

FINAL

# Closure Plan Coal Combustion Residual Landfill North Valmy Generating Station

*Prepared for*  
NV Energy

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# Certification

This page contains the written certification by a qualified professional engineer required by §257.102(b)(4) of the U.S Environmental Protection Agency's Coal Combustion Residual Rule.

This initial written closure plan for the coal combustion residual landfill at North Valmy Generating Station meets the requirements of §257.102 of the Coal Combustion Residual Rule.

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Figure 1 Conceptual Closure Schedule



# Introduction

This initial written closure plan presents the activities that will be performed to close the North Valmy Generating Station's coal combustion residuals (CCR) landfill in accordance with §257.102 of the U.S Environmental Protection Agency's CCR Rule.

## 1.1 Site Description

The North Valmy Generating Station (Station) is a nominal 518 megawatt coal-fired electric power generating facility jointly owned by NV Energy and Idaho Power Company. Located in Humboldt County, Nevada, the Station is approximately fifteen miles northwest of Battle Mountain, Nevada, approximately five miles east Interstate 80, and less than two miles from the Humboldt River.

Located on the north side of the Station, the CCR landfill is an unlined monofill landfill that currently has waste placed over approximately 143 acres. The waste fill currently extends up to 40 feet above the adjacent ground surface and generally has 3:1 (horizontal to vertical) side slopes. The landfill's surface is generally graded to drain stormwater to basins located at the perimeter of the landfill.

## 1.2 Regulatory Overview

The CCR Rule was published in the Federal Register on April 17, 2015 and became effective on October 19, 2015. The Rule regulates the disposal of CCR as solid waste in landfills, impoundments, and lateral expansions under Subtitle D of the Resource Conservation and Recovery Act. The Rule sets forth minimum requirements for written closure plans and the closure of CCR landfills in §257.102.

The North Valmy Generating Station's landfill is subject to the closure requirements in the CCR Rule because the landfill is classified as an existing CCR landfill. The landfill is considered as an existing CCR landfill because it is an "area of land or excavation that receives CCR" and it received CCR both before and after October 19, 2015, the effective date of the CCR Rule (per §257.52 and §257.53). As a result, this landfill must comply with the CCR Rule and more specifically, the closure requirements as required by §257.102(a).

The initial written closure plan must be placed in the Station's operating record not later than October 17, 2016 per §257.102(b)(2) and §257.105(i)(4). Within 30 days of placement the State Director must be notified as required by §257.106(i)(4) and §257.106(d). Also within 30 days of placement, the plan must be posted on a publicly accessible Internet site per §257.107(i)(4) and §257.107(d). The initial plan must be certified by a qualified professional engineer (§257.102(b)(4)).

The closure plan may be amended at any time, but it must be amended when "there is a change in the operation of the CCR unit that would substantially affect the written closure plan" or when "unanticipated events necessitate a revision" (§257.102(b)(3)). The plan must be amended at least 60 days before a planned change in operations, and no later than 60 days after an unanticipated event triggers a revision. After closure has commenced the plan must be amended not more than 30 days after the triggering event. Amended plans have the same requirements for certification, record keeping, public posting, and notification as required for the initial plan.

The landfill is regulated by the State of Nevada Division of Environmental Protection's Bureau of Waste Management under Class III Landfill Permit SW174R03. The activities and requirements associated with closure under that permit and applicable state regulations are not described in this closure plan.



# Landfill Closure Activities

This section describes the “steps necessary to close the CCR unit at any point during the active life of the CCR unit” and is written to meet the requirements of §257.102(b). The steps listed in this section are “consistent with recognized and generally accepted good engineering practices.” This section assumes that the CCR unit will be closed by leaving CCR in place as allowed by §257.102(a).

## 2.1 Narrative Description of Closure Process

This section contains the narrative description required by §257.102(b)(1)(i) of the CCR Rule.

### 2.1.1 Initiation of Closure Activities

Closure activities must commence no later than 30 days after the landfill receives the known final receipt of waste, either CCR or non-CCR waste, or no later than 30 days after removal of the known final volume of CCR for beneficial use (§257.102(e)(1)). Alternatively, closure must commence 2 years after the landfill received the last receipt of waste, either CCR or non-CCR waste, or 2 years after the last CCR was removed for beneficial use (§257.102(e)(2)). Time extensions for commencing closure are possible under the CCR Rule as described in §257.102(e)(2)(ii) and §257.102(e)(2)(iii). In addition, the landfill must initiate closure within 6 months of determining that the landfill has not demonstrated compliance with location requirements related to ground stability (§257.101(d)). For the purposes of the CCR rule, closure has commenced when the Owner or Operator ceases placing waste in the landfill and completes any of the actions of activities summarized below (§257.102(e)(3)).

- “Taken any steps necessary to implement the written closure plan required by [§257.102(b)]”
- “Submitted a completed application for any required state or agency permit or permit modification; or”
- “Taken any steps necessary to comply with state or other agency standards that are a prerequisite, or are otherwise applicable, to initiating or completing closure of a CCR unit.”

A notification of intent to close must be placed in the Station’s operating record no later than the date on which closure is initiated (§257.102(g) and §257.105(i)(7)). Within 30 days of placement the State Director must be notified as required by §257.106(i)(7) and §257.106(d). Also within 30 days of placement, the plan must be posted on a publicly accessible Internet site per §257.107(i)(7) and §257.107(d). The notification of intent to close must include a certification by a qualified professional engineer for the design of the final cover system. Because a professional engineer’s certification will be required, it is anticipated that the final cover design will be prepared before preparing the notification.

### 2.1.2 Closure Implementation

Implementation of closure activities will begin after preparing and certifying the final cover system design, selecting a closure contractor, issuing the notification of intent to close, and receiving the last receipt of waste. Site preparation activities may include delivering equipment and supplies, installing temporary erosion/stormwater control measures, and clearing the site. Subgrade preparation may include contouring and compacting the existing landfill surface as required by the design of the final cover system. The final cover system will likely be installed as subgrade preparation is completed. Other closure-related facilities may be installed, such as stormwater drainage structures, access roads, and/or fences. The final cover surface may be seeded if required by the final cover design.

### 2.1.3 Completion of Closure Activities

For existing CCR landfills closure must be completed within six months of commencing closure activities (§257.102(f)(1)). However, time extensions are possible under the CCR Rule (§257.102(f)(2)). Upon completion a qualified professional engineer must certify that the closure was completed in accordance with the closure plan and other closure requirements in the CCR Rule (§257.102(f)(3)). Within 30 days of completing closure a notification of closure completion must be placed in the facility's operating record and must include the professional engineer's certification (§257.102(h) and §257.105(i)(8)). Within 30 days of placement the State Director must be notified as required by §257.106(i)(8) and §257.106(d). Also within 30 days of placement, the notification of closure completion must be posted on a publicly accessible Internet site per §257.107(i)(8) and §257.107(d).

Finally, because the unit will be closed by leaving CCR in place, a notation must be recorded on the property deed or some other instrument that is normally examined during a title search (§257.102(i)(1)). The deed notation must include the information outlined in §257.102(i)(2). There is no time limit for recording in the Rule. Within 30 days of recording the notation a notification of recording must be placed in the operating record (§257.102(i)(3) and §257.105(i)(9)). Within 30 days of placement the State Director must be notified as required by §257.106(i)(9) and §257.106(d). Also within 30 days of placement, the notification of recording must be posted on a publicly accessible Internet site per §257.107(i)(9) and §257.107(d).

## 2.2 Final Cover System and Performance Standards

This section contains the description of the final cover system and installation methods as required by §257.102(b)(1)(iii) of the CCR Rule. This section also contains a discussion of how the final cover system will achieve the performance standards in the CCR Rule.

### 2.2.1 Description of Final Cover System

As required by §257.102(d)(3), the final cover system for the landfill will be designed and constructed to "minimize infiltration and erosion". The final cover system will also be designed and constructed to meet the requirements of either §257.102(d)(3)(i) or §257.102(d)(3)(ii), prescriptive and alternative final cover system options, respectively. NV Energy retains the option to select either the prescriptive or alternative final cover system options in the future. Regardless of which option is selected, the final cover system design will be certified in writing by a qualified professional engineer (§257.102(d)(3)(iii)).

The requirements for the prescriptive cover system are a 6-inch-thick erosion layer overlying an 18-inch-thick infiltration layer (§257.102(d)(3)(i)). The permeability of this system will be designed and constructed to be less than or equal to the permeability of any subsoils present, or no greater than  $1 \times 10^{-5}$  cm/sec, whichever is less. The system will also be designed and constructed to accommodate settlement and subsidence while maintaining cover system integrity. The erosion layer will be designed and constructed to support the growth of native plants.

An alternative final cover system that meets the requirements of §257.102(d)(3)(ii) may be installed instead of the prescriptive cover system. The alternative cover will be designed to be equivalent to the prescriptive cover in terms of infiltration reduction, erosion protection, and accommodation of settlement and subsidence. Alternative cover systems could include, but are not limited to, vegetated soil covers, evapotranspiration covers, granular caps, monolithic soil covers, geosynthetic covers, or compacted soil covers.

### 2.2.2 Final Cover Installation Methods and Procedures

Final cover installation generally will be completed using the methods and procedures listed below:



- Site preparation to include Installing temporary erosion/stormwater control measures
- Preparing the subgrade by contouring and compacting the existing landfill surface using heavy construction equipment
- Installing the cover system by placing, spreading, moisture conditioning, and compacting each soil layer using heavy construction equipment; geosynthetics may be placed if found to be necessary during final design.
- Installing erosion control measures
- Installing stormwater drainage control features, if found to be necessary during final cover design
- Installing any roadways and/or fences, if found to be necessary during final cover design
- Seeding the topmost layer of the cover, if found to be necessary during final cover design

### 2.2.3 Performance Requirements

The CCR unit will be closed in a manner that will meet the requirements and “closure performance standard” in §257.102(d). The applicable standards from that section are listed below and followed by a discussion of how the final cover system will help meet these standards. Per §257.102(d)(1) “the Owner or operator of a CCR unit must ensure that, at a minimum, the CCR unit is closed in a manner that will:”

- “Control, minimize or eliminate to the maximum extent feasible, post-closure infiltration of liquids into the waste and releases of CCR, leachate, or contaminated run-off to the ground or surface waters or to the atmosphere;” (§257.102(d)(1)(i))
  - The final cover system will control infiltration of liquid into waste by meeting the permeability requirements listed in the CCR Rule and by providing a final cover surface that is graded to promote positive drainage. Meeting the permeability requirements in the CCR rule will limit the potential for water to infiltrate through the cover and into the underlying waste. Creating a final cover surface that promotes the flow of water will reduce the time available for water to infiltrate through the cover and into the underlying waste.
  - The final cover system will control the release of CCR by covering exposed CCR to limit contact with wind, water, and other agents of erosion. Armoring, compaction, and/or other erosion control measures may be provided in areas more susceptible to water or wind erosion. Drainage and sediment control structures may be installed to collect and/or detain eroded CCR.
  - By limiting the amount of water coming into contact with CCR, the measures for controlling infiltration of liquid into waste will also serve to limit the amount of water available to create leachate and the amount of leachate generated. Controlling and reducing the amount of leachate generation will in turn control the release of leachate.
  - By limiting the amount of water coming into contact with CCR, the measures for controlling the release of CCR will also control the release of contaminated run-off.
- “Preclude the probability of future impoundment of water, sediment, or slurry;” (§257.102(d)(1)(ii))
  - The final cover system will be graded to provide positive drainage; thereby precluding the possibility of impounding water, sediment, and slurry.
- “Include measures that provide for major slope stability to prevent the sloughing or movement of the final cover system...” (§257.102(d)(1)(iii))
  - The slopes of the final cover system will be designed and graded to provide geometries and configurations that promote slope stability and prevent sloughing or movement. Stormwater and erosion control measures will also promote slope stability.

- “Minimize the need for further maintenance of the CCR unit; and” (§257.102(d)(1)(iv))
  - The type, amount, and frequency of maintenance activities will be considered during design of the final cover system, particularly when designing the erosion control and stormwater systems.
- “Be completed in the shortest amount of time consistent with recognized and generally accepted good engineering practices.” (§257.102(d)(1)(v))
  - Constructability will be considered during design of the final cover system so that design elements do not unnecessarily prolong the construction schedule.

## 2.3 Estimated Maximum CCR Inventory

Currently, the estimated maximum inventory of CCR expected to be in this on-site landfill during its active life is approximately 23.9 million cubic yards (required per §257.102(b)(iv)). This is based on the “permitted disposal capacity” currently listed in Solid Waste Disposal Site Permit SW174R03. The volume listed in the permit may be changed in the future as allowed by state regulations.

## 2.4 Estimated Largest Final Cover Area

The estimated “largest area of the CCR unit ever requiring a final cover... at any time during the CCR unit’s active life” is approximately 157 acres (required per §257.102(b)(v)). This is based on the permitted disposal area currently listed in Solid Waste Disposal Site Permit SW174R03. The area listed in the permit may be changed in the future as allowed by state regulations.

## 2.5 Conceptual Closure Schedule

The schedule required by §257.102(b)(vi) of the CCR Rule is shown in Figure 1. Currently, it is estimated that landfill closure activities will be completed by 2028. Landfill closure activities will commence after the North Valmy Generating Station is retired and the last receipt of CCR-wastes and non-CCR wastes generated during decommissioning and demolition (e.g. inert demolition debris) are received. Although the schedule includes some of the “major milestones” identified in the CCR rule as part of closure activities, it does not include all of the activities necessary to close the landfill in accordance with Class III Landfill Permit SW174R03 and applicable state regulations.

**Figure 1 Conceptual Closure Schedule**

Closure Plan, Coal Combustion Residual Landfill, North Valmy Generating Station

Step or Phase of CCR Unit Closure	Estimated Completion Timeframe <sup>a</sup> (months)																					
	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9
Design Landfill Closure Project, to include Final Cover Design	█	█	█	█	█	█	█															
Obtain Professional Engineer Certification for Final Cover Design							█															
Bid, Select, and Award Closure Contract							█	█	█	█	█	█										
Last Receipt of CCR and non-CCR Waste												█										
Issue Notifications of Intent to Close, for both CCR-Rule <sup>b</sup> and NDEP <sup>c</sup>													█									
Closure Construction Activities, to include Final Cover Installation <sup>d</sup>													█	█	█	█	█	█				
Issue Notification of Closure Completion for both CCR Rule <sup>e</sup> and NDEP																					█	
Record Deed Notation, for both CCR Rule <sup>f</sup> and State Regulations																					█	
Issue Notification of Deed Recordation <sup>g</sup>																						█

<sup>a</sup> Timeframes provided are approximate, conceptual, and in calendar days. Actual dates and durations for construction will depend on weather, contractor availability, and other variables.

<sup>b</sup> Closure must commence within 30 days of last known receipt of waste. Within 30 days of placement the notification of intent must be posted on the publicly accessible Internet site and notice sent to the State Director. Closure will have commenced when the Owner or Operator ceases placing waste in the landfill and completes any of the actions or activities summarized in §257.102(e)(3). The notification must contain the professional engineer certification of the final cover design.

<sup>c</sup> A notice of intent to close the landfill under State landfill regulations must be submitted to the NDEP 15 days before commencing closure, as required by the landfill permit.

<sup>d</sup> Closure must be completed within 6 months of commencing closure. Closure will have commenced when the Owner or Operator ceases placing waste in the landfill and completes any of the actions or activities summarized in §257.102(e)(3).

<sup>e</sup> The notification must be placed within 30 days of the completion of closure. Within 30 days of placement the notification of intent must be posted on the publicly accessible Internet site and notice sent to the State Director. The notification must be certified by a professional engineer.

<sup>f</sup> There is no time requirement listed in the CCR Rule for recording a notation on the property deed.

<sup>g</sup> The notification must be placed within 30 days of recording the deed. Within 30 days of placement the notification of intent must be posted on the publicly accessible Internet site and notice sent to the State Director.