# FACTSHEET
## (pursuant to NAC 445A.236)

**Permittee Name:** NEVADA ENVIRONMENTAL RESPONSE TRUST
510 SOUTH 4TH STREET
HENDERSON, NV - 89015

**Permit Number:** NV0024228

**Location:** NEVADA ENVIRONMENTAL RESPONSE TRUST, CLARK
800 EAST ATHENS ROAD, HENDERSON, NV - 89011
LATITUDE: 36.08549302, LONGITUDE: -114.987543
TOWNSHIP: T21S, RANGE: R63E, SECTION: S33

| Outfall / Well Num | Outfall / Well Name | Location Type | Well Log Num | Outfall City | Outfall State | Outfall Zip | Outfall County | Latitude | Longitude | Receiving Water |
|---|---|---|---|---|---|---|---|---|---|---|
| 001 | 001 COMBINED INFLUENT FROM SMPS & HLPS AT CWTP | Influent Structure | | HENDERSON | NV | 89015 | CLARK | 36.085671 | -114.988989 | LAS VEGAS WASH |
| 002 | 002 BACKWASH WASTE PUMP | Internal Outfall | | HENDERSON | NV | 89015 | CLARK | 36.084971 | -114.988793 | LAS VEGAS WASH |
| 003 | 003 TREATED EFFLUENT | External Outfall | | HENDERSON | NV | 89015 | CLARK | 36.086902 | -114.986951 | LAS VEGAS WASH |
| 004 | 004 END OF MIXING ZONE LV WASH AMBIENT WATER QUALITY MONITORING POINT | Receiving Water - Ambient | | HENDERSON | NV | 89015 | CLARK | 36.089819 | -114.974350 | LAS VEGAS WASH |

## General:

The Permittee, Nevada Environmental Response Trust (NERT), has applied for a permit to pump & treat the influent, originated from the dewatering activities associated with Southern Nevada Water Authority's (SNWA) construction of Sunrise Mountain Weir & Historic Lateral Weir, for the removal of perchlorate. Nevada Division of Environment Protection's Bureau of Industrial Cleanup (NDEP-BISC) identified a need to mitigate the anticipated accelerated discharge of perchlorate to the Las Vegas Wash (the Wash) from the existing perchlorate plume under and by the Wash from dewatering activities during the above cited construction of Weirs. Further, the current permit request and the proposed treatment plan by NERT is the Permittee's response to the requirement set forth by NDEP's Finding and Order issued on April 12, 2016. This Order, in turn, was a result of an ongoing perchlorate mitigation plan for the general area and currently regulated per the permit #NV0023060.

The SNWA will be pumping and handing over the influent from their dewatering activities from the respective weir construction sites and per project plan, in the vicinity of the Weir sites, and will be routed to two pump stations which in turn shall be received by NERT for treatment. Variable Frequency Drive controlled pumps (6 in total with up to 3,500 gallons per minute (GPM) capacity each) convey the water to a Strong Base Anion Exchange (SBA-IX) system at Central Water Treatment Plant (CWTP) located nearer to the Sunrise Mountain Weir via 24" diameter HDPE piping. At CWTP, suspended solids with specific gravity > 2.0 are captured by hydro-cyclones, followed by multi-media filters to further remove solid particles larger than 10 microns. Next in flow sequence are SBA-IX units to treat and remove perchlorate from the water to below 18 micrograms/l concentration levels. The underflow from the hydro-cyclones and the backwash from the multi-media filters are stored in separate storage tanks and will be re-blended with the treated water adding some of the TSS back, but only up to about a maximum TSS of 120 mg/l at the end of the pipe from the CWTP. When full, solids from the cyclone waste tank will be hauled to a non-hazardous landfill for disposal.

The treatment system, by design, has sufficient spare capacity for each of the key design elements to meet the remediation goal and to ensure uninterrupted operations synchronous with the Weir construction. Per NERT's 100% design documents, City of Henderson's requirement to have a hydrant and a storage tank for fire protection water has been included in the plan for the CWTP. At this time, NDEP's comments and feed back through the 75% design document review have been addressed as expected through the most recent 100% final design specifications, plans, and the treatment process control narrative. The Permittee shall continue to work with the NDEP through the review phase of the final design plan and O&M approval.

Discharge to the Las Vegas Wash from this facility shall commence only after the Permittee obtains the permit, construction following the approval for 100% Design Documents. The Permittee shall also submit a final Operations & Maintenance (O&M) manuals for the Bureau's approval (the schedule of compliance item #1).

**Discharge Characteristics:**

Flow: <= 9.94 MGD

Per Permittee's reported Water Quality data as sampled from three monitoring wells WMW6.55S,WMW6.15S, and WMW5.58SI from January 2015 & February 2016, in conjunction with the approved Mass-Balance Approach in translating the water quality standards at the end of end of the pre-approved Ambient Water Quality Monitoring Point to the end of the pipe concentrations, of Total Dissolved Solids (TDS), Manganese (Mn), and Boron (B) concentrations, are expected to be as follows:

Perchlorate: Per the most recent data, as reported by the Permittee, the influent has Perchlorate in the range of 370 micrograms/liter to 1,900 micrograms/liter. The treatment process is designed to achieve Perchlorate removal to <= 18 micrograms/liter in the effluent.

TDS: Range from 1,800 mg/l to 4,200 mg/l in the treated influent. The process is not expected to change the TDS. Per mass-balance approach this TDS is not expected to cause exceedance in the water quality standard (WQS) of 2400 mg/L at the end of approved reference end of mixing zone/ambient water quality monitoring point.

Mn: <=1.72 mg/l in the effluent & <= 0.200 mg/l at the downstream Ambient Water Quality monitoring point.

B: <=3.71 mg/l in the effluent & <= 0.75 mg/l at the downstream Ambient Water Quality monitoring point.

Nitrate as N: Non Detect (ND) to 8.08 mg/l

Inorganic Nitrogen : Nitrate/Nitrite as N: 0.19 mg/l J - 8.2 mg/l J * (*J- estimated value when the mass spectral data indicates the constituent is present or constituent is above Method Detection Limit, as the case may be, but below the Contract Required Quantification Limit ) with the reported values between the laboratory method detection limit and the laboratory practical quantitation limit. This may further reduce based on the design chemical reactions in the treatment system.

Oil & Grease: WMW6.55S sample result is 6.2mg/l while all the other samples are ND.

TSS: <= 135 mg/l in the effluent from the treatment plant.

Total P is in the range of 0.035 mg/l J - 0.077 mg/l

Ammonia as N is Non Detect (ND)

Iron, Chromium (Total and Hexavalent), Total Kjeldahl Nitrogen (TKN), Sulfide and the rest of the toxic materials of concern as applicable for the designated waters are wither below the level of concentrations of concern or ND.

New constituents in the waste stream: Based on the Ion exchange reactions of the specific SBA-IX system,

the waste stream shall have added chloride ions but in a very low concentration.

**Receiving Water:**

The treated effluent is received back by the Las Vegas Wash near Pabco Road, and will homogenize with the Wash at about 4000 feet downstream, at the end of the mixing zone.

**Summary of Changes From Previous Permit:**

This is a new permit.

**Proposed Effluent Limitations:**

The permit limits and monitoring requirements have been established to meet the requirement to maintain higher water quality (RMHQ) standards and to prevent degradation of the receiving water.

## Discharge Limitations Table for Combined Influent Flow To Cwtp To Be Reported Monthly

| Discharge Limitations | | | | Monitoring Requirements | | | |
|---|---|---|---|---|---|---|---|
| Parameter | Base | Quantity | Concentration | Monitoring Loc | Sample Loc | Measurement Frequency | Sample Type |
| Flow rate | Daily Maximum | <= 6900 Gallons per Minute (gal/min) | | Intake | 001 | Continuous | METER |
| pH | Value | | M&R Standard Units (SU) | Intake | 001 | Biweekly | GRAB |
| Solids, total suspended | Daily Maximum | | M&R Milligrams per Liter (mg/L) | Intake | 001 | Biweekly | COMPOS |
| Solids, total dissolved | Daily Maximum | | M&R Milligrams per Liter (mg/L) | Intake | 001 | Biweekly | COMPOS |
| Perchlorate (ClO4) | Daily Maximum | | M&R Micrograms per Liter (ug/L) | Intake | 001 | Biweekly | COMPOS |
| Nitrogen, total | Daily Maximum | | M&R Milligrams per Liter (mg/L) | Intake | 001 | Monthly When Discharging | COMPOS |
| Ammonia nitrogen, total, (as N) 30 day | Daily Maximum | | M&R Milligrams per Liter (mg/L) | Intake | 001 | Monthly When Discharging | COMPOS |
| Phosphorus, total (as P) | Daily Maximum | | M&R Milligrams per Liter (mg/L) | Intake | 001 | Monthly When Discharging | COMPOS |

**Discharge Limitations Table for Prior To Remix With Treated Effluent (Internal Monitoring Point) To Be Reported Monthly**

| Discharge Limitations | | | | Monitoring Requirements | | | |
|---|---|---|---|---|---|---|---|
| Parameter | Base | Quantity | Concentration | Monitoring Loc | Sample Loc | Measurement Frequency | Sample Type |
| Solids, total suspended | Daily Maximum | | M&R Milligrams per Liter (mg/L) | Internal Monitoring Point | 002 | Biweekly | COMPOS |
| Flow rate | Monthly Total | M&R Gallons per Month (gal/mo) | | Internal Monitoring Point | 002 | Continuous | METER |
| Perchlorate (ClO4) | Daily Maximum | | M&R Micrograms per Liter (ug/L) | Internal Monitoring Point | 002 | Biweekly | COMPOS |

**Discharge Limitations Table for Treated Effluent Discharge Pipe (External Outfall) To Be Reported Monthly**

| Discharge Limitations | | | | Monitoring Requirements | | | |
|---|---|---|---|---|---|---|---|
| Parameter | Base | Quantity | Concentration | Monitoring Loc | Sample Loc | Measurement Frequency | Sample Type |
| Flow, total | Monthly Total | M&R Million Gallons (Mgal) | | Effluent Gross | 003 | Continuous | METER |
| Solids, total suspended | Daily Maximum | | <= 135 Milligrams per Liter (mg/L) | Effluent Gross | 003 | Weekly When Discharging | COMPOS |
| pH, minimum | Daily Minimum | | >= 6.5 Standard Units (SU) | Effluent Gross | 003 | Biweekly | GRAB |
| pH, maximum | Daily Maximum | | <= 9.0 Standard Units (SU) | Effluent Gross | 003 | Biweekly | GRAB |
| Solids, total dissolved | Daily Maximum | | M&R Milligrams per Liter (mg/L) | Effluent Gross | 003 | Biweekly | COMPOS |
| Perchlorate (ClO4) | Daily Maximum | | <= 18 Micrograms per Liter (ug/L) | Effluent Gross | 003 | Weekly When Discharging | COMPOS |
| Manganese, total recoverable | Daily Maximum | | <= 1.72 Milligrams per Liter (mg/L) | Effluent Gross | 003 | Biweekly | COMPOS |
| Boron, total (as B) | Daily Maximum | | <= 3.71 Milligrams per Liter (mg/L) | Effluent Gross | 003 | Biweekly | COMPOS |
| Nitrogen, inorganic total | Daily Maximum | | M&R Milligrams per Liter (mg/L) | Effluent Gross | 003 | Biweekly | COMPOS |
| Phosphorus, total (as P) | Monthly Average | M&R Pounds per Day (lb/d) | | Effluent Gross | 003 | Biweekly | COMPOS |
| Ammonia nitrogen, total, (as N) 30 day[1] | Monthly Average | | M&R Milligrams per Liter (mg/L) | Effluent Gross | 003 | Biweekly | COMPOS |
| Phosphorus, total (as P) | Daily Maximum | | M&R Milligrams per Liter | Effluent Gross | 003 | Biweekly | COMPOS |

## Discharge Limitations Table for Treated Effluent Discharge Pipe (External Outfall) To Be Reported Monthly

| Discharge Limitations | | | | Monitoring Requirements | | | |
|---|---|---|---|---|---|---|---|
| Parameter | Base | Quantity | Concentration | Monitoring Loc | Sample Loc | Measurement Frequency | Sample Type |
| | | | (mg/L) | | | | |

Notes (Discharge Limitations Table):

1. Please schedule sampling so as to try to match as closely as possible to the corresponding influent stream as this parameter is intended to monitor the changes in Ammonia through the treatment cycle.

**Discharge Limitations Table for End Of Mixing Zone Lv Wash Ambient Water Quality Monitoring Point (Receiving Water - Ambient) To Be Reported Monthly**

| Discharge Limitations | | | | Monitoring Requirements | | | |
|---|---|---|---|---|---|---|---|
| Parameter | Base | Quantity | Concentration | Monitoring Loc | Sample Loc | Measurement Frequency | Sample Type |
| Solids, total dissolved | Single Sample | [1] | <= 2400 Milligrams per Liter (mg/L) | Downstream Monitoring | 004 | Monthly When Discharging | DISCRT |
| Manganese, total (as Mn) | Daily Maximum | [2] | <= 200 Micrograms per Liter (ug/L) | Downstream Monitoring | 004 | Monthly When Discharging | DISCRT |
| Boron, total (as B) | Daily Maximum | [2] | <= 750 Micrograms per Liter (ug/L) | Downstream Monitoring | 004 | Monthly When Discharging | DISCRT |

Notes (Discharge Limitations Table):

1. Total Dissolved Solids : 95% of S.V. samples <= 2400 mg/l (NAC 445A.2158 RMHQ)
2. NAC 445A.1236 Standards for toxic materials applicable to designated waters.

**Proposed Technology Based Effluent Limitations:**

There are no EPA established TBELs for the Perchlorate. Perchlorate in the effluent is limited to <= 18 micrograms/liter based on the best professional judgment (BPJ) of the permitting authority. BPJ is arrived at by taking into consideration: (a) Remediation projects currently underway to remove the perchlorate from groundwater in the vicinity ; (b) This limit is consistent with the expected perchlorate removal efficiency of the specific treatment technology proposed by the permittee.

**Proposed Water Quality-Based Effluent Limitations:**

WQBELs are set per NAC 445A.1236 & NAC 445A.2158 .

pH & TSS levels at the end of the CWTP per NAC445A.1236 & NAC 445A.2158 to be achieved at the Outfall 003.

TDS, Mn, and B limits (per NAC445A.2158 & NAC445A.1236) to be achieved at the approved end of the mixing zone (AWQMP-Outfall 004).

**Rationale for Permit Requirements:**

Effluent Water Quality limitations are set primarily with reference to NAC445A.1236 & NAC 445A.2158 as applicable at the boundary of the approved end of mixing-zone for the discharges from the facility.

The influent is characterized as chiefly consisting of existing surface waters and a smaller portion of shallow groundwater of the Las Vegas Wash located down gradient to BMI complex. NDEP-BISC estimated reach time for the shallow groundwater portion of the influent is few hours to a maximum of few days. Further the treatment process, by design, does not add to the Ammonia and P. As such the discharge from the facility shall not contribute to any new ammonia and P loading.

Ammonia: Ammonia is ND in the influent representative samples, hence no waste load allocations(WLA)

need to be made at this time. However, there is a slight chance this may change depending on the concentrations of ammonium in the influent and the changes in pH, if any, due to the IX chemical reactions. Collecting ammonia as M&R will help the general water quality improvement goals of NDEP for the Wash.

Total Phosphorous(P): Las Vegas Wash has total phosphorous nonpoint source load allocation of 90 lb/day. From the estimates based on the influent data, the facility might contribute about 3lb/day P when operating at the full treatment capacity or upto a maximum of 6.38 lb/day under the highest observed concentrations in the representative sample. Additionally per the Memo dated June 9th from the Bureau of Water Quality Planning, 'total Phosphorous discharge loads associated with groundwater dewatering activities in the Las Vegas Wash area can be assumed to be part of the base phosphorous load recognized in the 1989 Lake Mead Total Phosphorous TMDL Load Allocation.' M&R of Total P at the end of the pipe at CWTP through the TMDL effective period of March 1 to October 31 in particular and the rest of the year in general is to ensure the P in the effluent is well within the loading allocations.

Permittee's outfall will be within a few hundred feet of existing outfalls (American Pacific Corporation, NERT, Titanium Metals Corporation (two outfalls), and City of Henderson (CoH)) to the Wash. Further the existing NERT site for their BMI Complex ((#NV0023060) has an approved, per NAC 445A.295-302, end of mixing zone point to be monitored, on the basis of tracer-dye study. The Permittee requested to incorporate same location, 5.5 miles upstream of the confluence of the Las Vegas Wash with Lake Mead, as the end of the mixing-zone. The distance between the discharge point to the point of this homogenization point is about 4000 feet. As the discharge volume from this facility is about 4 times compared to the discharges from the NERT site, makes this reference point a conservative approach. Request to be approved as reference end of the mixing zone or downstream Ambient Water Quality Monitoring Point (AWQMP) has been accepted.

TDS,Mn, and B: TDS, Mn, and Boron in the shallow groundwater of the Las Vegas Wash in the general area are the other potential constituents of concern in the effluent per the sampling done using the three monitoring wells (WMW6.55S, WMW6.15S, and WMW5.58SI) and from other available data. The Permittee used the 7Q10 approach for identifying the critical low flows for the Wash and either maximum reported concentrations when available or maximum permit limits as critical concentrations for TDS, Mn, and B. The Permittee's request for end of the pipe limits based on estimates arrived at by the mass-balance approach and data as collected from the existing monitoring well sampling as well as last ten years data from the co-dischargers to the reference stretch of the Wash is statistically significant and appropriate; hence are accepted as requested with an expectation for the Permittee to continue to meet the reference water quality standards per NAC 445A.1236 and RMHQ & water quality standards for beneficial uses per NAC 445A.2158 at the AWQMP. The limits for Mn & B at the outfall 003 are set per the approved mass-balance calculations.

TDS: Per the approved mass-balance calculations, a TDS limit of 15,968 mg/l in the effluent is expected to meet RMHQ limit for TDS <= 2400 mg/l at the AWQMP per NAC 445A.2158. However, the maximum recorded TDS in the reference data is less than 4,500 mg/l. As such M&R for TDS is more appropriate than setting the three times higher15,968 mg/l limit from the mass-balance as numerical limit.

TSS & pH: TSS & pH at outfall 003 are limited pursuant to NAC 445A.2158.

Perchlorate: Per the Finding & Order Requiring Engineering Evaluation & Analysis dated April 12, 2016, NDEP-BISC identified and established limits for the potential for accelerated discharge of perchlorate from BMI complex, an adjoining Perchlorate Plume site, to the Wash as a result of proposed dewatering activities associated with the Sunrise Mountain & Historic Lateral Weir Construction . As such, the Permittee's Pump & Treat project goal is to fulfill the obligation to contain and treat the potential accelerated discharge of Perchlorate to the Wash, prior to releasing the effluent back into the Wash to below 18 micrograms/l. By this Order, as per the most recent updated version, NERT is also under obligation to be ready to receive and treat the influent from dewatering activities by October 1, 2017. The perchlorate limit <= 18 micrograms in the effluent from this facility reflects the primary project goal.

Total Inorganic Nitrogen: RMHQ of Inorganic Nitrogen per NAC 445A.2158 is 17 mg/l. Due to the very low influent concentration and likely reduction in the concentration per the chemistry to treatment process, the

M&R for Inorganic Nitrogen at the end of the CWTP is sufficient.

Priority Pollutants: The project's maximum scheduled project time is about two years, and current data has no priority pollutants that need immediate attention. As such customary annual M&R is not needed.

Chloride monitoring not needed: IX process related chemical constituent addition to the waste stream: Based on the Ion exchange reactions of the specific SBA-IX system, the waste stream shall have added chloride ions from the resin (as exchanged for the perchlorate ions , 1 to 1 ratio). Based on the influent perchlorate concentrations being removed (perchlorate in the influent maximum 1.9 mg/l), there is no potential for degradation of receiving water as well as not a significant concentration to affect potential for corrosion of plumbing system.

The monitoring frequency: The biweekly monitoring frequency is chosen so as to be able to monitor the effluent through each batch of the IX resin and Membrane filter use. The monitoring frequency of monthly when discharging for the AWQMP is deemed sufficient to identify any unexpected exceedances so they can be addressed promptly.

**Special Conditions:**

SA – Special Approvals / Conditions Table

| Item # | Description |
|---|---|
| 1 | If and when the construction activities at the Historic Lateral Weir renders the Outfall 004 inaccessible, upon Permittee's written request to the Bureau, the Permittee may be approved to collect samples from an alternative sampling point. |

**Flow:**

Daily maximum of 6900 GPM (9.94 MGD).

**Corrective Action Sites:**

The NERT site (BMI Complex) adjoining the general construction project is undergoing corrective action under the oversight of NDEP-BISC. Discharges to the Wash from this NERT site are covered under NPDES permit NV0023060. The Pump & Treat activities covered under the current permit are the direct result of and account for the potential perchlorate discharge from this BMI Complex.

No other BISC and any BCA sites of concern that could be impacted by the dewatering activities associated with the current permit have been identified.

**Wellhead Protection Program:**

The treatment facility and the discharge location at the Las Vegas Wash are not within a Drinking Water Protection Area (DWPA) around any public water supply well.

**Schedule of Compliance:**

SOC – Schedule of Compliance Table

| Item # | Description | Due Date |
|---|---|---|
| 1 | Within 90 days of the permit effective date, the Permittee shall submit and obtain approval for final Operations & Maintanance (O&M) manual, wet stamped by a Nevada licensed professional engineer. | 11/10/2017 |
| 2 | Within 1 year of this permit issuance, all DMRs shall be submitted electronically through the Nevada NetDMR website: https://netdmr.ndep.nv.gov/netdmr/public/home/htm | 8/10/2018 |

**Deliverable Schedule:**

DLV– Deliverable Schedule for Reports, Plans, and Other Submittals

| Item # | Description | Interval | First Scheduled Due Date |
|---|---|---|---|
| 1 | Quarterly DMRs | Quarterly | 10/28/2017 |
| 2 | Annual Report | Annually | 1/28/2018 |

**Procedures for Public Comment:**

The Notice of the Division's intent to issue a permit authorizing the facility to discharge to surface waters of the State of Nevada 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 until 5:00 P.M. 7/18/2017 , a period of 30 days following the date of the public notice. 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 of EPA Region IX 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.

**Proposed Determination:**

The Division has made the tentative determination to issue / re-issue the proposed 5-year permit.

Prepared by: **Sharada Maligireddy**
Date: **6/16/2017**
Title: **Staff Engineer**