

Emergency Response Plan GWETS Plume Containment Nevada Environmental Response Trust (NERT)

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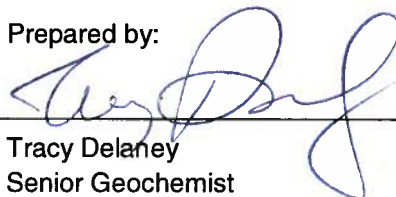
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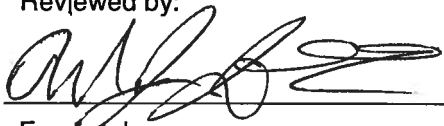
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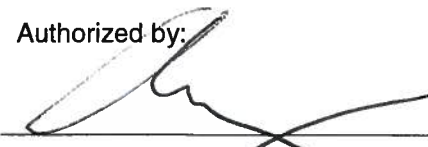
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ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
AWF	Athens Road Well Field
ERP	Emergency Response Plan
FBR	Fluidized Bed Reactor
GWETS	Groundwater Extraction and Treatment System
HASP	Health and Safety Plan
IWF	Interceptor Well Field
IX	Ion Exchange
SWF	Seep Well Field

1.0 INTRODUCTION

This emergency response plan (ERP) describes potential emergencies specifically related to the Groundwater Extraction and Treatment System (GWETS) at the Nevada Environmental Response Trust (Trust) site in Henderson, Nevada (Site). General health and safety and emergency response issues such as evacuation routes, medical treatment and first aid, and decontamination procedures are addressed in the site-specific Health and Safety Plan (HASP) established and maintained by the current GWETS operator, Envirogen Technologies, Inc. (Envirogen). Users should refer to the HASP for emergency response procedures not specifically related to potential emergencies impacting the operation of the GWETS.

This ERP describes the scenarios that could impact the operation of the GWETS in regard to plume containment, and the procedures for responding to those emergencies, roles and responsibilities during emergency response, and training that workers must receive to follow emergency procedures.

This emergency response plan provides the following site-specific information related to GWETS:

- Pre-emergency planning
- Contacts
- Roles and responsibilities
- Emergency alerting and response procedures.

GWETS Plume Containment System

The GWETS has been in place in essentially its current configuration since 2006. The GWETS operates by capturing groundwater from three extraction well fields and treating the captured groundwater via aboveground treatment facilities for subsequent discharge to the Las Vegas Wash. Perchlorate in extracted groundwater is treated in the on-site fluidized bed reactor (FBR) process using ethanol as a carbon source. Chromium in extracted groundwater is treated via chemical reduction and precipitation using ferrous sulfate. A map covering the area from the Site to the Las Vegas Wash showing the primary components of the GWETS is included as Figure 1.

Groundwater is captured using a system of extraction wells installed into the shallow water-bearing zone of the alluvium at three strategic locations: (1) on-site at the IWF; (2) approximately 8,200 feet downgradient of the IWF at the AWF; and (3) approximately 4,500 feet beyond the AWF near the Las Vegas Wash at the SWF. The locations of the three well fields are shown on Figure 1 in relation to other GWETS features.

The IWF consists of 30 active extraction wells. The main purpose of this well field is mass removal of contaminants. The AWF has 9 extraction wells which serve to contain the contaminant plume. The SWF has 9 wells which contain the plume and keep it from reaching Las Vegas Wash. If for any reason all of the IWF and AWF cease operation, there will be minimal intermediate interception of the plume by the slurry wall before the plume reaches the SWF.

If the SWF ceases operation, plume water will migrate toward Las Vegas Wash. The groundwater velocity in the vicinity of the SWF ranges from 20 to 85 feet per day (based on a tracer study done by J.M. Montgomery in 2000). The approximate distance from the SWF to the Las Vegas Wash likely ranges from 600 feet to 3,000 feet when considering the total width of the stream at all times. Until more information is available and the velocity and distance are confirmed, a groundwater velocity of 60 feet per day and distance of 1,500 feet will be used to calculate a travel time of 25 days. The critical objective of this ERP is to limit the downtime of SWF extraction to 25 days in the event of an emergency impacting the operation of the GWETS. Please note that this value does not account for the time required for the water table to re-equilibrate after the SWF were to be shut down, which would increase the allowable downtime.

In the event that this downtime objective cannot be met, this ERP establishes alternate treatment of the SWF using an IX plant installed at Lift Station #1.

2.0 ROLES AND RESPONSIBILITIES

The GWETS Plant Manager will have the responsibility to notify the Trust's Emergency Response Leader of any situation as described in Section 3.0 of the ERP. These individuals will be available by phone at all times, or will designate an alternate and inform all operational personnel. The Emergency Response Leader will assess the emergency, inform the Trust, and direct the response, including contacting off-site emergency personnel, if necessary. Additional contacts are those of suppliers of equipment that may be required to respond to emergencies (see Section 6). Contacts are listed in Table 1. Alternate contacts are provided for key positions in case the primary is not available

It is the obligation of the Emergency Response Leader to ensure that all compliance, notification and reporting obligations are satisfied for all applicable permitting associated with the GWETS operation.

Table 1 Contact List

Title	Primary Contact (Telephone)	Alternate Contact (Telephone)
GWETS Plant Manager	Wendy Prescott (702-371-9037)	Jeff Lambeth (702-236-1740) Mike Delvecchio (908-963-0651)
Emergency Response Leader	Frank Johns (303-810-0132)	Steven Bradley (619-961-8349)
Emergency Services	911	
NDEP Bureau of Water Pollution Control	Joe Maez (775-687-9435)	Nikita Lingenfelter (702-286-4850 x246)
NDEP Bureau of Corrective Actions	Weiquan Dong (702-486-2850 x252)	James (JD) Dotchin (702-486-2850 x235)
Temporary Power Supply	Curtis Mercurio (702-429-8487) Power Plus 3131 Olive Street Las Vegas, NV 89104	
Pipelines	Alan Nish (702-561-0193) Rafael Construction 5870 Construction Ave. Las Vegas, NV 89122	
Ion Exchange Supplier	Envirogen Technologies, Inc. (877-312-8950)	

3.0 ACTIVATION OF THE EMERGENCY ACTION PLAN

The Emergency Response Leader or their designee will be available at all times during field activities and will serve the emergency coordinator. The Emergency Response Leader activates the ERP based upon information

provided by the GWETS Plant Manager. The Emergency Response Leader implements the ERP when at least one of the following trigger conditions is met:

1. Any cause that could potentially require extraction at the SWF to be discontinued for a period of 24 hours or more for a reason other than scheduled maintenance;
2. Any cause that could potentially require the diversion of GWETS influent or effluent to GW-11 for a period of time that would cause levels to exceed 85% of permitted capacity; or
3. Any catastrophic failure that creates an immediate loss of GWETS operations.

Through consultation with the Trust, the Emergency Response Leader shall have the authority to direct GWETS operations until it has been determined that operations have returned to normal. Upon activation of the ERP, the Emergency Response Leader shall provide regular updates to NDEP BWPC and BCA until it has been determined that operations have returned to normal.

Certain incidents may not trigger activation of the ERP, but may trigger reporting under the Site Management Plan (SMP). Refer to the current version of the SMP for those reporting requirements.

4.0 GENERAL EMERGENCY RESPONSE ACTIVITIES

The following steps are common to all emergency response activities:

Notification—The person discovering the incident immediately reports the incident to their respective field supervisor, who will notify the GWETS Plant Manager. The GWETS Plant Manager notifies the Emergency Response Leader and the Emergency Response Leader notifies the Trust and the NDEP, as required, and notifies the on-site personnel, as necessary. The GWETS Plant Manager, in coordination with the Emergency Response Leader, will ensure that responding agencies (fire, police or medical (911) or regulatory agencies are notified, as required based on the respective emergency.

Assess the Nature and Extent of Incident—The GWETS Plant Manager determines the nature and extent of the incident and reports their findings to the Emergency Response Leader. Each incident has specific factors requiring action to effectively mitigate the incident. This plan discusses several types of anticipated incidents.

Identify Immediate Response Activities—The Emergency Response Leader, through communication with the GWETS Plant Manager, ensures that immediate response activities are initiated. Immediate response activities include:

- ETI will implement any required emergency response actions per their HASP to remove or rescue injured or exposed employees and ensuring appropriate medical treatment is provided;
- Stopping all repair activities until a determination can be made regarding current conditions;
- Implementing measures to identify and address any hazardous condition; and
- Assess the issue that triggered the ERP.

Coordinate Activities— At the direction of the Emergency Response Leader, the GWETS Plant Manager will coordinate all on-site activities. The Emergency Response Leader ensures the use of appropriate technical procedures to mitigate the incident and to minimize environmental impacts.

Maintain Site Security—The GWETS Plant Manager ensures control of all personnel entering and leaving the site during an emergency. The GWETS Plant Manager may direct other employees to assist with securing the site.

Follow-up Activities—The Emergency Response Leader ensures that all required notifications, especially to regulatory agencies are made. The Emergency Response Leader ensures the preparation of documentation and other reports regarding the incident are completed. The Emergency Response Leader conducts a post incident

review to ensure completion of all requirements, to evaluate the incident, to plan and prevent future reoccurrence, and to ensure appropriate start-up procedures.

5.0 PROCEDURES FOR MINIMIZING IMPACT OF EMERGENCIES

The GWETS has been evaluated for potential emergency occurrences that could prevent containment of the plume at the Las Vegas Wash. The potential reasons that SWF would be down are presented in Table 2.

Table 2 Potential Emergencies

<u>Source of Emergency</u>	<u>Location of Source</u>	<u>Type of Emergency</u>
Well field down	SWF	Extraction well down, pump down, power loss
Lift stations down	Lift Station #1 or #2	Pump down, power loss
Pipeline break	Pipelines from SWF to Lift Station #1, from Lift Station #1 to Lift Station #2, or from Lift Station #2 to WTP	Minor leak, major break
FBR (or biological treatment)	Plant Site	Multiple at Plant Site
Plant down		

The response to each type of emergency and the steps that need to be taken to prepare for these emergencies are provided in Table 3.

Table 3 Emergency Response Activities

<u>Type of Emergency</u>	<u>Response</u>	<u>Preparation</u>
Extraction well(s) down	Repair or replace well(s)	None
Extraction pump(s) down	Repair or replace pump(s)	Shelf spares are maintained on site
SWF loses power	Emergency generator	Vendor for temporary power supply identified in Section 2, above
Lift Stations #1 or # 2 pump down	Use standby pump	Ensure standby pump is available
Lift Stations #1 or # 2 power failure	Emergency generator	Vendor for temporary power supply identified in Section 2, above
Pipeline down - minor	Re-route with temporary pipeline	Vendor for temporary pipeline installation identified in Section 2, above
Pipeline down - major	Treat SWF with ion exchange	Install IX plant
WTP down	Divert to GW-11	Maintain adequate storage volume in GW-11
WTP down and GW-11 out of service	Treat SWF with ion exchange	Install IX plant

The sections below describe the activities that will be undertaken in the case of each emergency listed in Table 3.

Extraction Well(s) Down

If any of the SWF extraction wells get plugged or for some other reason stop producing water, the system will continue to operate using the remaining wells. Attempts will be made to repair the broken well. If these fail, a replacement well will be drilled and connected to the extraction system.

If a catastrophe impacts all of the extraction wells and the plume water is no longer intercepted, water will continue toward Las Vegas Wash until new extraction wells can be installed and the system repaired.

Problems with Extraction Pumps

If a pump at any of the well fields breaks down, that pump will be repaired or replaced as soon as possible.

If a catastrophe impacts all of the pumps, all pumps will be repaired or replaced as soon as possible. During this time, the plume will not be contained until some of the pumps can be reinstated.

Power Failure at SWF

In case of a power failure at SWF, a generator will provide the required power until the system can be repaired.

Lift Station Pump Down

Lift Stations #1 and #2 are critical to operation of the SWF and plume containment. If a pump is down in either of these lift stations, there are standby pumps installed that can be operated. If it is not possible to operate either pump for a period of more than 25 days, the Emergency Response Leader shall have the authority to procure, install, and begin the treatment of the SWF using an IX plant installed at Lift Station #1.

Power Failure at Lift Station

In case of a power failure at Lift Stations #1 and #2, a generator or generators will provide the required power until the system can be repaired.

Pipe Leak or Break

In case of a small break or leak in the pipeline that transports the impacted water from the SWF to the WTP, the spill will be contained as soon as possible. Operation of the SWF will stop while the pipe is repaired, if the repair can be completed within 24 hours. Once the repair is complete, the system will be restarted.

In case of a major break in the pipeline, the leaked water will be contained as soon as possible. New pipe will be ordered, attached to the existing pipe around the break and impacted water conducted to the WTP through this temporary pipeline. Once the system is running using the temporary pipeline, the main pipeline will be repaired and the system returned to normal operations.

If a catastrophe impacts a large length of the pipeline that would discontinue extraction for a period of more than 25 days, the Emergency Response Leader shall have the authority to procure, install, and begin the treatment of the SWF using an IX plant installed at Lift Station #1.

Shut down of FBR Plant

If the FBR (or biological) plant ceases to operate because of equipment failure or catastrophe, impacted water will be pumped to and stored in GW-11 until it can be treated. Once the volume remaining in GW-11 falls below 15% without a viable plan to return the system to operation, the Emergency Response Leader shall have the authority to procure, install, and begin the treatment of the SWF using an IX plant installed at Lift Station #1.

6.0 EMERGENCY RESPONSE EQUIPMENT

The lift stations are equipped with redundant, standby pumps that can be placed into service should one pump go down. Spare pumps for the extraction wells will be kept on site in case a pump in an extraction well goes down. The types of pumps in each of the extraction wells will be determined and one spare of each type of pump will be stored on site.

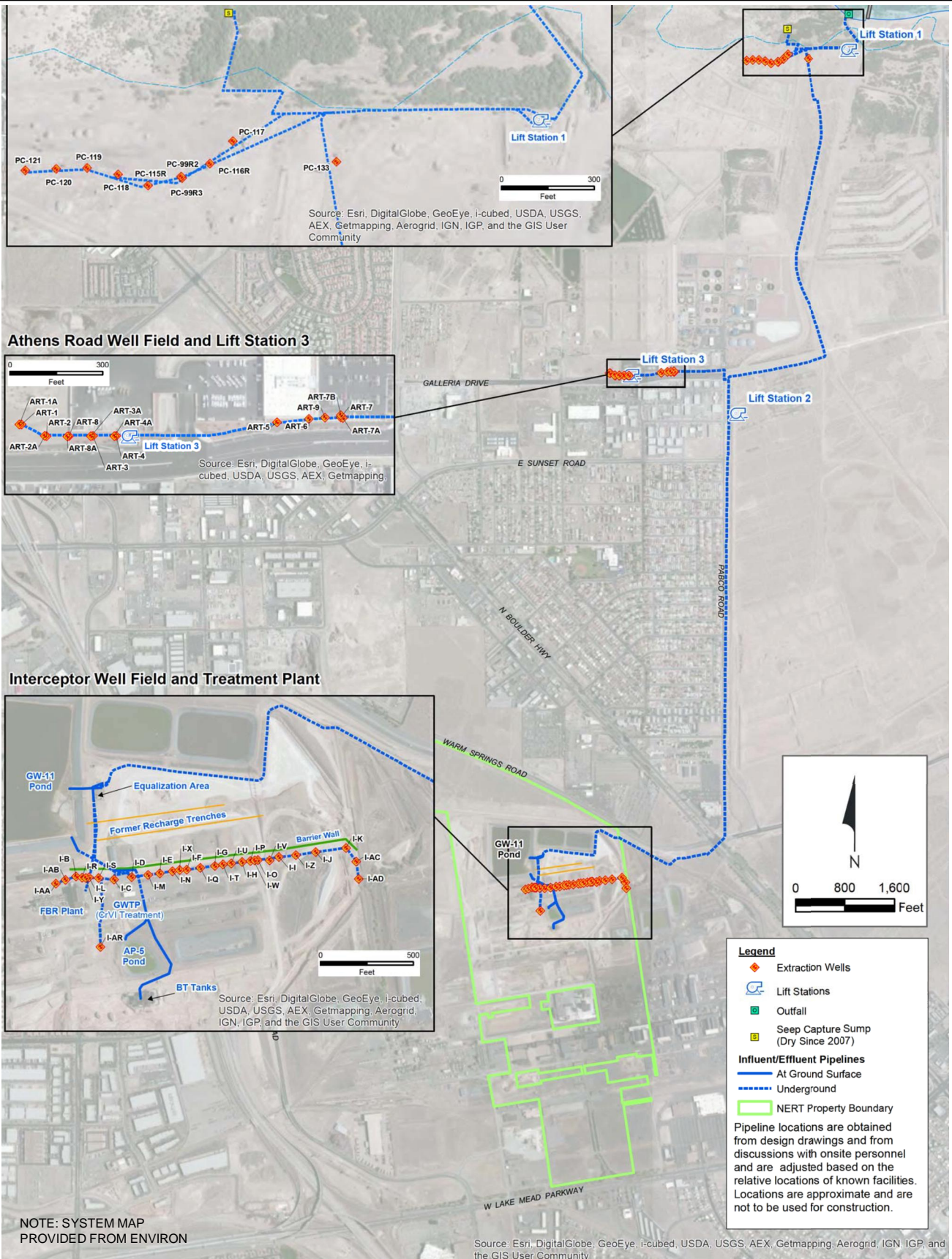
Two companies in the Henderson / Las Vegas area that rent generators adequate to meet the power requirements are listed in the contacts in Table 1. The emergency generation equipment can be rented in case of a long-term power outage impacting the SWF, Lift Station #1, or Lift Station #2.

In the event the Emergency Response Leader orders the deployment of an IX plant at Lift Station #1, NERT has established terms with ETI for the delivery, installation and operation of related equipment.

7.0 EMERGENCY RESPONSE TRAINING

All personnel working on the site will undergo training to respond to an emergency related to the GWETS. This training will be in addition to any health and safety training required under ETI's HASP. The training specific to the ERP will include:

- Knowledge of the ERP plan;
- ERP roles and responsibilities;
- Location of spare pumps and their use; and
- Contact information for vendors for temporary power, temporary pipeline, and IX system.



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NEVADA ENVIRONMENTAL RESPONSE TRUST

GROUNDWATER EXTRACTION AND TREATMENT MAP

Project No.: 133-20192-14009

Date: 06-20-2014

Designed By: TD

FIGURE
 1

Bar Measures 1 inch