# ATTACHMENT A

## Applicable or Relevant and Appropriate Requirements for the Pacific Gas and Electric Company (PG&E) Waste Discharge from its Interim Measures-3 (IM-3) Treatment Facility located at PG&E's Topock Compressor Station, southeast of Needles, San Bernardino County, California.

**Introduction:**

PG&E currently operates its Topock Natural Gas Compressor Station (Station) IM-3 treatment facility (IM-3 Facility) to implement a response action under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. § 9601 et seq.) to prevent groundwater containing hexavalent chromium from entering the nearby Colorado River. The hexavalent chromium contamination occurred as a result of PG&E's historic practice in the 1950s and 1960s to use this chemical constituent as a corrosion inhibitor in the waters used for its natural gas compressor station cooling towers, and to periodically dispose of untreated wastewater containing hexavalent chromium from the cooling towers into percolation beds in Bat Cave Wash, a normally dry ravine. Later, PG&E began treating the wastewater to reduce the hexavalent chromium to the immobile trivalent form of chromium, and discharging the treated wastewater into an injection well at the site. After 1973, the wastewater was discharged into lined evaporation ponds.

The hexavalent chromium contained in the wastewater historically released into the percolation beds of Bat Cave Wash subsequently migrated through the soils and into the groundwater over time. In 1988, PG&E completed a soil investigation in the Bat Cave Wash area at the request of the California Department of Health Services (now called the Department of Toxic Substances Control (DTSC)), and the U.S. Environmental Protection Agency (USEPA). The soil investigation determined that chromium was detected above background levels at or near the former percolation bed location. The investigation concluded that although the discharge of cooling tower wastewater into the percolation bed could have resulted in a slight chromium concentration increase in soil, chromium concentrations in Bat Cave Wash soils remained very low and did not pose a significant threat to the environment in the Topock area. The following year (1989), the Colorado River Basin Regional Water Board prepared a "Comprehensive Ground Water Monitoring Evaluation" for the facility, which identified chromium contamination associated with PG&E activities.

DTSC asserted lead state agency jurisdiction over the Topock Site in 1996, based on its authority to address the release or threatened release of a hazardous waste or hazardous waste constituents into the environment from a hazardous waste facility (Cal. Health and Safety Code section 25187), and entered into a Corrective Action Consent Agreement (CACA) with PG&E, dated February 26, 1996, as a result of the confirmed presence of hazardous levels of chromium found in the soils and groundwater.

On or about 2004, it was determined through subsequent soil and groundwater sampling that the hexavalent chromium had also come to be located on the properties of several federal agencies adjacent to the PG&E Station that are under the oversight of the U.S. Department of the Interior (DOI)--the U.S. Fish and Wildlife Service (USFWS), the U.S.

Bureau of Land Management (BLM), and the U.S. Bureau of Reclamation (BOR). As a result of this determination, DOI, USFWS, BLM, and BOR (collectively, the Federal Agencies) asserted jurisdiction over the investigation and cleanup of the Topock Site pursuant to their CERCLA authority. In accordance with that authority, the Federal Agencies entered into an Administrative Consent Agreement (Consent Agreement) with PG&E to conduct site investigations and cleanup. The Consent Agreement also incorporated all actions required to be performed by PG&E pursuant to the CACA into its definition of the CERCLA on-site response action "Work" that PG&E was now required to perform pursuant to the Consent Agreement.

The Consent Agreement also made clear that the permit exemption provided in CERCLA section 121(e)(1) applied to exempt all on-site CERCLA response actions (i.e., the "Work") from the procedural requirement to obtain Federal, State, or local permits. Accordingly, in lieu of renewed Waste Discharge Requirements (WDRs) issued by the Regional Water Board for the waste discharge from the IM-3 Facility, DOI will enforce the on-site waste discharge from the IM-3 Facility pursuant to the substantive Applicable or Relevant and Appropriate Requirements set forth herein (ARARs).

**Background:**

The Topock Compressor Station is a natural gas compressor station used for transmission of natural gas by pipeline. The Compressor Station is owned and operated by PG&E. PG&E currently operates the IM-3 Facility for implementation of a CERCLA response action identified as Interim Measures No. 3 (IM-3), pursuant to a July 2004 DTSC directive, to address hydraulic control of a groundwater plume contaminated primarily with hexavalent chromium to prevent contaminated groundwater from entering the nearby Colorado River.

Influent to the treatment facility is composed of the following:

a. Contaminated groundwater from extraction wells TW-2S, TW-2D, TW-3D, and PE-1.

b. Purged groundwater and water generated in rinsing field equipment during sampling events from the area wide Groundwater Monitoring Program. During most groundwater monitoring events, the maximum amount of purge water that is added to the influent is 1,000 to 3,000 gallons per day, or about 1.6 percent of the IM-3 facility capacity.

c. Groundwater generated during well installation, well development, and aquifer testing. Treatment of this water at the IM-3 facility will be coordinated to maintain total influent rates within the design capacity of the IM-3 system.

PG&E is currently discharging a maximum of 135 gpm of treated groundwater under Board Order No. R7-2006-0060 into two injection wells, IW-2 and IW-3, located on San Bernardino County Assessor's Parcel No. 650-151-06. The final effluent is composed of Reverse Osmosis (RO) permeate that may be blended with RO concentrate or microfilter water from the treatment facility. It is discharged to the groundwater on the west side of Parcel No. 650-151-06.

The extracted groundwater is treated with chemical reduction, precipitation, and solids removal by gravity or clarifier. Ferrous chloride is used to reduce Cr (VI) to Cr (III). The precipitated solids containing Cr (III) and Fe (III) are removed by gravity settling and microfiltration. Reverse Osmosis (RO) is used as a polishing step for the treated water to reduce Total Dissolved Solids (TDS). Under Board Order No. R7-2006-0060, RO concentrate and liquids may be discharged to an appropriate disposal facility. Residual solids are disposed according to federal and state regulations.

The IM-3 groundwater injection system consists of two (2) injection wells, IW-2 and IW-3, and a network of both observation wells and compliance monitoring wells that surround the injection wells. Observation well clusters, OW-1, OW-2, and OW-5, make up the inner network of monitoring wells located approximately 50 to 100 feet from the injection wells. Each observation well cluster consists of three monitoring wells screened at shallow, medium, and deep (S/M/D) intervals. Compliance monitoring well clusters, CW-1, CW-2, CW-3, and CW-4, make up the outer network of monitoring wells. They are located approximately 300 to 550 feet from the injection wells. Each compliance monitoring well cluster consists of two monitoring wells (M/D) with 50-foot screened intervals.

**Applicable or Relevant and Appropriate Requirements for Waste Discharge:**

**A. Discharge Prohibitions**

1. Discharge of waste classified as "hazardous" under Section 2521, Chapter 15 of Title 23 of the California Code of Regulations, or as "designated", as defined in California Water Code (CWC) Section 13173, is prohibited.

2. The effluent shall not contain heavy metals, chemicals, pesticides or other constituents in concentrations toxic to a human health.

3. The direct discharge of any wastewater to any surface waters or surface drainage courses is prohibited.

4. Bypass overflow, discharge or spill of untreated or partially treated wastewater is prohibited.

5. The discharge of waste to land not owned by or authorized for such use to PG&E is prohibited.

6. The discharge shall not cause degradation of any water supply, as required by State Water Board Resolution No. 68-16.

7. The treatment or disposal of wastes from the facility shall not cause pollution or nuisance as defined in CWC Section 13050, subdivisions (l) & (m).

**B. Effluent Limitations**

1. Representative samples of wastewater discharged from the treatment system shall not contain constituents in excess of the limits indicated below. The discharge to the groundwater shall be monitored at a location which is

acceptable by the Regional Water Board's Executive Officer or his designee:

| Constituent | Unit | Average Monthly Effluent Limit | Maximum Daily Effluent Limit |
|---|---|---|---|
| Flow | gpm[1] | 135 | ----- |
| Chromium (VI) | µg/L[2] | 8 | 16 |
| Chromium (Total) | µg/L | 25 | 50 |

1 gallons per minute
2 micrograms per liter

2. The hydrogen ion (pH) of the effluent shall be maintained within the limits of 6.5 to 8.4.

**C. Discharge Specifications**

1. No changes in the type of treatment chemicals added to the process water as described in these ARARs shall be made without the written approval of the Regional Water Board's Executive Officer and DOI staff.

2. The facility shall be protected from any washout or erosion of wastes or covering material, and from any inundation, which could occur as a result of floods, having a predicted frequency of once in 100 years. The facility includes extraction wells, treatment plant, conveyance system, injection wells, and monitoring wells. Extraction wells on the Colorado River floodplain within the 100-year floodplain are potentially subject to inundation. In the event that inundation occurs, PG&E shall promptly restore the wells to their proper operating capacity and submit a summary report of the corrective actions taken to the Executive Officer of the Regional Water Board and DOI staff for their approvals.

3. PG&E shall prohibit public access to the injection wells through such means as well locks, security bolts or other alternatives acceptable to DOI staff

4. The volume of additional groundwater introduced from the Groundwater Monitoring Program or other field activities shall not cause an exceedence of the effluent flow limits, as specified in these ARARs. In the event that the IM-3 water treatment facility is required to operate at the maximum effluent flow limit for the purpose of hydraulic control of the chromium (VI) plume, all additional groundwater generated from the Groundwater Monitoring Program or other field activities shall be stored in tanks or taken to an appropriately permitted off-site disposal facility.

5. Groundwater generated from the Groundwater Monitoring Program or other field activities not suitable for treatment at the IM-3 facility shall be taken to an appropriately permitted off-site disposal facility.

6. Discharge of treated wastewater other than at the location and in the manner described below is prohibited:

a. The discharge of treated groundwater shall be to one or both of the two injection well fields, IW-2 and IW-3, located on San Bernardino County Assessor's Parcel No. 650-151-06. The final effluent shall be composed of RO permeate that may be blended with RO concentrate or microfilter water from the treatment facility.

b. The extracted groundwater shall be treated with chemical reduction, precipitation, and solids removal by gravity or clarifier. RO shall be used as a polishing step for the treated water as necessary to reduce Total Dissolved Solids (TDS).

c. RO concentrate and liquids discharged off-site shall be transported to an appropriately permitted disposal facility.

d. Solid waste treatment, handling and disposal shall be in a manner that is consistent with all State and Federal laws and regulations.

**D. Special Provisions**

1. PG&E shall maintain a plan as to the method, treatment, handling and disposal of solid waste that is consistent with all State and Federal laws and regulations, and obtain prior written approval from the Regional Water Board Executive Officer and DOI staff specifying the location and method of disposal, before disposing of treated or untreated solid waste. Revisions or modifications to the plan shall be submitted to the Regional Water Board Executive Officer and DOI staff for their approvals.

2. PG&E shall maintain a contingency plan detailing mitigation measures in the event of a plant upset. The plan shall provide an analysis of system failure, the effect of failure, and the proposed course of corrective action. Revisions or modifications to the plan shall be submitted to the Regional Water Board's Executive Officer and DOI staff for their approvals.

3. Pursuant to CWC Section 13267, samples taken for Total Chromium shall be analyzed with a method having a method detection limit (MDL) of 1.0 ppb and samples taken for Chromium VI shall be analyzed with a method having a MDL of 0.2 ppb. The analytical results shall be reported consistent with actual observations by a California certified laboratory, and shall be reported in terms of the practical quantitation limit (PQL), if the MDL cannot be achieved. These requirements are necessary to ensure compliance with the ARARs set forth herein, determine the impact on the receiving groundwater, and confirm that the discharge of treated ground water does not violate these ARARs.

4. PG&E is the responsible party for compliance with these ARARs and the monitoring and reporting program for the underground injection project. PG&E shall comply with all conditions of these ARARs. Violations may result in enforcement actions taken by DOI staff, upon request by Regional Water Board staff.

## E. Standard Provisions

1. PG&E shall comply with all conditions of these ARARs. Noncompliance constitutes a violation of the Porter-Cologne Water Quality Control Act and any applicable requirements set forth in letter agreements executed by DOI and PG&E pertaining to the subject matter of these ARARs, and is grounds for enforcement action.

2. PG&E shall ensure that all site-operating personnel are familiar with the contents of these ARARs, and shall maintain a copy of these ARARs on site.

3. Consistent with CWC Section 13267(c), PG&E shall allow the Regional Water Board, or an authorized representative, upon presentation of credentials and other documents as may be required by law to:

    i. Enter upon the premises regulated by these ARARs, or the place where records must be kept under the conditions of these ARARs;

    ii. Have access to and copy, at reasonable times, any records that shall be kept under the conditions of these ARARs;

    iii. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required by these ARARs;

    iv. Sample or monitor at reasonable times, for the purpose of assuring compliance with these ARARs or as otherwise authorized by the California Water Code, any substances or parameters at this location.

4. Prior to any change of ownership or management of this operation, PG&E shall transmit a copy of these ARARs to the succeeding owner/operator, and forward a copy of the transmittal letter to the Regional Water Board with a copy to DOI.

5. Prior to any modifications in this facility, which would result in any material change in the quality or quantity of wastewater treated or discharged, or any material change in the location of discharge, PG&E shall report all pertinent information in writing to the Regional Water Board, with a copy to DOI, and obtain revised requirements before modifications are implemented.

6. Adequate measures shall be taken to assure that flood or surface drainage waters do not erode or otherwise render portions of the facilities inoperable.

7. These ARARs do not authorize violation of any federal, state, or local laws or regulations.

8. These ARARs do not convey any property rights of any sort or any exclusive privileges, nor do they authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state, or local laws or regulations.

9. PG&E shall at all times properly operate and maintain systems and components of the treatment system that are installed or used by PG&E to achieve compliance with the conditions of these ARARs. Proper operation and maintenance includes effective performance, adequate process controls and appropriate quality assurance procedures. This provision requires the operation of backup auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of these ARARs. All systems, both in service and reserved, shall be inspected and maintained on a regular basis. Records shall be kept of the inspection results and maintenance performed and made available to the Regional Water Board upon demand.

10. PG&E shall report any noncompliance that may endanger human health or the environment. PG&E shall immediately provide a verbal report of the noncompliance to the Regional Water Board office [(760) 346-7491], the DOI Topock Remedial Project Manager (RPM) [Pamela S. Innis at (303) 445-2502], and the California Office of Emergency Services [(800) 852-7550 or (916) 845-8911] as soon as: (1) PG&E has knowledge of the discharge; (2) notification is possible; and (3) notification can be provided without substantially impeding cleanup or other emergency measures. During non-business hours, PG&E shall leave a message on the Regional Water Board voice recorder and the DOI Topock RPM. A written report to the Regional Water Board, with a copy to DOI, shall also be provided within five (5) business days of the time PG&E becomes aware of the incident. The written report shall contain a description of the noncompliance and its cause, the period of noncompliance, the anticipated time to achieve full compliance, and the steps taken or planned, to reduce, eliminate, and prevent recurrence of the noncompliance. PG&E shall report all intentional or unintentional significant spills that occur within the facility or collection system to the Regional Water Board offices, with a copy to DOI, in accordance with the above time limits.

11. PG&E shall provide adequate notice to the Regional Water Board's Executive Officer, with a copy to DOI staff, of the following:

    i. Any substantial change in the volume or character of pollutants being introduced into any of the treatment facilities described in these ARARs by an existing or new source.

    ii. Any planned physical alterations or additions to the facilities described in these ARARs, or changes planned in PG&E's disposal practices, where such alterations, additions, or changes may justify the application of conditions that are different or absent in the existing ARARs, including notification of additional disposal sites not reported during the process of developing these ARARs, or not reported pursuant to an approved land application plan.

12. Federal regulations for storm water discharges require specific categories of facilities, which discharge storm water associated with industrial activity (storm water), to obtain National Pollutant Discharge Elimination System (NPDES) permits and to implement Best Conventional Pollutant Technology (BCT) and Best Available Technology Economically Achievable (BAT) to reduce or eliminate industrial storm water pollution.

13. All storm water discharges from this facility must comply with the lawful requirements of municipalities, counties, drainage districts, and other local agencies, regarding discharges of storm water to storm water drain systems or other courses under their jurisdiction.

14 Storm water discharges from the facility shall not cause or threaten to cause pollution or contamination.

15 Storm water discharges from the facility shall not contain hazardous substances equal to or in excess of a reportable quantity listed in 40 CFR Part 117 and/or 40 CFR Part 302.

16 PG&E shall comply with Monitoring and Reporting Program set forth in these ARARs, and future revisions thereto.

17 The monitoring and reporting requirements in Monitoring and Reporting Program set forth in these ARARs are necessary to determine compliance and to determine the impacts, if any, on groundwater.

18 PG&E shall furnish to the Regional Water Board's Executive Officer, with a copy to DOI, under penalty of perjury, technical monitoring program reports, and such reports shall be submitted in accordance with the specifications prescribed by the Regional Water Board's Executive Officer. Such specifications are subject to periodic revisions as may be warranted.

19 PG&E shall report any noncompliance in accordance with Provision 10. Reports of noncompliance shall be submitted with PG&E's next scheduled Self-Monitoring Report, or earlier if requested by the Regional Water Board's Executive Officer.

MONITORING AND REPORTING PROGRAM
FOR
PACIFIC GAS & ELECTRIC, OWNER/ OPERATOR
PG&E TOPOCK COMPRESSOR STATION GROUNDWATER INJECTION SOUTHEAST OF NEEDLES, SAN BERNARDINO COUNTY

Location of Wastewater Treatment Facilities and Discharges:
Latitude/Longitude, 34° 43' 17"N / 114° 24' 45"W

## MONITORING

California Water Code (CWC) Sections 13267 and 13383 authorize the Colorado River Basin Regional Water Quality Control Board (Regional Water Board) to require technical and monitoring reports. This Monitoring and Reporting Program (MRP) establishes monitoring and reporting requirements to implement the federal and California regulations.

1. Samples and measurements taken as required herein shall be representative of the volume and nature of the monitored discharge. All samples shall be taken at the monitoring locations specified below. Monitoring locations, sampling frequencies, and monitored constituents shall not be changed without notification to, and having the approval of the Regional Water Board's Executive Officer.

2. Unless otherwise approved by the Regional Water Boards Executive Officer, all analysis shall be conducted at a laboratory certified for such analysis by the California Department of Public Health. All analyses shall be conducted in accordance with the latest edition of "Guidelines Establishing Test Procedures for Analysis of Pollutants" (40 CFR Part 136), or equivalent methods promulgated by the United States Environmental Protection Agency (USEPA).

3. The collection, preservation and holding times of all samples shall be in accordance with USEPA approved procedures.

4. All monitoring instruments and devices used by PG&E to fulfill the prescribed monitoring program shall be properly maintained and, as applicable, calibrated at least once per year to ensure continued accuracy of the devices.

5. Monitoring results, including noncompliance, shall be reported at intervals and in a manner specified in this Monitoring and Reporting Program.

6. PG&E shall comply with the following:

    a. Samples and measurements taken for the purpose of monitoring shall be representative of the monitored activity.

    b. PG&E shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by these ARARs, and records of all data used to complete the application for these

ARARs, for a period of at least 5 years from the date of the sample, measurement, report or application.

c. Records of monitoring information shall include:

i. The individual(s) who performed the sampling or measurements.
ii. The date(s) analyses were performed.
iii. The individual(s) who performed the analysis.
iv. The analytical techniques or methods used; and
v. The results of such analysis.

**Monitoring Locations**

7. PG&E shall monitor the treatment facility influent, effluent, groundwater, and sludge in accordance with the following table. Monitoring locations shall not be changed without notification to, and having the approval of, the Regional Water Board's Executive Officer.

| Monitoring Location Name | Monitoring Location Description |
|---|---|
| T-100 | Influent point prior to treatment |
| T-700 | Effluent point after treatment |
| T-701 | Reverse Osmosis Waste stream |
| OW-1S/M/D | Observation Well # 1 |
| OW-2S/M/D | Observation Well # 2 |
| OW-5S/M/D | Observation Well # 5 |
| CW-1M/D | Compliance Monitoring Well # 1 |
| CW-2M/D | Compliance Monitoring Well # 2 |
| CW-3M/D | Compliance Monitoring Well # 3 |
| CW-4M/D | Compliance Monitoring Well # 4 |
| Sludge | Sludge Composite Sample |

**Influent Monitoring Requirements: T-100**

8. The Treatment System Influent shall be analyzed for the following constituents immediately prior to treatment:

| Constituents | Units | Type of Sample | Sampling Frequency | Reporting Frequency |
|---|---|---|---|---|
| Flow | gpm[1] | Metered | Continuous | Quarterly |
| TDS | mg/L[2] | Grab | Monthly | Quarterly |

[1] gallons per minute reported as a monthly average
[2] mg/L = milligrams per Liter
[3] Nephelometric Turbidity Units
[4] micromhos per centimeter
[5] micrograms per Liter

| Constituents | Units | Type of Sample | Sampling Frequency | Reporting Frequency |
|---|---|---|---|---|
| Turbidity | NTU[3] | Grab | Monthly | Quarterly |
| Specific Conductance | µmhos/cm[4] | Grab | Monthly | Quarterly |
| pH | pH units | Grab | Monthly | Quarterly |
| Total Chromium | µg/L[5] | Grab | Monthly | Quarterly |
| Chromium VI | µg/L | Grab | Monthly | Quarterly |
| Aluminum | µg/L | Grab | Quarterly | Quarterly |
| Ammonia (as N) | mg/L | Grab | Quarterly | Quarterly |
| Antimony | µg/L | Grab | Quarterly | Quarterly |
| Arsenic | µg/L | Grab | Quarterly | Quarterly |
| Barium | µg/L | Grab | Quarterly | Quarterly |
| Boron | mg/L | Grab | Quarterly | Quarterly |
| Copper | µg/L | Grab | Quarterly | Quarterly |
| Fluoride | mg/L | Grab | Quarterly | Quarterly |
| Lead | µg/L | Grab | Quarterly | Quarterly |
| Manganese | µg/L | Grab | Quarterly | Quarterly |
| Molybdenum | µg/L | Grab | Quarterly | Quarterly |
| Nickel | µg/L | Grab | Quarterly | Quarterly |
| Nitrate/Nitrite (as N) | mg/L | Grab | Quarterly | Quarterly |
| Sulfate | mg/L | Grab | Quarterly | Quarterly |
| Total Iron | µg/L | Grab | Quarterly | Quarterly |
| Zinc | µg/L | Grab | Quarterly | Quarterly |

**Effluent Monitoring Requirements: T-700**

9. The Treatment System Effluent shall be analyzed for the following constituents immediately after treatment:

| Constituents | Units | Type of Sample | Sampling Frequency | Reporting Frequency |
|---|---|---|---|---|
| Flow | gpm | Metered | Continuous | Quarterly |
| TDS | Mg/L | Grab | Monthly | Quarterly |
| Turbidity | NTU | Grab | Monthly | Quarterly |
| Specific Conductance | µmhos/cm | Grab | Monthly | Quarterly |
| pH | PH units | Grab | Monthly | Quarterly |
| Total Chromium | µg/L | Grab | Monthly | Quarterly |
| Chromium VI | µg/L | Grab | Monthly | Quarterly |
| Aluminum | µg/L | Grab | Monthly | Quarterly |
| Ammonia (as N) | Mg/L | Grab | Monthly | Quarterly |
| Antimony | µg/L | Grab | Monthly | Quarterly |
| Arsenic | µg/L | Grab | Monthly | Quarterly |
| Barium | µg/L | Grab | Monthly | Quarterly |
| Boron | Mg/L | Grab | Monthly | Quarterly |
| Copper | µg/L | Grab | Monthly | Quarterly |
| Fluoride | Mg/L | Grab | Monthly | Quarterly |
| Lead | µg/L | Grab | Monthly | Quarterly |
| Manganese | µg/L | Grab | Monthly | Quarterly |

| Constituents | Units | Type of Sample | Sampling Frequency | Reporting Frequency |
|---|---|---|---|---|
| Molybdenum | µg/L | Grab | Monthly | Quarterly |
| Nickel | µg/L | Grab | Monthly | Quarterly |
| Nitrate/Nitrite (as N) | mg/L | Grab | Monthly | Quarterly |
| Sulfate | mg/L | Grab | Monthly | Quarterly |
| Total Iron | µg/L | Grab | Monthly | Quarterly |
| Zinc | µg/L | Grab | Monthly | Quarterly |

**Reverse Osmosis Concentrate Monitoring Requirements: T-701**

10. The Treatment System reverse osmosis concentrate shall be analyzed for the following constituents immediately after treatment:

| Constituents | Units | Type of Sample | Sampling Frequency | Reporting Frequency |
|---|---|---|---|---|
| Flow | gpm | Metered | Continuous | Quarterly |
| TDS | mg/L | Grab | Quarterly | Quarterly |
| Specific Conductance | µmhos/cm | Grab | Quarterly | Quarterly |
| pH | pH units | Grab | Quarterly | Quarterly |
| Total Chromium | mg/L | Grab | Quarterly | Quarterly |
| Chromium VI | mg/L | Grab | Quarterly | Quarterly |
| Antimony | mg/L | Grab | Quarterly | Quarterly |
| Arsenic | mg/L | Grab | Quarterly | Quarterly |
| Barium | mg/L | Grab | Quarterly | Quarterly |
| Beryllium | mg/L | Grab | Quarterly | Quarterly |
| Cadmium | mg/L | Grab | Quarterly | Quarterly |
| Cobalt | mg/L | Grab | Quarterly | Quarterly |
| Copper | mg/L | Grab | Quarterly | Quarterly |
| Fluoride | mg/L | Grab | Quarterly | Quarterly |
| Lead | mg/L | Grab | Quarterly | Quarterly |
| Molybdenum | mg/L | Grab | Quarterly | Quarterly |
| Mercury | mg/L | Grab | Quarterly | Quarterly |
| Nickel | mg/L | Grab | Quarterly | Quarterly |
| Selenium | mg/L | Grab | Quarterly | Quarterly |
| Silver | mg/L | Grab | Quarterly | Quarterly |
| Thallium | mg/L | Grab | Quarterly | Quarterly |
| Vanadium | mg/L | Grab | Quarterly | Quarterly |
| Zinc | mg/L | Grab | Quarterly | Quarterly |

**Groundwater Monitoring Requirements: OW-1S/M/D, OW-2S/M/D, OW-5S/M/D**

11. Shallow groundwater observation monitoring wells (OW-1S, OW-2S, OW-5S) shall be monitored during the 2nd and 4th Quarter monitoring events and, middle and deep groundwater observation monitoring wells (OW-1M/D, OW-2M/D, OW-5M/D) shall be monitored annually during the 4th Quarter monitoring event for the following constituents:

| Constituents | Units | Type of Sample | Sampling Frequency | Reporting Frequency |
|---|---|---|---|---|
| Groundwater Elevation | feet | Calculation | Quarterly | Semi-Annually |
| Total Dissolved Solids | mg/L | Grab | Semi-Annually | Semi-Annually |
| Chromium VI | µg/L | Grab | Semi-Annually | Semi-Annually |
| Chromium, Total | µg/L | Grab | Semi-Annually | Semi-Annually |
| Molybdenum | µg/L | Grab | Semi-Annually | Semi-Annually |
| Sodium | mg/L | Grab | Semi-Annually | Semi-Annually |
| Turbidity | NTU | Grab | Semi-Annually | Semi-Annually |
| Specific Conductance | µmhos/cm | Grab | Semi-Annually | Semi-Annually |
| pH | pH units | Grab | Semi-Annually | Semi-Annually |
| Fluoride | mg/L | Grab | Semi-Annually | Semi-Annually |
| Nitrate/Nitrite (as N) | mg/L | Grab | Semi-Annually | Semi-Annually |
| Sulfate | mg/L | Grab | Semi-Annually | Semi-Annually |
| Chloride | mg/L | Grab | Semi-Annually | Semi-Annually |

12. The groundwater elevation shall be measured continuously by pressure transducer in wells OW-1S, OW-2S, OW-5S, OW-5M, and OW-5D, and by hand instrumentation prior to sampling in wells OW-1M, OW-1D, OW-2M, and OW-2D.

**Groundwater Monitoring Requirements: CW-1M/D, CW-2M/D, CW-3M/D, CW-4M/D**

13. The groundwater compliance monitoring wells (CW-1M/D, CW-2M/D, CW-3M/D, CW-4M/D) shall be monitored at the middle and deep casings during the 2nd and 4th Quarter for Semi-Annual monitoring and during the 4th Quarter for Annual monitoring for the following constituents. Groundwater elevations shall be measured in each compliance well on a quarterly basis and reported semi-annually.

| Constituents | Units | Type of Sample | Sampling Frequency | Reporting Frequency |
|---|---|---|---|---|
| Total Dissolved Solids | mg/L | Grab | Semi-Annually | Semi-Annually |
| Turbidity | NTU | Grab | Semi-Annually | Semi-Annually |
| Specific Conductance | µmhos/cm | Grab | Semi-Annually | Semi-Annually |
| pH | pH units | Grab | Semi-Annually | Semi-Annually |
| Fluoride | mg/L | Grab | Semi-Annually | Semi-Annually |
| Ammonia (as N) | mg/L | Grab | Semi-Annually | Semi-Annually |
| Nitrate/Nitrite (as N) | mg/L | Grab | Semi-Annually | Semi-Annually |
| Sulfate | mg/L | Grab | Semi-Annually | Semi-Annually |
| Chloride | mg/L | Grab | Semi-Annually | Semi-Annually |
| Total Iron | mg/L | Grab | Annually | Annually |
| Boron | mg/L | Grab | Annually | Annually |
| Calcium | mg/L | Grab | Annually | Annually |
| Magnesium | mg/L | Grab | Annually | Annually |
| Potassium | mg/L | Grab | Annually | Annually |

| Constituents | Units | Type of Sample | Sampling Frequency | Reporting Frequency |
|---|---|---|---|---|
| Sodium | mg/L | Grab | Annually | Annually |
| Alkalinity (as CaCO3) | mg/L | Grab | Annually | Annually |
| Aluminum | µg/L | Grab | Annually | Annually |
| Antimony | µg/L | Grab | Annually | Annually |
| Arsenic | µg/L | Grab | Annually | Annually |
| Barium | µg/L | Grab | Annually | Annually |
| Beryllium | µg/L | Grab | Annually | Annually |
| Cadmium | µg/L | Grab | Annually | Annually |
| Cobalt | µg/L | Grab | Annually | Annually |
| Total Chromium | µg/L | Grab | Annually | Annually |
| Chromium VI | µg/L | Grab | Annually | Annually |
| Copper | µg/L | Grab | Annually | Annually |
| Lead | µg/L | Grab | Annually | Annually |
| Manganese | µg/L | Grab | Annually | Annually |
| Mercury | µg/L | Grab | Annually | Annually |
| Molybdenum | µg/L | Grab | Annually | Annually |
| Nickel | µg/L | Grab | Annually | Annually |
| Selenium | µg/L | Grab | Annually | Annually |
| Silver | µg/L | Grab | Annually | Annually |
| Thallium | µg/L | Grab | Annually | Annually |
| Vanadium | µg/L | Grab | Annually | Annually |
| Zinc | µg/L | Grab | Annually | Annually |

**Sludge Monitoring Requirements**

14. PG&E shall report quarterly on the quantity, location and method of disposal of all sludge and similar solid materials being produced at the groundwater treatment facility.

15. PG&E shall quarterly collect one representative composite sample of sludge for each treatment tank and have an aquatic bioassay test performed on the samples. Report and select a procedure from the Static Acute Bioassay Procedure for Hazardous Waste Sample by the California Department of Fish and Game, Water pollution Control Laboratory, revised November 1988 or by other test methods approved by the California Department of Fish and Game. PG&E shall provide a report supporting any deviation from a standard procedure and must be approved by the Regional Water Board's Executive Officer.

16. Representative composite sludge samples shall be taken from each phase separator container whose purpose is to accumulate sludge for disposal prior to transportation of the sludge offsite. If sludge is transported offsite more frequently than monthly, a representative sample shall be taken on a monthly or quarterly basis as specified below. Sludge samples shall be tested for the following constituents:

| Constituents | Units | Type of Sample | Sampling Frequency | Reporting Frequency |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Fluoride | mg/kg | Composite | Quarterly | Quarterly |
| Total Chromium | mg/kg | Composite | Quarterly | Quarterly |
| Chromium VI | mg/kg | Composite | Quarterly | Quarterly |
| Antimony | mg/kg | Composite | Quarterly | Quarterly |
| Arsenic | mg/kg | Composite | Quarterly | Quarterly |
| Barium | mg/kg | Composite | Quarterly | Quarterly |
| Beryllium | mg/kg | Composite | Quarterly | Quarterly |
| Cadmium | mg/kg | Composite | Quarterly | Quarterly |
| Cobalt | mg/kg | Composite | Quarterly | Quarterly |
| Copper | mg/kg | Composite | Quarterly | Quarterly |
| Lead | mg/kg | Composite | Quarterly | Quarterly |
| Mercury | mg/kg | Composite | Quarterly | Quarterly |
| Molybdenum | mg/kg | Composite | Quarterly | Quarterly |
| Nickel | mg/kg | Composite | Quarterly | Quarterly |
| Selenium | mg/kg | Composite | Quarterly | Quarterly |
| Silver | mg/kg | Composite | Quarterly | Quarterly |
| Thallium | mg/kg | Composite | Quarterly | Quarterly |
| Vanadium | mg/kg | Composite | Quarterly | Quarterly |
| Zinc | mg/kg | Composite | Quarterly | Quarterly |
| Bioassay | | | Annually | Annually |

## REPORTING

1. The results of any analysis taken more frequently than required at the locations specified in this Monitoring and Reporting Program shall be reported to the Regional Water Board, with a copy to DOI.

2. Groundwater contour maps for all groundwater zones shall be provided for each monitoring frequency.

3. If the facility is not in operation, or there is no discharge during a required reporting period, PG&E shall forward a letter to the Regional Water Board, with a copy to DOI, indicating that there has been no activity during the required reporting period.

4. Reporting of a failure in the facility shall be made in accordance with Standard Provision Section E, paragraph 10, set for in these ARARs to the Regional Water Board office, with a copy to DOI. Results of any analysis performed as a result of a failure of the facility shall be provided within fourteen (14) days after collection of the samples.

5. PG&E shall inspect and document any operation/maintenance problems by inspecting each unit process. In addition, calibration of flow meters and equipment shall be performed in a timely manner and documented. Operation and Maintenance reports shall be submitted to the Regional Water Board Office, with a copy to DOI, twice-annually.

6. PG&E shall submit quarterly reports, including the results of all required monitoring using USEPA-approved test methods or other test methods specified in these ARARs. Quarterly reports shall be due on January 15$^{th}$, April 15$^{th}$, July

15th, and October 15th following each calendar quarter. Semi-Annual reports shall be due January 15th and July 15th. Annual reports shall be due January 15th.

7. PG&E shall report with each sample result the Reporting Limit (RL), applicable Minimum Level (ML) and the current Method Detection Limit (MDL), as determined by the procedure in 40 CFR Part 136.

8. PG&E shall arrange all reported data in a tabular format. The data shall be summarized to clearly illustrate whether the facility is operating in compliance with discharge specifications.

9. PG&E shall attach a cover letter to the reports. The information contained in the cover letter shall clearly identify violations of the ARARs; discuss corrective actions taken or planned; and the proposed time schedule for corrective actions. Identified violations must include a description of the requirement that was violated and a description of the violation.

10. A duly authorized representative of PG&E may sign the documents if:

    a. The authorization is made in writing by PG&E;

    b. The authorization specified an individual or person having responsibility for the overall operation of the regulated disposal system; and

    c. The written authorization is submitted to the Regional Water Board's Executive Officer, with a copy to DOI.

11. Each report shall contain the following statement:

    "I declare under the penalty of law that I have personally examined and am familiar with the information submitted in this document, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine and imprisonment for knowing violations".

12. Reports must be submitted to the Regional Water Board, with a copy to DOI, signed and certified as required by the MRPs to the addresses listed below:

    California Regional Water Quality Control Board
    Colorado River Basin Region
    73-720 Fred Waring Drive, Suite 100
    Palm Desert, CA 92260

    Pamela S. Innis, Topock Remedial Project Manager
    U.S. Department of the Interior
    Office of Environmental Policy and Compliance
    P.O. Box 2507 (D-108)
    Denver Federal Center, Building 56
    Denver, CO 80225-0007