

**SAFETY FACTOR ASSESSMENT – REVISION 01**  
**40 C.F.R. SECTION 257.73(e)**  
**PLANT SMITH ASH POND**  
**FLORIDA POWER & LIGHT COMPANY**

The United States Environmental Protection Agency's "Standards for the Disposal of Coal Combustion Residuals in Landfills and Surface Impoundments" Final Rule (40 C.F.R. Part 257), §257.73(e) requires the owner or operator of an existing CCR surface impoundment to conduct initial and periodic safety factor assessments. The owner or operator of the CCR unit must conduct an assessment and document that the minimum safety factors outlined in 40 C.F.R. §257.73(e)(1)(i) through (iv) for the embankment are achieved.

The Plant Smith Ash Pond is currently being consolidated and closed in place in accordance with 40 C.F.R. §257.102(d) and no longer receives CCR.

The Plant Smith Ash Pond currently consists of 125 acres of drainage area, and stormwater is routed over the closure area to the outlet structure located at the northeast area of the CCR unit. The current conditions were evaluated for stability under four loading conditions as per 40 C.F.R. §257.73(e):

- Storage Pool (40 C.F.R. § 257.73(e)(i))
- Surcharge Pool (40 C.F.R. § 257.73(e)(ii))
- Seismic Loading Conditions (40 C.F.R. § 257.73(e)(iii))
- Post-Seismic Liquefaction Conditions (when liquefaction susceptible materials are present; 40 C.F.R. § 257.73(e)(iv)).

Engineering analyses of the Ash Pond in its current condition were evaluated for each loading condition. Stability safety factors were evaluated for each of the loading scenarios using the computer program SLIDE (2018). As required by the EPA rule, a general limit equilibrium (GLE) method (Morgenstern and Price) was used to calculate factors of safety, and the factors of safety were calculated by dividing the resisting forces by the driving forces along the calculated critical slip surface of a given slope.

Stability was evaluated along one critical cross-section (section A-A') for the Ash Pond as shown in Attachment 1. Subsurface stratigraphy of the critical cross section was developed based on a combination of historical site data, subsequent subsurface investigations by Golder completed in 2016, 2018 and 2021 and observations during ongoing ash pond closure construction activities.

For the surcharge pool scenario, Golder considered the effects of the 100-year 24-hour rain event. This event was calculated to cause temporary flow on top of the pond consolidation area in drainage channels. Calculated factors of safety for stability under seismic conditions were calculated based on the earthquake hazard corresponding to a probability of exceedance of 2% in 50 years (2475-year return period). Golder used the Bray and Travasarou displacement-based seismic slope stability screening method (Bray and Travasarou 2009) to evaluate the seismic stability. Golder utilized National Centre for Earthquake Engineering (NCEER) methods to evaluate liquefaction susceptibility of soils underlying the embankment of the critical cross section. Given the low seismicity of the site, the NCEER screening method yielded results indicating that seismically induced liquefaction will not occur. Based on these results, Golder did not perform stability calculations using seismically induced post-liquefied strengths for the materials on site. However, the characteristics of some of the materials on site do classify them as being liquefiable, given sufficient stimulus. Golder recommends that analyses be performed for each individual future

potential stimulus (e.g., construction processes or demolition work) when considering site susceptibility to liquefaction.

The table below summarizes the results of the slope stability analyses for the current conditions at Plant Smith, with figures displaying the stability analysis results attached to this demonstration (Attachment 2 – Slope Stability Analysis Results).

Current Conditions Stability Analysis Results			
Analysis Case	Storage Pool	Surcharge Pool	Seismic
Rule Section	§ 257.73(e)(i)	§ 257.73(e)(ii)	§ 257.73(e)(iii)
Target Factor of Safety	1.5	1.4	1.0
Cross-Section	Factor of Safety		
	1.4	1.4	1.2

For the static storage pool case analyzed, the calculated factor of safety is lower than the factor required in 40 C.F.R. § 257.73(e)(i) to (iv). As such, the Plant Smith Ash Pond is required to cease placing CCR and non-CCR wastewater into the Ash Pond and undergo closure subject to the requirements of 40 C.F.R. § 257.101(b)(2) within six months of this determination. As noted in the Plant Smith Closure Plan, a Notice of Intent to Initiate Closure was previously completed on May 7, 2021 and Plant Smith Ash Pond no longer receives CCR or non-CCR wastewater. The Plant Smith Ash Pond is currently undergoing closure in accordance with the requirements of 40 C.F.R. § 257.102. The factors of safety presented in the table above are consistent with best engineering practices for the interim conditions prior to final closure of the facility. The final closure design will exceed the factor of safety requirements.

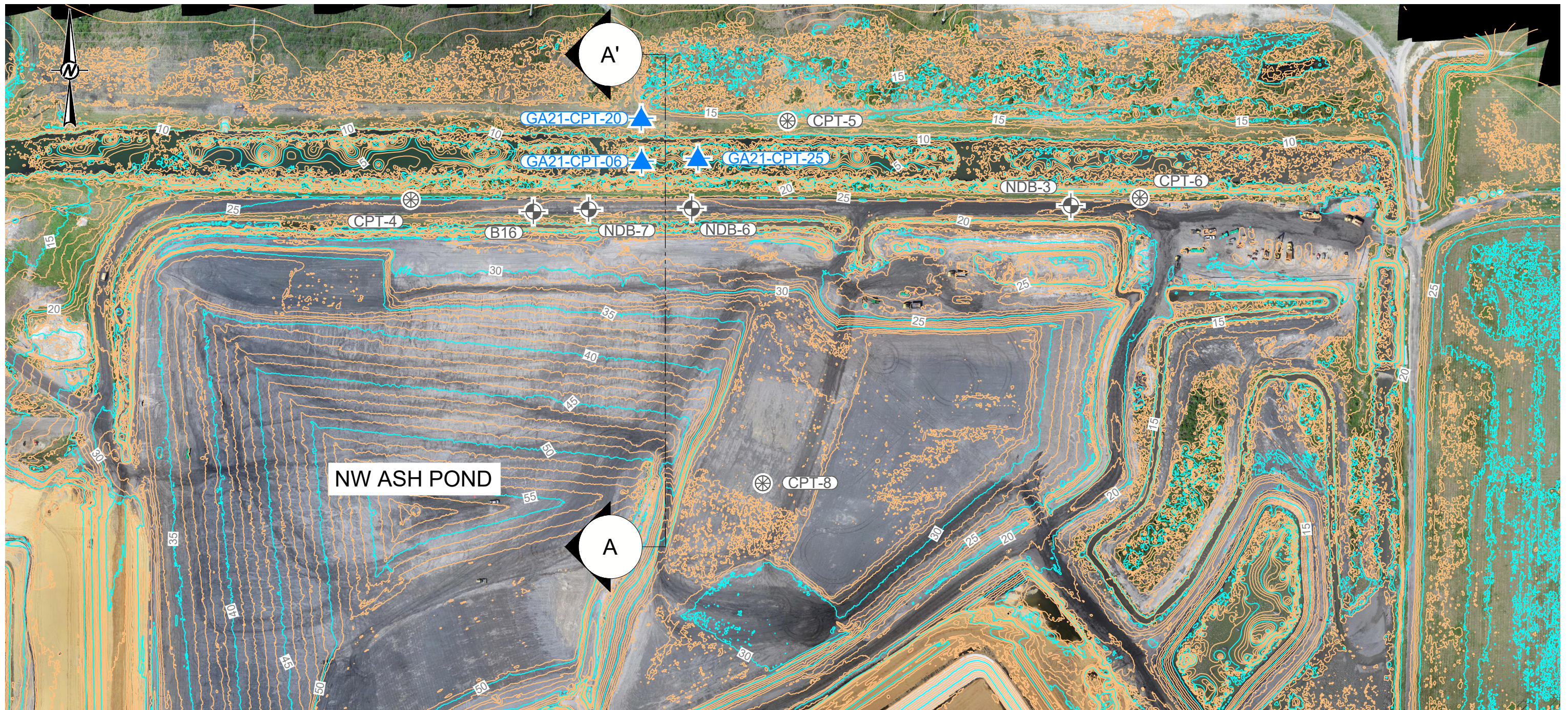
**CERTIFICATION**

I certify that the safety factor assessment for the Plant Smith Ash Pond was conducted in accordance with 40 C.F.R. 257.73(e).



Kevin S. Brown, P.E.  
 Florida Licensed Professional Engineer No. 57819  
**Golder Associates Inc.**

Path: \\atlantad\Gulf Power\Plant Smith\154251\_Ash Pond Closure\Geotech\_Investigation\Korkeg | File Name: 154251 - Critical Cross-Section Plan.dwg | Last Edited By: cprp | Date: 2021-10-13 Time: 5:48:47 PM | Printed By: CBRP | Date: 2021-10-13 Time: 5:50:09 PM

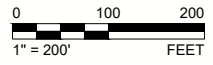




**LEGEND**

-  EXISTING CONTOURS
-  **GA21-CPT-09** AS-BUILT CPT LOCATIONS (2021)
-  **B12** GOLDR FIELD INVESTIGATION BORING LOCATIONS (2015-16)
-  **CPT-17** AS-BUILT CPT LOCATIONS (2016)

**REFERENCES**

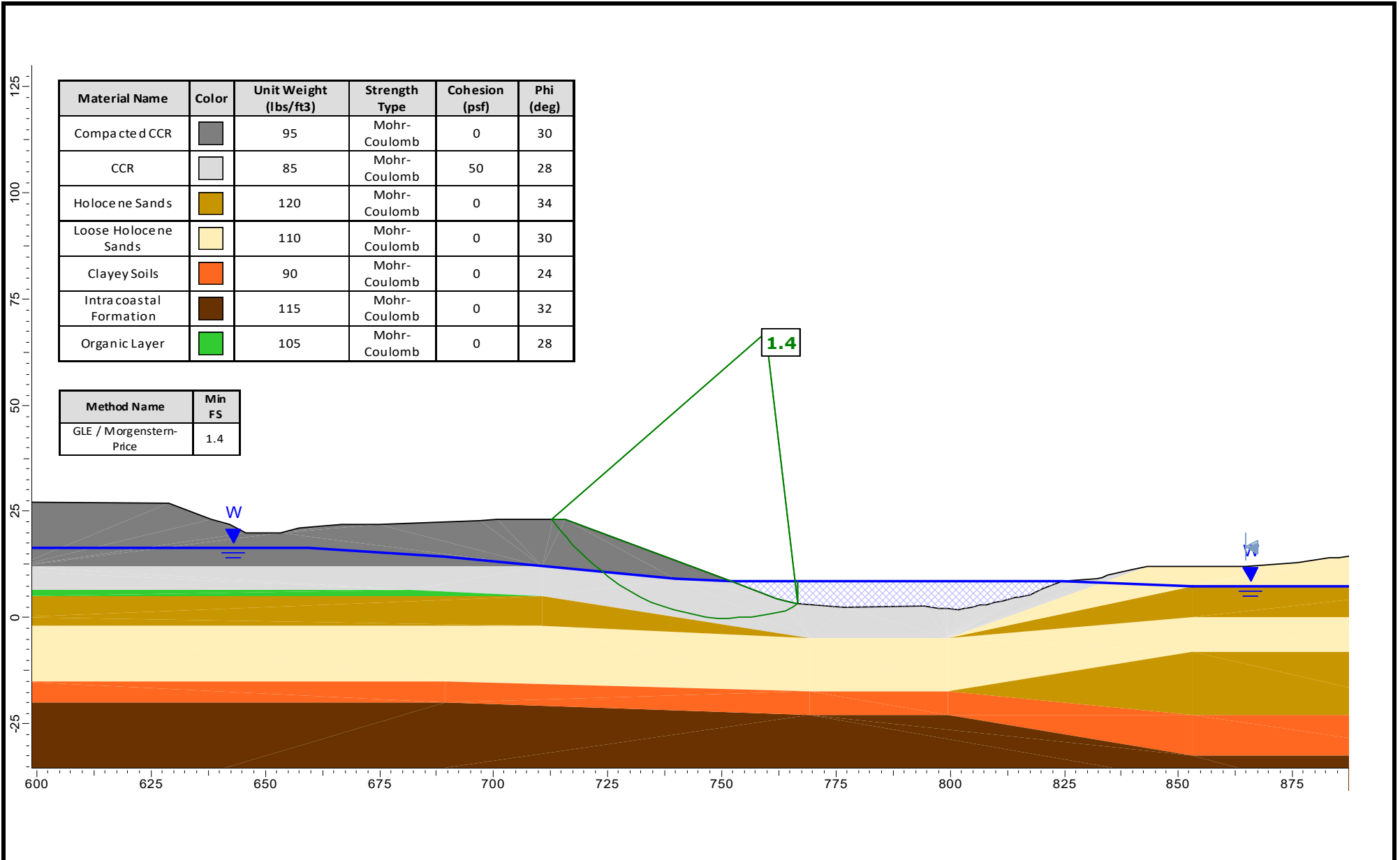
1. SITE TOPOGRAPHY PROVIDED BY CBP ON MAY 11, 2021.
2. AERIAL IMAGE PROVIDED BY CBP ON MARCH 21, 2021.



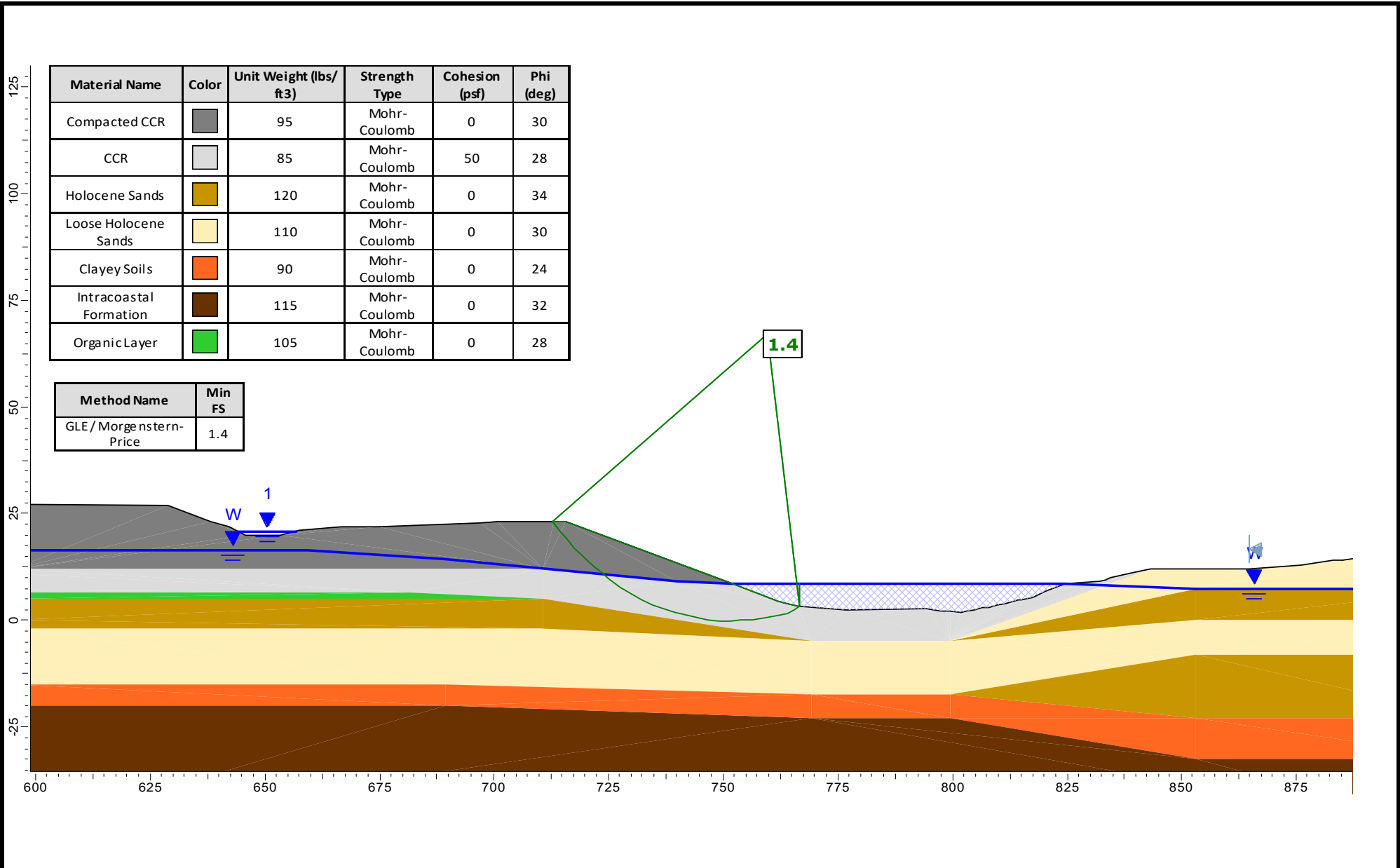
CLIENT	
CONSULTANT	 <b>GOLDER</b> MEMBER OF WSP
YYYY-MM-DD	2021/10/14
DESIGNED	QZ
PREPARED	CRP
REVIEWED	SS
APPROVED	KSB


PROJECT	PLANT SMITH SAFETY FACTOR ASSESSMENT
TITLE	<b>CRITICAL CROSS-SECTION PLAN VIEW</b>
PROJECT NO.	21470922
REV.	

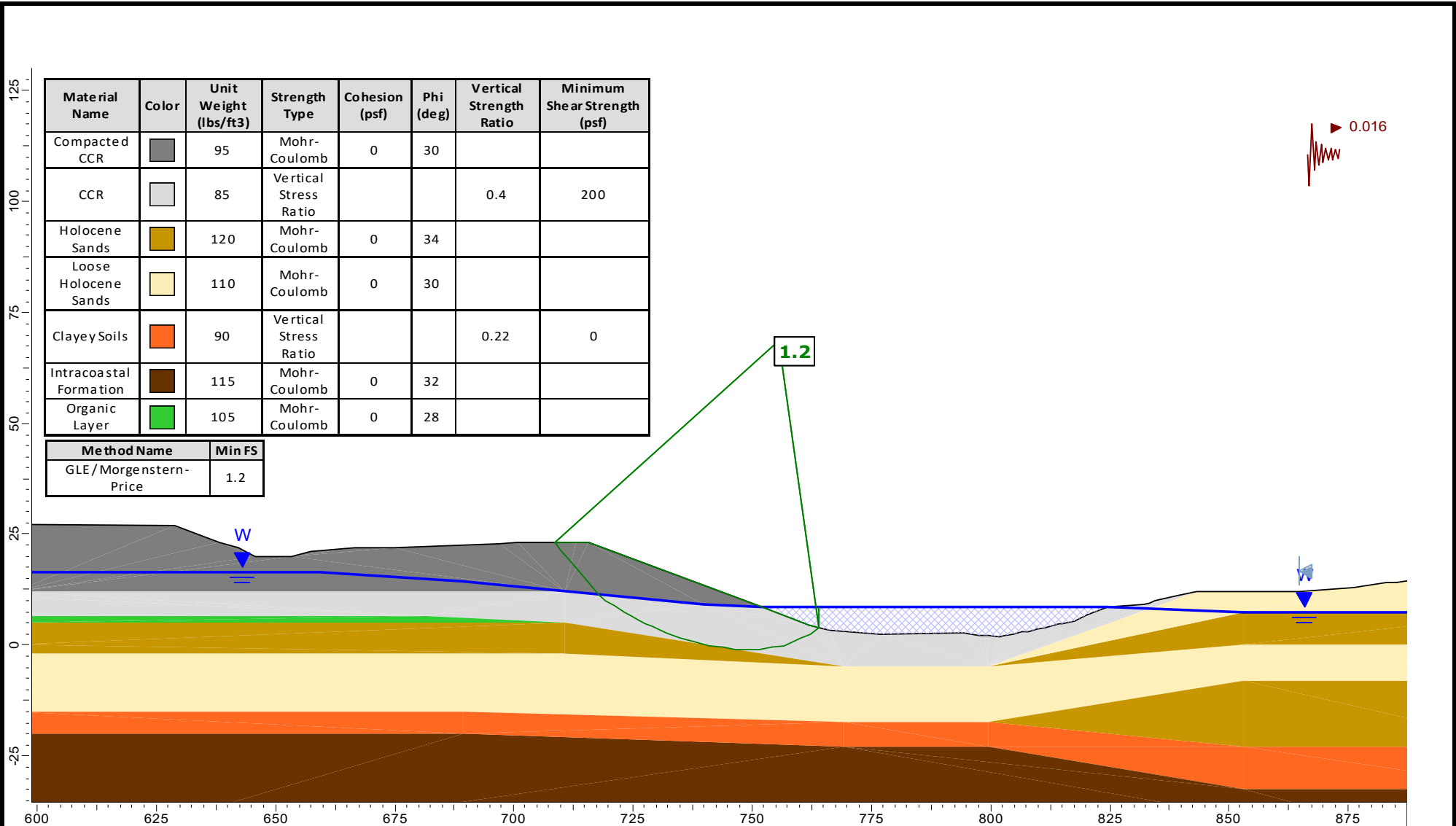
1" IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM ANSI B



	SCALE	AS SHOWN	PROJECT	Plant Lansing Smith Safety Factor Assessment	
	DATE	Oct 2021	TITLE	Section A-A'	
	MADE BY	SSS	Long-Term Maximum Storage Pool - Static Scenario		
	CAD	CRP			
FILE	STABILITY	CHECK	WRP	CLIENT	FLORIDA POWER & LIGHT COMPANY
PROJECT No.	21470922	REVIEW	KSB	FIGURE	



	SCALE	AS SHOWN	PROJECT	<b>Plant Lansing Smith Safety Factor Assessment</b>	
	DATE	Oct 2021	TITLE	<b>Section A-A'</b>	
	MADE BY	SSS	<b>Maximum Surcharge Pool - Static Scenario</b>		
	CAD	CRP			
FILE	STABILITY	CHECK	WRP	CLIENT	<b>FLORIDA POWER &amp; LIGHT COMPANY</b>
PROJECT No.	21470922	REVIEW	KSB	FIGURE	



	SCALE	AS SHOWN	PROJECT	Plant Lansing Smith Safety Factor Assessment	
	DATE	Oct 2021	TITLE	Section A-A'	
	MADE BY	SSS	Maximum Storage Pool - Seismic Scenario		
	CAD	CRP			
FILE	STABILITY	CHECK	WRP	CLIENT	FLORIDA POWER & LIGHT COMPANY
PROJECT No.	21470922	REVIEW	KSB	FIGURE	