

NEVADA DIVISION OF ENVIRONMENTAL PROTECTION

FACT SHEET

(pursuant to NAC 445A.236)

Applicant: Southern Nevada Water Authority
P O Box 99956
Las Vegas, NV 89153-9956

Permit Number: NV0023914

Facility Locations: Historic Lateral Weir Expansion –SNWA 810G01D1
Lower Las Vegas Wash, ~ 3.5-5.5 miles upstream of Lake Mead
Clark County, Nevada
Sections 29 & 30 T21S R63E and SE ¼ Section 25 T21S R62E MDB&M
Weir coordinates at top of weirs at their centerlines, respectively:

Historic Lateral Expansion:	Latitude: 36° 05' 24.26581" N Longitude: 114° 58' 30.68875" W
Sunrise Mountain:	Latitude: 36° 05' 21.09395" N Longitude: 114° 59' 25.92896" W
Upper Narrows:	Latitude: 36° 05' 22.59130" N Longitude: 114° 59' 45.35708" W
Duck Creek Confluence:	Latitude: 36° 05' 26.21168" N Longitude: 114° 59' 58.64162" W

Discharge Outfalls: Coordinates located tentatively at the downstream edges of the weir aprons:

Outfall 001L: Historic Lateral Expansion:	Latitude: 36° 05' 24.94842" N Longitude: 114° 58' 26.38872" W
Outfall 002M: Sunrise Mountain:	Latitude: 36° 05' 20.41996" N Longitude: 114° 59' 23.19065" W
Outfall 003U: Upper Narrows:	Latitude: 36° 05' 22.18885" N Longitude: 114° 59' 42.10481" W
Outfall 004C: Duck Creek Confluence:	Latitude: 36° 05' 25.27970" N Longitude: 114° 59' 55.29987" W

General: The Southern Nevada Water Authority (SNWA) is proposing to construct or expand four additional erosion control structures: the Historic Lateral Expansion Weir, the Sunrise Mountain Weir, the Upper Narrows Weir, and the Duck Creek Confluence Weir, together with associated bank protection in the Lower Las Vegas Wash (Wash), in Clark County, Nevada. Due to increasing flows resulting from expanding upstream urbanization in the Las Vegas Valley, the Wash has undergone significant erosion resulting in the discharge of large volumes of sediment and intercepted shallow ground water into Lake Mead (Lake). Sediment transport studies completed by SNWA have shown that without the installation of these facilities the Wash channel could erode another 15 to 28 feet deeper with accompanying lateral bank erosion and additional interception of contaminated groundwater. To address the erosion problems, a series of weirs is being constructed. This permit covers the construction

of 4 of the 22 erosion control structures constructed and/or planned for construction in the 7.5 mile long reach of the Wash from the Clark County Reclamation District wastewater outlet to Lake Las Vegas. The weirs will be constructed in a segment of the Wash where the channel bed has eroded and become incised to a depth of between 20-30 feet below the original floodplain. The incised channel width ranges from approximately 300-600 feet. The configuration of these weirs is similar to the design of weirs installed by the SNWA at other locations within the Wash. The weirs will be constructed as single stage, confined rock riprap structures. An upstream steel sheet pile seepage control wall located in the top of each weir section and a similar wall located in the apron section of each weir will confine the riprap, reducing movement under high flood flows. The rock riprap will be placed on a three stage filter system placed to prevent fine grained foundation soils from eroding away. No more than two of the weirs authorized by this permit will be in construction at any one time. Other weir construction projects, authorized under separate NPDES permits, may require concurrent dewatering discharge. Project management will ensure that the total maximum daily perchlorate mass load increase from all projects will not exceed the seasonal permit limits.

The weir construction projects will require surface water diversion and shallow groundwater dewatering. A major focus of water management during construction will be the discharge of groundwater containing perchlorate to the Wash, which flows to Lake Mead. Dewatering discharge to the Wash will be permitted year-round to Outfalls 001L, 002M, 003U, and 004C. Two distinct dewatering periods are scheduled, from December 1 through May 31 (typically when the Lake is de-stratified), and from June 1 through November 30 (typically when the Lake is stratified), each with different maximum perchlorate load increases. The winter dewatering season load is set at 80 pounds per day (ppd), and the summer dewatering season load is set at 25 ppd. The dewatering periods may be adjusted based on data collected weekly in Lake Mead. Data and request to dewater at the winter rates and loads, outside of the permitted winter season timeframe (December 1-May 31) shall be approved by the Division. Dewatering at the winter rates and loads will cease when a thermocline is established for two consecutive weeks at Sentinel Island and the drinking water intakes. Dewatering at the winter rates and loads will commence when the Lake has de-stratified past 1000 ft amsl at Sentinel Island and the drinking water intakes. These evaluation criteria will be included in the Sampling & Analysis Plan.

Flow: The application requested a total dewatering discharge flow rate of 6,900 gallons per minute (gpm), equivalent to 9.94 million gallons per day (MGD). Actual dewatering flow rates will be determined by the Permittee, based upon the maximum allowed perchlorate loading increase of 80 ppd each winter dewatering season (December 1 – May 31), and 25 ppd each summer dewatering season (June 1 – November 30). The perchlorate loads are calculated as the aggregate sum from all concurrent Weir project discharges from all Outfalls, regardless of the specific permit a Weir project is authorized under. Discharge to the Wash is permitted daily, year-round, to Outfalls 001L, 002M, 003U, and 004C.

Receiving Water Characteristics: The receiving water for the pumped groundwater is the Las Vegas Wash, tributary to Lake Mead. The Wash is the primary wastewater and stormwater drainage outlet for the Las Vegas Valley and surrounding watershed. Historic and current sampling of the project area Wash reach (LW4.95 through LW6.85) provides a record of perchlorate concentrations in the area of this weir project. These and other Wash sampling stations will continue to be monitored and the data reported quarterly. Also, Lake Mead is presently sampled regularly in several locations and will continue to be sampled during these weir construction projects. The Colorado River, below Hoover Dam will continue to be sampled by SNWA and others.

Site Groundwater: Within the project area the elevation of the groundwater varies with location, but is generally quite shallow, approximately 10-40 feet below ground surface. The local groundwater flow is towards Lake Mead. Within the project area a number of groundwater monitoring wells are sampled by SNWA on a quarterly basis. The application identified no public drinking water supply wells within ¼-mile of the site. The weir construction and discharge sites are not within a wellhead protection area.

Proposed Discharge Limitations, Sampling & Monitoring Requirements: Specific sampling requirements are listed below in Table I, including frequency and location of sampling. Informational surface water analyte and parameter information collected at non-discharge locations (Northshore Road; two designated locations within Lake Mead; and a Colorado River sampling location immediately below Hoover Dam) will be submitted to the Division under a separate reporting format than the quarterly DMRs submitted in compliance with Table I. The information will be reported quarterly via trend lines, graphs, charts and/or other methods.

Additional requirements include notifying the Division if the Lake elevation drops below 1050 feet above mean sea level (ft AMSL), and limiting the discharge to a maximum perchlorate mass load increase of: 80 ppd during each winter season, and 25 ppd during each summer season, calculated as the aggregate sum of all Weir project discharges from all Outfalls.

Table I. Discharge Limitations, Sampling and Monitoring Requirements

Parameters	Units	Discharge Limitations		Monitoring Requirements		
		30-Day Average	Daily Maximum	Sampling Locations	Monitoring Frequency	Monitoring Type
Flow ¹	gpm	M&R	6,900	All *	Continuous	Flow meter
pH -SV	S.U.	6.5 ≤ pH ≤ 9.0 ²		All *	Daily	Discrete
Perchlorate ³	lbs/day	M&R	80 ³	All *	Daily	Discrete
Perchlorate ⁴	lbs/day	M&R	25 ⁴	All *	Daily	Discrete
TDS ⁵	mg/l	M&R	M&R	All *	Monthly	Discrete
Selenium ⁶	µg/l	M&R	M&R	All *	Monthly	Discrete
TPH ⁷	mg/l	M&R	1.0	All *	Event	Discrete

NOTES:

* Sample at actively discharging Outfalls (Outfall 001L, 002M, 003U and/or 004C).

1. Monitor continuously and report quarterly, the maximum daily flow rate. Limits apply to aggregate sum of all discharges from Outfalls 001L, 002M, 003U and 004C.
2. Monitor daily and report quarterly, the minimum and maximum pH values. Limits apply to each Outfall’s daily discharge.
3. Winter Season (Dec 1-May 31) maximum mass load increase. Sample daily, calculate total daily perchlorate load from all Outfalls, and report quarterly. Limit is based on the aggregate sum of all concurrent weir project discharges from all Outfalls, regardless of the specific permit the Weir Outfall discharge is authorized under.
4. Summer Season (June 1-Nov 30) maximum mass load increase. Sample daily, calculate total daily perchlorate load from all Outfalls and report quarterly. Limit is based on the aggregate sum of all discharges from all Outfalls.
5. Sample monthly and report quarterly, the TDS concentration values.
6. Sample monthly and report quarterly, the total recoverable Selenium concentration values.
7. Collect a background TPH sample prior to first discharge, and collect a sample in the event of a fuel leak/visible sheen. Use EPA Methods 8015B and 8260B. Report background sample results on first DMR. Report event-required sample results on quarterly DMR, following the quarter of the event that required the sampling.

gpm: gallons per minute
 M&R: Monitor and Report
 lbs/day: pounds per day load

SV: Single Value
 S.U.: standard pH units
 TDS: Total Dissolved Solids

mg/L: milligrams per liter

µg/l: micrograms per liter

TPH: Total Petroleum Hydrocarbons, full range (C6-C40), purgeable and extractable

Rationale for Permit Requirements: The Division has established the monitoring requirements in Table 1 above to ensure that the receiving water, Las Vegas Wash, and downstream, Lake Mead, and the Colorado River are not degraded appreciably as a result of project activities.

Flow: The rationale for the 30-day average discharge was explained in the Flow section of this fact sheet. Monitor continuously and report quarterly. Dewatering discharges will be permitted year-round, but will be modified as necessary to produce seasonal maximum perchlorate mass loading increases (as detailed in the Perchlorate discussion).

pH: 6.5 - 9.0, standard units, per NAC 445A.199.

Perchlorate: Sample daily and report quarterly. There is no standard to date in the Wash. Seasonal maximum mass load increases authorized by this permit are limited to 80 ppd each winter dewatering season, and 25 ppd each summer dewatering season, calculated as the aggregate sum of all Weir project discharges from all Outfalls, regardless of the individual permit the Weir projects are authorized under. Limits are set to reduce the potential for lake stratification-induced increases that could impact drinking water intakes and downstream beneficial uses. Perchlorate concentrations in the Wash and in the shallow groundwater are due to sources upstream. Remediation is occurring at several key locations to limit the perchlorate mass flux to the Wash. Remediation efforts were initiated in 1999 and are ongoing. Wash data show a declining amount of perchlorate present in the Wash surface water over time beginning in early 2000, through mid-2007, as measured at Northshore Road. Recent Wash data trends show perchlorate loading to the Wash in the range of 60-90 ppd from mid-2007 through current (mid-2010), as measured at Northshore Road.

Additional sampling at multiple locations (Northshore Road, Lake Mead and below Hoover Dam) and analyses, is intended to monitor the total perchlorate load and assist in regulating the discharge. The perchlorate mass (at Northshore Road only) and concentration data (and other analyte and parameter data) generated from the above referenced locations will be submitted to the Division under a separate reporting format than the quarterly Discharge Monitoring Reports (DMRs) submitted in compliance with Table I. The separate reporting will be required as a quarterly submittal to the Division, and will be submitted both electronically and in hard copy. The submittal dates are April 28, July 28, October 28, and January 28 each year.

TDS: Monitor & Report. Sample monthly and report quarterly. Shallow groundwater with naturally occurring elevated TDS levels would flow to the Wash, if it was not intercepted by the dewatering system. Therefore, the TDS standard is not applied to dewatering discharges in this area. This permit is for the interception and passage of groundwater and thus is exempted under the Colorado River Basin Salinity Control Forum's policy on groundwater interception.

Selenium: Monitor & Report. Sample monthly and report quarterly. Surface water quality data is collected monthly in the Wash at station LW4.95 upstream of the project area, and at station LW3.1 downstream of the project area. Upstream station data collected from 2008-2009 averaged 2.94 µg/l. Downstream station data collected over the same time period averaged 2.78 µg/l. All data was well below the 20 µg/l standard set by NAC 445A.144. Groundwater monitoring data collected over the last

4 months of 2009 shows Selenium average and maximum concentrations of 8.9 and 12 µg/l, respectively. Calculation of the flow-weighted average, using the maximum expected discharge flow, average Wash flow, and the maximum reported groundwater and Wash Selenium concentrations, results in an expected Selenium concentration in the Wash well below the 20 µg/l standard set in NAC 445A.144. Because the shallow groundwater with naturally occurring elevated Selenium levels would flow to the Wash if not intercepted by the dewatering system, and because the flow-weighted average and peak concentrations indicate no potential to exceed the standard, no Selenium discharge limits are established for the permit. Monitoring is required to ensure that the standard continues to be met.

TPH: 1.0 mg/L. Collect one pre-project background sample and sample in the event of a noticeable sheen in the water. The presence of a sheen may indicate equipment leaks in or near the Wash. There is no need to sample on a regular basis, only in the event of equipment failure, fuel leaks, or a sheen.

Lake Mead (Lake) Water Surface Elevation (WSEL): The lowest Lake WSEL projected by the Bureau of Reclamation to occur within a 2-year projection period (December 2009-December 2011) is approximately 1060 ft AMSL. Modeling conducted by SNWA has shown that perchlorate concentrations will not increase appreciably within Lake Mead and Lower Colorado River system as a result of year-round dewatering discharge. The lowest Lake WSEL used in this model is 1050 ft AMSL. Discharge of perchlorate-bearing groundwater from Weir dewatering is limited by a Lake WSEL of 1050 ft AMSL.

Nitrogen, Phosphorus & Metals: The dewatering of Wash-induced shallow groundwater consists of re-routing flows back to the Wash. Because there is no addition of these constituents to the Wash, no sampling is required.

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:

- The Permittee shall achieve compliance with the effluent limitations upon issuance of the permit.
- Within 90 days of the permit effective date (**MM DD, 2010**), or within forty-five (45) days after the Permittee issues a Limited Notice To Proceed (LNTP) to a contractor to construct a particular Weir, whichever comes first, the Permittee shall submit to the Division, for review and approval, an updated **Dewatering Plan (Plan)** for the proposed shallow groundwater dewatering and discharge activities. Before implementing changes to an approved Plan, the Permittee shall submit proposed changes to the Division for review and approval.
- Within 30 days of the permit effective date (**MM DD, 2010**), the Permittee shall submit to the Division, for review and approval, a **Monitoring, Sampling and Analysis Plan (SAP)** that describes the sampling, analyses, monitoring and methodology that will be used to determine when the dewatering discharges are to commence or cease (this will be based on a minimum Lake WSEL of 1050 ft AMSL and on the temperature from the multi-parameter probe monitoring of Lake Mead sampling locations). The SAP shall summarize the sampling, analyses, monitoring, and data reporting to be conducted for the Northshore Road sampling location, two sampling locations in Lake Mead, and from the Colorado River at a position immediately below Hoover Dam (from the

power generation deck). Before implementing changes to an approved SAP, the Permittee shall submit proposed changes to the Division for review and approval.

- Within 90 days of the permit effective date (**MM DD, 2010**), the Permittee shall submit to the Division, for review and approval, a report on the evaluation of water quality impacts of dewatering discharges into the Las Vegas Wash on downstream perchlorate concentrations.
- The Permittee shall submit a letter to the Division, if requesting to discharge at the winter season dewatering and perchlorate loading rates, outside of the permitted winter dewatering season (December 1-May 31) timeframe, prior to discharge outside of the permitted time frame. The letter shall contain documentation from Lake Mead sampling that indicates the Lake is not stratified.

Proposed Determination: The Division has made the tentative determination to issue the proposed permit for a period of five (5) years.

Procedures for Public Comment: The Notice of the Division's intent to issue a NPDES permit authorizing the Permittee to discharge into the Las Vegas Wash for a five-year period, subject to the conditions contained within the permit, is being sent to the **Las Vegas Review-Journal** for publication. The Notice is being mailed to interested persons on our mailing list. Anyone wishing to comment on the proposed permit can do so in writing for a period of thirty (30) days following the date of publication of the public notice in the newspaper. The comment period can be extended at the discretion of the Administrator. The deadline date and time by which all comments are to be submitted (via postmarked mail or time-stamped faxes, e-mails, or hand-delivered items) to the Division is **November 9, 2010 by 5:00 P.M.**

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 determines to be appropriate. All public hearings must be conducted in accordance with NAC 445A.238.

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

Prepared by: Jeryl R. Gardner, P.E.
Date: October, 2010