



**CERTIFICATION OF CCR GROUNDWATER MONITORING PLAN  
TS POWER PLANT  
EUREKA COUNTY, NEVADA**

Prepared for:

  
**NEWMONT™**  
TS Power Plant  
914 Dunphy Ranch Road  
Battle Mountain, Nevada 89820

Prepared by:

 **NewFields**  
NewFields Mining Design & Technical Services  
1301 N. McCarran Blvd., Suite 101  
Sparks, Nevada 89431

NewFields Project 475.0221  
July 2016

July 8, 2016  
NewFields Project No. 475.0221.000

TS Power Plant  
914 Dunphy Ranch Road  
Battle Mountain, Nevada 89820

**Attention: Mr. Dennis Laybourn**  
**Senior Environmental Manager**

**RE: Certification of CCR Groundwater Monitoring Plan**  
**TS Power Plant**  
**Eureka County, Nevada**

Dear Mr. Laybourn,

This letter provides certification that the TS Power Plant - CCR Groundwater Monitoring Plan prepared by Newmont Nevada Energy Investment, LLC (NNEI) meets the requirements of §257.91(f) and 257.93(f)(6) of the 2015 Coal Combustion Residue Rule (40CFR Part 257.90) administered by the Environmental Protection Agency (EPA).

## **1. QUALIFICATIONS**

The review and certification of the CCR Groundwater Monitoring Plan and supporting information was performed by Brian Wellington, Ph.D., P.E. and Paul Kaplan, C.E.M., P.E.

Mr. Kaplan is a professional engineer and certified environmental manager (Nevada) with more than 33 years of experience in civil and geotechnical engineering for a wide variety of projects. Paul was the design engineer for the Ash Landfill project conducted in 2005.

Dr. Wellington is a professional engineer with more than 25 years of experience in civil and environmental engineering. He has performed environmental statistical and geostatistical evaluations for a wide variety of projects.

## **2. INTRODUCTION**

The project site is located approximately three (3) miles north of the Interstate 80 Dunphy exit in Eureka County, Nevada. The power plant facilities are located within Sections 11 and 14, Township 33N and Range 48E.



A geotechnical investigation and design program was conducted in 2005 as part of the Class III Landfill Permit Application for the TS Power Plant (March 2005). The Geotechnical and Design Report submitted as part of Permit Application included the following:

- Subsurface investigation,
- Laboratory testing of site soils,
- Site characterization, including groundwater
- Climate analyses,
- Surface water hydrologic and hydraulic analyses,
- Geoseismic evaluation,
- Slope stability analyses,
- Settlement analyses,
- Earthwork and construction recommendations, and
- Quality assurance during construction requirements.

Based on findings from the Geotechnical and Design Report, a groundwater monitoring program was developed and included as part of the Permit Application. NNEI has been operating in accordance with this monitoring plan since 2008, when the ash landfill began receiving waste.

The 2015 Coal Combustion Residue Rule (40CFR Part 257.90) contains additional requirements for groundwater monitoring and data evaluation. The TSPP - CCR Groundwater Monitoring Plan was prepared to comply with these specific CCR requirements.

### **3. PROJECT DESCRIPTION**

TS Power Plant (TSPP) is a 242 MW coal-fired power plant located in Eureka County, Nevada. TSPP was commissioned in 2008 and is one of the newest and most advanced coal fired power plants in the United States. Sub-bituminous coal from the Powder River Basin in Wyoming is the primary fuel at the facility. The coal contains approximately 5.4% ash. At full load, the plant burns approximately 110 tons/hour of coal and generates about 5.9 tons/hour of ash.

The TSPP facility includes a CCR landfill located approximately 0.5 miles northeast of the power plant. The CCR landfill is a fully geomembrane-lined facility (80-mil HDPE) with a total designed footprint of 36 acres and a maximum CCR design height of 60 feet. During the operational life of the power plant, the CCR landfill will be constructed incrementally as six (6) adjoining six (6)-



acre cells plus two (2) storage ponds to contain run-off from the design storm falling on the landfill. Currently, two cells (Cell 1 and Cell 2) and one (1) pond (Pond 1) have been constructed. Cell 1, the southwestern cell of the landfill, was part of original plant construction and has operated from 2008 to present. Cell 2, an identical six (6) acre cell immediately north of Cell 1, was constructed in 2013 and is currently accepting the designated waste streams. Based on recent (2015) survey information, the landfill contains approximately 227,000 cubic yards of designated waste. This represents approximately 9% of the total design capacity. Cell 1 has approximately 20 feet of material placed and the placement of ash is progressing to the north into Cell 2. Currently, Cell 2 has very little material on it. The disposal of CCR on the landfill is well below original projections, since the majority of fly ash being generated by TSPP is shipped offsite for re-use as a cement substitute.

#### **4. GROUNDWATER MANAGEMENT SYSTEM**

The existing groundwater monitoring system has been designed to reflect local groundwater hydrology and ensure that monitoring wells are properly located to accomplish the requirement to detect and assess any potential impacts to groundwater resulting from operation and closure of the CCR Landfill. Initial geotechnical evaluations of the area were conducted by AMEC as part of TSPP permitting and are incorporated in the Class III Landfill Permit Application submitted to NDEP – Bureau of Waste (NDEP-BWM).

The evaluation consisted of reviewing prior geophysical data and the completion of test borings and the installation of several temporary piezometers in the footprint of the proposed landfill. Based on a prior gravimetric survey, it was determined that the thickness of saturated alluvium in the area is at least 1,000 feet. Depth to groundwater in proximity to the landfill site was 17 to 36 feet below ground surface. Data indicates a very shallow gradient of 0.00086 ft/ft to the southwest. Lithologic units encountered in the area consisted of silt to gravel. The hydraulic conductivity of these materials is quite variable and estimated to range from  $1 \times 10^{-2}$  cm/sec to  $1 \times 10^{-5}$  cm/sec. Based on available data, the average rate of groundwater flow was estimated at 81 ft/yr.

The CCR Rule requires that a groundwater monitoring system for an existing CCR landfill consist of a minimum of one up gradient and three down gradient wells (§257.91(c)(1)). Currently, there are four monitoring wells (one up gradient and three down gradient) that serve the TS Power Plant Landfill. The location of the monitor wells is shown on Figure 1 of the Groundwater Monitoring Plan (attached). Based on calculations for groundwater gradient and flow rate, the location of the existing monitor wells relative to the landfill are considered adequate to detect impacts to groundwater in a timely manner.



## 5. CERTIFICATION

§257.91(f): NewFields certifies that the groundwater monitoring system has been designed and constructed to meet the requirements of this section of the rule.

§257.93(f)(6): NewFields certifies that the selected statistical method is appropriate for evaluating the groundwater monitoring data for the CCR Landfill area. The narrative description of the statistical method selected to evaluate the groundwater monitoring data is presented in Attachment B of the Groundwater Management Plan.

## 6. CLOSURE

We trust that this letter provides the certification that is required. Please contact us if you have any questions or if you require additional information.

Sincerely,

NewFields Mining Design & Technical Services



Paul Kaplan, C.E.M., P.E.  
Principal

Reviewed by:

Brian Wellington, Ph.D., P.E.  
Principal

PK/BW/ng

### Enclosures:

- CCR Groundwater Monitoring Plan, TS Power Plant, Eureka County, Nevada (July 2016)
- Attachment A: Water Sampling and Monitoring Procedures (March 2010)
  - Appendix A: Instrument Calibration & Use
  - Appendix B: Recommendation for Sampling & Preservation of Waters
  - Appendix C: Well Purging Calculation
  - Appendix D: Chain of Custody Record
- Attachment B: Technical Memorandum – Background Analysis (NewFields, 2016)

Addressee: (2) + electronic

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