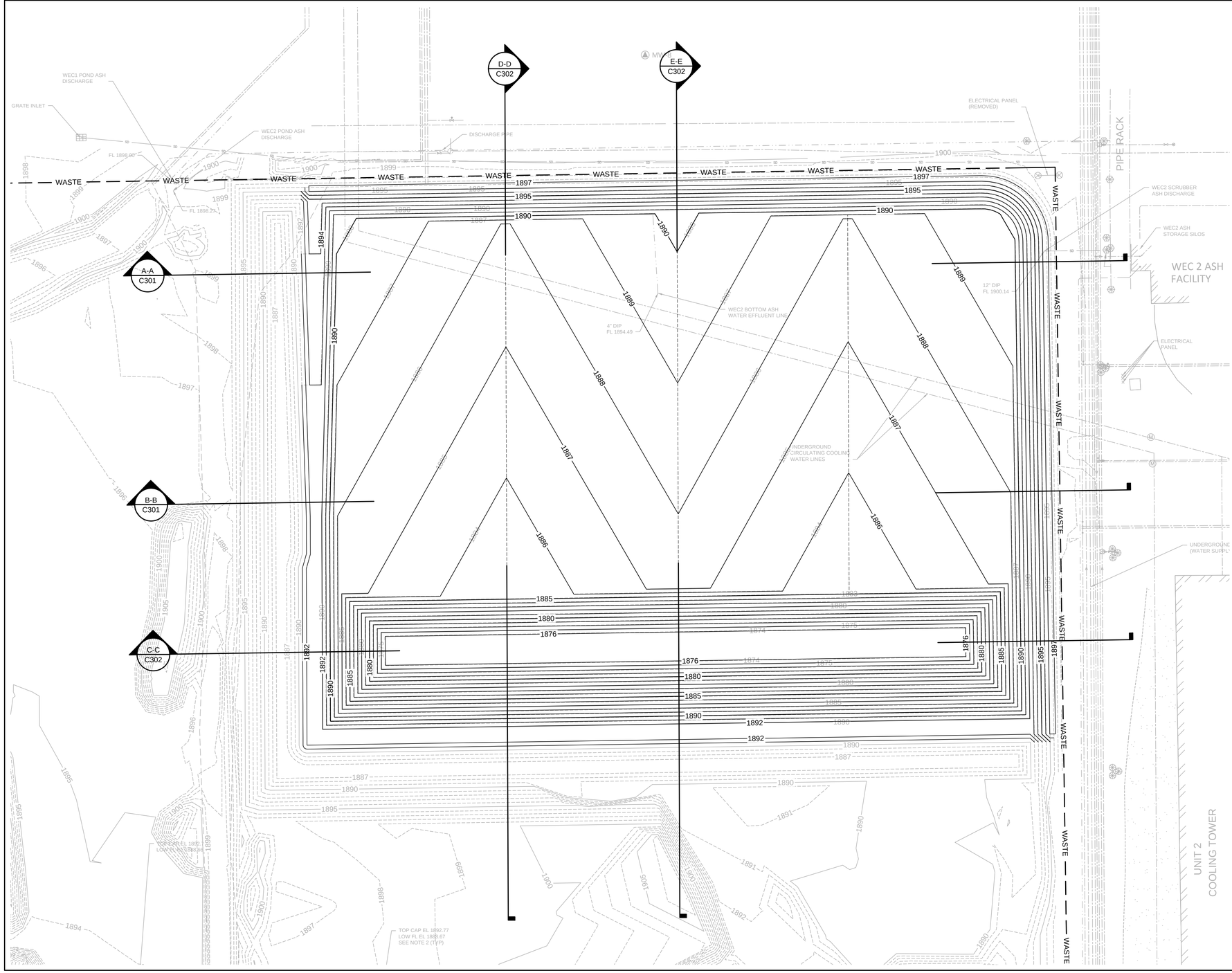

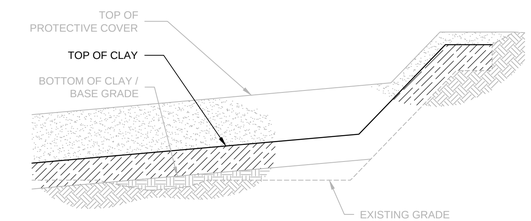

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NOTES

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A	06/02/2023	ISSUED FOR REVIEW

PROJECT MANAGER	L. CALUB
CIVIL	L. CALUB
CIVIL	K. KINLEY
DRAWN BY	M. BICKFORD
QC BY	
PROJECT NUMBER	10167167

public power generation agency

HASTINGS UTILITIES

GERALD T. WHELAN ENERGY CENTER
CCR MONOFILL EXCAVATION AND RETROFIT LINER

TOP OF CLAY GRADING PLAN

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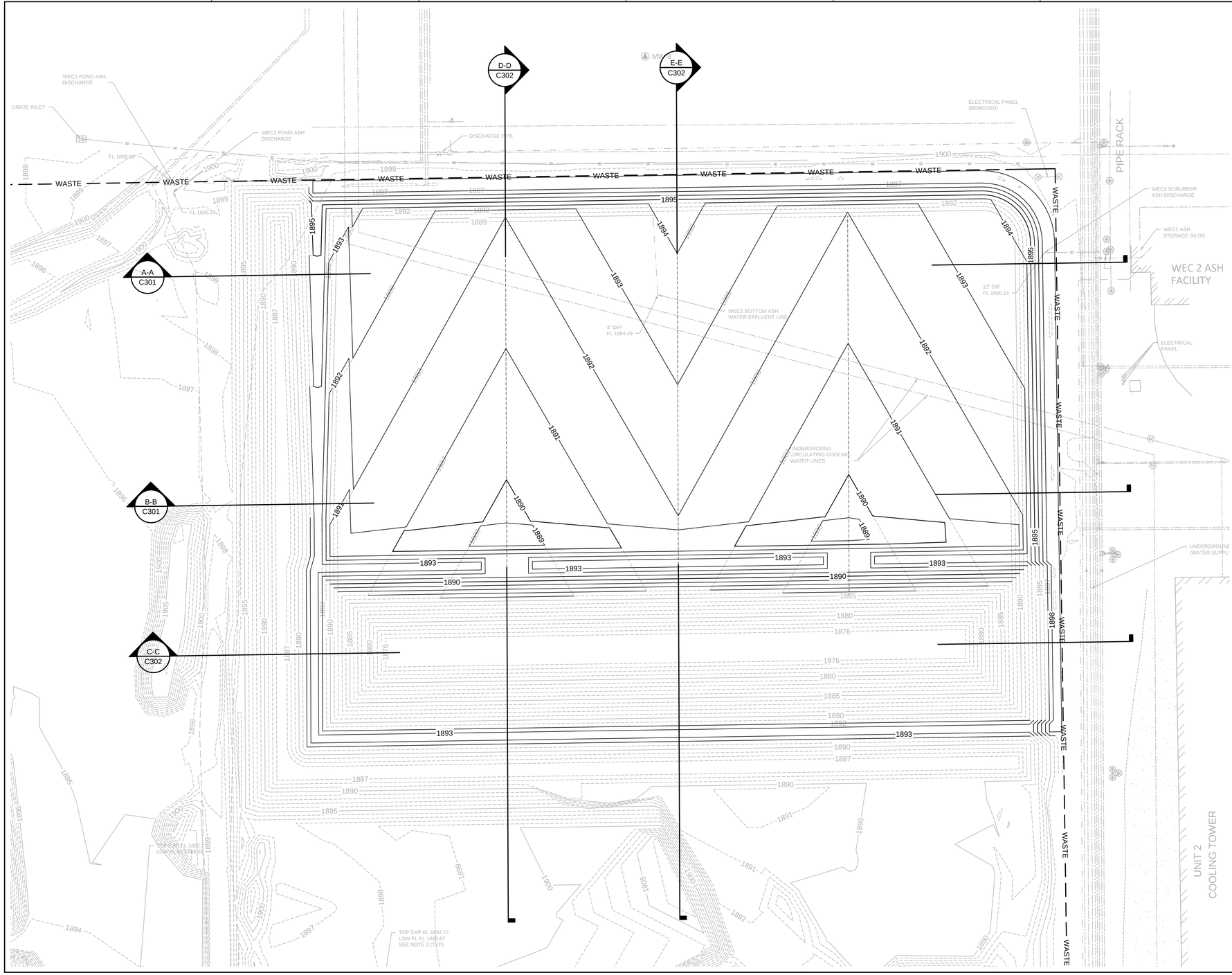

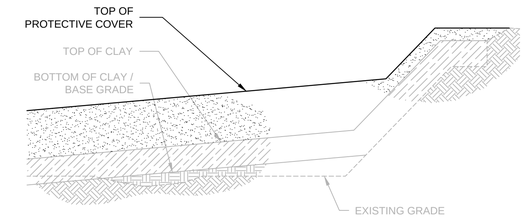

LINER LAYER KEY
NOT TO SCALE

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NOTES

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ISSUE	DATE	DESCRIPTION
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PROJECT MANAGER	L. CALUB
CIVIL	L. CALUB
CIVIL	K. KINLEY
DRAWN BY	M. BICKFORD
QC BY	
PROJECT NUMBER	10167167

public power generation agency

HASTINGS UTILITIES

GERALD T. WHELAN ENERGY CENTER
CCR MONOFILL EXCAVATION AND RETROFIT LINER

PROTECTIVE COVER GRADING PLAN

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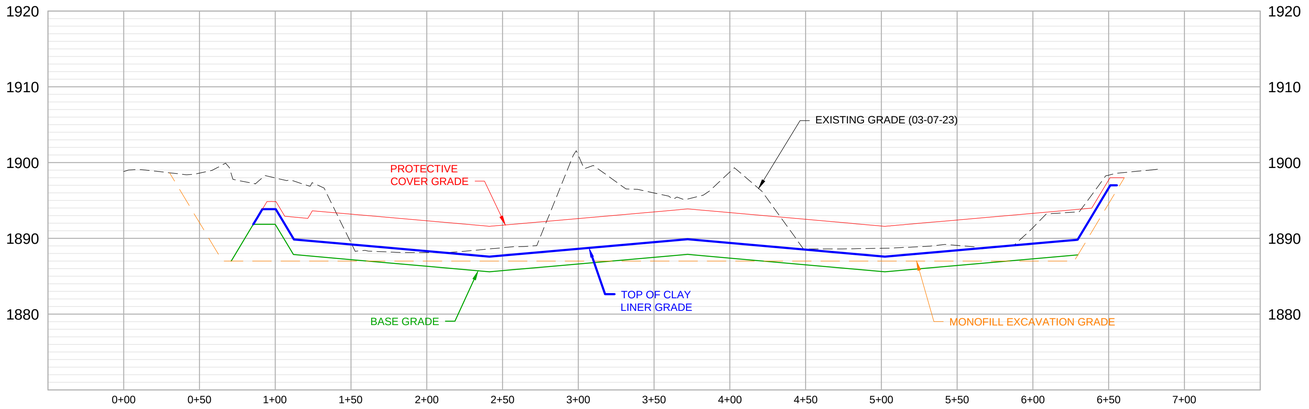

A-A
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SECTION A-A

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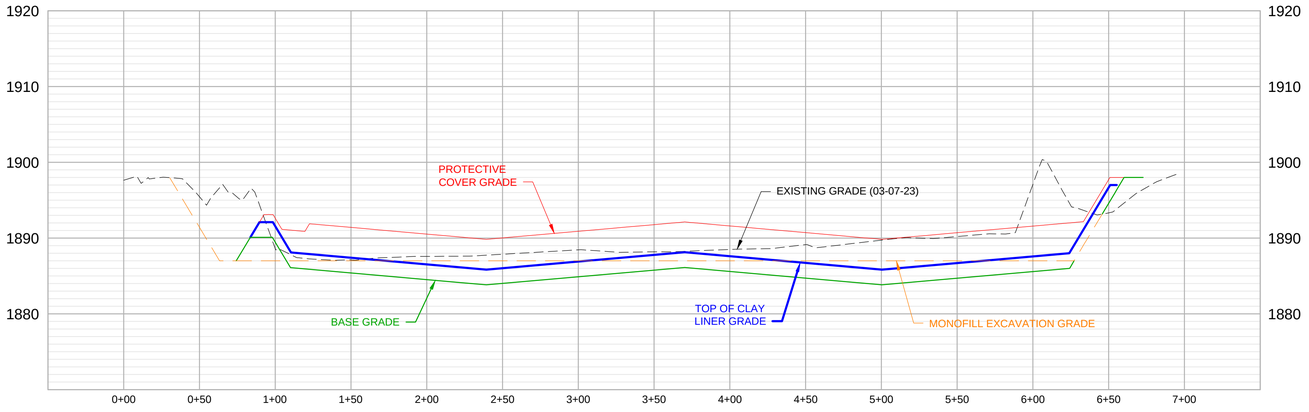

B-B
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SECTION B-B

HORIZ: 1" = 50' | VERT: 1" = 10'

ISSUE	DATE	DESCRIPTION
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PROJECT MANAGER	L. CALUB
CIVIL	L. CALUB
CIVIL	K. KINLEY
DRAWN BY	M. BICKFORD
QC BY	
PROJECT NUMBER	10167167

public power generation agency

HASTINGS UTILITIES

GERALD T. WHELAN ENERGY CENTER
CCR MONOFILL EXCAVATION AND RETROFIT LINER

CROSS SECTIONS

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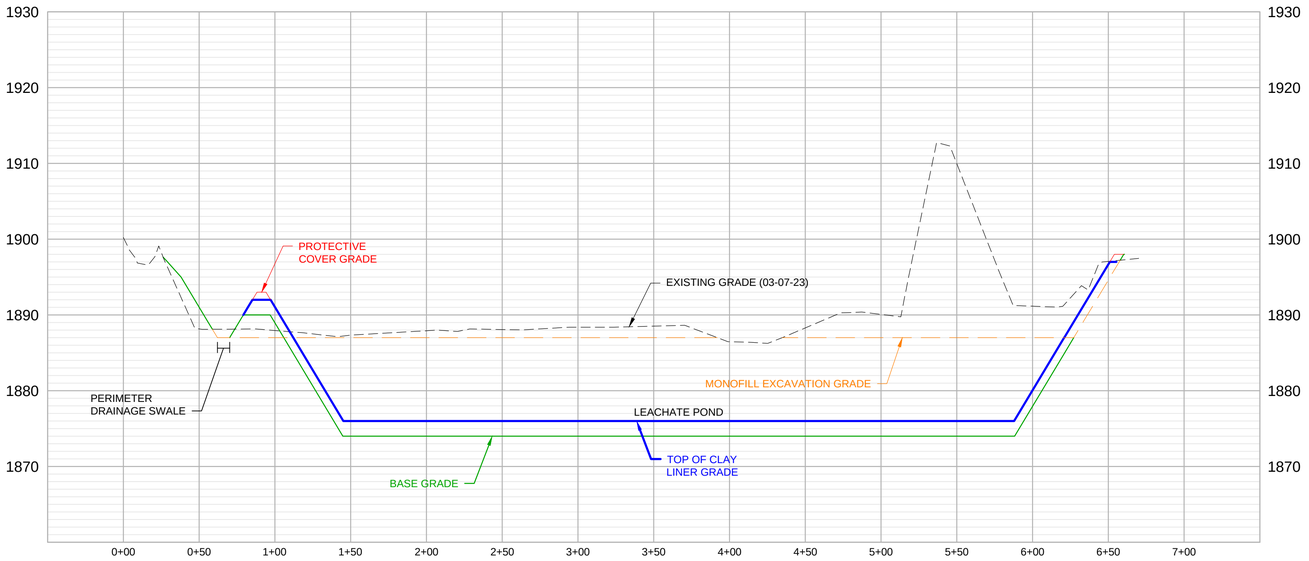
FILENAME C301.dwg

SCALE AS NOTED

SHEET C301



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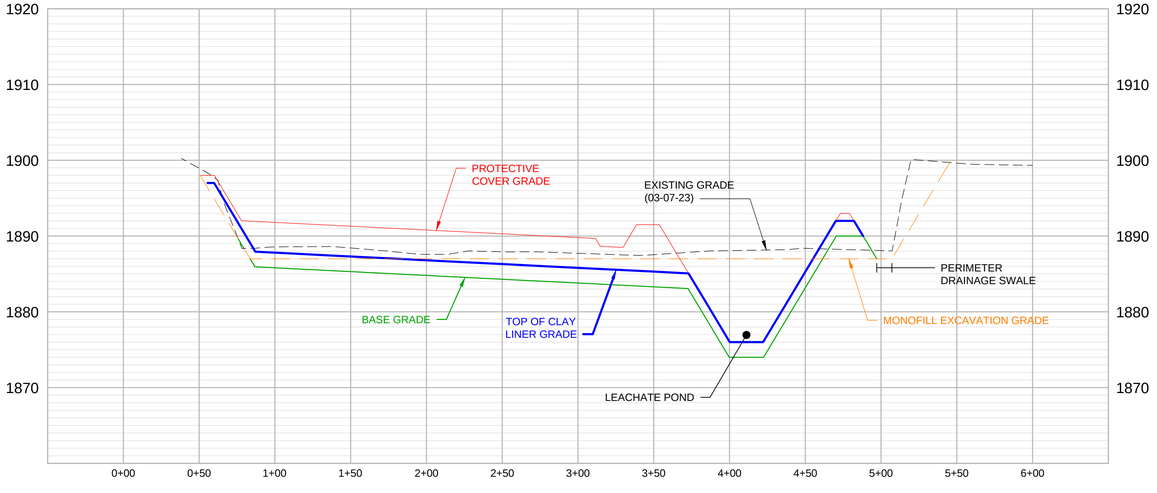

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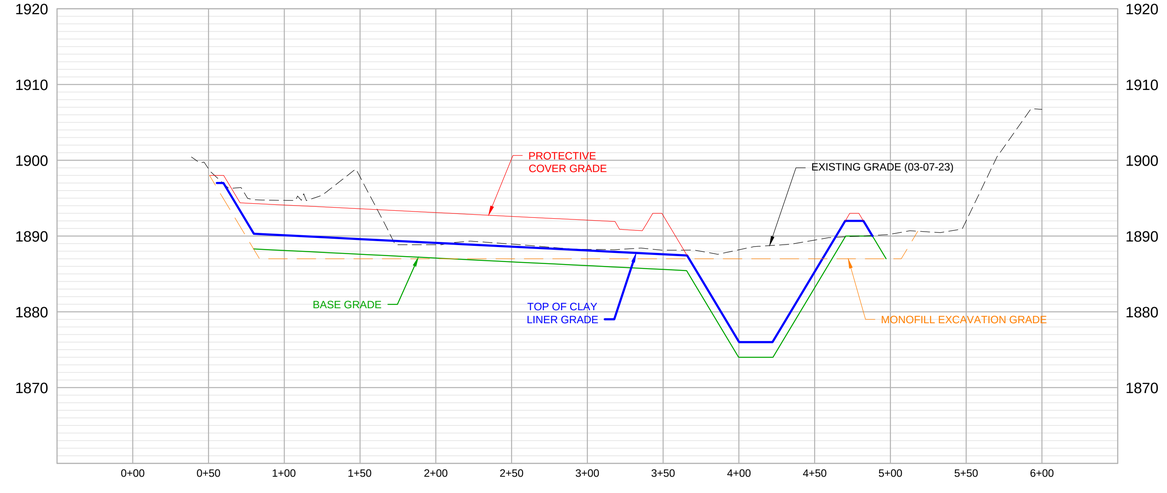

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PROJECT MANAGER	L. CALUB
CIVIL	L. CALUB
CIVIL	K. KINLEY
DRAWN BY	M. BICKFORD
QC BY	
PROJECT NUMBER	10167167

public power generation agency

HASTINGS UTILITIES

GERALD T. WHELAN ENERGY CENTER
CCR MONOFILL EXCAVATION AND RETROFIT LINER

CROSS SECTIONS

0 1" 2"

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SCALE	AS NOTED

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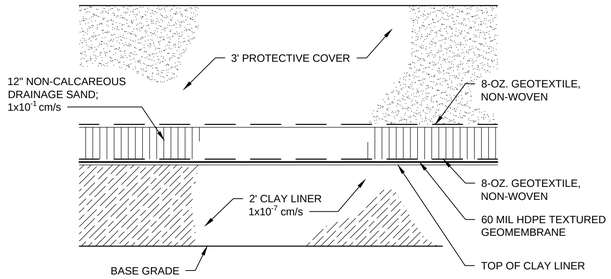
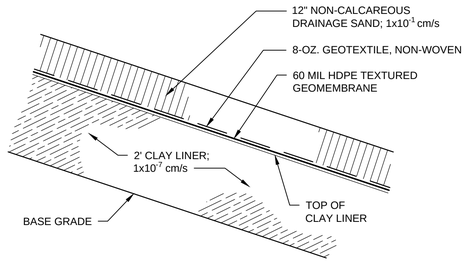


NOTES

1. PROTECTIVE COVER MAY BE SOIL ROAD AGGREGATE, ASH MATERIAL, EROSION CONTROL MATERIAL, OR GENERAL FILL.

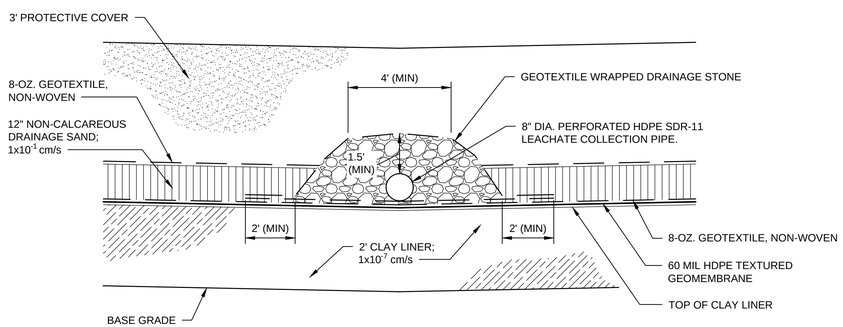
1 / 00C102 BOTTOM LINER SECTION
NO SCALE



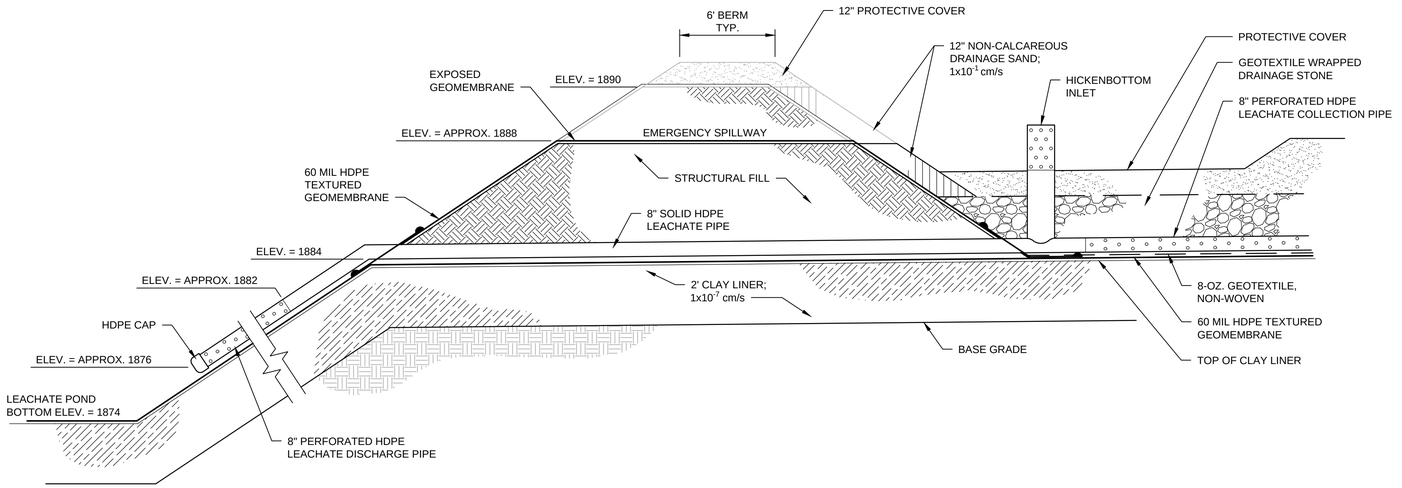
NOTES

1. SIDESLOPES MAY SUBSTITUTE GCL FOR 2-FOOT RCL WITH ENGINEER'S APPROVAL.
2. SIDESLOPES MAY SUBSTITUTE GEOCOMPOSITE FOR 1-FOOT DRAINAGE LAYER AND GEOTEXTILE LAYERS WITH ENGINEER'S APPROVAL.

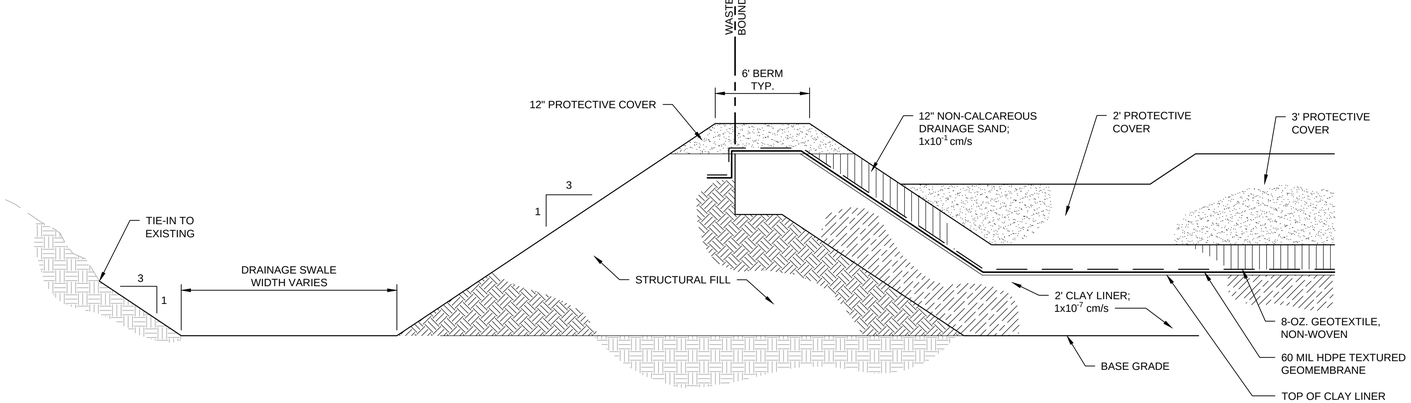
2 / 00C102 SIDESLOPE LINER SECTION
NO SCALE



3 / 00C102 LEACHATE COLLECTION TRENCH
NO SCALE



4 / 00C102 LEACHATE POND BERM
NO SCALE



NOTES

1. PROTECTIVE COVER MAY EXTEND TO TOP OF INTERCELL BERM OR MAY BE KEPT BACK FROM INTERCELL BERM FOR OPERATIONS TO VISUALLY IDENTIFY SOLID WASTE BOUNDARY.
2. PROTECTIVE COVER SOIL PLACED ON BERM MUST NOT BE WASTE ASH MATERIAL.

5 / 00C102 PERIMETER BERM
NO SCALE

ISSUE	DATE	DESCRIPTION
0	08/06/2021	NDEE TITLE 132 PERMIT RENEWAL & MAJOR MOD

PROJECT MANAGER	L. CALUB
CIVIL	L. CALUB
CIVIL	K. KINLEY
DRAWN BY	M. BICKFORD
PROJECT NUMBER	10298587

PROFESSIONAL MECHANICAL ENGINEER
LORI J. CALUB E-9881
STATE OF NEBRASKA

public power generation agency
HASTINGS UTILITIES

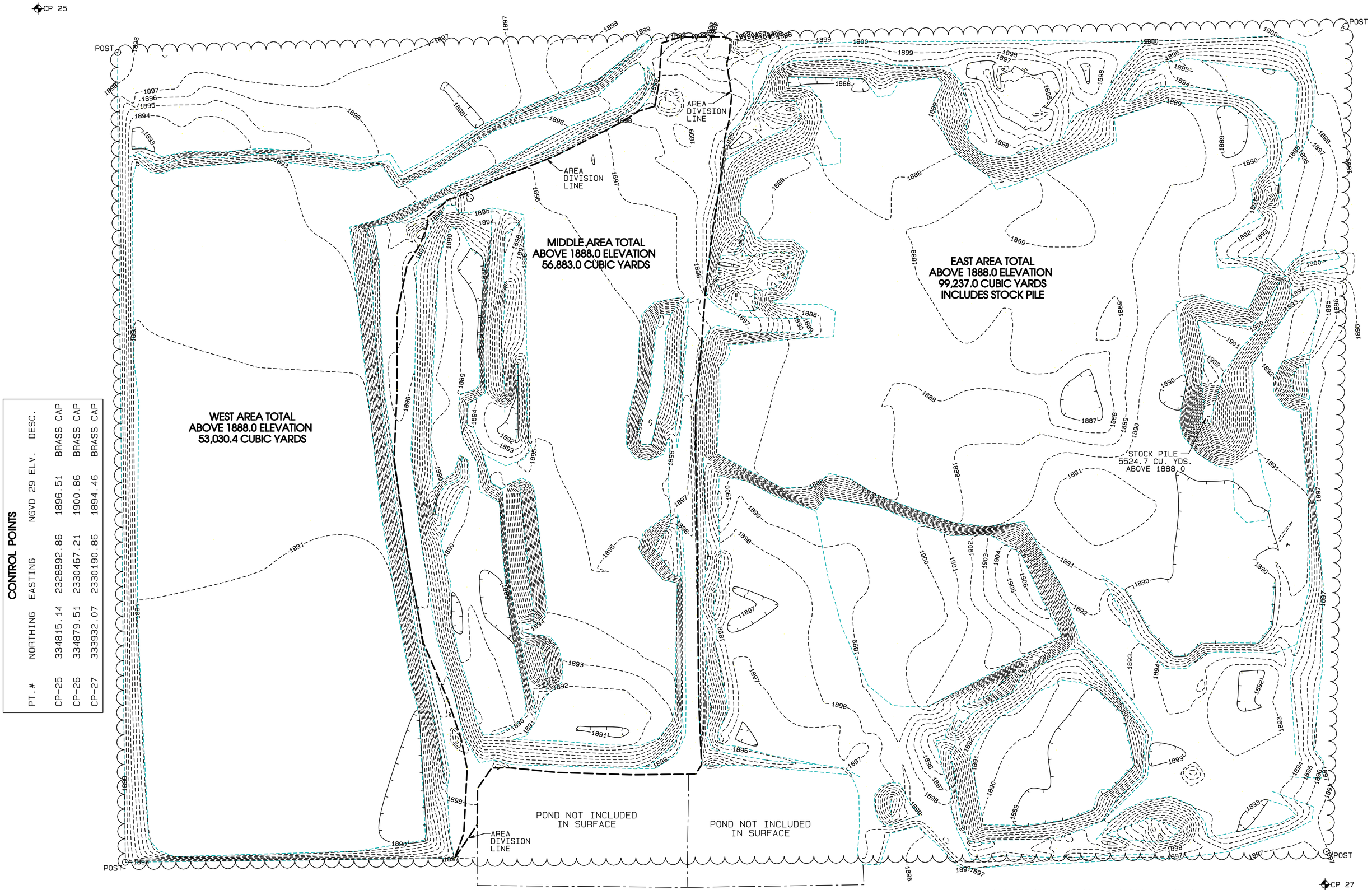
GERALD T. WHELAN ENERGY CENTER
WEC TEMPORARY ASH DISPOSAL AREA
NDEE TITLE 132 PERMIT RENEWAL & MAJOR MODIFICATION

DETAILS

0 1" 2"

FILENAME 00C501.dwg
SCALE AS NOTED

SHEET 00C501



CONTROL POINTS

PT.#	NORTHING	EASTING	NGVD 29 ELV.	DESC.
CP-25	334815.14	2328892.86	1896.51	BRASS CAP
CP-26	334879.51	2330467.21	1900.86	BRASS CAP
CP-27	333932.07	2330190.86	1894.46	BRASS CAP

GRUMMERT PROFESSIONAL SERVICES, LLC
PO BOX 37, KENESAW, NE 68956
PHONE 402-879-5701 EMAIL jmgrummert@yahoo.com
WEBSITE www.grummertsurveying.com

GPS PROJECT # 021-2023 SHEET 1 OF 1

N W E S

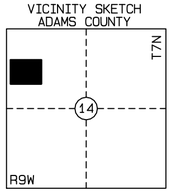
ALL BEARINGS ARE ASSUMED
SCALE: 1"=60'

0' 30' 60' 120'

LEGEND :
- FOUND CORNER
- CALCULATED POINT
- SET 5/8" X 24" REBAR WITH BLUE LS-783 CAP UNLESS NOTED OTHERWISE

M-MEASURED DISTANCE
R-RECORD DISTANCE
G-GOVERNMENT DISTANCE
P-PLATTED DISTANCE
D-DEED DISTANCE

VICINITY SKETCH
ADAMS COUNTY



SURVEYOR'S CERTIFICATE:

I, HEREBY CERTIFY THAT THIS TOPOGRAPHICAL SURVEY WAS MADE BY ME OR UNDER MY SUPERVISION AND IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE, AND THAT I AM A LICENSED PROFESSIONAL LAND SURVEYOR UNDER THE LAWS OF THE STATE OF NEBRASKA. COMPLETED ON MARCH 7TH, 2023.

Joshua E. Grummert

JOSHUA E. GRUMMERT | LS-783

SEAL

SURFACE TO DATUM VOLUME REPORT (OVERALL)

Where the DTM surface is above the datum the volume is reported as fill.
Where the DTM surface is below the datum the volume is reported as excavation.

Shrinkage/swell factors: Excavation 1.0000 Fill 1.0000

DTM Surface Layer Name	Number of Points	Datum Elevation
TOPO DATA 030723	1,334	1,888.00

Excavation Volume Beneath Datum (Cu. Yd.)	Fill Volume Above Datum (Cu. Yd.)
856.6	209,150.4

Net Difference: 208,293.8 Cu. Yd. excess volume above datum