NOTE

Subject: EPA Comments on Basin Electric Power Coop - Laramie River Power Station, Wheatland, WY
Round 10 Draft Assessment Report

To: File

Date: March 20, 2012

1. Please correct the following discrepancies with the hazard potential ratings:
    a. On p. 16, under section 4.4, East and West Holding Ponds, the report text indicates a hazard potential rating of **"significant"** for both ponds.
    b. On p. 17, under section 5.2, Inflow Design Floods, the report text states "Based on our site visit and the limited data available for our review, we recommend that Bottom Ash Ponds 1 and 2 **and the East and West Emergency Holding Ponds** be rated **"Low"** hazard, and Bottom Ash Pond 3 be rated "Significant" hazard." The rest of section 5.2 has the rating for the East and West Emergency Holding Ponds as "low" in one paragraph and "significant" in another, please revise/correct.
    c. On p. 32, sections 12.5.4 and 12.5.5, both the East and the West Emergency Holding Ponds are identified as **low-hazard** structures in the first bullet for each section.
    d. The checklist sheets in Appendix A list the East and West Emergency Holding Ponds as rated **"low"** hazard potential.
    e. Additionally, the selection of the 50-year design storm and subsequent justification for selection is flawed for the East and West Emergency Holding Ponds based on the previous hazard potential classification. It appears that H/H analyses (page 18, Section 5.2.3 "East and West Emergency Holding Ponds") was performed correctly based on the initial hazard potential classification, but this must be confirmed by the contractor.
2. On p. 3, Section 2.1 "General," it may be advantageous to provide the geodetic coordinates of the facility or individual impoundments for ease of location. Additionally, the street address of the facility should be provided in the report.
3. In Section 2.2, it may be advantageous to provide an aerial photograph of the facility and callouts of the impoundments similar to Figure 2 "Plan of Ash Impoundments."
4. The figures and state report found in Appendix C are not part of the utility's survey response.
5. On p. 6, Section 2.2 "Impoundment Dams and Reservoirs," in the description of physical geometry, construction material, and general information about impoundments, it may be advantageous to separate the text pertaining to individual units to individual sections for ease of comprehension.

6. In each subsection of Section 5.2 “Inflow Design Floods,” it appears the contractor conducted an independent hydrologic and hydraulic analysis of the CCW impoundments. If this is so, the contractor should state this in the section and provide relevant calculations in appendix. If no formal H/H analysis was performed, the contractor should state as much and recommend that formal analysis be performed and submitted by a contractor independent of the facility. The report notes in Section 12.5 that “Preliminary hydrologic analyses” was undertaken. If formal analysis was not available to contractor, it should be state as such and listed as a deficiency of the facility.

BASIN ELECTRIC POWER COOPERATIVE

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June 21, 2012

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

RE: Comment Request on Basin Electric Power Coop – Laramie River Station Draft Report

Dear Mr. Hoffman:

This letter is in response to the comment request received on May 29th, 2012 for the draft of the Specific Site Assessment for Coal Combustion Waste Impoundments at the Basin Electric Laramie River Station. This report presents the results of a specific site assessment of the dam safety of coal combustion waste (CCW) impoundments at the Laramie River Station (LRS). The specific site assessment was performed on May 12th, 2011 by GEI Consultants, Inc.

Basin Electric's comments on the report are as follows:

Overall
Correspondence and/or a list of information from Basin Electric to GEI Consultants were not included as an attachment to this report, and Basin Electric believes it should be included.

Section 1.1
Paragraph 1: "The CCW impoundments are the Bottom Ash Ponds 1, 2 and 3, and the East and West Emergency Holding Ponds." The ponds are permitted with the State of Wyoming as two ponds, each consisting of cells: The Bottom Ash Pond which is comprised of three cells (1, 2, and 3) and the Emergency Holding Pond which is comprised of two cells (East and West).

Section 1.4
Stephen G. Brown, P.E. is not a registered Professional Engineer in the State of Wyoming.

Section 1.6
"....a project coordinate system and datum is not identified on the grading and site plans..." The coordinate system and datum for the plant site is based on a local projection derived from NAD27 and NGVD29.

Section 2.2

Table 2-1 and paragraph 2: The maximum dike height between Bottom Ash Ponds 1 and 2 is 25 feet, and the maximum dike height of Bottom Ash Pond 3 is also 25 feet. According to drawing 0CY-6004, Bottom Ash Ponds 1, 2 and 3 have a combined storage of 2,111.1 acre-feet.

Paragraph 2, 5th to last sentence: "Bottom Ash Pond 3 is located to the south and *the bottom is* at a higher elevation than Bottom Ash Ponds 1 and 2."

Paragraph 4, page 9, second sentence: "*Select* design and construction drawings..." should be changed to simply "Design and construction drawings...."

Section 2.6

"*Selected* design and construction drawings....." should be changed to simply say "Design and construction drawings..."

Section 2.7

First paragraph, second sentence: "Coal is delivered *by rail* from the mine to the plant..."

In first sentence of second paragraph add "control residuals" after "flue gas emissions".

2nd paragraph "..., and the landfill located west of Bottom Ash Ponds 2 and 3 are currently being used." Should add to end of sentence "and has partially been reclaimed (or capped)."

2nd paragraph, second to last sentence: "Some water from Bottom Ash Pond 2 is..." should read "Some water from Bottom Ash Pond 1 is pumped back to the plant for use as make-up water for the ash water system and for use in the scrubber system."

Section 3.0

In first sentence of second paragraph add "site" after "plant".

2nd paragraph, second to last sentence; "...appear to be located more than 500 feet away..." should be changed to "...are approximately 500 feet away..." Most are within 25 feet of 500 feet from the pond embankment centerline.

Third paragraph, first sentence: "*Some* drawings of the original design and construction..." Should simply read "Drawings of the original design and construction..."

Section 4.1

2nd paragraph, last sentence; "Impoundments are classified as Less than Low, Low, Significant, or High hazard..." There is no hazard classification in either the FEMA guidelines or the USACE guideline that defines a "Less than Low".

Section 4.2

First paragraph: the maximum dike height for Bottom Ash Ponds 1 & 2 is 25 feet.

2nd paragraph, third to last sentence: a CCW release would not flow across private agricultural land.

2nd paragraph, add after third to last sentence; "In addition, a storm water runoff pond is located in the drainage that would prevent any discharge from entering the Laramie River."

Section 4.3
First paragraph: the maximum dike height on Bottom Ash Pond 3 is 25 feet.
2nd paragraph: CCW would not be released to adjacent private property due to the county road. If a failure were to occur, the CCW waste would be contained by the county road and only pond water would be able to potentially reach the private property approximately ¼ mile south.
4th sentence: remove the word "*key*" before "plant access road", as an alternate road is equally available.
3rd to last sentence: before reaching the Laramie River, any release of CCW from Bottom Ash Pond 3 would first flow into the stormwater drainage and detention basin located to the south of the Emergency Holding ponds.

Section 4.4
Last sentence of last paragraph indicates the East and West Emergency Holding Pond dikes should be classified as a "Significant" hazard. The Inspection checklist in Appendix One, however, indicates theses dikes should be classified as a "Low" hazard. Basin Electric believes the hazard classification of "Low" indicated on the checklist to be correct.

Section 5.2
First paragraph, second sentence: "Based on our site visit and the *limited* data available for our review..." should be changed to "Based on our site visit and the data available..." Also, Bottom Ash Ponds 1, 2, and the East and West Emergency Holding Ponds are rated as "Low" hazard, and Bottom Ash Pond 3 is rated as "Significant" hazard. This is inconsistent with Section 4.
In the 3rd paragraph, The East and West Emergency Holding ponds are referred to as "Significant" hazard. This is inconsistent with the Inspection Checklist in Appendix One, which classifies the ponds as "Low" hazard.
Since an incorrect hazard rating was applied to the East and West Emergency Holding Pond dikes, the Spillway Design Flood (SDF) criteria applied to these ponds was also incorrect. It should be noted, however, that even with the incorrect (overly conservative) SDF, the East and West Emergency Holding Ponds met the regulatory requirements for storage of the inflow design flood without overtopping.

Section 6.0
According to Figure 1 in USACE's 1979 Recommended Guidelines for Safety Inspection of Dams (ER 1110-2-106), LRS is located in Seismic Zone 1. According to the above referenced document, "projects located in Seismic Zones 0, 1, and 2 may be assumed to present no hazard from earthquake provided static stability conditions are satisfactory and conventional safety margins exist." It is unclear why seismic stability analyses are recommended for all five impoundments in Section 12.1 of the Draft Site Assessment.

Section 11.1.5
This section states that "there are currently no staff members trained in dam safety inspections". This is incorrect as Scott Woolsey (Wyoming PE #6323) has been trained in dam safety inspections.
Section 12.1

Item 1: "specifically in the northeast corner around the overflow conduit that …" This is not an overflow conduit. It is the Sewage Treatment Plant Effluent (STPE) discharge into the Bottom Ash Pond #1. Also, the concrete slope protection on the upstream slopes of Bottom Ash Pond 1 was partially repaired in 2011 and the remainder will be completed in the summer of 2012.

Section 12.5.1
4th bullet: Basin Electric believes that a structural stability analysis is only required for Bottom Ash Pond 1 on the east and northeast dikes.

Section 12.5.2
4th bullet: Based on this report, Basin Electric does not believe a structural stability analysis is required for Bottom Ash Pond 2.
6th bullet: "Acceptable" would be a more appropriate rating for the maintenance, surveillance and operational procedures due to the same procedures being used on this pond as on Bottom Ash Pond 1.

Section 12.5.3
5th bullet, last sentence: CCW would not be released to adjacent private property due to the county road. If a failure were to occur, the CCW waste would be contained by the county road and only pond water would be able to potentially reach the private property approximately ¼ mile south.
6th bullet: "Acceptable" would be a more appropriate rating for the maintenance, surveillance and operational procedures due to the same procedures being used on this pond as on Bottom Ash Pond 1.

Section 12.6
No reference is supplied for the source of the definitions that describe the results of the assessment.

If you have any questions or comments, please let me know. I can be reached via email at mfluharty@bepc.com or by phone at (701) 557-5688.

Sincerely,

Mike Fluharty
V.P. Plant Operations

cc: Scott Woolsey
Lyle Witham
Maria Barnhardt

GEI Consultants

Geotechnical
Environmental
Water Resources
Ecological

July 31, 2011
GEI Project 092886

Stephen Hoffman
Office of Resource Conservation and Recovery
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW (5304P)
Washington, D.C. 20460

Re: Response to Comments for Specific Site Assessment for Coal Combustion Waste Impoundments at Basin Electric Laramie River Station

Dear Mr. Hoffman:

This letter provides GEI Consultants, Inc., response to review comments provided by Basin Electric Power Cooperative (letter dated June 21, 2012) and the Environmental Protection Agency (EPA) ("Note" dated March 20, 2012) for the Specific Site Assessment for Coal Combustion Waste Impoundments at Basin Electric Laramie River Station, located in Wheatland, Wyoming. This letter provides response to review comments that were not addressed as part of the final report. The comments are repeated below followed by the response.

Responses to Technical Review Comments

Environmental Protection Agency Comments – All comments were addressed in the final report.

Basin Electric Power Cooperative Comments:

- Section 1.4 – Stephen G. Brown, P.E. is not a registered Professional Engineer in the State of Wyoming.

  Response: Wyoming P.E. registration is not required by the EPA for the CCW impoundment assessment project. We have added Douglas Laiho as a Technical Reviewer for this project, and Mr. Laiho is a registered P.E. in the State of Wyoming.

- Section 2.2 – Table 2-1 and Paragraph 2: "…the maximum dike height of Bottom Ash Pond 3 is also 25 feet. According to Drawing 0CY-6004, Bottom Ash Ponds1, 2, and 3 have a combined storage of 2,111.1 acre-feet."

  Response: The Bottom Ash Pond 3 north dike is connected to Bottom Ash Ponds 1 and 2 south dike, therefore, the maximum height of Bottom Ash Pond 3 north dike can be measured from Bottom Ash Pond 3 crest El. 4590 to Bottom Ash Pond 1 and 2 toe El. 4540, resulting in an estimated maximum height of 50 ft. We estimated storage capacities for each of the pond cells. We added the combined storage capacity of Bottom Ash Ponds 1, 2, and 3 as 2,111.1 acre-feet as a note to Table 2-1.

GEI Consultants, Inc.
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303.662.0100 fax: 303.662.8757

- Section 4.1 – 2nd paragraph, last sentence; "Impoundments are classified as Less Than Low, Low, Significant, or High Hazard…" There is no hazard classification in either the FEMA guidelines or the USACE guideline that defines a "Less Than Low".

  Response: As indicated in EPA comments to GEI dated February 3, 2012, "Less than Low" is a hazard classification used by the EPA for the CCW impoundment assessment project.

- Section 4.2 – 2nd paragraph, third to last sentence: a CCW release would not flow across private agricultural land.

  Response: No formal hydrology analysis or model that evaluates dam breach or flood routing has been provided by Basin Electric. Based on GEI's observations at the site visit, CCW could flow across private agricultural land located between the LRS and Laramie River in the event of a breach.

- Section 4.3 – First paragraph: the maximum dike height on Bottom Ash Pond 3 is 25 ft.

  Response: See response to Section 2.2, Table 2-1 above.

- Section 4.3 – 2nd paragraph: CCW would not be released to adjacent private property due to the county road. If a failure were to occur, the CCW would be contained by the county road and only pond water would be able to potentially reach private property approximately ¼ mile south.

  Response: No formal hydrology analysis or model that evaluates dam breach or flood routing has been provided by Basin Electric. Based on GEI's observations at the site visit, the elevation of Grayrocks Road appeared to be lower than the crest of the Bottom Ash Pond 3 south dike. In the case of a breach of the south dike, CCW may potentially impact private property to the south.

- Section 6.0 – According to Figure 1 in USACE's 1979 Recommended Guidelines for Safety Inspection of Dams (ER 110-2-106), LRS is located in Seismic Zone 1. According to the above referenced document, "projects located in Seismic Zones 0, 1, and 2 may be assumed to present no hazard from earthquake provided static stability conditions are satisfactory and conventional safety margins exist." It is unclear why seismic stability analyses are recommended for all five impoundments in Section 12.1 of the Draft Site Assessment.

  Response: As provided in EPA comments to GEI dated February 3, 2012, GEI understands that EPA policy recommends static and seismic stability analyses be performed on all ponds falling within the scope of the CCW impoundment assessment.

- Section 12.5.1 – 4th bullet: Basin Electric believes that a structural stability analysis is only required for Bottom Ash Pond1 on the east and northeast dikes.

  Response: As provided in EPA comments to GEI dated February 3, 2012, EPA policy recommends static and seismic stability analyses be performed for all ponds falling within the scope of the CCW impoundment assessment. GEI recommends that the critical section or

sections be analyzed for static and seismic stability for each pond. Critical section(s) are generally determined by height, loading, and/or worst soil profile among other factors.

- Section 12.5.2 – 5th bullet, last sentence: CCW would not be released to adjacent private property due to the county road. If a failure were to occur, the CCW waste would be contained by the county road and only pond water would be able to potentially reach the private property approximately ¼ mile south.

  Response: Same response as Section 4.3, 2nd paragraph comment above.

- Section 12.5.3 – 5th bullet, last sentence: CCW would not be released to adjacent private property due to the county road. If a failure were to occur, the CCW waste would be contained by the county road and only pond water would be able to potentially reach the private property approximately ¼ mile south.

  Response: Same response as Section 4.3, 2nd paragraph comment above.

We appreciate the opportunity to provide this information. If you have any questions or need additional information, please contact me.

Sincerely,

GEI CONSULTANTS, INC.

Gillian M. Hinchliff, P.E.
Project Engineer

Douglas Laiho, P.E.
Technical Reviewer

GMH/DL;mw