ch2m

DELIVERABLE COVER SHEET

Project:	OF200 Project		
Client:	URS | CH2M Oak Ridge LLC (UCOR)	Project No.:	683020

Document Title:	Y-12 Outfall 200 Mercury Treatment Facility Headworks and MTF Subsurface Profiles		
Document Number:	UCOR-TMEM-027	Revision Number: 0	See Below
Function	**Name**	**Signature**	**Date**
Originator:	Mike Eller/CVO		6/14/2017
Reviewer/Checker:	Jen Schaeffer/KNV	Jennifer A. Schaeffer	6/14/17
Approval:	Laird Ellis/DEN	W. Laird Ellis, Jr. Digitally signed by W. Laird Ellis, Jr. Date: 2017.06.16 08:44:52 -06'00'	
Comments: None			

Revision History

Revision No.	Description	Date
0	Initial Issue	06/16/2017

TECHNICAL MEMORANDUM

Y-12 Outfall 200 Mercury Treatment Facility Headworks and MTF Subsurface Profiles

PREPARED FOR: URS|CH2M Oak Ridge LLC

PREPARED BY: Jen Schaeffer|CH2M, Michael Eller|CH2M

DATE: June 16, 2017

PROJECT NUMBER: 683020/ROS 410

Revision History

Revision No.	Description	Effective Date
0	Initial Issue of Rev 0	06/16/2017

Purpose

The purpose of this technical memorandum (TMEM) is to provide interpreted subsurface profiles for the proposed Headworks and Mercury Treatment Facility (MTF) sites associated with the Y-12 Outfall 200 (OF200) Mercury Treatment Facility Project, located in Oak Ridge, Tennessee.

Geotechnical Explorations at the OF200 Sites

A site specific exploration was performed by GEOServices, LLC (GEOServices) in late 2015 and early 2016. A second geotechnical exploration was performed in November 2016 by Strata-G, with a report provided in January 2017.

Brief summaries of the geotechnical data reports are provided below. Additional information of the geotechnical explorations can be found in the geotechnical data reports.

- Strata-G. 2017. *Geotechnical Report for Data Gap Characterization at the Proposed Outfall 200 Mercury Treatment Facility Sites (DOE-EMCHAR-012, Rev 1)*. January 4. The geotechnical exploration included 22 geotechnical borings using hollow-stem auger methods in soil and wireline rock coring methods in rock. Geophysical testing was performed within nine borings, and included caliper logging and natural gamma logging to characterize void infilling and distribution. No soil samples were collected, and no laboratory testing was performed on recovered rock samples.
- GEOServices. 2016. *Report of Limited Geotechnical Exploration, Outfall 200 Mercury Treatment Facility.* Submitted to [Mr. Walt Foutz, Certified Professional Geologist]. March 4. The exploration included 32 geotechnical borings using hollow-stem auger methods in soil and wireline rock coring methods in rock. Laboratory testing included index testing, unconfined compressive strength testing of soil and rock, California Bearing Ratio (CBR) testing, consolidation testing, and triaxial strength testing of soil.

Subsurface Profiles

Subsurface profiles for the Headworks and MTF, based upon the 2016 GEOServices and 2017 Strata-G geotechnical explorations have been developed by CH2M are included as Attachment A. Further

descriptions of soil conditions and groundwater are provided within the referenced geotechnical data reports available as part of the construction documents.

Limitations

This technical memorandum has been prepared for the exclusive use of URS|CH2M Oak Ridge LLC for specific application to the proposed structures associated with the Outfall 200 Mercury Treatment Facility Project in accordance with generally accepted geotechnical engineering practice. No other warranty, expressed or implied, is made.

The subsurface interpretations contained in this technical memorandum are based on available published literature, and on data obtained from subsurface explorations and laboratory testing. Exploration data indicate soil conditions and water levels only at specific locations and times, and only to the depths penetrated. Subsurface conditions and water levels at other locations may differ from conditions occurring at these explored locations. In addition, the passage of time may result in a change in conditions at these locations. Some of the information provided is based upon interpretation. The information provided in this technical memorandum reflects the opinion of the engineer for the specific evaluation presented herein. Any use of interpreted information for other purposes could lead to erroneous assumptions and faulty conclusions.

If subsurface conditions differing from those described in the referenced data reports are encountered during subsequent explorations or construction, then the subsurface profile interpretations provided in this technical memorandum should not be considered valid unless the changes are reviewed and the recommendations revised or verified in writing by CH2M.

CH2M is not responsible for any claims, damages, or liability associated with interpretation of subsurface data or for reuse of subsurface data, without CH2M's express written authorization.

Attachment A – Subsurface Profiles

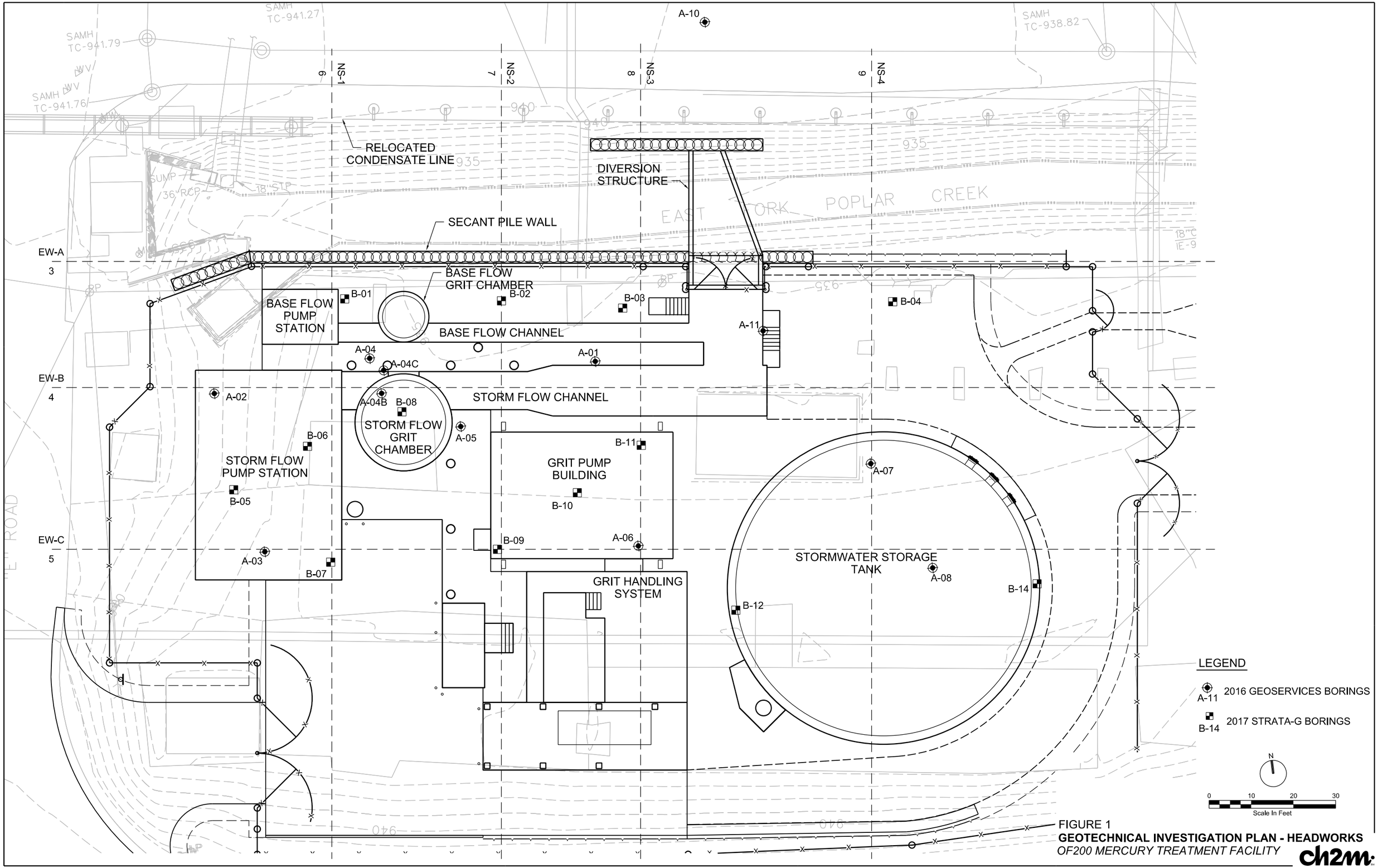


FIGURE 1
GEOTECHNICAL INVESTIGATION PLAN - HEADWORKS
OF200 MERCURY TREATMENT FACILITY

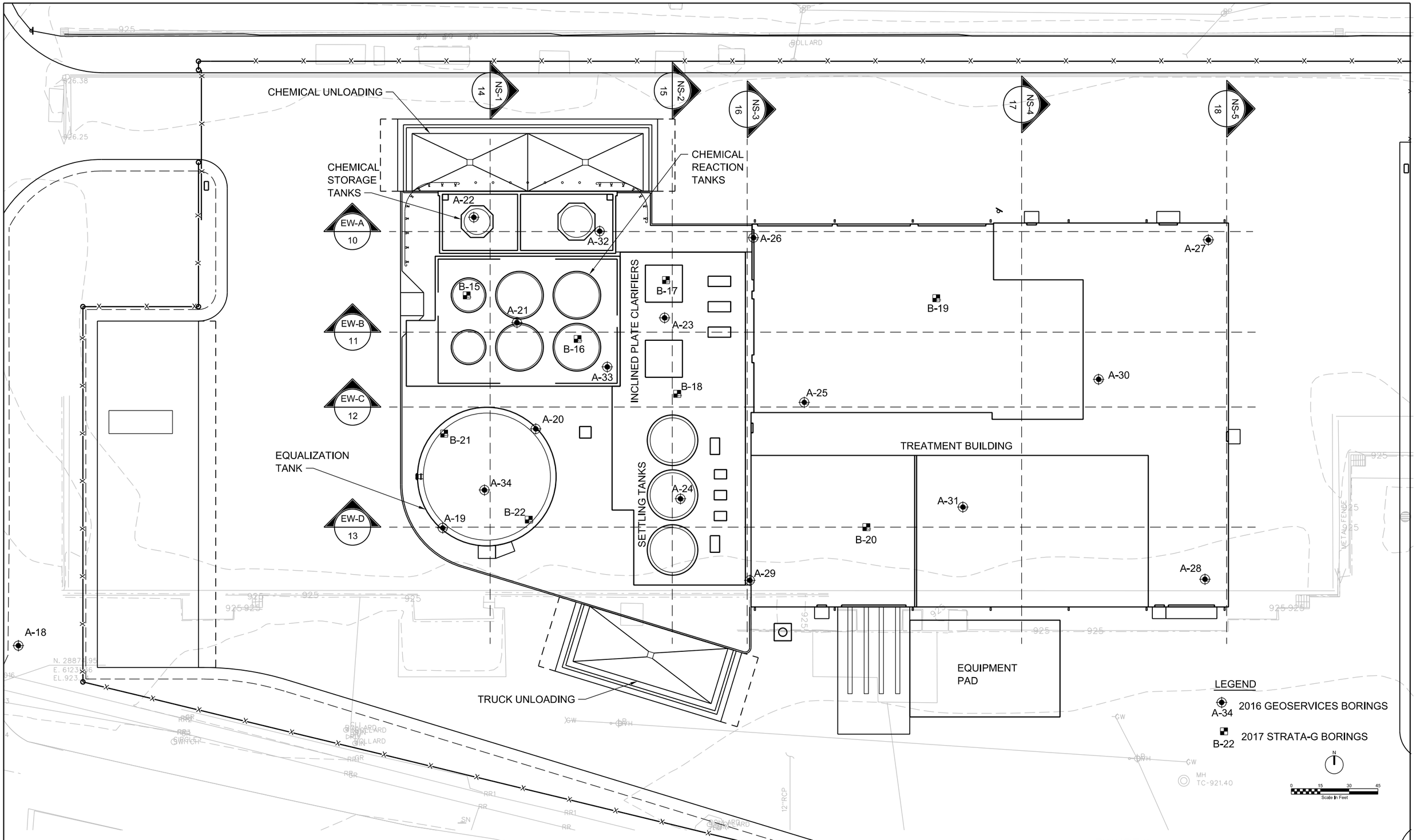


FIGURE 2
GEOTECHNICAL INVESTIGATION PLAN - MTF
OF200 MERCURY TREATMENT FACILITY

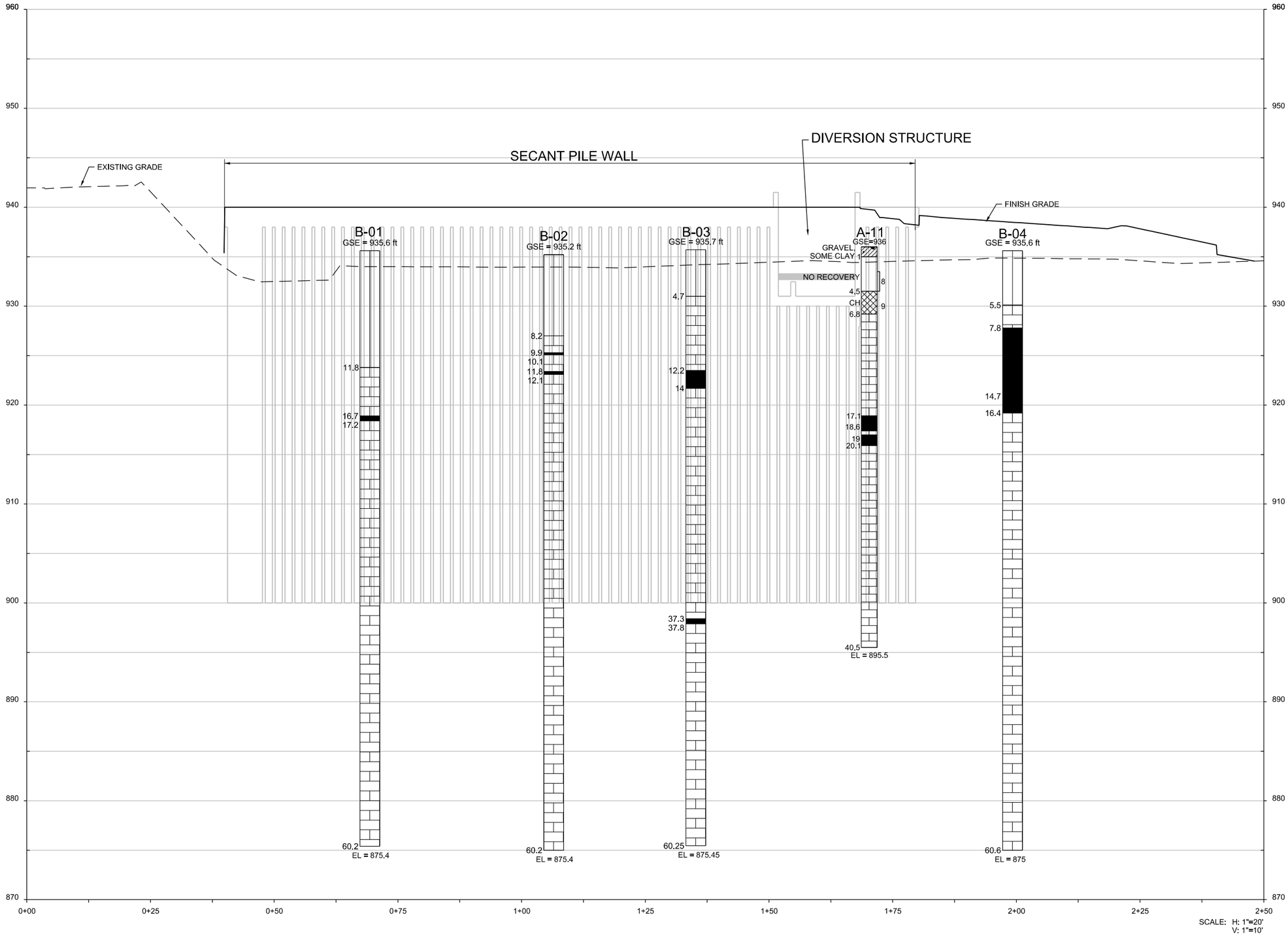


FIGURE 3
HEADWORKS, SECTION EW-A
OF200 MERCURY TREATMENT FACILITY

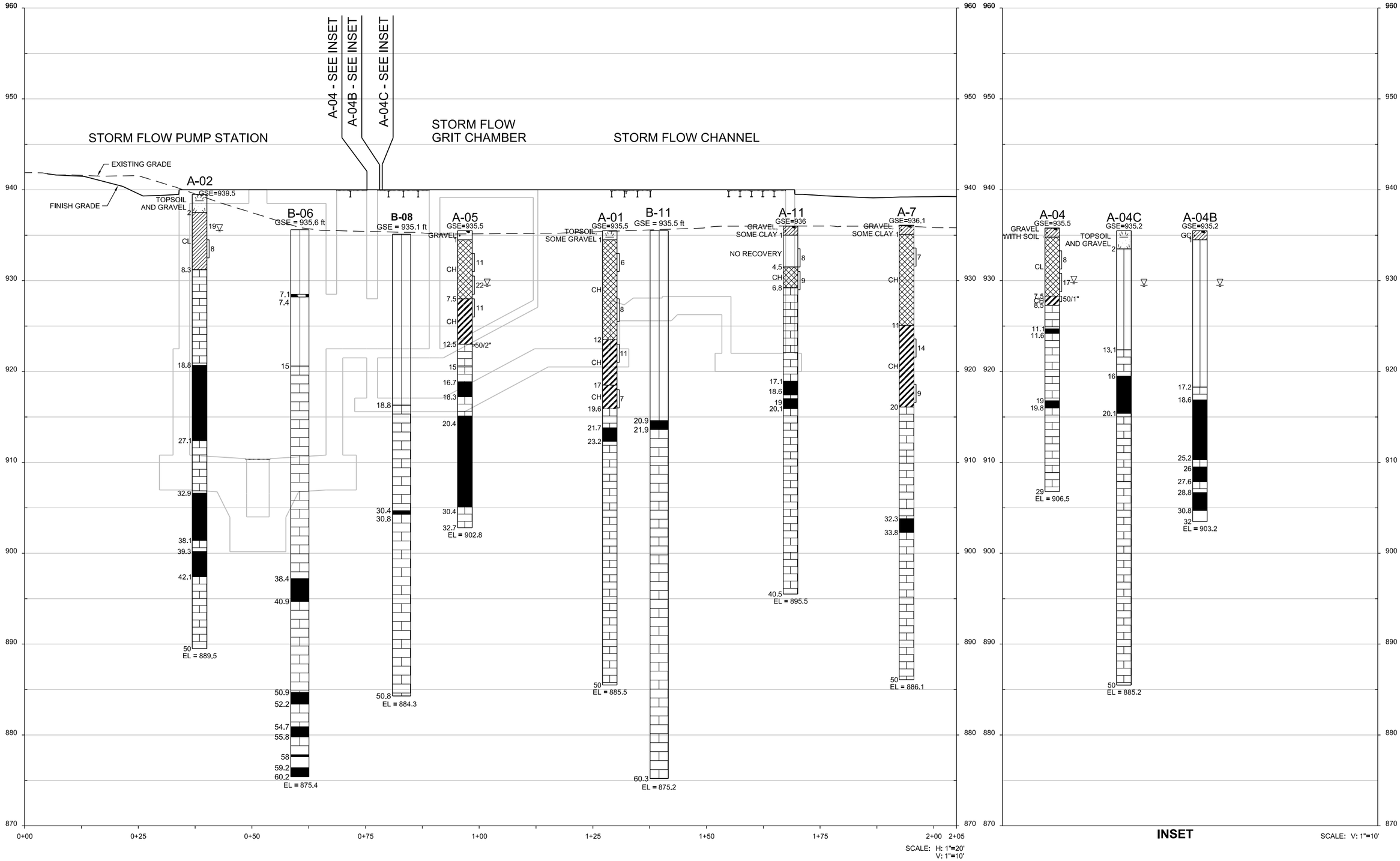


FIGURE 4
HEADWORKS, SECTION EW-B
OF200 MERCURY TREATMENT FACILITY

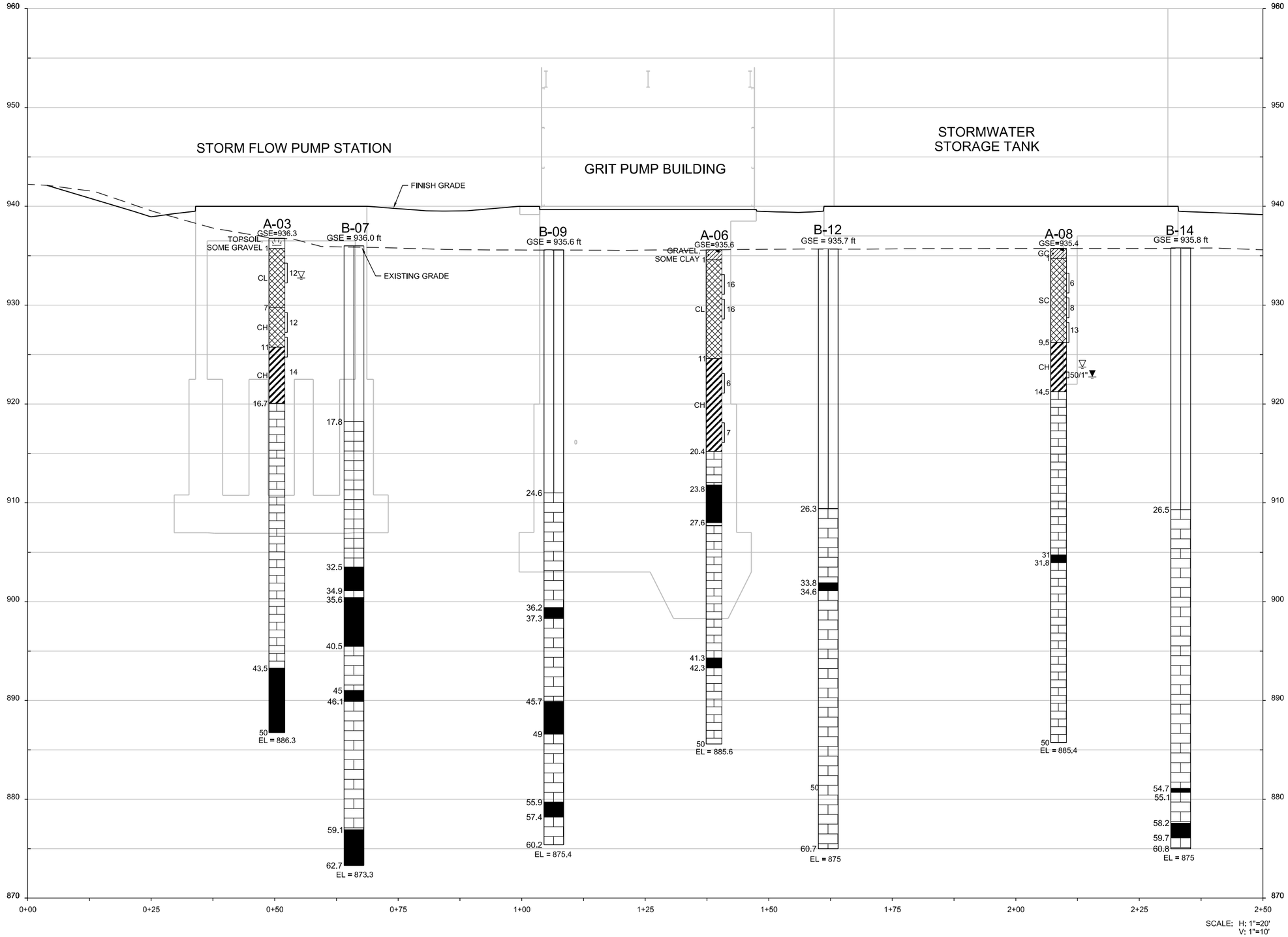


FIGURE 5
HEADWORKS, SECTION EW-C
OF200 MERCURY TREATMENT FACILITY

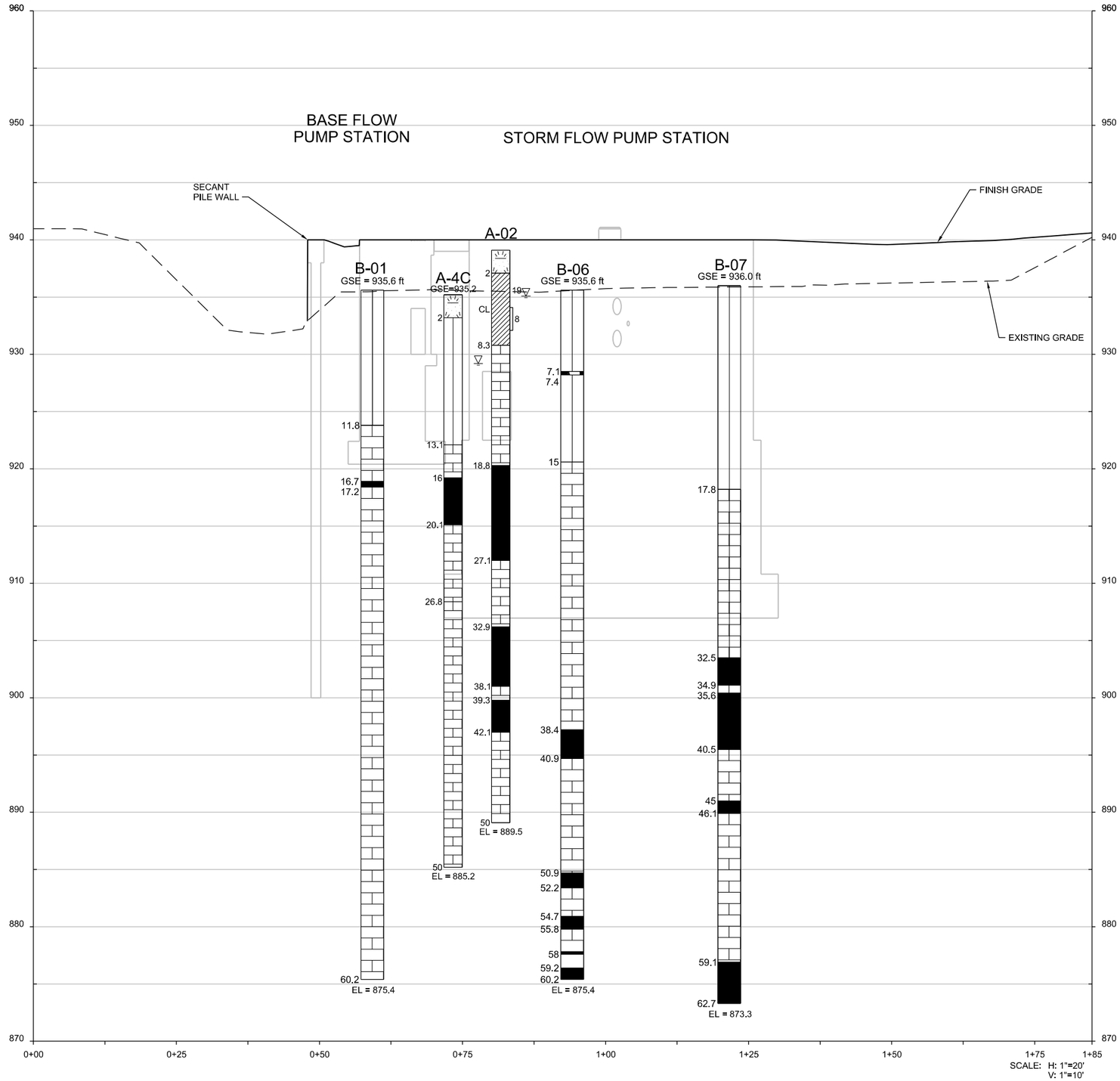


FIGURE 6
HEADWORKS, SECTION NS-1
OF200 MERCURY TREATMENT FACILITY

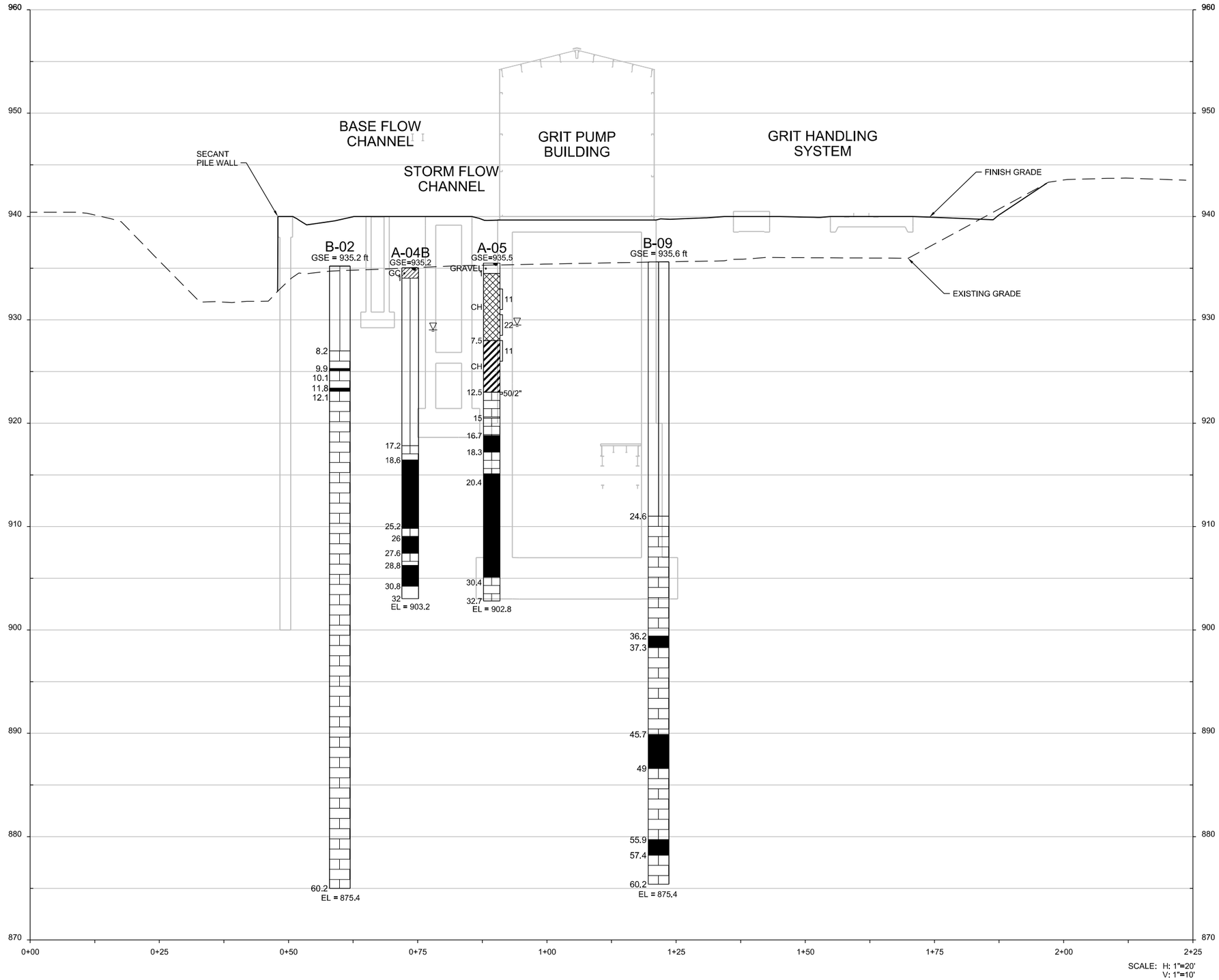


FIGURE 7
HEADWORKS, SECTION NS-2
OF200 MERCURY TREATMENT FACILITY

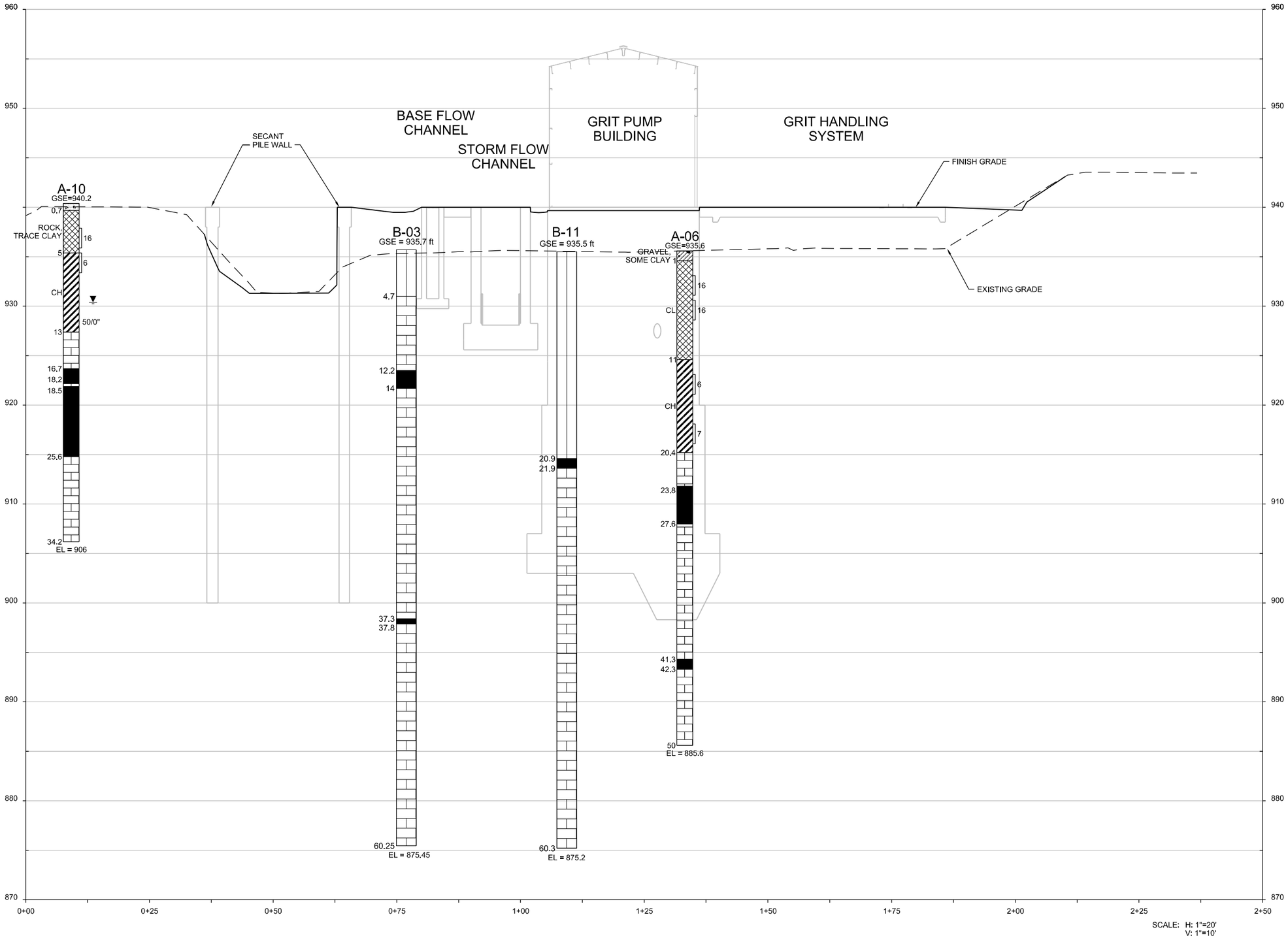


FIGURE 8
HEADWORKS, SECTION NS-3
OF200 MERCURY TREATMENT FACILITY

© CH2M HILL

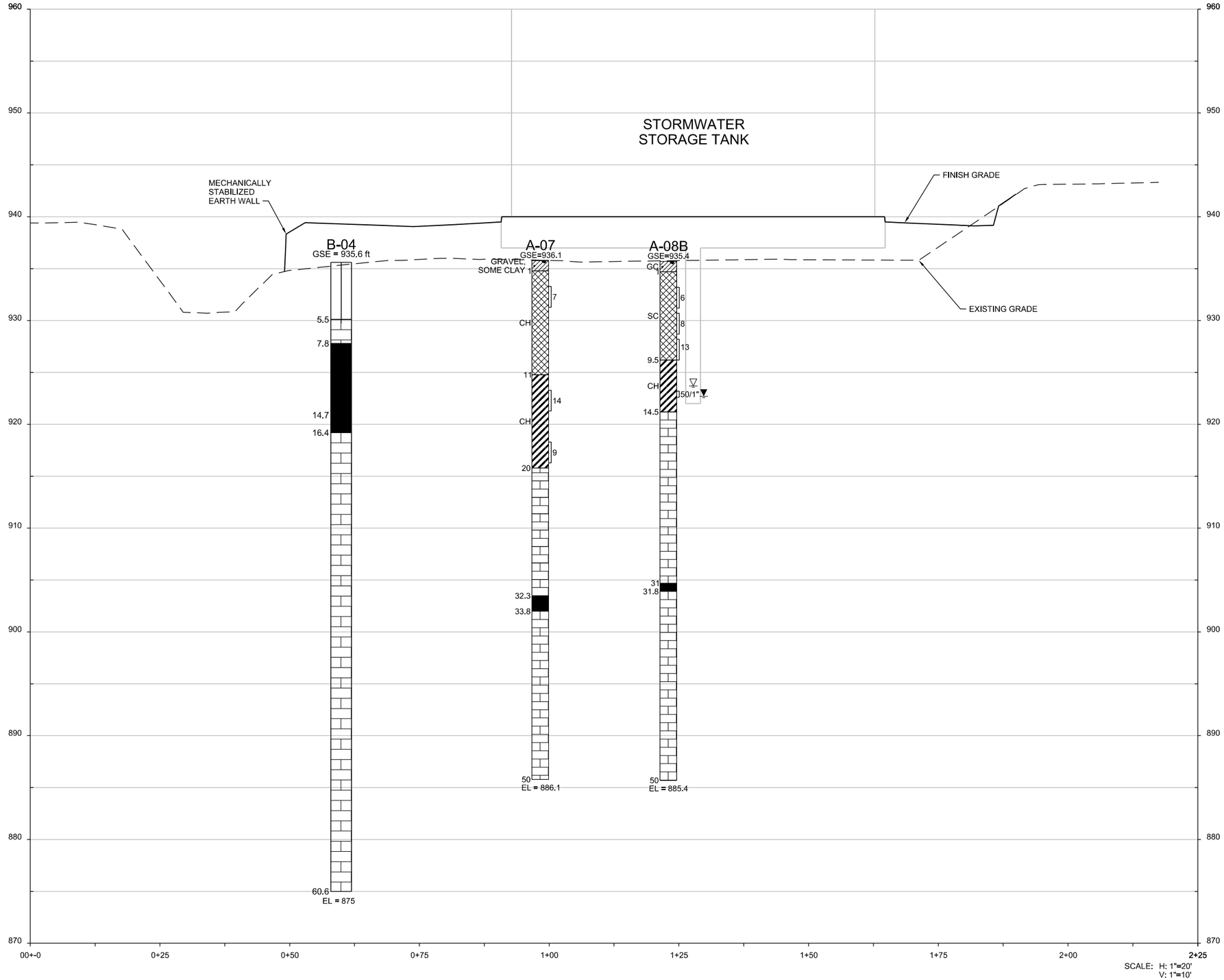


FIGURE 9
HEADWORKS, SECTION NS-4
OF200 MERCURY TREATMENT FACILITY

© CH2M HILL

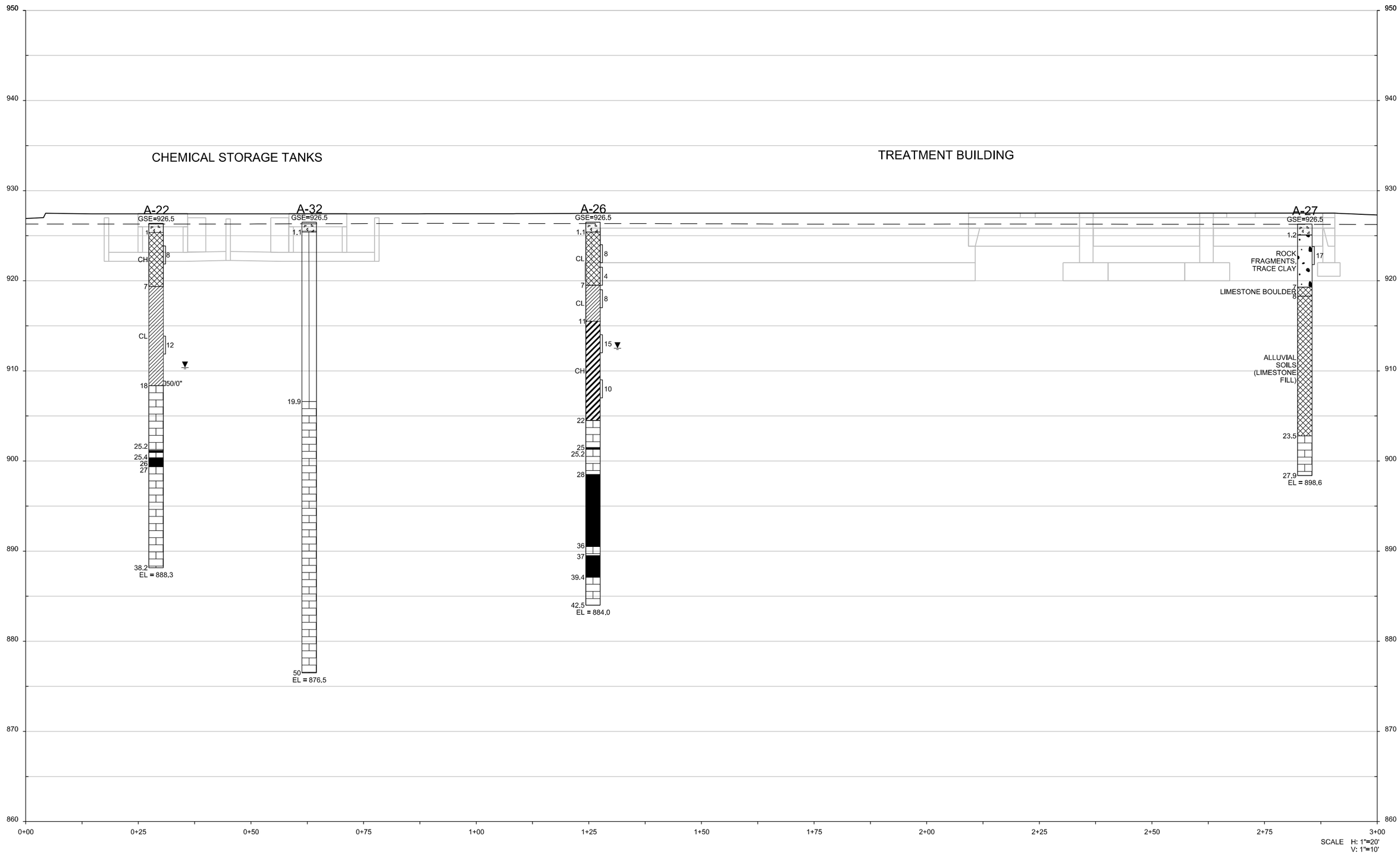


FIGURE 10
MERCURY TREATMENT FACILITY, SECTION EW-A
OF200 MERCURY TREATMENT FACILITY

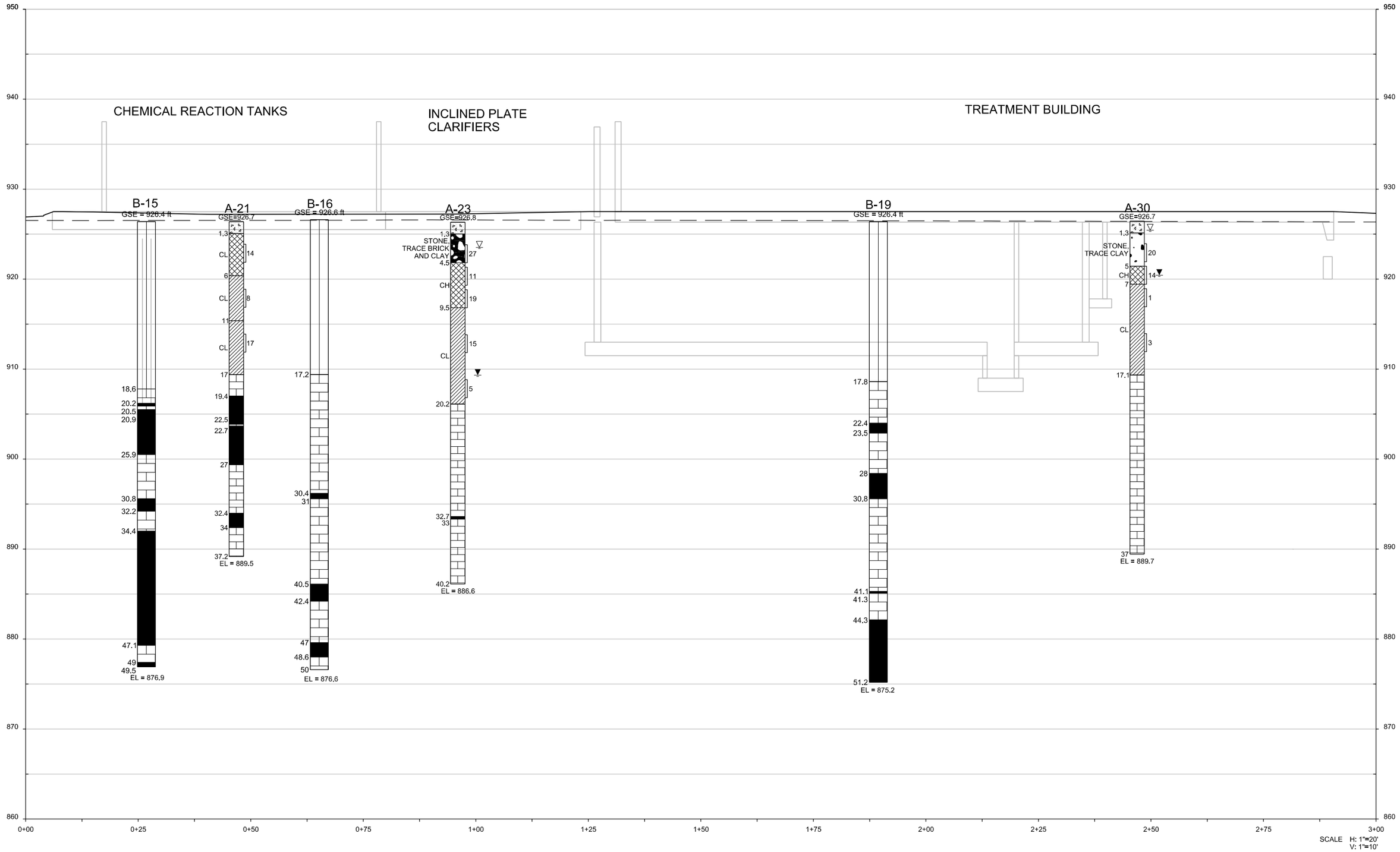


FIGURE 11
MERCURY TREATMENT FACILITY, SECTION EW-B
OF200 MERCURY TREATMENT FACILITY

© CH2M HILL

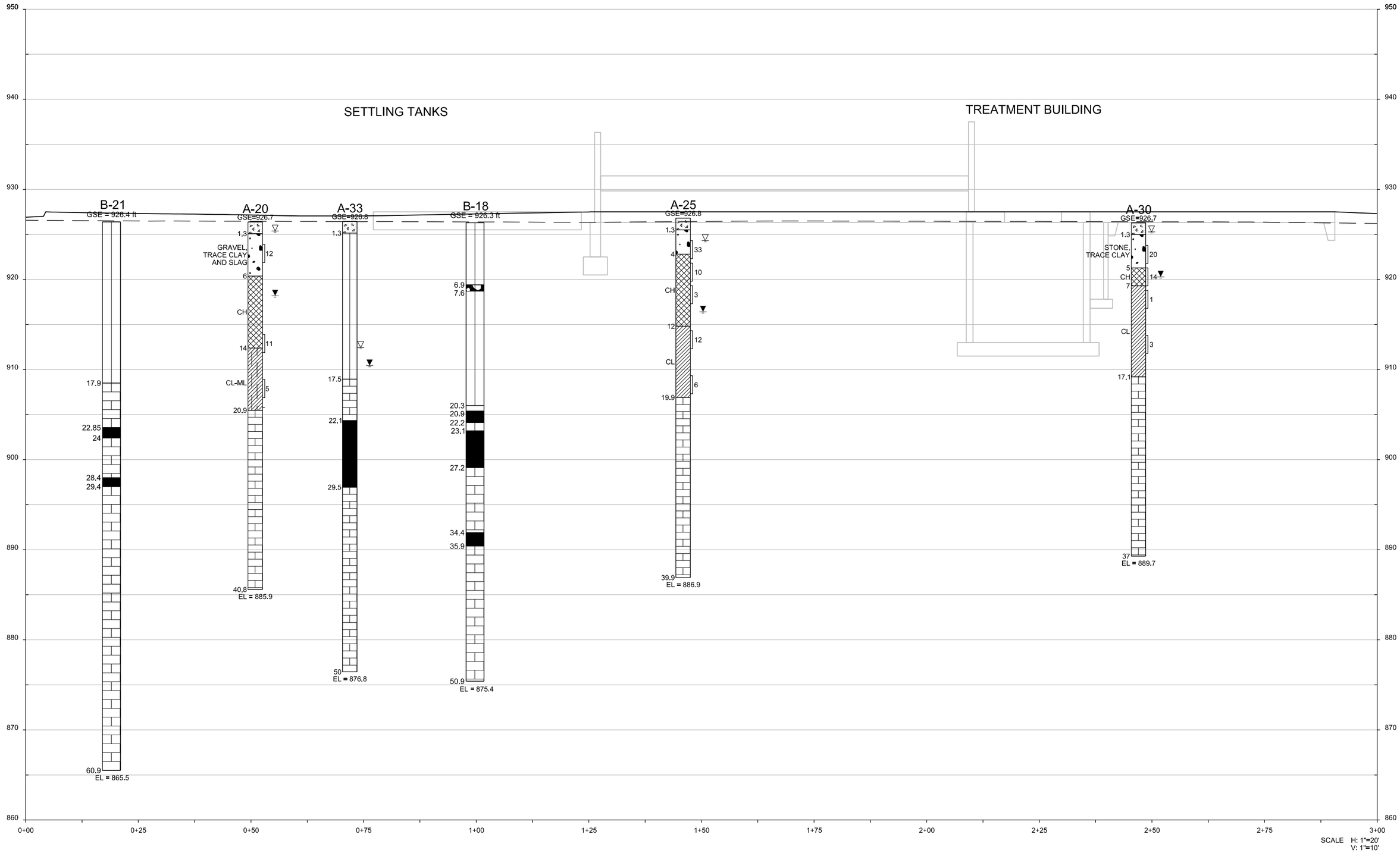


FIGURE 12
MERCURY TREATMENT FACILITY, SECTION EW-C
OF200 MERCURY TREATMENT FACILITY

© CH2M HILL

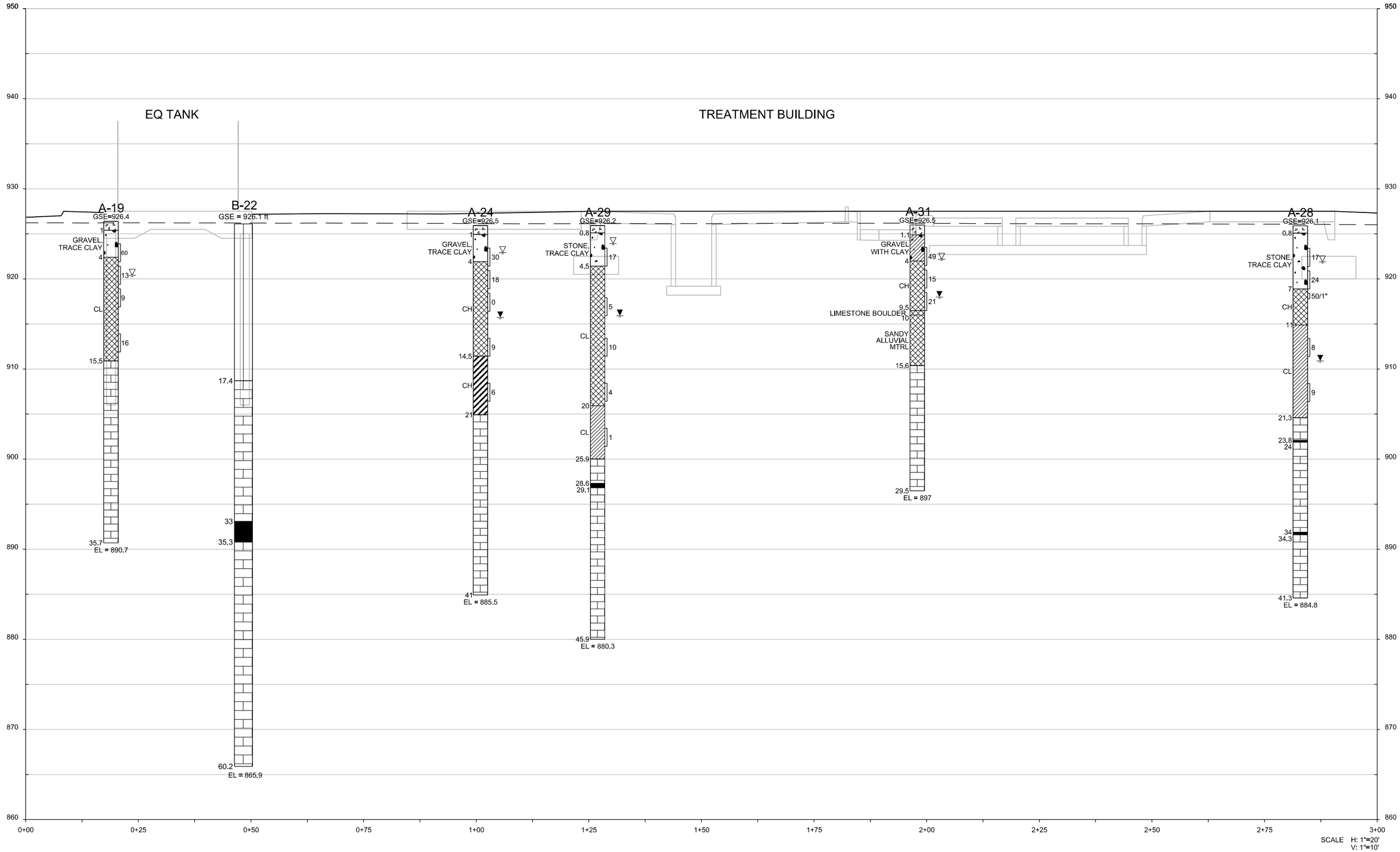


FIGURE 13
MERCURY TREATMENT FACILITY, SECTION EW-D
OF200 MERCURY TREATMENT FACILITY

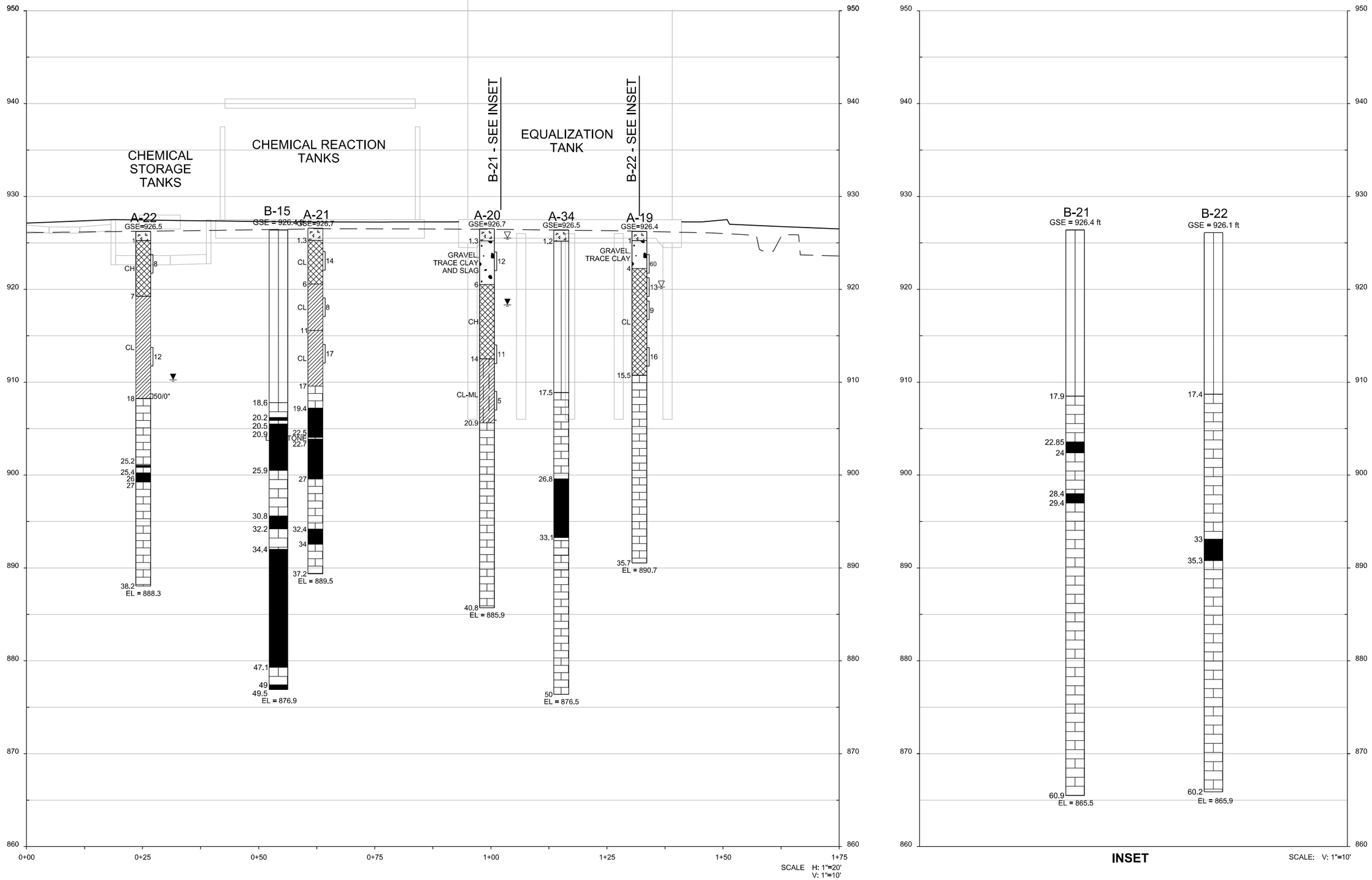


FIGURE 14
MERCURY TREATMENT FACILITY, SECTION NS-1
OF200 MERCURY TREATMENT FACILITY

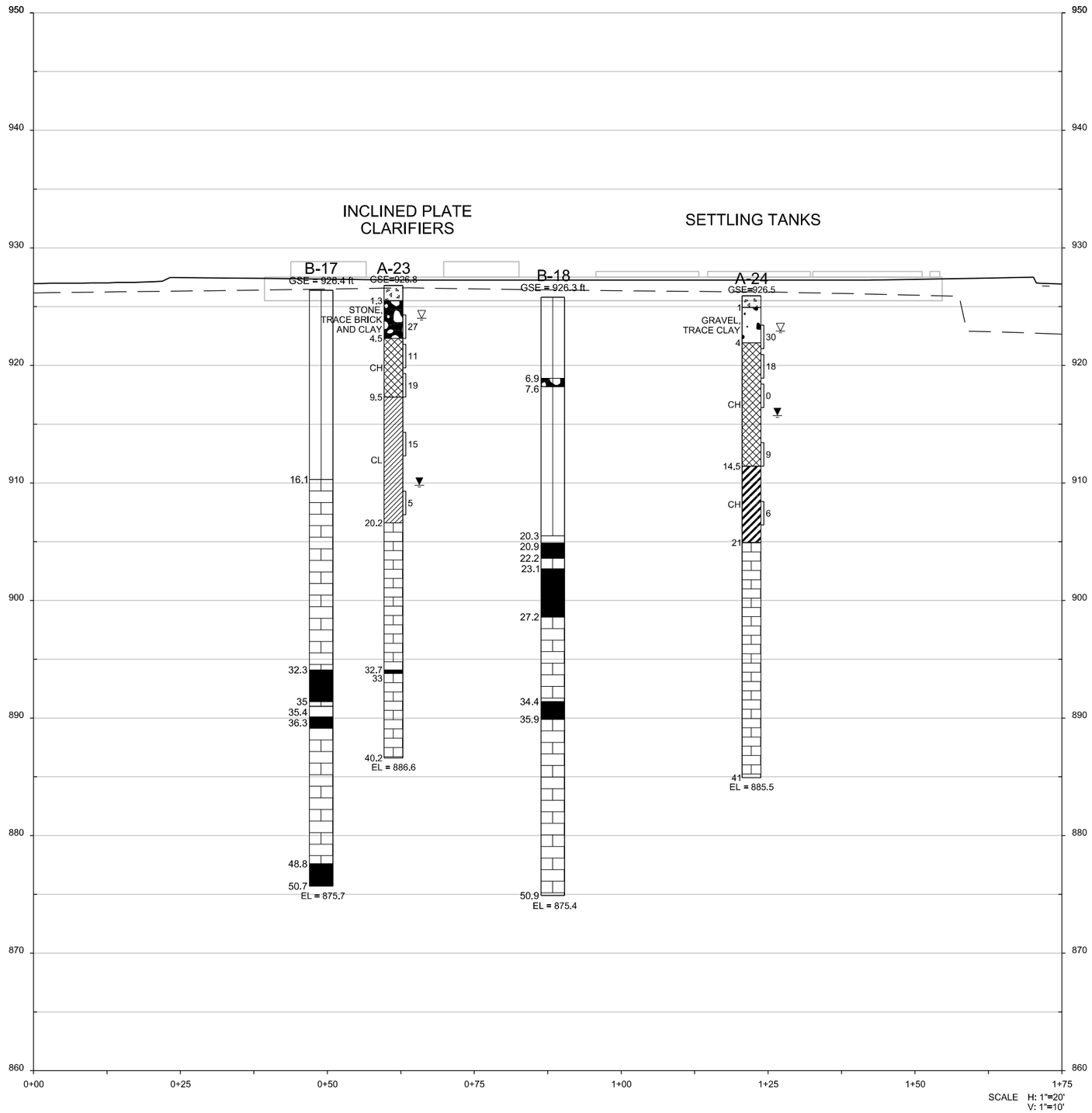


FIGURE 15
MERCURY TREATMENT FACILITY, SECTION NS-2
OF200 MERCURY TREATMENT FACILITY

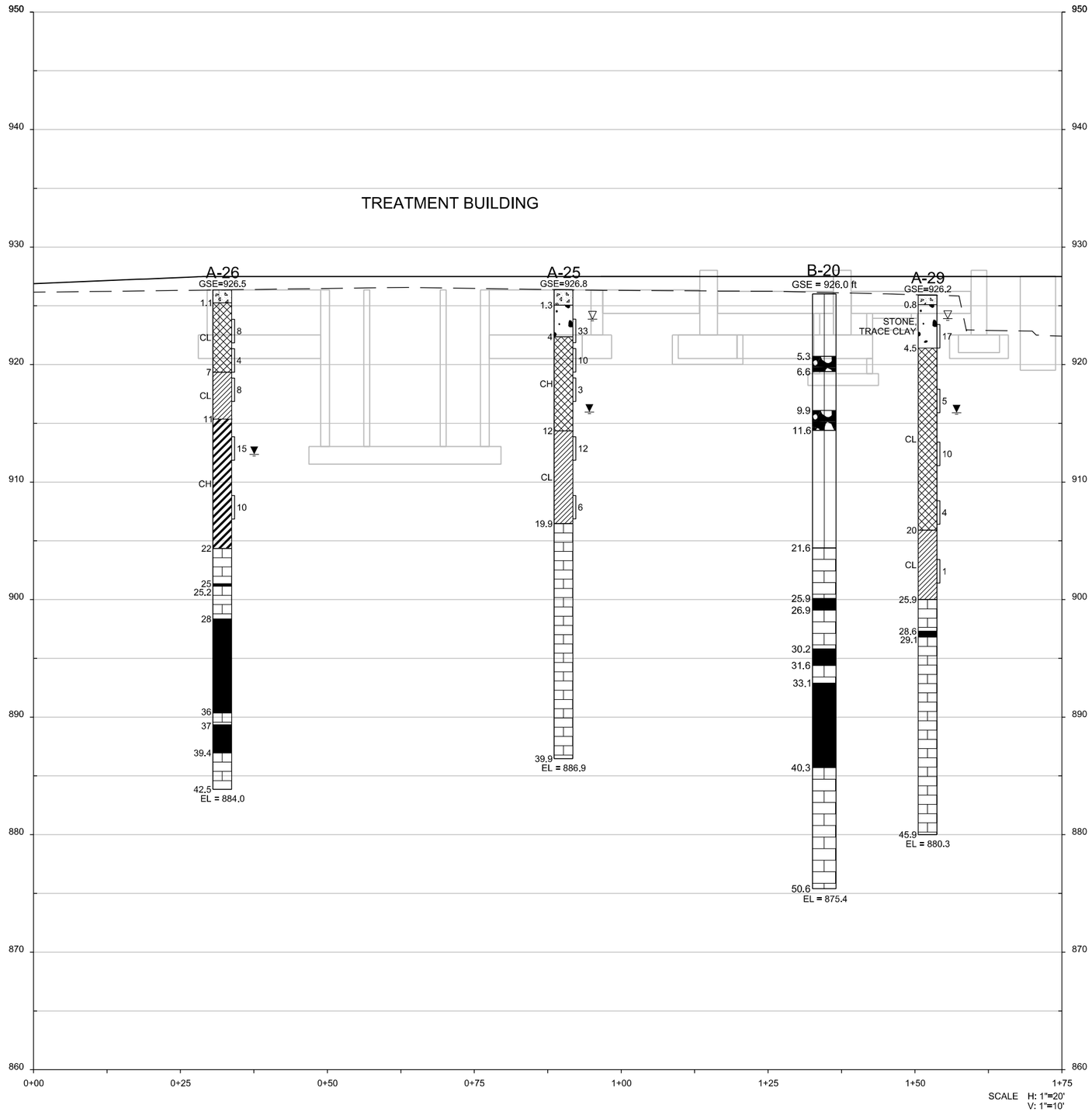


FIGURE 16
MERCURY TREATMENT FACILITY, SECTION NS-3
OF200 MERCURY TREATMENT FACILITY

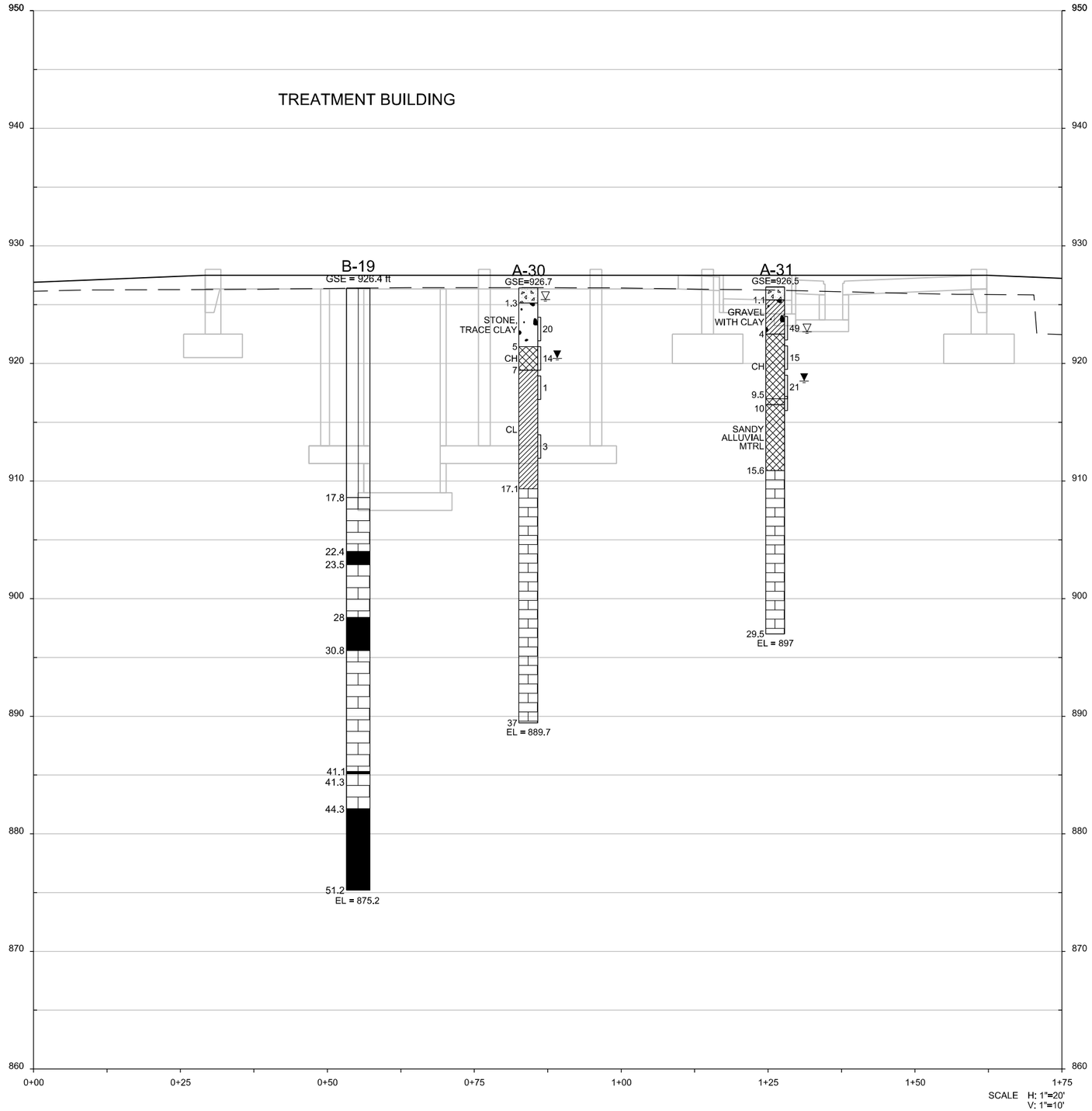


FIGURE 17
MERCURY TREATMENT FACILITY, SECTION NS-4
OF200 MERCURY TREATMENT FACILITY

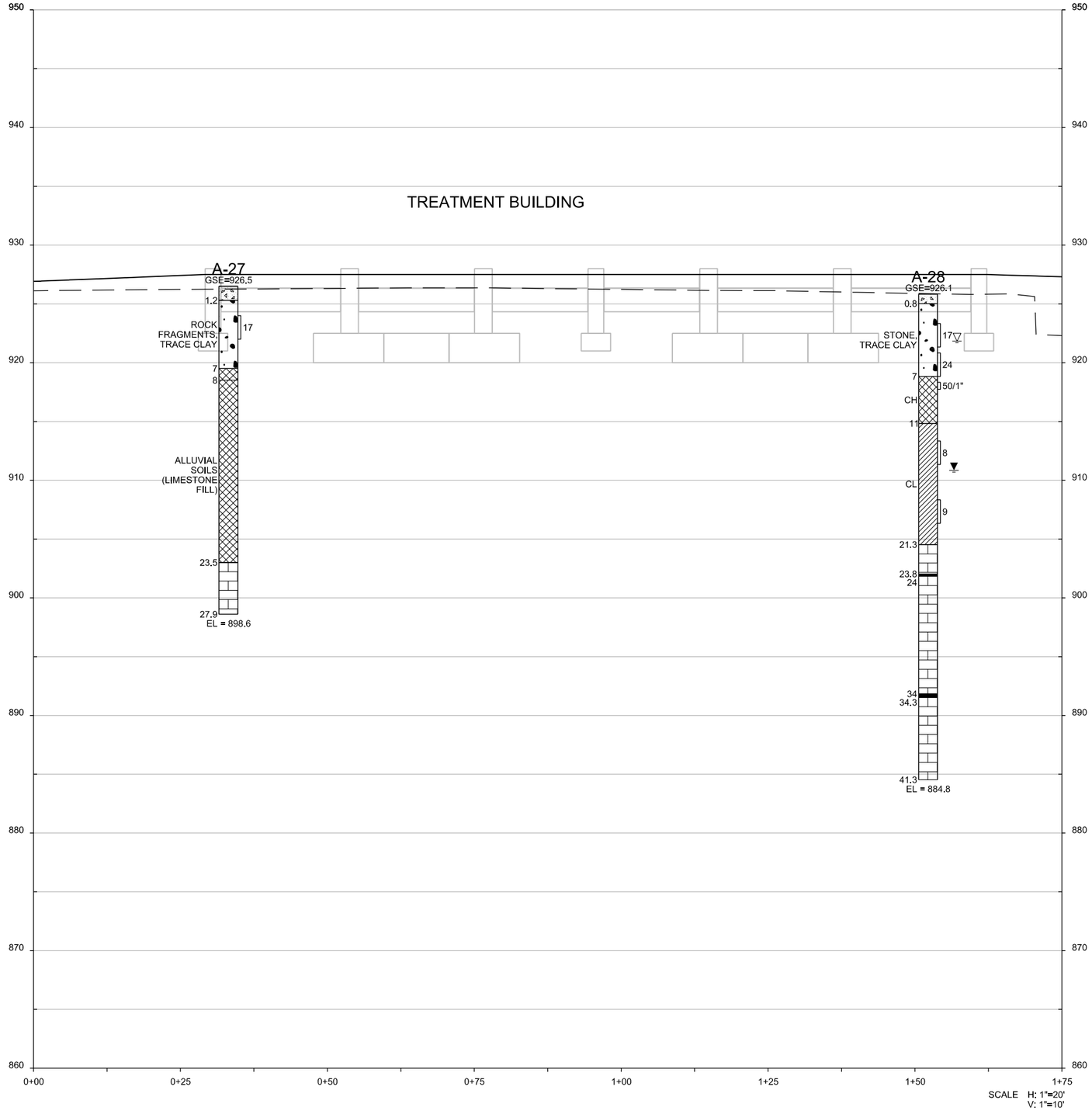
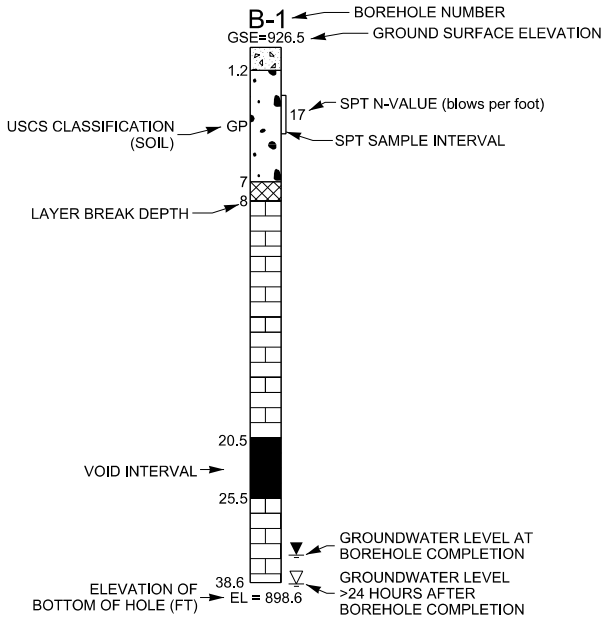
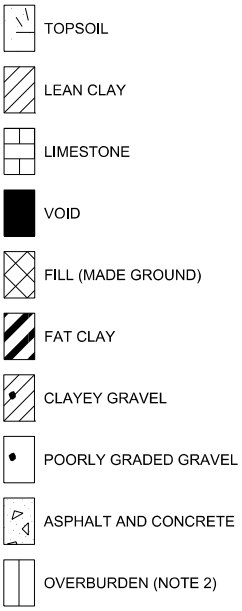


FIGURE 18
MERCURY TREATMENT FACILITY, SECTION NS-5
OF200 MERCURY TREATMENT FACILITY

BOREHOLE LEGEND



LITHOLOGY LEGEND



NOTES:

1. NOT ALL BOREHOLE INFORMATION IS SHOWN, REFER TO INDIVIDUAL BOREHOLE LOGS FROM 2016 GEOSERVICES AND 2017 STRATA-G GEOTECHNICAL REPORTS.
2. BORING ADVANCED THROUGH OVERBURDEN WITH AUGERS; SAMPLES NOT RECOVERED.
3. VOIDS MAY BE SOIL FILLED OR OPEN, REFER TO THE INDIVIDUAL BOREHOLE LOGS.

LEGEND

HEADWORKS/MERCURY TREATMENT FACILITY FENCE DIAGRAMS

OF200 MERCURY TREATMENT FACILITY

© CH2M HILL