

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

FACT SHEET

(pursuant to NAC 445A.236)

Permittee Name: Southern California Edison
Mohave Generating Station
P.O. Box 29505
Laughlin, NV 89028

Permit Number: NEV30007

Facility Location: Mohave Generating Station,
655 Bruce Woodbury Way
Laughlin, NV 89028
Township 32 South, Range 66 East, Sections 22 through 27
Latitude: 35° 8' 00" N
Longitude: 114° 35' 00" W

Corrective Actions Sites: There are two corrective actions cases associated with this facility: ID Number 6525, groundwater contamination; and ID Number 6668, soil contaminated with total petroleum hydrocarbons. There are no other Bureau of Corrective Actions sites within one mile of the facility.

Drinking Water Protection: Portions of the facility are within the 6000' and 3000' Drinking Water Protection Areas (DWPAs) around the Colorado River intake for the Mohave Generating Station public water supply. A Wellhead Protection Area (WHPA) has not been established for this public water supply.

General: Southern California Edison operated the Mohave Generating Station, a coal-fired power plant from 1971 to closure on December 31, 2005. The coal arrived at the site as slurry of fifty percent (50%) crushed coal and fifty percent (50%) water, via pipeline from Arizona. At the plant, the coal was separated from the water using high-speed centrifuges and clarifiers known as "clariflocculators". The coal was used to fire the boilers, and the water was used in the plant's cooling process. The plant also obtained additional water from the nearby Colorado River for cooling purposes. Seven cooling towers served two 790-megawatt power-generating units and were designed to cool the water so that it can be recycled through the main condensers.

As the water was recycled and passed through the cooling process, evaporation losses resulted in high mineral concentrations in the remaining water. Due to repeated re-use, the mineral concentrations eventually became too high for the water to be used in the plant. This water was disposed of by evaporation in lined wastewater evaporation ponds. Other structures on the site that contained coal, process water, and process wastewater of various types are included in the permit: the coal fines storage pond, reuse water storage ponds, plant drain storage ponds, the ash/coal fines drying pond and the cooling tower basin and canal. These structures are all hereafter collectively referred to as "systems". A description of each system and the fluids/wastes they contained is listed in Table A. Since the last permit renewal, the Permittee has removed from service and is decommissioning several system components, including the Coal Fines Storage Pond System (Pond 5), and the Coal Storage Pond System (Marcona Ponds 1-8). It is anticipated that additional system components will be decommissioned during the term of the renewed permit.

The facility permit also includes a small package treatment plant that processes domestic wastewater from the facility, and discharges the secondary-treated effluent to a lined evaporation pond. Effluent limitations are summarized in a table included herein.

Under previous temporary permits, use of process water from the Cooling System (Cooling Tower Basin and Cooling Canal) for dust suppression purposes was authorized. Under the temporary authorizations, monitoring was required. The Permittee has indicated process water will no longer be used for this purpose, and that only fresh water will be applied for dust control. Monitoring will not be required for the use of fresh water for dust suppression. Best Management Practices (BMPs) must be employed.

No discharges of pollutants are permitted from the above-described systems to either surface or groundwaters of the State.

**Table A.
 List of Southern California Edison Mohave Generating Plant Water Systems**

SYSTEM	CONTENTS	PONDS	CAPACITY (gallons)
Reuse Water Storage Pond System	Reusable Wastewater	Sweetwater Pond Pond No. 2	14 million 77 million
Wastewater Evaporation Pond System	Poor quality wastewater	Pond No. 3 Pond No 4A Pond No 4B Pond No 6A Pond No 6B Pond No 6C	144 million 175 million 175 million 74 million 68 million 68 million
Plant Drain Storage Pond System	Plant site drainage	North Peripheral Drain South Peripheral Drain	2.6 million 2.6 million
Ash and Coal Fines Drying Pond System	Solids from the plant drain storage pond system, solids/liquid from various sumps on the power block, and material being dried prior to being placed into the landfill.	Ash and Coal Fines Drying Pond	6 million
Cooling System	Transferred cooling water for reuse	Cooling Tower Basin Cooling Canal	3.9 million 4.2 million
Ash Canyon Catch Basin	All plant site drainage outside of the power block that travels over the fly ash disposal area	Ash Canyon Dam	70 million

The primary leak detection system for the evaporation ponds is an array of electrodes installed in drill holes below the liners and adjacent to the pond dikes. Buried wires connect these electrodes to a control panel. An electrical current is applied to a floating electrode inserted into the highly conductive, pond wastewater. Any current passing through the pond liners will be received by the

buried electrodes. The magnitude of the current signal transmitted through the liner indicates the integrity of the liner.

Two types of liner material are presently used at the facility: high density polyethylene (HDPE) and coated asphalt. The CD and 6B Ponds are presently lined with HDPE. This material is nonconductive and very little current will pass through to the electrodes beneath. Therefore, a breach in the liner is easily detectable.

The remaining ponds are lined with coated asphalt. It has been determined that this material has slight conductive properties. However, leaks in the asphalt liner will result in increased soil moisture beneath the liner, which will attract and conduct the electrical current applied to pond wastewater. It is this signal that is detected by the electrode array to indicate a leak in coated asphalt-lined ponds.

A secondary leak detection system has been installed beneath the HDPE liners. This series of probes directly measures soil moisture using a microwave technology; although, measurements are limited to a relative small area surrounding each probe. The probes serve two functions. Their primary function is to measure any environmental effects on the soil moisture, such as rainfall, that could change the interpretation of data indicating leak in a particular pond. Secondly, the probes will also directly detect leaks if soil moisture near a probe increases significantly.

A survey of the pond liners using the array of electrodes is performed quarterly. These surveys include direct soil moisture measurements, and the results of the surveys are presented to the State of Nevada, Division of Environmental Protection in Annual Groundwater Monitoring Reports. If a leak is detected, station personnel are notified immediately, and notification of the State is conducted in accordance with Part II.A.4 of the permit.

This permit also incorporates 12 monitor wells for additional leak detection monitoring.

Previous editions of Permit NEV30007 included the Bureau of Water Pollution Control oversight of groundwater remediation activities to address high TDS groundwater contamination that occurred as a result of leaking ponds prior to the original permit issuance. In November 2008, the oversight of these activities was transferred to the Bureau of Corrective Actions.

Receiving Water Characteristics: This is a “zero discharge” permit. Discharges of pollutants from the systems to groundwaters or surface waters of the State are not permitted, except as authorized from specified ponds/components for dust suppression. The waters below the site have been impacted by pre-regulation leakage of highly mineralized process water from the various impoundment structures. Due to the extensive groundwater remediation program, the groundwater quality at the site is well characterized. Data from the network of monitoring wells submitted in annual reporting from 2004 through 2008 indicate the following overall groundwater quality below the site.

PARAMETER	AVERAGE	MAXIMUM	MINIMUM
pH (Standard Units)	7.82	9.7	7.0
Electrical Conductivity (µmho/cm)	1408.6	6350	579
Nitrate (mg/l)	6.51	35.4	<0.5
Total Dissolved Solids (mg/l)	944.3	5393	312

Flow: There is no flow limitation on the systems at this facility, with the exception of the package

sewage treatment plant. The flow to the package treatment plant is limited to the design capacity of 36,000 gallons per day.

Limitations: The Permittee will be required to monitor the fluids contained in all systems on an annual basis for pH, electrical conductivity, calcium, magnesium, sodium, potassium, bicarbonate, sulfate, chloride, nitrate, and total dissolved solids. The twelve leak detection wells shall also be monitored and reported for pH, electrical conductivity, temperature and groundwater elevation. Leak detection surveys shall be performed and reported at the intervals specified in Parts I.A.1.a of the permit. A report of the quantities by type of any solid waste material removed from any system described in the permit shall also be submitted annually.

The package treatment plant effluent limitations and monitoring conditions are summarized below. Samples shall be collected after final treatment and prior to discharge to the evaporation pond.

Package Wastewater Treatment Plant Effluent Limitations

PARAMETER	DISCHARGE LIMITATIONS		MONITORING REQUIREMENTS	
	Quarterly Average	Quarterly Maximum	Measurement Frequency	Sample Type
Flow	0.036 MGD	---	Continuous	Meter
BOD ₅	30 mg/l	45 mg/l	Quarterly	Discrete
TSS	30 mg/l	45 mg/l	Quarterly	Discrete
pH	6.0 to 9.0 Standard Units		Quarterly	Discrete

Special Conditions: No later than 30 days prior to the decommissioning, removal and/or closure of a facility component administered by this permit, the Permittee shall notify the Division, in writing, of the planned decommissioning/removal.

No later than 30 days after the decommissioning, removal and/or closure of a facility component administered by this permit, the Permittee shall provide the Division with documentation verifying the removal of the component, and shall request that the component monitoring be delete from the sampling schedule. This shall be considered a minor modification of the permit.

Schedule of Compliance: The Permittee shall implement and comply with the provisions of the schedule of compliance after approval by the Administrator, including in said implementation and compliance, any additions or modifications, which the Administrator may make in approving the schedule of compliance.

- a. The Permittee shall achieve compliance upon issuance of the permit.
- b. **MMM DD, 2010**, a revised operation and maintenance manual shall be submitted to the Division for review and approval. The manual shall include revised information for all

the leak detection and pond systems described in the permit. The document will also cover dust control activities and Best Management Practices (BMPs). Within fourteen days of receiving the Division's comments, if any, the manual shall be finalized and submitted to the Division. All compliance deliverable items shall be sent to both of the following addresses:

**Division of Environmental Protection
Bureau of Water Pollution Control - Las Vegas
2030 E. Flamingo Rd, Suite 230
Las Vegas, NV 89119-0837**

**Department of Conservation and Natural Resources
Division of Environmental Protection
Bureau of Water Pollution Control
901 S. Stewart Street, Suite 4001
Carson City, Nevada 89701**

Procedures for Public Comment: The Notice of the Division's intent to issue a permit authorizing the facility to discharge to the groundwater of the State of Nevada subject to the conditions contained within the permit is being sent to the **Las Vegas Review-Journal** and the **Laughlin Nevada Times** for publication. The notice is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit may do so in writing for a period of 30 days following the date of the public notice. All comments regarding this permit must be received or postmarked by **5:00 PM on MMM DD, 2010**. The comment period can be extended at the discretion of the Administrator.

A public hearing on the proposed determination can be requested by the applicant, any affected State, any affected interstate agency, the Regional Administrator or any interested agency, person or group of persons.

The request must be filed within the comment period and must indicate the interest of the person filing the request and the reasons why a hearing is warranted.

Any public hearing determined by the Administrator to be held must be conducted in the geographical area of the proposed discharge or any other area the Administrator determined to be appropriate. All public hearings must be conducted to accordance with NAC 445A.238.

The final determination of the Administrator may be appealed to the State Environmental Commission pursuant to NRS 445A.605.

Rationale for Permit Requirements: Leak detection surveys are required to prevent any further groundwater contamination from occurring and to prevent hindering the ongoing remediation program. Remediation wells are to be monitored to determine the effectiveness of the remediation program, to support the results of the leak detection methods and to prove the competency of the system liners. Any substances removed from the storage or disposal systems shall be monitored to

prevent any pollutant from entering any waters.

Package wastewater treatment plant limits and monitoring requirements are included to demonstrate compliance with secondary treatment standards, to assess the functionality of the system, and to determine when design capacity is being approached.

The wastewater contained in each system specified in Part I.A.1.a is to be monitored on an annual basis for pH, electrical conductivity (EC), total dissolved solids (TDS), calcium (Ca), magnesium (Mg), sodium (Na), potassium (K), bicarbonate (HCO_3), sulfate (SO_4), chloride (Cl), and nitrate (NO_3). These constituents are monitored since they are the most likely analytes to be evapo-concentrated in the ponds. Copper analysis was previously deemed prudent since the power plant used a commercial micro-biocide containing cupric nitrate to control growth of organisms in the cooling towers. However, the cooling towers have been decommissioned and removed from the facility, so this analysis has been dropped from consideration.

Determination: The Division has made the determination to renew the permit, as proposed, for a five (5) year period.

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Bureau of Water Pollution Control
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