STATE OF UTAH
DIVISION OF WATER QUALITY
DEPARTMENT OF ENVIRONMENTAL QUALITY
SALT LAKE CITY, UTAH

UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES) PERMITS

Major Municipal Permit No. **UT0021741**
Biosolids Permit No. **UTL021741**

In compliance with provisions of the Utah *Water Quality Act, Title 19, Chapter 5, Utah Code Annotated ("UCA") 1953, as amended* (the *"Act"*),

**NORTH DAVIS SEWER DISTRICT**

is hereby authorized to discharge from its wastewater treatment facility to receiving waters named

**THE GREAT SALT LAKE**,

to dispose of biosolids,

in accordance with specific limitations, outfalls, and other conditions set forth herein.

**This permit shall become effective on June 1, 2021.**

**This permit expires at midnight on December 31, 2025.**

Signed this 19th day of May, 2021.

Erica Brown Gaddis, PhD
Director

DWQ-2021-000604

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## I. DISCHARGE LIMITATIONS AND REPORTING REQUIREMENTS

A. Description of Discharge Points. The authorization to discharge wastewater provided under this part is limited to those outfalls specifically designated below as discharge locations. Discharges at any location not authorized under a UPDES permit are violations of the *Act* and may be subject to penalties under the *Act*. Knowingly discharging from an unauthorized location or failing to report an unauthorized discharge may be subject to criminal penalties as provided under the *Act*.

| Outfall Number | Location of Discharge Outfall |
|---|---|
| 001 | Located at latitude 40°05'04" and longitude 112°06'30". The discharge is through a 54-inch diameter gravity flow concrete pipe leading from the chlorine contact basin to an unnamed irrigation return drainage ditch and thence to the Great Salt Lake. |
| 003 | Located at latitude 41°04'44" and longitude 112°12'14". The discharge is through a 63-inch diameter pipe to Gilbert Bay and the Great Salt Lake. |

B. Narrative Standard. It shall be unlawful, and a violation of this permit, for the permittee to discharge or place any waste or other substance in such a way as will be or may become offensive such as unnatural deposits, floating debris, oil, scum, or other nuisances such as color, odor or taste, or cause conditions which produce undesirable aquatic life or which produce objectionable tastes in edible aquatic organisms; or result in concentrations or combinations of substances which produce undesirable physiological responses in desirable resident fish, or other desirable aquatic life, or undesirable human health effects, as determined by a bioassay or other tests performed in accordance with standard procedures.

C. Specific Limitations and Self-Monitoring Requirements.

1. Effective immediately and lasting through the life of this permit, there shall be no acute or chronic toxicity in Outfalls 001 and 003 as defined in *Part VIII*, and determined by test procedures described in *Part I. C.4.a & b* of this permit.

2.

a. Effective immediately and lasting the duration of this permit, the permittee is authorized to discharge from Outfall 001 and Outfall 003. Such discharges shall be limited and monitored by the permittee as specified below:

(1) Outfall 001
Discharge from Outfall 001 will be permitted in the same manner that it has been until Outfall 003 has been completed/activated (December 31, 2025, or sooner) When Outfall 003 is completed/activated the discharge is only permitted when the flows through the Treatment Facility have exceeded the capacity of the Treatment Facility to pump effluent to Outfall 003. When this happens, and the treated effluent has accumulated to a point where the backup is impacting the treatment of the wastewater, discharges through Outfall 001 may then occur.

| Outfall 001 | | | | | |
|---|---|---|---|---|---|
| Parameter | Effluent Limitations * | | | | |
| | Maximum Monthly Avg | Maximum Weekly Avg | Yearly Average | Daily Minimum | Daily Maximum |
| Interim limits, June 1, 2021 through December 31, 2025 (OR when 003 is activated) | | | | | |
| $BOD_5$, mg/L<br>$BOD_5$ Min. % Removal | 25<br>85 | 35<br>- | - | - | - |
| TSS, mg/L<br>TSS Min. % Removal | 25<br>85 | 35<br>- | - | - | - |
| TRC, mg/L | - | - | - | - | 2.5 |
| Phosphorus, mg/L | - | - | 3.0 | - | - |
| *E. coli*, No./100mL | 126 | 157 | - | - | - |
| Oil & Grease, mg/L | - | - | - | - | 10.0 |
| pH, Standard Units | - | - | - | 6.5 | 9 |
| Final limits, January 1, 2026 (OR when 003 is activated) | | | | | |
| Total Flow, MGD<br>November 1 – June 30<br>July 1 – October 31 | <br>- †<br>0 ‡ | <br>-<br>- | <br>-<br>- | <br>-<br>- | <br>-<br>- |
| $BOD_5$, mg/L<br>$BOD_5$ Min. % Removal | 25<br>85 | 35<br>- | - | - | - |
| TSS, mg/L<br>TSS Min. % Removal | 25<br>85 | 35<br>- | - | - | - |
| TRC, mg/L | - | - | - | - | 2.5 |
| *E. coli*, No./100mL | 126 | 157 | - | - | - |
| Oil & Grease, mg/L | - | - | - | - | 10.0 |
| pH, Standard Units | - | - | - | 6.5 | 9 |
| Mass Loading Limits | | | | | |
| | Maximum Monthly Avg | Maximum Weekly Avg | Annual Loading | Daily Minimum | Daily Maximum |
| Total Phosphorus, lbs./Year | - | - | 6,500 | - | - |

| Self-Monitoring and Reporting Requirements [1] | | | |
|---|---|---|---|
| Outfall 001 | | | |
| Parameter | Frequency § | Sample Type | Units |
| Interim Self-Monitoring and Reporting Requirements, June 1, 2021 through December 31, 2025 (OR when 003 is activated) | | | |
| Total Flow **, †† | Continuous | Recorder | MGD |

* See Definitions, Part VIII, for definition of terms.

†North Davis may discharge to Outfall No. 001 from November 1 through June 30, only if an instantaneous plant effluent is being measured at greater than 34 MGD. If discharge is occurring to Outfall No. 001, North Davis shall maintain a minimum instantaneous pumping rate of 34 MGD to Outfall No. 003 at all times discharge to Outfall No. 001 is occurring, as per the Variance Part 13, d, ii and iii.

‡North Davis shall have no discharge to Outfall No. 001 from July 1 through October 31 excepting flows in excess of 34 MGD caused by high flow environmental events, as per the Variance Part 13, d, iv

§ To demonstrate compliance with this permit, North Davis will complete at least 95% of the attempted required monitoring events required during the year.

** Flow measurements of influent/effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.

†† If the rate of discharge is controlled, the rate and duration of discharge shall be reported.

| Self-Monitoring and Reporting Requirements [1] | | | |
|---|---|---|---|
| Outfall 001 | | | |
| Parameter | Frequency [§] | Sample Type | Units |
| $BOD_5$, Influent [‡‡]<br>Effluent | 5 Times Weekly<br>5 Times Weekly | Composite<br>Composite | mg/L<br>mg/L |
| TSS, Influent [7]<br>Effluent | 5 Times Weekly<br>5 Times Weekly | Composite<br>Composite | mg/L<br>mg/L |
| DO | 5 Times Weekly | Grab | mg/L |
| *E. coli* | 5 Times Weekly | Grab | No./100mL |
| pH | 5 Times Weekly | Grab | SU |
| Total Ammonia (as N) | Weekly | Grab | mg/L |
| WET – Acute Biomonitoring (Screening Only) | Quarterly | Composite | Pass/Fail |
| WET – Chronic Biomonitoring [§§] (Screening Only) | Quarterly | Composite | Pass/Fail |
| Oil & Grease [***] | Monthly | Grab | mg/L |
| Copper | Monthly | Composite | mg/L |
| Cyanide, Effluent | Monthly | Composite | mg/L |
| Free Cyanide, [†††] Effluent | Monthly | Composite | mg/L |
| Metals, Influent ,[7]<br>Effluent | 4 x Yearly [‡‡‡]<br>4 x Yearly [11] | Composite/Grab<br>Composite/Grab | mg/L<br>mg/L |
| Organic Toxics, Influent ,[7]<br>Effluent | Yearly[11]<br>Yearly[11] | Composite/Grab<br>Composite/Grab | mg/L<br>mg/L |
| TBPEL Rule Monitoring [§§§] | | | |
| Total Ammonia (as N) | Monthly | Composite | mg/L |
| Orthophosphate, (as P)<br>Effluent | Monthly | Composite | mg/L |
| Phosphorus, Total<br>Influent<br>Effluent | Monthly<br>Monthly | Composite<br>Composite | mg/L<br>mg/L |
| Total Kjeldahl Nitrogen, TKN (as N)<br>Influent<br>Effluent | Monthly<br>Monthly | Composite<br>Composite | mg/L<br>mg/L |
| Nitrate, NO3 | Monthly | Composite | mg/L |

‡‡ In addition to monitoring the final discharge, influent samples shall be taken and analyzed for this constituent at the same frequency as required for this constituent in the discharge.

§§ North Davis will be required to complete 10 chronic WET tests to determine if chronic toxicity is occurring. If the results show no toxicity, then additional chronic testing will not be required beyond the 10 tests. $TU_c$ is calculated by dividing the receiving water effluent concentration determined in accordance with R317-2-5 by the chronic test $IC_{25}$. The $TU_c$ is an indicator and an exceedance is not used for determining compliance.

*** Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report NA.

††† Free cyanide is a subset of total cyanide and in most situations; total cyanide will overestimate the free cyanide concentrations. Monitoring for free cyanide is a new requirement for the upcoming permit cycle to support future comparisons and reasonable potential evaluations. It will be sampled at the same frequency as other metals are sampled.

‡‡‡ The sampling for metals is based on the Guidance for Determining Monitoring Frequencies for the Pretreatment Program, which was developed by Region VIII and is dated October 15, 1998. The guidance indicates that sampling for metals should be four (4) times a year currently this frequency seems adequate.

§§§ These reflect changes required with the adoption of UCA R317-1-3.3, Technology-based Phosphorus Effluent Limits rule.

| Self-Monitoring and Reporting Requirements [1] | | | |
|---|---|---|---|
| Outfall 001 | | | |
| Parameter | Frequency [§] | Sample Type | Units |
| Nitrite, NO2 | Monthly | Composite | mg/L |
| Final Self-Monitoring and Reporting Requirements, January 1, 2026 (OR when 003 is activated) | | | |
| Flow [****] | Continuous | Recorder | MGD |
| $BOD_5$, Effluent | 5 Times Weekly | Composite | mg/L |
| TSS, Effluent | 5 Times Weekly | Composite | mg/L |
| *E. coli* | 5 Times Weekly | Grab | No./100mL |
| pH | 5 Times Weekly | Grab | SU |
| Total Ammonia (as N) | Daily | Composite | mg/L |
| Total Phosphorus (as N) | Daily | Composite | mg/L |

(2) Outfall 003

Discharge from Outfall No. 003 shall be to open water achieved either by discharge pipe or by earthen channel delivering the effluent to the GSL surface elevation as per the Variance Part 13, l, i.

| Outfall 003 | | | | | |
|---|---|---|---|---|---|
| Parameter | Effluent Limitations [1] | | | | |
| | Maximum Monthly Avg | Maximum Weekly Avg | Annual Average | Daily Minimum | Daily Maximum |
| Total Flow | 34 | - | - | - | - |
| $BOD_5$, mg/L<br>$BOD_5$ Min. % Removal | 25<br>85 | 35<br>- | -<br>- | -<br>- | -<br>- |
| TSS, mg/L<br>TSS Min. % Removal | 25<br>85 | 35<br>- | -<br>- | -<br>- | -<br>- |
| *E. coli*, No./100mL | 126 | 157 | - | - | - |
| Oil & Grease, mg/L | - | - | - | - | 10.0 |
| pH, Standard Units | - | - | - | 6.5 | 9 |

| Self-Monitoring and Reporting Requirements [1] | | | |
|---|---|---|---|
| Outfall 003 | | | |
| Parameter | Frequency [4] | Sample Type | Units |
| Total Flow [5], [6] | Continuous | Recorder | MGD |
| $BOD_5$, Influent [7]<br>Effluent | 5 Times Weekly<br>5 Times Weekly | Composite<br>Composite | mg/L<br>mg/L |
| TSS, Influent [7]<br>Effluent | 5 Times Weekly<br>5 Times Weekly | Composite<br>Composite | mg/L<br>mg/L |
| *E. coli* | 5 Times Weekly | Grab | No./100mL |
| pH | 5 Times Weekly | Grab | SU |
| Total Ammonia (as N) | Weekly | Grab | mg/L |
| WET – Acute Biomonitoring (Screening Only) | Quarterly | Composite | Pass/Fail |

****North Davis may discharge to Outfall No. 001 from November 1 through June 30, only if an instantaneous plant effluent is being measured at greater than 34 MGD. If discharge is occurring to Outfall No. 001, North Davis shall maintain a minimum instantaneous pumping rate of 34 MGD to Outfall No. 003 at all times discharge to Outfall No. 001 is occurring (Variance Part 13, d, ii and iii). North Davis shall have no discharge to Outfall No. 001 from July 1 through October 31 excepting flows in excess of 34 MGD caused by high flow environmental events (Variance Part 13, d, iv).

| Self-Monitoring and Reporting Requirements [1] | | | |
|---|---|---|---|
| Outfall 003 | | | |
| Parameter | Frequency [4] | Sample Type | Units |
| WET – Chronic Biomonitoring †††† (Screening Only) | Quarterly | Composite | Pass/Fail |
| Oil & Grease [9] | When Sheen Observed | Grab/Visual | mg/L |
| Copper | Monthly | Composite | mg/L |
| Cyanide, Effluent | Monthly | Composite | mg/L |
| Free Cyanide, [10] Effluent | Monthly | Composite | mg/L |
| Metals, Influent [7]<br>Effluent | 4 x Yearly [11]<br>4 x Yearly [11] | Composite/Grab<br>Composite/Grab | mg/L<br>mg/L |
| Organic Toxics, Influent [7]<br>Effluent | Yearly [11]<br>Yearly [11] | Composite/Grab<br>Composite/Grab | mg/L<br>mg/L |
| TBPEL Rule Monitoring [12] | | | |
| Total Ammonia, Effluent | Monthly | Composite | mg/L |
| Orthophosphate, (as P) Effluent | Monthly | Composite | mg/L |
| Phosphorus, Total<br>Influent<br>Effluent | <br>Monthly<br>Monthly | <br>Composite<br>Composite | <br>mg/L<br>mg/L |
| Total Kjeldahl Nitrogen, TKN (as N)<br>Influent<br>Effluent | <br>Monthly<br>Monthly | <br>Composite<br>Composite | <br>mg/L<br>mg/L |
| Nitrate, NO3 | Monthly | Composite | mg/L |
| Nitrite, NO2 | Monthly | Composite | mg/L |

3. Compliance Schedule

   a. Compliance Schedule for the Variance to the TBPEL Rule.

      (1) NDSD shall prepare and comply with a Director approved Outfall No. 001 receiving water study and monitoring plan. The Outfall No. 001 receiving water study and monitoring plan shall evaluate the effectiveness of phragmites treatment in Farmington Bay by tracking changes in wetland vegetation following the treatment program. The Outfall No. 001 receiving water study shall be submitted to DWQ for approval no later than February 1, 2023. (Variance Part 13, e).

      (2) NDSD shall prepare and comply with a DWQ Director approved Outfall No. 003 receiving water study and monitoring plan. The Outfall No. 003 receiving water study shall be submitted to DWQ for approval no later than February 1, 2023. (Variance Part 13, i).

      (3) By no later than February 1, 2023, NDSD shall submit to DWQ a Board resolution supporting the Outfall 001 Phragmites control. The resolution shall include the approximate budget for the construction work and phragmites control work. (Variance Part 13, m).

†††† North Davis will be required to complete 10 chronic WET tests to determine if chronic toxicity is occurring. If the results show no toxicity, then additional chronic testing will not be required beyond the 10 tests. $TU_c$ is calculated by dividing the receiving water effluent concentration determined in accordance with R317-2-5 by the chronic test $IC_{25}$. The $TU_c$ is an indicator and an exceedance is not used for determining compliance.

(4) Beginning no later than March 1, 2022, and for every year thereafter while this variance is in effect, NDSD agrees to submit to DWQ an annual report relating to its phosphorus discharges (the "Annual Report"). (Variance Part 13, n).

4. Whole Effluent Toxicity (WET) Testing.

a. *Whole Effluent Testing – Acute Toxicity*. Starting on June 1, 2021 the permittee shall quarterly, conduct acute static renewal toxicity tests on a (grab/composite) sample of the final effluent for the Outfall(s). The sample shall be collected at the point of compliance before mixing with the receiving water.

The monitoring frequency for acute tests shall be quarterly unless a sample is found to be acutely toxic during a routine test. If that occurs, the monitoring frequency shall become weekly (See Part I.C,4,c, Accelerated Testing). Unless otherwise approved by the Director, samples shall be collected on a two day progression; i.e., if the first sample is on a Monday, during the next sampling period, the sampling shall begin on a Wednesday, etc.

The static-renewal acute toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of Methods for Measuring the Acute Toxicity of Effluents and Receiving Waters to Freshwater and Marine Organisms, Fifth Edition, October 2002, EPA-821-R-02-012 as per 40 CFR 136.3(a) TABLE IA-LIST OF APPROVED BIOLOGICAL METHODS. The permittee shall conduct the 48-hour static renewal toxicity test using Ceriodaphnia dubia (solution renewal every 24 hours)and the acute 96-hour static renewal toxicity test using Pimephales promelas (fathead minnow)(solution renewal every 24 hours). Based on the Test Acceptability Criteria included in Utah Pollutant Discharge Elimination System (UPDES) Permit and Enforcement Guidance Document for Whole Effluent Toxicity Control (Biomonitoring) January, 2017, the Director may require acceptable variations in the test, i.e. temperature, carbon dioxide atmosphere, or any other acceptable variations in the testing procedure, as documented in the Fact Sheet Statement of Basis. If possible, dilution water should be taken from the receiving stream. A valid replacement test is required within the specified sampling period to remain in compliance.

Acute toxicity occurs when 50 percent or more mortality is observed for either species at any effluent concentration. Mortality in the control must simultaneously be 10 percent or less for the results to be considered valid. If more than 10 percent control mortality occurs, the test shall be repeated until satisfactory control mortality is achieved. The permittee shall meet all QA/QC requirements of the acute WET testing method listed in this Section of the permit.

If the permit contains a total residual chlorine limitation such that it may interfere with WET testing (>0.20 mg/L), the permittee may dechlorinate the sample in accordance with approved USEPA methods for WET testing the sample. If de-chlorination is affecting the test, the permittee may collect the sample just before chlorination with Director approval.

Quarterly test results shall be reported along with the Discharge Monitoring Report (DMR) submitted for the end of the required reporting period (month, quarter or semi-annual) e.g., biomonitoring results for the calendar quarter ending March 31 shall be reported with the DMR due April 28, with the remaining biomonitoring reports submitted with DMRs due each July 28, October 28, and January 28. Monthly test results shall be reported along with the DMR submitted for that month. The format for

the report shall be consistent with Appendix C of "Utah Pollutant Discharge Elimination System (UPDES) Permitting and Enforcement Guidance Document for Whole Effluent Toxicity (Biomonitoring), Utah Division of Water Quality, February 2018.

b. *Whole Effluent Testing – Chronic Toxicity*.
(Chronic WET tests are considered an indicator for Class 5 waters (Great Salt Lake) because of uncertainties regarding the representativeness of the standard test species for Great Salt Lake. If a separate acute test is not conducted, the results of the acute duration portion of a chronic test are reported as specified in Part a. Whole Effluent Testing – Acute Toxicity. As an indicator, the chronic test results can demonstrate compliance with portions of the Narrative Standards (R317-2-7.2). However, the chronic WET test results alone do not demonstrate noncompliance with the Narrative Standards. As indicators, the chronic WET test results alone are not used for determining reasonable potential for toxicity or noncompliance with the permit.)

Starting on June 1, 2021, the permittee shall quarterly, conduct chronic static renewal toxicity tests on a composite sample of the final effluent for Outfalls 001/003. The sample shall be collected at the point of compliance before mixing with the receiving water.

Three samples are required and samples shall be collected on Monday, Wednesday and Friday of each sampling period or collected on a two-day progression for each sampling period. This may be changed with Director approval. The chronic toxicity tests shall be conducted in general accordance with the procedures set out in the latest revision of *Short-Term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms, Fourth Edition*, October 2002, *EPA—821-R-02-013* as per *40 CFR 136.3(a)* TABLE IA-LIST OF APPROVED BIOLOGICAL METHODS. Test species shall consist of *Ceriodaphnia dubia* and *Pimephales promelas* (fathead minnow).

A multi dilution test consisting of at least five concentrations and a control is required at two dilutions below and two above the RWC, if possible. If test acceptability criteria are not met for control survival, growth, or reproduction, the test shall be considered invalid. A valid replacement test is required within the specified sampling period to remain in compliance with this permit. Chronic toxicity occurs when, during a chronic toxicity test, the 25% inhibition concentration (IC25) calculated on the basis of test organism survival and growth or survival and reproduction, is less than or equal to effluent concentration (equivalent to the RWC). If a sample is found to be chronically toxic during a routine test, the monitoring frequency shall become biweekly (see Part I.C4.c, Accelerated Testing). (the Director may enter acceptable variations in the test procedure here as documented in the Fact Sheet Statement of Basis and based on the test acceptability criteria as contained in Utah Pollutant Discharge Elimination System (UPDES) Permitting and Enforcement Guidance Document for Whole Effluent Toxicity Control February, 2018). If possible, dilution water should be obtained from the receiving stream.

If the permit contains a total residual chlorine limitation such that it may interfere with WET testing (>0.20 mg/L), the permittee may dechlorinate the sample in accordance with the standard method. If de-chlorination is negatively affecting the test, the permittee may collect the sample just before chlorination with Director approval.

Quarterly test results shall be reported along with the Discharge Monitoring Report (DMR) submitted for the end of the required reporting period (e.g., biomonitoring results for the calendar quarter ending March 31 shall be reported with the DMR due April 28, with the remaining biomonitoring reports submitted with DMRs due each July 28, October 28, and January 28). Monthly test results shall be reported along with the DMR submitted for that month. The format for the report shall be consistent with Appendix C of "Utah Pollutant Discharge Elimination System (UPDES) Permitting and Enforcement Guidance Document for Whole Effluent Toxicity, Utah Division of Water Quality, February, 2018.

c. *Accelerated Testing*. When whole effluent toxicity is indicated during routine WET testing as specified in this permit, the permittee shall notify the Director in writing within 5 days after becoming aware of the test result. The permittee shall perform an accelerated schedule of WET testing to establish whether a pattern of toxicity exists unless the permittee notifies the Director and commences a PTI, TIE, or a TRE. Accelerated testing or the PTI, TIE, or TRE will begin within fourteen days after the permittee becomes aware of the test result. Accelerated testing shall be conducted as specified under Part I. Pattern of Toxicity. If the accelerated testing demonstrates no pattern of toxicity, routine monitoring shall be resumed.

d. *Pattern of Toxicity*. A pattern of toxicity is defined by the results of a series of up to five biomonitoring tests pursuant to the accelerated testing requirements using a full set of dilutions for acute (five plus the control) and five effluent dilutions for chronic (five plus the control), on the species found to be more sensitive, once every week for up to five consecutive weeks for acute and once every two weeks up to ten consecutive weeks for chronic.

If two (2) consecutive tests (not including the scheduled test which triggered the search for a pattern of toxicity) do not result in an exceedance of the acute or chronic toxicity criteria, no further accelerated testing will be required and no pattern of toxicity will be found to exist. The permittee will provide written verification to the Director within 5 days of determining no pattern of toxicity exists, and resume routine monitoring.

A pattern of toxicity may or may not be established based on the following:

WET tests should be run at least weekly (acute) or every two weeks (chronic) (note that only one test should be run at a time), for up to 5 tests, until either:

1) 2 consecutive tests fail, or 3 out of 5 tests fail, at which point a pattern of toxicity will have been identified, or

2) 2 consecutive tests pass, or 3 out of 5 tests pass, in which case no pattern of toxicity is identified.

e. *Preliminary Toxicity Investigation*.

(1) When a pattern of toxicity is detected the permittee will notify the Director in writing within 5 days and begin an evaluation of the possible causes of the toxicity. The permittee will have 15 working days from demonstration of the pattern of toxicity to complete an optional Preliminary Toxicity Investigation (PTI) and submit a written report of the results to the Director. The PTI may include, but is not limited to: additional chemical and biological monitoring, examination of pretreatment program records, examination of discharge

monitoring reports, a thorough review of the testing protocol, evaluation of treatment processes and chemical use, inspection of material storage and transfer areas to determine if any spill may have occurred.

(2) If the PTI identifies a probable toxicant and/or a probable source of toxicity, the permittee shall submit, as part of its final results, written notification of that effect to the Director. Within thirty days of completing the PTI the permittee shall submit to the Director for approval a control program to control effluent toxicity and shall proceed to implement such plan in accordance with the Director's approval. The control program, as submitted to or revised by the Director, will be incorporated into the permit. After final implementation, the permittee must demonstrate successful removal of toxicity by passing a two species WET test as outlined in this permit. With adequate justification, the Director may extend these deadlines.

(3) If no probable explanation for toxicity is identified in the PTI, the permittee shall notify the Director as part of its final report, along with a schedule for conducting a Phase I Toxicity Reduction Evaluation (TRE) (see Part I. 4. f. Toxicity Reduction Evaluation)

(4) If toxicity spontaneously disappears during the PTI, the permittee shall submit written notification to that effect to the Director, with supporting testing evidence.

f. *Toxicity Reduction Evaluation (TRE)*. If a pattern of toxicity is detected the permittee shall initiate a TIE/TRE within 7 days unless the Director has accepted the decision to complete a PTI. With adequate justification, the Director may extend the 7-day deadline. The purpose of the TIE portion of a TRE will be to establish the cause of the toxicity, locate the source(s) of the toxicity, and the TRE will control or provide treatment for the toxicity.

A TRE may include but is not limited to one, all, or a combination of the following:

(1) Phase I – Toxicity Characterization

(2) Phase II – Toxicity Identification Procedures

(3) Phase III – Toxicity Control Procedures

(4) Any other appropriate procedures for toxicity source elimination and control.

If the TRE establishes that the toxicity cannot be immediately eliminated, the permittee shall submit a proposed compliance plan to the Director. The plan shall include the proposed approach to control toxicity and a proposed compliance schedule for achieving control. If the approach and schedule are acceptable to the Director, this permit may be reopened and modified.

If toxicity spontaneously disappears during the TIE/TRE, the permittee shall submit written notification to that effect to the Director.

If the TRE shows that the toxicity is caused by a toxicant(s) that may be controlled with specific numerical limitations, the permittee shall submit the following:

(a) An alternative control program for compliance with the numerical requirements.

(b) If necessary, as determined by the Director, provide a modified biomonitoring protocol which compensates for the pollutant(s) being controlled numerically.

This permit may be reopened and modified to incorporate any additional numerical limitations, a modified compliance schedule if judged necessary by the Director, and/or modified WET testing requirements without public notice.

Failure to conduct an adequate TIE/TRE plan or program as described above, or the submittal of a plan or program judged inadequate by the Director, shall be considered a violation of this permit. After implementation of TIE/TRE plan, the permittee must demonstrate successful removal of toxicity by passing a two species WET test as outlined in this permit.

D. Reporting of Monitoring Results.

1. Reporting of Wastewater Monitoring Results Monitoring results obtained during the previous month shall be summarized for each month and reported by NetDMR‡‡‡‡, post-marked or entered into NetDMR no later than the 28th day of the month following the completed reporting period. The first report is due on July 28, 2021. If no discharge occurs during the reporting period, "no discharge" shall be reported. Legible copies of these, and all other reports including whole effluent toxicity (WET) test reports required herein, shall be signed and certified in accordance with the requirements of *Signatory Requirements (see Part VII.G*), and submitted by NetDMR, or to the Division of Water Quality at the following address:

Department of Environmental Quality
Division of Water Quality
PO Box 144870
Salt Lake City, Utah 84114-4870

‡‡‡‡ Starting January 1, 2017 monitoring results must be submitted using NetDMR unless the permittee has successfully petitioned for an exception.

## II. INDUSTRIAL PRETREATMENT PROGRAM

A. Pretreatment Program Delegation. The permittee has been delegated primary responsibility for enforcing against discharges prohibited by *40 CFR 403.5* and applying and enforcing any national Pretreatment Standards established by the United States Environmental Protection Agency in accordance with Section 307 (b) and (c) of *The Clean Water Act (CWA)*, as amended by *The Water Quality Act (WQA), of 1987*.

The permittee shall implement the Industrial Pretreatment Program in accordance with the legal authorities, policies, and procedures described in the permittee's approved Pretreatment Program submission. Such program commits the permittee to do the following:

1. Carry out inspection, surveillance, and monitoring procedures, which will determine, independent of information supplied by the industrial user, whether the industrial user is in compliance with the pretreatment standards. At a minimum, all significant industrial users shall be inspected and sampled by the permittee at least once per year;

2. Control through permit, order, or similar means, the contribution to the POTW by each industrial user to ensure compliance with applicable pretreatment standards and requirements;

3. Require development, as necessary, of compliance schedules by each industrial user for the installation of control technologies to meet applicable pretreatment standards;

4. Maintain and update industrial user information as necessary, to ensure that all IUs are properly permitted and/or controlled at all times;

5. Enforce all applicable pretreatment standards and requirements and obtain appropriate remedies for noncompliance by any industrial user;

6. Annually publish a list of industrial users that were determined to be in significant noncompliance during the previous year. The notice must be published before March 28 of the following year;

7. Maintain an adequate revenue structure and staffing level for continued implementation of the Pretreatment Program.

*8.* Evaluate all significant industrial users at least once every two years to determine if they need to develop a slug prevention plan. If a slug prevention plan is required, the permittee shall insure that the plan contains at least the minimum elements required in *40 CFR 403.8(f)(2)(v);*

9. Notify all significant industrial users of their obligation to comply with applicable requirements under *Subtitles C and D* of the *Resource* Conservation and Recovery Act (RCRA); and

10. Develop, implement, and maintain an enforcement response plan as required by *40 CFR 403.8(f)(5)* which shall, at a minimum,

    a. Describe how the POTW will investigate instances of noncompliance;

    b. Describe the types of escalating enforcement responses the POTW will take in response to all anticipated type of industrial user violations; and

c. Describe the time periods within which such responses will be taken and identify the POTW staff position(s) responsible for pursuing these actions.

11. Establish and enforce specific local limits as necessary to implement the provisions of the *40 CFR Parts 403.5(a)* and *(b)*, and as required by *40 CFR Part 403.5(c)*.

B. Program Updates. The permittee is required to modify its pretreatment program, as necessary, to reflect changes in the regulations of *40 CFR 403*. Such modifications shall be completed within the time frame set forth by the applicable regulations. Modification of the approved pretreatment program must be done in accordance with the requirements of *40 CFR 403.18*. Modifications of the approved program which result in less stringent industrial user requirements shall not be effective until after approval has been granted by the Director.

C. Annual Report. The permittee shall provide the Division of Water Quality and EPA with an annual report briefly describing the permittee's pretreatment program activities over the previous calendar year. Reports shall be submitted no later than March 28 of each year. These annual reports shall, at a minimum, include:

1. An updated listing of the permittee's industrial users.

2. A descriptive summary of the compliance activities including numbers of any major enforcement actions, i.e., administrative orders, penalties, civil actions, etc.

3. An assessment of the compliance status of the permittee's industrial users and the effectiveness of the permittee's Pretreatment Program in meeting its needs and objectives.

4. A summary of all sampling data taken of the influent and effluent for those pollutants listed in *Part II.H.*

5. A description of all substantive changes made to the permittee's pretreatment program referenced in *Section B* of this section. Substantive changes include, but are not limited to, any change in any ordinance, major modification in the program's administrative structure or operating agreement(s), a significant reduction in monitoring, or a change in the method of funding the program.

6. Other information as may be determined necessary by the Director.

D. General and Specific Prohibitions. Pretreatment standards (*40 CFR 403.5*) specifically prohibit the introduction of the following pollutants into the waste treatment system from any source of non-domestic discharge:

1. Pollutants which create a fire or explosion hazard in the publicly owned treatment works (POTW), including, but not limited to, wastestreams with a closed cup flashpoint of less than 140˚F (60˚C);

2. Pollutants, which will cause corrosive structural damage to the POTW, but in no case, discharges with a pH lower than 5.0;

3. Solid or viscous pollutants in amounts which will cause obstruction to the flow in the POTW resulting in interference;

4. Any pollutant, including oxygen demanding pollutants (BOD, etc.), released in a discharge at such volume or strength as to cause interference in the POTW;

5. Heat in amounts, which will inhibit biological activity in the POTW, resulting in interference, but in no case, heat in such quantities that the influent to the sewage treatment works exceeds 104˚F (40˚C));

6. Petroleum oil, nonbiodegradable cutting oil, or products of mineral oil origin in amounts that will cause interference or pass through;

7. Pollutants, which result in the presence of toxic gases, vapor, or fumes within the POTW in a quantity that may cause worker health or safety problems;

8. Any trucked or hauled pollutants, except at discharge points designated by the POTW; or

9. Any pollutant that causes pass through or interference at the POTW.

10. Any specific pollutant which exceeds any local limitation established by the POTW in accordance with the requirement of *40 CFR 403.5(c)* and *40 CFR 403.5(d)*.

E. Categorical Standards. In addition to the general and specific limitations expressed in *Part D* of this section, applicable National Categorical Pretreatment Standards must be met by all industrial users of the POTW. These standards are published in the federal regulations at *40 CFR 405* et. seq.

F. Self-Monitoring and Reporting Requirements.

1. Influent and Effluent Monitoring and Reporting Requirements. The permittee shall sample and analyze both the influent and effluent, for the parameters listed in the Monitoring for Pretreatment Program Table.

<table>
<tr><td colspan="5">Monitoring for Pretreatment Program Table</td></tr>
<tr><td>Parameter</td><td>Reporting Limit</td><td>Sample Type</td><td>Frequency</td><td>Units</td></tr>
<tr><td>Total Arsenic</td><td>NA</td><td rowspan="10">Composite</td><td rowspan="11">Quarterly</td><td rowspan="12">mg/L</td></tr>
<tr><td>Total Cadmium</td><td>NA</td></tr>
<tr><td>Total Chromium</td><td>NA</td></tr>
<tr><td>Total Copper</td><td>0.0066</td></tr>
<tr><td>Total Lead</td><td>NA</td></tr>
<tr><td>Total Molybdenum</td><td>NA</td></tr>
<tr><td>Total Nickel</td><td>NA</td></tr>
<tr><td>Total Selenium</td><td>NA</td></tr>
<tr><td>Total Silver</td><td>NA</td></tr>
<tr><td>Total Zinc</td><td>NA</td></tr>
<tr><td>Total Cyanide</td><td>NA</td><td rowspan="3">Composite/Grab</td></tr>
<tr><td>Total Mercury</td><td>0.000012</td></tr>
<tr><td>TTOs</td><td>NA</td><td>Yearly</td></tr>
</table>

2. A test method should be used that has a reporting limit as stated in the column. If a test method is not available the permittee must submit documentation to the Director regarding the method that will be used.

3. The influent and effluent shall be analyzed by the permittee for total toxic pollutants (TTOs) listed in 40 CFR 122 Appendix D Table II (Organic Toxic Pollutants). The pesticides fraction of Appendix D, Table II is suspended unless pesticides are expected to be present.

4. In accordance with the requirements of 40 CFR Part 403.5(c), the permittee shall determine if there is a need to develop or revise its local limits in order to implement the general and specific prohibitions of 40 CFR Part 403.5 (a) and Part 403.5 (b). A technical evaluation of the need to develop or revise local limits shall be submitted to the Division within 12 months of the effective date of this permit. This evaluation should be conducted in accordance with the latest revision of the EPA Local Limits Development Guidance. If a technical evaluation, reveals that development or revision of local limits is necessary, the permittee shall submit the proposed local limits revision to the Division of Water Quality for approval, and after approval implement the new local limits, within 12 months of the Division's determination that a revision is necessary.

5. The results of the analyses of metals, cyanide and toxic organics shall be submitted along with the Discharge Monitoring Report (DMR) at the end of the earliest possible reporting period. Also, the permittee must submit a copy of the toxic organics data to the DWQ's Pretreatment Coordinator via email.

6. For local limit parameters it is recommended that the most sensitive method be used for analysis. This will determine if the parameter is present and provide removal efficiencies based on actual data rather than literature values. If a parameter load is greater than the allowable head works load, for any pollutant listed in Part II.F.1. or a pollutant of concern listed in the local limit development document, the permittee must report the exceedances to the DWQ's Pretreatment Coordinator. If the loading exceeds the allowable headworks load, increase sampling must occur based on the requirements given by the DWQ's Pretreatment Coordinator. If needed sampling may need to occur to find the source(s) of the increase. This may include sampling of the collection system. Notification regarding the exceedances of the allowable headworks loading can be provided via email.

G. Enforcement Notice. *UCA 19-5-104* provides that the State may issue a notice to the POTW stating that a determination has been made that appropriate enforcement action must be taken against an industrial user for noncompliance with any pretreatment requirements within 30 days. The issuance of such notice shall not be construed to limit the authority of the Director.

H. Formal Action. The Director retains the right to take legal action against any industrial user and/or POTW for those cases where a permit violation has occurred because of the failure of an industrial user to meet an applicable pretreatment standard.

## III. BIOSOLIDS REQUIREMENTS

A. Biosolids Treatment and Disposal. The authorization to dispose of biosolids provided under this permit is limited to those biosolids produced from the treatment works owned and operated by the permittee. The treatment methods and disposal practices are designated below.

1. Treatment

   a. Anaerobic Digestion -solids are treated in the absence of air for a specific mean cell residence time at a specific temperature (values for the mean cell residence time and temperature shall be between 15 days at 35 to 55 °C and 60 days at 20 °C). Under *40 CFR 503.32 (b)(3), Appendix B, A.3*

2. Description of Biosolids Disposal Method

   a. Class A biosolids may be sold or given away to the public for lawn and garden use or land application.

   b. Class B biosolids may be land applied for agriculture use or at reclamation sites at agronomic rates.

   c. Biosolids may be disposed of in a landfill or transferred to another facility for treatment and/or disposal.

3. Changes in Treatment Systems and Disposal Practices.

   a. Should the permittee change their disposal methods or the biosolids generation and handling processes of the plant, the permittee must notify the Director at least 30 days in advance if the process/method is specified in 40 CFR 503. This includes, but is not limited to, the permanent addition or removal of any biosolids treatment units (i.e., digesters, drying beds, belt presses, etc.) and/or any other change.

   b. Should the permittee change their disposal methods or the biosolids generation and handling processes of the plant, the permittee must notify the Director at least 180 days in advance if the process/method is not specified in 40 CFR 503. This includes, but is not limited to, the permanent addition or removal of any biosolids treatment units (i.e., digesters, drying beds, belt presses, etc.) and/or any other change.

For any biosolids that are land filled, the requirements in *Section 2.12* of the latest version of the *EPA Region VIII Biosolids Management Handbook* must be followed

B. Specific Limitations and Monitoring Requirements. All biosolids generated by this facility to be sold or given away to the public shall meet the requirements of *Part III.B.1, 2, 3* and *4* listed below.

1. Metals Limitations. All biosolids sold or given away in a bag or similar container for application to lawns and home gardens must meet the metals limitations as described below. If these metals limitations are not met, the biosolids must be landfilled.

| Pollutant Limits, (40 CFR Part 503.13(b)) Dry Mass Basis | | | | |
|---|---|---|---|---|
| Heavy Metals | Table 1 | Table 2 | Table 3 | Table 4 |
| | Ceiling Conc. Limits §§§§, ***** (mg/kg) | CPLR †††††, (mg/ha) | Pollutant Conc. Limits, (mg/kg) | APLR ‡‡‡‡‡, (mg/ha-yr) |
| Total Arsenic | 75 | 41 | 41 | 41 |
| Total Cadmium | 85 | 39 | 39 | 39 |
| Total Copper | 4300 | 1500 | 1500 | 1500 |
| Total Lead | 840 | 300 | 300 | 300 |
| Total Mercury | 57 | 17 | 17 | 17 |
| Total Molybdenum | 75 | N/A | N/A | N/A |
| Total Nickel | 420 | 420 | 420 | 420 |
| Total Selenium | 100 | 100 | 100 | 100 |
| Total Zinc | 7500 | 2800 | 2800 | 2800 |

2. Pathogen Limitations. All biosolids sold or given away in a bag or a similar container for application to lawns and home gardens must meet the pathogen limitations for Class A. Land applied biosolids must meet the pathogen limitations for Class B as described below. If the pathogen limitations are not met, the biosolids must be landfilled.

   a. Class A biosolids shall meet one of the pathogen measurement requirements in the following Pathogen Control Class table or shall meet the requirements for a Process to Further Reduce Pathogens as defined in *40 CFR Part 503.32(a) Sewage Sludge – Class A.*

      (1) North Davis has chosen to not treat the biosolids through a PFRP to meet Class A biosolids requirements, as the biosolids are not intended for land application on home lawns or gardens.

   b. Class B biosolids shall meet the pathogen measurement requirements in the following Pathogen Control Class table or shall meet the requirements for a Process to Significantly Reduce Pathogens as defined in *40 CFR Part 503.32(b) Sewage Sludge – Class B.* North Davis has chosen to meet the PSRP through the following method; *Under 40 CFR 503.32 (b)(3), Appendix B, A.3* The PSRP may be accomplished by treating the sewage sludge by a process in the absence of air for a specific mean cell residence time at a specific temperature (values for the mean cell residence time and temperature shall be between 15 days at 35 to 55 °C and 60 days at 20 °C), If done so, the biosolids meet the Class B requirements through anaerobic digestion.

      In addition, the permittee shall comply with all applicable site restrictions listed below *(40 CFR Part 503.32, (b), (5)):*

      (1) Food crops with harvested parts that touch the biosolids/soil mixture and are totally above the land surface shall not be harvested for 14 months after application.

§§§§ The limitations represent the maximum allowable levels of heavy metals in any biosolids intended for land application
***** These limitations represent the maximum allowable levels of heavy metals based on an average of all samples taken during a 30-day period.
††††† CPLR -- Cumulative Pollutant Loading Rate
‡‡‡‡‡ APLR – Annual Pollutant Loading Rate

(2) Food crops with harvested parts below the land surface shall not be harvested for 20 months after application if the biosolids remains on the land surface for four months or more prior to incorporation into the soil.

(3) Food crops with harvested parts below the surface of the land shall not be harvested for 38 months after application of sewage sludge when the sewage sludge remains on the land surface for less than four months prior to incorporation into the soil.

(4) Food crops, feed crops, and fiber crops shall not be harvested from the land for 30 days after application.

(5) Animals shall not be allowed to graze on the land for 30 days after application.

(6) Turf grown on land where biosolids is applied shall not be harvested for one year after application if the harvested turf is placed on either land with a high potential for public exposure or a lawn.

(7) Public access to land with a high potential for public exposure shall be restricted for one year after application.

(8) Public access to land with a low potential for public exposure shall be restricted for 30 days after application.

(9) The sludge or the application of the sludge shall not cause or contribute to the harm of a threatened or endangered species or result in the destruction or adverse modification of critical habitat of a threatened or endangered species after application.

| Pathogen Control Class | |
|---|---|
| 503.32 (a)(1) - (5), (7), -(8), Class A | 503.32 (b)(1) - (5), Class B |
| B Salmonella species –less than three (3) MPN§§§§§ per four (4) grams total solids (DWB)****** or Fecal Coliforms – less than 1,000 MPN per gram total solids (DWB). | Fecal Coliforms – less than 2,000,000 MPN or CFU†††††† per gram total solids (DWB). |
| 503.32 (a)(6) Class A—Alternative 4 | |
| B Salmonella species –less than three (3) MPN per four (4) grams total solids (DWB) or less than 1,000 MPN Fecal Coliforms per gram total solids (DWB),<br>And - Enteric viruses –less than one (1) plaque forming unit per four (4) grams total solids (DWB)<br>And - Viable helminth ova –less than one (1) per four (4) grams total solids (DWB) | |

§§§§§ MPN – Most Probable Number
****** DWB – Dry Weight Basis.
†††††† CFU – Colony Forming Units

3. Vector Attraction Reduction Requirements.

   a. The permittee will meet vector attraction reduction through use of one of the methods listed in *40 CFR 503.33*. North Davis is meeting the requirements though the following methods.

      (1) *Under 40 CFR 503.33(b)(1)*, the solids need to be treated through anaerobic digestion for at least 15 days at a temperature of a least 35° C (95° F) with a 38% reduction of volatile solids.

   If the permittee intends to use another one of the alternatives, the Director and the EPA must be informed at least thirty (30) days prior to its use. This change may be made without additional public comment.

4. Self-Monitoring Requirements.

   a. At a minimum, upon the effective date of this permit, all chemical pollutants, pathogens and applicable vector attraction reduction requirements shall be monitored according to *40 CFR 503.16(1)(a)*.

| Minimum Frequency of Monitoring (40 CFR Part 503.16, 503.26. and 503.46) | | |
|---|---|---|
| Amount of Biosolids Disposed Per Year | | Monitoring Frequency |
| Dry US Tons | Dry Metric Tons | Per Year or Batch |
| > 0 to < 320 | > 0 to < 290 | Once Per Year or Batch |
| > 320 to < 1650 | > 290 to < 1,500‡‡‡‡‡‡ | Once a Quarter or Four Times |
| > 1,650 to < 16,500 | > 1,500 to < 15,000 | Bi-Monthly or Six Times |
| > 16,500 | > 15,000 | Monthly or Twelve Times |

   b. Sample collection, preservation and analysis shall be performed in a manner consistent with the requirements of *40 CRF 503* and/or other criteria specific to this permit. A metals analysis is to be performed using *Method SW 846* with *Method 3050* used for digestion. For the digestion procedure, an amount of biosolids equivalent to a dry weight of one gram shall be used. The methods are also described in the latest version of the *Region VIII Biosolids Management Handbook.*

   c. The Director may request additional monitoring for specific pollutants derived from biosolids if the data shows a potential for concern.

   d. After two (2) years of monitoring at the frequency specified, the permittee may request that the Director reduce the sampling frequency for the heavy metals. The frequency cannot be reduced to less than once per year for biosolids that are sold or given away to the public for any parameter. The frequency also cannot be reduced for any of the pathogen or vector attraction reduction requirements listed in this permit.

C. Management Practices of Biosolids.

   1. Biosolids Distribution Information

‡‡‡‡‡‡ North Davis has produced on average 2574 Dry Metric Tons a year over the past 10 years. Accordingly, they will sample at least bi-monthly or six (6) times per year, however, North Davis requested, and was granted a reduction in the monitoring frequency for the biosolids. They are only required to sample quarterly at a minimum.

a. For biosolids that are sold or given away, an information sheet shall be provided to the person who receives the biosolids. The label or information sheet shall contain:
   (1) The name and address of the person who prepared the biosolids for a sale or to be given away.

   (2) A statement that prohibits the application of the biosolids to the land except in accordance with the instructions on the label or information sheet.

2. Biosolids Application Site Storage

   a. For biosolids or material derived from biosolids that are stored in piles for one year or longer, measures shall be taken to ensure that erosion (whether by wind or water) does not occur. However, best management practices should also be used for piles used for biosolids treatment. If a treatment pile is considered to have caused a problem, best management practices could be added as a requirement in the next permit renewal

3. Land Application Practices

   a. The permittee shall operate and maintain the land application site operations in accordance with the following requirements:

      (1) The permittee shall provide to the Director and the EPA within 90 days of the effective date of this permit a land application plan.

      (2) Application of biosolids shall be conducted in a manner that will not contaminate the groundwater or impair the use classification for that water underlying the sites.

      (3) Application of biosolids shall be conducted in a manner that will not cause a violation of any receiving water quality standard from discharges of surface runoff from the land application sites. Biosolids shall not be applied to land 10 meters or less from waters of the United States (as defined in 40 CFR 122.2).

      (4) No person shall apply biosolids for beneficial use to frozen, ice-covered, or snow-covered land where the slope of such land is greater than three percent and is less than or equal to six percent unless one of the following requirements is met:

         (a) there is 80 percent vegetative ground cover; or,

         (b) approval has been obtained based upon a plan demonstrating adequate runoff containment measures.

      (5) Application of biosolids is prohibited to frozen, ice-covered, or snow-covered sites where the slope of the site exceeds six percent.

      (6) Agronomic Rate

         (a) Application of biosolids shall be conducted in a manner that does not exceed the agronomic rate for available nitrogen of the crops grown on the site. At a minimum, the permittee is required to follow the methods for calculating agronomic rate outlined in the latest version of the *Region VIII Biosolids Management Handbook* (other methods may be approved by the Director). The treatment plant shall provide written notification to the applier of the biosolids of the concentration of total nitrogen (as N on a dry weight basis)

in the biosolids. Written permission from the Director is required to exceed the agronomic rate.

(b) The permittee may request the limits of *Part III, C, 6* be modified if different limits would be justified based on local conditions. The limits are required to be developed in cooperation with the local agricultural extension office or university.

(c) Deep soil monitoring for nitrate-nitrogen is required for all land application sites (does not apply to sites where biosolids are applied less than once every five years). A minimum of six samples for each 320 (or less) acre area is to be collected. These samples are to be collected down to either a 5-foot depth, or the confining layer, whichever is shallower (sample at 1-foot, 2-foot, 3-foot, 4-foot and 5-foot intervals). Each of these one-foot interval samples shall be analyzed for nitrate-nitrogen. In addition to the one-foot interval samples, a composite sample of the 5-foot intervals shall be taken, and analyzed for nitrate-nitrogen as well. Samples are required to be taken once every five years for non-irrigated sites that receive more than 18 inches of precipitation annually or for irrigated sites

(7) Biosolids shall not be applied to any site area with standing surface water. If the annual high groundwater level is known or suspected to be within five feet of the surface, additional deep soil monitoring for nitrate-nitrogen as described in *Part III.C.(6), (c).* is to be performed. At a minimum, this additional monitoring will involve a collection of more samples in the affected area and possibly more frequent sampling. The exact number of samples to be collected will be outlined in a deep soil monitoring plan to be submitted to the Director and the EPA within 90 days of the effective date of this permit. The plan is subject to approval by the Director.

(8) The specified cover crop shall be planted during the next available planting season. If this does not occur, the permittee shall notify the Director in writing. Additional restrictions may be placed on the application of the biosolids on that site on a case-by-case basis to control nitrate movement. Deep soil monitoring may be increased under the discretion of the Director.

(9) When weather and or soil conditions prevent adherence to the biosolids application procedure, biosolids shall not be applied on the site.

(10) For biosolids that are sold or given away, an information sheet shall be provided to the person who receives the biosolids. The label or information sheet shall contain:

(a) The name and address of the person who prepared the biosolids for sale or give away for application to the land.

(b) A statement that prohibits the application of the biosolids to the land except in accordance with the instructions on the label or information sheet.

(c) The annual whole biosolids application rate for the biosolids that do not cause the metals loading rates in Tables 1, 2, and 3 (*Part III.B.1.*) to be exceeded.

(11) Biosolids subject to the cumulative pollutant loading rates in Table 2 (*Part III.B.1.*) shall not be applied to agricultural land, forest, a public contact site, or a reclamation site if any of the cumulative pollutant loading rates in Table 2 have been reached.

(12) If the treatment plant applies the biosolids, it shall provide the owner or leaseholder of the land on which the biosolids are applied notice and necessary information to comply with the requirements in this permit.

(13) The permittee shall inspect the application of the biosolids to active sites to prevent malfunctions and deterioration, operator errors and discharges, which may cause or lead to the release of biosolids to the environment or a threat to human health. The permittee must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment. The permittee shall keep an inspection log or summary including at least the date and time of inspection, the printed name and the handwritten signature of the inspector, a notation of observations made and the date and nature of any repairs or corrective action.

D. Special Conditions on Biosolids Storage. Permanent storage of biosolids is prohibited. Biosolids shall not be temporarily stored for more than two (2) years. Written permission to store biosolids for more than two years must be obtained from the Director. Storage of biosolids for more than two years will be allowed only if it is determined that significant treatment is occurring.

E. Representative Sampling. Biosolids samples used to measure compliance with *Part III* of this Permit shall be collected at locations representative of the quality of biosolids generated at the treatment works and immediately prior to land application.

F. Reporting of Monitoring Results.

1. Biosolids. The permittee shall provide the results of all monitoring performed in accordance with *Part III.B*, and information on management practices, biosolids treatment, site restrictions and certifications shall be provided no later than February 19 of each year. Each report is for the previous calendar year. If no biosolids were sold or given away during the reporting period, "no biosolids were sold or given away" shall be reported. Legible copies of these, and all other reports required herein, shall be signed and certified in accordance with the *Signatory Requirements (see Part VII.G)*, and submitted to the Utah Division of Water Quality and the EPA by the NeT-Biosolids§§§§§§ system through the EPA Central Data Exchange (CDX) system.: and submitted to the Utah Division of Water Quality by NetDMR or at the following address:

Original to: Biosolids Coordinator
Utah Division of Water Quality
PO Box 144870
Salt Lake City Utah, 84114-4870

G. Additional Record Keeping Requirements Specific to Biosolids.

1. Unless otherwise required by the Director, **the permittee is not required to keep records** on compost products if the permittee prepared them from biosolids that meet the limits in Table 3 (*Part III.B.1*), the Class A pathogen requirements in *Part III.B.2* and the vector

§§§§§§ Starting January 1, 2021, the Annual Biosolids Reports should be submitted through thi s system.

attraction reduction requirements in *Part III.B.3*. The Director may notify the permittee that additional record keeping is required if it is determined to be significant to protecting public health and the environment.

2. **The permittee is required** to keep the following information for at least 5 years:

   a. Concentration of each heavy metal in Table 3 (*Part III.B.1*).

   b. A description of how the pathogen reduction requirements in *Part III.B.2* were met.

   c. A description of how the vector attraction reduction requirements in *Part III.B.3* were met.

   d. A description of how the management practices in *Part III.C* were met (if necessary).

   e. The following certification statement:

      "I certify under the penalty of law, that the heavy metals requirements in *Part III.B.1*, the pathogen requirements in *Part III.B.2*, the vector attraction requirements in *Part III.B.3*, the management practices in *Part III.C*. This determination has been made under my direction and supervision in accordance with the system designed to assure that qualified personnel properly gather and evaluate the information used to determine that the pathogen requirements, the vector attraction reduction requirements and the management practices have been met. I am aware that there are significant penalties for false certification including the possibility of imprisonment."

3. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit and records of all data used to complete the application for this permit for the life of the permit. Data collected on site, copies of Biosolids Report forms, and a copy of this UPDES biosolids-only permit must be maintained on site during the duration of activity at the permitted location.

## IV. STORM WATER REQUIREMENTS.

A. Industrial Storm Water Permit. Based on the type of industrial activities occurring at the facility, the permittee is required to maintain separate coverage or an appropriate exclusion under the Multi-Sector General Permit (MSGP) for Storm Water Discharges Associated with Industrial Activities (UTR000000). If the facility is not already covered, the permittee has 30 days from when this permit is issued to submit the appropriate Notice of Intent (NOI) for the MSGP or exclusion documentation.

B. Construction Storm Water Permit. Any construction at the facility that disturbs an acre or more of land, including less than an acre if it is part of a common plan of development or sale, is required to obtain coverage under the UPDES Construction General Storm Water Permit (UTRC00000). Permit coverage must be obtained prior to land disturbance. If the site qualifies, a Low Erosivity Waiver (LEW) Certification may be submitted instead of permit coverage.

## V. MONITORING, RECORDING & GENERAL REPORTING REQUIREMENTS

A. Representative Sampling. Samples taken in compliance with the monitoring requirements established under *Part I* shall be collected from the effluent stream prior to discharge into the receiving waters. Samples and measurements shall be representative of the volume and nature of the monitored discharge. Samples of biosolids shall be collected at a location representative of the quality of biosolids immediately prior to the use-disposal practice.

B. Monitoring Procedures. Monitoring must be conducted according to test procedures approved under *Utah Administrative Code ("UAC") R317-2-10 and 40CFR Part 503*, unless other test procedures have been specified in this permit.

C. Penalties for Tampering. The *Act* provides that any person who falsifies, tampers with, or knowingly renders inaccurate, any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished by a fine of not more than $10,000 per violation, or by imprisonment for not more than six months per violation, or by both.

D. Compliance Schedules. Reports of compliance or noncompliance with, or any progress reports on, interim and final requirements contained in any Compliance Schedule of this permit shall be submitted no later than 14 days following each schedule date.

E. Additional Monitoring by the Permittee. If the permittee monitors any parameter more frequently than required by this permit, using test procedures approved under *UAC R317-2-10* and *40 CFR 503* or as specified in this permit, the results of this monitoring shall be included in the calculation and reporting of the data submitted in the DMR or the Biosolids Report Form. Such increased frequency shall also be indicated. Only those parameters required by the permit need to be reported.

F. Records Contents. Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements:
2. The individual(s) who performed the sampling or measurements;
3. The date(s) and time(s) analyses were performed;
4. The individual(s) who performed the analyses;
5. The analytical techniques or methods used; and,
6. The results of such analyses.

G. Retention of Records. The permittee shall retain records of all monitoring information, including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation, copies of all reports required by this permit, and records of all data used to complete the application for this permit, for a period of at least five years from the date of the sample, measurement, report or application. This period may be extended by request of the Director at any time. A copy of this UPDES permit must be maintained on site during the duration of activity at the permitted location

H. Twenty-four Hour Notice of Noncompliance Reporting.

1. The permittee shall (orally) report any noncompliance including transportation accidents, spills, and uncontrolled runoff from biosolids transfer or land application sites which may seriously endanger health or environment, as soon as possible, but no later than twenty-four (24) hours from the time the permittee first became aware of circumstances. The report shall be made to the Division of Water Quality, (801) 536-4300, or 24-hour answering service (801) 536-4123.

2. The following occurrences of noncompliance shall be reported by telephone (801) 536-4300 as soon as possible but no later than 24 hours from the time the permittee becomes aware of the circumstances:

   a. Any noncompliance which may endanger health or the environment;

   b. Any unanticipated bypass, which exceeds any effluent limitation in the permit (See *Part VI.G, Bypass of Treatment Facilities.)*;

   c. Any upset which exceeds any effluent limitation in the permit (See *Part VI.H*, *Upset Conditions*.);

   d. Violation of a daily discharge limitation for any of the pollutants listed in the permit; or,

   e. Violation of any of the Table 3 metals limits, the pathogen limits, the vector attraction reduction limits or the management practices for biosolids that have been sold or given away.

3. A written submission shall also be provided within five days of the time that the permittee becomes aware of the circumstances. The written submission shall contain:

   a. A description of the noncompliance and its cause;

   b. The period of noncompliance, including exact dates and times;

   c. The estimated time noncompliance is expected to continue if it has not been corrected;

   d. Steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance; and,

   e. Steps taken, if any, to mitigate the adverse impacts on the environment and human health during the noncompliance period.

4. The Director may waive the written report on a case-by-case basis if the oral report has been received within 24 hours by the Division of Water Quality, (801) 536-4300.

5. Reports shall be submitted to the addresses in *Part I.D*, *Reporting of Monitoring Results*.

I. Other Noncompliance Reporting. Instances of noncompliance not required to be reported within 24 hours shall be reported at the time that monitoring reports for *Part I.D* are submitted. The reports shall contain the information listed in *Part V.H.3*

J. Inspection and Entry The permittee shall allow the Director, or an authorized representative, upon the presentation of credentials and other documents as may be required by law, to:

1. Enter upon the permittee's premises where a regulated facility or activity is located or conducted, or where records must be kept under the conditions of the permit;

2. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this permit;

3. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this permit, including but not limited to, biosolids treatment, collection, storage facilities or area, transport vehicles and containers, and land application sites;

4. Sample or monitor at reasonable times, for the purpose of assuring permit compliance or as otherwise authorized by the *Act*, any substances or parameters at any location, including, but not limited to, digested biosolids before dewatering, dewatered biosolids, biosolids transfer or staging areas, any ground or surface waters at the land application sites or biosolids, soils, or vegetation on the land application sites; and,

5. The permittee shall make the necessary arrangements with the landowner or leaseholder to obtain permission or clearance, the Director, or authorized representative, upon the presentation of credentials and other documents as may be required by law, will be permitted to enter without delay for the purposes of performing their responsibilities.

## VI. COMPLIANCE RESPONSIBILITIES

A. Duty to Comply. The permittee must comply with all conditions of this permit. Any permit noncompliance constitutes a violation of the Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or for denial of a permit renewal application. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.

B. Penalties for Violations of Permit Conditions. The *Act* provides that any person who violates a permit condition implementing provisions of the *Act* is subject to a civil penalty not to exceed $10,000 per day of such violation. Any person who willfully or negligently violates permit conditions or the Act is subject to a fine not exceeding $25,000 per day of violation. Any person convicted under *UCA 19-5-115(2)* a second time shall be punished by a fine not exceeding $50,000 per day. Except as provided at *Part VI.G*, *Bypass of Treatment Facilities* and *Part VI.H*, *Upset Conditions*, nothing in this permit shall be construed to relieve the permittee of the civil or criminal penalties for noncompliance.

C. Need to Halt or Reduce Activity not a Defense. It shall not be a defense for a permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit.

D. Duty to Mitigate. The permittee shall take all reasonable steps to minimize or prevent any discharge in violation of this permit, which has a reasonable likelihood of adversely affecting human health or the environment. The permittee shall also take all reasonable steps to minimize or prevent any land application in violation of this permit.

E. Proper Operation and Maintenance. The permittee shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) which are installed or used by the permittee to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems, which are installed by a permittee only when the operation is necessary to achieve compliance with the conditions of the permit.

F. Removed Substances. Collected screening, grit, solids, sludge, or other pollutants removed in the course of treatment shall be disposed of in such a manner so as to prevent any pollutant from entering any waters of the state or creating a health hazard. Sludge/digester supernatant and filter backwash shall not directly enter either the final effluent or waters of the state by any other direct route.

G. Bypass of Treatment Facilities.

1. Bypass Not Exceeding Limitations. The permittee may allow any bypass to occur which does not cause effluent limitations to be exceeded, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to paragraph 2 and 3 of this section.

2. Prohibition of Bypass.

   a. Bypass is prohibited, and the Director may take enforcement action against a permittee for bypass, unless:

      (1) Bypass was unavoidable to prevent loss of human life, personal injury, or severe property damage;

      (2) There were no feasible alternatives to bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate backup equipment should have been installed in the exercise of reasonable engineering judgement to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance, and

      (3) The permittee submitted notices as required under *section VI.G.3*.

   b. The Director may approve an anticipated bypass, after considering its adverse effects, if the Director determines that it will meet the three conditions listed in *sections VI.G.2.a (1), (2) and (3)*.

3. Notice.

   a. *Anticipated bypass*. Except as provided above in *section VI.G.2* and below in *section VI.G.3.b*, if the permittee knows in advance of the need for a bypass, it shall submit prior notice, at least ninety days before the date of bypass. The prior notice shall include the following unless otherwise waived by the Director:

      (1) Evaluation of alternative to bypass, including cost-benefit analysis containing an assessment of anticipated resource damages:

      (2) A specific bypass plan describing the work to be performed including scheduled dates and times. The permittee must notify the Director in advance of any changes to the bypass schedule;

      (3) Description of specific measures to be taken to minimize environmental and public health impacts;

      (4) A notification plan sufficient to alert all downstream users, the public and others reasonably expected to be impacted by the bypass;

      (5) A water quality assessment plan to include sufficient monitoring of the receiving water before, during and following the bypass to enable evaluation of public health risks and environmental impacts; and,

      (6) Any additional information requested by the Director.

   b. *Emergency Bypass*. Where ninety days advance notice is not possible, the permittee must notify the Director, and the Director of the Department of Natural Resources, as soon as it becomes aware of the need to bypass and provide to the Director the information in *section VI.G.3.a.(1) through (6)* to the extent practicable.

c. *Unanticipated bypass*. The permittee shall submit notice of an unanticipated bypass to the Director as required under *Part IV.H*, Twenty Four Hour Reporting. The permittee shall also immediately notify the Director of the Department of Natural Resources, the public and downstream users and shall implement measures to minimize impacts to public health and environment to the extent practicable.

H. Upset Conditions.

1. Effect of an upset. An upset constitutes an affirmative defense to an action brought for noncompliance with technology based permit effluent limitations if the requirements of paragraph 2 of this section are met. Director's administrative determination regarding a claim of upset cannot be judiciously challenged by the permittee until such time as an action is initiated for noncompliance.

2. Conditions necessary for a demonstration of upset. A permittee who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:

   a. An upset occurred and that the permittee can identify the cause(s) of the upset;

   b. The permitted facility was at the time being properly operated;

   c. The permittee submitted notice of the upset as required under *Part V.H*, *Twenty-four Hour Notice of Noncompliance Reporting*; and,

   d. The permittee complied with any remedial measures required under *Part VI.D*, *Duty to Mitigate*.

3. Burden of proof. In any enforcement proceeding, the permittee seeking to establish the occurrence of an upset has the burden of proof.

## VII. GENERAL REQUIREMENTS

A. Planned Changes. The permittee shall give notice to the Director as soon as possible of any planned physical alterations or additions to the permitted facility. Notice is required only when the alteration or addition could significantly change the nature or increase the quantity of parameters discharged or pollutant sold or given away. This notification applies to pollutants, which are not subject to effluent limitations in the permit. In addition, if there are any planned substantial changes to the permittee's existing sludge facilities or their manner of operation or to current sludge management practices of storage and disposal, the permittee shall give notice to the Director of any planned changes at least 30 days prior to their implementation.

B. Anticipated Noncompliance. The permittee shall give advance notice to the Director of any planned changes in the permitted facility or activity, which may result in noncompliance with permit requirements.

C. Permit Actions. This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the permittee for a permit modification, revocation and reissuance, or termination, or a notification of planned changes or anticipated noncompliance, does not stay any permit condition.

D. Duty to Reapply. If the permittee wishes to continue an activity regulated by this permit after the expiration date of this permit, the permittee shall apply for and obtain a new permit. The application shall be submitted at least 180 days before the expiration date of this permit.

E. Duty to Provide Information. The permittee shall furnish to the Director, within a reasonable time, any information which the Director may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit, or to determine compliance with this permit. The permittee shall also furnish to the Director, upon request, copies of records required to be kept by this permit.

F. Other Information. When the permittee becomes aware that it failed to submit any relevant facts in a permit application, or submitted incorrect information in a permit application or any report to the Director, it shall promptly submit such facts or information.

G. Signatory Requirements. All applications, reports or information submitted to the Director shall be signed and certified.

1. All permit applications shall be signed by either a principal executive officer or ranking elected official.

2. All reports required by the permit and other information requested by the Director shall be signed by a person described above or by a duly authorized representative of that person. A person is a duly authorized representative only if:

   a. The authorization is made in writing by a person described above and submitted to the Director, and,

   b. The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility, such as the position of plant manager, superintendent, position of equivalent responsibility, or an individual or position

having overall responsibility for environmental matters. A duly authorized representative may thus be either a named individual or any individual occupying a named position.

3. Changes to authorization. If an authorization under *paragraph VII.G.2* is no longer accurate because a different individual or position has responsibility for the overall operation of the facility, a new authorization satisfying the requirements of *paragraph VII.G.2.* must be submitted to the Director prior to or together with any reports, information, or applications to be signed by an authorized representative.

4. Certification. Any person signing a document under this section shall make the following certification:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

H. Penalties for Falsification of Reports. The *Act* provides that any person who knowingly makes any false statement, representation, or certification in any record or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction be punished by a fine of not more than $10,000.00 per violation, or by imprisonment for not more than six months per violation, or by both.

I. Availability of Reports. Except for data determined to be confidential under *UAC R317-8-3.2*, all reports prepared in accordance with the terms of this permit shall be available for public inspection at the office of Director. As required by the *Act*, permit applications, permits and effluent data shall not be considered confidential.

J. Oil and Hazardous Substance Liability. Nothing in this permit shall be construed to preclude the permittee of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties to which the permittee is or may be subject under the *Act*.

K. Property Rights. The issuance of this permit does not convey any property rights of any sort, or any exclusive privileges, nor does it authorize any injury to private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations.

L. Severability. The provisions of this permit are severable, and if any provisions of this permit, or the application of any provision of this permit to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this permit, shall not be affected thereby.

M. Transfers. This permit may be automatically transferred to a new permittee if:

1. The current permittee notifies the Director at least 20 days in advance of the proposed transfer date;

2. The notice includes a written agreement between the existing and new permittee's containing a specific date for transfer of permit responsibility, coverage, and liability between them; and,

3. The Director does not notify the existing permittee and the proposed new permittee of his or her intent to modify, or revoke and reissue the permit. If this notice is not received, the transfer is effective on the date specified in the agreement mentioned in paragraph *2* above.

N. State or Federal Laws. Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the permittee from any responsibilities, liabilities, or penalties established pursuant to any applicable state law or regulation under authority preserved by *UCA 19-5-117* and *Section 510* of the *Act* or any applicable Federal or State transportation regulations, such as but not limited to the Department of Transportation regulations.

O. Water Quality - Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate effluent limitations and compliance schedule, if necessary, if one or more of the following events occurs:

1. Water Quality Standards for the receiving water(s) to which the permittee discharges are modified in such a manner as to require different effluent limits than contained in this permit.

2. A final wasteload allocation is developed and approved by the State and/or EPA for incorporation in this permit.

3. Revisions to the current CWA § 208 areawide treatment management plans or promulgations/revisions to TMDLs (40 CFR 130.7) approved by the EPA and adopted by DWQ which calls for different effluent limitations than contained in this permit.

P. Biosolids – Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include the appropriate biosolids limitations (and compliance schedule, if necessary), management practices, other appropriate requirements to protect public health and the environment, or if there have been substantial changes (or such changes are planned) in biosolids use or disposal practices; applicable management practices or numerical limitations for pollutants in biosolids have been promulgated which are more stringent than the requirements in this permit; and/or it has been determined that the permittees biosolids use or land application practices do not comply with existing applicable state of federal regulations.

Q. Toxicity Limitation - Reopener Provision. This permit may be reopened and modified (following proper administrative procedures) to include, whole effluent toxicity (WET) limitations, a compliance date, a compliance schedule, a change in the whole effluent toxicity (biomonitoring) protocol, additional or modified numerical limitations, or any other conditions related to the control of toxicants if one or more of the following events occur;

1. Toxicity is detected, as per *Part I.C.4.a* and *b* of this permit, during the duration of this permit.

2. The TRE results indicate that the toxicant(s) represent pollutant(s) or pollutant parameter(s) that may be controlled with specific numerical limits, and the Director concludes that numerical controls are appropriate.

3. Following the implementation of numerical control(s) of toxicant(s), the Director agrees that a modified biomonitoring protocol is necessary to compensate for those toxicants that are controlled numerically.

4. The TRE reveals other unique conditions or characteristics, which in the opinion of the permit issuing authority justify the incorporation of unanticipated special conditions in the permit.

R. Storm Water-Reopener Provision. At any time during the duration (life) of this permit, this permit may be reopened and modified (following proper administrative procedures) as per *UAC R317.8*, to include, any applicable storm water provisions and requirements, a storm water pollution prevention plan, a compliance schedule, a compliance date, monitoring and/or reporting requirements, or any other conditions related to the control of storm water discharges to "waters-of-State".

S. TBPEL Variance-Reopener Provision. At any time during the duration (life) of this permit, this permit may be reopened and modified (following proper administrative procedures) as per *UAC R317.8*, to include or remove any applicable TBPEL Variance provisions and requirements, a compliance schedule, a compliance date, monitoring and/or reporting requirements, or any other conditions related to the TBPEL Variance.

## VIII. DEFINITIONS

A. Wastewater.

1. The "7-day (and weekly) average", other than for *E. coli* bacteria, fecal coliform bacteria, and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 7-day period or calendar week, whichever is applicable. Geometric means shall be calculated for *E. coli* bacteria, fecal coliform bacteria, and total coliform bacteria. The 7-day and weekly averages are applicable only to those effluent characteristics for which there are 7-day average effluent limitations. The calendar week, which begins on Sunday and ends on Saturday, shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms. Weekly averages shall be calculated for all calendar weeks with Saturdays in the month. If a calendar week overlaps two months (i.e., the Sunday is in one month and the Saturday in the following month), the weekly average calculated for that calendar week shall be included in the data for the month that contains Saturday.

2. The "30-day (and monthly) average," other than for *E. coli* bacteria, fecal coliform bacteria and total coliform bacteria, is the arithmetic average of all samples collected during a consecutive 30-day period or calendar month, whichever is applicable. Geometric means shall be calculated for *E. coli* bacteria, fecal coliform bacteria and total coliform bacteria. The calendar month shall be used for purposes of reporting self-monitoring data on discharge monitoring report forms.

3. "Act," means the *Utah Water Quality Act*.

4. "Acute toxicity" occurs when 50 percent or more mortality is observed for either test species at any effluent concentration (lethal concentration or "$LC_{50}$").

5. "Annual Loading Cap" is the highest allowable phosphorus loading discharged over a calendar year, calculated as the sum of all the monthly loading discharges measured during a calendar year divided by the number of monthly discharges measured during that year.

6. "Bypass," means the diversion of waste streams from any portion of a treatment facility.

7. "Chronic toxicity" occurs when the $IC_{25}$< XX% effluent. The XX% effluent is the concentration of the effluent in the receiving water, at the end of the mixing zone expressed as per cent effluent.

8. "$IC_{25}$" is the concentration of toxicant (given in % effluent) that would cause a 25% reduction in mean young per female, or a 25% reduction in overall growth for the test population.

9. "Composite Samples" shall be flow proportioned. The composite sample shall, as a minimum, contain at least four (4) samples collected over the compositing period. Unless otherwise specified, the time between the collection of the first sample and the last sample shall not be less than six (6) hours nor more than 24 hours. Acceptable methods for preparation of composite samples are as follows:

a. Constant time interval between samples, sample volume proportional to flow rate at time of sampling;

b. Constant time interval between samples, sample volume proportional to total flow (volume) since last sample. For the first sample, the flow rate at the time the sample was collected may be used;

c. Constant sample volume, time interval between samples proportional to flow (i.e., sample taken every "X" gallons of flow); and,

d. Continuous sample volume, with sample collection rate proportional to flow rate.

10. "CWA" means *The Federal Water Pollution Control Act*, as amended, by *The Clean Water Act of 1987*.

11. "Daily Maximum" (Daily Max.) is the maximum value allowable in any single sample or instantaneous measurement.

12. "EPA," means the United States Environmental Protection Agency.

13. "Director," means Director of the Division of Water Quality.

14. A "grab" sample, for monitoring requirements, is defined as a single "dip and take" sample collected at a representative point in the discharge stream.

15. An "instantaneous" measurement, for monitoring requirements, is defined as a single reading, observation, or measurement.

16. "Severe Property Damage," means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.

17. "Upset," means an exceptional incident in which there is unintentional and temporary noncompliance with technology-based permit effluent limitations because of factors beyond the reasonable control of the permittee. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or careless or improper operation.

B. Biosolids.

1. "Biosolids," means any material or material derived from sewage solids that have been biologically treated.

2. "Dry Weight-Basis," means 100 percent solids (i.e. zero percent moisture).

3. "Land Application" is the spraying or spreading of biosolids onto the land surface; the injection of biosolids below the land surface; or the incorporation of biosolids into the land so that the biosolids can either condition the soil or fertilize crops or vegetation grown in the soil. Land application includes distribution and marketing (i.e. the selling or giving away of the biosolids).

4. "Pathogen," means an organism that is capable of producing an infection or disease in a susceptible host.

5. "Pollutant" for the purposes of this permit is an organic substance, an inorganic substance, a combination of organic and inorganic substances, or pathogenic organisms that after discharge and upon exposure, ingestion, inhalation, or assimilation into an organism either directly from the environment or indirectly by ingestion through the food-chain, could on the basis of information available to the Administrator of EPA, cause death, disease, behavioral abnormalities, cancer, genetic mutations, physiological malfunctions (including malfunction in reproduction), or physical deformations in either organisms or offspring of the organisms.

6. "Runoff" is rainwater, leachate, or other liquid that drains over any part of a land surface and runs off the land surface.

7. "Similar Container" is either an open or closed receptacle. This includes, but is not limited to, a bucket, a box, a carton, and a vehicle or trailer with a load capacity of one metric ton or less.

8. "Total Solids" are the materials in the biosolids that remain as a residue if the biosolids are dried at 103$^{o}$ or 105$^{o}$ Celsius.

9. "Treatment Works" are either Federally owned, publicly owned, or privately-owned devices or systems used to treat (including recycling and reclamation) either domestic sewage or a combination of domestic sewage and industrial waste or liquid manure.

10. "Vector Attraction" is the characteristic of biosolids that attracts rodents, flies, mosquito's or other organisms capable of transporting infectious agents.

11. "Animals" for the purpose of this permit are domestic livestock.

12. "Annual Whole Sludge Application Rate" is the amount of sewage sludge (dry-weight basis) that can be applied to a unit area of land during a cropping cycle.

13. "Agronomic Rate is the whole sludge application rate (dry-weight basis) designed to: (1) provide the amount of nitrogen needed by the crop or vegetation grown on the land; and (2) minimize the amount of nitrogen in the sewage sludge that passes below the root zone of the crop or vegetation grown on the land to the ground water.

14. "Annual Pollutant Loading Rate" is the maximum amount of a pollutant (dry-weight basis) that can be applied to a unit area of land during a 365-day period.

15. "Application Site or Land Application Site" means all contiguous areas of a users' property intended for sludge application.

16. "Cumulative Pollutant Loading Rate" is the maximum amount of an inorganic pollutant (dry-weight basis) that can be applied to a unit area of land.

17. "Grit and Screenings" are sand, gravel, cinders, other materials with a high specific gravity and relatively large materials such as rags generated during preliminary treatment of domestic sewage at a treatment works and shall be disposed of according to *40 CFR 258*.

18. "High Potential for Public Contact Site" is land with a high potential for contact by the public. This includes, but is not limited to, public parks, ball fields, cemeteries, plant nurseries, turf farms, and golf courses.

19. "Low Potential for Public Contact Site" is the land with a low potential for contact by the public. This includes, but is not limited to, farms, ranches, reclamation areas, and other lands which are private lands, restricted public lands, or lands which are not generally accessible to or used by the public.

20. "Monthly Average" is the arithmetic mean of all measurements taken during the month.

21. "Volatile Solids" is the amount of the total solids in sewage sludge lost when the sludge is combusted at 550 degrees Celsius for 15-20 minutes in the presence of excess air.

**FACT SHEET AND STATEMENT OF BASIS**
**NORTH DAVIS SEWER DISTRICT**
**RENEWAL PERMIT: DISCHARGE, BIOSOLIDS**
**UPDES PERMIT NUMBER: UT0021741**
**UPDES BIOSOLIDS PERMIT NUMBER: UTL-021741**
**MAJOR MUNICIPAL**

## FACILITY CONTACTS

| | | | |
|---|---|---|---|
| Person Name: | Kevin R. Cowan | Person Name: | Kenneth W. Burgener |
| Position: | District Manager | Position: | Laboratory Director |
| Person Name: | Myron K. Bachman | Person Name: | Alan B. Williams |
| Position: | Plant Superintendent | Position: | Biosolids Specialist |
| Person Name: | Jonas Reeder | | |
| Position: | Pretreatment Coordinator | | |

| | |
|---|---|
| Facility Name: | North Davis Sewer District |
| Mailing Address: | 4252 West 2200 South<br>Syracuse, Utah 84075 |
| Telephone: | (801) 825-0712 |
| Actual Address: | 4252 West 2200 South Syracuse, Utah |

## DESCRIPTION OF FACILITY

The North Davis Sewer District Wastewater Treatment Plant (North Davis) is located at 4252 W. 2200 S., Syracuse, Utah. The facility is located approximately ¼ mile south of the Antelope Island Road and near the old shoreline of the Great Salt Lake (GSL). The District serves the municipalities of Clearfield, Clinton, Layton, Roy, Sunset, Syracuse and West Point, portions of unincorporated Davis and Weber Counties, Hill Air Force Base and the Freeport Center. The service area includes a total population of approximately 229,000. The facility finished upgrades and expansions in 2007 and 2016. The process and internal flows were changed from the previous permits. The facility has a design flow of 34 million gallons per day (MGD) with a peak of 65 MGD, and a storm event peak of 102 MGD.

The North Davis facility is a trickling filter/solids contact process. Sewage enters the facility through a flume at the influent of the facility where the flow is measured and recorded by a flow meter. It then passes through mechanical step screens which remove rags, trash, and large debris. The screenings are then conveyed to a screenings washer by vacuum system where they are washed, compacted and disposed at the landfill.

Wastewater continues to flow from the step screens to the Pista Grit chambers where the flow velocity is reduced and grit sedimentation is hydraulically moved to the center of the grit hopper. The settled grit is removed from hoppers at the bottom of the grit hopper with a centrifugal pump and transferred to grit washers. There the grit is washed and moved to a dumpster for disposal at the landfill. Next, the wastewater flows to the influent pump station where it is pumped to the primary clarifiers at the east end of the facility. The four primary clarifiers are made up of two 135 ft. diameter and two 150 ft. diameter clarifiers. From there it flows to the bio-tower pump station and is circulated through the bio-towers. There are two bio-towers that are 120 ft. diameter. In the event of bio-tower failure or repair, the old trickling filters have been left in place and can be placed in service if needed.

The flow then goes to the solids contact basins. There are eight basins, each rated at 370,000 gallon capacity. The use of the basins is controlled by the hydraulic flow and the desired detention time. Effluent from the basins is then directed to the four 160 ft. diameter secondary clarifiers. From the clarifiers the wastewater flows to the four chlorine contact chambers with an approximate volume of 330,000 gallons each.

The treated and disinfected wastewater flows from the chlorine contact basin to an outfall ditch, which is unnamed and flows to the GSL. Effluent sampling is conducted at the chlorine contact basin. The North Davis facility has an alternative discharge point that was added during an expansion in 1985. The alternative discharge point was created when the GSL was at record levels. Additionally, at that time, a dike was constructed around the plant to prevent the GSL from flooding the facility. The alternate discharge point is designed to allow the facility to pump effluent to the lake when the level rises and the effluent can no longer gravity flow to the lake. In such cases, the effluent will be pumped from the chlorine contact chambers to the outfall structure and alternative discharge point. This structure and alternative point can also be used if the chlorine contact chambers are emptied for cleaning. In the event the alternative discharge point is used, the sampling will be conducted at the point of discharge. The effluent discharge pumping system is only installed on the north chlorine contact basin.

In 1958 when the original facility was built, it included a structure for total treatment plant bypass. The structure is still in place and is being maintained for emergency use, such as in the event of receiving flammable or explosive material in the influent. The bypass structure would only be used in the event of an emergency which threatened the health or safety of District personnel, the public, or would be detrimental to the facility or structures. The permit does not authorize a discharge through this bypass structure.

As part of the expansion modifications, the majority of storm generated drainage flows at the facility are directed to the facility's headworks.

The monitoring frequencies for many parameters have changed to be more consistent with the Division of Water Quality's (DWQ) "Monitoring, Recording, and Reporting Guidelines". The guideline indicates that for a facility with a daily effluent flow at the level of North Davis, they should be monitoring daily for the majority of parameters. Based on the compliance history of North Davis, the monitoring frequencies have been increased from three to five times a week in the renewal permit. Those changes are reflected in the Permit and FSSOB.

North Davis has historically monitored the effluent at a frequency greater than the minimum required, and they have expressed concerns with being able to accomplish the minimum monitoring frequencies of 5 times weekly on a year round basis. In the past, North Davis has experienced issues with sample collection during periods of extremely cold temperatures, and have had to discard samples due to freezing conditions. To account for this, and to better define for the public and facility what constitutes noncompliance with the permit, the renewal permit includes a 95% compliance rate for monitoring at a minimum frequency over a year. Specifically, on an annual basis, the facility should be able to complete 95% of the minimum monitoring events required. DWQ will not consider it a violation of the permit if a sample is attempted, but must be rejected prior to analysis.

In approximately 2013, DWQ changed the way it evaluates discharges into the GSL; previous to 2013 a Waste Load Allocation (WLA) was not generated for discharges to the GSL. Permit renewals prior to 2013 had a document declaring the there was a finding of no significant impact for the discharge. For the 2016 renewal, the Division preformed a Level I Antidegradation Review for the GSL discharge.

As a result of the Level I antidegradation review during the 2016 renewal, effluent free cyanide, ammonia, temperature, and chronic WET monitoring were added. The ammonia monitoring required by the anti-

degradation review is separate from the monitoring related to UAC R317-1-3.3, Technology-Based Phosphorous Effluent Limits (TBPEL) Rule. The TBPEL rule requires composite sampling, while the sampling for the GSL Antidegradation Review requires that it be done according to EPA approved compliance monitoring methods which specifies a grab sample.

North Davis is already monitoring whole effluent toxicity (WET) for Acute Toxicity through Acute WET testing. The 2016 permit renewal added the requirement that North Davis also monitor toxicity with chronic WET testing. This was a new monitoring requirement, as opposed to an effluent limit, because, based on the predicted effluent concentrations of the effluent, the effluent does not have reasonable potential for toxicity [UAC R317-8-4.2(4)(a)2.]. WET testing is one of the tools the Division uses to assess whether WET limits are needed to ensure compliance with the Narrative Standards (UAC R317-2-7.2). Based on the WET test results, the Division may determine that additional WET evaluations or WET limits are needed to ensure that the discharge does not have the potential to cause or contribute to a violation of the Narrative Standards.

Because the dilution of North Davis's effluent in the receiving waters is less than 20:1, North Davis will be required to complete a minimum of 10 quarterly chronic WET tests to assist DWQ in determining if chronic toxicity is occurring. The WET testing is being done as a screening tool to identify indicators that may require additional evaluation in accordance with the Interim Methods for Evaluating Use Support for the GSL, Utah Pollution Discharge Elimination System Permits (October 2014). If the results consistently show no chronic toxicity, then additional chronic toxicity testing will not be required beyond the 10 tests.

There have been no major changes at the facility since the pervious permit was issued.

## SUMMARY OF CHANGES FROM PREVIOUS PERMIT

1). **RP Monitoring Changes**

While conducting a reasonable potential review for the renewal, five pollutants warranted further review including copper, chromium, cyanide, free cyanide, and mercury. Additionally, the RP review recommended that the monitoring frequency for copper, cyanide and free cyanide be increased from quarterly to monthly.

| Changes in Effluent Monitoring Frequency | | |
|---|---|---|
| Parameter | Previous Frequency | New Frequency |
| Copper | Quarterly | Monthly |
| Cyanide | Quarterly | Monthly |
| Free Cyanide | Quarterly | Monthly |

2). **TBPEL**

Initial Variance

On December 16, 2014, the Utah Water Quality Board adopted *Utah Administrative Code (UAC) R317-1-3.3, Technology-Based Limits for Controlling Phosphorous Pollution* which establishes new regulations for the discharge of phosphorus to surface waters. The TBPEL Rule is self-implementing and includes the following requirements:

- all non-lagoon wastewater treatment works discharging wastewater to surface waters of the state shall provide treatment processes which will produce effluent less than or equal to an annual mean

of 1.0 mg/L for total phosphorus. This TBPEL shall be achieved by January 1, 2020 unless a variance has been granted by DWQ.

On March 11, 2019, DWQ approved the North Davis variance request allowing an interim total phosphorus annual average limit of 3.0 mg/L, beginning January 1, 2020 and, not to extend beyond January 1, 2022. The 2019 variance and interim limits were incorporated through a permit modification which public noticed both the variance and the modification.

Variance Extension

As part of this permit modification, North Davis has requested an extension of the 2019 Variance to establish a pipeline to a new outfall (003) allowing effluent discharge to Gilbert Bay, rather than Farmington Bay (001). The 2021 Variance extension (2021 extension) request includes:

- effluent limits, operating conditions for the Outfalls;
- deadlines for the creation and submission of plans and reports; and,
- the establishment of habitat monitoring and control efforts at the current outfall 001.

The 2021 extension is being public noticed with this permit modification and, when completed and signed, will be included in Attachment 6 of this FSSOB.

Outfall 003

As part of the 2021 extension to the TBPEL requested by North Davis, a new outfall (Outfall 003) will be added to the permit for the discharge to Gilbert Bay in the GSL. Once completed, 003 will be the primary outfall for the facility and is located north of the Antelope Island Causeway. Effluent to this outfall is pumped from the plant and has a current limit of 34 MGD flow, based on pump capacity. Pump and pipeline construction to the new outfall North Davis will maintain Outfall 001 for the rare occasions when the flow of treated effluent from the facility exceeds the pumping capacity for Outfall 003.

Effluent monitoring will continue to be conducted at the end of the chlorine contact chamber and will serve as the monitoring location until construction is complete. The contact chamber is located prior to pumping to Outfall 003 and outflow to Outfall 001. Once the pump and pump station are built and operating, the regulatory sample point will be moved to the wet well of the pump station for both outfall locations

The same effluent limits and monitoring requirements that are currently conducted for Outfall 001 will be conducted for Outfall 003 once it is activated.

The effluent limits that will be implemented at Outfall 003 are summarized in the table below.

| Outfall 003 Effluent Limitations | | | | |
|---|---|---|---|---|
| Parameter | Maximum Monthly Avg | Maximum Weekly Avg | Daily Minimum | Daily Maximum |
| $BOD_5$, mg/L | 25 | 35 | - | - |
| $BOD_5$ Min. % Removal | 85 | - | - | - |
| TSS, mg/L | 25 | 35 | - | - |
| TSS Min. % Removal | 85 | - | - | - |
| *E. coli*, No./100mL | 126 | 157 | - | - |
| Oil & Grease, mg/L | - | - | - | 10.0 |
| pH, Standard Units | - | - | 6.5 | 9 |

The Level 2 Antidegradation Review (L2ADR) for the new outfall is being public noticed with this permit modification. The completed and signed L2ADR will be included in Attachment 4 of the FSSOB. The L2ADR included a supplemental Report and is included in Attachment 5 of the FSSOB

Outfall 001

Historically the facility has witnessed influent flows that exceed the Outfall 003 effluent pumping capacity limit of 34 MGD during storm events as a result of storm runoff and/or infiltration into the collection system. Without another way to discharge the effluent during these events the treated effluent will back-up into the plant, negatively impacting the quality of the effluent.

To prevent these backups and negative impacts, Outfall 001 will be maintained and permitted to allow for the discharge of excess flow above the 34 MGD limit of outfall 003. Outfall 001 may only be used once the flows through Outfall 003 have reached the maximum pumped flow of 34 MGD. As a result of these conditions, discharges to 001 will be rare and North Davis will typically report "No Discharge" on the discharge monitoring reports for this outfall.

The final limits for Outfall 001 are summarized in a table below,

| Outfall 001 Effluent Limitations | | | | |
|---|---|---|---|---|
| Parameter | Maximum Monthly Avg | Maximum Weekly Avg | Daily Minimum | Daily Maximum |
| Total Flow, MGD<br>November 1 – June 30<br>July 1 – October 31 | <br>-<br>0 | <br>-<br>- | <br>-<br>- | <br>-<br>- |
| $BOD_5$, mg/L | 25 | 35 | - | - |
| TSS, mg/L | 25 | 35 | - | - |
| TRC, mg/L | - | - | - | 2.5 |
| *E. coli*, No./100mL | 126 | 157 | - | - |
| pH, Standard Units | - | - | 6.5 | 9 |

Discharges from Outfall 001 will also be limited to an annual phosphorus loading limit.

| Outfall 001 | |
|---|---|
| Final Mass Loading Limits | |
| Parameter | Annual Loading |
| Total Phosphorus, lbs./Year | 6,500 |

Since the discharges from Outfall 001 should only occur in rare circumstances and will usually be small relative to the discharge at 003, monitoring frequency at 001 is as follows:

- *E.coli*, pH, BOD, and TSS will be the same as for Outfall 003, 5 times weekly;
- Ammonia, and Phosphorus will be daily.

North Davis has indicated that they will install an extra sampler and meter at the overflow that will collect a flow proportioned sample anytime the discharge occurs, which mean they will just have to note that the flow happened and collect it from the sampler.

North Davis has also noted that when the submit monthly report through NetDMR, they will attach a report of all the monitoring, including a new space for the flow though Outfall 001. This will allow DWQ to review the estimate of volume discharged from 001.

| Final Self-Monitoring and Reporting Requirements | | |
|---|---|---|
| Parameter | Frequency | |
| | Outfall 001 | Outfall 003 |
| Total Flow | Continuous | Continuous |
| $BOD_5$ | 5 Times Weekly | 5 Times Weekly |
| TSS | 5 Times Weekly | 5 Times Weekly |
| *E. coli* | 5 Times Weekly | 5 Times Weekly |
| pH | 5 Times Weekly | 5 Times Weekly |
| Total Ammonia (as N) | Daily | Weekly |
| Total Phosphorus (as N) | Daily | Weekly |

3). Biosolids

In 2020 North Davis requested that the biosolids be considered as meeting the requirements of a PSRP after dewatering and without the need to further process them onsite at the farm in Weber County prior to land applying.

Under the EPA 40 CFR Part 503 A. 3, Appendix B, A. 1. the regulations indicate that if sewage sludge is treated through a process in the absence of air for a specific mean cell residence time at a specific temperature (values for the mean cell residence time and temperature shall be between 15 days at 35 to 55 °C and 60 days at 20 °C), the biosolids produced meet the Class B requirements through anaerobic digestion. Through the information provided by North Davis, it has been proven that North Davis treats the biosolids for at least 30 days at 37 ° C or greater. This is well within the range required by anaerobic digestion. The requested change was approved in May of 2013 and is being included in the renewal permit.

4). Storm water

Storm Water permit provisions have been removed as part of a programmatic separation of the previously combined UPDES Industrial permit. North Davis will now be required to apply for and obtain separate UPDES Industrial Storm Water Permit coverage under the MSGP No. UTR000000, or an applicable exemption, as described further in the Storm Water Requirements section of this Fact Sheet.

## DISCHARGE

### DESCRIPTION OF DISCHARGE

The North Davis has been reporting self-monitoring results on Discharge Monitoring Reports on a monthly basis. A summary of the last 3 years of data is attached and there were no violations.

| Outfall | Description of Discharge Point |
|---|---|
| 001 | Located at latitude 40°05'04" and longitude 112°06'30". The discharge is through a 54-inch diameter gravity flow concrete pipe leading from the chlorine contact basin to an unnamed irrigation return drainage ditch and thence to the Great Salt Lake. |
| 003 | Located near latitude 41°04'44" and longitude 112°12'14". The discharge is from the Pump Building through a 63-inch diameter pipe to Gilbert Bay and the Great Salt Lake. |

### RECEIVING WATERS AND STREAM CLASSIFICATION

The final discharge is to the west of the causeway to Antelope Island to the Gilbert Bay and the Great Salt Lake (Class 5A, 5E) with a secondary outfall to an unnamed irrigation return drainage ditch (Class 2B, 3E)

to Farmington Bay (Class 5D, 5E) and ultimately ends up in the Great Salt Lake according to *Utah Administrative Code (UAC) R317-2-13*:

Class 2B -- Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing.

Class 3E -- Severely habitat-limited waters. Narrative standards will be applied to protect these waters for aquatic wildlife.

Class 5A Gilbert Bay
Geographical Boundary -- All open waters at or below approximately 4,208-foot elevation south of the Union Pacific Causeway, excluding all of the Farmington Bay south of the Antelope Island Causeway and salt evaporation ponds.
Beneficial Uses -- Protected for frequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain.

Class 5E Transitional Waters along the Shoreline of the Great Salt Lake Geographical Boundary –
Geographical Boundary -- All waters below approximately 4,208-foot elevation to the current lake elevation of the open water of the Great Salt Lake receiving their source water from naturally occurring springs and streams, impounded wetlands, or facilities requiring a UPDES permit. The geographical areas of these transitional waters change corresponding to the fluctuation of open water elevation.
Beneficial Uses -- Protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain.

Class 5D Farmington Bay
Geographical Boundary -- All open waters at or below approximately 4,208-foot elevation east of Antelope Island and south of the Antelope Island Causeway, excluding salt evaporation ponds.
Beneficial Uses -- 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. The oil and grease is based on best professional judgment (BPJ). Included in Attachment 3 is the Anti-degradation Review (ADR) Level I, and Wasteload Analysis for this discharge into Farmington Bay and Gilbert Bay. It has been determined that this discharge will not cause a violation of water quality standards. The permittee is expected to be able to comply with these limitations.

**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

A copy of the RP analysis is included in Attachment 4 at the end of this Fact Sheet Statement of Basis.

The permit limitations are:

| Outfall 001 | | | | | |
|---|---|---|---|---|---|
| Parameter | Effluent Limitations [1] | | | | |
| | Maximum Monthly Avg | Maximum Weekly Avg | Yearly Average | Daily Minimum | Daily Maximum |
| Interim limits, June 1, 2021 through December 31, 2025 (OR when 003 is activated) | | | | | |
| $BOD_5$, mg/L<br>$BOD_5$ Min. % Removal | 25<br>85 | 35<br>- | - | - | - |
| TSS, mg/L<br>TSS Min. % Removal | 25<br>85 | 35<br>- | - | - | - |
| TRC, mg/L | - | - | - | - | 2.5 |
| Phosphorus, mg/L (as P) | - | - | 3.0 | - | - |
| *E. coli*, No./100mL | 126 | 157 | - | - | - |
| Oil & Grease, mg/L | - | - | - | - | 10.0 |
| pH, Standard Units | - | - | - | 6.5 | 9 |
| Final limits, January 1, 2026 (OR when 003 is activated) | | | | | |
| Total Flow, MGD<br>November 1 – June 30<br>July 1 – October 31 | <br>- [2]<br>0 [3] | <br>-<br>- | <br>-<br>- | <br>-<br>- | <br>-<br>- |
| $BOD_5$, mg/L<br>$BOD_5$ Min. % Removal | 25<br>85 | 35<br>- | - | - | - |
| TSS, mg/L<br>TSS Min. % Removal | 25<br>85 | 35<br>- | - | - | - |
| TRC, mg/L | - | - | - | - | 2.5 |
| *E. coli*, No./100mL | 126 | 157 | - | - | - |
| Oil & Grease, mg/L | - | - | - | - | 10.0 |
| pH, Standard Units | - | - | - | 6.5 | 9 |
| Mass Loading Limits | | | | | |
| | Maximum Monthly Avg | Maximum Weekly Avg | Annual Loading | Daily Minimum | Daily Maximum |
| Total Phosphorus, lbs./Year | - | - | 6,500 | - | - |

[1] See Definitions, Part VIII, for definition of terms.
[2] North Davis may discharge to Outfall No. 001 from November 1 through June 30, only if an instantaneous plant effluent is being measured at greater than 34 MGD. If discharge is occurring to Outfall No. 001, North Davis shall maintain a minimum instantaneous pumping rate of 34 MGD to Outfall No. 003 at all times discharge to Outfall No. 001 is occurring, as per the Variance Part 13, d, ii and iii
[3] North Davis shall have no discharge to Outfall No. 001 from July 1 through October 31 excepting flows in excess of 34 MGD caused by high flow environmental events, as per the Variance Part 13, d, iv

| Outfall 003 | | | | | |
|---|---|---|---|---|---|
| Parameter | Effluent Limitations [1] | | | | |
| | Maximum Monthly Avg | Maximum Weekly Avg | Annual Average | Daily Minimum | Daily Maximum |
| Total Flow | 34 | - | - | - | - |
| $BOD_5$, mg/L | 25 | 35 | - | - | - |
| $BOD_5$ Min. % Removal | 85 | - | - | - | - |
| TSS, mg/L | 25 | 35 | - | - | - |
| TSS Min. % Removal | 85 | - | - | - | - |
| *E. coli*, No./100mL | 126 | 157 | - | - | - |
| Oil & Grease, mg/L | - | - | - | - | 10.0 |
| pH, Standard Units | - | - | - | 6.5 | 9 |

**SELF-MONITORING AND REPORTING REQUIREMENTS**

The following self-monitoring requirements are updated from the previous permit. While conducting a reasonable potential review for the renewal five pollutants warranted further review. As a result of the review it was recommended that the monitoring frequency for copper, cyanide and free cyanide be increased. As a result, the monitoring frequency for each of these pollutants will be increased from quarterly to monthly.

The permit will require reports to be submitted monthly and annually, as applicable, on Discharge Monitoring Report (DMR) forms due 28 days after the end of the monitoring period. Effective January 1, 2017, monitoring results must be submitted using NetDMR unless the permittee has successfully petitioned for an exception. Lab sheets for biomonitoring must be attached to the biomonitoring DMR. Lab sheets for metals and toxic organics must be attached to the DMRs.

| Self-Monitoring and Reporting Requirements [1] | | | |
|---|---|---|---|
| Outfall 001 | | | |
| Parameter | Frequency [4] | Sample Type | Units |
| Interim Self-Monitoring and Reporting Requirements, June 1, 2021 through December 31, 2025 (OR when 003 is activated) | | | |
| Total Flow [5], [6] | Continuous | Recorder | MGD |
| $BOD_5$, Influent [7] | 5 Times Weekly | Composite | mg/L |
| Effluent | 5 Times Weekly | Composite | mg/L |
| TSS, Influent [7] | 5 Times Weekly | Composite | mg/L |
| Effluent | 5 Times Weekly | Composite | mg/L |
| DO | 5 Times Weekly | Grab | mg/L |
| *E. coli* | 5 Times Weekly | Grab | No./100mL |
| pH | 5 Times Weekly | Grab | SU |
| Total Ammonia (as N) | Weekly | Grab | mg/L |

[4] To demonstrate compliance with this permit, North Davis will complete at least 95% of the attempted required monitoring events required during the year.

[5] Flow measurements of influent/effluent volume shall be made in such a manner that the permittee can affirmatively demonstrate that representative values are being obtained.

[6] If the rate of discharge is controlled, the rate and duration of discharge shall be reported.

[7] In addition to monitoring the final discharge, influent samples shall be taken and analyzed for this constituent at the same frequency as required for this constituent in the discharge.

| Self-Monitoring and Reporting Requirements [1] | | | |
|---|---|---|---|
| Outfall 001 | | | |
| Parameter | Frequency [4] | Sample Type | Units |
| WET – Acute Biomonitoring (Screening Only) | Quarterly | Composite | Pass/Fail |
| WET – Chronic Biomonitoring [8] (Screening Only) | Quarterly | Composite | Pass/Fail |
| Oil & Grease [9] | Monthly | Grab | mg/L |
| Copper | Monthly | Composite | mg/L |
| Cyanide, Effluent | Monthly | Composite | mg/L |
| Free Cyanide, [10] Effluent | Monthly | Composite | mg/L |
| Metals, Influent ,[7]<br>Effluent | 4 x Yearly [11]<br>4 x Yearly [11] | Composite/Grab<br>Composite/Grab | mg/L<br>mg/L |
| Organic Toxics, Influent ,[7]<br>Effluent | Yearly [11]<br>Yearly [11] | Composite/Grab<br>Composite/Grab | mg/L<br>mg/L |
| TBPEL Rule Monitoring [12] | | | |
| Total Ammonia (as N) | Monthly | Composite | mg/L |
| Orthophosphate, (as P)<br>Effluent | Monthly | Composite | mg/L |
| Phosphorus, Total<br>Influent<br>Effluent | Monthly<br>Monthly | Composite<br>Composite | mg/L<br>mg/L |
| Total Kjeldahl Nitrogen, TKN (as N)<br>Influent<br>Effluent | Monthly<br>Monthly | Composite<br>Composite | mg/L<br>mg/L |
| Nitrate, NO3 | Monthly | Composite | mg/L |
| Nitrite, NO2 | Monthly | Composite | mg/L |
| Final Self-Monitoring and Reporting Requirements, January 1, 2026 (OR when 003 is activated) | | | |
| Flow [13] | Continuous | Recorder | MGD |

[8] North Davis will be required to complete 10 chronic WET tests to determine if chronic toxicity is occurring. If the results show no toxicity, then additional chronic testing will not be required beyond the 10 tests. $TU_c$ is calculated by dividing the receiving water effluent concentration determined in accordance with R317-2-5 by the chronic test $IC_{25}$. The $TU_c$ is an indicator and an exceedance is not used for determining compliance.

[9] Oil & Grease sampled when sheen is present or visible. If no sheen is present or visible, report NA.

[10] Free cyanide is a subset of total cyanide and in most situations; total cyanide will overestimate the free cyanide concentrations. Monitoring for free cyanide is a new requirement for the upcoming permit cycle to support future comparisons and reasonable potential evaluations. It will be sampled at the same frequency as other metals are sampled.

[11] The sampling for metals is based on the Guidance for Determining Monitoring Frequencies for the Pretreatment Program, which was developed by Region VIII and is dated October 15, 1998. The guidance indicates that sampling for metals should be four (4) times a year currently this frequency seems adequate.

[12] These reflect changes required with the adoption of UCA R317-1-3.3, Technology-based Phosphorus Effluent Limits rule.

[13] North Davis may discharge to Outfall No. 001 from November 1 through June 30, only if an instantaneous plant effluent is being measured at greater than 34 MGD. If discharge is occurring to Outfall No. 001, North Davis shall maintain a minimum instantaneous pumping rate of 34 MGD to Outfall No. 003 at all times discharge to Outfall No. 001 is occurring (Variance Part 13, d, ii and iii). North Davis shall have no discharge to Outfall No. 001 from July 1

| Self-Monitoring and Reporting Requirements [1] | | | |
|---|---|---|---|
| Outfall 001 | | | |
| Parameter | Frequency [4] | Sample Type | Units |
| $BOD_5$, Effluent | 5 Times Weekly | Composite | mg/L |
| TSS, Effluent | 5 Times Weekly | Composite | mg/L |
| *E. coli* | 5 Times Weekly | Grab | No./100mL |
| pH | 5 Times Weekly | Grab | SU |
| Total Ammonia (as N) | Daily | Composite | mg/L |
| Total Phosphorus (as N) | Daily | Composite | mg/L |

| Self-Monitoring and Reporting Requirements [1] | | | |
|---|---|---|---|
| Outfall 003 | | | |
| Parameter | Frequency [4] | Sample Type | Units |
| Total Flow [5], [6] | Continuous | Recorder | MGD |
| $BOD_5$, Influent [7]<br>Effluent | 5 Times Weekly<br>5 Times Weekly | Composite<br>Composite | mg/L<br>mg/L |
| TSS, Influent [7]<br>Effluent | 5 Times Weekly<br>5 Times Weekly | Composite<br>Composite | mg/L<br>mg/L |
| DO | 5 Times Weekly | Grab | mg/L |
| *E. coli* | 5 Times Weekly | Grab | No./100mL |
| pH | 5 Times Weekly | Grab | SU |
| Total Ammonia (as N) | Weekly | Grab | mg/L |
| WET – Acute Biomonitoring (Screening Only) | Quarterly | Composite | Pass/Fail |
| WET – Chronic Biomonitoring [14] (Screening Only) | Quarterly | Composite | Pass/Fail |
| Oil & Grease [9] | Monthly | Grab/Visual | mg/L |
| Copper | Monthly | Composite/Grab | mg/L |
| Cyanide, Effluent | Monthly | Composite/Grab | mg/L |
| Free Cyanide, [10] Effluent | Monthly | Composite/Grab | mg/L |
| Metals, Influent [7]<br>Effluent | 4 x Yearly [11]<br>4 x Yearly [11] | Composite/Grab<br>Composite/Grab | mg/L<br>mg/L |
| Organic Toxics, Influent [7]<br>Effluent | Yearly [11]<br>Yearly [11] | Composite/Grab<br>Composite/Grab | mg/L<br>mg/L |
| TBPEL Rule Monitoring [12] | | | |
| Total Ammonia, Effluent | Monthly | Composite | mg/L |
| Orthophosphate, (as P) Effluent | Monthly | Composite | mg/L |
| Phosphorus, Total<br>Influent<br>Effluent | <br>Monthly<br>Monthly | <br>Composite<br>Composite | <br>mg/L<br>mg/L |

through October 31 excepting flows in excess of 34 MGD caused by high flow environmental events (Variance Part 13, d, iv)

[14] North Davis will be required to complete 10 chronic WET tests to determine if chronic toxicity is occurring. If the results show no toxicity, then additional chronic testing will not be required beyond the 10 tests. $TU_c$ is calculated by dividing the receiving water effluent concentration determined in accordance with R317-2-5 by the chronic test $IC_{25}$. The $TU_c$ is an indicator and an exceedance is not used for determining compliance.

| Self-Monitoring and Reporting Requirements [1] | | | |
|---|---|---|---|
| Outfall 003 | | | |
| Parameter | Frequency [4] | Sample Type | Units |
| Total Kjeldahl Nitrogen, TKN (as N)<br>Influent<br>Effluent | <br>Monthly<br>Monthly | <br>Composite<br>Composite | <br>mg/L<br>mg/L |
| Nitrate, NO3 | Monthly | Composite | mg/L |
| Nitrite, NO2 | Monthly | Composite | mg/L |

1. Compliance Schedule

   a. Compliance Schedule for the Variance to the TBPEL Rule.

      (1) NDSD shall prepare and comply with a Director approved Outfall No. 001 receiving water study and monitoring plan. The Outfall No. 001 receiving water study and monitoring plan shall evaluate the effectiveness of phragmites treatment in Farmington Bay by tracking changes in wetland vegetation following the treatment program. The Outfall No. 001 receiving water study shall be submitted to DWQ for approval no later than February 1, 2023. (Variance Part 13, e).

      (2) NDSD shall prepare and comply with a DWQ Director approved Outfall No. 003 receiving water study and monitoring plan. The Outfall No. 003 receiving water study shall be submitted to DWQ for approval no later than February 1, 2023. (Variance Part 13, i).

      (3) By no later than February 1, 2023, NDSD shall submit to DWQ a Board resolution supporting the Outfall 001 Phragmites control. The resolution shall include the approximate budget for the construction work and phragmites control work. (Variance Part 13, m).

      (4) Beginning no later than March 1, 2022, and for every year thereafter while this variance is in effect, NDSD agrees to submit to DWQ an annual report relating to its phosphorus discharges (the "Annual Report"). (Variance Part 13, n).

## BIOSOLIDS

For clarification purposes, sewage sludge is considered solids, until treatment or testing shows that the solids are safe, and meet beneficial use standards. After the solids are tested or treated, the solids are then known as biosolids. Class A biosolids, may be used for high public contact sites, such as home lawns and gardens, parks, or playing fields, etc. Class B biosolids may be used for low public contact sites, such as farms, rangeland, or reclamation sites, etc.

### DESCRIPTION OF TREATMENT AND DISPOSAL

Primary sedimentation solids and thickened waste secondary sludge are anaerobically digested. Digested solids are mechanically dewatered with belt filter presses and then stored in drying beds. Biosolids in the drying beds are transported to the drying pad on a regular basis to minimize odor potential at the plant site. The solids may be windrowed and turned to achieve additional drying on the concrete storage pad. Solids

on the storage pad continue to dry and are exposed to sun and environmental elements to complete the Class B biosolids stabilization process.

The Permittee submitted their 2019 annual biosolids report on February 3, 2020. The report states the Permittee produced 2109 dry metric tons (DMT) of solids.

**SELF-MONITORING REQUIREMENTS**

Under *40 CFR 503.16(a)(1),* the self-monitoring requirements are based upon the amount of biosolids disposed per year and shall be monitored according to the chart below.

| Minimum Frequency of Monitoring (40 CFR Part 503.16, 503.26. and 503.46) | | |
|---|---|---|
| Amount of Biosolids Disposed Per Year | | Monitoring Frequency |
| Dry US Tons | Dry Metric Tons | Per Year or Batch |
| > 0 to < 320 | > 0 to < 290 | Once Per Year or Batch |
| > 320 to < 1650 | > 290 to < 1,500 | Once a Quarter or Four Times |
| > 1,650 to < 16,500 | > 1,500 to < 15,000 | Bi-Monthly or Six Times |
| > 16,500 | > 15,000 | Monthly or Twelve Times |

Over the last decade North Davis has produced an average of 2574 DMT of biosolids annually therefore they would need to sample bi-monthly or six (6) times a year, however, North Davis requested, and was granted a reduction in the monitoring frequency for the biosolids. They are only required to sample quarterly at a minimum.

Landfill Monitoring

Under *40 CFR 258,* the landfill monitoring requirements include a paint filter test. If the biosolids do not pass a paint filter test, the biosolids cannot be disposed in the sanitary landfill *(40 CFR 258.28(c)(1).*

**BIOSOLIDS LIMITATIONS**

Heavy Metals

Class A Biosolids for Home Lawn and Garden Use

The intent of the heavy metal's 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. C.* of the permit) to made available 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 to 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 not exceed the maximum heavy metals in Table 1 and the monthly average pollutant concentrations in Table 3 (see 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. C*. 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 biosolids are only applied to land owned by the permittee, the information sheet requirements are waived). If the biosolids are land applied according to the regulations of *40 CFR 503.13*, 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 listed in *40 CFR Part 503.13(b) Table 1* and the heavy metals loading rates in *40 CFR Part 503.13(b) Table 2*; or
>
> The maximum heavy metals in *40 CFR Part 503.13(b) Table 1* and the monthly heavy metals concentrations in *40 CFR Part 503.13(b) Table 3*.

**Tables 1, 2, 3 and 4** of Heavy Metal Limitations

| Pollutant Limits, (40 CFR Part 503.13(b)) Dry Mass Basis | | | | |
|---|---|---|---|---|
| Heavy Metals | **Table 1** | **Table 2** | **Table 3** | **Table 4** |
| | Ceiling Conc. Limits [15], [16] (mg/kg) | CPLR [17], (mg/ha) | Pollutant Conc. Limits (mg/kg) | APLR [18], (mg/ha-yr) |
| Total Arsenic | 75 | 41 | 41 | 2.0 |
| Total Cadmium | 85 | 39 | 39 | 1.9 |
| Total Copper | 4300 | 1500 | 1500 | 75 |
| Total Lead | 840 | 300 | 300 | 15 |
| Total Mercury | 57 | 17 | 17 | 0.85 |
| Total Molybdenum | 75 | N/A | N/A | N/A |
| Total Nickel | 420 | 420 | 420 | 21 |
| Total Selenium | 100 | 100 | 100 | 5.0 |
| Total Zinc | 7500 | 2800 | 2800 | 140 |

Any violation of these limitations shall be reported in accordance with the requirements of Part III.F.1. of the permit. If the biosolids do not meet these requirements they cannot be land applied.

[15] The limitations represent the maximum allowable levels of heavy metals in any biosolids intended for land application

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

[17] CPLR -- Cumulative Pollutant Loading Rate

[18] APLR – Annual Pollutant Loading Rate

Pathogens

The Pathogen Control class listed in the table below must be met;

| Pathogen Control Class | |
|---|---|
| 503.32 (a)(1) - (5), (7),-(8), Class A | 503.32 (b)(1) - (5), Class B |
| B Salmonella species –less than three (3) MPN[19] per four (4) grams total solids (DWB)[20] or Fecal Coliforms – less than 1,000 MPN per gram total solids (DWB). | Fecal Coliforms – less than 2,000,000 MPN or CFU[21] per gram total solids (DWB). |
| 503.32 (a)(6) Class A—Alternative 4 | |
| Salmonella species –less than three (3) MPN per four (4) grams total solids (DWB) or less than 1,000 MPN Fecal Coliforms per gram total solids (DWB),<br>And – Enteric viruses –less than one (1) plaque forming unit per four (4) grams total solids (DWB)<br>And - Viable helminth ova –less than one (1) per four (4) grams total solids (DWB) | |

Class A Requirements for Home Lawn and Garden Use
If biosolids are land applied to home lawns and gardens, the biosolids need to be treated by a specific process to further reduce pathogens (PFRP), and meet a microbiological limit of less than less than 3 most probable number (MPN) of *Salmonella* per 4 grams of total solids (or less than 1,000 most probable number (MPN/g) of fecal coliform per gram of total solids) to be considered Class A biosolids.

North Davis has chosen to not treat the biosolids through a PFRP to meet Class A biosolids requirements, as the biosolids are nor intended for land application on home lawns or gardens.

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 Class A standards with respect to pathogens. If the biosolids do not meet Class A pathogen standards the biosolids cannot be sold or given away to the public, and the permittee will need find another method of beneficial use or disposal.

Pathogens Class B
If biosolids are to be land applied for agriculture or land reclamation the solids need to be treated by a specific process to significantly reduce pathogens (PSRP).

North Davis has chosen to meet the PSRP through the following methods:

1. Under *40 CFR 503.32 (b)(2)*, North Davis may test the biosolids and must meet a microbiological limit of less than 2,000,000 MPN of fecal coliform per gram for the biosolids to be considered Class B biosolids with respect to pathogens.

[19] MPN – Most Probable Number
[20] DWB – Dry Weight Basis.
[21] CFU – Colony Forming Units

2. Under *40 CFR 503.32 (b)(3), Appendix B, A.3* The PSRP may be accomplished by treating the sewage sludge by a process in the absence of air for a specific mean cell residence time at a specific temperature (values for the mean cell residence time and temperature shall be between 15 days at 35 to 55 °C and 60 days at 20 °C), If done so, the biosolids meet the Class B requirements through anaerobic digestion

Vector Attraction Reduction (VAR)
If the biosolids are land applied, North Davis will be required to meet VAR through the use of a method of listed under *40 CFR 503.33.*

North Davis intends to meet the vector attraction reduction requirements through the method listed below.

- Under *40 CFR 503.33(b)(1),* the solids need to be treated through anaerobic digestion for at least 15 days at a temperature of a least 35° C (95° F) with a 38% reduction of volatile solids.

If the biosolids do not meet a method of VAR, the biosolids cannot be land applied.

If the permittee intends to use another one of the listed alternatives in *40 CFR 503.33*, the Director and the EPA must be informed at least thirty (30) days prior to its use. This change may be made without additional public notice

Landfill Monitoring
Under *40 CFR 258,* the landfill monitoring requirements include a paint filter test to determine if the biosolids exhibit free liquid. If the biosolids do not pass a paint filter test, the biosolids cannot be disposed in the sanitary landfill *(40 CFR 258.28(c)(1).*

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 must be maintained are dependent on the quality of the biosolids in regards to the metals concentrations. If the biosolids continue to meet the metals limits of *Table 3* of *40 CFR 503.13*, and are sold or given away the records must be retained for a minimum of five years. If the biosolids are disposed in a landfill the records must retained for a minimum of five years.

Reporting
North Davis must report annually as required in *40 CFR 503.18*. This report is to include the results of all monitoring performed in accordance with *Part III.B* of the permit, information on management practices, biosolids treatment, and certifications. This report is due no later than February 19 of each year. Each report is for the previous calendar year.

## MONITORING DATA

METALS MONITORING DATA
North Davis is required to sample for metals at least six (6) times. They sampled the Class B biosolids at least 6 times a year. All biosolids land applied has met *Table 3* of *40 CFR 503.13*. The monitoring data is below.

North Davis Metals Monitoring Data

| North Davis Monitoring Data, 2010 - 2019 | | | |
|---|---|---|---|
| Parameter | Table 3, mg/kg (Exceptional Quality) | Average, mg/kg | Maximum, mg/kg |
| Arsenic | 41.0 | 24.2 | 41.4 |
| Cadmium | 39.0 | 3.82 | 8.79 |
| Copper | 1,500.0 | 963 | 1410 |
| Lead | 300.0 | 24.5 | 80 |
| Mercury | 17.0 | 1.28 | 8.92 |
| Molybdenum | 75.0 | 11.59 | 32 |
| Nickel | 400.0 | 25.4 | 51.3 |
| Selenium | 36.0 | 13.56 | 44.1 |
| Zinc | 2,800.0 | 786 | 1400 |

**PATHOGEN MONITORING DATA**

North Davis is required to monitor the biosolids 42 times (six events of seven samples each) for pathogens, and they have done that. The summary of the monitoring data is below. All biosolids land applied have met the Class B pathogen standards through anaerobic digestion.

North Davis Fecal Coliform Monitoring Results.

| North Davis Fecal Coliform Monitoring Results | | |
|---|---|---|
| Year | Geometric Mean | Maximum |
| 2019 | 4667 | 109000 |
| 2018 | 3845 | 7000 |
| 2017 | 3845 | 7000 |
| 2016 | 3845 | 7000 |
| 2015 | 9414 | 18400 |
| 2014 | 19809 | 1672283 |
| 2013 | 10666 | 74142 |
| 2012 | 7909 | 433959 |
| 2011 | 14837.04716 | 1800000 |
| 2010 | 1 | 1 |

## STORM WATER

Separate storm water permits may be required based on the types of activities occurring on site.

Previously storm water discharge requirements and coverage were combined in this individual permit. These have been separated to provide consistency among permittees, electronic reporting for storm water discharge monitoring reports, and increase flexibility to changing site conditions.

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 for the It is required to obtain a construction storm water permit during the period of construction.

Information on storm water permit requirements can be found at http://stormwater.utah.gov

## PRETREATMENT REQUIREMENTS

The pretreatment requirements, regarding administering an approved pretreatment program, remain the same as in the current permit. 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 conducted quarterly and the sampling of organic toxics yearly, see Part II of the UPDES Permit. This is consistent with the guidance developed by the Division of Water Quality. Additional requirements have been added to the permit to ensure that if the allowable headworks loading is above the value calculated for the local limit development that additional monitoring and notification must occur.
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. The permittee should utilize the EPA Local Limits Development Guidance to justify the re-evaluation of the local limits.

## 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. 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.

The permittee is a minor municipal facility that will be discharging an infrequent amount of effluent, in which toxicity is neither an existing concern, nor likely to be present. Also, the receiving irrigation ditch is regularly dry; therefore there is not any available data to conclude that the irrigation ditch is impaired. Based on these considerations, and the absence of receiving stream water quality monitoring data, there is no reasonable potential for toxicity in the permittee's discharge (per State of Utah Permitting and Enforcement Guidance Document for WET Control). As such, there will be no numerical WET limitations or WET monitoring requirements in this permit. However, the permit will contain a toxicity limitation re-opener provision that allows for modification of the permit should additional information indicate the presence of toxicity in the discharge.

## TOTAL MAXIMUM DAILY LOAD REQUIREMENTS

North Davis discharges wastewater into Farmington Bay and Gilbert Bay neither of which has been identified as impaired. According to the 2018/2020 Combined Integrated Report there is no evidence of impairment for Gilbert Bay and the Great Salt Lake, and there is insufficient data to fully assess Farmington Bay and identify if it is impaired or not.

If the water body's do get listed as a result of the 303(d)-assessment process, and a TMDL study is completed, the results of the TMDL process will be included as applicable into the UPDES

permit, as required by 40 CFR Part 130.

## PERMIT DURATION

It is recommended that this permit be effective for a duration of no greater than five (5) years.

Drafted by
Daniel Griffin, Discharge, Biosolids, Reasonable Potential Analysis
Jennifer Robinson, Pretreatment
Lonnie Shull, Biomonitoring
Carl Adams, Storm Water
Chris Bittner, Level 1 Antidegradation Review and Wasteload Analysis
Utah Division of Water Quality, (801) 536-4300

**PUBLIC NOTICE**

Began: April 2, 2021
Ended: May 3, 2021

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 was published in the Standard Examiner.

During the public comment period provided under R317-8-6.5, any interested person may submit written comments on the draft permit and 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 R317-8-6.12.

Addendum to the FSSOB,

During the public comment period the permittee noted that the biosolids monitoring frequency was bi-monthly, but back in 2016 they had requested, and been granted a reduction in the minimum biosolids monitoring frequency to quarterly. The frequency in the permit will be reduced to match the frequency in the previous permit. This is being considered a minor, typographical error and the permit will not be republic noticed.

The National Autobahn Society (NAS) submitted comments on the Variance to the TBPEL Rule (Variance) during the public comment period. To summarize, the comments were specifically related to modifying the Variance to allow more water to be discharged from Outfall 001 into Farmington Bay, and request more studies and monitoring of the bird habitat in Farmington Bay to determine the impact of moving the discharge point has on the birds in the Farmington Bay. The NAS then submitted a letter withdrawing the comments and indicating they plan to work with NDSD and DWQ to study the impacts of the outfall location change, and phragmites treatment. The result of the withdrawal of the submitted comments is that the permit and FSSOB are being handled as if there were no comments and the Permit will be signed with no major changes.

The comments letter was identified by DWQ as document number DWQ-2021-008329. The letter withdrawing the comments was identified by DWQ as document number DWQ-2021-008486.

DWQ-2021-000602

# ATTACHMENT 1

*Effluent Monitoring Data*

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# Effluent Monitoring Data.

| | Flow | | pH | | O & G | TRC | *E. coli* | | BOD5 | | TSS | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Month | Ave | Max | Min | Max | Max | Max | Acute | Chronic | Ave | Max | Ave | Max |
| Jan-13 | 18.8 | 20.2 | 7.5 | 7.7 | 1.7 | 1.2 | 10 | 6 | 5 | 6 | 7 | 8 |
| Feb-13 | 21.3 | 22.9 | 7.6 | 7.7 | 1.7 | 1.1 | 13 | 8 | 7 | 9 | 7 | 7 |
| Mar-13 | 24.3 | 28.6 | 7.5 | 7.7 | 1.7 | 1.1 | 11 | 9 | 17 | 21 | 7 | 9 |
| Apr-13 | 20.2 | 21.2 | 7.5 | 7.7 | 1.7 | 1.2 | 20 | 12 | 19 | 21 | 7 | 8 |
| May-13 | 21.4 | 25.5 | 7.4 | 7.6 | 1.7 | 1.3 | 9 | 7 | 18 | 21 | 10 | 11 |
| Jun-13 | 20.5 | 22.1 | 7.5 | 7.7 | 1.4 | 1 | 12 | 7 | 18 | 21 | 11 | 14 |
| Jul-13 | 20.2 | 22.3 | 7.4 | 7.7 | 1.4 | 1.3 | 10 | 8 | 10 | 11 | 14 | 16 |
| Aug-13 | 19.6 | 20.8 | 7.5 | 7.6 | 1.4 | 1.2 | 13 | 7 | 8 | 10 | 8 | 9 |
| Sep-13 | 20 | 21.8 | 7.6 | 7.8 | 1.4 | 1.1 | 78 | 15 | 11 | 12 | 8 | 9 |
| Oct-13 | 17.9 | 19 | 7.5 | 7.7 | 1.7 | 0.9 | 11 | 8 | 9 | 11 | 8 | 8 |
| Nov-13 | 17.2 | 18.1 | 7.5 | 7.7 | 1.7 | 0.9 | 10 | 8 | 9 | 10 | 8 | 10 |
| Dec-13 | 17.2 | 20.4 | 7.2 | 7.6 | 1.4 | 1.2 | 10 | 12 | 9 | 10 | 10 | 18 |
| Jan-14 | 17.5 | 19.9 | 7.3 | 7.5 | 1.4 | 0.8 | 29 | 6 | 7 | 8 | 8 | 9 |
| Feb-14 | 20.3 | 22.6 | 7.4 | 7.6 | 1.4 | 1 | 43 | 19 | 8 | 10 | 8 | 8 |
| Mar-14 | 20.8 | 27.4 | 7.4 | 7.7 | 1.7 | 1 | 30 | 10 | 7 | 8 | 9 | 10 |
| Apr-14 | 19.1 | 21.2 | 7.4 | 7.6 | 1.4 | 1.5 | 8 | 6 | 8 | 9 | 9 | 10 |
| May-14 | 20.2 | 22.7 | 7.4 | 7.5 | 1.4 | 1.3 | 9 | 6 | 7 | 9 | 8 | 10 |
| Jun-14 | 20.6 | 23 | 7.5 | 7.6 | 1.4 | 1 | 16 | 8 | 8 | 10 | 8 | 9 |
| Jul-14 | 20.5 | 22.3 | 7.5 | 7.8 | 1.4 | 1.5 | 10 | 7 | 9 | 10 | 12 | 13 |
| Aug-14 | 21 | 21.9 | 7.6 | 7.7 | 1.2 | 1.3 | 17 | 14 | 8 | 9 | 9 | 10 |
| Sep-14 | 20.2 | 23.2 | 7.5 | 7.7 | 1.4 | 1.1 | 12 | 8 | 7 | 8 | 8 | 13 |
| Oct-14 | 18.2 | 20.9 | 7.5 | 7.6 | 1.4 | 1.1 | 7 | 5 | 6 | 8 | 9 | 10 |
| Nov-14 | 16.6 | 17.7 | 7.4 | 7.6 | 1.4 | 1.7 | 8 | 6 | 7 | 9 | 14 | 23 |
| Dec-14 | 16.9 | 19.3 | 7.4 | 8.9 | 1.4 | 1.2 | 34 | 8 | 6 | 10 | 11 | 23 |
| Jan-15 | 18.1 | 19.8 | 7.5 | 7.6 | 1.4 | 0.9 | 10 | 6 | 7 | 8 | 10 | 11 |
| Feb-15 | 17.8 | 18.7 | 7.3 | 7.5 | 1.4 | 1 | 7 | 6 | 5 | 6 | 9 | 10 |
| Mar-15 | 17.6 | 18.6 | 7.3 | 7.5 | 1.4 | 1.3 | 5 | 5 | 5 | 6 | 7 | 8 |
| Apr-15 | 18.1 | 22.3 | 7.2 | 7.6 | 1.4 | 1 | 7 | 6 | 7 | 8 | 11 | 11 |
| May-15 | 22.5 | 31.9 | 7.5 | 7.6 | 2 | 1.1 | 10 | 6 | 7 | 9 | 13 | 16 |
| Jun-15 | 20.2 | 22.5 | 7.5 | 7.6 | 1.6 | 1.3 | 8 | 6 | 6 | 6 | 9 | 10 |
| Jul-15 | 19.7 | 21.8 | 7.5 | 7.7 | 1.4 | 1.5 | 12 | 9 | 5 | 6 | 11 | 11 |
| Aug-15 | 20.7 | 22.6 | 7.5 | 7.7 | 1.4 | 1.1 | 9 | 5 | 5 | 6 | 7 | 13 |
| Sep-15 | 20.1 | 23.5 | 7.6 | 7.7 | 1.4 | 1.1 | 7 | 5 | 5 | 6 | 8 | 10 |
| Oct-15 | 18.1 | 20.3 | 7.5 | 7.6 | 1.4 | 1 | 12 | 8 | 5 | 6 | 11 | 13 |
| Nov-15 | 16.9 | 18.3 | 7.1 | 7.6 | 1.4 | 1.3 | 11 | 8 | 4 | 6 | 6 | 7 |
| Dec-15 | 18.1 | 21.6 | 7.4 | 7.6 | 2.63 | 0.9 | 8 | 5 | 7 | 8 | 8 | 8 |

WET Results

| Month | WET Test | Pass / Fail |
|---|---|---|
| Mar-13 | 48Hr Acute Ceriodaphnia | Pass |
| Mar-13 | 96Hr Acute Pimephales Promelas | NA |
| Jun-13 | 48Hr Acute Ceriodaphnia | NA |
| Jun-13 | 96Hr Acute Pimephales Promelas | Pass |
| Sep-13 | 48Hr Acute Ceriodaphnia | Pass |
| Sep-13 | 96Hr Acute Pimephales Promelas | NA |
| Dec-13 | 48Hr Acute Ceriodaphnia | NA |
| Dec-13 | 96Hr Acute Pimephales Promelas | Pass |
| Mar-14 | 48Hr Acute Ceriodaphnia | Pass |
| Mar-14 | 96Hr Acute Pimephales Promelas | NA |
| Jun-14 | 48Hr Acute Ceriodaphnia | Pass |
| Jun-14 | 96Hr Acute Pimephales Promelas | NA |
| Sep-14 | 48Hr Acute Ceriodaphnia | Pass |
| Sep-14 | 96Hr Acute Pimephales Promelas | NA |
| Dec-14 | 48Hr Acute Ceriodaphnia | NA |
| Dec-14 | 96Hr Acute Pimephales Promelas | Pass |
| Mar-15 | 48Hr Acute Ceriodaphnia | Pass |
| Mar-15 | 96Hr Acute Pimephales Promelas | NA |
| Jun-15 | 48Hr Acute Ceriodaphnia | NA |
| Jun-15 | 96Hr Acute Pimephales Promelas | Pass |
| Sep-15 | 48Hr Acute Ceriodaphnia | Pass |
| Sep-15 | 96Hr Acute Pimephales Promelas | NA |
| Dec-15 | 48Hr Acute Ceriodaphnia | NA |
| Dec-15 | 96Hr Acute Pimephales Promelas | Pass |

# ATTACHMENT 2

*Level I Antidegradation Review*
*and*
*Wasteload Analysis*

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State of Utah
GARY R. HERBERT
*Governor*

SPENCER J. COX
*Lieutenant Governor*

Department of
Environmental Quality

L. Scott Baird
*Executive Director*

DIVISION OF WATER QUALITY
Erica Brown Gaddis, PhD
*Director*

**M E M O R A N D U M**

TO: Daniel Griffin, Permit Writer

FROM: Chris Bittner, Standards Coordinator

DATE: December 4, 2020

SUBJECT: Antidegradation Reviews for the North Davis Sewer District (NDSD)
UPDES Permit UT0021741 Renewal
Outfalls 001 and 003

The NDSD has proposed to construct and operate a new outfall, 003 to meet the requirements of R317-1-3.3, Technology-based Limits for Controlling Phosphorus Pollution. Outfall 003 will discharge to Gilbert Bay and will have sufficient capacity to provide the option of eliminating discharges from Outfall 001that discharges to Farmington Bay. The antidegradation reviews included herein include both outfalls.

The Level I anti-degradation reviews are conducted in accordance with the *Interim Methods for Evaluating Use Support for Great Salt Lake Utah Pollution Discharge Elimination System (UPDES) Permits* (v. 1.0 January 4, 2016). The Level II anti-degradations reviews are based on the requirements of UAC R317-2-3. The whole effluent toxicity (WET) requirements are based on the *Utah Pollutant Discharge Elimination System Permit and Enforcement Guidance Document for Whole Effluent Toxicity* (DWQ, February, 2018).

As described in the *Interim Methods,* effluent pollutant concentrations were screened against Class 3D aquatic life numeric criteria to identify parameters requiring further analyses to determine "reasonable potential" and ensure protection of the uses.

# Antidegradation Reviews for Outfall 001

### Outfall 001 Receiving Waters and Designated Uses:

#### Unnamed Drainage Ditch (R317-2-13.10)

Class 2B: Protected for infrequent primary contact recreation. Also protected for secondary contact recreation where there is a low likelihood of ingestion of water or a low degree of bodily contact with the water. Examples include, but are not limited to, wading, hunting, and fishing;

Class 3E: Severely habitat-limited waters. Narrative standards will be applied to protect these waters for aquatic wildlife;

to:

**Class 5E Transitional Waters, Great Salt Lake (R317-2-13.11)**

Protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain;

to:

**Class 5D Farmington Bay, Great Salt Lake (R317-2-13.11)**

Protected for infrequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain.

Utah's secondary treatment requirements (R317-1-3) are judged to be sufficient to protect the recreational uses. Consistent with the Narrative Standards (R317-2-7.2), the aquatic life in the drainage ditch is protected from acute toxicity. The aquatic life in the Class 5E and 5D waters is protected from both acute and chronic adverse effects. No dilution was assumed for the effluent in the receiving waters. Flow measurements attempted by the NDSD indicate that flows in the drainage ditch mare insignificant or zero under limiting conditions. Beyond the mixing zones allowable under R317-2-5, some dilution likely occurs in the Class 5E waters and occurs in the downstream Class 5D open waters of Farmington Bay.

Effluent concentrations were compared to Class 3D aquatic life criteria and the results for metals and metalloids is shown in Table 1. With the exception of ammonia, chromium, copper, free cyanide, and total residual chlorine, no other pollutants were identified for further evaluation using the reasonable potential analyses. These pollutants are discussed in the following section.

**Outfall 001 Pollutants of Concern**

*Ammonia*

The ammonia screening limits are based on the most recent scientific data presented for the 2013 EPA ammonia water quality criteria. For the NDSD, the criteria are based on a fresh water aquatic life community and presumed absence of unionid mussels. The potential presence of early life-stages of fish also affects the ammonia criteria. Fish are present in Farmington Bay and surrounding wetlands. NDSD discharges near the causeway between Farmington and Gilbert Bays and the

higher salinities normally present are anticipated to preclude the presence of fish. For this permit cycle, early life-stages of fish were presumed to be absent. Table 2 illustrates the screening criteria used to evaluate reasonable potential for ammonia.

For the last permit renewal, only limited data for ammonia concentrations in the effluent were available. Based on a comparison of these data with the more frequent monitoring conducted over the last 5 years, optimization efforts have decreased ammonia concentrations in the effluent markedly. However, monthly average concentrations exceed the chronic screening criteria. The maximum reported monthly average effluent concentrations were 12 mg/L in the winter, 10 mg/L in the fall, 7 mg/L in the spring, and 6 mg/L for the summer. These exceedances are more likely to affect fish, if present, than invertebrates based on the species sensitivity distribution presented in the USEPA (2013) ammonia criteria document.

*Chromium*
The concentrations of chromium$^{6+}$ exceeded the screening criterion in several effluent samples. However, comparisons of the identical reported concentrations of chromium$^{3+}$ and chromium$^{6+}$ support NDSD's explanation that the reported chromium$^{6+}$ concentrations represent data entry errors and not effluent concentrations.

*Copper*
Copper concentrations in one effluent sample exceed the chronic screening criterion. At minimum, more frequent monitoring is recommended to ensure that the data are representative of effluent concentrations.

*Mercury*
The analytical reporting limit for one effluent sample exceeded the screening criterion of 0.000012 mg/L. The reason for the elevated analytical detection should be investigated and resolved so that future analytical results are sufficiently sensitive to compare to 0.000012 mg/L.

*Cyanide*
During the previous permit cycle, monitoring for free cyanide was added in addition to the existing monitoring for total cyanide. Free cyanide is the toxic form but total cyanide is often used as an initial screening method for free cyanide. The free cyanide screening criteria are 0.022 mg/L for one hour and 0.0052 mg/L for a 4-day average.

Free cyanide was infrequently detected up to a maximum concentration of 0.014 mg/L which exceeds the chronic screening criterion but not the acute criterion. Based on the infrequency of detections and that detected concentrations are relatively close to the detection limits, additional validation of sample and analytical methods are recommended. Free cyanide is toxic to a wide variety of organisms but it should be noted that no toxicity has been observed with the WET testing.

*Chlorine*
Total residual chlorine (TRC) is a new parameter of concern for this permit cycle. The effluent is treated with chlorine to eliminate pathogens. The one-hour screening criterion for total residual chlorine is 0.019 mg/l and the four-day criterion is 0.011 mg/L. Chlorine is toxic to a wide variety of aquatic organisms.

The maximum concentration of TRC in the effluent was reported as 2.05 mg/L and the maximum of the monthly average concentrations was 0.87 mg/L. The maximum concentration is 100-times higher than the acute screening criterion and the maximum monthly average concentration is over ten-times higher than the chronic screening criterion. The current dosing regimens should be reviewed. WET samples are routinely dechlorinated and are therefore unreliable for detecting toxicity due to chlorine.

**Outfall 001 WET Testing**

The current WET testing, acute with chronic as an indicator, is consistent with the *Utah Pollutant Discharge Elimination System Permit and Enforcement Guidance Document for Whole Effluent Toxicity* and no changes are recommended.

**Outfall 001 Level II Antidegradation Review**

A Level II antidegradation review is not required because water quality will not be lowered by the proposed activity, or for existing permitted facilities, water quality will not be further lowered by the proposed activity (R317-2-3.5.b.1.).

## Antidegradation Reviews for Outfall 003

**Receiving Waters and Designated Uses:**

**Class 5A Gilbert Bay, Great Salt Lake (UAC R317-2-13.11)**

> Protected for frequent primary and secondary contact recreation, waterfowl, shore birds and other water-oriented wildlife including their necessary food chain.

Utah's secondary treatment requirements (R317-1-3) are judged to be sufficient to protect the recreational uses. The Class 5A aquatic life uses are protected from both acute and chronic adverse effects. Outfall 003 is proposed to discharge to Gilbert Bay adjacent to the breach in the Antelope Island causeway. This causeway is the boundary between Farmington and Gilbert Bays. Under normal conditions, flows are out of Farmington Bay into Gilbert Bay. At times, flow directions and mixing may be more complex because of the density differences in the water between the bays, wind events, and currents in Gilbert Bay. These conditions may result in bi-directional flows between the bays and infrequent flow reversals from Gilbert Bay to Farmington Bay as indicated by monitoring at the causeway breach.

The currently available data are insufficient to support reliable dilution estimates for the proposed outfall and the Level I antidegradation review is based on no dilution. Collection of site-specific mixing zone data could be used to refine these findings. However, the potential dilution allowances under R317-2-5 are anticipated to be minimal because of the shallow water within the 200 feet of the outfall. This limits the quantity of receiving water available for dilution. Limiting conditions are

projected to be calm, stable meteorological conditions. Under calm conditions, mixing of the effluent with the receiving waters will be limited by the density differences between the effluent and Gilbert Bay.

The initial screening procedures are identical for Outfall 003 are identical to Outfall 001. The same pollutants were identified for further evaluation in the following section: ammonia, chromium, copper, free cyanide, mercury, and total residual chlorine.

**Outfall 003 Pollutants of Concern**

*Ammonia*
The ammonia limits are based on the most recent scientific data presented for the 2013 EPA ammonia water quality criteria. Based on the salinities measured at the proposed location of Outfall 003, fish and early life-stages of fish are not expected to be present. The screening criteria presented in Table 1 are based on a presumed absence of unionid mussels and early life-stages of fish.

For the last permit renewal, only limited data for ammonia concentrations in the effluent were available. Based on a comparison of these data with the more frequent monitoring conducted over the last 5 years, optimization efforts have decreased ammonia concentrations in the effluent markedly. However, monthly average concentrations exceed the chronic screening criteria under the limiting condition of no dilution. The maximum reported monthly average effluent concentrations were 12 mg/L in the winter, 10 mg/L in the fall, 7 mg/L in the spring, and 6 mg/L for the summer.

The 2013 EPA ammonia screening criteria are based exclusively on freshwater species that are not present in Gilbert Bay. No data are available to specifically assess the toxicity of ammonia for the Gilbert Bay resident organisms such as brine shrimp and brine flies. Based on a comparison of EPA's recommended fresh water and marine water criteria, the toxicity of ammonia decreases in saline waters compared to fresh water and decreases in marine waters with increasing salinity. Unpublished toxicity data from the University of Notre Dame with brine shrimp suggest that this species may be more tolerant of ammonia than most aquatic organisms. While precise comparisons are not possible, the impacts of the current effluent concentrations are predicted to have less of an impact to Gilbert Bay than Farmington Bay.

*Chromium*
The concentrations of chromium$^{6+}$ exceeded the screening criterion in several effluent samples. However, comparisons of the identical reported concentrations of chromium$^{3+}$ and chromium$^{6+}$ support NDSD's explanation that the reported chromium$^{6+}$ concentrations represent data entry errors and not effluent concentrations.

*Copper*
Copper concentrations in one effluent sample exceed the chronic screening criterion. Toxicity testing conducted using copper on brine shrimp and brine flies demonstrated that brine shrimp are more sensitive than brine flies. The growth no-observed-effects-concentration (NOEC) was 459 µg/L supporting that the maximum measured effluent concentration of 66 µg/L would not adversely impact the uses of Gilbert Bay.

*Mercury*
The analytical reporting limit for one effluent sample exceeded the screening criterion of 0.000012 mg/L. The reason for the elevated analytical detection should be investigated and resolved so that future analytical results are sufficiently sensitive to compare to 0.000012 mg/L.

*Cyanide*
During the previous permit cycle, monitoring for free cyanide was added in addition to the existing monitoring for total cyanide. Free cyanide is the toxic form but total cyanide is often used as an initial screening method for free cyanide. The free cyanide screening criteria are 0.022 mg/L for one hour and 0.0052 mg/L for a 4-day average.

Free cyanide was infrequently detected up to a maximum concentration of 0.014 mg/L which exceeds the chronic screening criterion but not the acute criterion. Based on the infrequency of detections and that detected concentrations are relatively close to the detection limits, additional validation of sample and analytical methods are recommended. Free cyanide is toxic to a wide variety of organisms but it should be noted that no toxicity has been observed with the WET testing.

*Chlorine*
Total residual chlorine (TRC) is a new parameter of concern for this permit cycle. The effluent is treated with chlorine to eliminate pathogens. The one-hour screening criterion for total residual chlorine is 0.019 mg/l and the four-day criterion is 0.011 mg/L. Chlorine is toxic to a wide variety of aquatic organisms.

The maximum concentration of TRC in the effluent was reported as 2.05 mg/L and the maximum of the monthly average concentrations was 0.87 mg/L. The maximum concentration is 100-times higher than the acute screening criterion and the maximum monthly average concentration is over ten-times higher than the chronic screening criterion. The current dosing regimens should be reviewed. WET samples are routinely dechlorinated and are therefore unreliable for detecting toxicity due to chlorine.

**Outfall 003 WET Testing**

The existing WET test requirements for Outfall 001 are consistent with the *Utah Pollutant Discharge Elimination System Permit and Enforcement Guidance Document for Whole Effluent Toxicity* and the same requirements are recommended for Outfall 003 based on the salinity of the effluent.

**Level II Antidegradation Review**
Outfall 003 represents a new discharge to the Class 5A Gilbert Bay waters and a Level II antidegradation review is required.

## Table 1. NDSD Reasonable Potential Screening for Metals and Metalloids

| | CN | Free CN | AS | Cd | Cr III | Cr VI | Cu | Pb | Ni | Si | Zn | Mo | Se | Hg | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acute Criteria | 0.022 | 0.022 | 0.1 | 0.007 | 5.612 | 0.016 | 0.0517 | 0.1 | 1.516 | 0.0411 | 0.3879 | | 0.02 | 0.00015 | Posible Acute Limit |
| Chronic Criteria | 0.0052 | 0.0052 | 0.19 | 0.0025 | 0.268 | 0.011 | 0.0305 | 0.0186 | 0.169 | | 0.3879 | | 0.0046 | 0.000012 | Posible Chronic Limit |
| Reported | CN | Free CN | As | Cd | Tot Cr | Tot Cr | Cu | Pb | Ni | Ag | Zn | Mo | Se | Hg | |
| Sep-15 | 0.0138 | - | 0.00911 | No Det | No Det | No Det | 0.00477 | No Det | 0.00204 | 0.0000391 | 0.0298 | 0.00339 | 0.000411 | No Det | |
| Dec-15 | 0.00557 | - | 0.00704 | No Det | No Det | No Det | 0.00596 | No Det | 0.00166 | No Det | 0.0137 | 0.00328 | 0.000301 | 0.0000015 | |
| Mar-16 | 0.0103 | - | 0.00758 | No Det | 0.00333 | 0.00333 | 0.0121 | 0.00264 | 0.00202 | 0.0000244 | 0.0258 | 0.00454 | 0.0000634 | 0.0000035 | |
| Jun-16 | 0.0118 | - | 0.00667 | No Det | No Det | No Det | 0.00673 | 0.000235 | 0.00284 | No Det | 0.0229 | 0.00358 | No Det | 0.0000018 | |
| Sep-16 | No Det | - | 0.0102 | No Det | No Det | No Det | 0.00362 | No Det | 0.0015 | No Det | 0.0165 | 0.00367 | 0.000322 | No Det | |
| Dec-16 | No Det | - | 0.00765 | No Det | No Det | No Det | 0.00574 | 0.000188 | 0.00202 | No Det | 0.016 | 0.00419 | 0.000497 | No Det | |
| Mar-17 | - | 0.00948 | 0.00889 | No Det | 0.000229 | 0.000229 | 0.00567 | No Det | 0.00192 | No Det | 0.0282 | 0.00428 | 0.000602 | 0.00000127 | |
| Jun-17 | - | 0.0138 | 0.00755 | No Det | 0.00037 | 0.00037 | 0.00717 | No Det | 0.0017 | No Det | 0.0207 | 0.0031 | 0.000272 | 0.0000013 | |
| Sep-17 | No Det | No Det | 0.0088 | No Det | 0.00053 | 0.00053 | 0.00668 | No Det | 0.00325 | No Det | 0.0216 | 0.00324 | 0.000419 | 0.0000025 | |
| Dec-17 | 0.00224 | 0.0104 | 0.00748 | - | 0.000396 | 0.000396 | 0.00876 | - | 0.00264 | - | 0.0216 | 0.00358 | 0.000478 | No Det | |
| Mar-18 | No Det | No Det | 0.00592 | No Det | 0.000893 | 0.000893 | 0.0046 | No Det | 0.0028 | No Det | 0.0332 | 0.00387 | 0.000333 | No Det | |
| Jun-18 | 0.0157 | No Det | 0.00712 | 0.0001 | 0.00198 | 0.00198 | 0.00733 | No Det | 0.00223 | No Det | 0.0241 | 0.00316 | 0.000404 | No Det | |
| Sep-18 | No Det | No Det | 0.0083 | No Det | No Det | No Det | 0.00361 | No Det | 0.00217 | No Det | 0.018 | 0.00277 | No Det | No Det | |
| Dec-18 | 0.00884 | 0.00415 | 0.00728 | No Det | No Det | No Det | 0.00396 | No Det | 0.00202 | 0.000506 | 0.0188 | 0.00331 | 0.000461 | No Det | |
| Mar-19 | 0.00784 | 0.005 | 0.00934 | 0.00005 | 0.002 | 0.002 | 0.00685 | 0.002 | 0.00161 | 0.002 | 0.0243 | 0.00399 | 0.002 | 0.0000012 | |
| Jun-19 | 0.00784 | 0.005 | 0.00934 | 0.0005 | 0.02 | 0.02 | 0.00685 | 0.002 | 0.00161 | 0.002 | 0.0243 | 0.00399 | 0.002 | 0.0000012 | |
| Sep-19 | 0.00854 | 0.00854 | 0.0133 | 0.000164 | 0.00407 | 0.00407 | 0.066 | 0.000999 | 0.00431 | 0.002 | 0.0672 | 0.00433 | 0.002 | 0.0000015 | |
| Dec-19 | 0.00362 | 0.00362 | 0.00743 | 0.0000445 | 0.000956 | 0.000956 | 0.00448 | 0.000224 | 0.00282 | 0.000116 | 0.0193 | 0.00328 | 0.000287 | 0.000001 | |
| Mar-20 | 0.0102 | 0.0102 | 0.00578 | 0.0005 | 0.002 | 0.002 | 0.00563 | 0.002 | 0.00239 | 0.002 | 0.0293 | 0.00326 | 0.002 | 0.000001 | |
| Jun-20 | 0.0132 | 0.0149 | 0.00688 | 0.0005 | 0.002 | 0.002 | 0.0058 | 0.002 | 0.00299 | 0.002 | 0.0248 | 0.00422 | 0.002 | 0.00009 | |
| Non D | | | | | | | | | | | | | | | |
| Max | 0.0157 | 0.0149 | 0.0133 | 0.0005 | 0.02 | 0.02 | 0.066 | 0.00264 | 0.00431 | 0.002 | 0.0672 | 0.00454 | 0.002 | 0.00009 | Max Reported Value |
| Acute? Check | Yes | Yes | No | No | No | Yes | Yes | No | No | No | No | No | No | Yes | Do I run Full RP? |
| Chronic? Check | Yes | Yes | No | No | No | Yes | Yes | No | No | No | No | No | No | Yes | Do I run Full RP? |

| | |
|---|---|
| - | no data was included in NetDMR |
| | Value above Chronic Criteria |
| Yes | Full RP to be run, Limit likely. |

**Table 2. NDSD Total Ammonia Nitrogen Screening Criteria**

| Season | Average Effluent pH | Average Effluent Temperature (°C) | CMC[1] (mg/L) | CCC[2] (mg/L) | CCC[3] (mg/L) |
|---|---|---|---|---|---|
| Winter (Jan.-March) | 7.4 | 19.4 | **21.3** | 5.2 | **5.9** |
| Spring (April-June) | 7.4 | 21.7 | **23** | 5 | **5** |
| Summer (July-Sept.) | 7.4 | 23.4 | **20.4** | 4.4 | **4.4** |
| Fall (Oct.-Dec.) | 7.4 | 21.0 | **24** | 5.2 | **5.3** |

Notes:
1 CMC= Criteria maximum concentration (one-hour average), USEPA (2013) no unionid mussels and no salmonids
2 CCC= Criteria continuous concentration (4-day average); USEPA (2013) no unionid mussels, early life stages present
3 CCC= Criteria continuous concentration (4-day average); USEPA (2013) no unionid mussels, early life stages not present
Bold font shows criteria used for screening

# ATTACHMENT 3

*Reasonable Potential Analysis*

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**REASONABLE POTENTIAL ANALYSIS**

Water Quality has worked to improve our reasonable potential analysis (RP) for the inclusion of limits for parameters in the permit by using an EPA provided model. As a result of the model, more parameters may be included in the renewal permit. A Copy of the Reasonable Potential Analysis Guidance (RP Guide) is available at water Quality. There are four outcomes for the RP Analysis[22]. They are:

| | |
|---|---|
| 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. |

Initial screening for metals values that were submitted through the discharge monitoring reports showed that a closer look at some of the metals is needed. A copy of the initial screening is included in the "Effluent Metals and RP Screening Results" table in this attachment. The initial screening check for metals showed that further investigation of cyanide, free cyanide, chromium, copper, and mercury is required.

After discussions with North Davis it was determined that chromium, copper and mercury had some issue with the data. Chromium was entered incorrectly into the system. The actual result should be 0.002 mg/L Cr VI, not 0.02 mg/L, which eliminated any concern. As a result, no changes to chromium will be included in this renewal.

The data for mercury included a result from a different lab that was almost two orders of magnitude higher than the regular lab. This is a result of the sample being analyzed by at an outside lab that has yet to develop the same mercury analysis abilities. The minimum quantification limit for the outside lab is higher than for the onsite lab. When this sample is removed from consideration, mercury no longer requires further investigation. As a result, no changes to mercury will be included in this renewal.

The data for copper contained one result that was an order of magnitude higher than the rest. Further investigation confirmed that the value is legitimate and cannot be removed from consideration. Without this result, copper does not require further investigation. North Davis believes that they can address this through the pretreatment program. It is recommended that the monitoring frequency for copper be increased in this renewal to confirm the copper levels in the effluent.

During the previous permit cycle, monitoring for free cyanide was added in addition to the existing monitoring for total cyanide. Free cyanide is the toxic form but total cyanide is often used as an initial screening method for free cyanide. The free cyanide screening criteria are 0.022 mg/L for one hour and 0.0052 mg/L for a 4-day average.

Free cyanide was infrequently detected up to a maximum concentration of 0.014 mg/L which exceeds the chronic screening criterion but not the acute criterion. Based on the infrequency of detections and that detected concentrations are relatively close to the detection limits, additional validation of sample and analytical methods are recommended. Free cyanide is toxic to a wide variety of organisms but it should be noted that no toxicity has been observed with the WET testing.

[22] See Reasonable Potential Analysis Guidance for definitions of terms

Metals Monitoring and RP Check

| Criteria | AS | Cd | Cr III | Pb | Ni | Si | Zn | Mo | Se |
|---|---|---|---|---|---|---|---|---|---|
| Acute | 0.1 | 0.007 | 5.612 | 0.1 | 1.516 | 0.0411 | 0.3879 | | 0.02 |
| Chronic | 0.19 | 0.0025 | 0.268 | 0.0186 | 0.169 | | 0.3879 | | 0.0046 |
| | 0.00911 | No Det | No Det | No Det | 0.00204 | 0.0000391 | 0.0298 | 0.00339 | 0.000411 |
| | 0.00704 | No Det | No Det | No Det | 0.00166 | No Det | 0.0137 | 0.00328 | 0.000301 |
| | 0.00758 | No Det | 0.00333 | 0.00264 | 0.00202 | 0.0000244 | 0.0258 | 0.00454 | 0.0000634 |
| | 0.00667 | No Det | No Det | 0.000235 | 0.00284 | No Det | 0.0229 | 0.00358 | No Det |
| | 0.0102 | No Det | No Det | No Det | 0.0015 | No Det | 0.0165 | 0.00367 | 0.000322 |
| | 0.00765 | No Det | No Det | 0.000188 | 0.00202 | No Det | 0.016 | 0.00419 | 0.000497 |
| | 0.00889 | No Det | 0.000229 | No Det | 0.00192 | No Det | 0.0282 | 0.00428 | 0.000602 |
| | 0.00755 | No Det | 0.00037 | No Det | 0.0017 | No Det | 0.0207 | 0.0031 | 0.000272 |
| | 0.0088 | No Det | 0.00053 | No Det | 0.00325 | No Det | 0.0216 | 0.00324 | 0.000419 |
| | 0.00748 | - | 0.000396 | - | 0.00264 | - | 0.0216 | 0.00358 | 0.000478 |
| | 0.00592 | No Det | 0.000893 | No Det | 0.0028 | No Det | 0.0332 | 0.00387 | 0.000333 |
| | 0.00712 | 0.0001 | 0.00198 | No Det | 0.00223 | No Det | 0.0241 | 0.00316 | 0.000404 |
| | 0.0083 | No Det | No Det | No Det | 0.00217 | No Det | 0.018 | 0.00277 | No Det |
| | 0.00728 | No Det | No Det | No Det | 0.00202 | 0.000506 | 0.0188 | 0.00331 | 0.000461 |
| | 0.00934 | 0.00005 | 0.002 | 0.002 | 0.00161 | 0.002 | 0.0243 | 0.00399 | 0.002 |
| | 0.00934 | 0.0005 | 0.02 | 0.002 | 0.00161 | 0.002 | 0.0243 | 0.00399 | 0.002 |
| | 0.0133 | 0.000164 | 0.00407 | 0.000999 | 0.00431 | 0.002 | 0.0672 | 0.00433 | 0.002 |
| | 0.00743 | 0.0000445 | 0.000956 | 0.000224 | 0.00282 | 0.000116 | 0.0193 | 0.00328 | 0.000287 |
| | 0.00578 | 0.0005 | 0.002 | 0.002 | 0.00239 | 0.002 | 0.0293 | 0.00326 | 0.002 |
| Reported | 0.00688 | 0.0005 | 0.002 | 0.002 | 0.00299 | 0.002 | 0.0248 | 0.00422 | 0.002 |
| Max | 0.0133 | 0.0005 | 0.02 | 0.00264 | 0.00431 | 0.002 | 0.0672 | 0.00454 | 0.002 |
| Acute? | No | No | No | No | No | No | No | No | No |
| Chronic? | No | No | No | No | No | No | No | No | No |

| Criteria | CN | Free CN | Cu | Cr VI | Cr VI | Hg | Hg |
|---|---|---|---|---|---|---|---|
| Acute | 0.022 | 0.022 | 0.0517 | 0.016 | 0.016 | 0.00015 | 0.00015 |
| Chronic | 0.0052 | 0.0052 | 0.0305 | 0.011 | 0.011 | 0.000012 | 0.000012 |
| | | | | Reported | Corrected | Reported | Adjusted |
| | 0.0138 | - | 0.00477 | No Det | No Det | No Det | No Det |
| | 0.00557 | - | 0.00596 | No Det | No Det | 0.0000015 | 0.0000015 |
| | 0.0103 | - | 0.0121 | 0.00333 | 0.00333 | 0.0000035 | 0.0000035 |
| | 0.0118 | - | 0.00673 | No Det | No Det | 0.0000018 | 0.0000018 |
| | No Det | - | 0.00362 | No Det | No Det | No Det | No Det |
| | No Det | - | 0.00574 | No Det | No Det | No Det | No Det |
| | - | 0.00948 | 0.00567 | 0.000229 | 0.000229 | 0.00000127 | 0.00000127 |
| | - | 0.0138 | 0.00717 | 0.00037 | 0.00037 | 0.0000013 | 0.0000013 |
| | No Det | No Det | 0.00668 | 0.00053 | 0.00053 | 0.0000025 | 0.0000025 |
| | 0.00224 | 0.0104 | 0.00876 | 0.000396 | 0.000396 | No Det | No Det |
| | No Det | No Det | 0.0046 | 0.000893 | 0.000893 | No Det | No Det |
| | 0.0157 | No Det | 0.00733 | 0.00198 | 0.00198 | No Det | No Det |
| | No Det | No Det | 0.00361 | No Det | No Det | No Det | No Det |
| | 0.00884 | 0.00415 | 0.00396 | No Det | No Det | No Det | No Det |
| | 0.00784 | 0.005 | 0.00685 | 0.002 | 0.002 | 0.0000012 | 0.0000012 |
| | 0.00784 | 0.005 | 0.00685 | 0.02 | 0.002 | 0.0000012 | 0.0000012 |
| | 0.00854 | 0.00854 | 0.066 | 0.00407 | 0.00407 | 0.0000015 | 0.0000015 |
| | 0.00362 | 0.00362 | 0.00448 | 0.000956 | 0.000956 | 0.000001 | 0.000001 |
| | 0.0102 | 0.0102 | 0.00563 | 0.002 | 0.002 | 0.000001 | 0.000001 |
| | 0.0132 | 0.0149 | 0.0058 | 0.002 | 0.002 | 0.00009 | - |
| Max | 0.0157 | 0.0149 | 0.066 | 0.02 | 0.002 | 0.0000035 | 0.0000035 |
| Acute? | Yes | Yes | Yes | Yes | No | Yes | No |
| Chronic? | Yes | Yes | Yes | Yes | No | Yes | No |

# ATTACHMENT 4

*Outfall 003 L2ADR*

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# ANTIDEGRADATION REVIEW FORM
# UTAH DIVISION OF WATER QUALITY

## Instructions

The objective of antidegradation rules and policies is to protect existing high quality waters and set forth a process for determining where and how much degradation is allowable for socially and/or economically important reasons. In accordance with Utah Administrative Code (UAC R317-2-3), an antidegradation review (ADR) is a permit requirement for any project that will increase the level of pollutants in waters of the state. The rule outlines requirements for Level I and Level II ADRs, as well as public comment procedures. This review form is intended to assist the applicant and Division of Water Quality (DWQ) staff in complying with the rule but is not a substitute for the complete rule in R317-2-3.5. Additional details can be found in the *Utah Antidegradation Implementation Guidance* and relevant sections of the guidance are cited in this review form.

ADRs should be among the first steps of an application for a UPDES permit because the review helps establish treatment expectations. The level of effort and amount of information required for the ADR depends on the nature of the project and the characteristics of the receiving water. To avoid unnecessary delays in permit issuance, the Division of Water Quality (DWQ) recommends that the process be initiated at least one year prior to the date a final approved permit is required.

DWQ will determine if the project will impair beneficial uses (Level I ADR) using information provided by the applicant and whether a Level II ADR is required. The applicant is responsible for conducting the Level II ADR. For the permit to be approved, the Level II ADR must document that all feasible measures have been undertaken to minimize pollution for socially, environmentally or economically beneficial projects resulting in an increase in pollution to waters of the state.

For permits requiring a Level II ADR, this antidegradation form must be completed and approved by DWQ before any UPDES permit can be issued. Typically, the ADR form is completed in an iterative manner in consultation with DWQ. The applicant should first complete the statement of social, environmental and economic importance (SEEI) in Part C and determine the parameters of concern (POC) in Part D. Once the POCs are agreed upon by DWQ, the alternatives analysis and selection of preferred alternative in Part E can be conducted based on minimizing degradation resulting from discharge of the POCs. Once the applicant and DWQ agree upon the preferred alternative, the review is considered complete, and the form must be signed, dated, and submitted to DWQ.

For additional clarification on the antidegradation review process and procedures, please contact Nicholas von Stackelberg (801-536-4374) or Dave Wham (801-536-4337).

# Utah Division of Water Quality
# Antidegradation Review Form

## Part A: Applicant Information

**Facility Name:** North Davis Sewer District Water Reclamation Facility

**Facility Owner**: North Davis Sewer District

**Facility Location**: 4252 West 2200 South, Syracuse, Utah, 84075

**Form Prepared By**: Jeff DenBleyker, PE, Jacobs Engineering Group Inc.

**Outfall Number:** 003

**Receiving Water:** Gilbert Bay and/or Gilbert Bay transitional wetlands (Great Salt Lake beneficial use classes 5A)

**What Are the Designated Uses of the Receiving Water (R317-2-6)?**

Domestic Water Supply: None
Recreation: None
Aquatic Life: None
Agricultural Water Supply: None
Great Salt Lake: 5A - Gilbert Bay

**Category of Receiving Water (R317-2-3.2, -3.3, and -3.4):** Category 3

**UPDES Permit Number (if applicable):** UT0021741

**Effluent Flow Reviewed:** 34 mgd
Typically, this should be the maximum daily discharge at the design capacity of the facility. Exceptions should be noted.

**What is the application for? (check all that apply)**

☒ A UPDES permit for a new facility, project, or outfall.

☐ A UPDES permit renewal with an expansion or modification of an existing wastewater treatment works.

☐ A UPDES permit renewal requiring limits for a pollutant not covered by the previous permit and/or an increase to existing permit limits.

☐ A UPDES permit renewal with no changes in facility operations.

## Part B. Is a Level II ADR required?

*This section of the form is intended to help applicants determine if a Level II ADR is required for specific permitted activities. In addition, the Executive Secretary may require a Level II ADR for an activity with the potential for major impact on the quality of waters of the state (R317-2-3.5a.1).*

**B1. The UPDES permit is new or is being renewed and the proposed effluent concentration and loading limits are higher than the concentration and loading limits in the previous permit and any previous antidegradation review(s).**

☒ **Yes** (Proceed to Part B2 of the Form)

☐ **No** No Level II ADR is required and there is no need to proceed further with review questions.

**B2. Will any pollutants use assimilative capacity of the receiving water, i.e. do the pollutant concentrations in the effluent exceed those in the receiving waters at critical conditions?** For most pollutants, effluent concentrations that are higher than the ambient concentrations require an antidegradation review. For a few pollutants, such as dissolved oxygen, an antidegradation review is required if the effluent concentrations are less than the ambient concentrations in the receiving water. (Refer to Section 3.3 of Implementation Guidance)

☒ **Yes** (Proceed to Part B3 of the Form)

☐ **No** No Level II ADR is required and there is no need to proceed further with review questions.

**B3. Are water quality impacts of the proposed project temporary and limited (Section 3.3.3 of Implementation Guidance)?** Proposed projects that will have temporary and limited effects on water quality can be exempted from a Level II ADR.

☐ **Yes** Identify the reasons used to justify this determination in Part B3.1 and proceed to Part G. No Level II ADR is required.

☒ **No** A Level II ADR is required (Proceed to Part C)

**B3.1 Complete this question only if the applicant is requesting a Level II review exclusion for temporary and limited projects (see R317-2-3.5(b)(3) and R317-2-3.5(b)(4)). For projects requesting a temporary and limited exclusion please indicate the factor(s) used to justify this determination (check all that apply and provide details as appropriate) (Section 3.3.3 of Implementation Guidance):**

☐ Water quality impacts will be temporary and related exclusively to sediment or turbidity and fish spawning will not be impaired.

**Factors to be considered in determining whether water quality impacts will be temporary and limited:**

a) The length of time during which water quality will be lowered:
b) The percent change in ambient concentrations of pollutants:
c) Pollutants affected:
d) Likelihood for long-term water quality benefits:
e) Potential for any residual long-term influences on existing uses:
f) Impairment of fish spawning, survival and development of aquatic fauna excluding fish removal efforts:

Additional justification, as needed:

## Level II ADR

*Part C, D, E, and F of the form constitute the Level II ADR Review. The applicant must provide as much detail as necessary for DWQ to perform the antidegradation review. Questions are provided for the convenience of applicants; however, for more complex permits it may be more effective to provide the required information in a separate report. Applicants that prefer a separate report should record the report name here and proceed to Part G of the form.*

**Optional Report Name:** *See Jacobs 2021b.*

## Part C. Is the degradation from the project socially and economically necessary to accommodate important social or economic development in the area in which the waters are located?

*The applicant must provide as much detail as necessary for DWQ to concur that the project is socially and economically necessary when answering the questions in this section. More information is available in Section 6.2 of the Implementation Guidance.*

**C1. Describe the social and economic benefits that would be realized through the proposed project, including the number and nature of jobs created and anticipated tax revenues.**

**C2. Describe any environmental benefits to be realized through implementation of the proposed project.**

**C3. Describe any social and economic losses that may result from the project, including impacts to recreation or commercial development.**

**C4. Summarize any supporting information from the affected communities on preserving assimilative capacity to support future growth and development.**

**C5. Please describe any structures or equipment associated with the project that will be placed within or adjacent to the receiving water.**

**Part D. Identify and rank (from increasing to decreasing potential threat to designated uses) the parameters of concern.** *Parameters of concern are parameters in the effluent at concentrations greater than ambient concentrations in the receiving water. The applicant is responsible for identifying parameter concentrations in the effluent and DWQ will provide parameter concentrations for the receiving water. More information is available in Section 3.3.3 of the Implementation Guidance.*

**Parameters of Concern:**

| Rank | Pollutant | Ambient | | Effluent | |
|---|---|---|---|---|---|
| | | Concentration / Units | Basis | Concentration / Units | Basis |
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |

**Pollutants Evaluated that are not Considered Parameters of Concern:**

| Pollutant | Ambient Concentration | Effluent Concentration | Justification |
|---|---|---|---|
| | | | |
| | | | |
| | | | |
| | | | |
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## Part E. Alternative Analysis Requirements of a Level II Antidegradation Review.

*Level II ADRs require the applicant to determine whether there are feasible less-degrading alternatives to the proposed project. For new and expanded discharges, the Alternatives Analysis must be prepared under the supervision of and stamped by a Professional Engineer registered with the State of Utah. DWQ may grant an exception from this requirement under certain circumstances, such as the alternatives considered potentially feasible do not include engineered treatment alternatives. More information regarding the requirements for the Alternatives Analysis is available in Section 5 of the Implementation Guidance.*

**E1. The UPDES permit is being renewed without any changes to flow or concentrations. Alternative treatment and discharge options including changes to operations and maintenance were considered and compared to the current processes. No economically feasible treatment or discharge alternatives were identified that were not previously considered for any previous antidegradation review(s).**

☒ **Yes** (Proceed to Part F)

☐ **No or Does Not Apply** (Proceed to E2)

**E2. Attach as an appendix to this form a report that describes the following factors for all alternative treatment options 1) a technical description of the treatment process, including construction costs and continued operation and maintenance expenses, 2) the mass and concentration of discharge constituents, and 3) a description of the reliability of the system, including the frequency where recurring operation and maintenance may lead to temporary increases in discharged pollutants. Most of this information is typically available from a Facility Plan, if available.**

**Report Name:** *Supporting Information for Level II Antidegradation Review, Great Salt Lake Outfall Relocation Project (Jacobs 2021b)*

**E3. Describe the proposed method and cost of the baseline treatment alternative. The baseline treatment alternative is the minimum treatment required to meet water quality based effluent limits (WQBEL) as determined by the preliminary or final wasteload analysis (WLA) and any secondary or categorical effluent limits.**

**E4. Were any of the following alternatives feasible and affordable?**

| Alternative | Feasible | Reason Not Feasible/Affordable |
|---|---|---|
| Pollutant Trading | No | No willing partners, does not meet the stated project purpose |
| Water Recycling/Reuse | No | Does not meet the stated project purpose |
| Land Application | Not Applicable | Does not meet the stated project purpose |
| Connection to Other Facilities | Not Applicable | Physically prohibitive, geographically distant |
| Upgrade to Existing Facility | No | Prohibitive cost |
| Total Containment | Not Applicable | Does not meet the stated project purposet |
| Improved O&M of Existing Systems | No | Already optimized, does not meet TBPEL |
| Seasonal or Controlled Discharge | No | Does not meet the stated project purpose |
| New Construction | No | Prohibitive cost, does not meet the stated project purpose |
| No Discharge | No | See water recycling/reuse |

**E5. From the applicant's perspective, what is the preferred treatment option?**

**See Jacobs 2021**

**E6. Is the preferred option also the least polluting feasible alternative?**

☒ **Yes**

☐ **No**

**If no, what were less degrading feasible alternative(s)?**

**If no, provide a summary of the justification for not selecting the least polluting feasible alternative and if appropriate, provide a more detailed justification as an attachment.**

## Part F. Optional Information

**F1. Does the applicant want to conduct optional public review(s) in addition to the mandatory public review? Level II ADRs are public noticed for a thirty day comment period. More information is available in Section 3.7.1 of the Implementation Guidance.**

☒ **No**

☐ **Yes**

**F2. Does the project include an optional mitigation plan to compensate for the proposed water quality degradation?**

☐ **No**

☒ **Yes**

**Report Name:** ☐

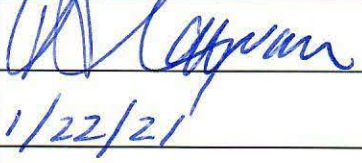
## Part G. Certification of Antidegradation Review

### G1. Applicant Certification

*The form should be signed by the same responsible person who signed the accompanying permit application or certification.*

Based on my inquiry of the person(s) who manage the system or those persons directly responsible for gathering the information, the information in this form and associated documents is, to the best of my knowledge and belief, true, accurate, and complete.

Print Name: Kevin Cowan

Signature: 

Date: 1/22/21

### G2. DWQ Approval

To the best of my knowledge, the ADR was conducted in accordance with the rules and regulations outlined in UAC R-317-2-3.

Print Name: _____

Signature: _____

Date: _____

# ATTACHMENT 5

*Outfall 003 L2ADR Supplemental Report*

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Jacobs

Memorandum

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385.474.8500
385.474.8600
www.jacobs.com

| | |
|---|---|
| **Subject** | **Supporting Information for Level II Antidegradation Review Great Salt Lake Outfall Relocation Project** |
| **Attention** | North Davis Sewer District |
| **From** | Jacobs Engineering Group Inc. |
| **Date** | January 21, 2021 |
| **Copies to** | Utah Division of Water Quality |


The purpose of this memorandum is to provide documentation in support of the Level II Antidegradation Review (ADR) application form prepared and submitted by the North Davis Sewer District (NDSD) to the Utah Division of Water Quality (DWQ) in support of its Great Salt Lake Outfall Relocation Project. The memorandum is organized to provide an overview of the background, need & purpose for the project and address each of the relevant sections of the application form.

## 1. Background, Need & Purpose

CH2M 2017a provides a summary of the background, need, purpose and rational for NDSD's original request for a variance from the Technology Based Phosphorus Effluent Limit (TBPEL) (NDSD 2017). NDSD's variance request was approved by DWQ on March 11, 2019 (DWQ 2019). Jacobs 2019d also provides an overview of the background, need and purpose for the proposed project.

### 1.1 Background

The need to protect the water quality of waterbodies downstream of the communities it serves (such as Farmington Bay and Great Salt Lake) was the genesis of NDSD and remains its primary purpose. Even as NDSD meets and/or exceeds regulatory requirements for the quality of its treated effluent, the existing water quality of Farmington Bay remains a concern to Great Salt Lake stakeholders including the surrounding communities, land owners, conservation groups and resource and regulatory agencies.

### 1.2 Need

NDSD initiated the development of a Nutrient Management Master Plan study in 2017 to define an effective and efficient strategy to meet the TBPEL and other future potential regulatory requirements. NDSD sought a cost-effective alternative that provided it with regulatory certainty while protecting its effluent flows to Great Salt Lake. CH2M 2017a and Jacobs 2019d provide further discussion of the need for this project.

### 1.3 Purpose

"The purpose [and objective] of the project is to develop and implement a nutrient management plan that does the following:

1. Identifies [and implements] alternatives that meet the impending regulatory requirements of the TBPEL and other potential future effluent limits for nutrients. NDSD's mission is to meet and/or exceed regulatory requirements and protect the water quality of receiving water bodies. This project explores alternatives that may be more beneficial than a No-Action Alternative.

2. Maximizes the benefit of NDSD's effluent to Great Salt Lake and the public. NDSD seeks to invest in alternatives that (1) improve the water quality of Farmington Bay and (2) maximize the probability that NDSD's effluent will continue to flow into Great Salt Lake into the future.

3. Guides capital investment. NDSD does not want to make short-sighted or unnecessary water reclamation facility (WRF) improvements that need to be torn out, abandoned, and replaced because of new, more stringent nutrient regulatory requirements in the near future (Jacobs 2019d)."

## 2. Part A, Applicant Information

See the application form.

## 3. Part B, Is a Level II ADR Required?

DWQ's Level I ADR (DWQ 2020) determined that a Level II ADR is required for this project.

## 4. Part C, Is Degradation from the Project Socially and Economically Necessary?

This section provides information in support of the requirements in DWQ's Level II ADR application form, Part C.

**C1. Describe the social and economic benefits that would be realized through the proposed project, including the number and nature of jobs created and anticipated tax revenues.**

Ensuring fiscal responsibility and maximizing the benefits of its facilities and operations to the communities within its service area and surrounding environment is critical to NDSD's mission. The stated mission of the NDSD is to: "Operate and maintain wastewater collection and treatment facilities to exceed regulatory requirements; serve the public with integrity and skill; develop, challenge, and reward an outstanding work team; and foster a commitment to excellence, value, continuous improvement, and pride in the operation of all aspects of the District's facilities with a goal of creating and sustaining a world class operation."

NDSD evaluated numerous alternatives to achieve the stated objective of this project. These alternatives were aggregated into six primary alternatives and were evaluated for their potential benefits and impacts to the communities NDSD serves and to Great Salt Lake and the environment. A complete analysis of the six alternatives, including an evaluation of their social and economic benefits is included in Jacobs 2019d. The six alternatives included:

1. No-Action Alternative: Chemical removal of total phosphorus to comply with the TBPEL at Outfall 001.

2. No-Action Alternative: A new Water Reclamation Facility to comply with the TBPEL and potential future, more stringent nutrient limits at Outfall 001.
3. No-Action Alternative: A new Water Reclamation Facility to limit water quality impacts to Farmington Bay by treating effluent to be "reused" in the communities for potential potable or non-potable uses.
4. Alternative No. 1. Relocate the discharge of treated effluent to a new Outfall 002 to Ogden Spur in Gilbert Bay, Great Salt Lake.
5. Alternative No. 2. Relocate the discharge of treated effluent to a new Outfall 002 to Ogden Spur and Outfall 003 in Gilbert Bay, Great Salt Lake.
6. Alternative No. 3. Relocate the discharge of treated effluent to a new Outfall 003 in Gilbert Bay, Great Salt Lake.

These alternatives were discussed with DWQ and Great Salt Lake stakeholders via individual conversations, meetings with groups of stakeholders and resource and regulatory agencies, and at the Great Salt Lake Advisory Council. Alternative No. 3 was developed as a result of this collaboration and selected by NDSD and DWQ as providing the maximum social and economic benefit and minimum impact among the alternatives considered.

**C2. Describe any environmental benefits to be realized through implementation of the proposed project.**

"As stated in its mission statement, NDSD's intent is not to simply meet regulatory requirements but to exceed them. Rather than simply meet an end-of-pipe TBPEL, NDSD proposes an "innovative alternative approach" to the TBPEL designed to both offset benefits from simply meeting the TBPEL in Farmington and maximize the benefit to and long-term protection of the beneficial uses in both Farmington Bay and Gilbert Bay (CH2M 2017a)". CH2M 2017a provides the key rationale for NDSD's request for a variance from the TBPEL (NDSD 2017) and anticipated environmental benefits. This variance request was reviewed by DWQ, modified to address concerns and remaining questions, finalized as part of the variance request (CH2M 2017a and NDSD 2017), and approved by DWQ on March 11, 2019 (DWQ 2019).

As stated above, Jacobs 2019d provides an overview of the numerous alternatives that were considered. The document also provides an analysis of the potential benefits and impacts to Great Salt Lake and the environment and illustrates that the proposed project (Alternative No. 3 – New Outfall 003 to Gilbert Bay) provides the maximum social and economic benefit and minimum impact among the alternatives considered. Further, Jacobs 2020d provides an overview of the rationale and design considerations for Outfall 003 to Gilbert Bay, including how potential impacts to Gilbert Bay were considered and addressed.

**C3. Describe any social and economic losses that may result from the project, including impacts to recreation or commercial development.**

Jacobs 2019d provides an overview of the numerous alternatives that were considered and an analysis of the potential benefits and impacts to NDSD and its constituents. The No-Action Alternative provides the required certainty of meeting current and future water quality regulations only at the highest expense and the likely loss of all flow contributing to Farmington Bay and Great Salt Lake. Alternative No. 3 provides

the required regulatory certainty while maximizing social and economic benefits, minimizing social and economic impacts and balancing these with benefits and impacts to the environment (Jacobs 2019d).

**C4. Summarize any supporting information from the affected communities on preserving assimilative capacity to support future growth and development.**

As described in CH2M 2017a, Jacobs 2019d, and Jacobs 2020d, the selected alternative (Alternative No. 3 - New Outfall 003 to Gilbert Bay) provides the most significant removal of pollutant loads from Farmington Bay at the least cost and relocates the pollutant load to the much larger, naturally nitrogen limited and less sensitive Gilbert Bay. There are already concerns about the impacts that growth has had upon Farmington Bay. Alternative No. 3 (New Outfall 003 to Gilbert Bay) effectively offsets benefits from simply meeting the TBPEL in Farmington Bay and provides NDSD with capacity (Jacobs 202c) and regulatory certainty well into the future.

**C5. Please describe any structure or equipment associated with the project that will be placed within or adjacent to the receiving water.**

Jacobs 2019d provides an overview of the proposed facilities for each of the alternatives considered. The no-action alternatives (treatment process upgrades) generally do not change facilities within or adjacent to the receiving water, however, will likely lead to the loss of treated effluent contributed to both Farmington Bay and Great Salt Lake. Alternative Nos. 1, 2 and 3 each include a new outfall(s) to Great Salt Lake. Jacobs 2020c and 2020e provide a more detailed description of the structures that are part of the selected alternative (Alternative No. 2 - New Outfall 003 to Gilbert Bay).

Jacobs 2020d provides an overview of the rationale and design considerations for Outfall 003 to Gilbert Bay. The outfall structure at Outfall 003 has been designed so that the ultimate invert elevation of the channel will be ~4190 feet (NVGD 29). A shallow ditch will be excavated downstream of the riprap channel to extend the outfall to the open water if lake levels are below 4194.0 feet (NVGD 29). The objective of the ditch is to facilitate a direct connection of the outfall structure to the open water of Gilbert Bay.

## 5. Part D, Identify and Rank Parameters of Concern

This section provides an overview of the analysis completed to identify, evaluate, and rank parameters of concern (POC). POC are parameters in the treated effluent that have concentrations that exceed ambient concentrations in the receiving water, such as Gilbert Bay.

Table 1 provides a summary of potential POC including a comparison of effluent concentrations versus ambient concentrations in Gilbert Bay, NDSD's permitted UPDES effluent limits, and Gilbert Bay and freshwater water quality criteria. As highlighted in Table 1, only copper, ammonia, chromium$^{3+}$, chromium$^{6+}$, nickel and zinc have effluent concentrations that exceed available data describing ambient concentrations in Gilbert Bay and thus are considered POC. Table 1 includes a ranking of all potential POC based first upon prioritization by DWQ (2020) and then the computed toxic weighting assimilative capacity factor. Note that the ranking of potential POC in Table 1 includes parameters that were not defined as POC. Table 2 provides a summary of analytical results from NDSD's required quarterly discharge monitoring reports.

A key objective of this project (Alternative No. 3 – New Outfall 003 to Gilbert Bay) is to relocate the vast majority of NDSD's treated effluent, along with all of its potential pollutants and POC, from the potentially impaired waters of Farmington Bay to the much larger, naturally nitrogen limited, and less sensitive Gilbert Bay. As discussed in CH2M 2017a and DWQ 2020, although the effluent concentration of some POC do exceed ambient concentrations from available data describing Gilbert Bay (copper, ammonia, chromium$^{3+}$, chromium$^{6+}$, nickel and zinc ), all POC had a very low toxic weighting assimilative capacity factor (Table 1) and are expected to have minimal impacts to uses in the less sensitive Gilbert Bay. This project provides a direct and significant benefit to Farmington Bay with minimal impact to Gilbert Bay.

**Table 1. Summary of Results of Determination of POC Assimilative Capacity**
*All potential parameters of concern are listed; proposed parameters of concern are highlighted.*

| Parameter of Concern | Effluent Concentration[a] (mg/L) | Ambient Concentration[d] (mg/L) | UPDES Effluent Limit[f] (mg/L) | Gilbert Bay Water Quality Criteria[g] (mg/L) | Freshwater Water Quality Criteria[h] (mg/L) | Assimilative Capacity | | Toxic Weighting Factor[i] | Toxic Weighting-Assimilative Capacity Factor | Rank[j] |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Used | Available | | | |
| Copper | 0.0091 | 0.0069 | | | 0.0293 | 24% | 76% | 0.630 | 0.15 | 1 |
| Cyanide | 0.0038 | | | | 0.0052 | | | 1.1 | 0.00 | 2 |
| Free Cyanide | 0.0074 | | | | 0.0052 | | | 1.1 | 0.00 | 3 |
| Ammonia[e] | 5.73 | 1.18 | 4.4 | | 4.4 | 27% | 73% | 0.0025 | 0.00 | 4 |
| Mercury[b] | 0.0000016 | 0.0000075 | | | 0.000012 | 63% | 38% | 120.00 | 75.00 | 5 |
| Arsenic | 0.0081 | 0.112 | | | 0.15 | 75% | 25% | 3.5 | 2.61 | 6 |
| Lead[b] | 0.002 | 0.0028 | | | 0.0109 | 26% | 74% | 2.2 | 0.56 | 7 |
| Selenium | 0.0008 | 0.0009 | | | 0.0046 | 20% | 80% | 1.1 | 0.22 | 8 |
| Cadmium | 0.0001 | 0.0001 | | | 0.0020 | 5% | 95% | 2.6 | 0.13 | 9 |
| Cr VI | 0.0019 | 0.0005 | | | 0.011 | 5% | 95% | 0.51 | 0.02 | 10 |
| Nickel | 0.0023 | 0.0014 | | | 0.1680 | 1% | 99% | 0.11 | 0.00 | 11 |
| Zinc | 0.025 | 0.0047 | | | 0.3824 | 1% | 99% | 0.047 | 0.00 | 12 |
| Cr III | 0.0014 | 0.0005 | | | 0.2307 | 0% | 100% | 0.076 | 0.00 | 12 |
| Silver | 0.0006 | | | | 0.03491 | 0% | 100% | 16 | 0.00 | 12 |
| Molybdenum[c] | 0.0037 | 0.046 | | | | | | 0.2 | 0.00 | 12 |
| Total Res. Chlorine | 0.73 | | | | 0.011 | | | 0.5 | 0.00 | 12 |
| E. coli | 11.46 | | 126 | | | | | | 0.00 | 12 |
| pH | 7.53 | | 6.5-9 | | 6.5-9 | | | | 0.00 | 12 |
| Total Phosphorus | 1.5 | 0.3 | | | | | | 0 | 0.00 | 12 |
| TKN | 7.42 | | | | | | | | 0.00 | 12 |
| Nitrate | 14.16 | | | | | | | 0.0007467 | 0.00 | 12 |
| Nitrite | 0.54 | | | | | | | 0.0032 | 0.00 | 12 |

Assimilative Capacity Used = (Ambient Concentration/Water Quality Criteria) * 100

Assimilative Capacity Available = 100 – Assimilative Capacity Used

| Legend | |
|---|---|
| | Parameter of Concern |

[a] Mean value from NDSD Quarterly Reports (Sept 2015 - Jun 2020), non-detect values were treated as 0.5*MDL.

[b] 80th percentile value reported for bioaccumulative toxics rather than the mean value, non-detect values were treated as 0.5*MDL.

[c] Ambient value for molybdenum from Johnson et al. 2008

[d] Taken from Adams et al. 2015. Ambient values not available for the remaining parameters.

[e] Ambient value from sample of Gilbert Bay water collected by NDSD 2020.

[f] From existing North Davis Sewer District UPDES permit

[g] The only numeric water quality criteria for Gilbert Bay is a selenium tissue standard.

[h] Water quality criteria for dissolved metals adjusted for hardness of 400 mg/L, Note that hardness in Gilbert Bay= 18,350 mg CaCO3/L (USGS NWIS Site 4)

[i] Toxic Weighting Factor taken from udwq_adr_spreadsheet_tools_v1.0_v1.xls and WQ Reference Pollutant Parameters (https://echo.epa.gov/trends/loading-tool/resources#pollutant)

[j] Ranked first by parameters identified by DWQ's Reasonable Potential analysis (each had individual samples that exceeded DWQ screening limits) and second by the toxic weighting assimilative capacity factor.

## Table 2. Quarterly Analytical Results from NDSD effluent Discharge Monitoring Reports

| | CN | Free CN | As | Cd | Cr III | Cr VI | Cu | Pb | Ni | Ag | Zn | Mo | Se | Hg[a] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Sep-2015** | | 0.0138 | 0.00911 | 0.0000371 | 0.000955 | 0.00246 | 0.00477 | 0.000224 | 0.00204 | 0.0000391 | 0.0298 | 0.00339 | 0.000411 | 0.0000001 |
| **Dec-2015** | | 0.00557 | 0.00704 | 0.0000371 | 0.000955 | 0.00246 | 0.00596 | 0.000224 | 0.00166 | 0.000116 | 0.0137 | 0.00328 | 0.000301 | 0.0000015 |
| **Mar-2016** | | 0.0103 | 0.00758 | 0.0000371 | 0.00333 | 0.00333 | 0.0121 | 0.00264 | 0.00202 | 0.0000244 | 0.0258 | 0.00454 | 0.0000634 | 0.0000035 |
| **Jun-2016** | | 0.0118 | 0.00667 | 0.0000371 | 0.000955 | 0.00246 | 0.00673 | 0.000235 | 0.00284 | 0.000116 | 0.0229 | 0.00358 | 0.000254 | 0.0000018 |
| **Sep-2016** | 0.00181 | 0.00976 | 0.0102 | 0.0000371 | 0.000955 | 0.00246 | 0.00362 | 0.000224 | 0.0015 | 0.000116 | 0.0165 | 0.00367 | 0.000322 | 0.0000001 |
| **Dec-2016** | 0.00181 | 0.005 | 0.00765 | 0.0000371 | 0.000955 | 0.00246 | 0.00574 | 0.000188 | 0.00202 | 0.000116 | 0.016 | 0.00419 | 0.000497 | 0.0000001 |
| **Mar-2017** | | 0.00948 | 0.00889 | 0.0000371 | 0.000229 | 0.000229 | 0.00567 | 0.000224 | 0.00192 | 0.000116 | 0.0282 | 0.00428 | 0.000602 | 0.00000127 |
| **Jun-2017** | | 0.0138 | 0.00755 | 0.0000371 | 0.00037 | 0.00037 | 0.00717 | 0.000224 | 0.0017 | 0.000116 | 0.0207 | 0.0031 | 0.000272 | 0.0000013 |
| **Sep-2017** | 0.00181 | 0.00181 | 0.0088 | 0.0000371 | 0.00053 | 0.00053 | 0.00668 | 0.000224 | 0.00325 | 0.000116 | 0.0216 | 0.00324 | 0.000419 | 0.0000025 |
| **Dec-2017** | 0.00224 | 0.0104 | 0.00748 | 0.0000371 | 0.000396 | 0.000396 | 0.00876 | 0.000224 | 0.00264 | 0.000116 | 0.0216 | 0.00358 | 0.000478 | 0.0000001 |
| **Mar-2018** | 0.00181 | 0.00181 | 0.00592 | 0.0000371 | 0.000893 | 0.000893 | 0.0046 | 0.000224 | 0.0028 | 0.000116 | 0.0332 | 0.00387 | 0.000333 | 0.0000001 |
| **Jun-2018** | 0.0157 | 0.00181 | 0.00712 | 0.0001 | 0.00198 | 0.00198 | 0.00733 | 0.000224 | 0.00223 | 0.000116 | 0.0241 | 0.00316 | 0.000404 | 0.0000001 |
| **Sep-2018** | 0.00181 | 0.00181 | 0.0083 | 0.0000371 | 0.000955 | 0.00246 | 0.00361 | 0.000224 | 0.00217 | 0.000116 | 0.018 | 0.00277 | 0.000254 | 0.0000001 |
| **Dec-2018** | 0.00181 | 0.00415 | 0.00728 | 0.0000371 | 0.000955 | 0.00246 | 0.00396 | 0.000224 | 0.00202 | 0.000506 | 0.0188 | 0.00331 | 0.000461 | 0.0000001 |
| **Mar-2019** | 0.00181 | 0.005 | 0.00934 | 0.00005 | 0.002 | 0.002 | 0.00685 | 0.002 | 0.00161 | 0.002 | 0.0243 | 0.00399 | 0.002 | 0.0000012 |
| **Jun-2019** | 0.00181 | 0.005 | 0.00934 | 0.0005 | 0.002 | 0.002 | 0.00685 | 0.002 | 0.00161 | 0.002 | 0.0243 | 0.00399 | 0.002 | 0.0000012 |
| **Sep-2019** | 0.00181 | 0.00854 | 0.0133 | 0.000164 | 0.00407 | 0.00407 | 0.066 | 0.000999 | 0.00431 | 0.002 | 0.0672 | 0.00433 | 0.002 | 0.0000015 |
| **Dec-2019** | 0.00362 | 0.00362 | 0.00743 | 0.0000445 | 0.000956 | 0.000956 | 0.00448 | 0.000224 | 0.00282 | 0.000116 | 0.0193 | 0.00328 | 0.000287 | 0.000001 |
| **Mar-2020** | 0.00181 | 0.0102 | 0.00578 | 0.0005 | 0.002 | 0.002 | 0.00563 | 0.002 | 0.00239 | 0.002 | 0.0293 | 0.00326 | 0.002 | 0.000001 |
| **Jun-2020** | 0.0132 | 0.0149 | 0.00688 | 0.0005 | 0.002 | 0.002 | 0.0058 | 0.002 | 0.00299 | 0.002 | 0.0248 | 0.00422 | 0.002 | 0.0000198 |
| **Mean** | 0.0038 | 0.0074 | 0.0081 | 0.0001 | 0.0014 | 0.0019 | 0.0091 | 0.0007 | 0.0023 | 0.0006 | 0.0250 | 0.0037 | 0.0008 | 0.0000019 |
| **8oth %** | 0.002792 | 0.01068 | 0.009156 | 0.0001128 | 0.002 | 0.00246 | 0.007202 | 0.002 | 0.002824 | 0.002 | 0.02842 | 0.004196 | 0.002 | 0.00000156 |

[a] Note that NDSD completed mercury analyses prior to June 2020; AWAL started mercury analyses in June 2020. AWAL's MDL for mercury is higher than DWQ's screening limits. NDSD is updating methods to address this.

**Legend**

No data

Nondetect (0.5*MDL)

Exceeds both acute and chronic limits

Exceeds chronic limit

Note: all values are mg/L

**DWQ's Screening Limits per Waste Load Allocation**

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Acute Criteria | 0.022 | 0.022 | 0.1 | 0.007 | 5.612 | 0.016 | 0.0517 | 0.1 | 1.516 | 0.0411 | 0.3879 | | 0.02 | 0.0015 |
| Chronic Criteria | 0.0052 | 0.0052 | 0.19 | 0.0025 | 0.268 | 0.011 | 0.0305 | 0.0186 | 0.0169 | | 0.3879 | | 0.0046 | 0.000012 |

**Laboratory Analytical Limits**

| | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **AWAL MDL (mg/L)** | 0.00362 | 0.00362 | 0.000298 | 0.0000742 | 0.00191 | 0.00492 | 0.00166 | 0.000448 | 0.000728 | 0.000232 | 0.00418 | 0.000652 | 0.000508 | 0.0000396 |
| **AWAL RL (mg/L)** | 0.005 | 0.005 | 0.002 | 0.0005 | 0.002 | 0.005 | 0.003 | 0.002 | 0.002 | 0.002 | 0.006 | 0.002 | 0.002 | 0.00009 |
| **NDSD MDL mg/L** (NDSD completed mercury analyses prior to June 2020) | | | | | | | | | | | | | | 0.0000002 |

DWQ completed a Reasonable Potential analysis and Level I ADR for Outfall 003 and identified potential POC that exceed EPA screening criteria (DWQ 2020). These included:

1. **Ammonia**: While there is very limited data on ambient ammonia concentrations in Gilbert Bay, ammonia concentrations in the treated effluent are expected to exceed ambient concentrations in Gilbert Bay and 2013 EPA ammonia screening criteria for freshwater. Thus, ammonia is included as a POC in Table 1.

   As described in DWQ 2020, no data is available to describe the toxicity of ammonia in Gilbert Bay, but the toxicity of ammonia is expected to decrease in marine waters and decreases with increasing salinity. Thus, ammonia would be expected to be less toxic in Farmington Bay than in freshwater and less toxic in Gilbert Bay than in Farmington Bay. Further, unpublished data suggest that brine shrimp may be more tolerant of ammonia than most aquatic organisms. This rationale, along with expected dilution of the treated effluent with the open waters of Gilbert Bay, lead to a determination that current effluent concentrations will have minimal impact in Gilbert Bay and much less of an impact than they currently do in Farmington Bay.

2. **Chromium**: Initial chromium$^{3+}$ and chromium$^{6+}$ concentrations submitted to DWQ included one data point (June 2019) that exceeded the screening criterion (Table 2). NDSD has been able to verify that this was a data transcription error and all chromium concentrations fall below screening criterion and freshwater numeric water quality criteria.

   Effluent concentrations do, however, exceed available ambient concentrations for chromium in Gilbert Bay, thus both chromium$^{3+}$ and chromium$^{6+}$ are listed as POC in Table 1. An evaluation of toxicity using freshwater toxic weighting factors indicates that these concentrations will likely have minimal impact to the uses of Gilbert Bay (Table 1), especially if one considers likely dilution and the typically even lower sensitivities of uses in the high salinities of Gilbert Bay. Thus, current effluent concentrations are expected to have minimal impact in Gilbert Bay and much less of an impact than they currently do in Farmington Bay.

3. **Copper**: One NDSD sample had a copper concentration (September 2019) that exceeded screening criterion (Table 2). This one datapoint was more than seven times the average concentration reported by NDSD. NDSD will increase the frequency of its monitoring for copper to determine if this was an outlier and, if it does represent a concern, develop a strategy to control copper concentrations of influent to the WRF.

   NDSD's average effluent copper concentration exceeded the available ambient concentrations for copper in Gilbert Bay, thus is listed as a POC in Table 1. Even so, DWQ determined in its analysis that this one datapoint of 66 ug/L was less than the no-observed-effects-concentration of 459 ug/L and thus would not adversely impact the uses of Gilbert Bay. An evaluation of toxicity using freshwater toxic weighting factors indicates that these concentrations will likely have minimal impact to the uses of Gilbert Bay (Table 1), especially if one considers likely dilution and the typically even lower sensitivities of uses in the high salinities of Gilbert Bay. Thus, current effluent concentrations are expected to have minimal impact in Gilbert Bay and much less of an impact than they currently do in Farmington Bay.

4. **Mercury**: Initial mercury concentrations submitted to DWQ included one data point (June 2020) that exceeded the screening criterion (Table 2). NDSD has been able to confirm that this water sample was analyzed using a different method with a method detection limit that exceeds screening criterion (the analyzer that had been previously used had broken down). Thus, this June 2020 value was reported using the reporting limit and exceeded the screening criterion. NDSD is in the process of modifying its methods to report concentrations below the screening criterion and confirm its effluent is still following its historic pattern of mercury concentrations that are well below screening criterion.

   NDSD's effluent concentrations are below the available ambient concentrations for mercury in Gilbert Bay, thus, although it has the potential for toxicity, mercury is not considered a POC in Table 1.

5. **Cyanide**: NDSD's dataset includes multiple data points that exceed chronic screening criterion for cyanide and free cyanide (Table 2). Free cyanide is the only parameter that had a reported average concentration that exceeded chronic screening criterion. NDSD will be increasing the frequency of its monitoring program for cyanide and free cyanide to determine if and how to further minimize potential risks associated with these parameters.

   No ambient concentrations of cyanide or free cyanide in Gilbert Bay are available. Cyanide and free cyanide are not identified as POC in Table 1, however, are ranked high in the list potential POC and will be further examined in the future. While free cyanide can be toxic to a wide variety of organisms, no toxicity has been observed in NDSD effluent during acute or chronic WET testing. Further, an evaluation of toxicity using freshwater toxic weighting factors indicates that these concentrations will likely have minimal impact to the uses of Gilbert Bay (Table 1), especially if one considers likely dilution and the typically even lower sensitivities of uses in the high salinities of Gilbert Bay. The proposed project is expected to significantly reduce potential impacts of cyanide and free cyanide in Farmington Bay with minimal impacts in Gilbert Bay.

6. **Chlorine**: NDSD's reported effluent concentrations of total residual chlorine (TRC) exceed acute and chronic screening criteria but are below its permitted effluent limits. No ambient concentrations of TRC in Gilbert Bay are available, however, although Gilbert Bay has high NaCl concentrations, effluent concentrations of TRC are expected to be higher than ambient conditions. As a result, TRC was identified by DWQ as a POC. Effluent TRC concentrations are expected to decline as the effluent is aerated through the new Outfall 003 energy dissipator before flowing into Gilbert Bay. Dilution of the effluent is also expected to be greater at Outfall 003 than at Outfall 001.

Effluent concentrations of both nickel and zinc do exceed available ambient concentrations in Gilbert Bay and thus are identified as POC in Table 1. An evaluation of toxicity using freshwater toxic weighting factors indicates that the concentrations for both nickel and zinc will likely have minimal impact to the uses of Gilbert Bay (Table 1), especially if one considers likely dilution and the typically even lower sensitivities of uses in the high salinities of Gilbert Bay. Thus, current effluent concentrations are expected to have minimal impact in Gilbert Bay and much less of an impact than they currently do in Farmington Bay.

Nutrients in Gilbert Bay are a subject of current research. However, as discussed in CH2M 2017a, DWQ 2019 and Jacobs 2019d, Gilbert Bay is known to be naturally nitrogen limited and less sensitive to nutrients than Farmington Bay. The proposed project is an "innovative, alternative approach" to meeting current and likely future nutrient effluent limits with minimal impacts to Gilbert Bay and much less of an impact than they currently do in Farmington Bay.

The remaining parameters were not considered as POCs as they are below screening criterion, below ambient concentrations in Gilbert Bay and are expected to have minimal impact in Gilbert Bay and much less of an impact than they currently do in Farmington Bay.

## 6. Part E, Alternative Analysis

This section provides information in support of the requirements in DWQ's Level II ADR application form, Part E. NDSD initially considered various treatment alternatives to meet current TBPEL and likely future nutrient limit requirements, but then began evaluation of alternatives for the relocation of its outfall when doing so appeared justifiable. Although NDSD can answer "Yes" to E1 and proceed to Section F, the following narrative is provided to answer each of the questions.

**E1. The UPDES permit is being renewed without any changes to flow or concentrations. Alternative treatment and discharge options including changes to operations and maintenance were considered and compared to the current processes. No economically feasible treatment or discharge alternatives were identified that were not previously considered for any previous antidegradation review(s).**

Yes, NDSD's proposed project does not change flow or effluent concentrations. NDSD has fully considered its treatment and discharge options including changes in treatment process, operations and maintenance. Pollutant trading, water recycling/reuse, land application, facility upgrades, improved operations and maintenance, seasonal or controlled discharges, new construction and no discharge (i.e., reuse) were all options that were considered in terms of benefits and impacts to NDSD, the communities it serves and the environment it is part of.

NDSD uniquely considered the water quality and ecology downstream of its outfall location and determined that the proposed alternative (Alternative No. 3 – New Outfall 003 to Gilbert Bay) is the least degrading, the least polluting and provides the most benefit and least impact to NDSD and the communities it represents, Farmington Bay and Great Salt Lake (Jacobs 2019d).

**E2. Attach as an appendix to this form a report that describes the following factors for all alternative treatment options 1) a technical description of the treatment process, including construction costs and continued operation and maintenance expenses, 2) the mass and concentration of discharge constituents, and 3) a description of the reliability of the system including the frequency where recurring operation and maintenance may lead to temporary increases in discharged pollutants.**

NDSD completed a draft nutrient management plan (CH2M 2017b) that resulted in the recommendation of pursuing an "innovative, alternative approach" as proposed in CH2M 2017a and NDSD 2017. As a result of pursuing Alternative Nos. 1-3 and relocating the outfall to Gilbert Bay, the draft nutrient management plan was not finished or published.

Jacobs 2021a provides an updated evaluation of potential total phosphorus loads to Farmington Bay for four scenarios (Table 3):

- Scenario 1—NDSD continues to use Outfall 001 (no new outfalls to Gilbert Bay) without any new TP reductions.
- Scenario 2—NDSD continues to use Outfall 001 (no new outfalls to Gilbert Bay) with a new effluent TP limit of 1.0 milligrams per liter (mg/L).
- Scenario 3—NDSD continues to use Outfall 001 (no new outfalls to Gilbert Bay) with a new effluent TP limit of 0.1 mg/L.

- Scenario 4—NDSD implements Alternative No. 3 with a new Outfall 003 to Gilbert Bay sized for a capacity of 34 mgd with peak flows greater than 34 mgd directed to Outfall 001 without any new TP reductions.

**E3. Describe the proposed method and cost of the baseline treatment alternative. The baseline treatment alternative is the minimum treatment required to meet water quality based effluent limits (WQBEL) as determined by the preliminary or final wasteload analysis (WLA) and any secondary or categorical effluent limits.**

NDSD completed a draft nutrient management plan (CH2M 2017b) that resulted in the recommendation of pursuing an "innovative, alternative approach" as proposed in CH2M 2017a and NDSD 2017. As a result of pursuing Alternative Nos. 1-3 and relocating the outfall to Gilbert Bay, the draft nutrient management plan was not finished or published. Estimated costs for the conceptual design of treatment alternatives (as provided in CH2M 2017b and updated to 2020 dollars) and proposed Outfall 003 are provided in Table 4.

**Table 3. Estimated NDSD Total Phosphorus Loading to Farmington Bay Under Each Scenario (Existing Outfall 001 to Farmington Bay)**

| Scenario | TP Effluent Conc. (mg/L) | Total Annual Load (kg) | Total Annual Load (lbs) |
|---|---|---|---|
| NDSD Continues to Use Outfall 001 Without Any New TP Reductions | 1.5 | 41,973 | 92,341 |
| NDSD Continues to Use Outfall 001 with a New Effluent TP Limit of 1.0 mg/L | 1.0 | 28,346 | 62,361 |
| NDSD Continues to Use Outfall 001 with a New Effluent TP Limit of 0.1 mg/L | 0.1 | 2,835 | 6,236 |
| NDSD Implements Alternative No. 3 with a New Outfall 003 to Gilbert Bay | 1.5 | 104 | 229 |

**Table 4. Updated Costs from Conceptual Analysis of No-Action Treatment Alternatives versus Proposed Alternative No. 3**

| Cost | No-Action Treatment Alternatives | | | Proposed Alternative No. 3 New Outfall 003 to Gilbert Bay |
|---|---|---|---|---|
| | Option 1 – Chemical P Removal with Tertiary Filters (TP < 0.1 mg/L) | Option 2 – EBPR removal with Tertiary Filters (TP < 0.1 mg/L) | Option 3 - BNR with Tertiary Filters (TP < 0.1 mg/L, TN < 10 mg/L) | |
| **Construction Cost** | $42,000,000 | $71,200,000 | $117,000,000 | $45,700,000 |
| **Annual O&M Cost** | $2,246,000 | $2,171,000 | $3,458,000 | $238,500 |
| **20-year Life Cycle Cost** | $78,933,000 | $106,899,000 | $173,879,000 | $49,622,000 |

Note: I = 5%, n = 20, annual inflation = 3%

**E4. Were any of the following alternatives feasible and affordable?**

See E1 and the table on application form. All suggested alternatives were considered and none were found to be feasible, affordable or met the stated project purpose.

**E5. From the applicant's perspective, what is the preferred treatment option?**

The proposed alternative (Alternative No. 3 – New Outfall 003 to Gilbert Bay) is the least degrading, the least polluting and provides the most benefit and least impact to Farmington Bay and Great Salt Lake (Jacobs 2019d).

**E6. Is the preferred option also the least polluting feasible alternative?**

The proposed alternative (Alternative No. 3 – New Outfall 003 to Gilbert Bay) is the least degrading, the least polluting and provides the most benefit and least impact to Farmington Bay and Great Salt Lake (Jacobs 2019d).

## 7. Part F, Optional Information

**F1. Does the applicant want to conduct optional public review(s) in addition to the mandatory public review?**

No additional public review is requested. NDSD has made it a priority to communicate and collaborate with interested stakeholders throughout project development to identify and then develop the proposed alternative. Alternative No. 3 is what it is because of input from the public, communities, Great Salt Lake stakeholders, and State agencies.

**F2. Does the project include an optional mitigation plan to compensate for the proposed water quality degradation?**

NDSD has proposed to implement a 3-year phragmites control program (with State oversight) to significantly reduce or eliminate 500 acres of existing phragmites downstream of Outfall 001. The intent is to re-open historic shorebird habitat that can be supported by flows that will continue from the existing irrigation return ditch. This could be considered new habitat that will not be as susceptible to Great Salt Lake water elevation fluctuations.

NDSD has proposed to monitor for and control the propagation of phragmites at Outfall 003 and maintain the ditch downstream of Outfall 003 to maintain a direct connection to the open water of Gilbert Bay.

## 8. Part G. Certification of Antidegradation Review

See the application form.

## 9. References

CH2M HILL Engineers, Inc. (CH2M). 2017a. Proposal and Rationale for North Davis Sewer District TBPEL Variances. Technical memorandum prepared for the North Davis Sewer District. December 21. DWQ-2017-012791

CH2M HILL Engineers, Inc. (CH2M). 2017b. Draft Nutrient Management Plan. Unpublished technical memorandum prepared for the North Davis Sewer District. Not finalized as it recommended the innovative alternative approach.

Jacobs Engineering Group Inc. (Jacobs). 2018a. Field Sampling Plan; New Outfall to Great Salt Lake. Draft sampling plan prepared for North Davis Sewer District. March. DWQ-2018-003822

Jacobs Engineering Group Inc. (Jacobs). 2018b. Field Sampling Plan; New Outfall to Great Salt Lake. Final sampling plan prepared for North Davis Sewer District. August.(Revised from March). DWQ-2018-012136

Jacobs Engineering Group Inc. (Jacobs). 2018c. North Davis Sewer District New Outfall Project – Salinity Thresholds of Cyanobacteria: A Literature Review. January 2019. DWQ-2019-022941

Jacobs Engineering Group Inc. (Jacobs). 2019a. 2018 Annual Project Operating Report: Technology-based Phosphorus Effluent Limit Variance Compliance Monitoring at Great Salt Lake. Final report prepared for North Davis Sewer District. February. DWQ-2019-004761

Jacobs Engineering Group Inc. (Jacobs). 2019b. Phragmites Monitoring and Control Plan: Great Salt Lake Outfall Relocation. Draft plan prepared for North Davis Sewer District. February. DWQ-2020-012532

Jacobs Engineering Group Inc. (Jacobs). 2019c. North Davis Sewer District New Outfall Project – Total Phosphorus Load Evaluation. Technical memorandum prepared for North Davis Sewer District. August. DWQ-2019-022942

Jacobs Engineering Group Inc. (Jacobs). 2019d. Overview of Alternatives Considered for Relocation of North Davis Sewer District's Outfall to Great Salt Lake. Technical memorandum prepared for North Davis Sewer District. August 15. DWQ-2019-022943

Jacobs Engineering Group Inc. (Jacobs). 2020a. 2019 Annual Project Operating Report: Technology-based Phosphorus Effluent Limit Variance Compliance Monitoring at Great Salt Lake. Final report prepared for North Davis Sewer District. February. DWQ-2020-005687

Jacobs Engineering Group Inc. (Jacobs). 2020b. 2020 Field Sampling Plan: Existing Outfall 001 to Farmington Bay. Final plan prepared for North Davis Sewer District. May. DWQ-2020-023670

Jacobs Engineering Group Inc. (Jacobs). 2020c. Preliminary Design Report: Final Effluent Pipeline and Pump Station. Draft report prepared for the North Davis Sewer District. May 1. DWQ-2020-025729

Jacobs Engineering Group Inc. (Jacobs). 2020d. Rationale and Design Considerations for Outfall 003 at Gilbert Bay, Great Salt Lake. Memorandum prepared for the North Davis Sewer District. October 30.

Jacobs Engineering Group Inc. (Jacobs). 2020e. Basis of Design Report; NDSD Final Effluent Pipeline. Report prepared for the North Davis Sewer District. November 20, 2020.

Jacobs Engineering Group Inc. (Jacobs). 2021a. Updated Effluent Total Phosphorus Load Evaluation Relocation of North Davis Sewer District's Outfall to Great Salt Lake. Memorandum prepared for the North Davis Sewer District. January 7, 2021.

Jacobs Engineering Group Inc. Jacobs). 2021b. Supporting Information for Level II Antidegradation Review, Great Salt Lake Outfall Relocation Project. Memorandum prepared for the North Davis Sewer District. January 19, 2021.

North Davis Sewer District (District). 2017. Request for Variance from TBPEL. Letter to Erica Gaddis, Director of State of Utah Department of Environmental Quality, Division of Water Quality. December 21. DWQ-2017-01279

North Davis Sewer District (District). 2018. Field Sampling Plan – New Outfall to Great Salt Lake pre-construction sampling plan. Letter to Erica Gaddis, Director of State of Utah Department of Environmental Quality, Division of Water Quality. March 7. DWQ-2018-003821

North Davis Sewer District (District). 2020. Submittal of Permit Variance Update for TBPEL. Letter to Erica Gaddis, Director of State of Utah Department of Environmental Quality, Division of Water Quality. May 27. DWQ-2020-014322

Utah Department of Environmental Quality, Division of Water Quality (DWQ). 2019. Approval of Permit Variance to Technology-based Phosphorus Effluent Limitations (TBPEL) under R317-1-3.3.C.d. Letter to Kevin Cowan, District Manager, North Davis Sewer District with Permit Variance attached. March 11. DWQ-2019-002309

Utah Department of Environmental Quality, Division of Water Quality (DWQ). 2019. Approval of Permit Variance to Technology-based Phosphorus Effluent Limitations (TBPEL) under R317-1-3.3.C.d. Letter to Kevin Cowan, District Manager, North Davis Sewer District with Permit Variance attached. March 11. DWQ-2019-002309

Utah Department of Environmental Quality, Division of Water Quality (DWQ). 2020. Antidegradation Reviews for the North Davis Sewer District (NDSD), UPDES Permit UT0021741 Renewal, Outfalls 001 and 003. Memorandum prepared for DWQ. December 4.

# ATTACHMENT 6

*TBPEL Variance*

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UTAH DIVISION OF WATER QUALITY

| | |
|---|---|
| **IN THE MATTER OF**<br>**North Davis Sewer District**<br>**4252 West 2200 South**<br>**Syracuse, Utah 84075**<br><br>**UPDES PERMIT NO. UT0021741** | **PERMIT VARIANCE FOR TECHNOLOGY-BASED PHOSPHORUS EFFLUENT LIMITS** |

## BACKGROUND

1. North Davis Sewer District ("NDSD") is a Limited Purpose Local Government Entity – Local District under Utah Code Title 17B and the operator of a wastewater treatment facility located in Syracuse, Utah (the "Facility").

2. NDSD's operations at the Facility are undertaken subject to UPDES Discharge Permit No. UT0021741 ("Permit").

   a. Under the UPDES Permit NDSD is currently permitted to discharge to Outfall No. 001 which discharges to Farmington Bay.

   b. NDSD intends to permit a new discharge location referred to as Outfall No. 003 here forward under the UPDES Permit to discharge to Gilbert Bay.

3. The Facility was required to achieve technology-based phosphorus effluent limits ("TBPEL") on or before January 1, 2020, unless a variance is granted. *See* UAC R317-1-3.3.

   a. NDSD submitted a variance request, dated December 21, 2017 to the Utah Division of Water Quality ("DWQ"). The Variance Request is based on NDSD relocating the majority discharge to Gilbert Bay.

   b. Subsequently, a variance was granted on March 11, 2019 extending this deadline to January 1, 2022, if no extension was requested based on the conditions outlined in the variance.

   c. NDSD submitted a variance extension request, dated June 30, 2020 to the Utah Division of Water Quality ("DWQ"), seeking to extend their TBPEL Variance (the "Extension Request").

4. Utah law provides that DWQ may grant a variance for compliance with the TBPEL in the event that the operator demonstrates that the TBPEL or Phosphorus loading cap are clearly unnecessary to protect water downstream from the point of discharge. See UAC R317-1-3.3.C.l.c.

5. The Director of DWQ has determined that NDSD has met its burden to show that the TBPEL is clearly unnecessary in Gilbert Bay within the meaning of the UAC R317-1-3.3 and that a variance is appropriate, subject to the limitations and conditions provided herein.

6. Utah law provides that DWQ may grant a variance for compliance with the TBPEL in the event that the operator can demonstrate that commensurate phosphorus reduction can be achieved in receiving waters using innovative alternative approaches such as water quality trading and/or seasonal offsets. See UAC R317-1-3.3.C.1.d.

7. The Director of DWQ has determined that NDSD has met its burden to show an innovative alternative approach for the TBPEL for Outfall 001 to Farmington Bay within the meaning of the UAC R317 -1-3.3 and that a variance is appropriate, subject to the limitations and conditions provided herein.

## AUTHORITY

8. The Director of DWQ has authority to grant variances to the TBPEL pursuant to UAC R317-1-3.3 and the corresponding provisions of the Utah Water Quality Act.

9. The State of Utah administers the Utah Pollution Discharge Elimination System (UPDES) permit program under the Utah Water Quality Act.

## FINDINGS

10. The Variance Request included the following submissions, among others:
    a. Proposal and Rationale for North Davis Sewer District TBPEL Variances, ch2m (December, 2017).
    b. North Davis Sewer District New Outfall Location Proposal. (March 7, 2018)
    c. Field Sampling Plan – New Outfall to Great Salt Lake. Jacobs (March 2018)
    d. Field Sampling Plan – New Outfall to Great Salt Lake. Jacobs (August 2018)
    e. Submittal of Request for TBPEL Variance Update. (June 2020)

11. Based on the foregoing submissions and analysis provided by NDSD, the Director has determined that NDSD has established the basis for granting a TBPEL variance for an NDSD discharge to Farmington Bay.

    a. The proposed removal of effluent discharge from Farmington Bay comprises a phosphorus reduction commensurate with or exceeding implementation of the TBPEL in Farmington Bay (UAC R317-1-3.3.C.1.d).

i. Approximately, ten years of discharge data was evaluated at an estimated pumping capacity of 34 mgd to Outfall 003. At this pumping rate it is estimated discharge would have occurred from Outfall 001 for zero to seven days per year, with zero occurring from Outfall 001 between July 1 and October 31. These discharges would have resulted in a hypothetical loading of less than 1,000 lbs total phosphorus per year.

12. Based on the foregoing submissions and analysis provided by NDSD, the Director has determined that NDSD has established the basis for granting a TBPEL variance for an NDSD discharge to Gilbert Bay along the Antelope Island causeway.

a. Hypersaline conditions in Gilbert Bay significantly limit the potential for negative impacts and degradation of designated beneficial uses from phosphorus pollution such as harmful algal blooms and the development of phragmites stands, and

b. Given the expected phosphorus contributions from this outfall, phosphorus effluent concentration reductions in NDSD effluent are unnecessary to protect beneficial uses in Gilbert Bay under existing, hypersaline conditions based on the current understanding of phosphorus dynamics in Gilbert Bay (UAC R317-1-3.3.C.1.c).

**VARIANCE**

13. The Director hereby grants NDSD a variance as to the compliance with the TBPEL, subject to the following conditions:

a. This variance does not extend beyond January 1, 2030, which is prior to the anticipated expiration date of the Facility's UPDES permit after the 2025 renewal cycle. This variance shall be revisited after January 1, 2030 but prior to the Facility's next UPDES permit renewal after that date and may be renewed, modified, or abandoned.

b. Pursuant to UAC R317-1-3.3.C.2, this variance is subject to re-evaluation in the event that there is any substantive change in the facility design or construction plans provided in the Variance Request or Extension Request. NDSD must provide timely notice to DWQ of any such substantive changes.

c. The interim effluent limitation, total phosphorus annual average effluent limitation of 3.0 mg/L to Outfall No. 001, under the Permit effective January 1, 2020 will terminate on January 1, 2026.

d. Effective January 1, 2026, NDSD shall comply with the following requirements at Outfall No. 001:

i. a total phosphorus annual effluent loading limitation shall be placed on NDSD's Outfall No. 001 to Farmington Bay of no more than 6,500 lbs/yr of total phosphorus.

i. No technology based effluent limitation for total phosphorus concentration will be placed on NDSD's Outfall No. 001 as long as NDSD complies with the requirements of this variance.

ii. NDSD may discharge to Outfall No. 001 from November 1 through June 30, only if an instantaneous plant effluent is being measured at greater than 34 mgd.

iii. If discharge is occurring to Outfall No. 001, NDSD shall maintain a minimum instantaneous pumping rate of 34 mgd to Outfall No. 003 at all times discharge to Outfall No. 001 is occurring.

iv. NDSD shall have no discharge to Outfall No. 001 from July 1 through October 31 excepting flows in excess of 34 mgd caused by high flow environmental events.

i. If a discharge as described in Part 13.d.iv. is caused by a high flow environmental event, NDSD shall submit information of the cause of the event including environmental data such as but not limited to stream flow data, rainfall gage data, or groundwater level data.

e. NDSD shall prepare and comply with a Director approved Outfall No. 001 receiving water study monitoring plan. The Outfall No. 001 receiving water study monitoring plan shall evaluate the effectiveness of phragmites treatment in Farmington Bay by tracking changes in wetland vegetation following the treatment program. The Outfall No. 001 receiving water study monitoring plan shall be submitted to DWQ for approval no later than February 1, 2023.

f. NDSD shall coordinate the following with the Utah Division of Forestry, Fire, & State Lands (FFSL) for phragmites treatment work in Farmington Bay.

i. NDSD shall submit a phragmites treatment plan to FFSL and DWQ for DWQ Director approval before bidding or conducting any control work. This plan shall include the activities and schedule described below in 13.g and be submitted to FFSL and DWQ for approval no later than February 1, 2024.

i. All contractors shall meet the *FFSL Contractor Minimum Requirements for Phragmites Control*.

ii. NDSD shall properly permit the phragmites control work with FFSL.

iii. NDSD shall conduct phragmites treatment of at least 500 acres.

i. If treatment costs for 500 acres exceed $250,000, NDSD may request a reduction in scope of work from the Director. NDSD will submit any reduction in scope of work to keep budget at or below $250,000 to the Director for approval.

ii. DWQ and FFSL may evaluate the phragmites treatment for successful completion after the activities have been completed per the schedule below in 13.g. If DWQ or FFSL evaluates the work and deems the treatment incomplete and NDSD has not spent up to the budget cap of $250,000, NDSD shall correct the work in accordance with DWQ or FFSL recommendations.

g. To facilitate the successful phragmites treatment in Farmington Bay, NDSD shall alter their discharge location in relation to when the phragmites treatment is conducted. The phragmites treatment and Outfall discharge change shall follow the following schedule.

i. NDSD shall conduct phragmites treatment between July 1, and August 21, 2024.

i. NDSD shall cease discharge to Outfall 001 between 14 days and 30 days after phragmites treatment is completed in accordance with Part 13.d.ii.

ii. NDSD shall mow and/or trample the phragmites treatment area between November 2024 and February 2025.

i. Following completion of mowing and/or trampling the phragmites treatment area, NDSD may discharge to Outfalls 001 or 003.

iii. NDSD shall conduct phragmites treatment between July 1, and August 21, 2025.

i. NDSD shall cease discharge to Outfall 001 between 14 days and 30 days after phragmites treatment is completed in accordance with Part 13.d.iv.

iv. NDSD shall mow and/or trample the phragmites treatment area between November 2025 and February 2026.

v. NDSD shall conduct phragmites treatment between June 1, and August 10, 2026.

i. NDSD will not intentionally discharge to Outfall 001 for this treatment and shall comply with Part 13.d.

vi. NDSD shall mow and/or trample the phragmites treatment area between November 2026 and February 2027.

h. No technology based effluent limitation for total phosphorus will be placed on NDSD's Outfall No. 003 as long as NDSD complies with the requirements of this variance.

i. NDSD shall prepare and comply with a DWQ Director approved Outfall No. 003 receiving water study monitoring plan. The Outfall No. 003 receiving water study monitoring plan shall be submitted to DWQ for approval no later than February 1, 2023.

i. The monitoring plan will specify methods to:

i. Characterize the effluent area of influence and mixing zone in the receiving water, and,

ii. Evaluate attainment of harmful algal bloom and phragmites performance measures included in this variance.

ii. The monitoring plan will identify a minimum of five monitoring locations to be sampled four times per year for the first five years following first discharge to Gilbert Bay, but may include an allowance to adjust timing or sampling frequency for unsafe sampling conditions during winter months.

iii. After five years, sampling locations and frequency may be modified as appropriate for observed conditions and as agreed upon by DWQ and NDSD.

j. NDSD shall comply with their approved Outfall 003 Phragmites Control Plan.

i. The Outfall 003 Phragmites control plan shall be submitted to the director for approval no later than February 1, 2024.

ii. The proportion of wetland vegetation associated with the Gilbert Bay Outfall 003 shall not exceed 10% phragmites cover.

iii. NDSD shall meet any additional phragmites control performance measures specified in the approved Outfall 003 Phragmites Control Plan.

k. Effluent discharged to the Gilbert Bay outfall shall not contribute to the production or maintenance of harmful algal blooms in the receiving water. Under the terms of this variance, determination of a harmful algal bloom shall be defined as the detection of algal, diatom, or cyanobacterial cells which are potentially harmful to human health or aquatic life in a density exceeding 100,000 cells/mL occurring for 2 or more weeks within the area of influence.

l. NDSD shall comply with the DWQ Director approved Outfall No. 003 effluent management plan.

i. NDSD Outfall No. 003 shall discharge to open water of the Great Salt Lake (GSL).

i. Discharge from Outfall No. 003 shall be to open water achieved either by discharge pipe or by earthen channel delivering the effluent to the GSL surface elevation.

ii. The discharge by discharge pipe or earthen channel shall be at or below 4,190 ft, NVGD 29.

iii. If the GSL elevation ever falls below the NDSD Outfall No. 003 discharge pipe or earthen channel elevation NDSD shall notify DWQ.

m. By no later than February 1, 2024, NDSD shall submit to DWQ a Board resolution supporting the Outfall 001 Phragmites control. The resolution shall include the approximate budget for the construction work and phragmites control work.

n. Beginning no later than March 1, 2022, and for every year thereafter while this variance is in effect, NDSD agrees to submit to DWQ an annual report relating to

its phosphorus discharges (the "Annual Report"). The scope of the Annual Report shall include descriptions of all projects, studies, and work necessary, in reasonable detail, to achieve compliance with the TBPEL rule. The Annual Report will provide a summary of progress and milestones achieved in all construction, study, funding, planning, design projects, and the Field Sampling Plan data, results, and analysis during the previous reporting period, projected progress and milestones scheduled to be completed during the following reporting period, and if the project(s) are on schedule. The Annual Report will also provide information on effluent phosphorus concentrations to determine NDSD's compliance with Part 13.c. of this variance, noted below.

o. If it is found that NDSD has failed to comply with the requirements of this variance, DWQ may terminate this variance. If this variance is terminated by the DWQ, NDSD will be expected to comply with the requirements UAC R317-1-3.3 within 18 months of written notice of termination.

Erica Brown Gaddis, PhD
Director
Utah Division of Water Quality

Date: May 19, 2021

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