
Central Valley Regional Water Quality Control Board

27 April 2021

Bradley C. Califf, President
Longbow, LLC
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Bakersfield, CA 93301

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REVISED MONITORING AND REPORTING PROGRAM NO. R5-2017-0036-007, LONGBOW, LLC, MCKITTRICK LEASE, MCKITTRICK OIL FIELD, KERN COUNTY

On 19 November 2020, the Central Valley Regional Water Quality Control Board (Central Valley Water Board) received a document titled, *Longbow, LLC, Request Sampling Reduction* (Sampling Reduction Request). The Sampling Reduction Request was submitted by EnviroTech Consultants, Inc. (EnviroTech) on behalf of Longbow, LLC (“Longbow” or “Discharger”) for its McKittrick Lease, a crude oil production facility (“Lease” or “facility”). On 21 April 2021, staff of the Central Valley Water Board issued a document to Longbow titled, *Revised Monitoring and Reporting Program No. R5-2017-0036-007, Longbow, LLC, McKittrick Lease, McKittrick Oil Field, Kern County* (Draft MRP). The Draft MRP provides a comment period for Longbow. On 26 April 2021, EnviroTech staff member Gabriela Naverrete informed Central Valley Water Board staff that neither Longbow nor EnviroTech have any comments on the Draft MRP. A summary of the Sampling Reduction Request, Central Valley Water Board staff comments, and changes to the Lease’s monitoring program follow.

SUBMITTED INFORMATION

The Lease utilizes one unlined surface impoundment (pond) for the disposal of oil field produced water (produced water). On 16 October 2018, Longbow received a Notice of Applicability, which assigned waste discharge requirements number R5-2017-0036-007 to the Lease. Therefore, discharges of produced water from the facility are regulated by waste discharge requirements, General Order Three, No. R5-2017-0036 (Order), which includes a Monitoring and Reporting Program (MRP). The MRP requires Longbow to sample produced water discharges every quarter and submit monitoring reports to the Central Valley Water Board. The Sampling Reduction Request proposes to have Longbow sample produced water and report results on an annual basis.

The MRP also requires Longbow to conduct an annual facility inspection and report the results to the Central Valley Water Board. The Sampling Reduction Request proposes to submit the results of the annual facility inspection with an annual monitoring report.

The MRP states that it can be modified if the Discharger provides significant data to support the proposed changes. The MRP states, *“If monitoring consistently shows no significant variation in magnitude of a constituent concentration or parameter, after a statistically significant number of sampling events, the Discharger may request that the MRP be revised by the Executive Officer...”*

The Sampling Reduction Request states, *“The analytical results, displayed in Attachment 2, show consistent concentrations of electrical conductivity, boron, chloride, and sodium for 6 quarters. The historical analytical results table included in Attachment 3, displays consistent analytical results in volatile organic analysis, polynuclear aromatic hydrocarbons, total petroleum hydrocarbons, general chemistry, metals, and radionuclides.”*

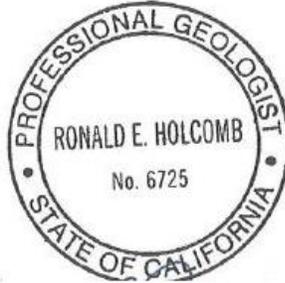
CENTRAL VALLEY WATER BOARD STAFF COMMENTS

1. While a general range of concentrations for some constituents appears to be emerging in the data (e.g., total dissolved solids), there are some constituents that vary significantly from quarter to quarter. Hexavalent chromium, for example, in some quarters was not detected, and in others the concentration was 30 micrograms per liter. Therefore, it is not appropriate to reduce monitoring to an annual schedule at this time. However, a reduction in frequency, to a semi-annual schedule, is appropriate.
2. The annual facility inspection is required in part, to ensure that crude oil production facilities regulated by the Order are prepared for the rainy season. This helps to ensure that infrastructure designed to transport, store, and dispose of produced water does not get overwhelmed by the addition of stormwater. Therefore, the inspection still needs to be conducted prior to 30 September of each year. If after a thorough inspection, the Discharger does not find that the facility needs maintenance or repair, the corresponding report may be prepared and then submitted with a semi-annual monitoring report. If the facility does need repairs, then the Discharger needs to submit written communication that describes the repairs or maintenance needed, and the corresponding corrective action, within 30 days.

REVISED MONITORING AND REPORTING PROGRAM NO. R5-2017-0036-007

Enclosed is Revised Monitoring and Reporting Program No. R5-2017-0036-007 (Revised MRP). Sampling, monitoring, and reporting has been reduced from quarterly to semi-annually. The first semi-annual self-monitoring report is due on 1 August of each year and the second semi-annual self-monitoring report will be due 1 February of each year. The annual facility inspection report will also be due on 1 February of each year, unless the annual inspection shows that the facility needs maintenance or repairs. If the facility needs repairs, then Longbow would need to submit written correspondence within 30 days. The Revised MRP is enclosed and describes these changes and requirements in further detail.

If you have any questions regarding this matter, you may contact Rebecca. T. Asami at (559) 445-5548 or by email at the following email address: rebecca.asami@waterboards.ca.gov.



RONALD E. HOLCOMB
Senior Engineering Geologist

Enclosures: Revised Monitoring and Reporting Program No. R5-2017-0036-007
Standard Provisions and Reporting Requirements, March 1991

cc: Gabriela Naverrete, Geologist, EnviroTech, Bakersfield

**CALIFORNIA REGIONAL WATER QUALITY CONTROL
BOARD CENTRAL VALLEY REGION**

**LANGBOW, LLC
MCKITTRICK OIL FIELD, MCKITTRICK LEASE**

**REVISED MONITORING AND REPORTING PROGRAM NO. R5- 2017-0036-007
FOR
WASTE DISCHARGE REQUIREMENTS GENERAL ORDER
OIL FIELD DISCHARGES TO LAND
GENERAL ORDER NUMBER THREE**

This Monitoring and Reporting Program (or "MRP") is required pursuant to Water Code section 13267. Longbow, LLC (referred to as "Longbow" or "Discharger") shall not implement any changes to this MRP unless and until the Central Valley Water Board adopts, or the Executive Officer issues, a revised MRP. Changes to sample location(s) shall be established with concurrence of Central Valley Water Board staff, and a description of the revised stations shall be submitted for approval by the Executive Officer.

This MRP includes monitoring, record-keeping, and reporting requirements. Monitoring requirements include monitoring of discharges, produced wastewater, solid waste, application of recycled materials (wastewater and solids), and groundwater (as applicable) to in order to determine if Longbow is complying with the requirements of Waste Discharge Requirements General Order No. R5-2017- 0036 (Order). All samples shall be representative of the volume and nature of the discharge or matrix of material sampled. All analyses shall be performed in accordance with **Standard Provisions and Reporting Requirements for Waste Discharge Requirements**, dated 1 March 1991 (Standard Provisions).

Field test instruments (such as a pH meter) may be used provided that the operator is trained in the proper use of the instrument and each instrument is serviced and/or calibrated at the recommended frequency by the manufacturer or in accordance with manufacturer instructions.

Analytical procedures shall comply with the methods and holding times specified in the following: *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA); *Test Methods for Evaluating Solid Waste* (EPA); *Methods for Chemical Analysis of Water and Wastes* (EPA); *Methods for Determination of Inorganic Substances in Environmental Samples* (EPA); *Standard Methods for the Examination of Water and Wastewater* (APHA/AWWA/WEF); and *Soil, Plant and Water Reference Methods for the Western Region* (WREP 125). Approved editions shall be those that are approved for use by the United States Environmental Protection Agency or the State Water Board's Environmental Laboratory Accreditation Program (ELAP). The Discharger may propose alternative methods for approval by the Executive Officer.

The MRP can be modified if the Discharger provides sufficient data to support the proposed changes. If monitoring consistently shows no significant variation in magnitude of a constituent concentration or parameter after a statistically significant

number of sampling events, the Discharger may request this MRP be revised by the Executive Officer to reduce monitoring frequency or minimize the list of constituents. The proposal must include adequate technical justification for reduction in monitoring frequency.

Monitoring requirements include the periodic visual inspection of the McKittrick Lease in the McKittrick Oil Field (referred to as "Lease" or "facility") to ensure continued compliance with the Order. The MRP also requires submittal of information regarding the use of all chemicals used during well drilling, installation, operation, and maintenance activities associated with each well generating waste materials (liquids and solids) that are discharged to land and regulated under this Order. This MRP requires the Discharger to keep and maintain records for five years from the date the monitoring activities occurred and to prepare and submit reports containing the results of monitoring specified below. This period of retention shall be extended during the course of any unresolved litigation regarding this discharge, or when requested by the Central Valley Water Board.

FACILITY MONITORING

Permanent markers in ponds shall be in place with calibrations indicating the water level at design capacity and available operational freeboard (two feet minimum required). The freeboard shall be monitored **monthly** on all ponds to the nearest tenth of a foot. Annually, prior to the anticipated rainy season, but **no later than 30 September**, the Discharger shall conduct an inspection of the facility. The inspection shall assess repair and maintenance needed for: drainage control systems; slope failure; groundwater monitoring wells, or any change in site conditions that could impair the integrity of the waste management unit or precipitation and drainage control structures; and shall assess preparedness for winter conditions including, but not limited to, erosion and sedimentation control. The Discharger shall take photos of any problem areas before and after repairs. If the annual facility inspection shows that maintenance or repairs are needed, the Discharger shall inform the Central Valley Water Board in writing, detailing the maintenance or repairs needed, and what related corrective actions will be taken within **30 days**. Any necessary construction, maintenance, or repairs shall be **completed by 31 October**. If repairs are needed, a report documenting repairs must be submitted by **30 November**. If no repairs are needed, the annual facility inspection report shall be submitted by **1 February**.

The Discharger shall inspect all precipitation diversion and drainage facilities for damage **within 7 days** following major storm events (e.g., a storm that causes continual runoff for at least one hour) capable of causing flooding, damage, or significant erosion. The Discharger shall take photos of any problem areas before and after repairs. Necessary repairs shall be commenced **within 30 days** of the inspection. If the annual facility inspection shows that maintenance or repairs are needed, the Discharger shall inform the Central Valley Water Board in writing, detailing the maintenance or repairs needed, and what related corrective actions will be taken within **30 days**. If repairs are needed, a report detailing this information must be submitted by **30 November**. If no repairs are needed the report, shall be **submitted by 1 February**.

Notification and reporting requirements for major storm events shall be conducted as required by the reporting requirements of this MRP. The Discharger shall monitor and record on-site rainfall data using an automated rainfall gauge, or subject to Executive Officer approval other acceptable gauge/monitoring arrangement, or a weather monitoring station within three miles of the facility. Data shall be used in establishing the severity of storm events and wet seasons for comparison with design parameters used for waste management unit design and conveyance and drainage design. Daily data and on-site observation shall be used for establishing the need for inspection and repairs after major storm events. Rainfall data shall be reported in the monitoring reports, as required by this MRP.

CHEMICAL AND ADDITIVE MONITORING

The Discharger shall provide the following for all chemicals and additives used as per the table below.

Requirement	Frequency
A list of all chemicals and additives used.	Semi-Annual
The volume of each chemical and additive used in gallons.	Semi-Annual
A list of the leases/facilities where the chemicals and additives are used.	Semi-Annual
Material safety data sheets for each chemical and/or additive.	Annual

Documents containing trade secrets shall be properly marked on the cover, by the Discharger, prior to submitting the document to the Central Valley Water Board. Individuals that have received permission by the Discharger shall be granted access to view the files at the office.

PRODUCED WASTEWATER MONITORING

Produced wastewater (or effluent) samples shall be representative of the volume and nature of the discharges. The Discharger shall maintain all sampling and analytical results: date, exact place, and time of sampling; dates analyses were performed; analyst's name; analytical techniques used; and results of all analyses. Such records shall be retained for a minimum of five years.

A complete list of substances that are tested for and reported on by the testing laboratory shall be provided to the Central Valley Water Board. All peaks must be

reported. In addition, both the method detection limit (MDL) and the practical quantification limit (PQL) shall be reported. Detection limits shall be equal to or more precise than USEPA methodologies. Analysis with an MDL greater than the most stringent drinking water standard that results in non-detection needs to be reanalyzed with the MDL set lower than the drinking water standard or at the lowest level achievable by the laboratory. All quality assurance/quality control (QA/QC) samples must be run on the same dates when samples were actually analyzed. Proper chain of custody procedures must be followed, and a copy of the completed chain of custody form shall be submitted with the report. All analyses must be performed by an Environmental Laboratory Accreditation Program (ELAP) certified laboratory.

If the discharge is intermittent rather than continuous, then on the first day of each such intermittent discharge, the Discharger shall monitor and record data for all of the constituents listed below, after which the frequencies of analysis given in the schedule shall apply for the duration of each such intermittent discharge.

DISCHARGE 001

Produced wastewater samples shall be collected downstream from the treatment system and prior to discharge to land (roads, ponds, etc.) (Discharge 001).

Produced wastewater monitoring shall include at least the following:

Parameter	Units	Sample	Type	Frequency
Flow	mgd	Metered	Continuous	Continuous
Table I – Effluent Monitoring	Varies	Grab	Varies	Semi-Annual

Note: In accordance to Order Provision E.3, instead of metering an engineered alternative may be used if approved in writing by the Executive Officer.

DISCHARGE 002

If ponds are used, produced wastewater samples shall be collected in the pond at the distal end of the system (Discharge 002), or if ponds are operated in parallel, in the pond that has contained produced wastewater for the longest period of time (i.e., longest retention time) (Discharge 002). Produced wastewater monitoring shall include at least what is on the following table.

Parameter	Units	Sample	Frequency
Table 1 Effluent Monitoring	Varies	Grab	Semi-Annual

Note: See table for sampling frequency.

SOLID WASTE MONITORING

Solid waste generated at the facility from production related activities, such as

tank or pond maintenance, shall be characterized for disposal. Non-hazardous solid wastes may be disposed on-site, as road or berm construction material, for instance, if such disposal does not pose a threat to water quality.

Hazardous waste (as defined in California Code of Regulations (CCR), title 22, section 66261.1) and designated wastes (as defined in California Water Code (CWC) section 13173) shall be properly disposed at a facility permitted to accept the waste.

Solid wastes disposed off-site shall be transported to an appropriately permitted facility. Central Valley Water Board staff may request that manifest documents be provided.

Solid waste volumes, disposal methods, disposal facilities, and analytical results from waste characterization shall be reported in the subsequent semi-annual and annual monitoring reports.

GROUNDWATER WELL SURVEY

The Discharger shall conduct a well survey to identify all water supply wells within one-mile of the ponds that receive produced wastewater or other authorized discharges. The Discharger shall sample the identified domestic water supply wells and analyze the samples for the waste constituents listed in Table II of this MRP. If access to private property is requested and denied, a demonstration of that denial is required.

REPORTING REQUIREMENTS

All monitoring results shall be submitted in semi-annual monitoring reports which are due by the first day of the second month after the reporting period as follows:

Report	Months Covered	Report Due
First Semi Annual Report	January to June	1 August
Second Semi Annual Report	July to December	1 February
Facility Inspection Report	January to December	1 February
If Facility needs repairs or maintenance – written communication	January to December	30 November

A transmittal letter shall accompany each monitoring report. The transmittal letter shall discuss any violations that occurred during the reporting period and all actions taken or planned for correcting violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions or a time schedule for implementing the corrective actions,

reference to the previous correspondence is satisfactory. Reports shall be submitted whether or not there is a discharge. The following information is to be included on all monitoring reports, as well as report transmittal letters:

Longbow, LLC
McKittrick Lease
McKittrick Oil Field
Geo Tracker Global ID: T100006768

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, the constituents, and the concentrations are readily discernible for all historical and current data. The data shall be summarized in such a manner that illustrates clearly, whether the Discharger complies with waste discharge requirements.

In addition to the details specified in Standard Provision C.3, monitoring information shall include the MDL and the Reporting limit (RL) or PQL. If the regulatory limit for a given constituent is less than the RL (or PQL), then any analytical results for that constituent that are below the RL (or PQL), but above the MDL, shall be reported and flagged as estimated.

If the Discharger monitors any constituent at the locations designated herein more frequently than is required by this Order, the results of such monitoring shall be included in the calculation and reporting of the values required in the monitoring reports. Such increased frequency shall be indicated on the monitoring reports.

All monitoring reports shall comply with the signatory requirements in Standard Provision B.3. All monitoring reports that involve planning, investigation, evaluation, or design, or other work requiring interpretation and proper application of engineering or geologic sciences, shall be prepared by or under the direction of persons registered to practice in California pursuant to California Business and Professions Code sections 6735, 7835, and 7835.1.

The Discharger shall submit electronic copies of all work plans, reports, analytical results, and groundwater elevation data over the Internet to the State Water Board Geographic Environmental Information Management System database (GeoTracker).

Electronic submittals shall comply with GeoTracker standards and procedures, as specified on the State Water Board's web site. Uploads to GeoTracker shall be completed on or prior to the due date.

In addition, a copy of each document shall be sent via email to the following email address: centralvalleyfresno@waterboards.ca.gov. Include a copy of the transmittal letter.

Laboratory reports submitted in compliance with this MRP shall be accompanied by an Excel file that includes the analytical data found in the laboratory report. Excel files shall be either generated by the laboratory or

compiled by the Discharger. At a minimum, the Excel file shall include the constituent name, sample location, sample name, sample date, analysis date, analytical method, result, unit, MDL, RL, and dilution factor. All Monitoring Reports shall include the following:

Facility reporting:

1. Monthly freeboard results as specified on MRP page 2.
2. The results of facility inspections conducted during the monitoring period as specified on MRP page 2.
3. Rainfall data as specified on MRP page 2.

Chemical and Additive reporting:

1. The data required as specified on MRP page 3.

Produced Wastewater reporting:

1. Tabular summary of current and historical results of effluent discharges.
2. For each month of the reporting period, calculation monthly effluent flow and the historical monthly effluent flow for the last 12-months.
3. For each reporting period, include a current and historical table for each effluent sample point for EC, boron, chloride, and sodium.

Solid Waste reporting:

1. The results of solid waste monitoring specified on MRP page 4, including the nature, volume, and weight in dry tons of solid waste produced during the reporting period.
2. Analytical results characterizing the solid waste, and particularly, whether the waste is hazardous as defined in CCR, title 22, section 66261.1).
3. The method of disposal and disposal locations of the solid wastes.
4. If wastes are hauled to a disposal facility, evidence that the disposal facility is properly permitted.

Second Semi-Annual Monitoring Reports, in addition to the above, by 1 February of each year, the Discharger shall submit a written report to the Executive Officer containing the following:

Production Facility information:

1. The names and general responsibilities of all persons employed to operate the produced wastewater treatment systems.
2. The names and telephone numbers of persons to contact regarding the facility for emergency and routine situations.
3. If field meters are used, then a statement certifying when the flow meters and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration (Standard Provision C.4).
 - a. A summary of all spills/releases, if any, that occurred during the year at the facility, tasks undertaken in response to the spills, and the results of the tasks undertaken.
4. A summary of the chemical and additive data collected under the Chemical and Additive Monitoring section, the required MSDS sheets, chemical

formulas and specific chemical names, and a discussion of whether any of the chemicals or additives were found in effluent discharges.

- a. A flow chart (i.e. diagram that clearly illustrates all processes that produced wastewater undergoes from well extraction to discharge to land) and map of the following:
 - i. Facility within the oil field
 - ii. Facility boundaries
 - iii. Production and wastewater distribution network with all stock tanks, and transfer pipes, and discharge points to the ponds or land.
- b. Annual report in tabular form for all the effluent and domestic water supply well data, if applicable.

Modifications. Any modification to this Monitoring and Reporting Program shall be in writing and approved by the Assistant Executive Officer, including any extensions. Any written extension request by the Discharger shall include justification for the delay. The Discharger shall implement the above monitoring program on signature date of the Executive Officer below.

Ordered by: Original Signed by Clay L. Rodgers for:
PATRICK PULUPA, Executive Officer

4/27/2021
(Date)

Table I. Effluent Monitoring

The table below describes parameters to be measured in the field.

Field Parameter	Units	Method: US EPA or Other	Reporting Frequency
Temperature	Degrees Fahrenheit	Meter	Semi-Annual
Electrical Conductivity	Micromhos per centimeter (µmhos/cm)	Meter	Semi-Annual
pH	pH Units	Meter	Semi-Annual

The table below describes parameters to be measured in the laboratory via water sampling.

Monitoring Parameter	Unit	Method: US EPA or Other Method	Reporting Frequency
Total Dissolved Solids (TDS)	Milligrams per liter (mg/l)	160.1	Semi-Annual
Total Suspended Solids (TSS)	mg/l	160.2	Semi-Annual
Electrical Conductivity	µmhos/cm	2510B	Semi-Annual
Total Organic Carbon (TOC)	mg/l	415.3	Semi-Annual
Boron, dissolved	mg/l	6010B	Semi-Annual
Alkalinity as CaCO ₃	mg/l	310.1	Semi-Annual
Bicarbonate Alkalinity as CaCO ₃	mg/l	310.1	Semi-Annual
Carbonate Alkalinity as CaCO ₃	mg/l	310.1	Semi-Annual
Hydroxide Alkalinity as CaCO ₃	mg/l	310.1	Semi-Annual
Sulfate, dissolved	mg/l	300.0	Semi-Annual
Nitrate-N, dissolved	mg/l	300.0	Semi-Annual
Calcium, dissolved	mg/l	6010B	Semi-Annual
Magnesium, dissolved	mg/l	6010B	Semi-Annual
Sodium, dissolved	mg/l	6010B	Semi-Annual
Potassium	mg/l	6010B	Semi-Annual
Chloride	mg/l	300.0	Semi-Annual
Polycyclic Aromatic Hydrocarbons	µg/l	8270 SIM (full scan)	Semi-Annual
Total Petroleum Hydrocarbons	µg/l	418.1	Semi-Annual
Volatile Organic Compounds	µg/l	8260B (full scan)	Semi-Annual

Monitoring Parameter	Unit	Method: US EPA or Other Method	Reporting Frequency
Oil and Grease	mg/l	1664A	Semi-Annual
Oxygen (o18)	Picocuries per liter (pCi/l)	900.0	Semi-Annual
Deuterium (Hydrogen 2, ² H, or D)	pCi/l	900.0	Semi-Annual
Radium 226	pCi/l	SM 7500 Ra	Semi-Annual
Radium 228	pCi/l	SM 7500 Ra	Semi-Annual
Gross Alpha (excluding radon and uranium)	pCi/l	SM 7110	Semi-Annual
Uranium	pCi/l	200.8	Semi-Annual
Lithium	mg/l	200.7	Semi-Annual
Strontium	mg/l	200.7	Semi-Annual
Iron	mg/l	200.8	Semi-Annual
Manganese	mg/l	200.8	Semi-Annual
Antimony	mg/l	200.8	Semi-Annual
Arsenic	mg/l	200.8	Semi-Annual
Barium	mg/l	200.8	Semi-Annual
Beryllium	mg/l	200.8	Semi-Annual
Cadmium	mg/l	200.8	Semi-Annual
Chromium, total	mg/l	200.8	Semi-Annual
Chromium, hexavalent	mg/l	7196A	Semi-Annual
Cobalt	mg/l	200.8	Semi-Annual
Copper	mg/l	200.8	Semi-Annual
Lead	mg/l	200.8	Semi-Annual
Mercury	mg/l	7470A	Semi-Annual
Molybdenum	mg/l	200.8	Semi-Annual
Nickel	mg/l	200.8	Semi-Annual
Selenium	mg/l	200.8	Semi-Annual
Silver	mg/l	200.8	Semi-Annual
Thallium	mg/l	200.8	Semi-Annual
Vanadium	mg/l	200.8	Semi-Annual
Zinc	mg/l	200.8	Semi-Annual
Oil Production and Process Chemicals and Additives	µg/l	Various	Semi-Annual

Note: The Discharger shall provide analytical results for all chemicals and additives used in the exploration, production, and/or processing of all oil and the treatment of produced wastewater discharged to land (e.g., ponds, roads, etc.) as described under the Chemical and Additive monitoring section of this monitoring and reporting program for which there are ELAP approved analyses. For those constituents for which there are not ELAP approved analytical methods, the Discharger shall submit a technical report

describing how it intends to address this issue. Analytical methods may be proposed by the Discharger but are subject to the approval of the Central Valley Water Board's Assistant Executive Officer.

Table II. Water-Supply Well Monitoring

The table below describes parameters to be measured in the laboratory.

Field Parameter	Units	Method: US EPA or Other	Reporting Frequency
Temperature	Degrees Fahrenheit	Meter	Semi-Annual
Electrical Conductivity	Micromhos per centimeter (µmhos/cm)	Meter	Semi-Annual
pH	pH Units	Meter	Semi-Annual
Groundwater Level	Feet to the nearest hundredth		Semi-Annual
Elevation Field	Median Sea Level		Semi-Annual

The table below describes parameters to be measured in the laboratory via water sampling.

Monitoring Parameter	Unit	Method: US EPA or Other Method	Reporting Frequency
Total Dissolved Solids (TDS)	Milligrams per liter (mg/l)	160.1	Semi-Annual
Total Suspended Solids (TSS)	mg/l	160.2	Semi-Annual
Electrical Conductivity	µmhos/cm	2510B	Semi-Annual
Total Organic Carbon (TOC)	mg/l	415.3	Semi-Annual
Boron, dissolved	mg/l	6010B	Semi-Annual
Alkalinity as CaCO ₃	mg/l	310.1	Semi-Annual
Bicarbonate Alkalinity as CaCO ₃	mg/l	310.1	Semi-Annual
Carbonate Alkalinity as CaCO ₃	mg/l	310.1	Semi-Annual
Hydroxide Alkalinity as CaCO ₃	mg/l	310.1	Semi-Annual
Sulfate, dissolved	mg/l	300.0	Semi-Annual
Nitrate-N, dissolved	mg/l	300.0	Semi-Annual
Calcium, dissolved	mg/l	6010B	Semi-Annual
Magnesium, dissolved	mg/l	6010B	Semi-Annual
Sodium, dissolved	mg/l	6010B	Semi-Annual
Potassium	mg/l	6010B	Semi-Annual
Chloride	mg/l	300.0	Semi-Annual

Monitoring Parameter	Unit	Method: US EPA or Other Method	Reporting Frequency
Polycyclic Aromatic Hydrocarbons	µg/l	8270 SIM (full scan)	Semi-Annual
Total Petroleum Hydrocarbons	µg/l	418.1	Semi-Annual
Volatile Organic Compounds	µg/l	8260B (full scan)	Semi-Annual
Oil and Grease	mg/l	1664A	Semi-Annual
Oxygen (o18)	Picocuries per liter (pCi/l)	900.0	Semi-Annual
Deuterium (Hydrogen 2, ² H, or D)	pCi/l	900.0	Semi-Annual
Radium 226	pCi/l	SM 7500 Ra	Semi-Annual
Radium 228	pCi/l	SM 7500 Ra	Semi-Annual
Gross Alpha (excluding radon and uranium)	pCi/l	SM 7110	Semi-Annual
Uranium	pCi/l	200.8	Semi-Annual
Lithium	mg/l	200.7	Semi-Annual
Strontium	mg/l	200.7	Semi-Annual
Iron	mg/l	200.8	Semi-Annual
Manganese	mg/l	200.8	Semi-Annual
Antimony	mg/l	200.8	Semi-Annual
Arsenic	mg/l	200.8	Semi-Annual
Barium	mg/l	200.8	Semi-Annual
Beryllium	mg/l	200.8	Semi-Annual
Cadmium	mg/l	200.8	Semi-Annual
Chromium, total	mg/l	200.8	Semi-Annual
Chromium, hexavalent	mg/l	7196A	Semi-Annual
Cobalt	mg/l	200.8	Semi-Annual
Copper	mg/l	200.8	Semi-Annual
Lead	mg/l	200.8	Semi-Annual
Mercury	mg/l	7470A	Semi-Annual
Molybdenum	mg/l	200.8	Semi-Annual
Nickel	mg/l	200.8	Semi-Annual
Selenium	mg/l	200.8	Semi-Annual
Silver	mg/l	200.8	Semi-Annual
Thallium	mg/l	200.8	Semi-Annual
Vanadium	mg/l	200.8	Semi-Annual
Zinc	mg/l	200.8	Semi-Annual