February 27, 2012

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

RE: NV Energy Response to Recommendations in EPA Letter Dated January 12, 2012

Dear Mr. Hoffman:

NV Energy (NVE) offers the following response to the recommendations noted in your January 12, 2012 letter. Please note that some of the recommendations you have noted have already been addressed and NVE has provided your office with the respective information.

12.1 Corrective Measures and Analyses for the Structures

EPA Recommendation:

"We concur with NVE's plan to conduct a study of the liquefaction potential of the impoundments to include field investigations, analysis, and assessment of the liquefaction potential relative to stability of the impoundments. If the results indicate there is a potential for liquefaction to affect the stability of an embankment, then the pseudo-static stability analysis performed by NVE would no longer be applicable and a post-liquefaction stability analysis would be necessary."

"Additional improvements to address stability of the impoundments may be necessary depending on the findings of the liquefaction potential evaluation."

NV Energy Response:

Included with our letter dated December 13, 2011, NVE provided the EPA with a copy of a Final Liquefaction Analysis of our Coal Combustion Waste Impoundments at the Reid Gardner Generating Station.

Based on a January 26, 2012 teleconference with EPA and a subsequent letter from EPA dated January 31, 2012, on February 10, 2012, NVE provided additional information clarifying three issues raised by EPA following your review and evaluation of the December 2011 Liquefaction Analysis. The three issues raised by EPA were as follows:

1. Structural Stability of Pond F;
2. Clarification of the results of static and seismic loading assuming liquefaction at operating ponds, and
3. Assumed Strength Characteristics of the pond liner

As of this writing, the liquid level in Pond F remains nearly empty of liquids. Additionally, physical isolation and administrative measures are in place to prevent flow to Pond F. Pond F is effectively out of service.

NVE is in the process of developing a plan to further evaluate the embankments structural integrity which will include validation of the Liquefaction Analysis results from December 2011. The findings from this evaluation will determine the final decision for future use, if any, of Pond F. We anticipate that the evaluation process will be complete by September 14, 2012. At that time NVE would proceed to implement any required structural improvements of the Pond F embankments or permanently close the pond and follow with later removal of the structure.

Included in ***"Appendix A"*** of this response are copies of the NVE December 13, 2011 cover letter which accompanied the Liquefaction Analysis report and our February 10, 2012 response to EPA letter dated January 31, 2012.

EPA Recommendation:

"Clear vegetation from the Pond F dike slopes above the Muddy River. Monitor the bank of the Muddy River for erosion to assess the potential for encroachment of the river on the toe of the Pond F dike at the northeast extent of Pond F."

NV Energy Response:

As a result of discussions with the EPA and Nevada Division of Environmental Protection (NDEP) representatives during their joint inspection at the Reid Gardner Generating Station on February 15, 2011, the vegetation along the base of the northwest corner of Pond F was cleared on May 3, 2011. By clearing this vegetation, it now allows NVE staff to observe the condition of the embankment closest to the Muddy River.

Provided in ***"Appendix B"*** of this response, NVE is providing before and after pictures of the observed vegetation during the site visit on February 15, 2011 and the current condition of the same areas as of February 22, 2012. The current picture were taken from approximately the same locations and angles as those on February 15, 2011.

NVE proposes "*No Further Action"* to this matter.

EPA Recommendation:

"Protect the integrity of the Pond F dike slurry wall by not removing the adjacent Pond G dikes until Pond F is out of service."

NV Energy Response:

We concur with this recommendation. Please note our comment above, noting that F Pond is currently in inactive status pending further evaluation of the dike structural integrity.

EPA Recommendation:

"Monitor the 16-inch gravity pipe adjacent to the toe of Pond F dike for visual signs of erosion or seepage because of its critical location adjacent to the toe of the embankments."

NV Energy Response:

NVE has added this 16-inch irrigation pipe and the diversion structure to its routine observation and inspection list. Specifically, NVE will be looking for visual signs of erosion or seepage causing any threat to the toe of the embankments.

EPA Recommendation:

"Perform repairs to the HDPE lining to seal the interstitial liner drainage system."

NV Energy Response:

Repairs were completed and documented with a letter to the Nevada Department of Environmental Protection dated September 15, 2011.

Additionally, NVE conducted additional internal inspections of all "outlet boots" for each interstitial leak detection systems at the Reid Gardner Generating Station and made additional repairs where necessary.

Attached in ***"Appendix C"*** is correspondence between NDEP and NVE. Included are before and after photos of all repairs as well as a visual picture generated from a satellite image of the Station with notations of where corresponding photos were taken. Included is a final letter from the NDEP dated October 12, 2011 accepting NVE actions and closing out their compliance inspection findings.

NVE considers this matter closed and will take no further action.

12.2 Corrective Measures Required for Instrumentation and Monitoring Procedures

EPA Recommendation:

"We recommend a more thorough instrumentation and monitoring program is developed and implemented. NVE has initiated surveys of concrete pads on the dikes and this may provide useful information on movement of the dike. If surveys of the concrete pads are found to be not representative of embankment movement, then we recommend that settlement monuments be installed. We recommend that uniform dike crest elevations be established in order to help with visual identification of settlement and to avoid the potential for concentrated flow if impoundments should overtop. We recommend a standardized monitoring program be established that includes all monitoring instrumentation and documents the methods used for data collection."

NV Energy Response:

NVE will engage the services of an engineering firm and evaluate a series of properly located bench marks for each pond embankment. These bench marks will be designed and located to provide consistent and accurate yearly survey data points. A policy and procedure for the required monitoring and comparison of the data will be developed and issued by August 31, 2012. Contracts will be issued and the survey bench marks installed and the baseline survey completed by November 16, 2012.

12.3 Corrective Measures Required for Maintenance and Surveillance Procedures

EPA Recommendation:

"We recommend NV Energy develop and document formal inspections of the CCW impoundments, at a minimum to be performed annually by plant staff. We recommend a brief daily check inspection be conducted by RGGS personnel and that a written record is maintained for the monthly inspections being conducted by NV Energy personnel. Also, continue efforts to repair minor erosion, oversteepened banks, and damage to the HDPE liner system as necessary."

NV Energy Response:

We concur with the recommendation and will perform yearly inspections that will be documented.

Pond daily monitoring will include a checklist for visual abnormalities of pond structures, dikes, liners, erosion, and embankments.

A monthly inspection and written record will be conducted by NV Energy personnel.

Maintenance activities to repair minor erosion, oversteeepened banks, and damage to the HDPE liner systems will continue as necessary.

12.4 Corrective Measures Required for the Methods of Operation of the Project Works

EPA Recommendation:

None.

NV Energy Response:

None

If you have any questions or should you require any additional information, please contact Tony Garcia, Manager, Environmental Services at 702-402-5767.

Sincerely,

David Sharp
Plant Director
Reid Gardner Generating Station

Enclosures

Cc: T. Garcia
M. Rojo
J. Martin
J. Hammons

“Appendix A”

Copies of the NVE December 13, 2011 cover letter which accompanied the Liquefaction Analysis report and our February 10, 2012 response to EPA letter dated January 31, 2012.

NVEnergy™

December 13, 2011

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

RE: Liquefaction Analysis – Coal Combustion Waste Impoundments
Reid Gardner Generating Station

Dear Mr. Hoffman:

In conformance with the NV Energy letter to your attention dated November 1, 2011, we have completed the Liquefaction Analysis on our Coal Combustion Waste Impoundments at the Reid Gardner Generating Station. Enclosed is one (1) copy of the Liquefaction Analysis Final Report for your review.

In summary, the results of the geotechnical investigation and liquefaction analyses indicate that the Station impoundments meet industry standards for stability under seismic loading conditions. All liquefaction induced settlements (directly beneath the embankments) were less than five inches, below the permitted two-foot freeboard for the embankments and within the acceptable tolerance of the HDPE pond liner systems. In addition, when reduced shear strengths were applied to the potentially liquefiable soil zones, all stability models meet or exceed the required minimum factor of safety.

If you have any questions regarding this analysis or require additional information, please contact Mr. Tony Garcia, Manager, Environmental Services at 702-402-5767.

Sincerely,

David Sharp
Plant Director, Reid Gardner Station
NV Energy, Inc.

Enclosure

NVEnergy

February 10, 2012

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

Dear Mr. Hoffman:

RE: Response to January 31, 2012 Letter Concerning Liquefaction Analysis at NV Energy Reid Gardner Generating Station

Based on the January 26, 2012 teleconference and the letter from EPA dated January 31, 2012, NV Energy (NVE) offers the following clarifications on the three issues raised by EPA following their review and evaluation of the December 2011 Liquefaction Analysis concerning the coal combustion waste (CCW) impoundments at the Reid Gardner Generating Station. As requested by EPA, a Nevada PE certification of our technical responses is also attached.

1. Structural Stability of Pond F

As noted in the Liquefaction Final Report dated December 2011 for the Reid Gardner Generating Station (Station), although liquefaction-induced slope failure was determined to be a non-issue, it was determined that a section of the *"Pond F"* embankment nearest the river was showing steady state total stress factors of safety below the required minimum values.

On December 2, 2011, NVE took immediate action as a precautionary measure and discontinued discharging its Station process effluents to Pond F and re-routed the discharges to other Station ponds. In addition, NVE began pumping the existing water out of *Pond F* to lower the liquid to a level near the bottom of the pond. At the time of this writing, the liquid level in *Pond F* remains nearly empty of liquids. Additionally, physical isolation and administrative measures are in place to prevent flow into Pond F. This pond is effectively out of service.

NVE is in the process of developing plans to further evaluate the embankments structural integrity which will include validation of the test results from December 2011. The findings from this evaluation will determine our final decision on future use of Pond F accordingly.

2. Clarification of the results of static and seismic loading assuming liquefaction at operating ponds

The static and seismic slope stability analyses for the CCW impoundments assessed by EPA have been previously submitted to EPA and their consultant, GEI Consultants. As stated in the Final Specific Site Assessment for Coal Combustion Waste Impoundments at Reid Gardner Generating Station by GEI Consultants, Inc. dated September 2011:

"The analyses considered the loading conditions End of Construction, steady Seepage, Seismic End of Construction, and Seismic Steady Seepage loading conditions. These loading conditions are consistent with guidance (USACE, USBR) for stability of dams, except the End of Construction case does not typically include an additional load from a horizontal seismic coefficient as was used in the Seismic End of Construction case, which added conservatism to the loading case." (Section 9.3, Methods of Analysis)

"The calculated factors of safety met or exceeded the minimum required factors of safety for the impoundments." (Section 11.1.2, Adequacy of Structural Stability)

Section 3, Methods of Analysis, of the Liquefaction Analysis (December 2011) describes the approach that Stanley Consultants used to evaluate the liquefaction potential of soils supporting the impoundment sites under seismic conditions. Appendix D includes the results of those liquefaction potential analyses. The factors of safety shown on the plates in this appendix reflect the potential of the soils beneath the embankments to liquefy under seismic conditions and are not factors of safety for the static stability of the impoundment embankments themselves.

Areas that showed liquefaction potential (factor of safety below 1.0 for soils with liquefaction potential), were evaluated for static post-earthquake total stress slope stability using the lower bound residual strength values for the liquefied zones with the water level of the impoundment consistent with at least the maximum permitted water level. The post-liquefaction static slope stability analyses are shown on the figures in Appendix E and listed in Table 4-3. All of the results shown in Table 4-3 are above the recommended FEMA static post-earthquake minimum factor of safety of 1.2.

A "fines correction" was applied in determining the residual strength of potentially liquefied soils for the post-liquefaction static global stability analysis of Pond 4B-1 (borings B-5 and B-15). As described in Section 3 (page 3-2), SPT blow count corrections were determined based on an assumption of clean sand. This blow count is then correlated to the residual shear strength of the liquefied soil stratum. Borings B-5 and B-15 indicate that the potentially liquefiable soil strata underlying the embankments in this area contain a high percentage of fines (silt or clay sized particles). Higher fines content makes a soil less contractive than clean sand having a similar N-value, with a corresponding increase in the post-liquefaction

residual shear strength of that soil. The fines correction was not applied at other pond locations because the use of the more conservative "clean sand" lower bound residual shear strength correlations produced factors of safety above the required minimum values for all potential failure surface shapes and depths (both circular and non-circular).

3. Assumed strength characteristics of the pond liner

As stated in the response to Item #2 above, the impoundment embankments have been analyzed under typical loading conditions as well as under post-liquefaction conditions. The areas with liquefaction potential are not typical of the soils supporting a majority of the embankments and, when encountered, were determined to be limited in vertical and horizontal extent. Liquefaction induced settlements were determined for eight areas, as shown in Table 4-1 in the Liquefaction Analysis. These liquefaction induced settlements will cause local differential settlements but not large embankment-wide settlements. The estimated settlements provided in Table 4-1, in the Liquefaction Analysis, are total settlements, with differential settlements across a short section of liner being a fraction of this amount. HDPE liners are utilized because of their relatively high tensile strengths combined with their ability to survive significant strains (500% or more strain prior to breaking). It is our opinion that the HDPE double liner systems would survive the settlements predicted for these localized areas of the pond embankments.

The pond embankments were originally designed, and successfully performed as, unlined systems for many years. In the unlikely event that the HDPE liner system experienced localized damage during a seismic event, the stability of the embankments would not be compromised and the pond could be emptied and the liner system repaired. Seepage from the ponds during a failure would be limited by the medium stiff fat and lean clay fill that was utilized in the construction of the pond embankments.

If you have any questions regarding this response, please contact Mr. Tony Garcia, Manager, Environmental Services at 702-402-5767.

Sincerely,

David Sharp
Plant Director
Alternate Responsible Official
NV Energy

Licensed Professional Engineer Certification

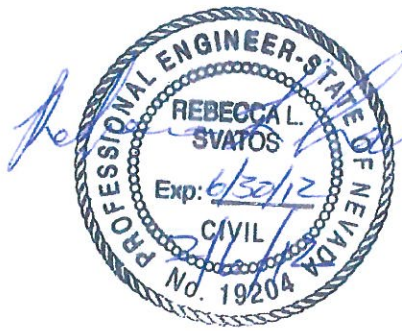
I hereby certify that the attached responses to Items #2 and #3 in the January 31, 2012 letter from the USEPA to NV Energy were prepared by me or under my direct personal supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Nevada.

Rebecca Lance Svatos, P.E.

Date 2/6/12

License Number: 019204

My license renewal date is: June 30, 2012

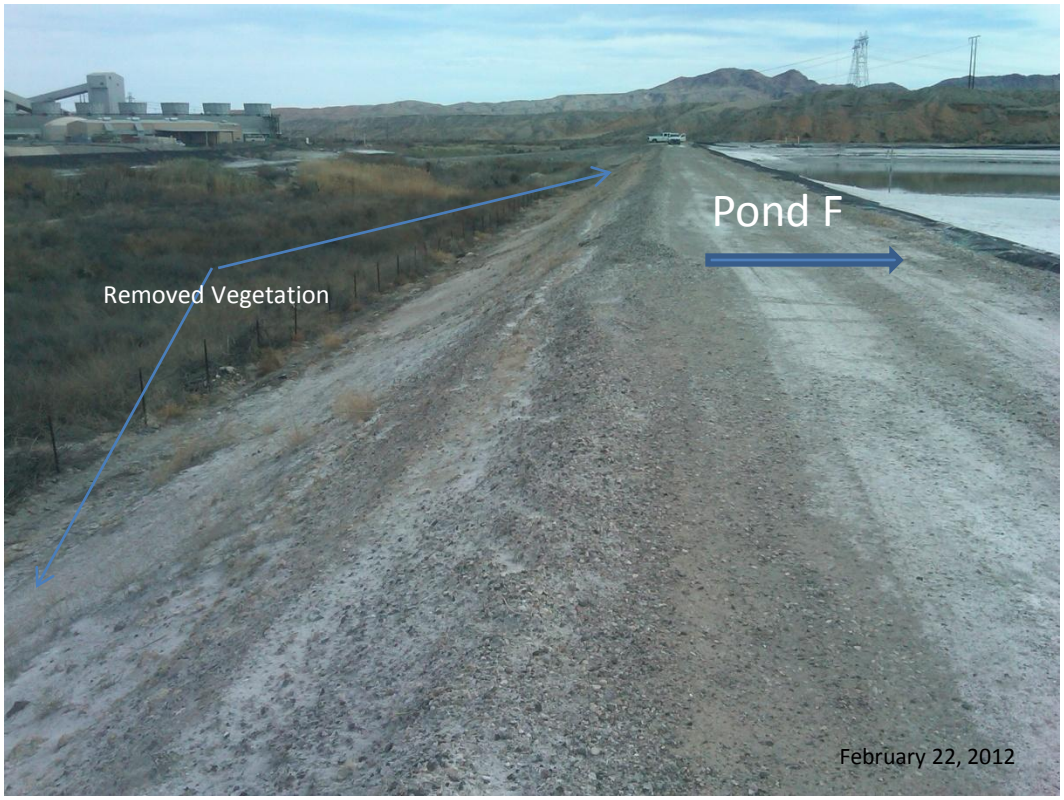


“Appendix B”

Before and after pictures of the observed vegetation during the site visit on February 15, 2011 and the current condition of the same areas as of February 22, 2012.

Photo 13: Looking southeast. North dike of Pond F. Typical soil cement slope protection. Muddy River located at left.

Photo 14: Pond F. Typical cracking and vegetation located along edge of crest and slope.



Reid Gardner Generating Station Looking Southeast. North dike of Pond F

“Appendix C”

Correspondence between NDEP and NVE

ndep
NEVADA DIVISION OF ENVIRONMENTAL PROTECTION
protecting the future for generations

STATE OF NEVADA
Department of Conservation & Natural Resources
DIVISION OF ENVIRONMENTAL PROTECTION

Brian Sandoval, Governor
Leo M. Drozdoff, P.E., Director
Colleen Cripps, Ph.D., Administrator

July 19, 2011

Mr. Tony D. Garcia, C.E.M.
NV Energy
P.O. Box 98910
Las Vegas, Nevada 89151-0001

RE: Response Letter Follow-Up for Reid Gardner Site Inspection Report
Permit: NEV91022

Dear Mr. Garcia:

The Nevada Division of Environmental Protection (NDEP) has completed a review of NV Energy's response letter, dated June 30, 2011, with respect to our three items of follow-up to our compliance inspection report. Based upon our review of your response letter, NDEP has the following item that needs to be addressed in order to complete the report items. We are hereby setting a response date of **August 29, 2011** for responding to this item.

1. Liner Repair at interstitial leak detection system outlet boots

   This item needs to be completed to address potential false readings of the LDS. By the deadline date above, please provide us a schedule for this repair to be completed by no later than October 1, 2011 or verification that this issue has been repaired.

Thank you for the thorough response to our inspection report and edits of clarification to the official inspection report. We have made corrections to the final report (enclosed). We look forward to your response on this remaining item.

If you have any questions on this matter, please call me at (775) 687-9431.

Sincerely,

Joseph Maez, P.E.
Compliance and Enforcement Branch

Enclosure: Final Report
CC:/ Compliance Coordinator

NVEnergy

September 15, 2011

Mr. Joe Maez, P.E.
Nevada Division of Environmental Protection
Compliance and Enforcement Branch
901 South Stewart Street, Suite 4001
Carson City, NV 89701

RE: NV Energy "***Final***" Response to NDEP Letter Dated July 19, 2011
Reid Gardner Site Inspection Report
Permit: NEV91022

Dear Mr. Maez:

NV Energy (NVE) is pleased to inform your office that we have completed repairs to the interstitial leak detection system outlet boots noted in your July 19, 2011 letter.

In your July 19, 2011 letter, NVE was required to complete repairs by no later than October 1, 2011. Additionally, NVE conducted additional internal inspections of all "outlet boots" for each interstitial leak detection systems at the Reid Gardner Generating Station (Station) and made additional repairs where necessary.

Attached for your review are before and after photos of all repairs as well as a visual picture generated from a satellite image of the Station with notations of where corresponding photos were taken.

NVE submits this report as confirmation of meeting your deadline of October 1, 2011 to make the repairs. Also, unless NVE hears from your office otherwise, NVE considers this matter closed and will take no further action on this matter.

If you have any questions, please contact me directly at 702-402-5767.

Sincerely,

Tony D. Garcia, C.E.M.
Manager
Environmental Services

Cc: M. Rojo D. Sharp J. Martin

Photo #12
Photo #13
Pond 4C-2
Pond 4A
501 Wally Ka
Photo #3
Pond 4C-1
Pond 4B-1
Photo #4
Photo #5 and #6
Pond 4B-2
Pond F
Pond E2
Photo #7 and #8
Pond G
Pond 4B-3
Photo #10 and #11
Pond D
Pond E1
Photo #1 and #2
Photo #9
Image U.S. Geological Survey
©2011 Google
©2010 Google
Imagery Date: 1/31/2008
36°39'22.48" N 114°38'37.11" W elev 1610 ft
Eye alt 6270 ft

Reid Gardner – Pond E1
Photo Location #1

Reid Gardner – Pond E1
Photo Location #2

Reid Gardner – Pond 4B-1
Photo Location #3

Reid Gardner – Pond 4B-2
Photo Location #4

Reid Gardner – Pond 4B-1
Photo Location #5

Reid Gardner – Pond 4B-1
Photo Location #6

Reid Gardner – Pond 4B-3
Photo #7

Reid Gardner – Pond 4B-3
Photo Location #8

Reid Gardner – Pond 4B-3
Photo Location #9

Reid Gardner – Pond 4C-3
Photo Location #10 and #11

Reid Gardner – Pond 4C-2
Photo Location #12

Reid Gardner – Pond 4C-1
Photo Location #13

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STATE OF NEVADA
Department of Conservation & Natural Resources
DIVISION OF ENVIRONMENTAL PROTECTION

Brian Sandoval, Governor
Leo M. Drozdoff, P.E., Director
Colleen Cripps, Ph.D., Administrator

October 12, 2011

Mr. Tony D. Garcia, C.E.M.
NV Energy
P.O. Box 98910
Las Vegas, Nevada 89151-0001

RE: Response Letter Follow-Up for Reid Gardner Site Inspection Report
Permit: NEV91022

Dear Mr. Garcia:

The Nevada Division of Environmental Protection (NDEP) has completed a review of NV Energy's response letter, dated September 15, 2011, with respect to our one remaining item of follow-up to our compliance inspection report. Based upon our review of your response letter, NDEP hereby closes out its findings from this year's compliance evaluation inspection.

Thank you for the detailed response to our inspection report follow-up items.

If you have any questions on this matter, please call me at (775) 687-9435.

Sincerely,

Joseph J. Maez

Joseph Maez, P.E., Supervisor
Compliance and Enforcement Branch

Cc: Sylvia Dahl, NDEP