

US EPA ARCHIVE DOCUMENT

NOTE

Subject: EPA Comments on Alliant Energy, Interstate Power & Light Co - Sixth Street Generating Station, Cedar Rapids, IA
Round 10 Draft Assessment Report

To: File

Date: May 4, 2012

1. On page 8, section 3.1 “Site Information and History,” it may be advantageous to detail not just that the plant is currently not producing coal fired energy, but if at any point since the flooding of the Cedar River in 2008 the facility has produced coal-fired energy.
2. On page 8, section 3.1 “Site information and History,” paragraph 2, it may be advantageous to elaborate on how the CCW would be removed from the various impoundments (e.g., dredging, draining, flushing).
3. On page 8, Section 3.1 “Site Information and History,” this section should be subdivided to reflect the operating procedure, the history, and the description of the impoundments. The information included in this section is too varied to be under one section heading.
4. On page 9, Section 3.2 A “Pertinent Data – General,” “Lake used for operations” should be replaced with “Source Intake Waters.”
5. On page 11, section 3.2 F “Pertinent Data – Outlet Works,” Intake Structure for Ash Pond 1, “Pipes stubbed through embankment without flared end section” is a somewhat ambiguous statement. Clarify. Also, see similar Intake Structure descriptions for Ash Pond’s 2, 3, and 4.
6. On page 13, section 3.4 “Hydrology and Hydraulics,” the Aether DBS Hydraulic Analysis should have a corresponding date.
7. Is there a need in the recommendations section for additional studies/analyses based on the following two statements:
 - a. (section 3.4, p. 13) “However, the exact extents of the watershed cannot be determined without a current topographic survey of the site and of the impoundments.”
 - b. (section 3.4, p. 13) “Aether DBS’s analysis does not discuss possible consequences in the event of an embankment failure or adequacy of culverts or design details, presumably since this study has concluded that the ash ponds are capable of storing the 24 hour, 100 year storm event without overtopping.”

8. On page 13, section 3.5 “Geotechnical Considerations,” the factors of safety determined through technical analysis of the structural stability of each impoundment must be clearly stated in the report. It would be advisable to include the minimum ACE factors of safety being used in this effort for all assessments for ease of comparison.
9. On page 13, section 3.5 “Geotechnical Considerations,” what is the basis for the conclusion that the materials for which the embankment was constructed include fly ash and boiler slag? (e.g., borings, construction field notes, plans)
10. On page 16, section 4.1.1 “Upstream Slope,” the report describes the erosion observed as “less than 6 inches.” What is this dimension in reference to? (e.g., depth, width, measured along the slope of the embankment)
11. On page 17, section 4.1.1 “Downstream Slope,” “Downstream Toe Area,” it is essential to note if any seepage was observed in the area, especially since the condition of the slopes was rated as fair to poor. See descriptions of Ash Pond 2, 3, and 4, if applicable.
12. On page 43, section 5.2 “Summary Statement,” in reference to the “POOR” rating given the impoundments, the report makes no mention of actual factors of safety generated from analyses conducted on the impoundments. These factors of safety should be available for all four ash impoundments for steady state, pseudo-steady state, rapid drawdown, and seismic. The basis of the rating must be made on the exceedance of minimal factors of safety.
13. The report makes no mention of current inspection or monitoring actions, corrective actions, emergency alerts, or recordkeeping. If none of these criteria are present at the facility, it should be stated as such.
14. Based on the nature of the description of outlet, inlet, and discharge structures by the contractor, it may be advisable for the report recommendations to include remedial actions to be taken to update the deteriorating infrastructure of the CCW impoundments.
15. Figures 1-4 have dropped out of the report. Please add them back in.
16. The Aether report has the following statement: “The ten most critical potential failure surfaces for each loading case are shown in Attachment F.” Attachment F is not included in the report. Please add it in.



August 13, 2012

**Via E-mail to: hoffman.stephen@epa.gov
and kohler.james@epa.gov**

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Mr. Stephen Hoffman
U.S. Environmental Protection Agency (5304P)
1200 Pennsylvania Avenue, NW
Washington, DC 20460

**Re: Response to Draft Assessment Report
Sixth Street Generating Station**

Dear Mr. Hoffman:

This letter is sent on behalf of Interstate Power and Light Company's ("IPL") Sixth Street Generating Station in response to the United States Environmental Protection Agency's ("EPA") Coal Ash Impoundment Site Assessment Draft Report for the Sixth Street Generating Station dated May 2, 2012 ("Draft Report"). The site assessment was conducted by the United States Environmental Protection Agency's ("EPA") contractor Kleinfelder on May 24, 2011. EPA's cover email accompanying the Draft Report requests that comments be submitted within 30 days of receipt. EPA extended this date to August 13, 2012 for IPL. The email also provides for a business confidentiality claim covering all or part of the information submitted by IPL.

CONFIDENTIAL BUSINESS INFORMATION CLAIM

IPL is claiming business confidentiality for both the Draft and Final Reports associated with the site assessment of the coal combustion material management units at the Sixth Street Generating Station and for the comments submitted in this letter in their entirety, a claim which is being made in accordance with 40 C.F.R. Part 2, Subpart B.

Per the criteria established by 40 CFR. Part 2, Subpart B, §2.208, the documents for which confidential treatment is requested are entitled to confidential treatment because: (1) this claim is timely and has not been waived, (2) IPL has taken reasonable measures to protect the confidentiality of the information and intends to continue to take such measures, (3) the information is not reasonably obtainable without IPL's consent by other persons by use of legitimate means, (4) no statute

specifically requires disclosure of this information, and (5) the disclosure of the information is likely to cause substantial harm to IPL's competitive position.

All of the documents for which confidential treatment is requested help IPL maintain its competitive position. IPL protects the confidentiality of this information by making it available only to those within the company with a legitimate need to know the information for purposes of performing their jobs.

COMMENTS ON THE DRAFT ASSESSMENT

Listed below are the comments associated with the Draft Report for the IPL – Sixth Street Generating Station.

Italics indicate language in Draft Report. **Bold** indicates suggested language.

General Comment:

1. Remove "*Alliant Energy*" and insert "**Interstate Power and Light Company ("IPL")**". This should include "*Alliant Energy*" references on Cover Page; Executive Summary; Table of Contents; Page 1 (Section 1.3); Page 1.2 (G - Management); Page 14 (Section 3.7); Page 4 (Section 1.2.5); Page 5 (Section 1.2.7); Page 6 (Section 1.2.8); Page 9 (Section 1.3.5).

Priority 1 Recommendations:

1. Page 3 and Section 6.1, First Paragraph, Ash Ponds – IPL responds to the Priority 1 recommendations and commitments as stated below:
 - "*Prepare an Emergency Ash Plan by November 30, 2012*" – Although it is our belief an EAP is not needed for this site since ash is not being sluiced to the ponds, the facility will commit to development of an EAP by **March 31, 2013**. The facility is having discussions with the Iowa Department of Natural Resources and other key stakeholders regarding the future of this area.
 - "*Monitor potential seepage through embankments starting by November 30, 2012*". After the Round 8 Assessments by EPA at some of our other generating stations, IPL has prepared a "Corporate Operations and Maintenance Plan" (Corp Plan) that outlines the proper operations and maintenance of coal combustion ash ponds based on the guidance documents readily available from the Corp of Engineers, FEMA and OSHA. In addition to the Corp Plan, each generating station has a "Site Specific Operations and Maintenance Plan" (Site Plan) that defines the roles; responsibilities; and actions required by the generating station to ensure our ponds are maintained and operated in a safe manner now and in the future. As part of the Site Plan, a 3rd Party PE will inspect the site on an annual basis to evaluate the current conditions; evaluate maintenance activities; and provide additional guidance to improve the overall safety of the ponds. Although we do not believe the water at the toe of the

embankments is a result of seepage from our ash ponds, we believe our inspections (IPL and Third Party) will adequately address this item. The inspection sheet has been revised accordingly to include monthly and a more detailed quarterly inspection. Also, the reports generated by Aether db's (July 27, 2012 and August 14, 2011) do not indicate that seepage is taking place through our embankments. Although we do not believe seepage is taking place, we will perform these visual inspections. We anticipate having this plan, including training; operational at the Sixth Street Generating Station by December 31, 2012 and will have the first quarter inspection completed by **March 31, 2013**. Please change this date in the report.

- *"Monitor potential erosion in drainage ditch and creek"*. As mentioned above, we are committed to develop a Corp Plan and Site Plan by December 31, 2012. The monthly, quarterly and annual third party engineer inspections will monitor any potential erosion issues. Please change this date to **"March 31, 2013"**.
- *"Control vegetation on the upstream slopes, crest, and downstream slopes by November 30, 2012"*. Remove trees from the embankments by November 30, 2012. Due to land ownership concerns and the potential need for IDNR Sovereign Land and Army Corp of Engineers permits, additional time beyond the *November 30, 2012* date will be needed. Instead of providing a date for this task completion, IPL is proposing to follow the Site Plan, along with a third party PE review, to dictate when and if these trees will be removed. The vegetation control will be governed by the Site O&M Plan as well.
- *"Perform video assessments of culvert piping by November 30, 2012"*. We do not understand the need to perform a video assessment of the piping as there has not been a discharge from the ponds in a number of years. The internal piping between ponds is not a concern since a failure would result in water flowing into another pond as the internal embankments walls are lower in elevation than the outer embankments. The outlet pipe for the ash ponds is clearly visible and since there has not been a discharge in a number of years, a failure is not imminent. Please remove this recommendation.

Priority 2 Recommendations:

1. Page 3 and Section 6.2 – IPL responds to the Priority 2 recommendations and commitments as stated below:

- *"Repair erosion of embankments by November 30, 2012"* – As mentioned above, these erosion areas will be addressed by the Site Plan. If these areas will need repair, we propose to have these addressed by June 30, 2013.
- *"Maintain a log of maintenance and other activities at the fly ash impoundments and supporting facilities by November 30, 2012"*. Please remove *"fly ash"* and insert **"bottom ash"** as fly ash was captured dry in silos when the facility was operating. Also, this recommendation will be governed by the Corp Plan and Site Plan. As mentioned previously, these plans will be implemented by December 31, 2012.

- “*Monitor Groundwater levels, starting by November 30, 2012*”. Analysis completed by Aether dbs in the attached “Response to the USEPA Draft Report”, dated August 8, 2012, shows that a rapid drawdown of a fully saturated embankment results in an acceptable factor of safety (factor of safety greater than 1.3). IPL is working with the Iowa Department of Natural Resources and Iowa Department of Transportation in development of a closure process regarding these Coal Combustion Waste (CCW) ponds. Since the CCW ponds pose no unacceptable risk from rapid piezometric surface elevation change as demonstrated in the 2008 flood and by Aether analysis, IPL suggests that resources to install piezometers would be better applied to closure of the ponds. The failure to install piezometers by November 30, 2012 will not lead to an unacceptable structural risk prior to completing closure. Please remove this requirement.
- “*Develop an O&M manual for the impoundments by November 20, 2012*”. Please note this item is labeled as number 5 and there is no number 4 listed. As we mentioned before, the Corp Plan and Site Plan will be operational by December 31, 2012. The EAP plan will be completed by March 31, 2013. Please change this in the final report.

2. Page 8, Section 3.1 Site Information and History

- The first paragraph, last sentence please remove “*groundwater continued to flood the 6th Street Basement...*”. Groundwater infiltrates into the basement and is pumped to the ash pond system. Please change to “**groundwater continues to seep into the basement, is captured in the floor sump system, and is pumped out into the ash ponds**”.
- Second paragraph – The flow patterns of the CCW ponds when the facility was in operation was the following: All process wastewaters and bottom ash was sluiced to Pond 1, Pond 1 would gravity feed to Pond 2, Pond 2 would gravity feed to Pond 3 and Pond 3 would gravity feed to Pond 4. If bottom ash was being dredged from Pond 1, all process waters and bottom ash would be discharged into Pond 2. If Pond 2 was being dredged, the valve from Pond 1 to Pond 2 would be closed and the valve connecting Pond 1 to Pond 4 would be open. Process waters or bottom ash waters were never discharged directly into Ponds 3 and 4 from the plant. Please change this paragraph to accurately reflect the plant’s operations.

REQUEST FOR CONFERENCE CALL WITH AMEC TO REVIEW COMMENTS

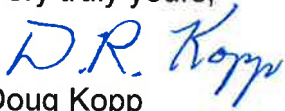
Finally, because of the technical complexity and factual detail contained in the Draft Report, IPL believes it would be efficient and helpful to conduct a conference call between IPL; Aether dbs; EPA and Kleinfelder to review the details of these comments. IPL would be happy to coordinate the time and set up a call-in number.

Mr. Stephen Hoffman
August 13, 2012
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IPL specifically requests such a discussion take place prior to the preparation of a Final Report.

IPL appreciates this opportunity to provide comments on the Draft Report for the Sixth Street Generating Station. If you have any technical questions, please contact William Skalitzky at (608) 458-3108. If you have any legal questions, please contact Jenna Wischmeyer at (319) 786-4843.

Very truly yours,



Doug Kopp
Director Environmental Affairs

Enclosure

cc: James Kohler - EPA
William Skalitzky - AECS
Jenna Wischmeyer - AECS



August 8, 2012

154.017.002

Mr. William Skalitzky
Alliant Energy Corporate Services
4902 N. Biltmore Lane
Madison, WI 53718

Response
USEPA Draft Report
Safety of Coal Combustion Waste Ponds
6th Street Generating Station
Cedar Rapids, Iowa

Dear Mr. Skalitzky

Aether DBS provides a response to the Draft Report issued by United States Environmental Protection Agency (USEPA) commenting on the structural safety analysis of the coal combustion waste pond on the 6th Street Generating Station property. The draft report was prepared by Kleinfelder and is dated May 2, 2012.

Aether DBS concurs with the finding that the ponds on the 6th Street Generating Station should be assigned a **low hazard potential**.

In the conclusion of the draft report Kleinfelder finds that:

“The conclusion presented by Aether DBS is that the outer embankment for the ash ponds should have an acceptable Factor of Safety (FOS) against failure under static and seismic loading scenarios including a minimum FOS of 1.6 for static loading and 1.5 for seismic loading. Based on our review of this study and our experience with design and construction of similar embankments, the conclusion presented by Aether DBS seems to be reasonable, provided that seepage through the embankments occurs in a controlled fashion.”

After providing this finding on the safety analysis, Kleinfelder provides a United States Army Corps of Engineers (USACE) condition rating of **POOR** to the ponds. Since a POOR rating implies that a dam safety issue exists that requires remedial action and since Kleinfelder found no such deficiency, Aether requested clarification from USEPA.

CONFIDENTIAL BUSINESS INFORMATION

On July 12, 2012, USEPA¹ responded that the POOR condition rating was justified based on three points lifted from the Kleinfelder report. The issues are:

1. Variability of the properties of the embankment materials (moisture content, strength, particle size, permeability) could result in uncontrolled seepage pathways resulting in a reduced the factor of safety as calculated by Aether. In particular the occurrence of rubble in one of the geoprobe borings taken in June 2011 is noted as a concern that would result in uncontrolled seepage.
2. Construction of I-380 piers in the ponds will result in some instability of the ponds and/or flow capacity limitation.
3. Uncontrolled seepage from rubble pockets in the embankment or tree roots on the downstream slope.

Before responding to the concerns, recapitulations of the known facts about the site are in order to properly address the concerns that lead to the Kleinfelder condition rating.

Response and Additional Information

The 6th street generating station began as an early city electric light plant in 1888. Around 1910, Iowa Electric Light and Power constructed a dam on McCloud Run² a tributary to the Cedar River for the provision of cooling water. Prior to 1910 the area of the present Coal Combustion Ash Ponds was low ground with an elevation of 708 to 712 feet as determined by the Aether borings taken in June 2011. Cedar Lake is controlled by the dam installed in the early 1900's at water elevation 721. The coal combustion ash ponds lay between the railroad embankments on the southeast shore of Cedar Lake and a bluff rising up from what was originally McCloud Run. The borings taken in June 2011 show that coal combustion waste fills the area between the railroad embankment and the bluff. The current ash pond embankments are constructed on top of the earlier coal combustion waste with a crest elevation of approximately 730 feet and were built after the construction of Cedar Lake.

The rubble fill in boring SB-4 that is the subject of the Kleinfelder comment is at 21 to 23 feet below the crest of the present embankment. This places the rubble below the coal combustion waste and indicates fill that predates the 1910 creation of Cedar Lake. Photograph 1 (in Attachment A) shows a picture of the core recovered from SB-4 showing the limestone and brick rubble that was found in this location below the coal combustion waste and above the original ground surface of clay and peat.

When the borings were installed in June 2011, the approximate geometry of the embankment at each boring location was measured by Aether. Figure 1 shows the field measurements of the crest width, upstream and downstream slopes and the location of the adjacent pond water at SB-3 (Pond 4) and SB-4 (Pond 1). The measurements show that

¹ Craig Dufficy to Stephen Hoffman, Memorandum "Alliant Energy 6th Street Generating Station Draft Report Condition Rating Evaluation, July 12, 2012

² Cedar Rapids Gazette, May 20, 2011 (<http://thegazette.com/2011/05/20/power-plant-removal-could-save-cedar-lake/> accessed 7/18/2012)

the crest widths in the higher sections of the embankment range from 15 to 30-foot. The inboard and outboard slopes are as steep as 1H to 1V on some slopes (The steep slopes are covered with rip rap, Photograph 2). From these variations, Aether chose to analyze the highest embankment near the outlet of Pond 4 where the crest was at the minimum width of 15-feet and the toe of the slope is at the water surface of Cedar Lake at elevation 721.

In June of 2008, the watershed of the Cedar River experienced a storm that caused flow through Cedar Rapids exceeding the 500-year return period event. During the flood the 6th street generating station recorded 6-feet of water on the floor of the station. At the same time the coal combustion waste ponds were fully inundated by the flood flow, Photograph 3. When the flood waters receded, the embankments of the coal combustion waste ponds were subjected to rapid drawdown of the phreatic water surface by sequential lowering of the water elevation on both sides of the embankments. After the flood wave ebbed, Alliant Energy completed an inspection of the coal combustion waste pond embankments that showed no damage from erosion or gully wash outs. No embankment repairs have been conducted by Alliant Energy. The only observed damage was the toppling over of the flow meter, which was unrelated to embankment stability.

An extended analysis of the cross-section of the embankment on Pond 4 presented by Aether³ in 2011 is shown in Attachment B. The result was completed by increasing the phreatic water elevation in the embankment cross-section to saturate the entire thickness of the coal combustion waste. The factor of safety under this rapid drawdown type of loading condition is 1.3. The result shows why the ponds were not structurally impacted by the recession of the 2008 flood inundation.

Response to Kleinfelder Findings

The findings expressed in the Kleinfelder report indicate that the reason for the POOR rating is the potential for reduced factor of safety under some unusual seepage event. If this is the case then the rating should have been FAIR based on the definitions of the USACE in section 7.0 of the Kleinfelder report.

The clarification of information presented herein and the additional information shown herein, lead Aether to the conclusion that the appropriate rating under the USACE system is SATISFACTORY. The presence of rubble fills 10-foot below the toe of the current embankments is not a stability factor for the embankments. The impact of unusual seepage events was tried and tested by the flood of 2008.

The soil parameters used for the surface clay and the ash/slag embankment and coal combustion waste fill are very conservative strength selections and are found to be “reasonable” for the conditions by Kleinfelder. The actual CCW dike material, as measured by Cone Penetrometer Testing (CPT), is much stronger than that specified in the stability analyses; a friction angle of 28 degrees with no cohesion. An average

³ Aether DBS, “Ash Pond Stability and Hydraulic Analysis, 6th Street Generating Station, Cedar Rapids, Iowa, August 4, 2011

CONFIDENTIAL BUSINESS INFORMATION

friction angle of 40 degrees was calculated from CPT-1 measurements. The fiction angle standard deviation is only 6 degrees over the 17 foot thickness. (The original ground surface is at a depth of 17 feet there as determined by the adjacent SB-1). CPT-3 produced similar results whereas CP-2 apparently hit an obstruction at only 5 feet.

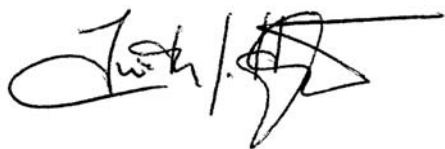
The embankments at 6th street are relatively wide at the crest, have rip rap protection on the outer slopes and contain only minimum volumes of water. The facility is undergoing the regulatory closure process and there are no plans to use the ponds as coal combustion waste ponds in the future.

Aether DBS believes the condition assessment for the 6th Street Coal Combustion Waste Ponds should be a **SATISFACTORY** rating.

The qualifications of the authors in geotechnical engineering are offered by curriculum vita, Attachment C.

If you have any questions, please call or e-mail.

Very truly yours,

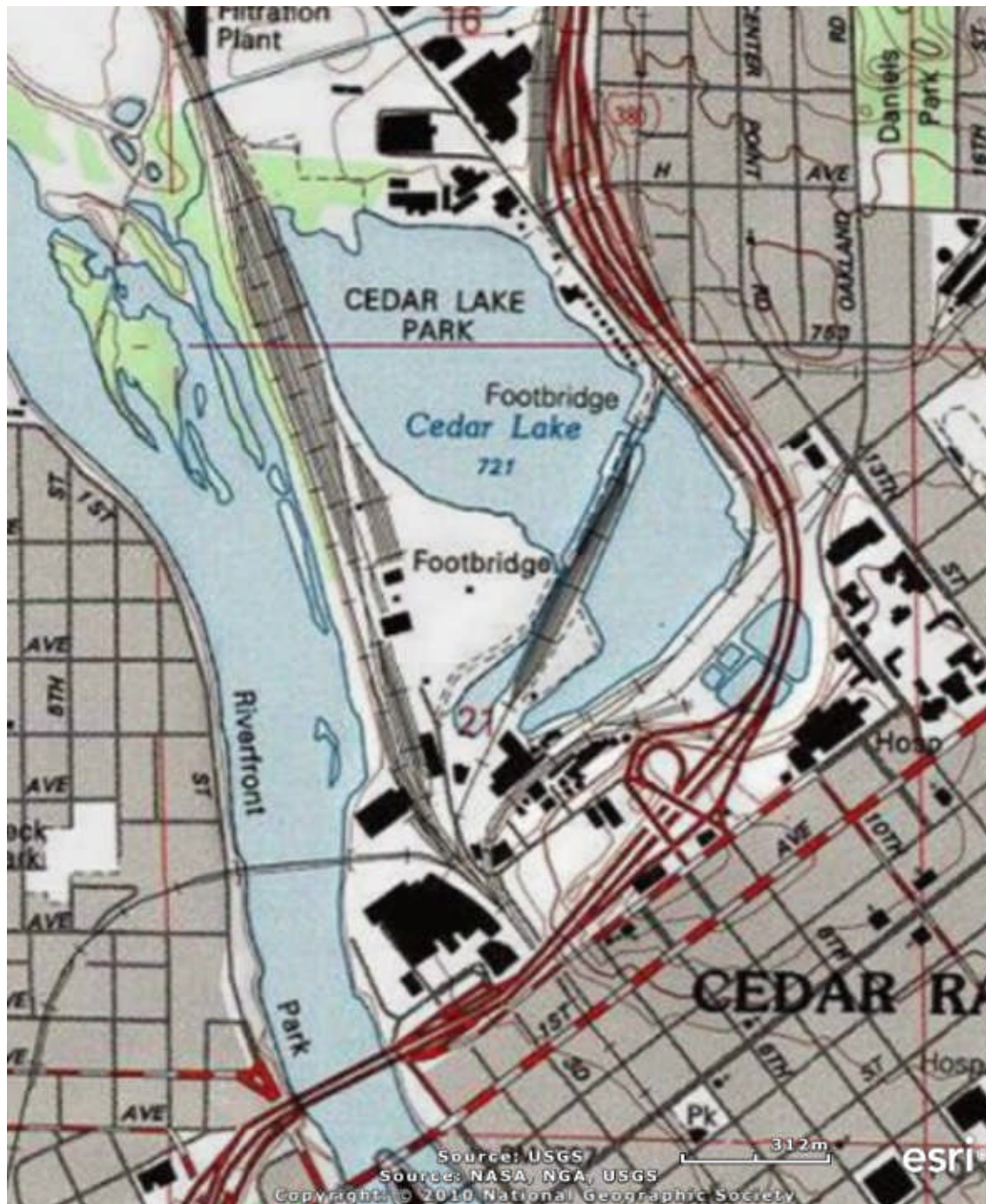


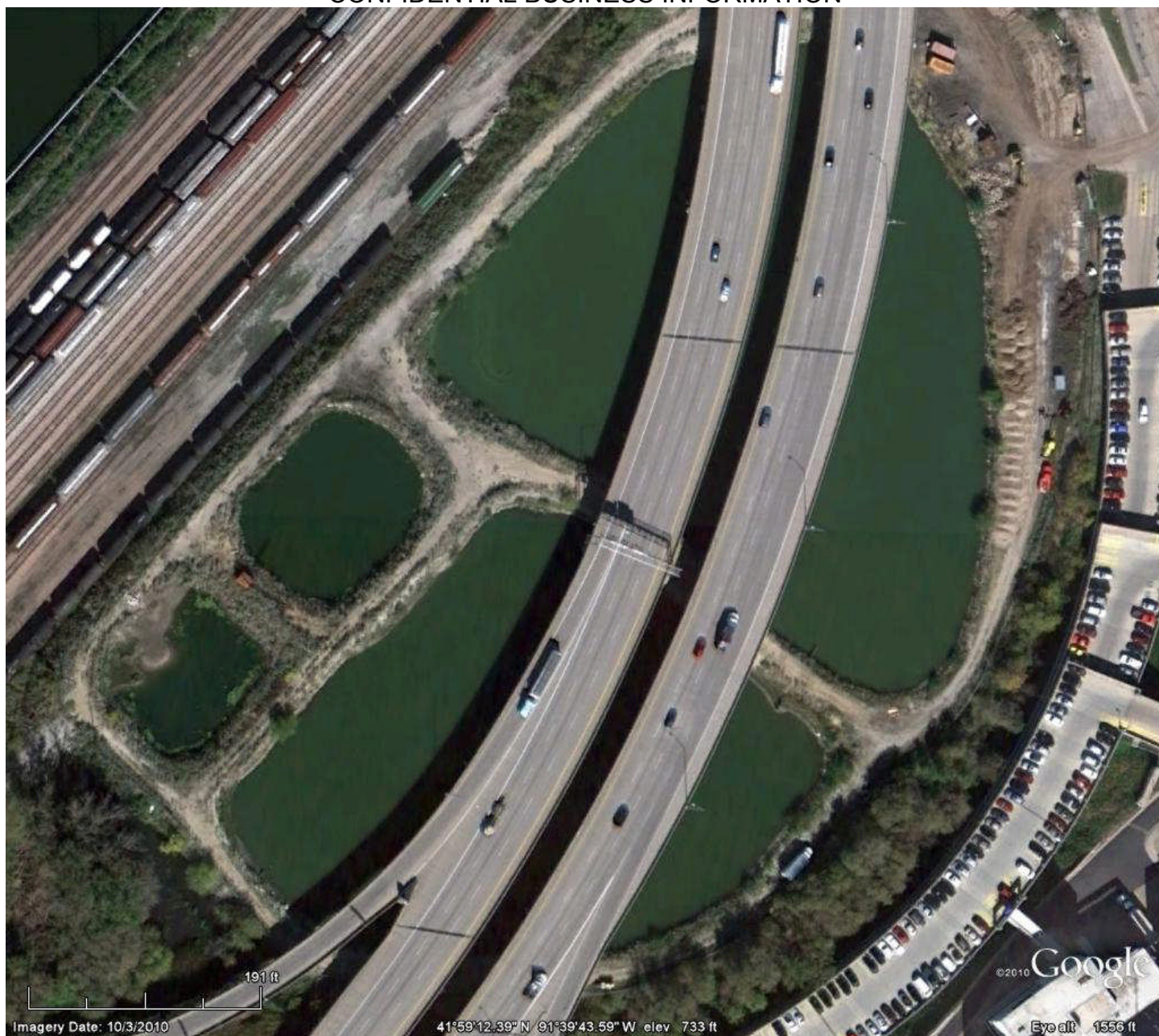
Timothy J. Harrington, P.E.



Thomas C. Wells, P.E.

6th Street Generating Plant, Cedar Rapids, Iowa

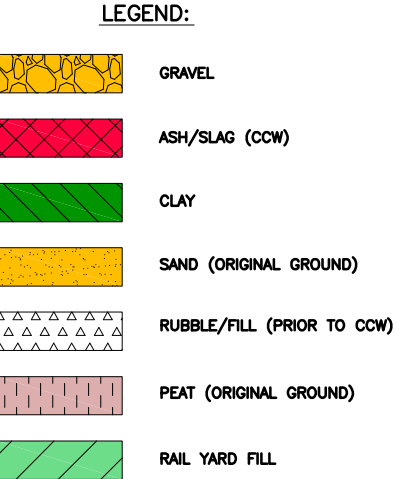
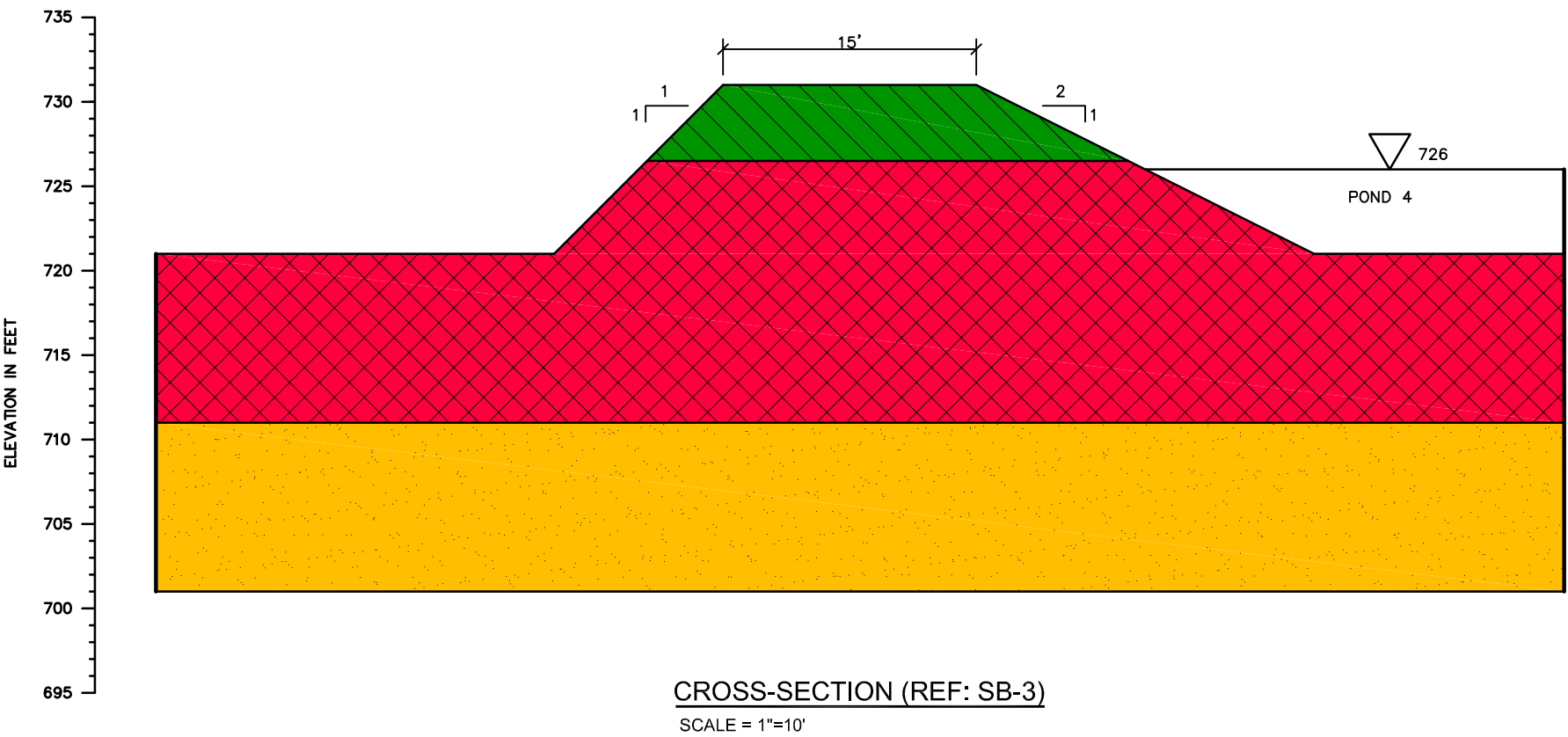




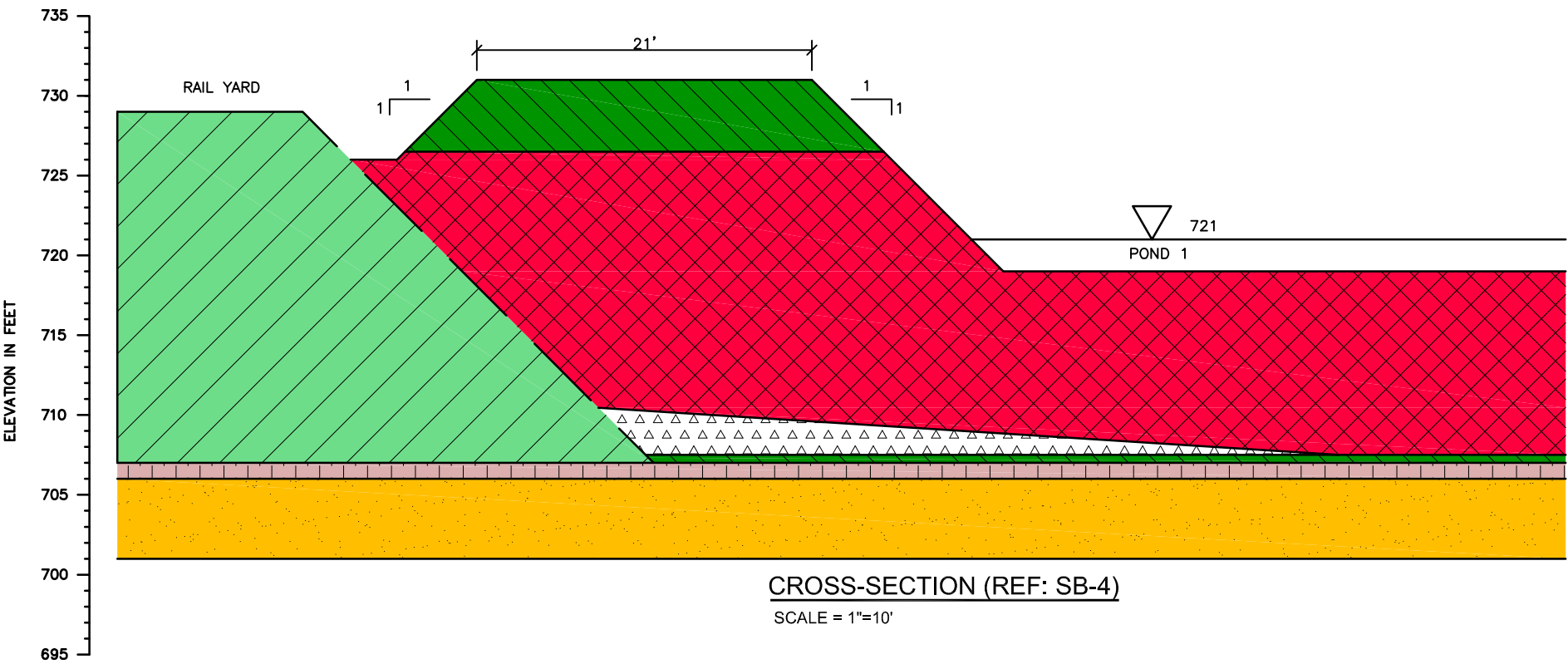
Ash Ponds

Sixth Street Generating Station, Cedar Rapids, Iowa

Google Earth Accessed 7/31/2011 by TCW



NOTE:
1. CEDAR LAKE WATER ELEVATION 721'.



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						DATE:	7-23-12	INTERSTATE POWER AND LIGHT COAL COMBUSTION WASTE PONDS 6TH STREET GENERATING STATION CEDAR RAPIDS, IOWA		EMBANKMENT CROSS-SECTIONS SOUTH END OF CCW PONDS		SHT. FIGURE 1
						DRAWN BY:	JFD					
						CHKD. BY:						
						APPROVED:						
REV	DATE	BY	DESCRIPTION									DWG. 154017-EMB XSEC

Attachment A

PHOTOGRAPHS

Response to USEPA Draft Report 6th Street Generating Station

Source:

Aether DBS, Site Investigation - June 11, 2011

Andrea Lynn Photograph, Cedar Rapids, Iowa

(<http://www.andrealynnphoto.com/CRflood2008/> accessed 6/18/2012)



Photograph 1

Rubble Fill at Contact Between Original Ground Surface and CCW (SB-4)



Photograph 2 Outboard Slope at Stability Analysis Cross-Section at SB-3



Photograph 3 Water at Flood Peak, June 13, 2008

Attachment B

Slope Stability Analysis Results Ten Most Critical Surfaces Per Analysis

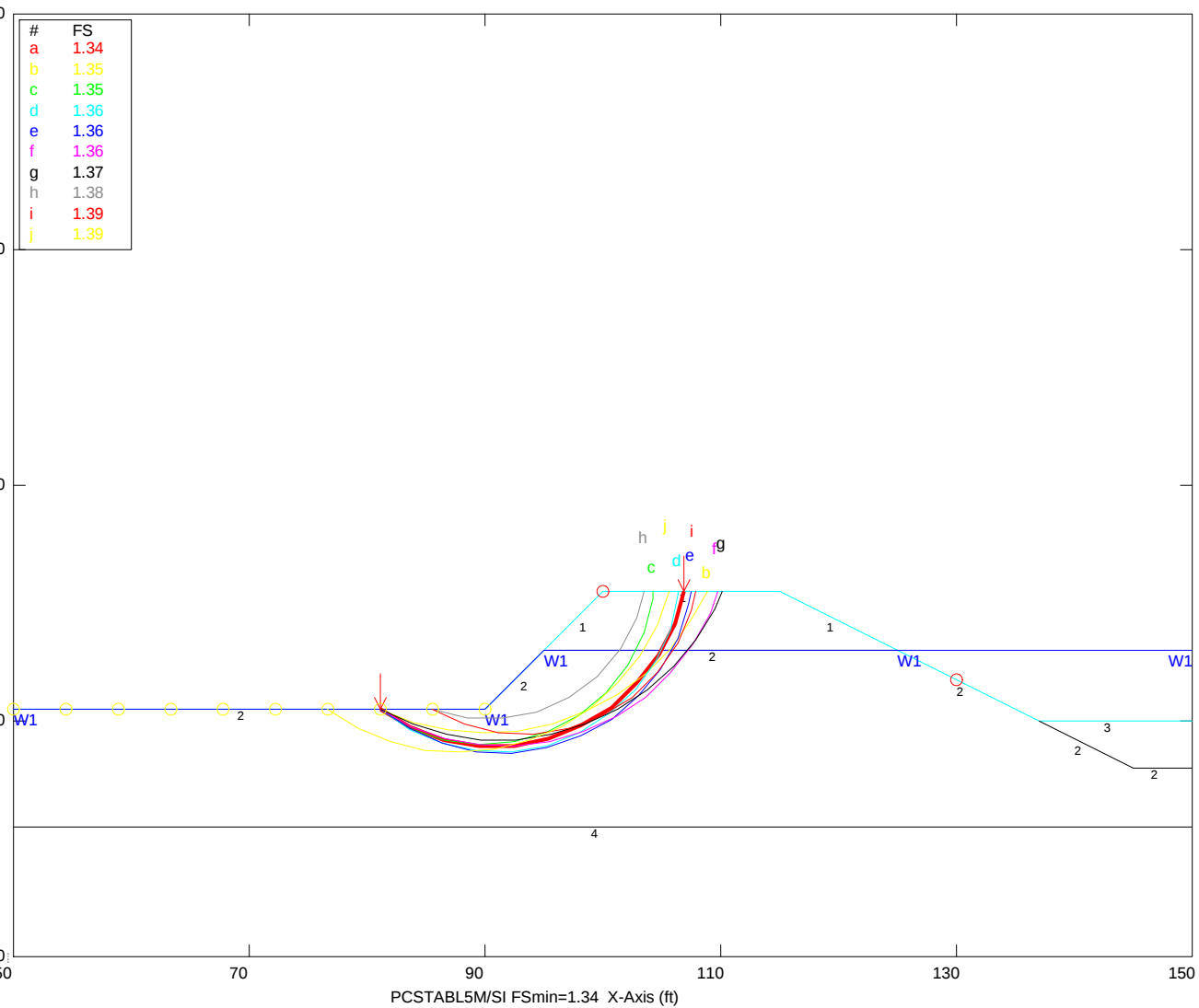
Response to USEPA Draft Report 6th Street Generating Station

Source:

Program pcSTABLE5M/si output by Aether DBS, July 19, 2012

Ten Most Critical. C:6THST11D.PLT By: TCW 07-19-12 8:01am

Ten Most Critical. C:6THST11D.PLT By: TCW 07-19-12 8:01am



Soil Type No. Label	Total Unit Wt. (pcf)	Saturated Unit Wt. (pcf)	Cohesion Intercept (psf)	Friction Angle (deg)	Pore Pressure Param.	Pressure Constant (psf)	Piez. Surface No.
1 Clay	125	125	500	0	0	0	W1
2 Ash/Slag	120	120	0	28	0	0	W1
3 Ash	115	115	0	25	0	0	W1
4 Sand	125	125	0	32	0	0	W1

Attachment C

Curriculum Vita

Mr. Timothy J. Harrington, P.E.

Mr. Thomas C. Wells, P.E.

Aether DBS

TIMOTHY HARRINGTON, P.E.

Principal

PROFESSIONAL ENGINEERING LICENSES

New Jersey, 1985 (GE 30238); Delaware, 1987 (7145); New York, 1986 (62728-1); Pennsylvania, 1979 (28505-E); Michigan, 1980 (27309); Indiana, 1981 (19646); Illinois, 1984 (062-041983); California, 1983 (35743); Georgia, 1984 (14874); Florida, 1982 (31484); Wisconsin 2003 (36243)

QUALIFICATIONS

Mr. Harrington has 37 years in the application of engineering solutions to the management and completion of projects involving many geotechnical, and environmental remediation components, specializing in soil and sediment remediation. He has:

- Managed Large Remediation Projects from design through construction
- Managed complex Superfund projects with intertwined design, regulatory and construction issues
- Negotiated for single and multiple PRP groups to receive agency approval of remedial actions
- Negotiate for single and multiple PRP groups to drive completion of construction remediation
- Developed innovative solutions that satisfy agency objectives and reach owner goals for the project
- Recognized as an expert on contaminate sediment and soil remediation in several USEPA regions
- Consulted on the recovery of fly ash from the Emory River in Kingston, Tennessee

Geotechnical Engineering Experience:

Mr. Harrington has consulted on the design and construction of systems to control slope stability and liquefaction of loose soils.

- Consultant on the means and methods of recovering 2.5 million cubic yards of fly ash from the Emory River near Kingston Tennessee.
- Personal observation of the fly ash impoundment failure at Kingston shortly after the failure and before the start of remedial action.
- Stability analysis and design for facilities in dune sand around Lake Michigan to maintain excavations.
- Stability analysis of Uranium Tailings ponds constructed by hydraulic placement methods in New Mexico.
- Design of systems to stabilize Uranium Tailings ponds by controlling seepage on the embankment face.
- Design of methods to remediate loose soil to control liquefaction by compaction and/or drainage methods.

Tim Harrington

- Liquefaction testing of soils by both laboratory and field methods.

EXPERIENCE

Principal and Senior Environmental Engineer, aether DBS., Naperville , IL

Mr. Harrington's firm was acquired in January of 2006 by Hard Hat Services (now aether DBS). Both firms coming together increased respectively each others' capabilities as well as offered additional services to their clients. Mr. Harrington manages major environmental remediation efforts and solutions as well as being responsible for the Chesterton, Indiana office. His expertise is in soils, sediment and marine environments.

President, Harrington Engineering & Construction, Inc., Chesterton, IN

Mr. Harrington was owner and provider of engineering and construction management services on domestic and international projects. Projects include design and construction management for the rebuilding of intake structures in Lake Michigan, removal and processing of sediment containing lead shot to restore beneficial reuse of a critical ocean shore environment, design of an upland landfill to contain sediment from the Fox River in Green Bay, Wisconsin, design of an in-water landfill in Auckland, New Zealand to contain low solids content sediment, and services on numerous facilities to construct or repair dock walls and marinas, resolve drainage problems and repair unstable slopes.

Canonie Environmental Services Corporation, Chesterton, IN

As vice president of the construction services division, Mr. Harrington was responsible for the direction of operations in the eastern USA. Projects included the construction of an upland disposal facility at the 102nd street site in Tonawanda, New York and the excavation of sediment from the St. Lawrence River, soil thermal treatment on high plasticity clay in Memphis, Tennessee, and site restoration including the removal of lime sludge and riverbank restoration in western Pennsylvania.

Rust Remedial Services Inc., Chicago, IL

Mr. Harrington served as Vice President and General Manager responsible for the operations of the Northern Region and the Thermal Operations groups. He managed work under contract totaling approximately \$400,000,000 and including numerous jobs where sediment remediation was a part of the total remedy including the Brio site in Houston, Texas, the construction of landfills in New York and Massachusetts, and removal of solidified sludge from two 20-acre basins in Southern New Jersey.

Canonie Environmental Services Corporation, Chesterton, IN

Mr. Harrington served as vice president of eastern operations responsible for design and construction projects, project manager, and project engineer for design and construction field engineering. Work included the design and construction of in-water and upland landfill's at Waukegan Harbor, Illinois, design and construction of a cap and slope protection for remnant sediments in the Hudson River, work on landfills caps in New Jersey and Indiana, and numerous projects working as a geotechnical engineering consultant on failure investigations.



Tim Harrington

D'Appolonia Consulting Engineers, Inc., Pittsburgh, PA

Mr. Harrington worked as a project engineer on projects to build power plants, on the investigation and design of mine tailing impoundments for uranium tailings in New Mexico, on design of underground mine works for the waste isolation pilot plant in New Mexico, and on several projects for water supply and dewatering of aquifer formations.

EDUCATION

Michigan State University – Masters of Science in Civil Engineering (Geotechnical and Structural Engineering Specialty)

Michigan State University – Bachelor of Science in Civil Engineering

CERTIFICATIONS

- 40-Hour OSHA HAZWOPER Training
- 8-Hour Refresher for 40-Hour Hazardous Training
- Certificates for Continuing Education from ACI, AISI, SJI and others for Renewal of Professional Licensing

PROFESSIONAL ACTIVITIES

American Society of Civil Engineers

American Concrete Institute





THOMAS CHARLES WELLS, P.E.
Senior Project Engineer

PROFESSIONAL ENGINEERING LICENSE

Michigan, 1991 (6201036924)

QUALIFICATIONS

Mr. Wells has over 35 years of geoenvironmental engineering and database management / programming experience. As a senior engineer for Aether DBS, Mr. Wells has supplied both office and field based engineering and information technology support services.

As a Professional Engineer, Mr. Wells has considerable experience in the key areas of geotechnical, environmental, hydrology, hydraulic, and foundation engineering. He has continued to practice in these areas as a part of his engineering/database focus.

Geotechnical Engineering Experience:

Mr. Wells has contributed to many heavy construction projects involving industrial facilities and environmental remediation. Geotechnical engineering related projects / tasks have included:

- Performed stability analyses for 8 miles of I-74 in Dearborn County, Indiana following a major interstate highway embankment failure. The stability investigation led to the design of a corrective berm on a similar nearby side-hill highway embankment.
- Performed stability analyses for a riparian fill design following the foundation soil failure of approximately 800 feet of ore yard at Sparrows Point, Maryland.
- Analyzed the extreme settlement (3-4 feet) of Chemical Storage Tanks in Paulsboro, New Jersey.
- Investigated and analyzed a slope stability failure along the St. Joseph River in Michigan.
- Analyzed a slope stability failure along the Grand Calumet River in Gary, Indiana and designed a corrective slope.
- Development and improvement of a 1-D finite-difference numerical model to simulate large-strain soil/sediment consolidation for use in predicting the large settlements that occur in hydraulically placed sediment.

EXPERIENCE

WELLS Technical Services, Chesterton / Union Mills, IN

As a sole Proprietor serving primarily Aether DBS (formerly Harrington Engineering & Construction), Envirocon, Inc. and Locus Technologies, Mr. Wells supplies engineering and information technology support services on a project-by-project basis. Aether DBS specializes in Sediment Restoration Services, Marine Design, Environmental Engineering, and Site Remediation. Envirocon is a full-service environmental remediation, demolition and civil construction contractor. Locus Technologies is an engineering and construction management firm based in northern California and serving primarily the environmental market. Locus Technologies is the leader in on-demand world-wide-web based Environmental Data Management Software, Services and Solutions.

Harding Lawson Associates, Chicago, IL

As an associate engineer in the Chicago office, Mr. Wells contributed to multiple projects and systems including HLADBMS (the Harding Lawson Associates DataBase Management System). HLADBMS was used to manage site characterization data generated by environmental projects. Mr. Wells also served as the North Carolina Low Level Radioactive Waste Facility feasibility project database administrator in Raleigh, NC during the project start-up phase November 1996 through March 1997.

Canonie Environmental Services Corporation

Mr. Wells served as a Technical Manager / Staff Consultant where he provided engineering and information technology support to both the technical and administrative staffs. Mr. Wells also acted as the drafting supervisor and network administrator at times (while performing his other roles). Geotechnical and Environmental project work included ground water & hydraulic modeling, geotechnical analysis & foundation design and geoenvironmental data management.

Environmental construction management tasks included the development of a construction equipment cost management system and the development of a companywide environmental construction cost estimating system used to estimate project costs totaling millions of dollars.

D'Appolonia Consulting Engineers, Inc., Pittsburgh, PA

Mr. Wells acted as the Computer department's liaison with the technical staff, supported project usage of the PRIME® super-minicomputers, and Mr. Wells also assisted with ground water modeling projects. During his first project assignment beyond graduate school, Mr. Wells authored a flood-routing program for a probable maximum flood study. During this period as a staff engineer, Mr. Wells performed pile driving, slope stability, and foundation analyses. He designed foundations, waste embankments, earthen dams, drainage channels, and spillways.

EDUCATION

Penn State University – Certificate in Geographic Information Systems

Michigan State University – Masters of Science in Civil Engineering (Geotechnical and Hydraulics / Hydrology Engineering Specialty)

Michigan State University – Bachelor of Science in Civil Engineering

CERTIFICATIONS

- 40-Hour OSHA HAZWOPER Training
- 8-Hour Refresher for 40-Hour Hazardous Training
- Certificates for Continuing Education from ASTM, Purdue University and others

PROFESSIONAL ACTIVITIES

American Society of Civil Engineers



IPL – 6th Street Generating Station



Ash Pond #4. Note water levels and 1380 bridge supports . Compare to Report picture #24

IPL – 6th Street Generating Station



Discharge pipe from Pond #3 to Pond #4. Note the water levels. Compare to Report Picture #21