

**FACT SHEET AND STATEMENT OF BASIS
JORDANELLE SPECIAL SERVICE DISTRICT
KEETLEY WATER TREATMENT PLANT
DISCHARGE RENEWAL PERMIT
UPDES PERMIT NUMBER: UT0022403
MAJOR INDUSTRIAL FACILITY**

FACILITY CONTACT INFORMATION

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Keetley Water Treatment Plant

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DESCRIPTION OF FACILITY

Jordanelle Special Service District (JSSD) maintains a non-operational silver, lead and zinc mine near Park City, Utah, which has been inactive since 1982. The Standard Industrial Classification (SIC) code established for this inactive mine is 1031 and the North American Industry Classification System (NAICS) code is 21223, for lead and zinc ores, while the SIC code is 1044 and the NAICS code is 21222 for silver ores. JSSD manages the water flowing out of the mine and directly into the onsite Keetley Water Treatment Plant (KWTP) to provide drinking water to the local community. This water treatment process has a SIC code 4941 and NAICS code 22131 for Water Supply.

The primary mine water treatment at the KWTP consists of two *Ondeo-Degremont Densedeg* high-rate solids contact clarifiers for the removal of metals present in the mine water. Raw mine water from the Ontario Drain Tunnel flows into a splitter box, which then flows into one of two rapid mixers where lime addition occurs to raise the pH. The water is then drawn into the solid contact reactors through an axial flow turbine. Polymer is injected into the water on the downstream side of the axial flow turbine. Flocculent particles are sheared as they are drawn through the turbine. As the particles reach a specific density, they are drawn through an up-flow chamber and then cascade into the thickener. It is in the thickener that settling occurs. Sludge is drawn from the thickener and recycled into the solids contact reactor to facilitate coagulation. Water is then discharged from the thickener into troughs where it flows to a conditioning chamber. If needed the pH is adjusted downward using carbon dioxide prior to being discharged from the facility to the onsite fish pond and then to the Jordanelle Reservoir via Outfall 001, which is located at latitude 40°38'03" North and longitude 111°26'13" West.

Over the past several years, KWTP had an average discharge flow of 5-7 million gallons per day (MGD) from Outfall 001. The KWTP has a maximum design flow of 12-16 MGD. JSSD is also currently considering the addition of a new similar water source of up to 1.0 MGD from the nearby former Mayflower Mine to be included in the KWTP process in the near future. This new water source would not change the overall design flow and treatment system of the KWTP, as no increase in the design flow or concentration/loading of pollutants is being requested by JSSD over those authorized in the existing permit. The Mayflower Mine discharge is currently permitted under UPDES Permit No. UT0026140 and when comparing water quality parameters with this JSSD KWTP Permit, the only effluent parameters not already accounted for are Dissolved Oxygen and Total Iron. Therefore, and as presented further in subsequent sections of this Fact Sheet, the permit will now include monitoring for these additional parameters as the KWTP facility is expected to be able to accommodate this new water source under the existing treatment operations and permit requirements. This renewal permit will once again authorize discharges from the JSSD KWTP over the next 5 years as appropriate.

SUMMARY OF CHANGES FROM PREVIOUS PERMIT

The only changes to monitoring proposed with this renewal permit are additional effluent monitoring requirements for Dissolved Oxygen (DO), Total Iron, and Total Antimony. Total Iron and DO were added to account for the potential addition of the Mayflower Mine discharge to the facilities source water. Total Antimony, which is known to be present in the current mine water sources, but was not previously included in the permit. All three of these new parameters are now being included with the other monitoring requirements to better evaluate the potential new water source as part of future discharges, as these water quality parameters have not been included previously in JSSD's permit. In addition, the effluent limits for Total Recoverable Aluminum became slightly more stringent due to an updated Wasteload Analysis (WLA) for this permit renewal. All other permit provisions remain unchanged.

DISCHARGE INFORMATION

DESCRIPTION OF DISCHARGE OUTFALL

A description of the permitted discharging outfalls are as follows:

<u>Outfall</u>	<u>Description of Discharge Point</u>
001	Located at latitude 40° 38' 03" N and longitude 111° 26' 13" W. The effluent is discharged from the southeast corner of the settling pond above the high-water mark of the Jordanelle Reservoir.

RECEIVING WATERS AND STREAM CLASSIFICATION

The final discharge flows into the Jordanelle Reservoir. The Jordanelle Reservoir is classified according to Utah Administrative Code (UAC) R317-2-13 as follows;

- | | |
|-------------|--|
| Class1C -- | Protected for domestic purposes with prior treatment by treatment processes as required by the Utah Division of Drinking Water. |
| Class 2A -- | Protected for frequent primary contact recreation where there is a high likelihood of ingestion of water or a high degree of bodily contact with the water. Examples include, but are not limited to, swimming, rafting, kayaking, diving, and water skiing. |
| Class 3A -- | Protected for cold water species of game fish and other cold-water aquatic life, including the necessary aquatic organisms in their food chain. |

Class 4 -- Protected for agricultural uses including irrigation of crops and stock watering.

BASIS FOR EFFLUENT LIMITATIONS

In accordance with regulations promulgated in *40 Code of Federal Regulations (CFR) Part 122.44* and in *Utah Administrative Code (UAC) R317-8-4.2*, effluent limitations are derived from Federal technology-based effluent limitations guidelines, Utah Secondary Treatment Standards (*UAC R317-1-3.2*) or Utah Water Quality Standards (*UAC R317-2*). In cases where multiple limits have been developed, those that are more stringent apply. In cases where no limits or multiple limits have been developed, Best Professional Judgment (BPJ) of the permitting authority may be used where applicable. “Best Professional Judgment” refers to a discretionary, best professional decision made by the permit writer based upon precedent, prevailing regulatory standards or other relevant information.

Permit limits can also be derived from the WLA, which incorporates Secondary Treatment Standards, Water Quality Standards, including Total Maximum Daily Load (TMDL) impairments as appropriate, Antidegradation Review (ADR), and designated uses into a water quality model that projects the effects of discharge concentrations on receiving water quality. Effluent limitations are those that the model demonstrates are sufficient to meet State water quality standards in the receiving waters. During this UPDES renewal permit development, a WLA and ADR were completed as appropriate. An ADR Level I review was performed and concluded that an ADR Level II review was not required for this permit renewal since there are no proposed increases in flow or concentrations from the existing JSSD KWTP operations. The WLA indicates that the effluent limitations will be sufficiently protective of water quality in order to meet State water quality standards in the receiving waters. The WLA and ADR are attached as an addendum to this Fact Sheet.

Limitations on total suspended solids (TSS) and the daily maximum for total recoverable mercury are based on the Code of Federal Regulations (CFR) found in *40 CFR 440.102*. The effluent limitations for copper, zinc, lead, aluminum, and the maximum monthly average for mercury are based on water quality standards as provided in the previous and current WLA utilizing the most stringent standards as appropriate. Mass loading-based limits for the metals are also derived from the WLAs and remain unchanged. The limits for pH are based on the Utah Water Quality Standards as mentioned and cited above. The oil & grease limitation is based on BPJ of the permitting authority to be consistent with other similar facilities state wide. The permittee is expected to continue complying with all effluent limitations.

The parameters of concern (POCs) are the same as previous permits and are based upon the KWTP operations as mentioned previously. Therefore, TSS, pH and the identified total recoverable metals are once again the primary POCs for this renewal permit.

Total Maximum Daily Load (TMDL)

According to the Utah 2022 303(d) [Water Quality Assessment Report](#) “Final 2022 Integrated Report on Water Quality”, the receiving water for the discharge, *Jordanella Reservoir (UT-L-16020203-003_00)* was listed as Not Supporting and impaired for pH (Class 3A use). As a result, effluent limits for pH revert to end of pipe criteria (6.5-9.0). Therefore, no additional potential POCs are being included at this time.

Reasonable Potential Analysis

Since January 1, 2016, DWQ has conducted reasonable potential analysis (RP) on all new and renewal applications received after that date. RP for this permit renewal was conducted following DWQ’s September 10, 2015 Reasonable Potential Analysis Guidance (RP Guidance). There are four outcomes defined in the RP Guidance: Outcome A, B, C, or D. These Outcomes provide a frame work for what routine monitoring or effluent limitations are required and are described further in the attached Addendum to this Fact Sheet.

A qualitative RP analysis was performed on all current permit parameters and potential POCs as identified to determine if there is a reasonable potential for the discharge to exceed the applicable water quality standards. Based on the RP process, it was determined that no additional effluent limits were necessary in this renewal permit. This is because all the effluent discharge data points reviewed over the past five years did not exceed the applicable and most stringent Water Quality Standards. Therefore, no RP currently exists at the facility for any of the existing permit parameters and/or identified POCs and a more quantitative RP analysis was not necessary at this time. The existing monitoring requirements will remain in the permit however, and considering the KWTP's potential new water source, will also include additional monitoring for Dissolved Oxygen, Total Iron, and Total Antimony so that RP can be performed on all permit parameters during the next 5-year permit cycle as appropriate. This resulted in an *RP Outcome B: No new effluent limitation. Routine monitoring requirements will be placed or increased from what they are in the permit.* A copy of the detailed RP analysis is included as an Addendum to this Fact Sheet.

The KWTP is expected to be able to continue complying with the following permit effluent limitations:

Effluent Limitations *a			
Parameter	Maximum Monthly Average	Daily Minimum	Daily Maximum
TSS, mg/L	20	--	30
pH, Standard Units	--	6.5	9.0
Oil & Grease, mg/L *b	--	--	10
Total Recoverable Copper, mg/L	--	--	0.056
Total Recoverable Copper lbs/day	--	--	5.6
Total Recoverable Mercury, mg/L	0.00017	--	0.002
Total Recoverable Mercury, lbs/day	--	--	0.7
Total Recoverable Lead, mg/L	0.012	--	0.165
Total Recoverable Lead, lbs/day	1.2	--	--
Total Recoverable Zinc, mg/L	--	--	0.5
Total Recoverable Zinc, lbs/day	--	--	50
Total Recoverable Aluminum, mg/L *d	1.19	--	2.41
Total Recoverable Aluminum, lbs/day *d	--	--	241
Whole Effluent Toxicity (WET), Chronic Biomonitoring	NA	NA	IC ₂₅ > 5% effluent

SELF-MONITORING AND REPORTING REQUIREMENTS

The following self-monitoring requirements as shown below are similar to the previous permit with metals monitoring changes as mentioned previously. The permit requires that the self-monitoring reports are to be submitted monthly as appropriate, and on Discharge Monitoring Report (DMR) forms due 28 days after the end of each monitoring period. Effective January 1, 2017, monitoring results must be submitted electronically using NetDMR unless the permittee has successfully petitioned for an exception. Lab reports for biomonitoring, as well as lab reports for metals and toxic organics, must be submitted with the applicable DMRs. A review of the past 5 years of DMR effluent monitoring data reveals that the KWTP has had no permit limit exceedances of any kind and should be able to continue complying with the permit provisions as included herein. Therefore, a separate effluent data table has not been included herein as the maximum effluent concentration values for all identified POCs is included in the RP section and table as appropriate.

The self-monitoring and reporting requirements in the permit are as follows:

Self-Monitoring and Reporting Requirements *a			
Parameter	Frequency	Sample Type	Units
Total Flow	Daily	Recorder	MGD
pH	Daily	Recorder/Grab	Standard Units
Oil & Grease *b	Weekly	Visual/Grab	mg/L
TSS	Monthly	Grab	mg/L
Dissolved Oxygen *c	Monthly	Grab	mg/L
Total Recoverable Iron *c	Monthly	Composite	mg/L
Total Recoverable Zinc	Monthly	Composite	mg/L, lbs/day
Total Recoverable Lead	Quarterly	Composite	mg/L, lbs/day
Total Recoverable Aluminum *d	Quarterly	Composite	mg/L, lbs/day
Total Recoverable Copper	Quarterly	Composite	mg/L, lbs/day
Total Recoverable Mercury	Yearly	Composite/Grab	mg/L, lbs/day
WET, Chronic Biomonitoring	Quarterly	Composite	Pass/Fail
Total Recoverable Antimony	Quarterly	Composite/Grab	mg/L
Total Recoverable Arsenic	Quarterly	Composite/Grab	mg/L
Total Recoverable Boron	Quarterly	Composite/Grab	mg/L
Total Recoverable Cadmium	Quarterly	Composite/Grab	mg/L
Total Recoverable Chromium	Quarterly	Composite/Grab	mg/L
Total Recoverable Nickel	Quarterly	Composite/Grab	mg/L
Total Recoverable Selenium	Quarterly	Composite/Grab	mg/L
Total Recoverable Silver	Quarterly	Composite/Grab	mg/L

*a See Permit Definitions, *Part VII*, for definition of terms.

*b A visual inspection for any oil and grease sheen, sanitary wastes, floating solids, and visible foam shall be performed at least weekly at Outfall 001. There shall be no visible sheen, floating solids, or visible foam in other than trace amounts upon any discharges and there shall be no discharge of any sanitary wastes at any time. If a sheen is observed at Outfall 001, then a sample of the effluent shall be collected immediately thereafter and the oil and grease shall not exceed 10 mg/L in concentration.

*c Upon completion of a minimum of 10 monitoring events for both Dissolved Oxygen and Total Iron, a Reasonable Potential (RP) analysis will be conducted by DWQ and based upon the RP analysis, the permit may be reopened and modified to include any additional effluent limitations as appropriate.

*d Monitoring for Total Aluminum is required only if alum or aluminum-based additives are included in the treatment process.

STORM WATER

Separate storm water permits may be required based on the types of activities occurring on site. The KWTP facility falls under the *Standard Industrial Category #4941 for Water Supply*, as well as under former Mineral Industry sectors. Previous DWQ determinations concluded that coverage under the UPDES multi-sector general permit for discharges associated with industrial activity, UPDES permit number UTR000000, was not required because storm water will not likely come in contact with or be contaminated by an overburden, raw material, intermediate product, finished product, by product, or waste product located onsite. Therefore, a separate storm water industrial UPDES permit is once again not being required at this time. However, at any time in the future, if DWQ determines that this is not the case, then JSSD will be required to apply for Industrial Storm Water Permit coverage or an applicable exemption as appropriate.

Permit coverage under the Construction General Storm Water Permit (CGP) is required for any construction at the facility which disturb an acre or more, or is part of a common plan of development or sale that is an acre or greater. A Notice of Intent (NOI) is required to obtain a construction storm water permit prior to the period of construction. Information on storm water permit requirements can be found at <http://stormwater.utah.gov>

PRETREATMENT REQUIREMENTS

Wastewater is discharged by the permittee into Publicly Owned Treatment Works (POTW) from kitchen and bathroom usage. These discharges are to a POTW that is also owned and operated by JSSD. Currently, separate process wastewater from the KWTP is discharged by the permittee directly into a water of the State. Therefore, if changes occur with any discharges of process wastewater directly into the POTW, then the permittee must contact the JSSD Water Reclamation Facility. If changes occur where process wastewater from the facility is discharged to a POTW, as an Indirect Discharge, which includes hauled waste, the permittee will be subject to federal, state and local pretreatment regulations. Based on section 307 of the Clean Water Act, the permittee shall comply with all applicable Federal Pretreatment Standards and Pretreatment Requirements promulgated in 40 CFR Section 403, the State Pretreatment Standards and Pretreatment Requirements found in UAC R317-8-8, and any Pretreatment Standards and Pretreatment Requirements developed by CVWRF or the POTW accepting the hauled waste.

In addition, per *40 CFR 403.12(p)(1)*, the permittee must notify the POTW, the EPA Regional Waste Management Director, and the State hazardous waste authorities, in writing, if a discharge of any substance into a POTW which if otherwise disposed of would be considered a hazardous waste under *40 CFR 261*. This notification must include the name of the hazardous waste, the EPA hazardous waste number, and the type of discharge (continuous or batch).

BIOMONITORING REQUIREMENTS

A nationwide effort to control toxic discharges where effluent toxicity is an existing or potential concern is regulated in accordance with the Utah Pollutant Discharge Elimination System Permit and Enforcement Guidance Document for Whole Effluent Toxicity Control (biomonitoring), dated February 2018 (DWQ WET policy). Authority to require effluent biomonitoring is provided in Permit Conditions, UAC R317-8-4.2, Permit Provisions, UAC R317-8-5.3 and Water Quality Standards, UAC R317-2-5 and R317-2-7.2.

Since the JSSD KWTP facility is classified as a major industrial discharger, the renewal permit will again

require whole effluent toxicity (WET) testing. And since there have been no WET testing failures over the past 5-year permit cycle, WET testing will once again consist of quarterly chronic toxicity testing using the most sensitive species, *Ceriodaphnia dubia* (water flea), as detailed in the permit. This is a continuation of a previous request by JSSD for a single test species, which was subsequently granted by DWQ as part of a previous permit renewal process. WET testing for a second test species, *Pimephales promelas* (fathead minnow), may be required in the future by DWQ if the permittee changes its treatment system, including but not limited to using alum or aluminum-based treatments. The permit will once again contain the standard requirements for accelerated testing upon failure of a WET test, and a Preliminary Toxicity Investigation (PTI) and Toxicity Reduction Evaluation (TRE) to be completed as necessary.

PERMIT DURATION

It is recommended that this permit be effective for a duration of five (5) years as authorized in UAC R317-8-5.1(1).

Drafted and reviewed by
Jeff Studenka, Discharge
Lonnie Shull, Biomonitoring
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March 21, 2023

PUBLIC NOTICE INFORMATION (to be updated after)

Began: Month Day, Year
Ended: Month Day, Year

Written Comments will be received at: 195 North 1950 West
PO Box 144870
Salt Lake City, UT 84114-4870

The Public Notice of the draft permit and the draft permit documents will be published on the DWQ website for at least 30 days as required per UAC R317-8-6.5. During the public comment period provided under UAC R317-8-6.5, any interested person may submit written comments on the draft permit and/or may request a public hearing, if no hearing has already been scheduled. A request for a public hearing shall be in writing and shall state the nature of the issues proposed to be raised in the hearing. All comments will be considered in making the final decision and shall be answered as provided in UAC R317-8-6.12.

ADDENDUM TO FSSOB

ATTACHMENTS (2): I. Wasteload Analysis & Antidegradation Review
II. Reasonable Potential Analysis Summary & Effluent Data

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ATTACHMENT 1

Wasteload Analysis & Antidegradation Review

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ATTACHMENT 2

Reasonable Potential Analysis & Effluent Data

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REASONABLE POTENTIAL ANALYSIS

DWQ has worked to improve our reasonable potential (RP) analysis for the inclusion of limits for parameters in the permit by utilizing an EPA approved method and RP guidance document. As a result, more parameters and/or limits may be included in a renewal permit. There are four resulting outcomes for the RP Analyses¹ as listed below;

- Outcome A: A new effluent limitation will be placed in the permit.
Outcome B: No new effluent limitation. Routine monitoring requirements will be placed or increased from what they are in the permit,
Outcome C: No new effluent limitation. Routine monitoring requirements maintained as they are in the permit,
Outcome D: No limitation or routine monitoring requirements are in the permit.

The Initial RP Screening Table is included below for all existing permit parameters and/or parameters of concern (POCs), as derived from the current UPDES permit application and DMR effluent monitoring information. Note that the full RP analysis model was not necessary at this time due to the results of the initial screening results below.

**RP Initial Screening Table for JSSD (UT0022403)
2018-2022 Effluent Data Summary Results & RP Analysis (Outfall 001)**

Parameter	No. of Samples	MEC* mg/L	Water Quality Standards (WQS) MAC** (most stringent)		Result
			Acute WQS mg/L	Chronic WQS mg/L	
Arsenic	20	0.0023	0.0329	NA	MEC ≤ MAC
Antimony	20	0.0046	0.0184	NA	MEC ≤ MAC
Boron	20	<0.05	2.468	NA	MEC ≤ MAC
Cadmium	20	<0.0002	0.0094	NA	MEC ≤ MAC
Copper	20	<0.0010	0.056	NA	MEC ≤ MAC
Chromium	20	0.0005	0.043	NA	MEC ≤ MAC
Nickel	20	0.0009	0.329	NA	MEC ≤ MAC
Lead	20	0.0032	0.165	0.012	MEC ≤ MAC
Mercury	5	<0.0002	0.002	0.0002	MEC ≤ MAC
Selenium	20	0.0026	0.055	0.044	MEC ≤ MAC
Silver	20	<0.0005	0.019	NA	MEC ≤ MAC
Zinc	60	0.02	0.5	NA	MEC ≤ MAC
TSS	60	6	30	20	MEC ≤ MAC
pH, SU	>1000	6.8 – 8.5 (SU)	6.5 (min)	9.0 (max)	MEC ≤ MAC

Notes:

NA = Not Applicable. Chronic takes on Acute WQS value.

*MEC = Maximum expected effluent concentration as determined from existing effluent monitoring data set.

**MAC = Maximum allowable concentration from Federal & State Water Quality Standards and/or Wasteload Analysis (most stringent).

MEC less than or equal (≤) to MAC, no additional Acute or Chronic limits required.

MEC > MAC = RP identified, include appropriate limits, if applicable.

¹ Outcome definitions taken from the 2015 DWQ Reasonable Potential Analysis Guidance.

Summary: Based upon the policy “Reasonable Potential Analysis Guidance” developed by the Utah Division of Water Quality on September 10, 2015 and subsequently implemented beginning January 1, 2016 for all new and renewal permits; it was determined that no additional effluent limits were warranted in this 2023 renewal permit. This is because all the data points reviewed did not exceed the most stringent applicable Water Quality Standards (WQS) and/or existing permit limits, and in most cases were well below the applicable standards and/or appropriate laboratory method detection limits (see above table). A review of the past 5 years of DMR effluent monitoring data reveals that the KWTP has had no permit limit exceedances of any kind and should be able to continue complying with the permit limitations and provisions. Therefore, a separate effluent data table has not been included herein as the maximum effluent concentration values for all identified existing and potential POCs has been included in the above table as appropriate. As a result of this analysis, no RP currently exists at the facility for any of the existing permit parameters and/or identified POCs and a more quantitative RP analysis was not necessary at this time.

Additionally, as a result of the RP analysis, the quarterly metals monitoring for Arsenic, Boron, Cadmium, Chromium, Nickel, Selenium and Silver, which were included as part of the 2018 permit renewal so as to better evaluate RP for these seven additional metals during the five-year permit cycle, are eligible to be omitted. The results of the RP analysis above confirmed that the omission of these seven quarterly metals from future monitoring would be appropriate as there is no reasonable potential for these metals to exceed WQS. However, monitoring for these seven metals and the other existing parameters will remain in the permit, as well as the addition of Dissolved Oxygen, Iron and Antimony, so as to better evaluate the potential new water source during this next 5-year permit cycle as was done this time for the previous seven additional metals monitoring parameters.

Result: From the above table and summary, the RP analysis results of the effluent discharge for all listed permit parameters and potential POCs is: $MEC \leq MAC$, therefore no additional Acute or Chronic limits are required. With the additional three monitoring parameters, this equates to **RP Outcome B: No new effluent limitation. Routine monitoring requirements will be placed or increased from what they are in the permit.**

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