

Sampling and Analysis Plan for Diesel Impact to Soil Administrative Order on Consent Activities

NV Energy
Reid Gardner Station

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Stanley Consultants INC.

A Stanley Group Company
Engineering, Environmental and Construction Services - Worldwide

NV Energy Certification

20618.02 Sampling and Analysis Plan for Diesel Impact to Soil

I certify that this document and all attachments submitted to the Division were prepared under the direction or supervision of NVE in accordance with a system designed to gather and evaluate the information by appropriately qualified personnel. Based on my inquiry of the person or persons who manage the system(s) or those directly responsible for gathering the information, or the immediate supervisor of such person(s), the information submitted and provided by NVE is, to the best of my knowledge and belief, true, accurate, and complete in all material respects. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature: _____
Name: Dave Sharp
Title: Plant Director, Reid Gardner Station
Company: NV Energy
Date: _____

Certified Environmental Manager Certification

I hereby certify that I am responsible for the services described in this document and for the preparation of this document. The services described in this document have been provided in a manner consistent with the current standards of the profession and to the best of my knowledge comply with all applicable federal, state and local statutes, regulations and ordinances. I hereby certify that all laboratory analytical data was generated by a laboratory certified by the NDEP for each constituent and media presented herein.

Signature: _____
Name: Rebecca L. Svatos
Title: Project Manager
Company: Stanley Consultants
Date: _____
EM Certificate Number EM-1931
EM Expiration Date: 9/30/2011

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Introduction

This Sampling and Analysis Plan (SAP) is being submitted to the Nevada Division of Environmental Protection (NDEP) in conformance with the Administrative Order on Consent (AOC) signed by NV Energy (NVE) and NDEP on February 22, 2008 regarding NVE's Reid Gardner Station (Station). The Station is a coal-fired electric power generation facility that produces approximately 600 MW of power from four generating units. The Station is located approximately 45 miles northeast of Las Vegas, within the Moapa Valley. The location of the Station is shown on Figure 1 in Appendix A. The site was developed in 1964 and the Station became commercially operational in 1965.

Approximately ten feet of diesel free product was discovered in a monitoring well located at the Plant Site in 1986. Subsequent investigations identified Total Petroleum Hydrocarbon (TPH) contamination in the soils at the Plant Site exceeding the applicable soil action level of 100 milligrams per kilogram (mg/kg) pursuant to Nevada Administrative Code (NAC) 445A.2272. These investigations suggest that most of the TPH contamination originated from leaking underground product piping associated with an 850,000-gallon above ground storage tank (AST) containing diesel fuel.

NVE plans to remove the 850,000-gallon AST and above grade piping in the immediate area; underground piping has already been taken out of service. The objective of this SAP is to determine if TPH contamination in vadose zone soils exceeds 100 mg/kg in the immediate vicinity of the 850,000-gallon AST. The purpose of this SAP is not to characterize potential sources of petroleum contamination or the extent of TPH contamination, but rather to obtain information that can be used by NVE to evaluate risks to site workers, evaluate future remediation expenditures, and plan for future uses in the area of the 850,000-gallon AST. NVE is completing this work under this SAP so that data collected may be used as part of future investigations and decision-making under the AOC, if appropriate.

Petroleum contamination detected in other areas of the Station, other petroleum sources, the extent of petroleum impact, and site-wide groundwater issues will be addressed in separate investigations under the AOC.

Background

2.1 Historic Information

An environmental investigation was conducted in April 1986 to assess subsurface conditions near a chemical storage area adjacent to Warehouse 2 at the Station. Approximately ten feet of diesel free product was discovered in one of the monitoring wells installed for the investigation. Subsequent investigations completed at the Station suggest that approximately 400,000 gallons of fuel were released from leaking underground product piping associated with the 850,000-gallon (AST) containing diesel fuel. The AST is located on the northerly side of the Station within an earthen berm and the diesel fuel was previously used as start up fuel for the four units. The location of the site is shown on Figure 1 in Appendix A. The diesel unloading and fuel transfer piping are located west of the AST. The product piping has since been disconnected, capped and abandoned in place. Integrity testing of the AST in October 1986 did not find any leaks in the tank.

NDEP issued a Finding of Violation for the unauthorized release of pollutants in the groundwater on October 1, 1986.

Field investigations of the diesel release were conducted in 1986 and 1987 at the Plant Site. These investigations focused on identifying groundwater contamination and delineating the free product plume. According to previous investigations, the diesel release was a result of leaks in the product piping, and not the AST. Free product recovery efforts began in 1986 and are ongoing to date. Through May 2009, approximately 272,000 gallons of diesel have been recovered.

Additional background information for the Station is available in the May 2008 Final Generic Quality Assurance Project Plan (QAPP).

2.2 Hydrogeology

According to the 1987 Hydrogeologic Study of the Reid Gardner Power Plant Site Report, groundwater was determined to flow generally toward the southeast, with several groundwater patterns identified at the site. The report stated that groundwater flow is highest in buried channels where they exist, otherwise groundwater flow is slow and through silty sands under low gradients.

Depth to groundwater within the AST berm is estimated to fluctuate from approximately 9 feet to 15 feet below ground surface (bgs), based on information from nearby monitoring wells and monitoring well HM-41 located within the berm area. Groundwater data is included in Appendix B.

2.3 Remediation Systems

Removal of product at the Station has been ongoing since the discovery of the product release in 1986. Remediation activities began with installing submersible pumps in three recovery wells. Later, five product recovery trenches were constructed and backfilled with gravel. In 2000, additional free product was identified to the north of the previously defined plume boundary. A product recovery well with a submersible pump was subsequently installed. In 2002, NVE installed nine free product recovery wells along the north-south trending product plume. In 2003, NVE installed a vacuum enhanced recovery system (VERS) that can extract product from eight extraction wells. In addition to the VERS, current product recovery includes a total fluids pump in one well and passive product recovery devices in two wells.

2.4 Future Plans

The 850,000-gallon AST is currently out of service and the diesel has been removed from the tank. NVE plans to clean the tank, and then remove the tank and associated above-ground product piping and dispensers in the immediate area. The tank removal is scheduled for the fourth quarter of 2009.

Data Quality Objectives

The objective of this SAP is to determine if TPH contamination in vadose zone soils exceeds 100 mg/kg in the immediate vicinity of the 850,000-gallon AST. The information collected from this SAP will be used by NVE to evaluate risks to site workers, evaluate future remediation expenditures, and plan for future uses in the area of the 850,000-gallon AST. The analytical results from this sampling plan will be compared to the applicable soil action level of 100 mg/kg TPH pursuant to Nevada Administrative Code (NAC) 445A.2272. Soil samples will be collected and analyzed for TPH and reported as TPH, gasoline range organics (GRO), diesel range organics (DRO), and oil range organics (ORO) per Method 8015.

Data quality objectives including data quality indicators, data review and validation, data management, and assessment oversight outlined in the QAPP will be used.

Sampling Rationale

The proposed sampling scheme for soil is biased/judgmental, with definitive laboratory analysis. Four soil borings are proposed in the immediate vicinity of the 850,000-gallon AST (approximate locations P1 through P4 as shown on Figure 2 in Appendix A). Soil samples will be collected above the historic high groundwater table elevation. The historic high groundwater table is estimated at approximately nine feet bgs inside the berm area, based on data from nearby monitoring wells (See Appendix B).

The base of the boring will be completed within the estimate historic high groundwater table to evaluate geology and observe the change between the vadose zone and the water table; however, the soil samples submitted for laboratory analysis will be collected above the historic high groundwater table.

The sample locations were chosen to evaluate TPH concentrations in the vadose zone in the immediate vicinity of the 850,000-gallon AST. The boring depths were selected to allow for sampling of the vertical extent of contamination within the vadose zone above the estimated historic high groundwater table. Each soil sample will be analyzed for TPH, GRO, DRO, and ORO by EPA Method 8015. Petroleum contamination detected in other areas of the Station, other petroleum sources, the extent of petroleum impact, and site-wide groundwater issues will be addressed in separate investigations under the AOC.

Request for Analyses

Each soil sample collected will be analyzed for TPH by EPA Method 8015 by the laboratory specified in the final QAPP dated May 2008 and approved by the NDEP on July 17, 2008 (Advanced Technology Laboratories [ATL]). EPA Method 8015 is specified in NAC 445A.2272 as the required method to determine if the soil action level for total TPH of 100 mg/kg has been exceeded. Analytical results will be reported for TPH - extractable range, GRO, DRO, and ORO.

Analytical quality control will be in accordance with the ATL Quality Assurance/Quality Control Manual provided in Appendix C of the approved QAPP.

Field Methods and Procedures

The investigation involves advancing four soil borings completed in the vadose zone above the historic high groundwater table. The borings will be advanced using a truck-mounted hollow-stem auger drilling machine (or equivalent). Soil samples will be continuously collected using a split spoon sampling device and field screened with a PID. In general accordance with the QAPP, soil samples will be collected as grab samples (independent, discrete samples).

The base of the boring will be completed within the estimate historic high groundwater table to evaluate geology and observe the change between the vadose zone and the water table; however, the soil samples submitted for laboratory analysis will be collected above the historic high groundwater table.

For the purpose of this SAP, one discrete grab sample will be collected from each soil boring for laboratory analysis. The sample will be collected at the interval indicating the highest PID reading or based on the Project Geologist's discretion (e.g., PID readings, visual or olfactory observations, etc.). If organic vapors are not detected and there are no visual or olfactory indications of contamination, the soil sample from immediately above the estimated historic high groundwater table will be submitted for laboratory analysis. A second soil sample in the vadose zone may be collected from the borings at the Project Geologist's discretion. Sampling locations are identified on Figure 2 in Appendix A.

Soil samples will be collected from a split-spoon sampler. The split-spoon sampler will be properly decontaminated between samples. Sample containers will be filled to the top, taking care to prevent soil from remaining in the lid threads prior to being closed to prevent potential contaminant migration to or from the sample. Sample containers will be closed as soon as they are filled, chilled to 4 degrees Celsius, and processed for overnight shipment to the laboratory. All soil samples will be analyzed for TPH.

Decontamination of sampling equipment must be conducted consistently to assure the quality of samples collected. All equipment that comes into contact with potentially contaminated soil or water will be decontaminated prior to each use. Disposable equipment intended for one-time use will not be decontaminated, but will be packaged for appropriate disposal. All sampling devices used will be decontaminated according to the EPA Region 9 decontamination procedures referenced in Appendix E of the approved QAPP.

Sample Containers, Preservation, and Storage

The laboratory, ATL, will provide the appropriate sample containers and preservatives for the proposed sampling event. The sample containers, preservation, and storage will be as specified in Table 3 of the approved QAPP.

Disposal of Investigation Derived Waste

Investigation Derived Waste (IDW) consisting of drill cuttings and decontamination fluids generated during drilling activities will be placed in drums that are visibly labeled and temporarily located on site. Offsite disposal of the IDW will be completed after the laboratory analysis results have been received. If additional analyses are needed to characterize the soils for offsite disposal, this will be handled by the waste disposal vendor.

Sample Documentation and Shipment

All documentation of the field activities will be as specified in Section A9.0 of the approved QAPP.

Sample handling and shipment will be as specified in Section B3.0 of the approved QAPP.

Quality Control

Quality control measures will be taken in accordance with the Final QAPP dated May 2008 and approved by the NDEP on July 17, 2008.

10.1 Quality Control Samples

In accordance with the approved QAPP, the following Quality Control (QC) requirements pertain to soil samples.

Table 10-1 Quality Control Samples

AOC Implementation Activity	Agency	Frequency of Activity
Field Split	NDEP	Discretionary upon request of NDEP per Section B5.2.2.4 of the QAPP
Field Blank	Stanley Consultants	1 per day or 5% of primary field samples (whichever is less) as specified in Section B5.2.2.1 of the QAPP
Equipment Rinsate Blank	Stanley Consultants	1 per day or 5% of primary field samples (whichever is less) as specified in Section B5.2.2.1 of the QAPP
Blind & Field Replicate Sample	Stanley Consultants	Not applicable to soil sample analysis as specified in Section B5.2.2.3 of the QAPP
Trip Blank	Stanley Consultants / ATL	One trip blank will be included with each shipping container transporting samples for VOC analysis as specified in Section B5.2.2.2 of the QAPP
Lab Reagent Blank	ATL	As specified in Section B5.3.7 of the QAPP
Method Blank	ATL	As specified in Section 6.2 of the ATL Quality Assurance Program Plan provided in Appendix C of the QAPP
Matrix Spike/Matrix Spike Duplicate	ATL	As specified in Section 6.2 of the ATL Quality Assurance Program Plan provided in Appendix C of the QAPP

Table 10-1 Quality Controls Samples (Continued)

AOC Implementation Activity	Agency	Frequency of Activity
Lab Control Sample	ATL	As specified in Section 6.2 of the ATL Quality Assurance Program Plan provided in Appendix C of the QAPP
General Bottle Control	ATL	Certified by Manufacturer

10.2 Data Usability/Validation

Per the request of NDEP and as stated in Section D2.0 of the approved QAPP, NVE will request a Tier 3 data package from the laboratory for 100% of the data generated from the sampling activities.

Level 3 data validation is outlined in Section D2.0 and Appendix F of the approved QAPP.

Section 11

Field Variances

As conditions in the field may vary, it may be necessary to make minor modifications to the SAP in the field. When appropriate, the QA Officer will be notified and a verbal approval will be obtained from the QA Officer before implementing the changes. Modifications to the approved SAP will be documented in the Diesel Impact to Soil Sampling Report.

Field Health and Safety Procedures

A site-specific health and safety plan will be prepared for the diesel soil sampling activities that is consistent with the General Health and Safety Plan dated March 2008 and accepted by NDEP on March 31, 2008. Field sampling activities will be conducted in accordance with this site-specific health and safety plan.

Appendix A

Site Figures

Appendix B

Historic Depth to Groundwater Data