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The findings, determinations and assertions contained in this document are not final and subject to change following the public comment period.

**FACT SHEET/STATEMENT OF BASIS
SALT LAKE CITY WATER RECLAMATION FACILITY
RENEWAL PERMIT: DISCHARGE, BIOSOLIDS & STORM WATER
UPDES PERMIT NUMBER: UT0021725
UPDES BIOSOLIDS PERMIT NUMBER: UTL-021725
UPDES MULTI-SECTOR STORM WATER GENERAL PERMIT NUMBER: UTR000000
MAJOR MUNICIPAL**

FACILITY CONTACTS

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DESCRIPTION OF FACILITY

The Salt Lake City Water Reclamation Facility (SLCWRF), constructed in 1965, is located in Salt Lake City Utah at 1365 West 2300 North. The Main Plant Administration Building is located at latitude 40°48'47.50" North and longitude 111°55'50.90" West.

The SLCWRF serves the northern portion of Salt Lake County with a resident population of approximately 187,000 people, 49,660 sewer connections and several industries located within its service boundaries. Since initial construction, the facility has completed numerous upgrades, improvements and expansions. The plant design monthly average flow is 56 million gallons per day (MGD) with a secondary treatment peak hourly flow of 96 MGD. An additional 44 MGD could bypass secondary treatment to disinfection for an effective facility peak hour flow of 140 MGD.

The SLCWRF consists of two distinct facilities: the pump plant and main treatment plant. The pump plant, located approximately one half mile south of the main plant, is the collection point for all Salt Lake City sanitary sewer flows. Flows from three reinforced concrete pipe (RCP) interceptors, a 48-inch, 66-inch and 78-inch combine into two influent channels. One of two ¾ inch motorized mechanical bar screens, screen the combined flows. The flows are then directed through up to four grit chambers and then to two wet wells feeding four sewage pumps utilizing up to three 48-inch force mains to the influent structure of the main plant. The screenings and grit are washed and dewatered and stored in separated storage bins until transport to the landfill. Control structures are available to bypass flows around screening and grit removal directly to the wet wells or the Oil Drain Canal in extreme emergencies.

Raw sewage from the pump plant enters the main treatment plant through up to three 48-inch force mains into the influent structure. At this point, influent sampling occurs by automatic refrigerated composite sampler. Flow then proceeds through to two aerated grit channels and distributed to as many as four primary clarifiers. Then, as best management practice on operational requirements dictates, the flow is directed though up to eight

trickling filters, an aerated snail removal channel, up to six aeration basins, four secondary clarifiers, and splits between four chlorine contact basins and discharged through Outfall 001 and 003.

The majority of the plant effluent discharges through Outfall 003 (40°48'47.5" N 111°55'46.3" W) directly to the Oil Drain Canal. The remaining effluent passes through thirty acres of wetlands on SLCWRF property constructed to provide year round habitat for waterfowl and other wildlife. The wetlands have a hydraulic design maximum of 5 MGD of chlorinated effluent. After passing through the wetlands, effluent discharges through Outfall 001 (40°48'57.5" N 111°55'51.3" W) through a 60" RCP to the Oil Drain Canal (40°49'54.9" N 111°56'09.5" W). No additional monitoring is required for Outfall 001, however violation of any parameter from Outfall 003 will also be viewed as a violation for the same parameter from Outfall 001.

The Oil Drain Canal travels a north/northwest direction 1.9 miles until the confluence with the Salt Lake City Sewage Canal at 40°50'40.92" N 111°56'35.50" W. The sewage canal continues west, crosses under the Jordan River in two siphons, then continues in a northwesterly direction about 7.6 miles, depending on lake level, directly into Farmington Bay.

Settled solids from the primary clarifiers are screened and fed to two gravity thickening clarifiers and then to one of three primary anaerobic digesters. Digested sludge from the primary digesters is pumped into the secondary digester. Stabilized solids from the secondary digester are sent to one of ten concrete lined drying beds (22 acres total). After the Biosolids have, air-dried and tested for 40 CFR Part 503 compliance. They are truck transported to E.T. Technologies or Utah Kennecott Copper tailings impoundment.

Secondary Bypass

If a secondary bypass is necessary, the influent will receive primary clarification and then continue to the chlorine contact basin for disinfection. Such bypasses (should any occur) will need to comply with the bypass of treatment facilities requirements of Part VI.G of the permit.

SUMMARY OF CHANGES FROM PREVIOUS PERMIT

As part of the renewal process, the SLCWRF has completed and submitted an Effluent Screening Report to determine if additional effluent limits are needed to protect the beneficial use of the receiving water. This document is included in Addendum 1. The report demonstrates that the effluent from this facility will not cause or contribute to a violation of water quality standards. Therefore, the effluent limits in the renewal permit are the same as in the previous permit. However, additional data is needed to address uncertainties associated with selenium and ammonia concentrations in the Northwest Oil Drain and Salt Lake Sewage Canal and to further delineate the mercury and ammonia concentrations in the effluent. Therefore, the renewal permit contains a compliance schedule to allow the facility time to collect flow, ammonia and selenium data in the Northwest Oil Drain and Salt Lake Sewage Canal as well as a requirement for three times weekly ammonia monitoring of the effluent.

The metals and organic monitoring frequency required as part of administering the pretreatment program have increased to 6 times per year and 2 times per year respectively. The renewal permit contains a requirement for SLCWRF to utilize a sufficiently sensitive, Clean Water Act approved method such as 1631 Revision E for mercury analysis. This information will also be used to address the uncertainties associated with mercury concentrations in the effluent.

DISCHARGE

DESCRIPTION OF DISCHARGE

The SLCWRF has been reporting self-monitoring results on Discharge Monitoring Reports on a monthly basis and has an excellent compliance history. A summary of the last 3 years of data are attached.

<u>Outfall</u> 001	<u>Description of Discharge Point</u> Up to 5 MGD of chlorinated effluent discharged to 30 acres of enhanced wetlands. After passing through the wetlands the effluent discharges directly to the Oil Drain Canal via Outfall 001 located at 40°49'54.9" N 111°56'09.5" W.
003	Discharges directly to the Oil Drain Canal. Typically 90% of the effluent discharges via this outfall. Located at 40°48'47.5" N 111°55'46.3" W.

RECEIVING WATERS AND STREAM CLASSIFICATION

The final discharge flows into the Oil Drain Canal, then to the Salt Lake City Sewage Canal and then into Farmington Bay of the Great Salt Lake. According to the *Utah Administrative Code (UAC) R317-2-13*, the Oil Drain Canal and Salt Lake City Sewage Canal are classified as 2B and 3E and the Great Salt Lake is classified as 5.

- Class 2B -Protected for infrequent primary and secondary contact recreation.
- Class 3E -Severely habitat-limited waters. Narrative standards will be applied to protect these waters for aquatic wildlife.
- Class 5D -Farmington Bay of the Great Salt Lake. Protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain.

BASIS FOR EFFLUENT LIMITATIONS

Limitations on total suspended solids (TSS), biochemical oxygen demand (BOD₅), E. coli, pH and percent removal for BOD₅ and TSS are based on current Utah Secondary Treatment Standards, *UAC R317-1-3.2*. In 1993, the effluent limit for oil and grease was removed from the renewal permit. This decision was based on best professional judgment (BPJ). Included in Addendum 2, is the last three years of self monitoring data submitted by SLCWRF. The facility has maintained compliance with all of its UPDES Effluent Limits during the last permit cycle. The DWQ has determined that this discharge will not cause or contribute to a violation of water quality standards based upon the Reasonable Potential Analysis and Level 1 Review included in Addendum 1. An Antidegradation Level II review is not required since water quality will not be further lowered by the proposed activity, *UAC R317-2-3.5.b.1.(b)*. The permittee is expected to be able to comply with these limitations. The permit limitations are:

Parameter	Effluent Limitations			
	Maximum Monthly Average	Maximum Weekly Average	Daily Minimum	Daily Maximum
Total Flow, MGD	56	NA	NA	NA
BOD ₅ , mg/L	25	35	NA	NA
BOD ₅ Min. % Removal	85	NA	NA	NA
TSS, mg/L	25	35	NA	NA
TSS Min. % Removal	85	NA	NA	NA
E. Coli, No./100mL	126	158	NA	NA
WET, Acute Biomonitoring	NA	NA	NA	Pass at 100% effluent
pH, Standard Units	NA	NA	6.5	9.0

NA – Not Applicable.

SELF-MONITORING AND REPORTING REQUIREMENTS

The following self-monitoring requirements are the same as in the previous permit. The permit will require reports to be submitted monthly and quarterly, as applicable, on Discharge Monitoring Report (DMR) forms due 28 days after the end of the monitoring period. Lab sheets for biomonitoring must be attached to the biomonitoring DMR.

Self-Monitoring and Reporting Requirements			
Parameter	Frequency	Sample Type	Units
Total Flow	Continuous	Recorder	MGD
BOD₅, Influent Effluent	Daily	Composite	mg/L
	Daily	Composite	mg/L
TSS, Influent Effluent	Daily	Composite	mg/L
	Daily	Composite	mg/L
E. Coli	Daily	Grab	No./100mL
WET, Acute Biomonitoring	Quarterly	Composite	Pass/Fail
Ammonia	3 x Week	Composite	mg/L
pH	3 x Week	Grab	SU
Metals, Influent Effluent	6 x Yearly	Composite	mg/L
	6 x Yearly	Composite	mg/L
Organic Toxics, Influent Effluent	Twice a Year Twice a Year	Grab	mg/L

SELENIUM, AMMONIA AND FLOW CHARACTERIZATION OF THE NORTHWEST OIL DRAIN AND SALT LAKE SEWAGE CANAL COMPLIANCE SCHEDULE

The Level I and Level II Antidegradation Review completed for this permit renewal, see Appendix 2, identified areas in which DWQ believes additional data is needed to fully address the uncertainties in the selenium and ammonia concentrations and flows of the Northwest Oil Drain and Salt Lake Sewage Canal.

Therefore, the renewal permit contains a compliance schedule to allow SLCWRF time to develop and submit for DWQ's approval a work plan for the characterization of selenium and ammonia concentrations and in the Northwest Oil Drain and Salt Lake Sewage Canal. Flow measurements in the Northwest Oil Drain and Salt Lake Sewage Canal will need to be included in this plan to establish dilution criteria to potentially be used in future permits.

BIOSOLIDS

TREATMENT AND DISPOSAL

The solids from the primary and secondary clarifiers are stabilized in anaerobic digesters with a mean cell residence time of at least 15 days at a minimum temperature of 95° F (36.6° C). After the digestion process the biosolids are wasted to one of 10 drying beds for solar de-watering. After the water is de-canted the biosolids are turned mechanically three to four times a week, for two to three months, depending on the season. The biosolids are removed to a concrete area and stored for up to two years until disposal. In 2012 the SLCWRF disposed of 4,173 dry metric tons (DMT) of biosolids. Of this 4,173 DMT, 711 DMT were land applied at Kennecott Copper for land reclamation and 3462 DMT were disposed at ET Technologies which is a soil regeneration site and the soil is used for final cover at the Salt Lake County Landfill with very good results.

FUTURE DISPOSAL OPTIONS

Under 40 CFR 503 (C)(6), Class A, Alternative 4(i) the SLCWRF may try to meet Class A biosolids through

testing of pathogens in lieu of a process to further reduce pathogens (PFRP) to meet Class A standards. This additional testing would require the SLCWRF to monitor for viable helminth ova (tape worms and round worm eggs that are alive), enteric viruses (viruses of the gut), as well as fecal coliform or *salmonella* bacteria.

LIMITATIONS AND SELF-MONITORING REQUIREMENTS

The self-monitoring requirements are based upon the amount of biosolids disposed per year and shall be monitored according to the chart below. At a minimum, all metals, pathogens and applicable vector attraction reduction requirements shall be monitored according to 40 CFR 503.16,(a)(1).

Minimum Frequency of Monitoring Based Upon Dry Metric Tons (DMT)	
Amount of Biosolids Produced Per Year	Monitoring Frequency
> 290 to < 1,500 DMT	Four Times Per Year
> 1,500 to < 15,000 DMT	Six Times Per Year

Landfill Monitoring

Prior to disposal in a landfill all biosolids must pass a paint filter test (to determine if the biosolids exhibit free liquid). If the solids do not pass a paint filter test, the biosolids cannot be disposed of in the landfill.

Heavy Metals Monitoring

SLCWRF is required to sample for heavy metals prior to the time of disposal if the biosolids are land applied or sold or given away to the public.

Pathogen Monitoring for Class B Biosolids

For biosolids to be considered Class B with regards to pathogens, the biosolids must be sampled for *fecal* coliform (or meet a process to significantly reduce pathogens).

Vector Attraction Reduction Monitoring

The biosolids must be monitored for time and temperature for vector attraction reduction or use another means of meeting a requirement for vector attraction reduction under 40 CFR 503.33 such as incorporation into the soil.

MONITORING DATA (Pathogens)

SLCWRF <i>Fecal Coliform</i> Monitoring Data, 2012	
Geo-mean of six samples, Most Probable Number Per Gram	Maximum of six samples, Most Probable Number Per Gram
274.0	419.0
All samples must be less than 2 million most probable number per gram of total solids.	

MONITORING DATA (Heavy Metals)

Heavy Metals	SLCWRF 2012, Yearly Average (six samples) mg/kg	SLCWRF 2012, Yearly Maximum (six samples) mg/kg	40 CFR Table 3, Exceptional Quality Biosolids Table mg/kg
Total Arsenic	31.05	39.7	41.0
Total Cadmium	16.69	25.2	39.0
Total Copper	882.67	1230.0	1500.0
Total Lead	54.30	85.0	300.0
Total Mercury	1.422	2.860	17.0
Total Molybdenum	58.01	87.10	NA
Total Nickel	82.65	118.0	420.0
Total Selenium	12.78	16.40	100.0
Total Zinc	253.27	1680.0	2800.0

BIOSOLIDS LIMITATIONS

Heavy Metals

Class A Biosolids for Home Lawn and Garden Use

The intent of the heavy metals regulations of Table 3, *40 CFR 503.13* is to ensure the heavy metals do not build up in the soil in home lawn and gardens to the point where the heavy metals become phytotoxic to plants. The permittee will be required to produce an information sheet (see Part III. D. 11. of the permit) to be handed out to all people who are receiving and land applying Class A biosolids to their lawns and gardens. If the instructions of the information sheet are followed to any reasonable degree, the Class A biosolids will be able to be land applied year after year, to the same lawns and garden plots without any deleterious effects to the environment. The information sheet must be provided to the public, because the permittee is not required, nor able to track the quantity of Class A biosolids that are land applied home lawns and gardens.

Class A Requirements With Regards to Heavy Metals

If the biosolids are to be applied to a lawn or home garden, the biosolids shall meet the maximum heavy metals in Table 1 and the monthly average pollutant concentrations in Table 3 (see the Table 1 and Table 3 below). If the biosolids do not meet these requirements, the biosolids cannot be sold or given away for applications to home lawns and gardens.

Class B Requirements for Agriculture and Reclamation Sites

The intent of the heavy metals regulations of Tables 1, 2 and 3, of *40 CFR 503.13* is to ensure that heavy metals do not build up in the soil at farms, forest land, and land reclamation sites to the point where the heavy metals become phytotoxic to plants. The permittee will be required to produce an information sheet

(see Part III. D. 11. of the permit) to be handed out to all people who are receiving and land applying Class B biosolids to farms, ranches; and land reclamation sites. If the biosolids are land applied according to the regulations of 40 CFR 501.13, to any reasonable degree, the Class B biosolids will be able to be land applied year after year, to the same farms, ranches, and land reclamation sites without any deleterious effects to the environment.

Class B Requirements With Regards to Heavy Metals

If the biosolids are to be land applied to agricultural land, forest land, a public contact site or a reclamation site it must meet at all times:

The maximum heavy metals concentrations listed in Table 1 and the heavy metals loading rates in Table 2; or

The maximum heavy metals concentrations in Table 1 and the monthly heavy metals concentrations in Table 3.

If the biosolids do not meet these requirements they cannot be land applied.

40 CFR 503.13-Tables 1, 2, and 3 of Heavy Metal Limitations

Heavy Metals	Table 1	Table 2	Table 3
All heavy metals concentrations shall be measured and reported	Daily Maximum mg/Kg a/b/c/	Cumulative Loading Rate Kg/Ha a/	Monthly Average Concentration mg/Kg a/b/c/d/
Total Arsenic	75	41	41
Total Cadmium	85	39	39
Total Copper	4300	1500	1500
Total Lead	840	300	300
Total Mercury	57	17	17
Total Molybdenum	75	NA	NA
Total Nickel	420	420	420
Total Selenium	100	100	100
Total Zinc	7500	2800	2800

a/ See Part VIII. of the permit for definition of terms.

b/ The limitations represent the maximum allowable levels of heavy metals in any biosolids intended for land application.

c/ Any violation of these limitations shall be reported in accordance with the requirements of Part V.H.1. of the permit.

d/ These limitations represent the maximum allowable levels of heavy metals based on an average of all samples taken during a 30-day period.

Pathogens

Class A Requirements

Prior to disposal, all biosolids must be sampled for pathogens and meet the pathogen requirements of *40 CFR 503.32 (a)(6), Class A, Alternative 4(i)* for the biosolids to be considered Class A with respect to pathogens. The total solids must meet a microbiological limit of less than 3 *Salmonella* per 4 grams of total solids (or less than 1,000 fecal most probable number of fecal coliform per gram of total solids), a microbiological limit of less than 1 plaque forming unit per 4 grams of enteric virus and less than 1 viable helminth ova per 4 grams of biosolids. The practice of sale or giveaway to the public is an acceptable use of biosolids of this quality as long as the biosolids continue to meet these pathogen limits. If the biosolids do not meet the Class A pathogen limits the SLCWRF must find an alternative method of disposal.

Class B Requirements for Agriculture

SLCWRF may achieve Class B biosolids in one of three different ways with regards to pathogens:

1. Under *40 CFR 503.32 (b)(2) Appendix B*, SLCWRF may test the biosolids and must meet a microbiological limit of less than 2,000,000 most probable number (MPN) of fecal coliform per gram for the biosolids to be considered Class B biosolids with respect to pathogens.
2. Under *40 CFR 503.32 (b)(3), Appendix B.2*. SLCWRF must meet one of the processes to significantly reduce pathogens. SLCWRF intends to meet a process to significantly reduce pathogens by using the air drying method of pathogen reduction. The biosolids are applied to an impervious surface and dried at a depth of no more than 9 inches (23 cm) deep. The biosolids are allowed to dry for a minimum of 3 months. During 2 of the 3 months, the ambient average daily temperature is above 32° F (0° C)
3. Under *40 CFR 503.32 (b)(3)* SLCWRF must meet one of the processes to significantly reduce pathogens. SLCWRF intends to meet a “process to significantly reduce pathogens” The PSRP will be accomplished through anaerobic digesters that have a minimum retention time of at least 15 days and a temperature of at least 95° F (35° C) (*40 CFR 503.32 (b)(3) Appendix (B)(3)*).

Vector Attraction Reduction

If the biosolids are land applied SLCWRF will be required to meet a method of vector attraction reduction under *40 CFR 503.33*. SLCWRF intends to meet a vector attraction reduction requirement by the method listed below.

Under *40 CFR 503.33(b)(1)*, the solids need to be treated by anaerobic digesters for at least 15 days at a temperature of a least 95° F (35° C).

Record Keeping

The record keeping requirements from *40 CFR 503.17* are included under Part III.G. of the permit. The amount of time the records need to be retained is dependent upon the quality of the biosolids with regard to the metals concentrations. If the biosolids exceed Table 3 values for any parameter that are land applied to a site, that site thereafter is subject to the heavy metals loading rates in Table 2. Records for those sites are to be retained in perpetuity.

Reporting

SLCWRF will be required to report annually as required in *40 CFR 503.18*. This report is to include the results of all monitoring performed in accordance with Part I.D. of the permit, information on management practices, land application sites, and certifications will be due no later than February 19 of each year. Each report is for the previous calendar year.

STORM WATER

Storm water provisions are included in this combined UPDES permit.

The storm water requirements are based on the UPDES Multi-Sector General Permit for Storm Water Discharges for Industrial Activity, General Permit No. UTR000000 (MSGP). All sections of the MSGP that pertain to discharges from wastewater treatment plants have been included and sections which are redundant or do not pertain have been deleted.

The permit requires the preparation and implementation of a storm water pollution prevention plan for all areas within the confines of the plant. Elements of this plan are required to include: 1. The development of a pollution prevention team: 2. Development of drainage maps and materials stockpiles: 3. An inventory of exposed materials: 4. Spill reporting and response procedures: 5. A preventative maintenance program: 6. Employee training: 7. Certification that storm water discharges are not mixed with non-storm water discharges: 8. Compliance site evaluations and potential pollutant source identification, and: 9. Visual examinations of storm water discharges.

PRETREATMENT REQUIREMENTS

The pretreatment requirements remain the same as in the current permit with the permittee administering an approved pretreatment program. Any substantial and/or non-substantial changes to the program as defined in *40 CFR 403.18*, must be submitted for approval to the Division of Water Quality. Authority to require a pretreatment program is provided for in *19-5-108 UCA, 1953 ann.* and *UAC R317-8-8*.

The sampling of metals will be on a six times a year and the sampling of organic toxics will be conducted twice a year. This increase is consistent with the guidance by Region VIII, which is based on the design flow of the wastewater treatment plant, Guidance for Determining Monitoring Frequencies for the Pretreatment Program, dated October 15, 1998.

The permittee will be required to perform an annual evaluation of the need to revise or develop technically based local limits to implement the general and specific prohibitions of *40 CFR, Part 403.5(a)* and *Part 403.5(b)*. This evaluation may indicate that present local limits are sufficiently protective, or that they must be revised. The initial evaluation is due twelve months after the effective date of the permit. As part of this evaluation, the permit requires influent and effluent monitoring for metals and organic toxics. Metals samplings are required every other month and organic toxics sampling once every 6 months, organic toxics are listed in *R317-8-7.5* and sludge monitoring for potential pollutants listed in *40 CFR 503*.

BIOMONITORING REQUIREMENTS

A nationwide effort to control toxic discharges where effluent toxicity is an existing or potential concern is regulated in accordance with the *State of Utah Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control (biomonitoring)*. 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 permittee is a major municipal discharger, the renewal permit will again require whole effluent toxicity (WET) testing. However, *State of Utah Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control (biomonitoring)* does not require chronic WET testing for effluent discharged to class 3E streams. Therefore, the renewal permit will once again contain acute WET limits and testing requirements but no chronic limits or testing requirements. The permit will contain the standard requirements for accelerated testing upon failure of a WET test and a Preliminary Toxicity Investigation (PTI) and Toxicity Reduction Evaluation (TRE) as necessary.

PERMIT DURATION

It is recommended that this permit be effective for a duration of five (5) years.

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PUBLIC NOTICE

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