

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

REVISED MONITORING AND REPORTING PROGRAM
ORDER NO. R5-2019-0043

FOR
HATHAWAY, LLC, KERN-TULARE WATER DISTRICT, AND
JASMIN RANCHOS MUTUAL WATER COMPANY

PRODUCED WASTEWATER RECLAMATION PROJECT
QUINN TREATMENT FACILITY
JASMIN OIL FIELD
KERN COUNTY

This Revised Monitoring and Reporting Program (MRP) supersedes the MRP adopted on 6 June 2019 required pursuant to Water Code section 13267.

Hathaway, LLC ([Hathaway](#)), Kern-Tulare Water District ([Kern-Tulare](#)), and Jasmin Ranchos Mutual Water Company ([Jasmin Water Company](#)) (hereafter jointly referred to as [Discharger](#)) shall not implement any changes to this MRP unless and until the Central Valley Regional Water Quality Control Board (Central Valley Water Board) adopts, or the Executive Officer issues, a revised MRP. Changes to a sample location 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 oil field produced wastewater (produced wastewater or discharge) samples, identification of chemicals associated with petroleum exploration and production, and tracking the application of recycled materials (blended produced wastewater); in order to determine if the Discharger is in compliance with applicable laws, regulations, policies, and Waste Discharge Requirements Order No. R5-2019-0043 (WDRs).

MONITORING

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 applicable provisions of the ***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*

REVISED MONITORING AND REPORTING PROGRAM ORDER NO. R5-2019-0043
HATHAWAY, LLC. KERN-TULARE WATER DISTRICT, AND JASMIN RANCHOS MUTUAL
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JASMIN TREATMENT FACILITY
JASMIN OIL FIELD
KERN COUNTY

-2-

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.

This 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 the monitoring frequency or to minimize the list of constituents. A proposal to modify this MRP needs to include, at a minimum, an adequate technical justification and 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 (as appropriate).

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.

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 quantitation 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-detect needs to be reanalyzed with the MDL set lower than the drinking water standard, if possible, or at the lowest level achievable by the laboratory. If the regulatory limit for a given constituent is less than the reporting limit (RL) or PQL, then any analytical results for that constituent below the RL (or PQL), but above the method detection limit (MDL), shall be reported and flagged as estimated. All quality assurance/quality control (QA/QC) samples must be run on the same dates as when samples are 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 ELAP certified laboratory.

PRODUCED WASTEWATER MONITORING

Produced wastewater 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; analytical techniques used; and results of all analyses.

The Discharger shall label all pipelines discharging produced wastewater, or other sources of water (e.g., surface water and/or groundwater), to the Jasmin Ranchos Mutual Water

Company Reservoir, Guzman Reservoir, and Big Four Reservoir . Identifying labels shall be located within five feet of the pipeline and shall include at least the following: type of water (e.g., produced wastewater, surface water, or groundwater), source of the water (e.g., Well ID, canal, or lease/facility), and the company that supplies the water.

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
 (Jasmin Treatment Facility)**

The Discharger shall monitor the volume and quality of produced wastewater treated at the Jasmin Treatment Facility. A representative sample of produced wastewater shall be collected from Pond No. 7, the last pond at the Jasmin Treatment Facility. Produced wastewater monitoring for Discharge 001 shall include at least the following:

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>	<u>Frequency</u>
Flow to Jasmin Water Company ¹	Ac-ft/day ²	Metered ³	Continuous
Flow to Kern-Tulare ¹	Ac-ft/day	Metered	Continuous
Other Flow ¹	Ac-ft/day	Metered	Continuous
Electrical Conductivity	µmhos/cm	Meter	Continuous
Table I – Water Quality Monitoring	Varies	Grab	Semi-Annual ^{4 5}
Table II – Oil Production and Process Chemicals and Additives ⁶	Varies	Grab	Semi-Annual ^{4 5}

- ¹ Individual volumes of produced wastewater shall be monitored and all discharge locations shall be defined in each monitoring report.
- ² Acre feet per day.
- ³ Flow may be measured with an appropriate engineered alternative if approved in writing by the Executive Officer.
- ⁴ Semi-annual monitoring requires the collection of samples two times per year. One sampling event shall be collected between January and March and the second shall be collected between July and September of each year. While collecting samples in compliance with this Order, samples for Discharges 001-004 shall be collected within a 24-hour period and submitted to the laboratory in an appropriate amount of time, as to not exceed any holding times.

5 The sampling frequency for Discharges 001 – 004 shall be increased to quarterly if any of the following occur:

- A single sample result for boron exceeds 0.9 mg/L at Discharge 001;
- The 12-month average boron concentration exceeds 0.85 mg/L at Discharge 001; or
- A new lease, facility, and/or source of produced wastewater is delivered to the Jasmin Treatment Facility.

In the event that one of these items occurs, the Discharger is responsible for immediately notifying the Central Valley Water Board of the change in writing. Following the change, the Discharger shall switch to quarterly monitoring and reporting. The monitoring frequency shall remain quarterly until the Discharger makes a demonstration that the frequency change is appropriate and receives written approval from the Executive Officer.

6 The Discharger is responsible for identifying approved analytical methods for all constituents identified in Table II, as appropriate. For constituents that do not have an approved analytical method, the Discharger shall cite the source (e.g., name of the consultant or laboratory) and qualifications of the entity that made the determination that an analytical method is not available for specific constituents in Table II. Entities that are reviewing Table II to identify analytical methods shall have adequate knowledge related to laboratory analyses and be qualified to complete this review.

**Discharge 002 – Irrigation Water
 (Jasmin Ranchos Mutual Water Company Reservoir)**

Produced wastewater and blending water are mixed in the Jasmin Ranchos Mutual Water Company Reservoir prior to distribution to cropland for irrigation. A monitoring station shall be established opposite of the inlet at the Jasmin Ranchos Mutual Water Company Reservoir that provides a representative sample of blended produced wastewater used for irrigation. Monitoring of the Jasmin Ranchos Mutual Water Company Reservoir for Discharge 002 shall include at least the following:

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>	<u>Frequency</u>
Inlet to the JRMWC Reservoir ¹			
Produced Wastewater	Ac-ft/m ²	Metered ³	Monthly
Blending Water	Ac-ft/m	Metered	Monthly
Total Volume	Ac-ft/m	Calculated	Monthly
Outlet of the JRMWC Reservoir ⁴			
Jasmin Water Company	Ac-ft/m	Metered	Monthly
Other	Ac-ft/m	Metered	Monthly
Blending Ratio ⁵	-	Calculated	Monthly
Table I – Water Quality Monitoring	Varies	Grab	Semi-Annual ^{6 7}

REVISED MONITORING AND REPORTING PROGRAM ORDER NO. R5-2019-0043
 HATHAWAY, LLC. KERN-TULARE WATER DISTRICT, AND JASMIN RANCHOS MUTUAL
 WATER COMPANY QUINN
 PRODUCED WASTEWATER RECLAMATION PROJECT
 JASMIN TREATMENT FACILITY
 JASMIN OIL FIELD
 KERN COUNTY

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>	<u>Frequency</u>
Table II – Oil Production and Process Chemicals and Additives ⁸	Varies	Grab	Semi-Annual ^{6 7}

- 1 Individual volumes shall be monitored and all sources of water defined in each monitoring report (e.g., petroleum production facilities, irrigation well names, or surface water sources).
- 2 Acre-feet per month.
- 3 Flow may be measured with an appropriate engineered alternative if approved in writing by the Executive Officer.
- 4 Individual volumes shall be monitored and all locations where blended produced wastewater is discharged to land shall be defined in each monitoring report.
- 5 The blending ratio shall be calculated using the sum of blending water and produced wastewater that are mixed.
- 6 Semi-annual monitoring requires the collection of samples two times per year. One sampling event shall be collected between January and March and the second shall be collected between July and September of each year. While collecting samples in compliance with this Order, samples for Discharges 001-004 shall be collected within a 24-hour period and submitted to the laboratory in an appropriate amount of time, as to not exceed any holding times.
- 7 **The sampling frequency for Discharges 001 – 004 shall be increased to quarterly if any of the following occur:**
 - A single sample result for boron exceeds 0.9 mg/L at Discharge 001;
 - The 12-month average boron concentration exceeds 0.85 mg/L at Discharge 001; or
 - A new facility, lease, and/or source of produced wastewater is delivered to the Jasmin Treatment Facility.

In the event that one of these items occurs, the Discharger is responsible for immediately notifying the Central Valley Water Board in writing of the change. Following that change, the Discharger shall switch to quarterly monitoring and reporting. The monitoring frequency shall remain quarterly until the Discharger makes a demonstration that the frequency change is appropriate and receives written approval from the Executive Officer.
- 8 The Discharger is responsible for identifying approved analytical methods for all constituents identified in Table II, as appropriate. For constituents that do not have an approved analytical method, the Discharger shall cite the source (e.g., name of the consultant or laboratory) and qualification of the entity(s) that made the statement that an analytical method is not available for specific constituents in Table II. Entities that are reviewing Table II to identify analytical methods shall have adequate knowledge related to laboratory analyses and be qualified to complete this review.

**Discharge 003 – Produced Wastewater Storage
 (Guzman Reservoir)**

The Discharger shall monitor the volume and quality of produced wastewater discharged to the Guzman Reservoir. The Discharger shall establish a monitoring station at the Guzman Reservoir that provides a representative sample of produced wastewater discharged to the Big Four Reservoir. Produced wastewater monitoring for Discharge 003 shall include at least the following:

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>	<u>Frequency</u>
Inlet to the Guzman Reservoir ¹			
Produced Wastewater	Ac-ft/m ²	Metered ³	Monthly
Blending Water	Ac-ft/m	Metered	Monthly
Total Volume	Ac-ft/m	Calculated	Monthly
Outlet of the Guzman Reservoir ⁴			
Big Four Reservoir	Ac-ft/m	Metered	Monthly
Other	Ac-ft/m	Metered	Monthly
Table I – Water Quality Monitoring	Varies	Grab	Semi-Annual ^{5 6}

¹ Individual volumes shall be monitored and all sources of water defined in each monitoring report (e.g., petroleum production facilities, irrigation well names, or surface water sources).

² Acre-feet per month.

³ Flow may be measured with an appropriate engineered alternative if approved in writing by the Executive Officer.

⁴ Individual volumes shall be monitored and all locations where blended produced wastewater is discharged to land shall be defined in each monitoring report.

⁵ Semi-annual monitoring requires the collection of samples two times per year. One sampling event shall be collected between January and March and the second shall be collected between July and September of each year. While collecting samples in compliance with this Order, samples for Discharges 001-004 shall be collected within a 24-hour period and submitted to the laboratory in an appropriate amount of time, as to not exceed any holding times.

⁶ **The sampling frequency for Discharges 001 – 004 shall be increased to quarterly if any of the following occur:**

- A single sample result for boron exceeds 0.9 mg/L at Discharge 001;
- The 12-month average boron concentration exceeds 0.85 mg/L at Discharge 001; or
- A new facility, lease, and/or source of produced wastewater is delivered to the Jasmin Treatment Facility.

In the event that one of these items occurs, the Discharger is responsible for immediately informing the Central Valley Water Board of the change in writing.

Following any of the above changes, the Discharger shall switch to quarterly monitoring and reporting. The monitoring frequency shall remain quarterly until the Discharger makes a demonstration that the frequency change is appropriate and receives written approval from the Executive Officer.

**Discharge 004 – Irrigation Water
 (Big Four Reservoir)**

The Discharger shall monitor the volume and quality of produced wastewater discharged to the Big Four Reservoir. The Discharger shall establish a monitoring station at the Big Four Reservoir that provides a representative sample of blended produced wastewater used for irrigation. Monitoring at Discharge 004 shall include at least the following:

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>	<u>Frequency</u>
Inlet to the Big Four Reservoir¹			
Produced Wastewater	Ac-ft/m ²	Metered ³	Monthly
Blending Water	Ac-ft/m	Metered	Monthly
Total Volume	Ac-ft/m	Calculated	Monthly
Outlet of the Big Four Reservoir⁴			
Kern-Tulare Water District	Ac-ft/m	Metered	Monthly
Jasmin Water Company	Ac-ft/m	Metered	Monthly
Other	Ac-ft/m	Metered	Monthly
Blending Ratio ⁵	-	Calculated	Monthly
Table I – Water Quality Monitoring	Varies	Grab	Semi-Annual ^{6 7}
Table II – Oil Production and Process Chemicals and Additives ⁸	Varies	Grab	Semi-Annual ^{6 7}

¹ Individual volumes shall be monitored and all sources of water defined in each monitoring report (e.g., petroleum production facilities, irrigation well names, or surface water sources).

² Acre-feet per month.

³ Flow may be measured with an appropriate engineered alternative if approved in writing by the Executive Officer.

⁴ Individual volumes shall be monitored and all locations where blended produced wastewater is discharged to land shall be defined in each monitoring report.

⁵ The blending ratio shall be calculated using the sum of blending water and produced wastewater that are mixed.

⁶ Semi-annual monitoring requires the collection of samples two times per year. One sampling event shall be collected between January and March and the second shall be collected between July and September of each year. While collecting samples in compliance with this

Order, samples for Discharges 001-004 shall be collected within a 24-hour period and submitted to the laboratory in an appropriate amount of time, as to not exceed any holding times.

7 The sampling frequency for Discharges 001 – 004 shall be increased to quarterly if any of the following occur:

- A single sample result for boron exceeds 0.9 mg/L at Discharge 001;
- The 12-month average boron concentration exceeds 0.85 mg/L at Discharge 001; or
- A new facility, lease, and/or source of produced wastewater is delivered to the Jasmin Treatment Facility.

In the event that one of these items occurs, the Discharger is responsible for immediately notifying the Central Valley Water Board in writing. Following the change, the Discharger shall switch to quarterly monitoring. The monitoring frequency shall remain quarterly until the Discharger makes a demonstration that a change in frequency is appropriate and receives written approval from the Executive Officer.

8 The Discharger is responsible for identifying approved analytical methods for all constituents identified in Table II, as appropriate. For constituents that do not have an approved analytical method, the Discharger shall cite the source (e.g., name of the consultant or laboratory) and qualification of the entity(s) that made the statement that an analytical method is not available for specific constituents in Table II. Entities that are reviewing Table II to identify analytical methods shall have adequate knowledge related to laboratory analyses and be qualified to complete this review.

IRRIGATION WATER MONITORING

The Discharger shall monitor the volume of water used for irrigation and the acreage of cropland receiving produced wastewater. Irrigation water monitoring shall include at least the following:

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>	<u>Frequency</u>
Volume of Produced Wastewater ¹	Ac-ft/m ²	Calculated	Monthly
Volume of Blending Water ¹	Ac-ft/m	Calculated	Monthly
Blending Ratio ³	-	Calculated	Monthly
Service Territory ⁴	Acres	-	Annually
Area of Cropland Receiving Blended Water ⁵	Acres	-	Annually
Crop Types ⁶	-	-	Annually

- 1 Individual volumes shall be monitored and all sources of water defined in each monitoring report (e.g., oil extraction facilities, irrigation well names, and surface water sources).
- 2 Acre-feet per month.
- 3 The blending ratio shall be calculated using the sum of blending water and produced wastewater that are mixed .
- 4 The service territory shall include the total acreage of the water district or water company.
- 5 The acreage of cropland shall include all land that was irrigated with produced wastewater within each water district and water company.
- 6 This shall include at least the crop type and acreage for all cropland irrigated with produced wastewater within each water district and water company.

CHEMICAL AND ADDITIVE MONITORING

The Discharger shall monitor all chemicals and additives used during petroleum exploration, production, and/or treatment that have the potential to be in the produced wastewater used for irrigation. Chemical and additive monitoring shall include at least the following:

<u>Requirement</u>	<u>Frequency</u>
A list of all chemicals and additives used.	Quarterly
Volume and mass of each chemical and additive used in gallons and kilograms.	Quarterly
The mass of each solid chemical and additive used in grams or kilograms (if dissolved into a solution, provide resulting solution concentration or ratio).	Quarterly
A list of the leases and/or facilities where the chemicals and additives are being used.	Quarterly
Safety data sheets for each chemical and additive.	Annually

Monitoring and reporting of chemical additives may be reduced at the discretion of the Assistant Executive Officer.

GROUNDWATER MONITORING

The Discharger shall monitor groundwater wells at the Jasmin Treatment Facility, Jasmin Ranchos Mutual Water Company Reservoir, Big Four Reservoir, and Guzman Reservoir. After measuring water levels and prior to collecting samples, each groundwater well shall be adequately purged to remove water that has been standing within the well screen and casing that may not be chemically representative of first encountered groundwater. Depending on the hydraulic conductivity of the geologic setting, the volume removed during purging is typically from 3 to 5 volumes of the standing water within the well casing and screen, or additionally the

filter pack pore volume. Alternative methods for collecting groundwater samples may be proposed to the Central Valley Water Board for review and approval.

The Discharger shall monitor groundwater wells for the following:

<u>Constituent/Parameter</u>	<u>Units</u>	<u>Sample Type</u>	<u>Frequency</u>
Depth to groundwater	Feet ¹	Measured	Quarterly
Groundwater elevation	Feet (amsl) ²	Calculated	Quarterly
Table I – Water Quality Monitoring	Varies	Grab	Quarterly
Table II – Oil Production and Process Chemicals and Additives ²	Varies	Grab	Quarterly

¹ Recorded to one hundredth of a foot

² Feet above mean sea level.

³ The Discharger is responsible for identifying approved analytical methods for all constituents identified in Table II, as appropriate. For constituents that do not have an approved analytical method, the Discharger shall cite the source (e.g., name of the consultant or laboratory) and qualifications of the entity that made the determination that an analytical method is not available for specific constituents in Table II. Entities that are reviewing Table II to identify analytical methods shall have adequate knowledge related to laboratory analyses and be qualified to complete this review.

Within 30 days of notification that permission to sample a well(s) is revoked or a well(s) is damaged, the Discharger shall submit for review and approval by Central Valley Water Board staff a report that either: (1) demonstrates that a reduction in the number of monitoring wells will not impair the ability to clearly and accurately assess potential groundwater impacts, or (2) proposes the installation of a new monitoring well(s) to offset the well(s) that is no longer able to be sampled.

FACILITY MONITORING

Monthly measurements of water levels are required for Pond Nos. 1 through 7 at the Quinn Treatment Facility, Jasmin Ranchos Mutual Water Company Reservoir, Guzman Reservoir, and Big Four Reservoir. Markers shall be in place with calibrations indicating that the water levels are at design capacity and have available operational freeboard. The freeboard shall be monitored **monthly** to the nearest tenth of a foot and results included in the appropriate monitoring report.

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: oil booms; drainage control systems; slope failure; 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. Any necessary construction, maintenance, or repairs shall be **completed by 31 October**. Annual facility inspection reporting shall be submitted by **1 February** of the following year.

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 completed within 30 days of the inspection. Damages and repairs shall be reported in the appropriate monitoring report.

REPORTING REQUIREMENTS

Monitored items described in this monitoring and reporting program have differing monitoring frequencies. The Discharger shall prepare a report with the information described above. All monitoring reports shall be submitted to the Central Valley Water Board on a semi-annual basis. Annual facility reports may be submitted concurrently with the second semi-annual report. These reports are due as follows:

<u>Monitoring Report</u>	<u>Due Date</u>
First Semi-Annual Monitoring Report: January – June	1 August
Second Semi-Annual Monitoring Report: July - December	1 February
Annual Facility Monitoring Report:	1 February

If the monitoring frequency for Discharges 001 – 004 is increased to quarterly, then monitoring reports shall be due as follows:

<u>Monitoring Report</u>	<u>Due Date</u>
First Quarter Monitoring Report: January – March	1 May
Second Quarter Monitoring Report: April – June	1 August
Third Quarter Monitoring Report July - September	1 November
Fourth Quarter Monitoring Report October – December	1 February
Annual Facility Monitoring Report:	1 February

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.**

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 the WDRs.

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, 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.

A. Reports submitted to the Central Valley Water Board

The Discharger shall submit copies of all monitoring reports, work plans, and technical reports to the following:

1. Electronic mail to CentralValleyFresno@waterboards.ca.gov.
2. Over the Internet to the [State Water Board Geographic Environmental Information Management System database \(GeoTracker\)](http://www.waterboards.ca.gov/ust/electronic_submittal/index.shtml)
(http://www.waterboards.ca.gov/ust/electronic_submittal/index.shtml)

A [frequently asked question document for GeoTracker](http://www.waterboards.ca.gov/ust/electronic_submittal/docs/faq.pdf) can be found at:
(http://www.waterboards.ca.gov/ust/electronic_submittal/docs/faq.pdf)

Electronic submittals to GeoTracker shall comply with GeoTracker standards and procedures, as specified on the State Water Board's web site.

The following information is to be included on all monitoring reports and report transmittal letters:

Hathaway, LLC, Kern-Tulare Water District, and Jasmin Ranchos Mutual Water Company
Produced Wastewater Reclamation Project
Jasmin Treatment Facility

Waste Discharge Requirements Order No. R5-2019-0043
GeoTracker Site Global ID: T10000007320
CIWQS Place ID: 233496

B. All Monitoring Reports shall include, at a minimum, the following:

Produced Wastewater Reporting:

1. Tabular summary of current and historical water quality results for Discharges 001, 002, 003, and 004 as specified on MRP pages 2, 3, 4, and 5.
2. For each month, a tabular summary of the monthly flow, the total annual flow (for the calendar year), and the historical annual flowrates for Discharges 001, 002, 003, and 004.
3. For each month, a tabular summary of the maximum daily flow and average daily flow for Discharge 001.
4. The tabular summary of water quality results shall include the Chemicals Abstracts Service Registry Number (CASRN) for all constituents, as appropriate, required in Tables I and II of this MRP.
5. For each sample of Boron, the Discharger shall calculate the 12-month rolling average of the discharge using the current value for that month averaged with the historical values for the previous 11 months.

Irrigation Water Reporting:

1. Irrigation water reporting shall be clearly marked in all monitoring reports.
2. Tabular summary of current and historical results as specified on MRP page 5.

Chemical and Additive Reporting:

1. List of all chemicals and additives that were used during the quarter.
2. Tabular summary of current and historical monthly volume and mass for all chemicals and additives as specified on MRP page 5 and 6.
3. Summary that identifies if any chemicals and additives were detected in the produced wastewater or in groundwater.
4. List of all leases and facilities where chemicals and additives are being used.

Groundwater Reporting:

1. Tabular summary of current and historical results as specified on MRP page 7.
2. A groundwater contour map with the depth to groundwater for that respective reporting period. The contour map shall include groundwater direction for the Jasmin Treatment Facility, Jasmin Ranchos Mutual Water Company Reservoir, Big Four Reservoir and Guzman Reservoir. The map shall also include the locations of monitoring wells, system components, and application areas where blended produced wastewater is used for irrigation.
3. Provide a current isoconcentration map of groundwater data for EC, chloride, and boron concentrations.

Laboratory Reports:

1. 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 need to be 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, CASRN, and dilution factor. Excel files shall either be mailed to the Central Valley Water Board Office on an electronic storage device, or sent via electronic mail to CentralValleyFresno@waterboards.ca.gov. Either method of delivery needs to include, at a minimum, a copy of the transmittal letter.

- C. 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:

Facility Information:

1. The names and general responsibilities of all persons employed to operate the produced water treatment systems.
2. The names and telephone numbers of persons to contact regarding the Facility for emergency and routine situations.
3. A statement certifying when the flow meters and other monitoring instruments and devices were last calibrated, including identification of the person who performed the calibration (Standard Provision C.4).
4. A summary of all spills/releases, if any, that occurred during the year, tasks undertaken in response to the spills, and the results of the tasks undertaken.
5. A summary of all leases and facilities that generated produced wastewater that was discharged to Jasmin Ranchos Mutual Water Company Reservoir, Big Four Reservoir, and Guzman Reservoir.
6. A summary (i.e., flow diagram, or description) that clearly illustrates all processes and locations for produced wastewater during extraction, treatment, storage, and disposal.
7. A map of the following:
 - Facility(s) within the oil field,
 - Facility(s)/lease(s) boundaries,
 - Produced wastewater distribution network, and
 - Distribution network for blended produced wastewater.

Produced Wastewater Reporting:

1. Tabular summary of current and historical total annual flow for Produced Wastewater Monitoring as specified on MRP pages 2 through 5.

Irrigation Water Reporting

1. Tabular summary of the current and historical average annual blending ratios.

2. Tabular summary of current and historical crops that were irrigated with blended produced wastewater and the crops respective acreage within the service territory of each water provider.
3. Individual aerial maps for Kern-Tulare Water District, and Jasmin Ranchos Mutual Water Company shall identify the crop(s) grown at each parcel within their respective service territory. Parcels that have changed crop type during the calendar year shall be noted by the submittal of two aerial maps for each Discharger, one aerial map for January and a second aerial map for December.

Chemical and Additive Reporting:

1. Safety Data Sheets for all chemicals and additives that are identified in monitoring reports for that respective calendar year.
2. Tabular summary of current and historical annual volume and mass for all chemicals and additives.
3. Summary that identifies if any chemicals and additives were detected in the produced wastewater used for irrigation or groundwater.
4. Identify new chemicals/additives that were used during the current calendar year and not in the previous calendar year.
5. Identify chemicals/additives that were used during the current or previous calendar year that will no longer be used by the Discharger.

Requesting Administrative Review by the State Water Board. Any person aggrieved by an action of the Central Valley Water Board that is subject to review as set forth in Water Code section 13320(a), may petition the State Water Board to review the action. Any petition must be made in accordance with Water Code section 13320 and California Code of Regulations, title 23, section 2050 and following. The State Water Board must receive the petition within thirty (30) days of the date the action was taken, except that if the thirtieth day following the date the action was taken falls on a Saturday, Sunday, or state holiday, then the State Water Board must receive the petition by 5:00 p.m. on the next business day. [Copies of the laws and regulations applicable to filing petitions may be found on the internet.](#) (http://www.waterboards.ca.gov/public_notices/petitions/water_quality/index.shtml) or will be provided upon request.

REVISED MONITORING AND REPORTING PROGRAM ORDER NO. R5-2019-0043
HATHAWAY, LLC. KERN-TULARE WATER DISTRICT, AND JASMIN RANCHOS MUTUAL
WATER COMPANY QUINN
PRODUCED WASTEWATER RECLAMATION PROJECT
JASMIN TREATMENT FACILITY
JASMIN OIL FIELD
KERN COUNTY

-16-

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. ·

This monitoring and reporting program shall be effective on the signature date below.

Ordered by: Original Signed by Alex Olsen for
PATRICK PULUPA, Executive Officer

5/15/2023
(Date)

Table I – Water Quality Monitoring

<u>Parameters</u>	<u>Units</u>	<u>US EPA or other Method</u>
Field Parameters		
Temperature	°F ¹	Meter
Electrical Conductivity	µmhos/cm ²	Meter
pH	pH units	Meter
Monitoring Parameters		
Total Dissolved Solids (TDS)	mg/L ³	160.1
Total Suspended Solids (TSS) ⁴	mg/L	160.2
Total Organic Carbon (TOC)	mg/L	415.3
Electrical Conductivity	µmhos/cm	2510B
Boron, dissolved	mg/L	6010B
Standard Minerals		
Alkalinity as CaCO ₃	mg/L	310.1
Bicarbonate Alkalinity as CaCO ₃	mg/L	310.1
Carbonate Alkalinity as CaCO ₃	mg/L	310.1
Hydroxide Alkalinity as CaCO ₃	mg/L	310.1
Sulfate, dissolved	mg/L	300.0
Total Kjeldahl Nitrogen	mg/L	351.3
Nitrate-N, dissolved	mg/L	300.0
Nitrite as N	mg/L	353.2
Ammonia as N	mg/L	350.1
Ammonium as N	mg/L	350.2
Calcium, dissolved	mg/L	6010B
Magnesium, dissolved	mg/L	6010B
Sodium, dissolved	mg/L	6010B
Potassium	mg/L	6010B
Chloride	mg/L	300.0
PAHs⁵	µg/L ⁶	8270
Total Petroleum Hydrocarbons (TPH)	µg/L	418.1
Volatile Organic Compounds		
Full Scan (See Table III)	µg/L	8260B
Stable Isotopes		
Oxygen (¹⁸ O)	o/oo ⁷	900.0
Deuterium (Hydrogen 2, ² H, or D)	o/oo	900.0

Table I – Water Quality Monitoring

<u>Parameters</u>	<u>Units</u>	<u>US EPA or other Method</u>
Radionuclides		
Radium-226	pCi/L ⁸	SM ⁹ 7500-Ra
Radium-228	pCi/L	SM 7500-Ra
Gross Alpha particle (excluding radon and uranium)	pCi/L	SM 7110
Uranium	pCi/L	200.8
Oil and Grease	mg/L	1664A
Constituents of Concern		
Lithium	mg/L	200.7
Strontium	mg/L	200.7
Iron	mg/L	200.8
Manganese	mg/L	200.8
Antimony	mg/L	200.8
Arsenic	mg/L	200.8
Barium	mg/L	200.8
Beryllium	mg/L	200.8
Cadmium	mg/L	200.8
Chromium (total)	mg/L	200.8
Chromium (hexavalent)	mg/L	7196A
Cobalt	mg/L	200.8
Copper	mg/L	200.8
Lead	mg/L	200.8
Mercury	mg/L	7470A
Molybdenum	mg/L	200.8
Nickel	mg/L	200.8
Selenium	mg/L	200.8
Silver	mg/L	200.8
Thallium	mg/L	200.8
Vanadium	mg/L	200.8
Zinc	mg/L	200.8
MBAS (Methylene Blue Active Substances)	mg/L	SM 425.1
QAC (Quaternary Ammonium Compounds)	mg/L	As Appropriate

REVISED MONITORING AND REPORTING PROGRAM ORDER NO. R5-2019-0043
HATHAWAY, LLC. KERN-TULARE WATER DISTRICT, AND JASMIN RANCHOS MUTUAL
WATER COMPANY QUINN
PRODUCED WASTEWATER RECLAMATION PROJECT
JASMIN TREATMENT FACILITY
JASMIN OIL FIELD
KERN COUNTY

-19-

- 1 Degrees Fahrenheit.
- 2 Micromhos per centimeter.
- 3 Milligrams per liter .
- 4 TSS is not required for groundwater monitoring.
- 5 Polycyclic aromatic hydrocarbons.
- 6 Micrograms per liter.
- 7 Parts per thousand.
- 8 Picocuries per liter
- 9 Standard Methods

HATHAWAY, LLC. KERN-TULARE WATER DISTRICT, AND JASMIN RANCHOS MUTUAL WATER COMPANY QUINN
 PRODUCED WASTEWATER RECLAMATION PROJECT
 JASMIN TREATMENT FACILITY
 JASMIN OIL FIELD
 KERN COUNTY

Table II - Oil Production and Process Chemicals and Additives

<u>No.</u>	<u>Constituent</u>	<u>CASRN</u>	<u>No.</u>	<u>Constituent</u>	<u>CASRN</u>
1	1,2,3 Trimethylbenzene	526-73-8	160	Lead	7439-92-1
2	1,2 Benzisothiazol-3(2H)-one	2634-33-5	161	Light Aliphatic Naphtha	64742-89-8
3	1,2,4-Trimethylbenzene	95-63-6	162	Light aromatic naphtha	64742-95-6
4	1,3,5 Trimethylbenzene	108-67-8	163	Lignite	129521-66-0
5	1,4 Dioxane	123-91-1	164	Limestone	1317-65-3
6	1H, 3H-Pyrano (4,3-b)(1)benzopyran-9-carboxylic acid, 4,10-dihydro-3,7,8 trihydroxy-3-methyl-10-oxo	479-66-3	165	Lithium carbonate	554-13-2
7	1-Hexadecene	629-73-2	166	Lithium chlorate	13453-71-9
8	2-Butoxyethanol	111-76-2	167	Lithium chloride	7447-41-8
9	2-Ethylhexanol	104-76-7	168	Lithium hydroxide	1310-65-2
10	2-Methylamino-2-methyl-1-propanol	27646-80-6	169	Lithium hypochlorite	13840-33-0
11	2-Propen-1-aminium, N,N-dimethyl-N-2-propenyl-, chloride, polymer with 2-hydroxypropyl 2-2-Propenoic acid, 2-methyl-, polymer with methyl 2-methyl-2-propenoate, octadecyl 2-methyl 2 propenoate and 2propenoic acid, sodium salt	67990-40-3	170	Magma Fiber	6806-10-0000
12	2-Propenoic acid, polymer with 2-propenamido, sodium salt	145417-45-4	171	Mercury	7439-97-6
13	2-Propenoic acid, telomer with 2-methyl-2-(1-oxo-2-propenyl)-1-propanesulfonic acid, sodium salt	25987-30-8	172	Methanol	67-56-1
14		130800-24-7	173	Methyl Chloride	74-87-3

HATHAWAY, LLC. KERN-TULARE WATER DISTRICT, AND JASMIN RANCHOS MUTUAL WATER COMPANY QUINN
 PRODUCED WASTEWATER RECLAMATION PROJECT
 JASMIN TREATMENT FACILITY
 JASMIN OIL FIELD
 KERN COUNTY

<u>No.</u>	<u>Constituent</u>	<u>CASRN</u>	<u>No.</u>	<u>Constituent</u>	<u>CASRN</u>
15	3-Butyn-2-ol, 2-methyl	115-19-5	174	Methyl ester of sulfonated tannin	N/A
16	Acetaldehyde	75-07-0	175	Methyl oxirane polymer	PE-M2464
17	Acetic Acid	64-19-7	176	Methylchloroisothiazolinone	26172-55-4
18	Acetone	67-64-1	177	Mineral Oil	8012-95-1
19	Acrolein	107-02-8	178	Monoethanolamine	141-43-5
20	Acrolein dimer	100-73-2	179	Mullite	1302-93-8
21	Acrylamide	79-06-1	180	Naphthalene	91-20-3
22	Acrylic Acid	79-10-7	181	Nickel	7440-02-0
23	Alcohols, C14-15, ethoxylated	68951-67-7	182	Nickel sulfate	7786-81-4
24	Alcohol ethoxylate	68439-45-2	183	Non Phenol Ethoxylates	9016-45-9
25	Alcohol ethoxylated, C-10-14	66455-15-0	184	Nonylphenol polyethylene glycol ether	127087-87-0
26	Alcohols, C9-11, ethoxylated	68439-46-3	185	Nutshell	N/A
27	Alkanes, C11-15-iso	90622-58-5	186	Oleic acid	112-80-1
28	Alkanes, C14-16	90622-46-1	187	Orange terpenes	68647-72-3
29	Alkanolamine aldehyde condensate	4719-04-4	188	Organic Acids Ethoxylated Alcohols	104-55-2
30	Alkanolamine phosphate	29868-05-1	189	Organic surfactant	577-11-7
31	Alkoxyated alcohol	69011-36-5	190	Oxyalkylated alkylphenol	68412-54-4
32	Alkyl amine	68439-70-3	191	Oxyalkylated alkylphenolic resin	30704-64-4
33	Alkyl benzenesulfonate	68081-81-2	192	Oxyalkylated alkylphenolic resin	30846-35-6
34	Alkyl benzenesulfonic acid	68584-22-5	193	Oxyalkylated alkylphenolic resin	63428-92-2
35	Alkyl dimethyl benzyl ammonium chloride	8001-54-5	194	Oxyalkylated alkylphenolic resin	68171-44-8
36	Alkylaryl sulfonate	68584-27-0	195	Oxyalkylated polyamine	67939-72-4
37	Alkylaryl sulfonates	68910-32-7	196	Oxyalkylated polyamine	68910-19-0

HATHAWAY, LLC. KERN-TULARE WATER DISTRICT, AND JASMIN RANCHOS MUTUAL WATER COMPANY
 PRODUCED WASTEWATER RECLAMATION PROJECT
 JASMIN TREATMENT FACILITY
 JASMIN OIL FIELD
 KERN COUNTY

<u>No.</u>	<u>Constituent</u>	<u>CASRN</u>	<u>No.</u>	<u>Constituent</u>	<u>CASRN</u>
38	Alkylarylsulfonate amine salt	90218-35-2	197	Paraffinic petroleum distillate	64742-55-8
39	Alkylbenzene mixture	68648-87-3	198	Pentadecane, 3-methylene	56919-55-2
40	Almond Shell	90320-37-9	199	Pentadecane, 5-methylene	115146-98-0
41	Aluminium oxide	1344-28-1	200	Pentadecane, 7-methylene	13043-55-5
42	Aluminum chloride	7446-70-0	201	Pentasodium diethylenetriamine pentaacetate	140-01-2
43	Aluminum chloride hydroxide	12042-91-0	202	Peroxyacetic acid	79-21-0
44	Aluminum stearate	300-92-5	203	Petrolleum distillates	64742-53-6
45	Amide surfactant acid salt	N/A	204	Phosphate ester salt	68425-75-2
46	Amides, Non Ionics	68140-01-2	205	Phosphonate salt	P-84-470
47	Amine derivative	61791-24-0	206	Phosphonic Acid	13598-36-2
48	Amine salt	67924-33-8	207	Phosphonium, tetrakis (hydroxymethyl)-, sulfate (2:1), salt	55566-30-8
49	Amine salt	NP-U2856	208	Phosphoric acid	7664-38-2
50	Amine sulfate	64346-44-7	209	Phosphoric acid ester salt	N/A
51	Amine sulfate	926-39-6	210	Piperazine	110-85-0
52	Aminotri (methylenephosphonic acid)	6419-19-8	211	POE (20) Sorbitan Trioleate	9005-70-3
53	Ammonium alkylaryl sulfonates	68910-31-6	212	Polyacrylamide	9003 05 8
54	Ammonium Benzoate	1863-63-4	213	Polyacrylate	9003-79-8
55	Ammonium bisulfate	10192-30-0	214	Polyacrylic acid	9003 01 4
56	Ammonium chloride	12125-02-9	215	Polyamine	64114-46-1
57	Ammonium Fluoride	1341-49-7	216	Polyamine salts	68955-69-1
58	Ammonium sulfate	7783-20-2	217	Polycarboxlate salt	19019-43-3
59	Amorphous silica	7631-86-9	218	PolyDADMAC	26062-79-3
60	Antimony trioxide	1309-64-4	219	Polydimethylsiloxane emulsion	N/A

HATHAWAY, LLC. KERN-TULARE WATER DISTRICT, AND JASMIN RANCHOS MUTUAL WATER COMPANY QUINN
 PRODUCED WASTEWATER RECLAMATION PROJECT
 JASMIN TREATMENT FACILITY
 JASMIN OIL FIELD
 KERN COUNTY

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61	Aromatic amines	N/A	220	Polyethylene	25038-59-9
62	Barite	13462-86-7	221	Polyethylene glycol	25322-68-3
63	Barium	7440-39-3	222	Polyglycol diepoxide	68036-92-0
64	Barium sulfate	7727-43-7	223	Polyglycol diepoxide	68036-95-3
65	Bentonite	1302-78-9	224	Polyglycol ester	PE-M2481
66	Benzene	71-43-2	225	Polyglycol ether	9038-95-3
67	Benzoic Acid	65-85-0	226	Poly lactide resin	9051-89-2
68	Benzyl chloride	100-44-7	227	Polymer sodium acrylate	9033-79-8
69	Beryllium	7440-41-7	228	Polyoxyalkylene glycol	68123-18-2
70	Branched DDBSA	68411-32-5	229	Polyoxyalkylene	68551-12-2
71	C12-C14 Isoalkanes	68551-19-9	230	Polyoxyalkylene glycol	36484-54-5
72	C12-C14 Isoalkanes	68551-20-2	231	Polyoxyalkylenes	78330-21-9
73	C14-30 Alkyl Derivatives	68855-24-3	232	Polyoxyalkylenes	61790-86-1
74	Cadmium	7440-43-9	233	Polyoxyethylene nonylphenyl ether phosphate	68412-53-3
75	Calcium carbonate	471-34-1	234	Polypropylene glycol	25322-69-4
76	Calcium oxide	1305-78-8	235	Polyquaternary amine	42751-79-1
77	Calcium sulfate	7778-18-9	236	Polyvinyl Alcohol	9002-89-5
78	Carbon	7440-44-0	237	Potassium acetate	127-08-2
79	Carbon Dioxide	124-38-9	238	Potassium bisulfate	7646-93-7
80	Carboxymethyl cellulose	9004-32-4	239	Potassium chloride	7447-40-7
81	Cationic acrylamide copolymer	69418-26-4	240	Potassium hydroxide	1310-58-3
82	Cationic acrylamide monomer	44992-01-0	241	Potassium Oxide	12136-45-7
83	Cationic polymer	54076-97-0	242	Propargl alcohol	107-19-7
84	Cedar Fiber	11132-73-3	243	Propionaldehyde	123-38-6
85	cellophane	9005-81-6	244	Propylene glycol	57-55-6
86	Cellulose	9004-34-6	245	Quartz Crystalline Silica	14808-60-7
87	Chromium	7440-47-3	246	Quaternary ammonium compound	61790-41-8

HATHAWAY, LLC. KERN-TULARE WATER DISTRICT, AND JASMIN RANCHOS MUTUAL WATER COMPANY QUINN
PRODUCED WASTEWATER RECLAMATION PROJECT

JASMIN TREATMENT FACILITY

JASMIN OIL FIELD

KERN COUNTY

<u>No.</u>	<u>Constituent</u>	<u>CASRN</u>	<u>No.</u>	<u>Constituent</u>	<u>CASRN</u>
88	Citric acid	77-92-9	247	Quaternary ammonium compound	68424-85-1
89	Citrus Terpenes	94266-47-4	248	Quaternized condensed alkanolamines	68609-18-7
90	Cocamide DEA	68603-42-9	249	Quinaldine	91-63-4
91	Cocamide DEA	68155-07-7	250	Salt of an organic sulfur compound	P-88-1256
92	Coke, petroleum, calcined	64743-05-1	251	Salt of fatty acid polyamine	68153-60-6
93	Copper	7440-50-8	252	Saponite	1319-41-1
94	Copper sulfate pentahydrate	7758-99-8	253	Severely Hydrotreated Paraffinic	64742-62-7
95	Cotton seed hulls	68308-87-2	254	Silica crystalline tridymite	15468-32-3
96	Crosslinked polyol ester	129828-31-5	255	Silica, crystalline, cristoballite	14464-46-1
97	Cumene	98-82-8	256	Siloxanes and Silicones	63148-62-9
98	Cyclohexanol	108-93-0	257	Smectite	1318-93-0
99	Cyclohexylamine	108-91-8	258	Sodium acetate	127-09-3
100	Cymenes	25155-15-1	259	Sodium Acid Pyrophosphate	7758-16-9
101	DDBSA Salt	N/A	260	Sodium Benzoate	532-32-1
102	Diester of sulfosuccinic acid sodium salt	2673-22-5	261	Sodium bicarbonate	144-55-8
103	Diethanolamine	111-42-2	262	Sodium bisulfite	7631-90-5
104	Dimethyl siloxane	N/A	263	Sodium carbonate	497-19-8
105	Dinonylphenyl polyoxyethylene	9014-93-1	264	Sodium carboxymethylstarch	9063-38-1
106	Diphosphoric acid, sodium salt (1:4)	7722-88-5	265	Sodium Chlorate	7775 09 9
107	Dipropylene glycol methyl ether	34590-94-8	266	Sodium chloride	7647-14-5

HATHAWAY, LLC. KERN-TULARE WATER DISTRICT, AND JASMIN RANCHOS MUTUAL WATER COMPANY QUINN
 PRODUCED WASTEWATER RECLAMATION PROJECT
 JASMIN TREATMENT FACILITY
 JASMIN OIL FIELD
 KERN COUNTY

<u>No.</u>	<u>Constituent</u>	<u>CASRN</u>	<u>No.</u>	<u>Constituent</u>	<u>CASRN</u>
108	Disodium ethylenediaminediacetate	38011-25-5	267	Sodium chloride	4647-14-5
109	Diutan gum	125005-87-0	268	Sodium dichloroisocyanurate	2893-78-9
110	d-Limonene	5989-27-5	269	Sodium edetate	64-02-8
111	Dodecane	112-40-3	270	Sodium Erythorbate	6381-77-7
112	Drilling Paper	N/A	271	Sodium glycolate	2836-32-0
113	Ethanol	64-17-5	272	Sodium hydroxide	1310-73-2
114	Ethanolamine thioglycolate	126-97-6	273	Sodium hypochlorite	7681-52-9
115	Ethoxylated amine	61791-26-2	274	Sodium Iodide	7681-82-5
116	Ethoxylated C11 Alcohol	34398-01-1	275	Sodium olefin sulfonate	68439-57-6
117	Ethoxylated octylphenol	N/A	276	Sodium Oxide	1313-59-3
118	Ethyl Acetate	141-78-6	277	Sodium polyacrylate	9003-79-3
119	Ethyl acrylate	140-88-5	278	Sodium polyacrylate	9003 04 7
120	Ethyl Octynol	5877-42-9	279	Sodium sulfate	7757-82-6
121	Ethylbenzene	100-41-4	280	Sodium tetraborate pentahydrate	12179-04-3
122	Ethylene Glycol	107-21-1	281	Sodium Thiosulfate Pentahydrate	10102-17-7
123	Fatty Acid	143-07-7	282	Sodium Thiosulfate Pentahydrate	7772-98-7
124	Fatty acid ester	67762-38-3	283	Sodium Trimetaphosphate	7785-84-4
125	Fatty acid oxyalkylate	70142-34-6	284	Solvent Dewaxed Heavy Paraffinic	64742-65-0
126	Fatty acids, tall-oil, sodium salts	61790-45-2	285	Sorbitan ester	NP-SMO3_U1240
127	Fatty alkylamines	61788-91-8	286	Sorbitan Mono-9-Octadecenoate	9005-65-6
128	Ferrous sulfate	17375-41-6	287	Sorbitan monooleate	1338-43-8
129	Formaldehyde	50-00-0	288	Soybean oil, Me ester	67784-80-9
130	Formamide	75-12-7	289	Stearic acid	57-11-4

HATHAWAY, LLC. KERN-TULARE WATER DISTRICT, AND JASMIN RANCHOS MUTUAL WATER COMPANY QUINN
 PRODUCED WASTEWATER RECLAMATION PROJECT
 JASMIN TREATMENT FACILITY
 JASMIN OIL FIELD
 KERN COUNTY

<u>No.</u>	<u>Constituent</u>	<u>CASRN</u>	<u>No.</u>	<u>Constituent</u>	<u>CASRN</u>
131	Formic Acid	64-18-6	290	Steel mill slag	65996-69-2
132	Furfuryl alcohol	98-00-0	291	Stoddard Solvents	8052-41-3
133	Glutaral	111-30-8	292	Sulfur dioxide	7446 09 5
134	Glycerides, tall oil mono-, di, and tri	97722-02-6	293	Sulfuric acid	7664-93-9
135	Glycerine	56-81-5	294	Tall oil fatty acids	61790-12-3
136	Glycine, N,N, 1,2- ethanediylbis (N-(carboxymethyl)-disodium salt	139-33-3	295	Tallow alkylamines	61790-33-8
137	Glycolic acid	79-14-1	296	Tar bases, Quinoline derivatives, benzyl chloride-Quaternized	72480-70-7
138	Glyoxal	107-22-2	297	Terpene hydrocarbon	8002 09 3
139	Graphite	7782-42-5	298	Tetradecane	629-59-4
140	Gypsum	13397-24-5	299	Tetrapropylenebenzene	25265-78-5
141	Heavy aromatic naphtha	64742-94-5	300	Thiourea, polymer with formaldehyde and 1-phenylethanone	68527-49-1
142	Heavy Catalytic Naphtha	64741-68-0	301	Titanium dioxide	13463-67-7
143	Humic acids	1415-93-6	302	Toluene	108-88-3
144	Hydrochloric Acid	7647-01-0	303	Tridecane	629-50-5
145	Hydrofluoric Acid	7664-39-3	304	Triethylene Glycol	112-27-6
146	Hydrogen Peroxide	7722-84-1	305	Trimethyl Benzene	25551-13-7
147	Hydroquinone	123-31-9	306	Triphosphoric acid, sodium salt (1:5)	7758-29-4
148	Hydrotreated light distillate	64742-47-8	307	Trisodium nitrilotriacetic acid	5064-31-3
149	Hydroxyethyl cellulose	9004-62-0	308	Undecane	1120-21-4
150	Hydroxyethylidenediphosphonic Acid	2809-21-4	309	Urea	57-13-6
151	Inorganic sulfer compound	7783-18-8	310	Walnut Shell	84012-43-1

HATHAWAY, LLC. KERN-TULARE WATER DISTRICT, AND JASMIN RANCHOS MUTUAL WATER COMPANY QUINN
 PRODUCED WASTEWATER RECLAMATION PROJECT
 JASMIN TREATMENT FACILITY
 JASMIN OIL FIELD
 KERN COUNTY

<u>No.</u>	<u>Constituent</u>	<u>CASRN</u>	<u>No.</u>	<u>Constituent</u>	<u>CASRN</u>
152	Iodine	7553-56-2	311	Water	7732-18-5
153	Ionic surfactants	N/A	312	Wood dust	N/A
154	Isobutanolamine	124-68-5	313	Xanthan Gum	11138-66-2
155	Isopropanol	67-63-0	314	Xenon	7440-63-3
156	Isoquinoline	119-65-3	315	Xenon radionuclide	14932-42-4
157	Kerosene	8008-20-6	316	Xylene	1330-20-7
158	Krypton	7439-90-9	317	Zinc	7440-66-6
159	Krypton 85	13983-27-2	318	Zinc chloride	7646-85-7

HATHAWAY, LLC. KERN-TULARE WATER DISTRICT, AND JASMIN RANCHOS MUTUAL WATER COMPANY QUINN
PRODUCED WASTEWATER RECLAMATION PROJECT

JASMIN TREATMENT FACILITY

JASMIN OIL FIELD

KERN COUNTY

Table III – Full Scan for Volatile Organic Compounds (Method 8260B)

<u>Constituent</u>	<u>CASRN</u>	<u>Constituent</u>	<u>CASRN</u>	<u>Constituent</u>	<u>CASRN</u>
Acetone	67-64-1	1,3-Dichlorobenzene	541-73-1	Methylene chloride	75-09-2
Acetonitrile	75-05-8	1,4-Dichlorobenzene	106-46-7	Methyl methacrylate	80-62-6
Acrolein (Propenal)	107-02-8	1,4-Dichlorobenzene-d (IS)		4-Methyl-2-pentanone (MIBK)	108-10-1
Acrylonitrile	107-13-1	cis-1,4-Dichloro-2-butene	1476-11-5	Naphthalene	91-20-3
Allyl alcohol	107-18-6	trans-1,4-Dichloro-2- butene	110-57-6	Nitrobenzene	98-95-3
Allyl chloride	107-05-1	Dichlorodifluoromethane	75-71-8	2-Nitropropane	79-46-9
Benzene	71-43-2	1,1-Dichloroethane	75-34-3	N-Nitroso-di-n-butylamine	924-16-3
Benzyl chloride	100-44-7	1,2-Dichloroethane	107-06-2	Paraldehyde	123-63-7
Bis(2-chloroethyl)sulfide	505-60-2	1,2-Dichloroethane-d (surr)		Pentachloroethane	76-01-7
Bromoacetone	598-31-2	1,1-Dichloroethene	75-35-4	2-Pentanone	107-87-9
Bromochloromethane	74-97-5	trans-1,2-Dichloroethene	156-60-5	2-Picoline	109-06-8
Bromodichloromethane	75-27-4	1,2-Dichloropropane	78-87-5	1-Propanol	71-23-8
4-Bromofluorobenzene (surr)	460-00-4	1,3-Dichloro-2-propanol	96-23-1	2-Propanol	67-63-0
Bromoform	75-25-2	cis-1,3-Dichloropropene	10061-01- 5	Propargyl alcohol	107-19-7
Bromomethane	74-83-9	trans-1,3- Dichloropropene	10061-02- 6	γ-Propiolactone	57-57-8
n-Butanol	71-36-3	1,2,3,4-Diepoxybutane	1464-53-5	Propionitrile (ethyl cyanide)	107-12-0
2-Butanone (MEK)	78-93-3	Diethyl ether	60-29-7	n-Propylamine	107-10-8
t-Butyl alcohol	75-65-0	1,4-Difluorobenzene	540-36-3	Pyridine	110-86-1
Carbon disulfide	75-15-0	1,4-Dioxane	123-91-1	Styrene	100-42-5
Carbon tetrachloride	56-23-5	Epichlorohydrin	106-89-8	1,1,1,2-Tetrachloroethane	630-20-6
Chloral hydrate	302-17-0	Ethanol	64-17-5	1,1,2,2-Tetrachloroethane	79-34-5
Chlorobenzene	108-90-7	Ethyl acetate	141-78-6	Tetrachloroethene	127-18-4

HATHAWAY, LLC. KERN-TULARE WATER DISTRICT, AND JASMIN RANCHOS MUTUAL WATER COMPANY QUINN
 PRODUCED WASTEWATER RECLAMATION PROJECT
 JASMIN TREATMENT FACILITY
 JASMIN OIL FIELD
 KERN COUNTY

Chlorobenzene-d (IS)		Ethylbenzene	100-41-4	Toluene	108-88-3
Chlorodibromomethane	124-48-1	Ethylene oxide	75-21-8	Toluene-d (surr)	2037-26-5
Chloroethane	75-00-3	Ethyl methacrylate	97-63-2	o-Toluidine	95-53-4
2-Chloroethanol	107-07-3	Fluorobenzene	462-06-6	1,2,4-Trichlorobenzene	120-82-1
2-Chloroethyl vinyl ether	110-75-8	Hexachlorobutadiene	87-68-3	1,1,1-Trichloroethane	71-55-6
Chloroform	67-66-3	Hexachloroethane	67-72-1	1,1,2-Trichloroethane	79-00-5
Chloromethane	74-87-3	2-Hexanone	591-78-6	Trichloroethene	79-01-6
Chloroprene	126-99-8	2-Hydroxypropionitrile	78-97-7	Trichlorofluoromethane	75-69-4
3-Chloropropionitrile	542-76-7	Iodomethane	74-88-4	1,2,3-Trichloropropane	96-18-4
Crotonaldehyde	4170-30-3	Isobutyl alcohol	78-83-1	Vinyl acetate	108-05-4
1,2-Dibromo-3-chloropropane	96-12-8	Isopropylbenzene	98-82-8	Vinyl chloride	75-01-4
1,2-Dibromoethane	106-93-4	Malononitrile	109-77-3	o-Xylene	95-47-6
Dibromomethane	74-95-3	Methacrylonitrile	126-98-7	m-Xylene	108-38-3
1,2-Dichlorobenzene	95-50-1	Methanol	67-56-1	p-Xylene	106-42-3