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

UTAH POLLUTANT DISCHARGE ELIMINATION SYSTEM (UPDES) PERMITS

Minor Industrial Permit No. **UT0025518**
Storm Water Permit No. **UTR000000**

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

PAYSON POWER PLANT

is hereby authorized to discharge from its wastewater treatment facility to receiving waters named **Unnamed Ditch** followed by **Beer Creek** and then into **Benjamin Slough**,

and to discharge storm water,

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

This permit shall become effective on April 1, 2018

This permit expires at midnight on March 31, 2023.

Signed this 23rd day of March, 2018.

Erica Brown Gaddis, PhD
Director

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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	The discharge is located at latitude 40°03'30" and longitude 111°43'45" into an unnamed ditch and eventually into the Benjamin Slough via Beer Creek.

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 Outfall 001as defined in *Part VIII* of this permit.

2.

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

Parameter	Effluent Limitations[1]				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
Total Flow, MGD	1	-	-	-	-
TSS, mg/L	25	35	-	-	-
Oil & Grease, mg/L	-	-	-	-	10.0
pH, Standard Units	-	-	-	6.5	9
TDS, mg/L	-	-	-	-	3396
DO, mg/L	-	-	-	4.0	-
Temperature (°C)					
Summer (Jul-Sep)	-	-	-	-	39.9
Fall (Oct-Dec)	-	-	-	-	46.6
Winter (Jan-Mar)	-	-	-	-	47.8
Spring (Apr-Jun)	-	-	-	-	47.0

[1] See Definitions, Part VIII, for definition of terms.

Parameter	Effluent Limitations1				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
TRC, mg/L					
Summer (Jul-Sep)	-	-	-	-	2.2
Fall (Oct-Dec)	-	-	-	-	1.2
Winter (Jan-Mar)	-	-	-	-	0.7
Spring (Apr-Jun)	-	-	-	-	1.0
Total Ammonia (as N), mg/L					
Summer (Jul-Sep)	10	-	-	-	-
Fall (Oct-Dec)	12.4	-	-	-	-
Winter (Jan-Mar)	12.4	-	-	-	-
Spring (Apr-Jun)	12.4	-	-	-	-
Copper, mg/L	0.12	-	-	-	-
Iron, mg/L	1.0	-	-	-	1.0
Cyanide, mg/L	0.0148	-	-	-	-
Chromium, mg/L	0.2	-	-	-	0.2
Zinc, mg/L	1.0	-	-	-	1.0
Selenium, mg/L	0.0169	-	-	-	-

Self-Monitoring and Reporting Requirements[1]			
Parameter	Frequency	Sample Type	Units
Total Flow[2]	Instantaneous	Recorder	MGD
TRC	Daily	Grab	mg/L
TDS	Weekly	Grab	mg/L
DO	Weekly	Grab	mg/L
TSS	Weekly	Grab	mg/L
Ammonia	Weekly	Grab	mg/L
Temperature	Weekly	Grab	°C
pH	Weekly	Grab	SU
Oil & Grease	Monthly	Grab	mg/L
Copper	Weekly	Grab	mg/L
Iron	Weekly	Grab	mg/L
Chromium	Weekly	Grab	mg/L
Zinc	Weekly	Grab	mg/L
Cyanide	Weekly	Grab	mg/L
Selenium	Weekly	Grab	mg/L
Mercury	Monthly	Grab	mg/L
Aluminum	Quarterly	Grab	mg/L
Arsenic	Quarterly	Grab	mg/L
Cadmium	Quarterly	Grab	mg/L
Lead	Quarterly	Grab	mg/L
Nickel	Quarterly	Grab	mg/L
Silver	Quarterly	Grab	mg/L

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

Self-Monitoring and Reporting Requirements[1]			
Parameter	Frequency	Sample Type	Units
Orthophosphate, (as P)[3]			
Effluent	Monthly	Composite	mg/L
Total Ammonia (as N)[3]			
Effluent	Monthly	Composite	mg/L
Phosphorus, Total[3]			
Influent	Monthly	Composite	mg/L
Effluent	Monthly	Composite	mg/L
Total Kjeldahl Nitrogen, TKN (as N)[3]			
Influent	Monthly	Composite	mg/L
Effluent	Monthly	Composite	mg/L
Nitrate, NO3[3]	Monthly	Composite	mg/L
Nitrite, NO2[3]	Monthly	Composite	mg/L
Priority Pollutants[4]	Once Every 2 Years	Grab	mg/L

3. Compliance Schedule for a Particular Parameter

   a. There is no Compliance Schedule included in this renewal permit

4. Acute/Chronic Whole Effluent Toxicity (WET) Testing.

   As part of the nationwide effort to control toxics, biomonitoring requirements are being included in all major permits and in minor permits for facilities where effluent toxicity is an existing or potential concern. Authorization for requiring effluent biomonitoring is provided for in UAC R317-8-4.2 and R317-8-5.3. The Whole Effluent Toxicity (WET) Control Guidance Document, February 15, 1991, outlines guidance to be used by Utah Division of Water Quality staff and by permittee's for implementation of WET control through the UPDES discharge permit program.

   Payson Power is a minor facility discharging non-contact cooling water. Comparison of the laboratory analysis performed on their effluent to the waste load analysis on the Beer Creek, Payson Power's discharge is not likely to be toxic. As a result, biomonitoring of the effluent will not be required. However, the permit will contain a WET reopener provision.

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 on a Discharge Monitoring Report Form (EPA No. 3320-1)[5] or 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 May 28, 2018. 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

[3] These reflect changes required with the adoption of UCA R317-1-3.3, Technology-based Phosphorus Effluent Limits rule.
[4] Testing must be performed in the first, second, and fifth years of the permit cycle. A list of the priority pollutants to be tested can be found in 40CFR423 appendix A.
[5] Starting January 1, 2017 monitoring results must be submitted using NetDMR unless the permittee has successfully petitioned for an exception.

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

II. INDUSTRIAL PRETREATMENT PROGRAM

A. Discharges to a POTW. Any process wastewater that the facility may discharge to the sanitary sewer, either as direct discharge or as a hauled waste, is subject to federal, state and local pretreatment regulations. Pursuant to Section 307 of the Clean Water Act, the permittee shall comply with all applicable Federal General Pretreatment Regulations promulgated, found in 40 CFR Section 403, the State Pretreatment Requirements found in *UAC R317-8-8*, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the waste.

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

III. BIOSOLIDS REQUIREMENTS

The State of Utah has adopted the 40 CFR 503 federal regulations for the disposal of sewage sludge (biosolids) by reference. However, this facility does not receive, generate, treat or dispose of biosolids. Therefore 40 CFR 503 does not apply

IV. STORM WATER REQUIREMENTS.

A. Coverage of This Section. The requirements listed under this section shall apply to storm water discharges. Storm water discharges from the following portions of the facility may be eligible for coverage under this permit: biosolids drying beds, haul or access roads on which transportation of biosolids may occur, grit screen cleaning areas, chemical loading, unloading and storage areas, salt or sand storage areas, vehicle or equipment storage and maintenance areas, or any other wastewater treatment device or system, used in the storage, treatment, recycling, and reclamation of municipal or domestic sewage, including lands dedicated to the disposal of sewage sludge that are located within the confines of the facility that may have a reasonable expectation to contribute to pollutants in a storm water discharge.

B. Prohibition of Non-Storm Water Discharges. Except for discharges identified in *Part I.*, and discharges described below in this paragraph, non-storm water discharges are prohibited. The following non-storm water discharges may be authorized under this permit provided the non-storm water component of the discharge is in compliance with this section; discharges from fire fighting activities; fire hydrant flushing; potable water sources including waterline flushing; drinking fountain water; irrigation drainage and lawn watering; routine external building wash down water where detergents or other compounds have not been used in the process; pavement wash waters where spills or leaks of toxic or hazardous materials (including oils and fuels) have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated compressor condensate; uncontaminated springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.

C. Storm Water Pollution Prevention Plan Requirements. The permittee must have (on site) or develop and implement a storm water pollution prevention plan as a condition of this permit.

1. Contents of the Plan. The plan shall include, at a minimum, the following items:

a. *Pollution Prevention Team.* Each plan shall identify a specific individual or individuals within the facility organization as members of a storm water Pollution Prevention Team who are responsible for developing the storm water pollution prevention plan and assisting the facility or plant manager in its implementation, maintenance, and revision. The plan shall clearly identify the responsibilities of each team member. The activities and responsibilities of the team shall address all aspects of the facility's storm water pollution prevention plan.

b. *Description of Potential Pollutant Sources.* Each plan shall provide a description of potential sources which may reasonably be expected to add significant amounts of pollutants to storm water discharges or which may result in the discharge of pollutants during dry weather from separate storm sewers draining the facility. Each plan shall identify all activities and significant materials, which may be reasonably expected to have the potential as a significant pollutant source. Each plan shall include, at a minimum:

(1) *Drainage.* A site map indicating drainage areas and storm water outfalls. For each area of the facility that generates storm water discharges associated with the waste water treatment related activity with a reasonable potential for containing significant amounts of pollutants, a prediction of the direction of flow and an identification of the types of pollutants that are likely to be present in storm water discharges associated with the activity. Factors to consider include the toxicity of the pollutant; quantity of chemicals used, produced or discharged; the likelihood of contact with storm water; and history of

significant leaks or spills of toxic or hazardous pollutants. Flows with a significant potential for causing erosion shall be identified. The site map shall include but not be limited to:

(a) Drainage direction and discharge points from all wastewater associated activities including but not limited to grit screen cleaning, bio-solids drying beds and transport, chemical/material loading, unloading and storage areas, vehicle maintenance areas, salt or sand storage areas.

(b) Location of any erosion and sediment control structure or other control measures utilized for reducing pollutants in storm water runoff.

(c) Location of bio-solids drying beds where exposed to precipitation or where the transportation of bio-solids may be spilled onto internal roadways or tracked off site.

(d) Location where grit screen cleaning or other routinely performed industrial activities are located and are exposed to precipitation.

(e) Location of any handling, loading, unloading or storage of chemicals or potential pollutants such as caustics, hydraulic fluids, lubricants, solvents or other petroleum products, or hazardous wastes and where these may be exposed to precipitation.

(f) Locations where any major spills or leaks of toxic or hazardous materials have occurred.

(g) Location of any sand or salt piles.

(h) Location of fueling stations or vehicle and equipment maintenance and cleaning areas that are exposed to precipitation.

(i) Location of receiving streams or other surface water bodies.

(j) Locations of outfalls and the types of discharges contained in the drainage areas of the outfalls.

(2) *Inventory of Exposed Materials*. An inventory of the types of materials handled at the site that potentially may be exposed to precipitation. Such inventory shall include a narrative description of significant materials that have been handled, treated, stored or disposed in a manner to allow exposure to storm water between the time of 3 years prior to the effective date of this permit and the present; method and location of onsite storage or disposal; materials management practices employed to minimize contact of materials with storm water runoff between the time of 3 years prior to the effective date of this permit and the present; the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of any treatment the storm water receives.

(3) *Spills and Leaks*. A list of significant spills and significant leaks of toxic or hazardous pollutants that occurred at areas that are exposed to precipitation or that otherwise drain to a storm water conveyance at the facility after the date of 3 years prior to the effective date of this permit. Such list shall be updated as appropriate during the term of the permit.

(4) *Sampling Data.* A summary of existing discharge sampling data describing pollutants in storm water discharges from the facility, including a summary of sampling data collected during the term of this permit.

(5) *Summary of Potential Pollutant Sources and Risk Assessment.* A narrative description of the potential pollutant sources from the following activities associated with treatment works: access roads/rail lines; loading and unloading operations; outdoor storage activities; material handling sites; outdoor vehicle storage or maintenance sites; significant dust or particulate generating processes; and onsite waste disposal practices. Specific potential pollutants shall be identified where known.

(6) *Measures and Controls.* The permittee shall develop a description of storm water management controls appropriate for the facility, and implement such controls. The appropriateness and priorities of controls in a plan shall reflect identified potential sources of pollutants at the facility. The description of storm water management controls shall address the following minimum components, including a schedule for implementing such controls:

(7) *Good Housekeeping.* All areas that may contribute pollutants to storm waters discharges shall be maintained in a clean, orderly manner. These are practices that would minimize the generation of pollutants at the source or before it would be necessary to employ sediment ponds or other control measures at the discharge outlets. Where applicable, such measures or other equivalent measures would include the following: sweepers and covered storage to minimize dust generation and storm runoff; conservation of vegetation where possible to minimize erosion; sweeping of haul roads, bio-solids access points, and exits to reduce or eliminate off site tracking; sweeping of sand or salt storage areas to minimize entrainment in storm water runoff; collection, removal, and proper disposal of waste oils and other fluids resulting from vehicle and equipment maintenance; other equivalent measures to address identified potential sources of pollution.

(8) *Preventive Maintenance.* A preventive maintenance program shall involve timely inspection and maintenance of storm water management devices (e.g., cleaning oil/water separators, catch basins) as well as inspecting and testing facility equipment and systems to uncover conditions that could cause breakdowns or failures resulting in discharges of pollutants to surface waters, and ensuring appropriate maintenance of such equipment and systems.

(9) *Spill Prevention and Response Procedures.* Areas where potential spills that can contribute pollutants to storm water discharges can occur, and their accompanying drainage points, shall be identified clearly in the storm water pollution prevention plan. Where appropriate, specifying material handling procedures, storage requirements, and use of equipment such as diversion valves in the plan should be considered. Procedures and equipment for cleaning up spills shall be identified in the plan and made available to the appropriate personnel.

(10) *Inspections.* In addition to the comprehensive site evaluation required under paragraph *(Part IV.C.1.b.(16))* of this section, qualified facility personnel shall be identified to inspect designated equipment and areas of the facility on a periodic basis. The following areas shall be included in all inspections: access

roads/rail lines, equipment storage and maintenance areas (both indoor and outdoor areas); fueling; material handling areas, residual treatment, storage, and disposal areas; and wastewater treatment areas. A set of tracking or follow-up procedures shall be used to ensure that appropriate actions are taken in response to the inspections. Records of inspections shall be maintained. The use of a checklist developed by the facility is encouraged.

(11) *Employee Training.* Employee training programs shall inform personnel responsible for implementing activities identified in the storm water pollution prevention plan or otherwise responsible for storm water management at all levels of responsibility of the components and goals of the storm water pollution prevention plan. Training should address topics such as spill response, good housekeeping and material management practices. The pollution prevention plan shall identify how often training will take place, but training should be held at least annually (once per calendar year). Employee training must, at a minimum, address the following areas when applicable to a facility: petroleum product management; process chemical management; spill prevention and control; fueling procedures; general good housekeeping practices; proper procedures for using fertilizers, herbicides and pesticides.

(12) *Record keeping and Internal Reporting Procedures.* A description of incidents (such as spills, or other discharges), along with other information describing the quality and quantity of storm water discharges shall be included in the plan required under this part. Inspections and maintenance activities shall be documented and records of such activities shall be incorporated into the plan.

(13) *Non-storm Water Discharges.*

(a) *Certification.* The plan shall include a certification that the discharge has been tested or evaluated for the presence of non-storm water discharges. The certification shall include the identification of potential significant sources of non-storm water at the site, a description of the results of any test and/or evaluation for the presence of non-storm water discharges, the evaluation criteria or testing method used, the date of any testing and/or evaluation, and the onsite drainage points that were directly observed during the test. Certifications shall be signed in accordance with *Part VII.G* of this permit.

(b) *Exceptions.* Except for flows from fire fighting activities, sources of non-storm water listed in *Part IV.B.* (Prohibition of Non-storm Water Discharges) of this permit that are combined with storm water discharges associated with industrial activity must be identified in the plan. The plan shall identify and ensure the implementation of appropriate pollution prevention measures for the non-storm water component(s) of the discharge.

(c) *Failure to Certify.* Any facility that is unable to provide the certification required (testing for non-storm water discharges), must notify the *Director* within 180 days after the effective date of this permit. If the failure to certify is caused by the inability to perform adequate tests or evaluations, such notification shall describe: the procedure of any test conducted for the presence of non-storm water discharges; the results of such test or other relevant observations; potential sources of non-storm water discharges to the storm sewer; and why adequate tests for such storm sewers were not

feasible. Non-storm water discharges to waters of the State, which are not, authorized by a *UPDES* permit are unlawful, and must be terminated.

(14) *Sediment and Erosion Control.* The plan shall identify areas, which, due to topography, activities, or other factors, have a high potential for significant soil erosion, and identify structural, vegetative, and/or stabilization measures to be used to limit erosion.

(15) *Management of Runoff.* The plan shall contain a narrative consideration of the appropriateness of traditional storm water management practices (practices other than those which control the generation or source(s) of pollutants) used to divert, infiltrate, reuse, or otherwise manage storm water runoff in a manner that reduces pollutants in storm water discharges from the site. The plan shall provide that measures that the permittee determines to be reasonable and appropriate shall be implemented and maintained. The potential of various sources at the facility to contribute pollutants to storm water discharges associated with industrial activity *Part IV.C.1.b* (Description of Potential Pollutant Sources) of this permit] shall be considered when determining reasonable and appropriate measures. Appropriate measures or other equivalent measures may include: vegetative swales and practices, reuse of collected storm water (such as for a process or as an irrigation source), inlet controls (such as oil/water separators), snow management activities, infiltration devices, wet detention/retention devices and discharging storm water through the waste water facility for treatment.

(16) *Comprehensive Site Compliance Evaluation.* Qualified personnel shall conduct site compliance evaluations at appropriate intervals specified in the plan, but in no case less than once a year. Such evaluations shall provide:

(a) Areas contributing to a storm water discharge associated with industrial activity shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system. Measures to reduce pollutant loadings shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed. Structural storm water management measures, sediment and erosion control measures, and other structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.

(b) Based on the results of the evaluation, the description of potential pollutant sources identified in the plan in accordance with *Part IV.C.1.b* (Description of Potential Pollutant Sources) of this section and pollution prevention measures and controls identified in the plan in accordance with *Part IV.C.1.b.(6)* (Measures and Controls) of this section shall be revised as appropriate within 2 weeks of such evaluation and shall provide for implementation of any changes to the plan in a timely manner, but in no case more than 12 weeks after the evaluation.

(c) A report summarizing the scope of the evaluation, personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the storm water pollution prevention plan, and actions taken in accordance with paragraph *i.* (above) shall be made and retained

as part of the storm water pollution prevention plan for at least 3 years after the date of the evaluation. The report shall identify any incidents of noncompliance. Where a report does not identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit. The report shall be signed in accordance with *Part VII.G* (Signatory Requirements) of this permit.

(17) *Deadlines for Plan Preparation and Compliance*. The permittee shall prepare and implement a plan in compliance with the provisions of this section within 270 days of the effective date of this permit. If the permittee already has a plan, it shall be revised according to *Part IV.C.1.b.(16)*, Comprehensive Site Evaluation.

(18) *Keeping Plans Current*. The permittee shall amend the plan whenever there is a change in design, construction, operation, or maintenance, that has a significant effect on the potential for the discharge of pollutants to the waters of the state or if the storm water pollution prevention plan proves to be ineffective in eliminating or significantly minimizing pollutants from sources identified by the plan, or in otherwise achieving the general objective of controlling pollutants in storm water discharges associated with the activities at the facility.

D. Monitoring and Reporting Requirements.

1. Quarterly Visual Examination of Storm Water Quality. Facilities shall perform and document a visual examination of a storm water discharge associated with industrial activity from each outfall, except discharges exempted below. The examination must be made at least once in each of the following designated periods during daylight hours unless there is insufficient rainfall or snow melt to produce a runoff event: January through March; April through June; July through September; and October through December.

a. *Sample and Data Collection*. Examinations shall be made of samples collected within the first 30 minutes (or as soon thereafter as practical, but not to exceed 1 hour) of when the runoff or snowmelt begins discharging. The examinations shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. The examination must be conducted in a well lit area. No analytical tests are required to be performed on the samples. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where practicable, the same individual should carry out the collection and examination of discharges for entire permit term.

b. *Visual Storm Water Discharge Examination Reports*. Visual examination reports must be maintained onsite in the pollution prevention plan. The report shall include the examination date and time, examination personnel, the nature of the discharge (i.e., runoff or snow melt), visual quality of the storm water discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution), and probable sources of any observed storm water contamination.

c. *Representative Discharge*. When the permittee has two or more outfalls that, based on a consideration of industrial activity, significant materials, and management

practices and activities within the area drained by the outfall, the permittee reasonably believes discharge substantially identical effluents, the permittee may collect a sample of effluent of one of such outfalls and report that the observation data also applies to the substantially identical outfall(s) provided that the permittee includes in the storm water pollution prevention plan a description of the location of the outfalls and explains in detail why the outfalls are expected to discharge substantially identical effluents. In addition, for each outfall that the permittee believes is representative, an estimate of the size of the drainage area (in square feet) and an estimate of the runoff coefficient of the drainage area [e.g., low (under 40 percent), medium (40 to 65 percent), or high (above 65 percent)] shall be provided in the plan.

d. *Adverse Conditions*. When a discharger is unable to collect samples over the course of the visual examination period as a result of adverse climatic conditions, the discharger must document the reason for not performing the visual examination and retain this documentation onsite with the results of the visual examination. Adverse weather conditions, which may prohibit the collection of samples, include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricane, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).

e. *Inactive and Unstaffed Site*. When a discharger is unable to conduct visual storm water examinations at an inactive and unstaffed site, the operator of the facility may exercise a waiver of the monitoring requirement as long as the facility remains inactive and unstaffed. The facility must maintain a certification with the pollution prevention plan stating that the site is inactive and unstaffed so that performing visual examinations during a qualifying event is not feasible.

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 maximum 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) testing, a WET limitation, a compliance schedule, a compliance date, additional or modified numerical limitations, or any other conditions related to the control of toxicants if toxicity is detected during the life of this 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".

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

6. "Chronic toxicity" occurs when the survival, growth, or reproduction for either test species exposed to a specific percent effluent dilution is significantly less (at the 95 percent confidence level) than the survival, growth, or reproduction of the control specimens.

7. "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.

8. "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.

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

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

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

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

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

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

15. "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.

16. "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. Storm Water.

1. "Best Management Practices" ("BMPs") means schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent or reduce the pollution of waters of the State. BMPs also include treatment requirements, operating procedures, and practices to control facility site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage.

2. "Coal pile runoff" means the rainfall runoff from or through any coal storage pile.

3. "Co-located industrial activity" means when a facility has industrial activities being conducted onsite that are described under more than one of the coverage sections of

Appendix II in the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity. Facilities with co-located industrial activities shall comply with all applicable monitoring and pollution prevention plan requirements of each section in which a co-located industrial activity is described.

4. "Commercial Treatment and Disposal Facilities" means facilities that receive, on a commercial basis, any produced hazardous waste (not their own) and treat or dispose of those wastes as a service to the generators. Such facilities treating and/or disposing exclusively residential hazardous wastes are not included in this definition.

5. "Landfill" means an area of land or an excavation in which wastes are placed for permanent disposal, and that is not a land application unit, surface impoundment, injection well, or waste pile.

6. "Land application unit" means an area where wastes are applied onto or incorporated into the soil surface (excluding manure spreading operations) for treatment or disposal.

7. "Municipal separate storm sewer system" (large and/or medium) means all municipal separate storm sewers that are either:

   a. Located in an incorporated place (city) with a population of 100,000 or more as determined by the latest Decennial Census by the Bureau of Census (at the issuance date of this permit, Salt Lake City is the only city in Utah that falls in this category); or

   b. Located in the counties with unincorporated urbanized populations of 100,000 or more, except municipal separate storm sewers that are located in the incorporated places, townships or towns within such counties (at the issuance date of this permit Salt Lake County is the only county that falls in this category); or

   c. Owned or operated by a municipality other than those described in paragraph *a.* or *b.* (above) and that are designated by the *Director* as part of the large or medium municipal separate storm sewer system.

8. "NOI" means "notice of intent", it is an application form that is used to obtain coverage under the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity.

9. "NOT" means "notice of termination", it is a form used to terminate coverage under the General Multi-Sector Permit for Storm Water Discharges Associated with Industrial Activity.

10. "Point source" means any discernible, confined, and discrete conveyance, including but not limited to, any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, concentrated animal feeding operation, landfill leachate collection system, vessel or other floating craft from which pollutants are or may be discharged. This term does not include return flows from irrigated agriculture or agricultural storm water runoff.

11. "Section 313 water priority chemical" means a chemical or chemical categories that:

a. Are listed at *40 CFR 372.65* pursuant to *Section 313* of the *Emergency Planning and Community Right-to-Know Act* (*EPCRA*) (also known as *Title III of the Superfund Amendments and Reauthorization Act* (*SARA*) of 1986);

b. Are present at or above threshold levels at a facility subject to *EPCRA Section 313* reporting requirements; and

c. Meet at least one of the following criteria:

(1) Are listed in *Appendix D* of *40 CFR Part 122* on either Table II (organic priority pollutants), Table III (certain metals, cyanides, and phenols) or Table V (certain toxic pollutants and hazardous substances);

(2) Are listed as a hazardous substance pursuant to *Section 311(b)(2)(A)* of the *CWA* at *40 CFR 116.4*; or

(3) Are pollutants for which EPA has published acute or chronic water quality criteria. See *Appendix III* of this permit. This appendix was revised based on final rulemaking EPA published in the *Federal Register* November 30, 1994.

12. "Significant materials" includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under *Section 101(14)* of *CERCLA*; any chemical the facility is required to report pursuant to *EPCRA Section 313*; fertilizers; pesticides; and waste products such as ashes, slag and sludge that have the potential to be released with storm water discharges.

13. "Significant spills" includes, but is not limited to: releases of oil or hazardous substances in excess of reportable quantities under *Section 311 of the Clean Water Act* (see *40 CFR 110.10* and *CFR 117.21*) or *Section 102* of *CERCLA* (see *40 CFR 302.4*).

14. "Storm water" means storm water runoff, snowmelt runoff, and surface runoff and drainage.

15. "SWDMR" means "storm water discharge monitoring report", a report of the results of storm water monitoring required by the permit. The Division of Water Quality provides the storm water discharge monitoring report form.

16. "Storm water associated with industrial activity" (*UAC R317-8-3.8(6)(c) & (d)*) means the discharge from any conveyance that is used for collecting and conveying storm water and that is directly related to manufacturing, processing or raw materials storage areas at an industrial plant. The term does not include discharges from facilities or activities excluded from the *UPDES* program. For the categories of industries identified in paragraphs *(a)* through *(j)* of this definition, the term includes, but is not limited to, storm water discharges from industrial plant yards; immediate access roads and rail lines used or traveled by carriers of raw materials, manufactured products, waste material, or by-products used or created by the facility; material handling sites; refuse sites; sites used for the application or disposal of process waste waters (as defined in *40 CFR Part 401*); sites used for the storage and maintenance of material handling equipment; sites used for

residual treatment, storage, or disposal; shipping and receiving areas; manufacturing buildings; storage areas (including tank farms) for raw materials, and intermediate and finished products; and areas where industrial activity has taken place in the past and significant materials remain and are exposed to storm water. For the categories of industries identified in paragraph *(k)* of this definition, the term includes only storm water discharges from all areas (except access roads and rail lines) listed in the previous sentence where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water. For the purposes of this paragraph, material handling activities include the storage, loading and unloading, transportation, or conveyance of any raw material, intermediate product, finished product, by-product or waste product. The term excludes areas located on plant lands separate from the plant's industrial activities, such as office buildings and accompanying parking lots as long as the drainage from the excluded areas is not mixed with storm water drained from the above described areas. Industrial facilities (including industrial facilities that are Federally, State, or municipally owned or operated that meet the description of the facilities listed in paragraphs *(a)* to *(k)* of this definition) include those facilities designated under *UAC R317-8-3.8(1)(a)5.* The following categories of facilities are considered to be engaging in "industrial activity" for purposes of this subsection:

a. Facilities subject to storm water effluent limitations guidelines, new source performance standards, or toxic pollutant effluent standards under *40 CFR Subchapter N* (except facilities with toxic pollutant effluent standards that are exempted under category (k) of this definition);

b. Facilities classified as Standard Industrial Classifications 24 (except 2434), 26 (except 265 and 267), 28 (except 283 and 285), 29, 311, 32 (except 323), 33, 3441, 373;

c. Facilities classified as Standard Industrial Classifications 10 through 14 (mineral industry) including active or inactive mining operations (except for areas of coal mining operations no longer meeting the definition of a reclamation area under *40 CFR 434.11(l)* because the performance bond issued to the facility by the appropriate SMCRA authority has been released, or except for areas of non-coal mining operations that have been released from applicable State or Federal reclamation requirements after December 17, 1990) and oil and gas exploration, production, processing, or treatment operations, or transmission facilities that discharge storm water contaminated by contact with or that has come into contact with, any overburden, raw material, intermediate products, finished products, byproducts or waste products located on the site of such operations; inactive mining operations are mining sites that are not being actively mined, but that have an identifiable owner/operator;

d. Hazardous waste treatment, storage, or disposal facilities, including those that are operating under interim status or a permit under Subtitle C of RCRA;

e. Landfills, land application sites, and open dumps that have received any industrial wastes (waste that is received from any of the facilities described under this subsection) including those that are subject to regulation under *Subtitle D* of *RCRA*;

f. Facilities involved in the recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards, including but limited to those classified as Standard Industrial Classification 5015 and 5093;

g. Steam electric power generating facilities, including coal handling sites;

h. Transportation facilities classified as Standard Industrial Classifications 40, 41, 42 (except 4221-25), 43, 44, 45 and 5171 that have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations. Only those portions of the facility that are either involved in vehicle maintenance (including vehicle rehabilitation, mechanical repairs, painting, fueling, and lubrication), equipment cleaning operations, airport deicing operations, or that are otherwise identified under paragraphs (a) to (g) or (I) to (k) of this subsection are associated with industrial activity;

i. Treatment works treating domestic sewage or any other sewage sludge or wastewater treatment device or system, used in the storage treatment, recycling, and reclamation of municipal or domestic sewage, including land dedicated to the disposal of sewage sludge that are located within the confines of the facility, with a design flow of 1.0 mgd or more, or required to have an approved pretreatment program under *40 CFR Part 403*. Not included are farm lands, domestic gardens or lands used for sludge management where sludge is beneficially reused and that are not physically located in the confines of the facility, or areas that are in compliance with *40 CFR Part 503*;

j. Construction activity including clearing, grading and excavation activities except: operations that result in the disturbance of less than 5 acres of total land area that are not part of a larger common plan of development or sale;

k. Facilities under Standard Industrial Classifications 20, 21, 22, 23, 2434, 25, 265, 267, 27, 283, 285, 30, 31 (except 311), 323, 34 (except 3441), 35, 36, 37 (except 373), 38, 39, 4221-25, (and that are not otherwise included within categories (a) to (j))

17. "Waste pile" means any non-containerized accumulation of solid, non-flowing waste that is used for treatment or storage.

FACT SHEET AND STATEMENT OF BASIS
PAYSON POWER PLANT
RENEWAL PERMIT: DISCHARGE& STORM WATER
UPDES PERMIT NUMBER: UT0025518
UPDES MULTI-SECTOR STORM WATER GENERAL PERMIT NUMBER: UTR000000
MINOR INDUSTRIAL

FACILITY CONTACTS

Person Name:	Ben Mitchell
Position:	Manager of Generation, Nebo Plant Manager
Telephone:	(801) 925-4003
Person Name:	Nathan Hardy
Position:	Director of Power Resources/Environmental
Telephone:	(801) 214-6421
Facility Name:	Payson Power Plant (Nebo Power Station)
Mailing Address:	Utah Associated Municipal Power Systems 2825 East Cottonwood Parkway, Ste. 200 Salt Lake City, Utah 84121-7055
Telephone:	(801) 566-3938
Actual Address:	1100 North 1100 East Payson, Utah 84651

DESCRIPTION OF FACILITY

Payson Power Project (Payson Power) is located in Payson, Utah at latitude 40°03'30" and longitude 111°43'45". Payson Power's Standard Industrial Classification (SIC) code is 4911, and the North American Industry Classification System (NAICS) code is 221111 for Steam Electric Power Generation.

Utah Associated Municipal Power Systems (UAMPS) constructed a new electric generating facility in Payson, Utah with an electric output of 141MW. The facility utilizes a gas-fired Combustion Turbine with a Heat Recovery Steam Generator and a steam turbine operating in a combined-cycle mode.

Cooling water is obtained from the Payson City Wastewater Treatment Plant (Payson City). The treatment plant and Payson Power have an agreement to use the treatment plant's effluent for cooling water purposes. The flow will enter the cooling tower and will be discharged as a non-contact cooling water stream. The estimated flow is 0.75MGD.

SUMMARY OF CHANGES FROM PREVIOUS PERMIT

1. Temperature

Since the permit was issued, construction of Payson Power was completed and it has commenced operating. There have been no significant violations. The Fahrenheit effluent temperature limit and reporting requirement will be eliminated from the permit. The Celsius effluent temperature limit and

reporting requirement will remain. The renewal permit for Payson Power will include provisions for storm water discharges.

2. TSS

There have been no process issues with influent total suspended solids (TSS). The requirement to report influent TSS in the monthly discharge monitoring reports (DMR) will be eliminated.

3. WLA Model

A new model is used by Water Quality to develop a waste load allocation (WLA) for dischargers to Waters of the State. In preparing for using this model, Water Quality determined that the receiving stream should have a synoptic study completed on it to improve the understanding of the waterway and improve the WLA. This study was conducted during the October 2013 and the information was incorporated in the WLA.

Aqua Engineering preformed a study on the stream to determine the decay rate for chlorine, temperature and travel time. The result of the study was submitted to Water Quality along with a report describing the flow scenarios between Payson City Waste Water Treatment Plant and Payson Power Plant. The memos were incorporated into the latest WLA and are included in Attachment 1 of the FSSOB.

The use of a different model by DWQ to evaluate receiving waters and develop a WLA for permit limits resulted in more stringent limits for the discharge permit than those limits in the last WLA. The parameters that will change are temperature, copper, cyanide, total residual chlorine (TRC), ammonia, total dissolved solids (TDS) and dissolved oxygen (DO).

4. TRC

The WLA indicates that the acute limit for TRC is lower than the chronic limit. This is the result of the difference in the mixing zone requirements for this particular receiving stream. As a result the chronic limit is removed and the acute limit remains.

5. Old and New Effluent Limits Comparison

	Previous Limit		New Limit	
Parameter	Acute	Chronic	Acute	Chronic
Ammonia (mg/L)				
Summer (Jul-Sep)	55	12.4	-	10
Fall (Oct-Dec)	55	12.4	-	12.4
Winter (Jan-Mar)	55	12.4	-	12.4
Spring (Apr-Jun)	55	12.4	-	12.4
Total Residual Chlorine (mg/L)				
Summer (Jul-Sep)	1.9	1	2.2	-
Fall (Oct-Dec)	2.7	1.5	1.2	-
Winter (Jan-Mar)	4	2.3	0.7	-
Spring (Apr-Jun)	2.7	1.5	1	-
Total Dissolved Solids	4000	-	3396	-
Temperature (°C)				
Summer (Jul-Sep)	44.9	-	39.9	-
Fall (Oct-Dec)	36.9	-	46.6	-

	Previous Limit		New Limit	
Parameter	Acute	Chronic	Acute	Chronic
Winter (Jan-Mar)	32.9	-	47.8	-
Spring (Apr-Jun)	36.9	-	47.0	-
Metals Limit (mg/L)				
Selenium	-	-	-	0.0169
Cyanide	0.07	0.03	-	0.0148
Copper	0.12	0.12	-	0.12

6. RP

During the permit cycle, Water Quality has worked to improve our reasonable potential analysis (RP) for parameters to have limits included by using an EPA provided model. As a result of the new model, new limits are included in the permit.

As a result of the RP evaluation the following changes have been made;

Acute limit has been removed from cyanide, copper, ammonia,
Limit for cyanide has been reduced,
Monitoring frequency has been reduced from 2 times a week to once a week for copper, iron, chromium zinc cyanide and selenium ammonia,
Monitoring for mercury has been increased, and a more sensitive method is recommended.

The results of the RP Analysis are included in Attachment 2 of the FSSOB.

7. Cr, CrIII, and CrVI

Hexavalent and trivalent chrome are subsets of total chrome. They are calculated through subtraction of other valent states of chrome instead of through direct measurement. Total chrome didn't have RP to exceed the chronic or acute limits for CrIII or CrVI. As a result the monitoring and reporting requirements are eliminated until there is RP. As long as the total chrome does not show RP to exceed the CrIII or CrVI limits, it may be left out.

8. Monitoring frequency

The monitoring frequencies for many parameters have changed to be more consistent with the Water Quality "Monitoring, Recording, and Reporting Guidelines". The guideline indicates that for a facility with a daily flow at the level of Payson Power, they should be monitoring weekly for the majority of parameters. Currently Payson Power monitors the influent levels for most parameters at the same frequency as the effluent, and monitors for the metals at least monthly. Due to the good compliance history of Payson Power, the frequencies of some parameters have been reduced. Those changes are reflected in the Permit and FSSOB.

9. TBPEL Rule

Water Quality adopted UAC R317-1-3.3, Technology-Based Phosphorus Effluent Limit (TBPEL) Rule in 2014. The TBPEL rule as it relates to "non-lagoon" wastewater treatment plants establishes new regulations for the discharge of phosphorus to surface waters and is self-implementing. The TBPEL rule includes the following requirements for non-lagoon wastewater treatment plants:

The TBPEL requires that 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.

The TBPEL discharging treatment works are required to implement, at a minimum, monthly monitoring of the following beginning July 1, 2015:

R317-1-3.3, D, 1 Influent for total phosphorus (as P) and total Kjeldahl nitrogen (as N) concentrations;

R317-1-3.3, D, 2. Effluent for total phosphorus and orthophosphate (as P), ammonia, nitrate-nitrite and total Kjeldahl nitrogen (an N);

In R317-1-3.3, D, 3 the rule states that all monitoring shall be based on 24-hour composite samples by use of an automatic sampler or a minimum of four grab samples collected a minimum of two hours apart.

DISCHARGE

DESCRIPTION OF DISCHARGE

Payson Power discharges into an irrigation ditch which runs approximately one to two miles before entering Beer Creek. Beer Creek runs through Benjamin Slough and hence to Utah Lake. Payson Power 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 significant violations.

Outfall	Description of Discharge Point
001	The discharge is located at latitude 40°03'30" and longitude 111°43'45" into an unnamed ditch and eventually into the Benjamin Slough via Beer Creek.

RECEIVING WATERS AND STREAM CLASSIFICATION

The final discharge flows into an unnamed ditch hence to Beer Creek. The route that the effluent takes has been classified as 2B & 3C (Beer Creek) and 4 (unnamed ditch and Beer Creek) 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 3C -- Protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain.

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

BASIS FOR EFFLUENT LIMITATIONS

Reasonable Potential Analysis

Since January 1, 2016, Water Quality has conducted reasonable potential analysis (RP) on all new and renewal applications received after that date. RP for this permit renewal was conducted following Water Quality'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 quantitative RP analysis was performed on cadmium, Cr VI, lead, aluminum, selenium, mercury, cyanide, iron, chromium, copper, zinc and ammonia to determine if there was reasonable potential for the

discharge to exceed the applicable water quality standards. Based on the RP analysis, the following parameters exceeded the most stringent chronic water quality standard or were determined to have a reasonable potential to exceed the standard: selenium, mercury, cyanide, copper, and ammonia. In addition, the RP analysis for mercury indicates increase monitoring is required. A copy of the RP analysis is included in Attachment 4 at the end of this Fact Sheet.

Attached is a Wasteload Analysis for this discharge into the unnamed irrigation ditch. It has been determined that this discharge will not cause a violation of water quality standards. An Antidegradation Level II review is not required since the Level I review shows that water quality impacts are minimal. The permittee is expected to be able to comply with these limitations.

The inclusion of iron, copper, chromium, zinc, oil and grease as pollutants of concern (POC) requiring effluent limits is based on New Source Performance Standards (NSPS) for a new source as found in the Code of Federal Regulations, 40 CFR 423.15. The inclusion of pH, temperature, TSS and TDS as a POC requiring effluent limits is based on BPJ. The inclusion of ammonia, cyanide and selenium as POC requiring effluent limits is based on BPJ is and supported by RP.

The effluent limits for iron, chromium, and zinc are based on NSPS for a new source as found in the Code of Federal Regulations, 40 CFR 423.15. The effluent limits for temperature, TDS, ammonia, cyanide, selenium and copper are water quality based effluent limits (WQBEL) from the WLA. Limitations on total suspended solids (TSS), pH are based on current Utah Secondary Treatment Standards, UAC R317-1-3.2. The oil and grease limit is based on best professional judgment (BPJ).

The permit limitations are

Parameter	Effluent Limitations[1]				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
Total Flow, MGD	1	-	-	-	-
TSS, mg/L	25	35	-	-	-
Oil & Grease, mg/L	-	-	-	-	10.0
pH, Standard Units	-	-	-	6.5	9
TDS, mg/L	-	-	-	-	3396
DO, mg/L	-	-	-	4.0	-
Temperature (°C)					
Summer (Jul-Sep)	-	-	-	-	39.9
Fall (Oct-Dec)	-	-	-	-	46.6
Winter (Jan-Mar)	-	-	-	-	47.8
Spring (Apr-Jun)	-	-	-	-	47.0
TRC, mg/L					
Summer (Jul-Sep)	-	-	-	-	2.2
Fall (Oct-Dec)	-	-	-	-	1.2
Winter (Jan-Mar)	-	-	-	-	0.7
Spring (Apr-Jun)	-	-	-	-	1.0

[1] See Definitions, Part VIII, for definition of terms.

Parameter	Effluent Limitations[1]				
	Maximum Monthly Avg	Maximum Weekly Avg	Yearly Average	Daily Minimum	Daily Maximum
Total Ammonia (as N), mg/L					
Summer (Jul-Sep)	10	-	-	-	-
Fall (Oct-Dec)	12.4	-	-	-	-
Winter (Jan-Mar)	12.4	-	-	-	-
Spring (Apr-Jun)	12.4	-	-	-	-
Copper, mg/L	0.12	-	-	-	-
Iron, mg/L	1.0	-	-	-	1.0
Cyanide, mg/L	0.0148	-	-	-	-
Chromium, mg/L	0.2	-	-	-	0.2
Zinc, mg/L	1.0	-	-	-	1.0
Selenium, mg/L	0.0169	-	-	-	-

SELF-MONITORING AND REPORTING REQUIREMENTS

The following self-monitoring requirements include changes from the previous permit. 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]			
Parameter	Frequency	Sample Type	Units
Total Flow[2]	Instantaneous	Recorder	MGD
TRC	Daily	Grab	mg/L
TDS	Weekly	Grab	mg/L
DO	Weekly	Grab	mg/L
TSS	Weekly	Grab	mg/L
Ammonia	Weekly	Grab	mg/L
Temperature	Weekly	Grab	°C
pH	Weekly	Grab	SU
Oil & Grease	Monthly	Grab	mg/L
Copper	Weekly	Grab	mg/L
Iron	Weekly	Grab	mg/L
Chromium	Weekly	Grab	mg/L
Zinc	Weekly	Grab	mg/L
Cyanide	Weekly	Grab	mg/L
Selenium	Weekly	Grab	mg/L
Mercury	Monthly	Grab	mg/L
Aluminum	Quarterly	Grab	mg/L
Arsenic	Quarterly	Grab	mg/L
Cadmium	Quarterly	Grab	mg/L
Lead	Quarterly	Grab	mg/L

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

Self-Monitoring and Reporting Requirements[1]			
Parameter	Frequency	Sample Type	Units
Nickel	Quarterly	Grab	mg/L
Silver	Quarterly	Grab	mg/L
Orthophosphate, (as P)[3] Effluent	Monthly	Composite	mg/L
Total Ammonia (as N)[3] Effluent	Monthly	Composite	mg/L
Phosphorus, Total[3] Influent Effluent	 Monthly Monthly	 Composite Composite	 mg/L mg/L
Total Kjeldahl Nitrogen, TKN (as N)[3] Influent Effluent	 Monthly Monthly	 Composite Composite	 mg/L mg/L
Nitrate, NO3[3]	Monthly	Composite	mg/L
Nitrite, NO2[3]	Monthly	Composite	mg/L
Priority Pollutants[4]	Once Every 2 Years	Grab	mg/L

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.

STORM WATER

The storm water requirements in the permit are based on the UPDES Multi-Sector General Permit for Storm Water Discharges for Industrial Activity, General Permit No. UTR000000 (MSGP) Sector O, Steam Electric Power Generating Facilities.

Steam electric power generating facilities are required to perform analytical monitoring for total recoverable iron with a cut off concentration of 1.0 mg/L per the MSGP. This permit requires monitoring for total recoverable iron quarterly in the 2nd and 4th years of the permit cycle. The samples shall be representative of the runoff from the site and do not need to be taken where storm water leaves the facility confines. Monitoring locations can be designated in the interior of the site where there is the most potential for storm water to be contaminated. The analytical cut off concentration is not an enforceable effluent limitation. If the concentration for total recoverable iron is above the 1.0 mg/L concentration then the permit requires that the facility evaluate the storm water pollution prevention plan and make efforts to reduce the concentrations.

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

[4] Testing must be performed in the first, second, and fifth years of the permit cycle. A list of the priority pollutants to be tested can be found in 40CFR423 appendix A.

Steam electric power generating facilities are required to perform analytical monitoring for total recoverable iron with a cut off concentration of 1.0 mg/L per the MSGP. This permit requires monitoring for total recoverable iron quarterly in the 2nd and 4th years of the permit cycle. The samples shall be representative of the runoff from the site and do not need to be taken where storm water leaves the facility confines. Monitoring locations can be designated in the interior of the site where there is the most potential for storm water to be contaminated. The analytical cut off concentration is not an enforceable effluent limitation. If the concentration for total recoverable iron is above the 1.0 mg/L concentration then the permit requires that the facility evaluate the storm water pollution prevention plan and make efforts to reduce the concentrations.

The storm water section in the permit also contains requirements for SWP3 Preparation, Discharge Certification, CWA Section 313, Visual Monitoring and Spill Prevention and Response.

PRETREATMENT REQUIREMENTS

The permittee does not discharge to another wastewater treatment facility, but rather treats and discharges all of the facility's process wastewater. Any wastewaters discharged to the sanitary sewer, either as a direct discharge or as a hauled waste, are subject to Federal, State and local pretreatment regulations. Pursuant to Section 307 of *The Water Quality Act of 1987*, the permittee shall comply with all applicable federal General Pretreatment Regulations promulgated at *40 CFR 403*, the State Pretreatment Requirements at *UAC R317-8-8*, and any specific local discharge limitations developed by the Publicly Owned Treatment Works (POTW) accepting the wastewaters

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

BIOMONITORING REQUIREMENTS

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

The permittee is a minor industrial facility that regularly discharges non-contact cooling water, in which toxicity is neither an existing concern, nor likely to be present. Therefore the potential for toxicity is not deemed sufficient to require Biomonitoring or to include whole effluent toxicity (WET) limits. Based on these considerations and the permitting authority's best professional judgment, 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 at any time in the future should additional information indicate the presence of toxicity in the discharge

PERMIT DURATION

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

Drafted by
Daniel Griffin, Discharge, Reasonable Potential Analysis
Jennifer Robinson, Pretreatment
Michael George, Storm Water
Nick von Stackelberg, Wasteload Analysis
Utah Division of Water Quality, (801) 536-4300

PUBLIC NOTICE

Began: February 8, 2018
Ended: March 12, 2018

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

The Public Noticed of the draft permit was published in The Daily Herald.

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 FSSOB

During finalization of the Permit certain dates, spelling edits and minor language corrections were completed. Due to the nature of these changes they were not considered Major and the permit is not required to be re Public Noticed.

Responsiveness Summary

No comments were received during the comment period, therefore no changes were made.

ATTACHMENT 1

Supplemental Reports

Parameter Memo and Flow Memo

Memorandum

To Dan Griffith

From Naho Garvin

Date April 4, 2013

CC Jeff Hiatt, Brad Rasmussen

Subject Payson Chlorine Decay Rates

Introduction

This memo is intended document the chlorine decay rates that occur in the ditch that Payson City discharges into prior to their outfall at Beer Creek.

Historically the City had sampled for chlorine levels at the outfall at Beer Creek and in the previous sampling there was never a sample that had a chlorine residual. However, with the new waste load analysis it showed a potential for chlorine to reach Beer Creek and lowered the Total Residual Chlorine (TRC) limit for the City. The historical data is no longer available so this memo is intended to increase the available data available for the modeling.

Total Residual Chlorine (TRC)

The TRC permit requirement in the draft permit was recommended to be substantially lowered. The City staff collected TRC concentration on several locations along the outfall ditch for Beer Creek as shown in Figure 1. The TRC was measured several days in February and March of 2017. The purpose of the sampling was to determine the first order decay rate for chlorine in the ditch to Beer Creek. The travel times were based on a dye study that was done concurrently with the TRC sampling. The sampling data along with the first order decay rate is included at the end of this memo as Appendix A.

The water temperature during the sampling varied between 9.4 and 11.6 degrees C. Decay rate was normalized to 20 degrees C using the modified van't Hoff Arrhenius equation as follows.

$$K_2 = K_1 \times \theta^{(T_2 - T_1)} \qquad \text{Equation 1}$$

Discharge to Beer Creek Sample Locations

Where;

K_2=Normalized Decay Rate (20 deg C)
K_1=River Temp Decay Rate
Θ=Temperature Coefficient (Typically between 1.02 and 1.10, 1.07 was used)
T_2=20 deg C
T_1=Measured River Temp

Table 1 below summarizes the decay rate. The temperature correction coefficient of 1.07 was used for this memo.

Table 1 Summary Decay Rate

Date	Measured Decay Rate (1/day)	Decay Rate @20 C (1/day)
2/26/2017	21.45	41.79
2/24/2017	16.03	32.28
2/27/2017	24.17	49.48
2/28/2017	13.69	27.30
3/1/2017	24.40	48.11
3/2/2017	25.67	49.74
3/3/2017	23.66	46.65
3/6/2017	25.03	47.82
3/7/2017	20.68	36.56
Min	13.69	27.30
Max	25.67	49.74
Average	21.64	42.19
20th Percentile	18.82	34.85

The normalized decay rates vary depending on the temperature coefficient used in the equation. When the lowest temperature coefficient was used (Θ=1.02), the average decay rate was calculated to be 26.31/day. Consequently, when the highest temperature coefficient was used (Θ=1.10), the average decay rate was calculated to be 55.45/day.

Based on the travel time assumptions the decay rate varied from 27.30/day to 49.74/day. The average was 42.19/day and the 20th percentile was 34.85/day. The TRC concentration at the Beer Creek never had a concentration that could be measured.

Flow

One of the major components of the model is the flow. The only flow to the ditch is from the discharge from Payson City and UAMPS. The flow determines the time required for the water to reach Beer Creek. The dye study was used to measure the time to reach the different sample points. It was assumed the flow was similar between all sample intervals.

Temperature

Historical temperature information was evaluated from the sample sites shown in Figure 2. Storet stations 4995400 and 4995420 were both in similar locations on Beer Creek. The data was combined in the two stations to evaluate Temperature.

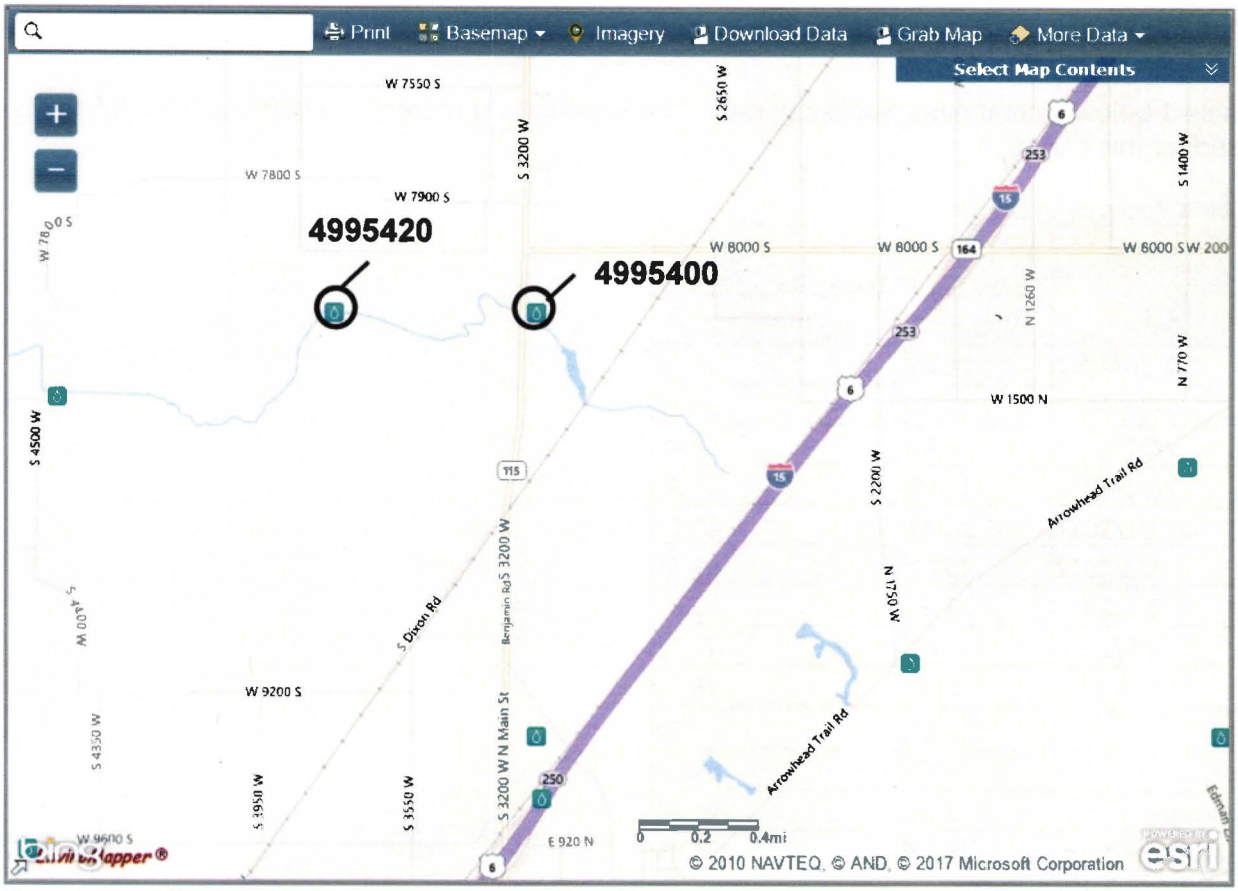


Figure 2 Storet Site Locations

Table 2 is a summary of the temperature data sampled at the Storet sites on Beer Creek. The data was sorted seasonally to reflect the breakdown in the model.

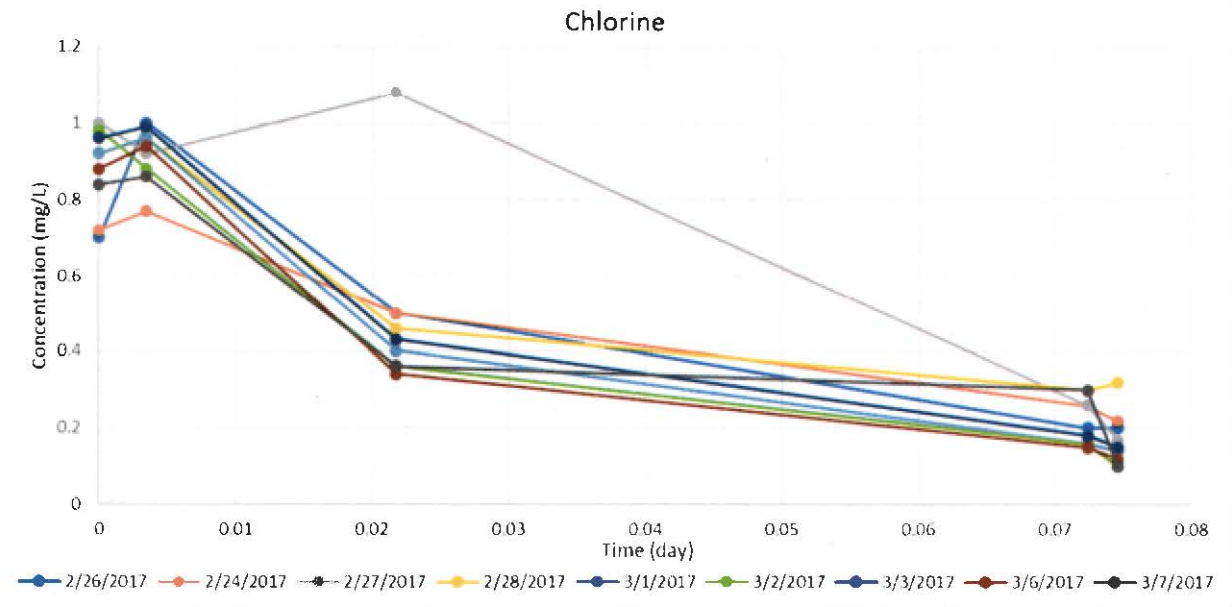
Table 2

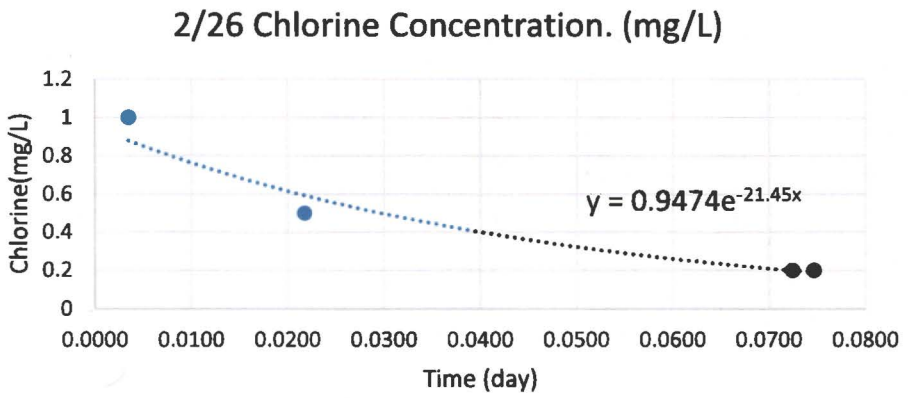
Beer Creek Temperature Summary			
Winter Temperature		**Summer Temperature**	
Min	0.27	Min	2.4
Max	11.0	Max	25.4
Average	4	Average	18.8
80th Percentile	5.7	80th Percentile	21.9
Spring Temperature		**Fall Temperature**	
Min	1.3	Min	1.6
Max	21.7	Max	22.1
Average	10.7	Average	10.6
80th Percentile	14.4	80th Percentile	15.1

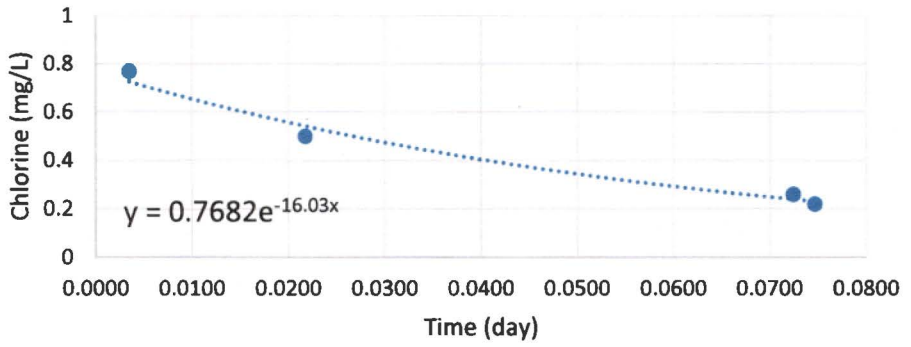
Appendix A – TRC Sampling

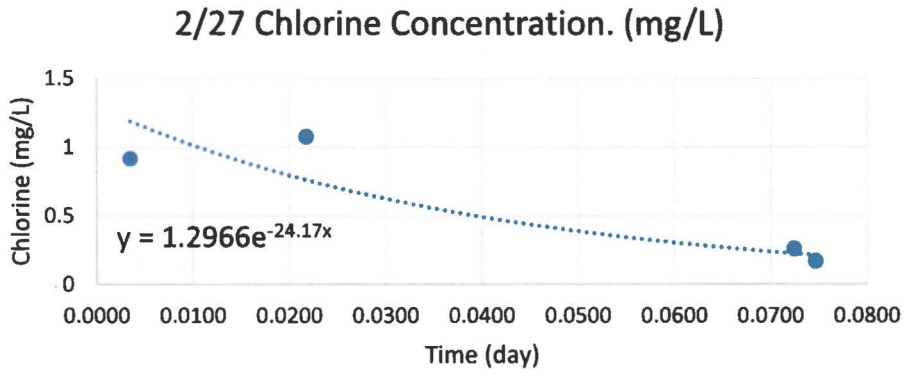
	Location	Travel Time (day)	Chlorine Conc. (mg/L)	pH	Temp (F)	Temp (C°)
2/26/2017	#1	0	0.7	7.61	52.2	11.2
	#2	0.0035	1	7.42	54.8	12.7
	#3	0.0217	0.5	7.65	50.3	10.2
	#4	0.0724	0.2	7.71	47.6	8.7
	#5	0.0747	0.2	9.2	46.4	8.0
						10.1
2/24/2017	#1	0	0.72	7.39	53.7	12.1
	#2	0.0035	0.77	7.49	53.3	11.8
	#3	0.0217	0.5	7.78	49.2	9.6
	#4	0.0724	0.26	8.05	45.2	7.3
	#5	0.0747	0.22	8.22	45.5	7.5
						9.7
2/27/2017	#1	0	1	7.18	51.4	10.8
	#2	0.0035	0.92	7.39	51.6	10.9
	#3	0.0217	1.08	7.54	49.2	9.6
	#4	0.0724	0.26	7.74	46	7.8
	#5	0.0747	0.17	7.79	46.5	8.1
						9.4
2/28/2017	#1	0	0.92	7.21	53.8	12.1
	#2	0.0035	0.96	7.65	52.1	11.2
	#3	0.0217	0.46	7.72	50	10.0
	#4	0.0724	0.3	8.03	45.6	7.6
	#5	0.0747	0.32	7.88	46.7	8.2
						9.8
3/1/2017	#1	0	0.92	7.47	50.2	10.1
	#2	0.0035	0.96	7.38	52.9	11.6
	#3	0.0217	0.4	7.65	51.9	11.1
	#4	0.0724	0.16	7.46	48.1	8.9
	#5	0.0747	0.14	7.47	46.6	8.1
						10.0
3/2/2017	#1	0	0.98	7.61	51.8	11.0
	#2	0.0035	0.88	7.44	52.2	11.2
	#3	0.0217	0.36	7.65	49.8	9.9
	#4	0.0724	0.16	7.32	49.8	9.9
	#5	0.0747	0.1	7.48	48.4	9.1
						10.2

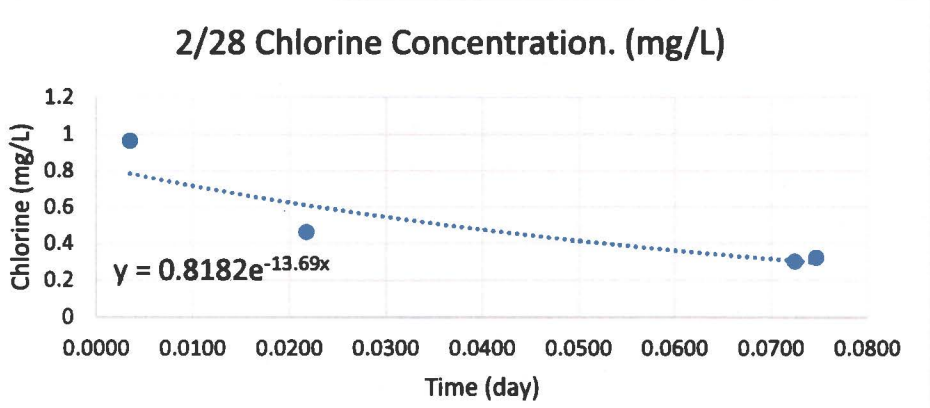
3/3/2017	#1	0	0.96	7.58	52	11.1
	#2	0.0035	0.99	7.47	51.8	11.0
	#3	0.0217	0.43	7.31	51.8	11.0
	#4	0.0724	0.18	7.38	48.3	9.1
	#5	0.0747	0.15	7.74	45.8	7.7
						10.0
3/6/2017	#1	0	0.88	7.38	52.6	11.4
	#2	0.0035	0.94	7.42	52.8	11.6
	#3	0.0217	0.34	7.27	50.8	10.4
	#4	0.0724	0.15	7.36	49.9	9.9
	#5	0.0747	0.12	7.74	47.8	8.8
						10.4
3/7/2017	#1	0	0.84	7.61	58.6	14.8
	#2	0.0035	0.86	7.54	56.8	13.8
	#3	0.0217	0.36	7.24	55.3	12.9
	#4	0.0724	0.3	7.38	47.2	8.4
	#5	0.0747	0.1	7.82	46.3	7.9
						11.6

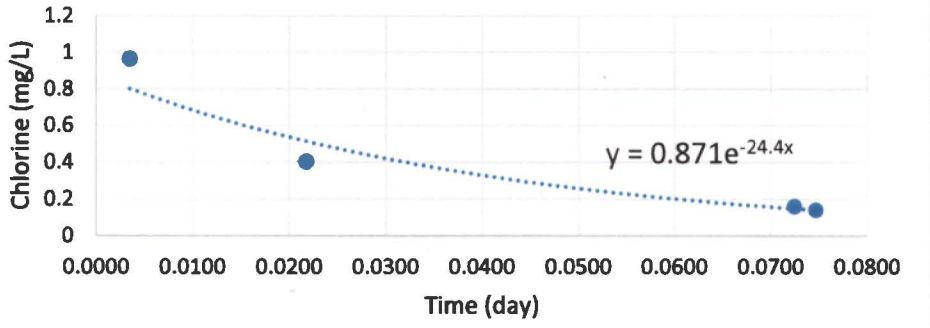


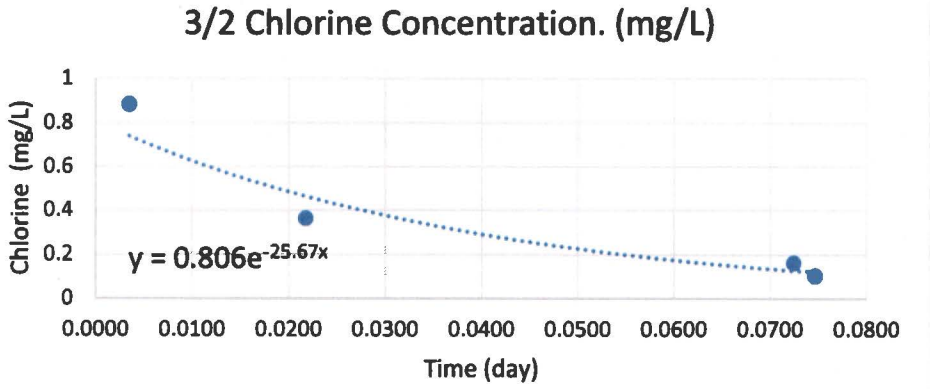

2/26 Chlorine Concentration. (mg/L)
Chlorine(mg/L)
1.2
1
0.8
0.6
0.4
0.2
0
y = 0.9474e-21.45x
0.0000 0.0100 0.0200 0.0300 0.0400 0.0500 0.0600 0.0700 0.0800
Time (day)

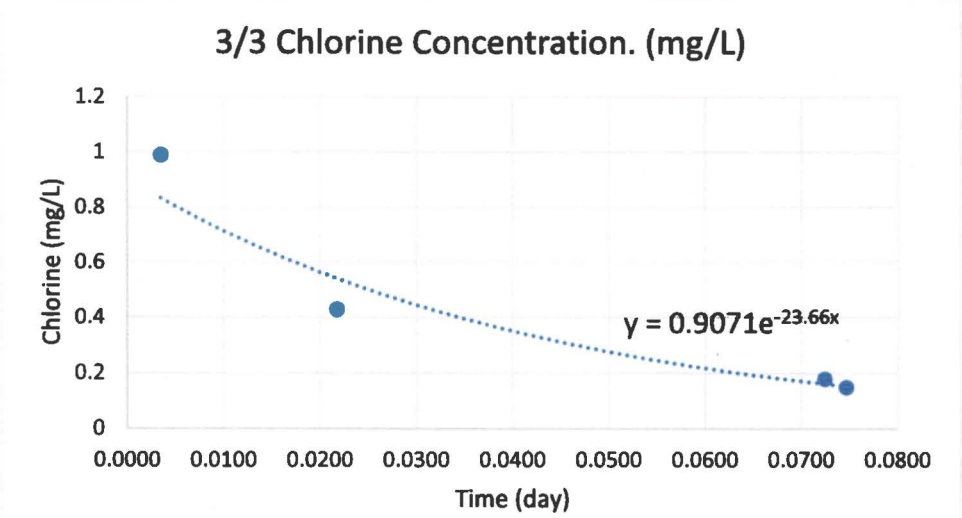

2/24 Chlorine Concentration. (mg/L)
Chlorine (mg/L)
1
0.8
0.6
0.4
0.2
0
y = 0.7682e-16.03x
0.0000 0.0100 0.0200 0.0300 0.0400 0.0500 0.0600 0.0700 0.0800
Time (day)

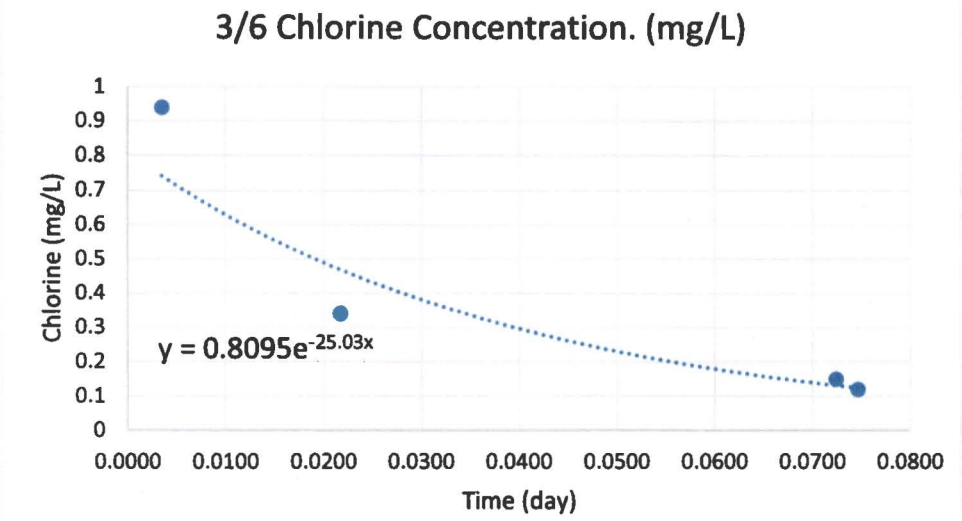

2/27 Chlorine Concentration. (mg/L)
Chlorine (mg/L)
1.5
1
0.5
0
y = 1.2966e-24.17x
0.0000 0.0100 0.0200 0.0300 0.0400 0.0500 0.0600 0.0700 0.0800
Time (day)

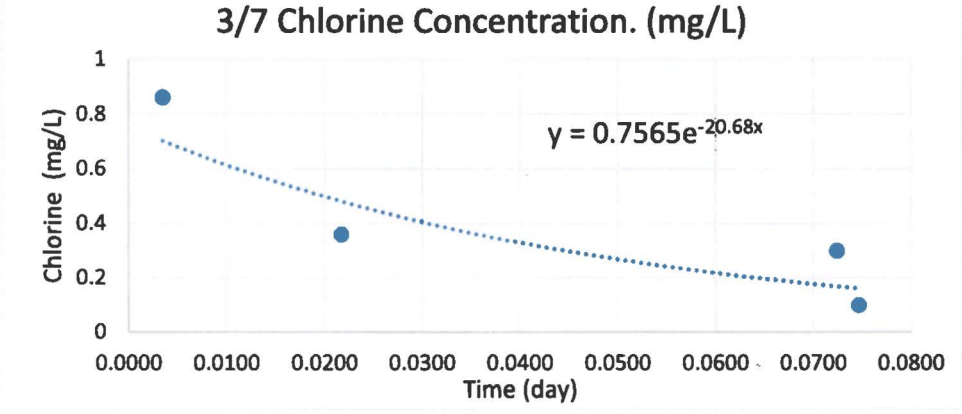

2/28 Chlorine Concentration. (mg/L)
Chlorine (mg/L)
1.2
1
0.8
0.6
0.4
0.2
0
y = 0.8182e-13.69x
0.0000 0.0100 0.0200 0.0300 0.0400 0.0500 0.0600 0.0700 0.0800
Time (day)


3/1 Chlorine Concentration. (mg/L)
Chlorine (mg/L)
1.2
1
0.8
0.6
0.4
0.2
0
y = 0.871e-24.4x
0.0000 0.0100 0.0200 0.0300 0.0400 0.0500 0.0600 0.0700 0.0800
Time (day)


3/2 Chlorine Concentration. (mg/L)
Chlorine (mg/L)
1
0.8
0.6
0.4
0.2
0
y = 0.806e-25.67x
0.0000 0.0100 0.0200 0.0300 0.0400 0.0500 0.0600 0.0700 0.0800
Time (day)


3/3 Chlorine Concentration. (mg/L)
Chlorine (mg/L)
1.2
1
0.8
0.6
0.4
0.2
0
y = 0.9071e-23.66x
0.0000 0.0100 0.0200 0.0300 0.0400 0.0500 0.0600 0.0700 0.0800
Time (day)


3/6 Chlorine Concentration. (mg/L)
Chlorine (mg/L)
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
y = 0.8095e-25.03x
0.0000 0.0100 0.0200 0.0300 0.0400 0.0500 0.0600 0.0700 0.0800
Time (day)


3/7 Chlorine Concentration. (mg/L)
Chlorine (mg/L)
1
0.8
0.6
0.4
0.2
0
y = 0.7565e-20.68x
0.0000 0.0100 0.0200 0.0300 0.0400 0.0500 0.0600 0.0700 0.0800
Time (day)

Date	Temp	Measured Decay Rate (1/day)	Decay Rate @20 C (1/day) Value of Θ		
			1.07	1.02	1.10
2/26/2017	10.1	21.45	41.79	26.07	54.88
2/24/2017	9.7	16.03	32.28	19.67	42.97
2/27/2017	9.4	24.17	49.48	29.81	66.31
2/28/2017	9.8	13.69	27.30	16.75	36.19
3/1/2017	10.0	24.4	48.11	29.76	63.49
3/2/2017	10.2	25.67	49.74	31.15	65.19
3/3/2017	10.0	23.66	46.65	28.86	61.56
3/6/2017	10.4	25.03	47.82	30.25	62.29
3/7/2017	11.6	20.68	36.56	24.43	46.15
Min		13.69	27.30	16.75	36.19
Max		25.67	49.74	31.15	66.31
Average		21.64	42.19	26.31	55.45
20th Percentile		18.82	34.85	22.53	44.88

Daniel Griffin <dgriffin@utah.gov>

Information for Payson waste load

2 messages

Brad Rasmussen <bradr@aquaeng.com> Tue, Apr 4, 2017 at 4:11 PM
To: Daniel Griffin <dgriffin@utah.gov>
Cc: Jeff Hiatt <jeffh@payson.org>, Scott Jeffryes <sjeffryes@uamps.com>, "travisj@payson.org" <travisj@payson.org>

Attached are a memo addressing the flows from Payson and UAMPS. There is also a memo addressing the chlorine decay rates. Let me know if you have questions.

BRAD RASMUSSEN, P.E. - PRINCIPAL
AQUA ENGINEERING

CELL (801) 450-2150 DIRECT (801) 299-1240

bradr@aquaeng.com www.aquaeng.com

533 W 2600 S Suite 275 Bountiful, UT 84010

2 attachments

Payson Permit Parameters.pdf
3878K

flow memo.pdf
233K

Daniel Griffin <dgriffin@utah.gov> Tue, Apr 4, 2017 at 4:25 PM
To: Nicholas Von Stackelberg <nvonstackelberg@utah.gov>

Nick,

Looks like they finally got us something. Haven't looked at it yet. Hopefully it will help everyone.

Dan
[Quoted text hidden]

Daniel Griffin, P. E.
Daniel Griffin P.E. | Environmental Engineer | UPDES Surface Water Section
801.536.4387 (office) | 801.536.4301 (fax)

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AQUA ENGINEERING

Memorandum

To: Dan Griffith

From: Brad Rasmussen

Date: April 4, 2017

CC: Jeff Hiatt, Scott Jeffryes

Subject: Discharge Flows to Beer Creek from Payson City and UAMPS

The purpose of this memo is to outline the different flow scenarios between Payson City's Waste Water Treatment Plant and the UAMPS Power Plant.

UAMPS uses the effluent from the treatment plant for their cooling towers. The original design was to cycle the water 4 times. This would basically evaporate 75% of the water that came to the cooling towers. However, in actual practice the water is only cycled up 2 times. The primary reason for this was to lower the TDS in the discharge. It is safe to assume that the water that is used from the treatment plant is reduced in volume by 50%.

The UAMPS facility is not in constant operation. Therefore, at various times all of the water is discharged from the City's treatment plant and some of the time some water is discharged from the City and the rest is discharged from UAMPS. Figure 1 shows the general flow of wastewater to Beer Creek.

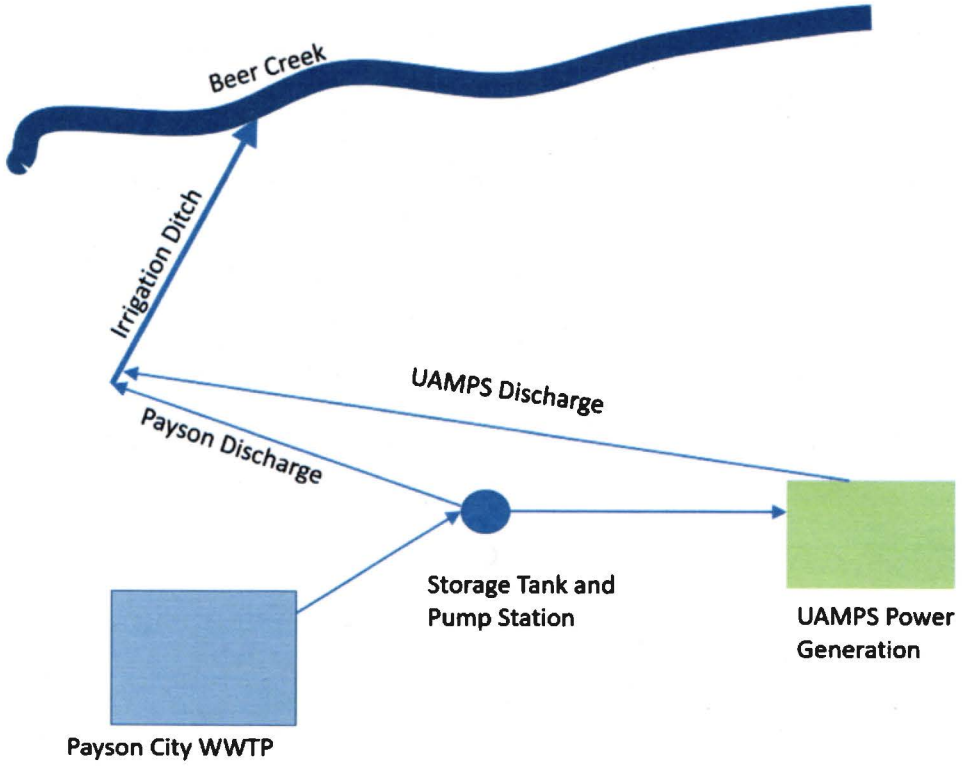

Figure 1 Wastewater Flow

533 W 2600 S Suite 275 Bountiful, UT
P (801) 299-1327 F (801) 299-0153
www.aquaeng.com

The average daily design for the treatment plant is 3 MGD. Assuming UAMPS is running at peak capacity they could take 2 MGD. At this point, Payson City would only be sending 1 MGD to Beer Creek. UAMPS would be evaporating 1 MGD and discharging 1 MGD for a total discharge to Beer Creek of 2MGD.

Below is a summary of different discharge scenarios, Payson discharges when UAMPS is not operating:

1. Storm Event – Peak Discharge from Payson no usage from UAMPS 5 MGD.
2. Design Flow - no usage from UAMPS 3 MGD.
3. Current Flow - no usage from UAMPS 1.75 MGD.

Below are several discharge options when UAMPS is using as much water as possible.

1. Storm Event – Peak flow (5MGD) into Payson UAMPS using 2 MGD. Payson discharge 3 MGD UAMPS discharge 1 MGD – Total to Beer Creek 4 MGD.
2. Design Flow – 3 MGD into Payson UAMPS using 2 MGD. Payson discharges 1 MGD UAMPS discharges 1 MGD total discharge 2 MGD.
3. Current Flow – 1.75 MGD into Payson UAMPS using 1.75 MGD. Payson discharges 0 MGD UAMPS discharges 0.87 MGD.

The flow split can vary between all the different scenarios. However, the extremes are listed above and the operation of UAMPS will strongly change the total flow to the stream. At the same time the flow will change but the load from the conservative elements will stay the same because they are concentrated in the cooling towers.

Hopefully this addresses the different flow issues that need to be addressed as part of the waste load allocation for Beer Creek. If you have questions please feel free to contact me.

Daniel Griffin <dgriffin@utah.gov>

Information for Payson waste load

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Attached are a memo addressing the flows from Payson and UAMPS. There is also a memo addressing the chlorine decay rates. Let me know if you have questions.

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[Quoted text hidden]

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2 attachments

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3878K

ATTACHMENT 2

Effluent Monitoring Data

Effluent Monitoring Data.

	Flow	pH		O & G	TRC	TSS		Ammonia	
Month	Max	Min	Max	Max	Max	Ave	Max	Ave	Max
Dec-13	0.466	6.5	7.3	ND	1.62	16.6	22	2.28	11.7
Jan-14	0.504	6.9	7.4	ND	1.16	11.08	20	0.5	0.5
Feb-14	0.617	6.5	7.1	ND	1.50	12.15	23	0	0
Mar-14	0.276	6.5	7.4	ND	1.96	11.83	14	0	0
Apr-14	0.457	6.6	7.6	ND	1.90	10.33	18	0.54	0.82
May-14	0.556	6.5	7.3	0	1.50	18	10.5	0.16	0.68
Jun-14	0.660	6.4	7.0	ND	1.30	13.2	18	0.5	0.5
Jul-14	0.608	6.6	7.3	ND	1.30	7.67	18	4.98	37.6
Aug-14	0.614	6.7	7.5	ND	1.23	5.38	14	0.5	0.5
Sep-14	0.601	6.5	7.1	ND	1.42	9.49	23	7.52	21.2
Oct-14	0.545	6.7	7.1	ND	1.95	6.37	8	0.5	0.5
Nov-14	0.382	6.6	6.9	ND	1.26	7.23	9	0.5	0.5
Dec-14	0.346	6.7	6.9	ND	2.75	6.06	7.2	0.61	1.21
Jan-15	0.406	6.7	7.1	ND	1.23	6.1	8	0.548	0.72
Feb-15	0								
Mar-15	0.309	6.6	6.9	ND	1.51	7.93	9.6	0.94	2.87
Apr-15	0.304	6.6	6.8	ND	1.22	8.32	10.8	0.05	0.05
May-15	0.388	6.8	7.1	ND	1.26	8.53	10.4	1.725	3.6
Jun-15	0.666	6.6	7.4	ND	1.40	5	12.2	3.63	13.2
Jul-15	0.769	6.5	7.2	ND	0.75	6.73	10.6	1.196	4.24
Aug-15	0.583	6.2	7.2	ND	1.05	6	8.2	0.5	0.52
Sep-15	0.615	6.6	7.2	ND	1.31	9.08	17	0.5	0.5
Oct-15	0.581	6.8	7.4	ND	1.19	8.44	11.3	1.07	4.46
Nov-15	0.465	7.0	7.3	ND	1.08	8.48	11.2	3.67	18.7
Dec-15	0.379	6.1	7.3	ND	2.44	7.1	10.2	3.93	12.4
Jan-16	0.571	6.8	7.1	ND	1.00	6.35	11.6	2.43	5.15
Feb-16	0.390	6.9	7.5	ND	0.44	4.43	5.8	0.52	0.63
Mar-16	0.363	6.7	7.4	ND	28.06	4	4	0.51	0.55
Apr-16	0.186	6.6	7.6	ND	0.44	4	4	0.5	0.5
May-16	0.652	6.0	7.8	ND	0.55	4	4	0.5	0.5
Jun-16	0.601	6.8	7.5	ND	0.60	4	7.8	0.676	2.08
Jul-16	0.802	6.5	7.4	ND	1.46	6.25	7.8	1.64	6.87
Aug-16	0.689	7.0	7.4	ND	0.82	4	7.2	0.5	0.5
Sep-16	0.550	6.9	7.3	ND	1.71	4.2	9.6	0.883	2.18
Oct-16	0.188	6.5	7.6	ND	1.83	4	11.6	1.297	4.34
Nov-16	0.318	6.5	7.7	ND	0.93	4	13.2	2.473	7.09

Metals										
	Chromium		Copper		Cyanide		Iron		Zinc	
Month	Ave	Max	Ave	Max	Ave	Max	Ave	Max	Ave	Max
Dec-13	0.014	0.0061	0.08	0.0468	0.015	0.0064	0.99	0.6425	0.13	0.0934
Jan-14	ND	ND	0.04	0.03	0.01	ND	0.59	0.39	0.09	0.05
Feb-14	0.02	0	0.48	0.1	0	0	12.7	2.28	0.71	0.14
Mar-14	ND	0	0.02	0.04	0.01	0.01	0.6	0.5	0.1	0.08
Apr-14	0.02	0.02	0.08	0.08	0.02	0.01	1.36	0.97	0.13	0.12
May-14	0.02	ND	0.1	0.06	0.02	0	0.27	0.51	0.16	0.12
Jun-14	ND	ND	0.04	0.03	0	0	0.51	0.35	0.11	0.08
Jul-14	ND	ND	0.04	0.01	0.01	0	0.68	0.37	0.31	0.05
Aug-14	ND	ND	0.14	0.05	ND	ND	0.65	0.37	0.07	0.02
Sep-14	ND	ND	0.19	0.13	0.01	0	0.49	0.35	0.1	0.06
Oct-14	ND	0.001	0.19	0.12	ND	ND	0.5	0.34	0.71	0.19
Nov-14	0.01	0.01	0.08	0.06	ND	ND	0.58	0.49	0.1	0.09
Dec-14	0.016	0.011	0.09	0.08	ND	ND	0.47	0.4	0.1	0.08
Jan-15	ND	ND	0.05	0.04	ND	ND	0.51	0.4	0.08	0.06
Feb-15										
Mar-15	ND	ND	0.083	0.04	0.02	0.01	0.97	0.51	0.12	0.09
Apr-15	ND	ND	0.04	0.02	0.009	0.0072	0.48	0.36	0.08	0.07
May-15	0.015	0.011	0.08	0.05	0.014	0.008	0.9	0.44	0.066	0.054
Jun-15	0.018	0.012	0.16	0.04	0.013	0.009	0.38	0.28	0.082	0.063
Jul-15	ND	ND	0.017	0.0104	0.008	ND3	0.29	0.23	0.08	0.06
Aug-15	ND	ND	0.08	ND	ND	ND	0.34	0.3	0.09	0.06
Sep-15	ND	ND	0.09	0.05	0.01	ND	0.35	0.27	0.1	0.08
Oct-15	ND	ND	0.09	ND	ND	ND	0.36	0.28	0.09	0.07
Nov-15	0.005	0.009	0.1	0.05	ND	ND	0.5	0.38	0.09	0.07
Dec-15	0.01	0.0085	0.15	0.06	0.02	0.01	0.67	0.38	0.09	0.06
Jan-16	0.005	0.004	0.0429	0.0318	0.006	ND3	0.54	0.355	0.1	0.14
Feb-16	0.0066	0.0051	0.04	0.0263	ND	ND	0.67	0.6017	0.36	0.14
Mar-16	0.0271	0.0078	0.195	0.0968	0.016	0.0061	0.77	0.66	0.38	0.09
Apr-16	0.019	0.019	0.069	0.069	ND	ND	0.82	0.82	0.02	0.02
May-16	0.015	0.007	0.12	0.075	ND	ND	1.46	0.847	0.12	0.051
Jun-16	0.0112	0.006	0.115	0.0761	0.007	ND	0.74	0.423	0.06	0.028
Jul-16	0.006	0.005	0.074	0.049	0.011	0.007	0.36	0.276	0.5	0.126
Aug-16	0.004	0.003	0.104	0.038	0.008	ND	0.49	0.278	0.27	0.098
Sep-16	0.004	0.003	0.038	0.032	0.007	0.006	0.31	0.262	0.1	0.073
Oct-16	0.007	0.004	0.051	0.039	0.014	0.007	0.44	0.352	0.1	0.085
Nov-16	0.011	0.005	0.053	0.038	0.008	0.006	0.54	0.363	0.88	0.184

Temperature, °C			
Month	Spring and Fall	Summer	Winter
Dec-13			28.6
Jan-14			32.4
Feb-14			29.1
Mar-14	10.5		
Apr-14	25.8		
May-14	17.8		
Jun-14		29.5	
Jul-14		32.2	
Aug-14		32.2	
Sep-14	29.8		
Oct-14	25.6		
Nov-14	23.6		
Dec-14			24.2
Jan-15			22.4
Feb-15			
Mar-15	25.3		
Apr-15	23.5		
May-15	24.5		
Jun-15		31.1	
Jul-15		32.9	
Aug-15		29.8	
Sep-15	33.7		
Oct-15	31.7		
Nov-15	27.3		
Dec-15			28.0
Jan-16			27.8
Feb-16			24.8
Mar-16	28.1		
Apr-16	23.1		
May-16	23.3		
Jun-16		31.2	
Jul-16		31.0	
Aug-16		33.7	
Sep-16	28.9		
Oct-16	24.7		
Nov-16	24.3		

Month	Aluminum		Arsenic		Cadmium		Cr III		Cr VI	
		Q		Q		Q		Q		Q
Feb-12	0.058	=	0.05	ND	0.02	ND	0.01	ND	0.02	ND
May-12	0.081	=	0.05	ND	0.02	ND	0.01	ND	0.02	ND
Aug-12	0.21	=	0.05	ND	0.02	ND	0.01	ND	0.02	ND
Nov-12	0.65	=	0.05	ND	0.02	ND	0.01	ND	0.01	ND
Feb-13	0.088	=	0.05	ND	0.02	ND	0.01	ND	0.01	ND
May-13	0.14	=	0.05	ND	0.02	ND	0.01	ND	0.01	ND
Aug-13	0.13	=	0.05	ND	0.02	ND	0.01	ND	0.01	ND
Nov-13	0.15	=	0.05	ND	0.02	ND	0.01	ND	0.01	ND
Feb-14	0.34	=	0.05	ND	0.02	ND	0.011	=	0.01	ND
May-14	0.058	=	0.05	ND	0.02	ND	0.01	ND	0.01	ND
Aug-14	0.13	=	0.05	ND	0.02	ND	0.01	ND	0.01	ND
Nov-14	0.14	=	0.05	ND	0.02	ND	0.01	ND	0.01	ND
Feb-15	0.097	=	0.05	ND	0.02	ND	0.01	ND	0.01	ND
May-15	0.107	=	0.05	ND	0.02	ND	0.018	=	0.01	ND
Aug-15	0.1	=	0.05	ND	0.02	ND	0.01	ND	0.01	ND
Nov-15	0.2	=	0.05	ND	0.02	ND	0.01	ND	0.01	ND
Feb-16	0.1	=	0.0097	=	0.0002	ND	0.0034	=	0.01	ND
May-16	0.05	ND	0.001	=	0.002	ND	0.0011	=	0.01	ND
Aug-16	0.2	=	0.0079	=	0.0002	ND	0.0043	=	0.01	ND
Nov-16	0.05	ND	0.007	=	0.0002	ND	0.0072	=	0.01	ND

Month	Lead		Mercury		Nickel		Selenium		Silver	
		Q		Q		Q		Q		Q
Feb-12	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
May-12	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
Aug-12	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
Nov-12	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
Feb-13	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
May-13	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
Aug-13	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
Nov-13	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
Feb-14	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
May-14	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
Aug-14	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
Nov-14	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
Feb-15	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
May-15	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
Aug-15	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
Nov-15	0.05	ND	0.0002	ND	0.05	ND	0.05	ND	0.01	ND
Feb-16	0.0007	=	0.0002	ND	0.011	=	0.0051	=	0.0005	ND
May-16	0.0013	=	0.0002	ND	0.007	=	0.003	=	0.0005	ND
Aug-16	0.0007	=	0.0002	ND	0.021	=	0.0078	=	0.0005	ND
Nov-16	0.0005	ND	0.0002	ND	0.017	=	0.0054	=	0.0005	ND

ATTACHMENT 3

Wasteload Analysis

Utah Division of Water Quality
Statement of Basis
ADDENDUM
Wasteload Analysis and Antidegradation Level I Review

Date: **April 10, 2017**

Facility: **Payson Power Project**
Payson, UT
UPDES No. UT0025518

Receiving water: **Beer Creek (2B, 3C, 4)**

This addendum summarizes the wasteload analysis that was performed to determine water quality based effluent limits (WQBEL) for this discharge. Wasteload analyses are performed to determine point source effluent limitations necessary to maintain designated beneficial uses by evaluating projected effects of discharge concentrations on in-stream water quality. The wasteload analysis also takes into account downstream designated uses (UAC R317-2-8). Projected concentrations are compared to numeric water quality standards to determine acceptability. The numeric criteria in this wasteload analysis may be modified by narrative criteria and other conditions determined by staff of the Division of Water Quality.

Discharge
Outfall 001: Irrigation Ditch → Beer Creek → Benjamin Slough → Utah Lake

The maximum daily design discharge is 1.0 MGD and the maximum monthly design discharge is 1.0 MGD for the facility, as provided by Payson Power (AQUA Engineering 2017a).

Receiving Water
The receiving water for Outfall 001 is an unnamed irrigation ditch, which is tributary to Beer Creek, which drains to Benjamin Slough and then Utah Lake.

Per UAC R317-2-13.5.c, the designated beneficial uses for Beer Creek (Utah County) from 4850 West (in NE1/4NE1/4 sec. 36, T.8 S., R.1 E.) to headwaters are 2B, 3C, and 4.

- *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 3C - Protected for nongame fish and other aquatic life, including the necessary aquatic organisms in their food chain*
- *Class 4 - Protected for agricultural uses including irrigation of crops and stock watering.*

Typically, the critical flow for the wasteload analysis is considered the lowest stream flow for seven consecutive days with a ten year return frequency (7Q10). Due to a lack of flow records for Beer Creek, the 20th percentile of flow measurements was calculated to estimate seasonal critical flow in the receiving water (Table 1). No flow records were found for the irrigation ditch

and it was assumed the ditch has no flow during critical conditions. Payson City Wastewater Treatment Plant (UPDES UT0020427) also discharges to the same irrigation ditch and has the potential to discharge concurrently with the Payson Power Project discharge; therefore, the design capacity discharge rate for the Payson City Wastewater Treatment Plant is shown in Table 1.

Table 1: Annual critical low flow

Season	Flow (cfs)			
	Payson WWTP Discharge During Chronic Conditions	Payson WWTP Discharge During Acute Conditions	Irrigation Ditch above WWTP	Beer Creek above confluence with Irrigation Ditch
Summer	1.55	4.64	0.0	4.0
Fall	1.55	4.64	0.0	10.0
Winter	1.55	4.64	0.0	13.2
Spring	1.55	4.64	0.0	10.0

TMDL

Beer Creek from confluence with Spring Creek to headwaters is listed as impaired for total ammonia and O/E bioassessment according to the 303(d) list in the *Utah's Final 2016 Integrated Report* (UDWQ 2017). Benjamin Slough from confluence with Utah Lake to Beer Creek confluence is listed as impaired for total ammonia. Utah Lake is listed as impaired for total phosphorus and total dissolved solids.

Mixing Zone

The maximum allowable mixing zone is 15 minutes of travel time for acute conditions, not to exceed 50% of stream width, and 2,500 feet for chronic conditions, per UAC R317-2-5. Water quality standards must be met at the end of the mixing zone.

The actual length of the mixing zone was not determined; however, it was presumed to remain within the maximum allowable mixing zone dimensions. Acute limits were calculated using 50% of the seasonal critical low flow.

Parameters of Concern

The potential parameters of concern identified for the discharge/receiving water were total suspended solids (TSS), total dissolved solids (TDS), dissolved oxygen (DO), total ammonia (TAN), copper, cyanide, chromium, iron, zinc, total residual chlorine (TRC), temperature and pH as determined in consultation with the UPDES Permit Writer.

Water Quality Modeling

A QUAL2Kw model of the receiving water was built and calibrated to synoptic survey data collected in October of 2013 by DWQ staff using standard operating procedures (UDWQ 2012). The model of Beer Creek extends 4 kilometers downstream from the confluence with the unnamed irrigation ditch to near the crossing with South 4850 West.

Receiving water quality data were obtained from monitoring site 4995420 Beer Creek above Payson WWTP at U-115 Crossing. The average seasonal value was calculated for each constituent with available data in the receiving water. Effluent parameters were characterized using data from monitoring site 4995410 Payson WWTP and 4995480 Payson Power.

The QUAL2Kw model was used for determining the WQBELs. Effluent concentrations were adjusted so that water quality standards were not exceeded in the receiving water. Where WQBELs exceeded secondary standards or categorical limits, the concentration in the model was set at the secondary standard or categorical limit.

The calibration and wasteload models are available for review by request.

WET Limits

The percent of effluent in the receiving water in a fully mixed condition, and acute and chronic dilution in a not fully mixed condition are calculated in the WLA in order to generate WET limits. The LC_{50} (lethal concentration, 50%) percent effluent for acute toxicity and the IC_{25} (inhibition concentration, 25%) percent effluent for chronic toxicity, as determined by the WET test, needs to be below the WET limits, as determined by the WLA. The WET limit for LC_{50} is typically 100% effluent and does not need to be determined by the WLA.

Table 2: WET Limits for IC_{25}

Season	Percent Effluent
Summer	28%
Fall	13%
Winter	10%
Spring	13%

Effluent Limits

The effect of the effluent on the DO in the receiving water was evaluated using the QUAL2Kw model. A DO sag downstream resulting from the plant discharge was predicted by the model in Beer Creek. However, the DO recovered and limits beyond secondary standards are not required for DO and BOD_5 (Table 3). QUAL2Kw rates, input and output for DO and eutrophication related constituents are summarized in Appendix A.

The limits for total residual chlorine were determined assuming an average decay rate of 42 /day (at 20 C°) and a travel time in the unnamed irrigation ditch of 107 minutes prior to discharge to Beer Creek (AQUA Engineering 2017b). The analysis for TRC is summarized in Appendix B.

A mass balance mixing analysis was conducted for conservative constituents such as dissolved metals. The WQBELs for conservative constituents are summarized in Appendix C.

Table 3: Water Quality Based Effluent Limits Summary

Effluent Constituent	Acute			Chronic		
	Standard	Limit	Averaging Period	Standard	Limit	Averaging Period
Flow (MGD)		1.0	1 day		1.0	30 days
Ammonia (mg/L)[1]						
Summer (Jul-Sep)		20.0			10.0	
Fall (Oct-Dec)	Varies	15.0	1 hour	Varies	12.4	30 days
Winter (Jan-Mar)		26.0			12.4	
Spring (Apr-Jun)		24.0			12.4	
Min. Dissolved Oxygen (mg/L)	3.0	4.0	Instantaneous	5.0	5.0	30 days
Total Residual Chlorine (mg/L)						
Summer (Jul-Sep)		2.2			3.3	
Fall (Oct-Dec)	0.019	1.2	1 hour	0.011	2.3	4 days
Winter (Jan-Mar)		0.7			2.0	
Spring (Apr-Jun)		1.0			1.8	
Total Dissolved Solids	1,200	3,396	Instantaneous	N/A		
Dissolved Metals (µg/L)						
Copper	51	272		30	120	
Cyanide	22	119	1 hour	5.2	15	4 days
Iron	1,000	5,570		N/A		
Zinc (µg/L)	380	2,071		380	1,678	
Temperature (°C)						
Summer (Jul-Sep)		39.9				
Fall (Oct-Dec)	27 deg and 4 deg change	46.6	Instantaneous	N/A		
Winter (Jan-Mar)		47.8				
Spring (Apr-Jun)		47.0				

1: Ammonia limit due to toxicity requirements.

Models and supporting documentation are available for review upon request.

Antidegradation Level I Review

The objective of the Level I ADR is to ensure the protection of existing uses, defined as the beneficial uses attained in the receiving water on or after November 28, 1975. No evidence is known that the existing uses deviate from the designated beneficial uses for the receiving water. Therefore, the beneficial uses will be protected if the discharge remains below the WQBELs presented in this wasteload.

A Level II Antidegradation Review (ADR) is not required for this discharge since the pollutant concentration and load is not increasing under this permit renewal.

Prepared by: **Nicholas von Stackelberg, P.E.**
Water Quality Management Section

Documents:

WLA Document: *payson_potw_wla_2017-04-10.docx*
QUAL2Kw Calibration Model: *payson_potw_cal_2013.xlsm*
QUAL2Kw Wasteload Model: *payson_potw_wla_2017.xlsm*

References:

AQUA Engineering. 2017a. *Discharge Flows to Beer Creek from Payson City and UAMPS.*

AQUA Engineering. 2017b. *Payson Chlorine Decay Rates.*

Neilson, B.T., A.J. Hobson, N. von Stackelberg, M. Shupryt, and J.D. Ostermiller. 2012. *Using QUAL2K Modeling to Support Nutrient Criteria Development and Wasteload Analyses in Utah.*

Utah Division of Water Quality. 2012a. *Utah Wasteload Analysis Procedures Version 1.0.*

Utah Division of Water Quality. 2012b. *Field Data Collection for QUAL2Kw Model Build and Calibration Standard Operating Procedures Version 1.0.*

Utah Division of Water Quality. 2017. *Utah's Final 2016 Integrated Report.*

WASTELOAD ANALYSIS [WLA] Date: 4/10/2017
Appendix A: QUAL2Kw Analysis for Eutrophication

Discharging Facility:	Payson Power	
UPDES No:	UT-0025518	
Permit Flow [MGD]:	1.00	Maximum Monthly Flow
	1.00	Maximum Daily Flow
Receiving Water:	Beer Creek	
Stream Classification:	2B, 3C, 4	
Stream Flows [cfs]:	4.00	Summer (July-Sept) Critical Low Flow
	10.00	Fall (Oct-Dec)
	13.20	Winter (Jan-Mar)
	10.00	Spring (Apr-June)
Fully Mixed:	NO	
Acute River Width:	50%	
Chronic River Width:	100%	

Modeling Information

A QUAL2Kw model was used to determine these effluent limits.

Model Inputs

The following is upstream and discharge information that was utilized as inputs for the analysis. Dry washes are considered to have an upstream flow equal to the flow of the discharge.

Headwater/Upstream Information	Summer	Fall	Winter	Spring
Flow (cfs)	4.0	10.0	13.2	10.0
Temperature (deg C)	21.2	12.1	5.0	12.6
Specific Conductance (µmhos)	1125	1125	1125	1125
Inorganic Suspended Solids (mg/L)	28.0	37.3	29.5	27.3
Dissolved Oxygen (mg/L)	6.7	8.2	10.4	8.5
$CBOD_5$ (mg/L)	2.6	2.7	5.1	3.6
Organic Nitrogen (mg/L)	1.500	1.500	1.500	1.500
NH4-Nitrogen (mg/L)	0.080	0.185	0.399	0.250
NO3-Nitrogen (mg/L)	1.125	1.327	1.430	1.255
Organic Phosphorus (mg/L)	0.035	0.110	0.119	0.077
Inorganic Ortho-Phosphorus (mg/L)	0.169	0.145	0.186	0.190
Phytoplankton (µg/L)	0.0	0.0	0.0	0.0
Detritus [POM] (mg/L)	3.1	4.1	3.3	3.0
Alkalinity (mg/L)	235	235	235	235
pH	7.8	8.2	8.3	8.0

Discharge Information - Payson POTW

Chronic	Summer	Fall	Winter	Spring
Flow (MGD)	1.0	1.0	1.0	1.0
Temperature (deg C)	22.7	17.1	11.4	16.9
Specific Conductance (µmhos)	1450	1450	1450	1450
Inorganic Suspended Solids (mg/L)	6.0	4.0	5.3	5.0
Dissolved Oxygen (mg/L)	5.0	5.0	5.0	5.0
$CBOD_5$ (mg/L)	25.0	25.0	25.0	25.0
Organic Nitrogen (mg/L)	5.000	5.000	5.000	5.000
NH4-Nitrogen (mg/L)	6.000	9.000	9.500	12.000
NO3-Nitrogen (mg/L)	21.700	22.875	28.820	28.500
Organic Phosphorus (mg/L)	0.000	0.000	0.000	0.000
Inorganic Ortho-Phosphorus (mg/L)	5.000	5.000	5.000	5.000
Phytoplankton (µg/L)	0.000	0.000	0.000	0.000
Detritus [POM] (mg/L)	0.0	0.0	0.0	0.0
Alkalinity (mg/L)	235	235	235	235
pH	7.6	7.6	7.5	7.5

Acute	Summer	Fall	Winter	Spring
Flow (MGD)	3.0	3.0	3.0	3.0
Temperature (deg C)	22.7	17.1	11.4	16.9
Specific Conductance (µmhos)	1450	1450	1450	1450
Inorganic Suspended Solids (mg/L)	6.0	4.0	5.3	5.0
Dissolved Oxygen (mg/L)	4.0	4.0	4.0	4.0
$CBOD_5$ (mg/L)	35.0	35.0	35.0	35.0
Organic Nitrogen (mg/L)	10.000	10.000	10.000	10.000
NH4-Nitrogen (mg/L)	10.000	12.000	13.000	12.000
NO3-Nitrogen (mg/L)	21.700	22.875	28.820	28.500
Organic Phosphorus (mg/L)	0.000	0.000	0.000	0.000
Inorganic Ortho-Phosphorus (mg/L)	10.000	10.000	10.000	10.000
Phytoplankton (µg/L)	0.000	0.000	0.000	0.000
Detritus [POM] (mg/L)	0.0	0.0	0.0	0.0
Alkalinity (mg/L)	235	235	235	235
pH	8.0	8.2	7.9	8.1

Discharge Information - Payson Power

Chronic	Summer	Fall	Winter	Spring
Flow (MGD)	1.0	1.0	1.0	1.0
Temperature (deg C)	30.0	25.9	27.5	23.6
Specific Conductance (µmhos)	4000	4000	4000	4000
Inorganic Suspended Solids (mg/L)	5.4	4.3	4.2	3.7
Dissolved Oxygen (mg/L)	5.0	5.0	5.0	5.0
$CBOD_5$ (mg/L)	3.6	5.0	6.4	3.3
Organic Nitrogen (mg/L)	1.300	1.300	1.300	1.300
NH4-Nitrogen (mg/L)	10.000	12.400	12.400	12.400
NO3-Nitrogen (mg/L)	37.267	34.400	55.500	45.800
Organic Phosphorus (mg/L)	0.000	0.610	1.130	2.886
Inorganic Ortho-Phosphorus (mg/L)	3.549	4.341	10.220	5.524
Phytoplankton (µg/L)	0.000	0.000	0.000	0.000
Detritus [POM] (mg/L)	0.0	0.0	0.0	0.0
Alkalinity (mg/L)	222	222	222	222
pH	7.1	6.6	6.7	6.9

Acute	Summer	Fall	Winter	Spring
Flow (MGD)	1.0	1.0	1.0	1.0
Temperature (deg C)	30.0	25.9	27.5	23.6
Specific Conductance (µmhos)	4000	4000	4000	4000
Inorganic Suspended Solids (mg/L)	5.4	4.3	4.2	3.7
Dissolved Oxygen (mg/L)	4.0	4.0	4.0	4.0
$CBOD_5$ (mg/L)	3.6	5.0	6.4	3.3
Organic Nitrogen (mg/L)	1.300	1.300	1.300	1.300
NH4-Nitrogen (mg/L)	20.000	15.000	26.000	24.000
NO3-Nitrogen (mg/L)	37.267	34.400	55.500	45.800
Organic Phosphorus (mg/L)	0.000	0.610	1.130	2.886
Inorganic Ortho-Phosphorus (mg/L)	3.549	4.341	10.220	5.524
Phytoplankton (µg/L)	0.000	0.000	0.000	0.000
Detritus [POM] (mg/L)	0.0	0.0	0.0	0.0
Alkalinity (mg/L)	222	222	222	222
pH	7.9	7.8	7.0	8.2

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

Effluent Limitations

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort reflect the environmental conditions expected at low stream flows.

Effluent Limitations based upon Water Quality Standards for DO, and Ammonia and Total Residual Chlorine Toxicity

In-stream criteria of downstream segments for Dissolved Oxygen will be met with an effluent limitation as follows:

Chronic	Standard	Summer	Fall	Winter	Spring
Flow (MGD)	N/A	1.00	1.00	1.00	1.00
NH4-Nitrogen (mg/L)	Varies	10.0	12.4	12.4	12.4
Dissolved Oxygen [30-day Ave] (mg/L)	5.0	5.0	5.0	5.0	5.0

Acute	Standard	Summer	Fall	Winter	Spring
Flow (MGD)	N/A	3.0	3.0	3.0	3.0
NH4-Nitrogen (mg/L)	Varies	20.0	15.0	26.0	24.0
Dissolved Oxygen [Minimum] (mg/L)	3.0	4.0	4.0	4.0	4.0

Summary Comments

The mathematical modeling and best professional judgement indicate that violations of receiving water beneficial uses with their associated water quality standards, including important down-stream segments, will not occur for the evaluated parameters of concern as discussed above if the effluent limitations indicated above are met.

Coefficients and Other Model Information

Parameter	*Value*	*Units*
Stoichiometry:		
Carbon	40	gC
Nitrogen	7.2	gN
Phosphorus	1	gP
Dry weight	100	gD
Chlorophyll	1	gA
Inorganic suspended solids:		
Settling velocity	0.001	m/d
Oxygen:		
Reaeration model	Thackston-Dawson	
Temp correction	1.024	
Reaeration wind effect	None	
O2 for carbon oxidation	2.69	gO2/gC
O2 for NH4 nitrification	4.57	gO2/gN
Oxygen inhib model CBOD oxidation	Exponential	
Oxygen inhib parameter CBOD oxidation	0.60	L/mgO2
Oxygen inhib model nitrification	Exponential	
Oxygen inhib parameter nitrification	0.60	L/mgO2
Oxygen enhance model denitrification	Exponential	
Oxygen enhance parameter denitrification	0.60	L/mgO2
Oxygen inhib model phyto resp	Exponential	
Oxygen inhib parameter phyto resp	0.60	L/mgO2
Oxygen enhance model bot alg resp	Exponential	
Oxygen enhance parameter bot alg resp	0.60	L/mgO2
Slow CBOD:		
Hydrolysis rate	0	/d
Temp correction	1.047	
Oxidation rate	0.103	/d
Temp correction	1.047	
Fast CBOD:		
Oxidation rate	10	/d
Temp correction	1.047	
Organic N:		
Hydrolysis	0.88120891	/d
Temp correction	1.07	
Settling velocity	0.099218	m/d
Ammonium:		
Nitrification	0.2064034	/d
Temp correction	1.07	
Nitrate:		
Denitrification	0.28353818	/d
Temp correction	1.07	
Sed denitrification transfer coeff	0.053355	m/d
Temp correction	1.07	
Organic P:		
Hydrolysis	0.79805215	/d
Temp correction	1.07	
Settling velocity	0.096605	m/d
Inorganic P:		
Settling velocity	0.04793	m/d
Sed P oxygen attenuation half sat constant	0.53889	mgO2/L

Phytoplankton:		
Max Growth rate	2.8944	/d
Temp correction	1.07	
Respiration rate	0.480803	/d
Temp correction	1.07	
Death rate	0.86518	/d
Temp correction	1	
Nitrogen half sat constant	15	ugN/L
Phosphorus half sat constant	2	ugP/L
Inorganic carbon half sat constant	1.30E-05	moles/L
Phytoplankton use HCO3- as substrate	Yes	
Light model	Smith	
Light constant	57.6	langleys/d
Ammonia preference	25.4151	ugN/L
Settling velocity	0.468545	m/d
Bottom Plants:		
Growth model	Zero-order	
Max Growth rate	10.8314	gD/m2/d or /d
Temp correction	1.07	
First-order model carrying capacity	100	gD/m2
Basal respiration rate	0.2458802	/d
Photo-respiration rate parameter	0.01	unitless
Temp correction	1.07	
Excretion rate	0.046004	/d
Temp correction	1.07	
Death rate	0.036896	/d
Temp correction	1.07	
External nitrogen half sat constant	711.113	ugN/L
External phosphorus half sat constant	123.473	ugP/L
Inorganic carbon half sat constant	7.44E-05	moles/L
Bottom algae use HCO3- as substrate	Yes	
Light model	Smith	
Light constant	41.6646	mgO^2/L
Ammonia preference	28.99375	ugN/L
Subsistence quota for nitrogen	31.0379	mgN/gD
Subsistence quota for phosphorus	2.26157	mgP/gD
Maximum uptake rate for nitrogen	770.252	mgN/gD/d
Maximum uptake rate for phosphorus	36.4362	mgP/gD/d
Internal nitrogen half sat ratio	1.468463	
Internal phosphorus half sat ratio	3.2861345	
Nitrogen uptake water column fraction	1	
Phosphorus uptake water column fraction	1	
Detritus (POM):		
Dissolution rate	2.318491	/d
Temp correction	1.07	
Settling velocity	0.08897	m/d
pH:		
Partial pressure of carbon dioxide	370	ppm
TRC:		
Decay rate	0.8	/d

Atmospheric Inputs:	Summer	Fall	Winter	Spring
Min. Air Temperature, F	57.7	29.5	24.0	45.0
Max. Air Temperature, F	90.5	51.0	44.9	74.2
Dew Point, Temp., F	58.6	35.0	30.3	48.5
Wind, ft./sec. @ 21 ft.	9.8	7.5	7.6	9.2
Cloud Cover, %	10%	10%	10%	10%

Other Inputs:	
Bottom Algae Coverage	75%
Bottom SOD Coverage	100%
Prescribed SOD, gO_2/m^2/day	0

WASTELOAD ANALYSIS [WLA]
Appendix B: Total Residual Chlorine

Date: 4/10/2017

Discharging Facility: Payson Power
UPDES No: UT-0025518

CHRONIC

	Season	Receiving Water	Standard	Payson WWTP Effluent	Payson Power Effluent	Total Effluent	Mixing Zone Boundary	Dilution Factor	Effluent Limit Without Decay	Temperature (°C)	Decay Rate @ 20 °C (/day)	Decay Rate @ T °C (/day)	Travel Time (min)	Decay Coefficient	Effluent Limit
Discharge (cfs)	Summer	4.0		1.5	1.5	3.1	7.1	2.6							
	Fall	10.0		1.5	1.5	3.1	13.1	6.5							
	Winter	13.2		1.5	1.5	3.1	16.3	8.5							
	Spring	10.0		1.5	1.5	3.1	13.1	6.5							
Temperature (°C)	Summer			22.7	30.0	26.4									
	Fall			17.1	25.9	21.5									
	Winter			11.4	27.5	19.4									
	Spring			16.9	23.6	20.3									
TRC (mg/L)	Summer	0.000	0.011						0.025	26.4	42	56.3	124.66667	0.01	3.300
	Fall	0.000	0.011						0.047	21.5	42	45.0	124.66667	0.02	2.282
	Winter	0.000	0.011						0.058	19.4	42	40.9	124.66667	0.03	2.002
	Spring	0.000	0.011						0.047	20.3	42	42.5	124.66667	0.03	1.847

ACUTE

	Season	Receiving Water	Standard	Payson WWTP Effluent	Payson Power Effluent	Total Effluent	Mixing Zone Boundary	Dilution Factor	Effluent Limit Without Decay	Temperature (°C)	Decay Rate @ 20 °C (/day)	Decay Rate @ T °C (/day)	Travel Time (min)	Decay Coefficient	Effluent Limit
Discharge (cfs)	Summer	2.0		4.6	1.5	6.2	8.2	0.4							
	Fall	5.0		4.6	1.5	6.2	11.2	1.1							
	Winter	6.6		4.6	1.5	6.2	12.8	1.4							
	Spring	5.0		4.6	1.5	6.2	11.2	1.1							
Temperature (°C)	Summer			22.7	30.0	24.5									
	Fall			17.1	25.9	19.3									
	Winter			11.4	27.5	15.4									
	Spring			16.9	23.6	18.6									
TRC (mg/L)	Summer	0.000	0.019						0.025	24.5	42	51.8	124.66667	0.01	2.220
	Fall	0.000	0.019						0.034	19.3	42	40.7	124.66667	0.03	1.160
	Winter	0.000	0.019						0.039	15.4	42	34.0	124.66667	0.05	0.747
	Spring	0.000	0.019						0.034	18.6	42	39.4	124.66667	0.03	1.040

WASTELOAD ANALYSIS [WLA] Date: 4/10/2017

Appendix C: Mass Balance Mixing Analysis for Conservative Constituents

Discharging Facility:	Payson Power	
UPDES No:	UT-0025518	
Permit Flow [MGD]:	1.00	Maximum Monthly Discharge
	1.00	Maximum Daily Discharge
Payson WWTP:	1.00	Chronic Discharge
	3.00	Acute Discharge
Receiving Water:	Beer Creek	
Stream Classification:	2B, 3C, 4	
Stream Flows [cfs]:	4.00	Summer (July-Sept) Critical Low Flow
Fully Mixed:	NO	
Acute River Width:	50%	
Chronic River Width:	100%	
Mixed Flow [cfs]:	7.1	Chronic
	8.2	Acute

Modeling Information

A mass balance mixing analysis was used to determine these effluent limits.

All model numerical inputs, intermediate calculations, outputs and graphs are available for discussion, inspection and copy at the Division of Water Quality.

Background Conditions

Total Recoverable Metals	Chronic			Acute		
Parameter	Beer Creek	WWTP	Combined	Beer Creek	WWTP	Combined
Flow (cfs)	4.0	1.5	5.5	2.0	4.6	6.6
Aluminum (µg/L)	5.4	86.4	28.0	5.4	86.4	62.0
Arsenic (µg/L)	7.7	1.2	5.9	7.7	1.2	3.2
Cadmium (µg/L)	0.4	0.4	0.4	0.4	0.4	0.4
Chromium VI (µg/L)	2.5	2.1	2.4	2.5	2.1	2.2
Chromium III (µg/L)	2.5	2.1	2.4	2.5	2.1	2.2
Copper (µg/L)	5.3	9.3	6.4	5.3	9.3	8.1
Cyanide (µg/L)	3.5	3.5	3.5	3.5	3.5	3.5
Iron (µg/L)				6.7	48.7	36.1
Lead (µg/L)	0.3	1.2	0.6	0.3	1.2	0.9
Mercury (µg/L)	0.008	0.008	0.008	0.008	0.008	0.008
Nickel (µg/L)	0.5	4.5	1.6	0.5	4.5	3.3
Selenium (µg/L)	1.9	0.9	1.6	1.9	0.9	1.2
Silver (µg/L)				0.8	0.8	0.8
Tributylin (µg/L)	0.048	0.048	0.048	0.048	0.048	0.048
Zinc (µg/L)	10.0	61.1	24.3	10.0	61.1	45.7
TDS (mg/L)	754	972	815			

Effluent Limitations

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort reflect the environmental conditions expected at low stream flows.

Effluent Limitations for Protection of Recreation (Class 2B Waters)

Physical Parameter	Maximum Concentration
pH Minimum	6.5
pH Maximum	9.0
Bacteriological	
E. coli (30 Day Geometric Mean)	206 (#/100 mL)
E. coli (Maximum)	668 (#/100 mL)

Effluent Limitations for Protection of Aquatic Wildlife (Class 3C Waters)

Inorganics Parameter	Chronic Standard (4 Day Average) Standard	Acute Standard (1 Hour Average) Standard
Phenol (mg/L)		0.010
Hydrogen Sulfide (Undissociated) [mg/L]		0.002

Total Recoverable Metals	Chronic Standard (4 Day Average)[1]			Acute Standard (1 Hour Average)[1]		
Parameter	Standard	Background[2]	Limit	Standard	Background[2]	Limit
Aluminum (µg/L)	N/A[3]	5.4	NONE	750	62.0	4,130
Arsenic (µg/L)	150	5.9	673	340	3.2	1,906
Cadmium (µg/L)	0.7	0.4	2.3	8.5	0.4	47.3
Chromium VI (µg/L)	11.0	2.4	44.3	16.0	2.2	86.9
Chromium III (µg/L)	263	2.4	1,199	5,497	2.2	30,886
Copper (µg/L)	29.8	6.4	120	50.5	8.1	272
Cyanide (µg/L)	5.2	3.5	14.8	22.0	3.5	119
Iron (µg/L)				1,000	36.1	5,570
Lead (µg/L)	18.0	0.6	81.1	462	0.9	2,593
Mercury (µg/L)	0.012	0.008	0.034	2.4	0.008	13.5
Nickel (µg/L)	165	1.6	752	1,484	3.3	8,334
Selenium (µg/L)	4.6	1.6	16.9	18.4	1.2	102
Silver (µg/L)				39.3	0.8	220
Tributylin (µg/L)	0.072	0.048	0.206	0.46	0.05	2.52
Zinc (µg/L)	380	24.3	1,678	380	45.7	2,071

1: Based upon a Hardness of 390 mg/l as CaCO3

2: Background concentration average of monitoring data

3: Where the pH is equal to or greater than 7.0 and the hardness is equal to or greater than 50 ppm as $CaCO_3$ in the receiving water after mixing, the 87 ug/L chronic criterion (expressed as total recoverable) will not apply, and aluminum will be regulated based on compliance with the 750 ug/L acute aluminum criterion (expressed as total recoverable).

Organics [Pesticides]	Chronic Standard (4 Day Average)			Acute Standard (1 Hour Average)		
Parameter	Standard	Background[1]	Limit	Standard	Background[1]	Limit
Aldrin (µg/L)				1.5	1.0	7.1
Chlordane (µg/L)	0.0043	0.0029	0.0123	1.2	0.0	6.7
DDT, DDE (µg/L)	0.001	0.001	0.003	0.55	0.00	3.09
Diazinon (µg/L)	0.17	0.11	0.49	0.17	0.11	0.80
Dieldrin (µg/L)	0.0056	0.0038	0.0160	0.24	0.00	1.34
Endosulfan, a & b (µg/L)	0.056	0.038	0.160	0.11	0.04	0.57
Endrin (µg/L)	0.036	0.024	0.103	0.086	0.024	0.450
Heptachlor & H. epoxide (µg/L)	0.0038	0.0025	0.0108	0.26	0.00	1.46
Lindane (µg/L)	0.08	0.05	0.23	1.0	0.1	5.5
Methoxychlor (µg/L)				0.03	0.02	0.14
Mirex (µg/L)				0.001	0.001	0.005
Nonylphenol (µg/L)	6.6	4.4	18.8	28.0	4.4	151.3
Parathion (µg/L)	0.0130	0.0087	0.0371	0.066	0.009	0.359
PCB's (µg/L)	0.014	0.009	0.040			
Pentachlorophenol (µg/L)	15.0	10.1	42.8	19.0	10.1	93.0
Toxephene (µg/L)	0.0002	0.0001	0.0006	0.73	0.00	4.10

1: Background concentration assumed 67% of chronic standard

Radiological	Maximum Concentration		
Parameter	Standard	Background[1]	Limit
Gross Alpha (pCi/L)	15	10.1	21.4

1: Background concentration assumed 67% of chronic standard; TDS is based on observed ambient data

Effluent Limitation for Protection of Agriculture (Class 4 Waters)

	Maximum Concentration		
Parameter	Standard	Background[1]	Limit
Total Dissolved Solids (mg/L)	1,200	815	3,396
Boron (mg/L)	0.75	0.2	3.0
Arsenic, Dissolved (µg/L)	100	5.9	443
Cadmium, Dissolved (µg/L)	10	0.4	44.8
Chromium, Dissolved (µg/L)	100	2.4	452
Copper, Dissolved (µg/L)	200	6.4	901
Lead, Dissolved (µg/L)	100	0.6	457
Selenium, Dissolved (µg/L)	50	1.6	225
Gross Alpha (pCi/L)	15	10.1	42.8

1: Background concentration assumed 67% of chronic standard; TDS is based on observed ambient data

WASTELOAD ANALYSIS [WLA] Date: 4/10/2017
Appendix D: Temperature and Heat

Discharging Facility:	Payson Power	
UPDES No:	UT-0025518	
Permit Flow [MGD]:	1.00	Maximum Monthly Flow
	1.00	Maximum Daily Flow
Receiving Water:	Beer Creek	
Stream Classification:	2B, 3C, 4	

Modeling Information

A mass balance mixing analysis was used to determine these effluent limits.

Model Inputs

The following is upstream and discharge information that was utilized as inputs for the analysis. Dry washes are considered to have an upstream flow equal to the flow of the discharge.

Headwater/Upstream Information

	Flow	Temperature
	cfs	deg C
Summer	4.0	21.2
Fall	10.0	12.1
Winter	13.2	5.0
Spring	10.0	12.6

Discharge Informtion

Payson WWTP	Flow	Temperature
	cfs	deg C
Summer	1.5	22.7
Fall	1.5	17.1
Winter	1.5	11.4
Spring	1.5	16.9

Payson Power	Flow
	cfs
Summer	1.5
Fall	1.5
Winter	1.5
Spring	1.5

Effluent Limitations

Current State water quality standards are required to be met under a variety of conditions including in-stream flows targeted to the 7-day, 10-year low flow (R317-2-9).

Other conditions used in the modeling effort reflect the environmental conditions expected at low stream flows.

Effluent Limitations for Protection of Aquatic Wildlife (Class 3C Waters)

Standard	Maximum Concentration
Temperature (deg C)	27
Temperature Change (deg C)	4

Payson Power	Temperature	Heat Load
	deg C	MBTU/day
Summer	39.9	599.5
Fall	46.6	699.8
Winter	47.8	716.9
Spring	47.0	705.2

ATTACHMENT 4

Reasonable Potential Analysis

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[5]. 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 the full model needed to be run on cadmium, Cr VI, lead, aluminum, selenium, mercury, cyanide, iron, chromium, copper, and zinc.

The current RP model in use by DWQ only takes into account 120 data points. To insure the most recent data is used, the data is organized so the most recent samples are used first. When/if outliers are identified in the data, the data may be removed, but the organization is maintained.

Cadmium

The RP screening was run on cadmium using the most recent data back through 2009. This resulted in 35 data points and that there is possible RP indicated for the chronic limits for cadmium. Evaluation of the data shows that they have nothing but ND, and that the MDL for the outside lab (Timpview) has recently improved(0.05 mg/L in 2009 to 0.0002 mg/Lin 2016). It is the earlier MDL values that result in the RP Model being run from the screening. When the higher MDL's are replaced with the lower one, the screening indicates that the RP is eliminated. Running the RP Model on the data confirms this result. This result indicates that improved/increased monitoring is required. The improvement in the MDL at the lab is sufficient at this time, No changes are required at this time.
(Outcome C from Reasonable Potential Guide)

CrIII

The RP screening was run on CrIII (trivalent chrome) using the most recent data back through 2009. This resulted in 35 data points and no indication of RP. The results indicate that there is no requirement for a limit at this time.
(Outcome C from Reasonable Potential Guide)

CrVI

The RP screening was run on using the most recent data back through 2009. This resulted in 32 data points and returned no indication of RP. Evaluation of the data shows that they have nothing but ND, and

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

that the MDL has recently improved. As a result, there is no requirement of changes to the monitoring requirements for CrVI during this permit renewal.
(Outcome C from Reasonable Potential Guide)

Chromium

There were no acute or chronic limits for chromium indicated in the WLA so the limits for CrVI were used. The RP screening was run on chromium using the most recent data back through 2012. Chromium is sampled twice weekly, resulting in 422 data points and that there is a possible RP indicated for the chronic limits for chromium. Reviewing the data showed that there might be outliers in the data and the EPA ProUCL model was used to evaluate the data. This produced no potential outliers. Running the RP model results in no indication of RP for chromium. This result indicates no changes are required at this time.
(Outcome C from Reasonable Potential Guide)

Lead

The RP screening was run on lead using the most recent data back through 2009. This resulted in 35 data points and returned a possible RP for the chronic limits for lead. Evaluation of the data shows that they have nothing but ND, and that the MDL has recently improved. As a result, there are no required changes for lead during this permit renewal.
(Outcome C from Reasonable Potential Guide)

Aluminum

There were no chronic limits for aluminum indicated in the WLA so the acute limit was used The RP screening was run on aluminum using the most recent data back through 2009. This resulted in 35 data points and that there no RP indicated for aluminum. Evaluation of the data shows that they have nothing but ND through October 2015, and that the MDL for the outside lab (Timpview) improved. Running the RP model indicates no RP for acute and chronic limits. This result indicates that no changes are required for aluminum at this time.
(Outcome C from Reasonable Potential Guide)

Selenium

The RP screening was run on selenium using the most recent data back through 2009. This resulted in 35 data points and that there is possible RP indicated for the chronic limits for selenium. Evaluation of the data shows that they have nothing but ND until 2016, and that the MDL for the outside lab (Timpview) has recently improved. It is the earlier MDL values that result in the RP Model being run from the screening.. Running the RP Model results in an indication for RP at the chronic limit.

The source water for the system comes from Payson City either as Type I Reuse from the Payson City Waste Water Treatment Plant (Payson City) or culinary makeup water. Currently there is no indication of which source was used during the periods where selenium was high. Also, the Payson City permit will be including a chronic limit for selenium which may change the effluent levels as the influent improves.

With these circumstances in mind, the chronic limit for selenium will be included in the permit, and may be revaluated if conditions improve.
(Outcome A from Reasonable Potential Guide)

Mercury

The RP screening was run on mercury using the most recent data back through 2009. This resulted in 32 data points and that there is possible RP indicated for the chronic limits for mercury. Evaluation of the data shows that they have nothing but ND. A review of the data also indicates that they are not using a method with an MDL low enough to rule out a chronic RP for mercury. This result indicates that an effluent limit may not be required, but to insure this for the next renewal the monitoring frequency and/or analytical method need to be improved. (Outcome B from Reasonable Potential Guide)

Cyanide

The RP screening was run on copper using the most recent data back through 2012. Cyanide is sampled twice weekly, resulting in 422 data points and the screening showed that there is a Reasonable Potential indicated for the chronic limit for cyanide. Reviewing the data showed that there might be outliers in the data and the EPA ProUCL model was used to evaluate the data. Running the ProUCL three times resulted in thirty outliers being identified, however only three of the points identified were from the most recent 120, and those were not identifiable until the third ProUCL run. There is no indication in the data to suggest an error or interference was present, and the influent samples were below the MDL. When those three are excluded from the RP model, the results indicate that at a confidence Interval, there is no Chronic RP, but at 99% Interval, the RP remains. Repeating the process one more time does remove the RP completely, but that also removes 10% of the data.

The source water for the system comes from Payson City either as Type I Reuse from the Payson City Waste Water Treatment Plant (Payson City) or culinary makeup water. Currently there is no indication of which source was used during the periods where data outliers were identified. Also, the Payson City permit will be including a chronic limit for cyanide which may change the effluent levels as the influent improves.

With these circumstances in mind, the chronic limit for cyanide will be included in the permit, and may be revaluated if conditions improve.
(Outcome A from Reasonable Potential Guide)

Iron

There was no chronic limit for iron indicated so the acute limit was used. The RP screening was run on iron using the most recent data back through 2012. Iron is sampled twice weekly, resulting in 422 data points and the screening showed that there is a Reasonable Potential indicated for both the chronic and acute limits for iron. Reviewing the data showed that there might be outliers in the data and the EPA ProUCL model was used to evaluate the data. This produced six potential outliers at 5% and 1% significance. The most significant outlier was 12.7 mg/L from February 11, 2014. Removing these points and rerunning ProUCL resulted in no other outliers being identified.

Excluding the outlier data from the set and running the RP model results in no indication of RP for iron. This result indicates that the limit monitoring could remain the same for the next monitoring period.

Iron also has a categorical limit from 40 CFR Part 423 – Steam Electric Power Generating Point Source Category. The limit it 1.0 mg/l. Excluding the outlier data from the set and running the RP model on this limit results in no indication of RP for iron at 95% confidence, but at 99% confidence RP is indicated.

This result indicates that a limit and monitoring should be included in the permit. This is the same limit from the previous permit, so this will not result in any changes.
(Outcome C from Reasonable Potential Guide)

Copper

The RP screening was run on copper using the most recent data back through 2012. Copper is sampled twice weekly, resulting in 422 data points and the screening showed that there is a Reasonable Potential indicated for both the chronic and acute limits for iron. Reviewing the data showed that there might be outliers in the data and the EPA ProUCL model was used to evaluate the data. The outliers were removed, but only four were in the most recent 120 samples. This RP model result indicates that the inclusion of chronic effluent limit for copper is required at this time.
(Outcome A from Reasonable Potential Guide)

Zinc

The RP screening was run on zinc using the most recent data back through 2012. Zinc is sampled twice weekly, resulting in 422 data points and that there is a possible RP indicated for the chronic limits for zinc. Running the RP model results in no indication of RP for zinc. This result indicates no changes are required at this time.
(Outcome C from Reasonable Potential Guide)

Table of limits to include.

Metals	Chronic	Acute
Parameter	Limit (mg/L)	Limit (mg/L)
Selenium (mg/L)	0.0169	
Cyanide	0.0148	
Copper	0.12	

Ammonia

Initial screening for ammonia RP was also done. The screening was based on the seasonal acute and chronic limits and the twice weekly monitoring results that were submitted by Payson Power. The screening indicated a possible Chronic and Acute RP for spring, summer and fall, and a Chronic RP for winter. As a result, the full RP Model was run on the seasons.

Summer

The RP screening was run on ammonia for the summer using the most recent data back through 2012. Ammonia is sampled twice weekly, resulting in 105 data points and the screening showed that there is a Reasonable Potential indicated for the chronic and acute limits. Reviewing the data showed that there might be outliers in the data and the EPA ProUCL model was used to evaluate the data. Running the ProUCL three times resulted in twenty five outliers being identified at the 1% significance. Evaluations of influent monitoring results indicate that the first fifteen are associated higher influent ammonia levels in the source water from Payson City; ten of the influent values were higher than the potential limits. When the first ten points are excluded from the RP model, the results indicate that there is no RP.

The source water for the system comes from Payson City either as Type I Reuse from the Payson City Waste Water Treatment Plant (Payson City) or culinary makeup water. Currently there is no indication of which source was used during the periods where data outliers were identified, but there is an indication that there were upsets at Payson City during these time frames. Also, the Payson City permit will be including lower limits for ammonia and require improved treatment which may change the effluent levels as the influent improves.

With these circumstances in mind, the chronic limit for ammonia will be included in the permit, and may be revaluated if conditions improve.
(Outcome B from Reasonable Potential Guide)

Fall

The RP screening was run on ammonia for the fall using the most recent data back through 2012. Ammonia is sampled twice weekly, resulting in 114 data points and the screening showed that there is a Reasonable Potential indicated for the chronic and acute limits. Reviewing the data showed that there might be outliers in the data and the EPA ProUCL model was used to evaluate the data. Running the ProUCL three times resulted in thirty outliers being identified at the 1% significance. Evaluations of influent monitoring results indicate that the first twenty are associated higher influent ammonia levels in the source water from Payson City. When the first ten points are excluded from the RP model, the results indicate that there is no Acute or Chronic RP.

The source water for the system comes from Payson City either as Type I Reuse from the Payson City Waste Water Treatment Plant (Payson City) or culinary makeup water. Currently there is no indication of which source was used during the periods where data outliers were identified, but there is an indication that there were upsets at Payson City during these time frames. Also, the Payson City permit will be including lower limits for ammonia and require improved treatment which may change the effluent levels as the influent improves.

With these circumstances in mind, the chronic limit for ammonia will be included in the permit, and may be revaluated if conditions improve.
(Outcome B from Reasonable Potential Guide)

Winter

The RP screening was run on ammonia for the winter using the most recent data back through 2012. Ammonia is sampled twice weekly, resulting in 106 data points and the screening showed that there is no Reasonable Potential indicated for the acute or chronic limits. Reviewing the data showed that there might be outliers in the data and the EPA ProUCL model was used to evaluate the data. Running the ProUCL three times resulted in twenty two outliers being identified at the 1% significance. Evaluations of influent monitoring results indicate that some are associated higher influent ammonia levels in the source water from Payson City.

The source water for the system comes from Payson City either as Type I Reuse from the Payson City Waste Water Treatment Plant (Payson City) or culinary makeup water. Currently there is no indication of which source was used during the periods where data outliers were identified, but there is an indication that there were upsets at Payson City during these time frames. Also, the Payson City permit will be including lower limits for ammonia and require improved treatment which may change the effluent levels as the influent improves.

With these circumstances in mind, the chronic limit for ammonia will be included in the permit, and may be revaluated if conditions improve.
(Outcome B from Reasonable Potential Guide)

Spring

The RP screening was run on ammonia for the spring using the most recent data back through 2012. Ammonia is sampled twice weekly, resulting in 84 data points and the screening showed that there is a Reasonable Potential indicated for the chronic and acute limits. Reviewing the data showed that there might be outliers in the data and the EPA ProUCL model was used to evaluate the data. Running the ProUCL resulted in ten outliers being identified at the 1% significance. Evaluations of influent monitoring results indicate that some are associated higher influent ammonia levels in the source water from Payson City. When the first ten points are excluded from the RP model, the results indicate that there is no Acute or Chronic RP.

The source water for the system comes from Payson City either as Type I Reuse from the Payson City Waste Water Treatment Plant (Payson City) or culinary makeup water. Currently there is no indication of which source was used during the periods where data outliers were identified, but there is an indication that there were upsets at Payson City during these time frames. Also, the Payson City permit will be including lower limits for ammonia and require improved treatment which may change the effluent levels as the influent improves.

With these circumstances in mind, the chronic limit for ammonia will be included in the permit, and may be revaluated if conditions improve.
(Outcome B from Reasonable Potential Guide)

Metals Monitoring and RP Check

Quarterly Reported Metals Effluent										
Metal	Arsenic	Cadmium	Cr VI	Lead	Nickel	Silver	Aluminum	Selenium	Cr III	Mercury
Chronic Limit	1.906	0.0473	0.0869	2.593	8.334	0.22	4.13	0.102	30.886	0.0135
Acute Limit	0.673	0.0023	0.0443	0.0811	0.752		4.13	0.0169	1.199	0.000034
ND	0.05	0.05	0.02	0.05	0.05	0.01	0.05	0.005	0.05	0.001
Max	0.05	0.05	0.02	0.05	0.05	0.01	0.65	0.0165	0.05	0.001
Chronic Check	No	YES	No	No	No	No	No	No	No	No
Acute Check	No	YES	No	YES	No	YES	No	YES	No	YES

Monthly Reported Metals Effluent					
Metal	Copper	Iron	Chromium	Zinc	Cyanide
Chronic Limit	0.12	5.57	0.0443	1.678	0.0148
Acute Limit	0.272	5.57	0.0869	2.071	0.119
ND	0.050	0.020	0.100	0.050	0.000
Max	0.480	12.700	0.100	0.880	0.058
Chronic Check	YES	YES	YES	YES	YES
Acute Check	YES	YES	YES	No	No

RP input/output summary

RP Procedure Output	Outfall Number:	001	Data Units, mg/L	
Parameter	Aluminum	Lead	Cadmium	Selenium
Distribution	Lognormal	Lognormal	Default	Delta-Lognormal
Reporting Limit	0.05 mg/L	0.0005 mg/L	0.0002 mg/L	0.005 mg/L
Significant Figures	2	2	2	2
Maximum Reported Effluent Conc.	0.48	0.0013	0	0.0078
Coefficient of Variation (CV)	0.34	0.37	0.6	1.3
Acute Criterion	0.8417	0.1172	0.0068	0.0204
Chronic Criterion	0.1011	0.00098	0.0006	0.0051
Confidence Interval	95	99	99	99
Projected Maximum Effluent Conc. (MEC)	0.45	0.004	NA	0.01
RP Multiplier	1.3	3	NA	1.3
RP for Acute?	NO	NO	NA	NO
RP for Chronic?	YES	NO	NA	YES
Outcome	C	C	C	A

RP Procedure Output	Outfall Number:	001	Data Units, mg/L	
Parameter	Zinc	Mercury	Chromium (Total)	Copper
Distribution	Delta-Lognormal	Default	Delta-Lognormal	Delta-Lognormal
Reporting Limit	0.07 mg/L	0.0002 mg/L	0.005	0.01 mg/L
Significant Figures	2	2	2	2
Maximum Reported Effluent Conc.	0.23	0	0.0271	0.13
Coefficient of Variation (CV)	0.54	0.6	0.7	0.71
Acute Criterion	0.343	0.0027	0.1168	0.043
Chronic Criterion	0.3601	0.000013	0.1168	0.027
Confidence Interval	99	99	99	99
Projected Maximum Effluent Conc. (MEC)	0.35	NA	0.05	0.22
RP Multiplier	1.5	NA	2.5	1.7
RP for Acute?	YES	NA	NO	YES
RP for Chronic?	NO	NA	NO	YES
Outcome	C	B	C	A

RP Procedure Output	Outfall Number: 001		Data Units, mg/L		
Parameter	Cyanide (Total))		Iron		
Distribution	Delta-Lognormal		Lognormal		
Reporting Limit	0.005 mg/L		0.02 mg/L		
Significant Figures	2		2		
Maximum Reported Effluent Conc.	0.027		1.02		
Coefficient of Variation (CV)	0.92		0.53		
Acute Criterion	0.0243		5.57	1	
Chronic Criterion	0.0055			1	
Confidence Interval	95	99	99	95	99
Projected Maximum Effluent Conc. (MEC)	0.038	0.016	1.3	0.87	1.3
RP Multiplier	0.93	1.1	1.3	0.85	1.3
RP for Acute?	NO	NO	NO	NO	Yes
RP for Chronic?	NO	YES	NO	NO	Yes
Outcome	A	A	C	B	A

RP Procedure Output	Outfall Number:	001	Data Units, mg/L	
Parameter	Summer	Fall	Winter	Spring
Distribution	Delta-Lognormal	Delta-Lognormal	Delta-Lognormal	Delta-Lognormal
Reporting Limit	0.5 mg/L	0.5 mg/L	0.5 mg/L	0.5 mg/L
Significant Figures	2	2	2	2
Maximum Reported Effluent Conc.	4.24	4.4	5.15	1.23
Coefficient of Variation (CV)	0.81	0.92	1	1.2
Acute Criterion	20	15	26	24
Chronic Criterion	10	12.4	12.4	12.4
Confidence Interval	99	99	99	99
Projected Maximum Effluent Conc. (MEC)	6.8	7.1	8.6	2.6
RP Multiplier	2	1.6	1.7	2.1
RP for Acute?	NO	NO	NO	NO
RP for Chronic?	NO	NO	NO	NO
Outcome	B	B	B	B