Permit Rationale

Date: June 16, 2016

Permit Writer: Melinda McCoy

Facility Name: Carroll, City of STP

Location: County: Carroll
Latitude: 42 degrees 3 minutes 25 seconds
Longitude: 94 degrees 50 minutes 44 seconds

Region/ FO: **DNR FO#4**, Atlantic

Design: Discharge from a vertical loop reactor activated sludge wastewater treatment facility to an unnamed creek (A2, B(WW-2))
Date Constructed: 2005
Flow: ADW: 1.6 MGD; AWW: 4.2 MGD; MWW: 6.3 MGD
BOD5: 4735 lbs/day; TKN: 1021 lbs/day
P.E.: 28353
Source: Construction Permit No. 2002-450-S dated October 13, 2003

Treatment Plant Description: Wastewater treatment is provided by a vertical loop reactor activated sludge wastewater treatment facility. Treatment consists of an automated bar screen, vortex grit removal, 2 primary clarifiers, 3 vertical loop reactor aeration tanks, 2 final clarifiers, primary and secondary anaerobic digesters, a sludge storage lagoon, a storm water pumping station, and a flow equalization basin. The facility accepts domestic waste from the City of Carroll, as well as industrial waste from Smithfield Farmland Corporation and the Carroll County Solid Waste Management Commission landfill. The facility discharges to an unnamed creek that flows to the Middle Raccoon River.

Wasteload allocation: WLA dated April 21, 2016

Antidegradation: Based on the analysis included in the WLA dated April 21, 2016, a Tier II antidegradation review is not required.

Impaired Waterbody: The following stream segments in the discharge route are on the 2014 impaired waters list:

- South Raccoon River for primary contact (indicator bacteria)
- Raccoon River for primary contact (indicator bacteria) and drinking water (nitrate)
- Des Moines River for primary contact (indicator bacteria) and aquatic life (biological: other and unknown toxicity)
- Red Rock Reservoir for primary contact (indicator bacteria and turbidity)

A total maximum daily load (TMDL) was completed and approved by the U.S. Environmental Protection Agency (EPA) in 2008 for the Raccoon River for nitrate and *Escherichia coli* (*E. coli*). The City of

Carroll's wastewater treatment plant was assigned total kjeldahl nitrogen (TKN) and *E. coli* allocations in the TMDL, as discussed below.

A TMDL for pathogen indicators (*E. coli*) was also approved by EPA on March 5, 2010, for segments of the Des Moines River in the route of flow downstream from this facility. However, since the City of Carroll was already assigned an *E. coli* allocation in the aforementioned Raccoon River TMDL, the City was not assigned an *E. coli* allocation in the Des Moines River TMDL.

It should be noted that additional and/or more stringent effluent limits may be given to this facility based on any future approved TMDLs for impaired waterbodies, which may provide watershed-based wasteload allocations. Information on impaired streams in Iowa and approved TMDLs can be found at the following website:
http://www.iowadnr.gov/Environmental-Protection/Water-Quality/Watershed-Improvement/Impaired-Waters

Limits:

Effective from permit issuance to permit expiration

Parameter	Season	7-day ave **mg/L**	30-day ave **mg/L**	daily max **mg/L**	min	max	7-day ave **lbs/day**	30-day ave **lbs/day**	daily max **lbs/day**
$CBOD_5$	yearly	40	25	---	---	---	1401	876	---
TSS	yearly	45	30	---	---	---	1576	1051	---
pH	yearly	---	---	---	6.5	9.0	---	---	---
TKN	yearly	---	---	---	---	---	---	1940	3175
NH3-N	As specified in WLA dated April 21, 2016								

Effective from permit issuance to 59 months after permit issuance

Parameter	Season	7-day ave **mg/L**	30-day ave **mg/L**	daily max **mg/L**	min	max	7-day ave **lbs/day**	30-day ave **lbs/day**	daily max **lbs/day**
Copper	yearly	---	0.076	0.092	---	---	---	2.7	3.2

Effective from 36 months after permit issuance to permit expiration

Parameter	Season	7-day ave **mg/L**	30-day ave **mg/L**	daily max **mg/L**	min	max	7-day ave **lbs/day**	30-day ave **lbs/day**	daily max **lbs/day**
DO	yearly	---	---	---	5.0	---	---	---	---
E. coli (geomean)	summer	---	126	---	---	---	---	---	---

Mixing Zone and Zone of Initial Dilution:
Approximately 1,600 feet downstream from the outfall of this facility the receiving stream, Unnamed Creek, flows into the Middle Raccoon River. Both streams are perennial. According to 567 IAC 61.2(4) "b" (2) & "e" (2) the length of the mixing zone is not to exceed 2,000 feet, and is limited by the distance to the juncture of two perennial streams for ammonia nitrogen and toxics. Thus, the mixing zone length for this facility for ammonia nitrogen and toxics is 1,600 feet. As a result, the mixing zone and zone of initial dilution percentages used for wasteload allocation calculations are reduced to (1,600 / 2,000) 80% of their default values for ammonia nitrogen and toxics for the protection of Unnamed Creek. However, the mixing zone length limitation does not apply to pH, thus the default dilution factor is used in the calculations.

2. ANTIDEGRADATION REVIEW REQUIREMENT:
According to the Iowa Antidegradation Implementation Procedure, effective February 17, 2010 (IAC 567-61.2(2).e), all new or expanded regulated activities (with limited exceptions, such as unsewered communities) are subject to antidegradation review requirements.

Table 2: Antidegradation Review Analysis

Item #	Factor or Scenario	Antidegradation Determination	Analysis/Comments
1	Design Capacity Increase	Yes ☐, No ☒, or Not Applicable ☐	1: Existing design capacity sheet attached
2	Significant Industrial Users (SIU) Contributing New Pollutant of Concern (POC)	Yes ☐, No ☒, or Not Applicable ☐	As indicated in the request form
3	New Process Contributing New Pollutant of Concern (POC)	Yes ☐, No ☒, or Not Applicable ☐	As indicated in the request form
4	Less Stringent Water Quality Based Limits?	Yes ☐, No ☒, or Not Applicable ☐	1: Current limits sheet attached
5	Outfall Location Change	Yes ☐, No ☒, or Not Applicable ☐	

Conclusion and discussion:

None of the factors trigger the antidegradation review; therefore a tier II antidegradation review is not required.

Please note that the antidegradation review conducted in this WLA is based on the current information available. Antidegradation could also be triggered during the NPDES permitting process based on new information.

3. TOTAL MAXIMUM DAILY LOAD (TMDL) LIMITATIONS:
The following stream segments in the discharge route are on the 2014 impaired waters list:

- The South Raccoon River for primary contact – indicator bacteria
- The Raccoon River for primary contact – indicator bacteria, drinking water – nitrate
- The Des Moines River for primary contact – indicator bacteria, aquatic life – biological (other), biological (unknown toxicity)
- Red Rock Reservoir for primary contact – indicator bacteria, turbidity

A TMDL for segments of the Raccoon River in the route of flow downstream from this facility was completed in 2008 for both bacteria and nitrate. This facility was assigned WLAs for both pollutants. See Section 4 for details.

A TMDL for segments of the Des Moines River in the route of flow downstream from this facility was completed in 2010 for bacteria. However, this facility was not assigned a WLA for bacteria in the TMDL since a TMDL for the Raccoon River watershed where this facility is located had already been prepared.

Please note that the results presented in this report are wasteload allocations based on meeting the State's current water quality standards in the receiving waterbody. Additional and/or more stringent effluent limits may be applicable to this discharge based on approved TMDLs for impaired waterbodies, which may provide watershed based wasteload allocations. Information on impaired streams in Iowa and approved TMDLs can be found at the following website: http://www.iowadnr.gov/Environment/WaterQuality/WatershedImprovement/WatershedResearchData.aspx

4. CALCULATIONS: The wasteload allocations / permit limits for this outfall are calculated based on the facility's Average Dry Weather (ADW) design flow of 1.6 mgd and its Average Wet Weather (AWW) design flow of 4.2 mgd.

Please note that only wasteload allocations/permit limits (water quality based effluent limits) calculated using DNR approved design flows can be applied in NPDES permits. Water quality based effluent limits calculated using proposed flows that have not been approved by the DNR for permitting and compliance may be used for informational purposes only.

The water quality based permit concentration limits are derived using the allowed stream flow and the ADW design flow, while loading limits are derived using the allowed stream flow and the AWW design flow.

Toxics: The Toxics wasteload allocations will consider the procedures included in the 2000 revised WQS and the 2007 chemical criteria.

To protect the aquatic life use of Unnamed Creek:
The chronic WLA will continue to use the 7Q10 stream flow in its calculations. In this case, due to the shortened mixing zone, 20% of the 7Q10 flow and 2% of the 1Q10 flow in Unnamed Creek are used as the Mixing Zone (MZ) and Zone of Initial Dilution (ZID), respectively.

To protect the downstream HH use of the Middle Raccoon River:
Note that the start of the HH segment of the Middle Raccoon River is over 10 miles downstream from the confluence of the Middle Raccoon River and Unnamed Creek. It is expected that the effluent will be completely mixed with the flow in the Middle Raccoon River at this point; thus 100% of the applicable low flows are used in the calculations.

For pollutants that are non-carcinogenic and have criteria for human health protection, the criteria apply at the end of the MZ, which in this case is 100% of the 7Q10 flow in the Middle Raccoon River at the start of the HH designated segment.

For pollutants that are carcinogenic and have criteria for human health protection, the criteria apply at the end of the MZ, which in this case is 100% of the harmonic mean flow in the Middle Raccoon River at the start of the HH designated segment.

To protect the downstream Class C use of the Middle Raccoon River:
The Class C designation is over 30 miles downstream of the start of the HH segment of the Middle Raccoon River. The effluent is expected to be completely mixed with the flow in the Middle Raccoon River at this point; thus 100% of the applicable low flows are used in the calculations.

For pollutants that are non-carcinogenic and have criteria for maximum contaminant level (MCL), the criteria apply at the end of the MZ, which in this case is 100% of the 7Q10 flow in the receiving stream at the water intakes.

For pollutants that are carcinogenic and have criteria for maximum contaminant level (MCL), the criteria apply at the end of the MZ, which in this case is 100% of the harmonic mean flow in the receiving stream at the water intakes.

Final limits:
The maximum limits are those calculated for the protection of the aquatic life and the average limits are the more stringent between those for the protection of the aquatic use and those for the protection of the HH and C uses.

Please note that the TRC limits are based on a sampling frequency of 5/week based on a population equivalent (PE) of 28,353; the limits for other toxics are based on a sampling frequency of 1/week.

Ammonia Nitrogen: Standard stream background temperatures, pH, and concentrations of NH3-N are mixed with the discharge from the facility's effluent pH and temperature values to calculate the applicable instream WQS criteria for the protection of Unnamed Creek.

Based on the ratio of the stream flow to the discharging flow and the shortened mixing zone length, 4% of the 1Q10 and 80% of the 30Q10 flow are used as the ZID and the MZ. Unnamed Creek is a B(WW-2) stream, therefore, early life protection will begin in April and run through September.

The monthly background temperatures, pH, and NH3-N concentrations shown in Table 3 are used for the wasteload allocation/permit limits calculations based on the Year 2000 ammonia criteria. Table 4 shows the statewide monthly effluent pH and temperature values for mechanical facilities. Table 5 shows the calculated ammonia nitrogen wasteload allocations for this facility.

Table 3: Background Temperature, pH and NH3-N Concentrations
For Use with Year 2000 Ammonia Criteria

Months	pH	Temperature (°C)	NH_3-N (mg/l)
January	7.8	0.6	0.5
February	7.7	1.2	0.5
March	7.9	4.3	0.5
April	8.1	11.7	0.5
May	8.1	16.6	0.5
June	8.1	21.4	0.5
July	8.1	24.8	0.0
August	8.2	23.8	0.0
September	8	22.2	0.5
October	8	12.3	0.5
November	8.1	6	0.5
December	8	1.6	0.5

VI. DISCUSSION OF EFFLUENT LIMITATIONS

A. Regulatory Basis for Limitations

1. Technology Based Limitations

   a. Federal Effluent Limitation Guidelines – The Federal Effluent Limitation Guidelines for domestic wastewater treatment facilities are the secondary treatment standards. These standards have been adopted into, and are applied out of, Regulation 62, the Regulations for Effluent Limitations.

   b. Regulation 62: Regulations for Effluent Limitations – These Regulations include effluent limitations that apply to all discharges of wastewater to State waters and are shown in Section VIII of the WQA. These regulations are applicable to the discharge from the City of Steamboat Springs WWTF.

2. Numeric Water Quality Standards - The WQA contains the evaluation of pollutants limited by water quality standards. The mass balance equation shown in Section VI of the WQA was used for most pollutants to calculate the potential water quality based effluent limitations (WQBELs), M_2, that could be discharged without causing the water quality standard to be violated. For ammonia, the AMMTOX Model was used to determine the maximum assimilative capacity of the receiving stream. A detailed discussion of the calculations for the maximum allowable concentrations for the relevant parameters of concern is provided in Section VI of the Water Quality Assessment developed for this permitting action.

   The maximum allowable pollutant concentrations determined as part of these calculations represent the calculated effluent limits that would be protective of water quality. These are also known as the water quality-based effluent limits (WQBELs). Both acute and chronic WQBELs may be calculated based on acute and chronic standards, and these may be applied as daily maximum (acute) or 30-day average (chronic) limits.

3. Narrative Water Quality Standards - Section 31.11(1)(a)(iv) of The Basic Standards and Methodologies for Surface Waters (Regulation No. 31) includes the narrative standard that State surface waters shall be free of substances that are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life.

   a. Whole Effluent Toxicity - The Water Quality Control Division has established the use of WET testing as a method for identifying and controlling toxic discharges from wastewater treatment facilities. WET testing is being utilized as a means to ensure that there are no discharges of pollutants "in amounts, concentrations or combinations which are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life" as required by Section 31.11 (1) of the Basic Standards and Methodologies for Surface Waters. The requirements for WET testing are being implemented in accordance with Division policy, Implementation of the Narrative Standard for Toxicity in Discharge Permits Using Whole Effluent Toxicity (Sept 30, 2010). Note that this policy has recently been updated and the permittee should refer to this document for additional information regarding WET.

4. Water Quality Regulations, Policies, and Guidance Documents

   a. Antidegradation - Since the receiving water is Undesignated, an antidegradation review is required pursuant to Section 31.8 of The Basic Standards and Methodologies for Surface Water. As set forth in Section VII of the WQA, an antidegradation evaluation was conducted for pollutants when water quality impacts occurred and when the impacts were significant. Based on the antidegradation requirements and the reasonable potential analysis discussed below, antidegradation-based average concentrations (ADBACs) may be applied.

   According to Division procedures, the facility has three options related to antidegradation-based effluent limits: (1) the facility may accept ADBACs as permit limits (see Section VII of the WQA); (2) the facility may select permit limits based on their non-impact limit (NIL), which would result in the facility not being subject to an antidegradation review and thus the antidegradation-based average

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concentrations would not apply (the NILs are also contained in Section VII of the WQA); or (3) the facility may complete an alternatives analysis as set forth in Section 31.8(3)(d) of the regulations which would result in alternative antidegradation-based effluent limitations.

The effluent must not cause or contribute to an exceedance of a water quality standard and therefore the WQBEL must be selected if it is lower than the NIL. Where the WQBEL is not the most restrictive, the discharger may choose between the NIL or the ADBAC: the NIL results in no increased water quality impact; the ADBAC results in an "insignificant" increase in water quality impact. The ADBAC limits are imposed as two-year average limits.

b. Antibacksliding – As the receiving water is designated Reviewable or Outstanding, and the Division has performed an antidegradation evaluation, in accordance with the Antidegradation Guidance, the antibacksliding requirements in Regulation 61.10 have been met.

c. Determination of Total Maximum Daily Loads (TMDLs) – This stream segment is not on the State's 303(d) list, and therefore TMDLs do not apply.

d. Colorado Mixing Zone Regulations – Pursuant to section 31.10 of The Basic Standards and Methodologies for Surface Water, a mixing zone determination is required for this permitting action. The Colorado Mixing Zone Implementation Guidance, dated April 2002, identifies the process for determining the meaningful limit on the area impacted by a discharge to surface water where standards may be exceeded (i.e., regulatory mixing zone). This guidance document provides for certain exclusions from further analysis under the regulation, based on site-specific conditions.

The guidance document provides a mandatory, stepwise decision-making process for determining if the permit limits will not be affected by this regulation. Exclusion, based on Extreme Mixing Ratios, may be granted if the ratio of the facility design flow to the chronic low flow (30E3) is greater than 2:1 or if the ratio of the chronic low flow to the design flow is greater than 20:1. Since the ratio of the chronic low flow to the design flow is 7:1, the permittee was required to perform additional studies to determine if further requirements apply. A mixing zone study was submitted on February 12th, 2009, and displayed that due to a montane stream (Yampa River) mean width and depth of 46 feet and 2.1 feet, respectively, the facility is exempt from further mixing zone study requirements at this time.

f. Salinity Regulations – In compliance with the Colorado River Salinity Standards and the Colorado Discharge Permit System Regulations, the permittee shall monitor for total dissolved solids two times per month. Samples shall be taken at Permitted Feature 001A.

The average concentration discharged is less than 500 mg/l, and therefore the facility is exempt from further requirements other than monitoring for TDS.

g. Reasonable Potential Analysis – Using the assimilative capacities contained in the WQA, an analysis must be performed to determine whether to include the calculated assimilative capacities as WQBELs in the permit. This reasonable potential (RP) analysis is based on the Determination of the Requirement to Include Water Quality Standards-Based Limits in CDPS Permits Based on Reasonable Potential, dated December, 2002. This guidance document utilizes both quantitative and qualitative approaches to establish RP depending on the amount of available data.

A qualitative determination of RP may be made where ancillary and/or additional treatment technologies are employed to reduce the concentrations of certain pollutants. Because it may be anticipated that the limits for a parameter could not be met without treatment, and the treatment is not coincidental to the movement of water through the facility, limits may be included to assure that treatment is maintained.

A qualitative RP determination may also be made where a federal ELG exists for a parameter, and where the results of a quantitative analysis results in no RP. As the federal ELG is typically less stringent than a limitation based on the WQBELs, if the discharge was to contain concentrations at the

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ELG (above the WQBEL), the discharge may cause or contribute to an exceedance of a water quality standard.

To conduct a quantitative RP analysis, a minimum of 10 effluent data points from the previous 5 years, should be used. The equations set out in the guidance for normal and lognormal distribution, where applicable, are used to calculate the maximum estimated pollutant concentration (MEPC). For data sets with non-detect values, and where at least 30% of the data set was greater than the detection level, MDLWIN software is used consistent with Division guidance to generate the mean and standard deviation, which are then used to establish the multipliers used to calculate the MEPC. If the MDLWIN program cannot be used the Division's guidance prescribes the use of best professional judgment.

For some parameters, recent effluent data or an appropriate number of data points may not be available, or collected data may be in the wrong form (dissolved vs total) and therefore may not be available for use in conducting an RP analysis. Thus, consistent with Division procedures, monitoring will be required to collect samples to support a RP analysis and subsequent decisions for a numeric limit. A compliance schedule may be added to the permit to require the request of an RP analysis once the appropriate data have been collected.

For other parameters, effluent data may be available to conduct a quantitative analysis, and therefore an RP analysis will be conducted to determine if there is RP for the effluent discharge to cause or contribute to exceedances of ambient water quality standards. The guidance specifies that if the MEPC exceeds the maximum allowable pollutant concentration (MAPC), limits must be established and where the MEPC is greater than half the MAPC (but less than the MAPC), monitoring must be established. Table VI-1 contains the calculated MEPC compared to the corresponding MAPC, and the results of the reasonable potential evaluation, for those parameters that met the data requirements. The RP determination is discussed for each parameter in the text below.

Table VI-1 – Quantitative Reasonable Potential Analysis

Pollutant	*Maximum of 30-Day Avg Effluent Conc. Or MEPC*	*Minimum Applicable 30-Day Avg Proposed WQBEL or NIL*	*30-Day Avg RP*	*Maximum of Daily Max or 7-Day Avg Effluent Conc. Or MEPC*	*Minimum Applicable Daily Max or 7-Day Avg Proposed WQBEL*	*Daily Max RP*	*Maximum of 2-Yr Avg Effluent Conc. Or MEPC*	*Proposed ADBACs*	*2-Year Avg RP*
Cd, Dis (µg/l)	0	2.1	No	0	4.2	No	0	1.5	No
Cr^{+3}, TR (µg/l)*	NA	NA	NA	0.88	140	No	1.4	34	No
Cr^{+6}, Dis (µg/l)*	0.88	62	No	0.88	45	No	1.4	8.5	No
Cu, Dis (µg/l)	34.1	37	Yes	34.1	28	Yes	NA	NA	NA
CN, Free (µg/l)	NA	NA	NA	5	16	No	NA	NA	NA
Fe, Dis (µg/l)	308	300	Yes	NA	NA	NA	NA	NA	NA
Pb, Dis (µg/l)	2.2	11	No	2.2	148	No	0.44	1.5	No
Mn, Dis (µg/l)	222	156	Yes	222	7697	No	NA	NA	NA
Hg, Tot (µg/l)	0.2	0.057	Yes	NA	NA	NA	NA	NA	NA
Ni, Dis (µg/l)	3.85	254	No	3.85	1128	No	2.64	33	No
Se, Dis (µg/l)	5.5	25	No	5.5	51	No	0.88	3.5	No
Ag, Dis (µg/l)	0.22	0.32	Yes	0.22	4.2	No	NA	NA	NA
Zn, Dis (µg/l)	74.8	569	No	74.8	378	No	55	79	Yes

*Reported total recoverable total chromium concentrations were used to describe maximum potential total recoverable trivalent chromium concentrations and dissolved hexavalent chromium concentrations.

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B. Parameter Evaluation

BOD_5 - The BOD_5 concentrations in Reg 62 are the most stringent effluent limits and are therefore applied. These limitations are the same as those contained in the previous permit and are imposed upon the effective date of this permit.

Total Suspended Solids - The TSS concentrations in Reg 62 are the most stringent effluent limits and are therefore applied. The removal percentages for TSS also apply based on the Regulations for Effluent Limitations. These limitations are the same as those contained in the previous permit and are imposed upon the effective date of this permit.

Oil and Grease – The oil and grease limitations from the Regulations for Effluent Limitations are applied as they are the most stringent limitations. This limitation is the same as those contained in the previous permit and is imposed upon the effective date of this permit.

pH - This parameter is limited by the water quality standards of 6.5-9.0 s.u., as this range is more stringent than other applicable standards. This limitation is the same as that contained in the previous permit and is imposed upon the effective date of this permit.

E. Coli – The limitation for *E. Coli* is based upon the NIL as described in the WQA. A qualitative determination of RP has been made as the treatment facility has been designed to treat specifically for this parameter.

Previous monitoring as shown in Table V-1 indicate that this limitation can be met and is therefore imposed upon the effective date of the permit.

Total Residual Chlorine (TRC) - The limitation for TRC is based upon the NIL as described in the WQA. A qualitative determination of RP has been made as chlorine may be used in the treatment process. Previous monitoring as shown in Table V-1 indicates that this limitation can be met and is therefore imposed upon the effective date of the permit.

Total Inorganic Nitrogen – The calculated WQBELs for this parameter are 110 mg/l and 89 mg/l for March through June and July through February, respectively. These T.I.N. concentrations are greater than the maximum expected concentrations for this type of facility. Ammonia concentrations were as high as 14 mg/l, and so TIN is not expected to approach the WQBELs. Therefore, no monitoring requirements or limitations will be required for this parameter at this time.

Ammonia - The limitations for ammonia are based upon the either the NIL or the ADBAC, as described in the WQA. A qualitative determination of RP has been made as the treatment facility has been designed to treat specifically for this parameter.

Previous monitoring as shown in Table V-1 indicate that ammonia limitations for April through October can be met and are therefore effective immediately.

Based upon previous monitoring, the ammonia limitations for the remaining months are more stringent than previously, and may be exceeded. Therefore, the permittee may not be able to consistently meet these limitations upon the permit effective date and a compliance schedule has been added to the permit for these months to give the permittee time to meet these limitations. Interim limitations based upon maximum effluent concentrations during the previous permit term apply during the period of the compliance schedule .

Total Arsenic – Monitoring will continue for this parameter as specified by the temporary modification for total arsenic for the receiving stream segment.

Potentially Dissolved Arsenic - There were no data available to perform an RP analysis for potentially dissolved arsenic. However, the maximum effluent concentration for total recoverable arsenic was 1.7 ug/l, approximately three orders of magnitude less than the proposed dissolved arsenic WQBELs of 1133 ug/l (March

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through June) and 949 ug/l (July through February). Therefore, there is no qualitative reasonable potential for this parameter, and no monitoring will be required.

Potentially Dissolved Cadmium – Effluent data from October 2007 through March 2015 displayed potentially dissolved cadmium concentrations less than the detection level 0.1 ug/l, with the exception of two samples (April 2008 and July 2009) that were at the detection level of 0.1 ug/l. The maximum effluent concentration is less than 50% of the proposed ADBAC of 1.5 ug/l, and therefore no limitations will be required for this parameter. Semi-annual monitoring will remain in the permit to ensure that effluent quality continues to be characterized for this parameter, and for use in the next renewal reasonable potential analysis.

Total Recoverable Trivalent Chromium – There were no data available to perform an RP analysis for total recoverable trivalent chromium. However, reported total recoverable total chromium concentrations were used to describe maximum potential total recoverable trivalent chromium concentrations. The MEPC for total chromium was 0.88 ug/l, less than half of the proposed total recoverable trivalent chromium ADBAC. Therefore, there is no quantitative reasonable potential for this parameter, and no limitations will be required. Semi-annual monitoring will remain in the permit for total recoverable chromium to ensure that effluent quality continues to be characterized for this parameter, and for use in the next renewal reasonable potential analysis.

Dissolved Hexavalent Chromium – There were no data available to perform an RP analysis for dissolved hexavalent chromium However, reported total recoverable total chromium concentrations were used to describe maximum potential dissolved hexavalent chromium concentrations. The MEPC for total chromium was 0.88 ug/l, less than half of the proposed dissolved hexavalent chromium ADBAC. Therefore, there is no quantitative reasonable potential for this parameter, and no limitations will be required. Semi-annual monitoring will remain in the permit for total recoverable chromium to ensure that effluent quality continues to be characterized for this parameter, and for use in the next renewal reasonable potential analysis.

Potentially Dissolved Copper – The RP analysis for potentially dissolved copper was based upon the WQBEL as described in the WQA. With the available data the "normal" program was used to determine the appropriate statistics to determine the MEPC. The daily maximum WQBEL for copper is less than the 30 day average WQBEL, and therefore the daily maximum limitation is protective of the 30 day limitation. While the MEPC was greater than 50% of of the 30 day average MAPC, but less than the MAPC, the MEPC was greater than the daily maximum MAPC and therefore limitations are required. Therefore a, 30-day average monitoring requirement and a daily maximum limitation has been added to the permit. This limitation are more stringent than the previous limit and the permittee may not be able to consistently meet these limitations; therefore, a compliance schedule has been added to the permit to give the permittee time to meet this limitation for July through February, when the daily maximum limit is less than the maximum effluent concentration during the previous permit term. Interim limitations based upon the maximum effluent concentration during the previous permit term apply during the period of the compliance schedule.

Cyanide – The RP analysis for cyanide was based upon the NIL as described in the WQA. The monthly 30 day average concentrations for cyanide were below a detection level of either 3 ug/l or 5 ug/l for November 2007 through March 2015 with the exception of one sample in September 2009, which had a cyanide concentration of 5 ug/l. The MEPC is less than 50% of the MAPC. As the facility has encountered one instance of a cyanide concentration equal to 5 ug/l, there is reasonable potential for this parameter. Therefore, there is no quantitative reasonable potential for this parameter, and no limitations will be required. Semi-annual monitoring will remain in the permit for cyanide to ensure that effluent quality continues to be characterized for this parameter, and for use in the next renewal reasonable potential analysis.

Total Recoverable Iron – There were no data available to determine the NIL or perform an RP analysis for total recoverable iron. Therefore, this parameter has been added to the permit with a weekly report only condition for the collection of data for determining a NIL and performing an RP analysis.

Dissolved Iron - The RP analysis for dissolved iron was based upon the WQBEL as described in the WQA. With the available data, the MDLWIN program wwas used to determine the appropriate statistics to determine the MEPC. The MEPC was greater than the MAPC and therefore limitations are required. Therefore a 30-day

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average requirement has been added to the permit. This limitation is more stringent than the previous limit and the permittee may not be able to consistently meet this limitation; therefore, a compliance schedule has been added to the permit to give the permittee time to meet this limitation. An interim limitation based upon the maximum effluent concentration during the previous permit term applies during the period of the compliance schedule.

Potentially Dissolved Lead - The RP analysis for potentially dissolved lead was based upon the ADBAC as calculated in the WQA. With the available data, the MDLWIN program was used for the two year rolling average to determine the appropriate statistics to determine the MEPC. The MEPC is less than 50% of the MAPC. As the facility has encountered one instance of a cyanide concentration equal to 5 ug/l, there is reasonable potential for this parameter. Therefore, there is no quantitative reasonable potential for this parameter, and no limitations will be required. Semi-annual monitoring will remain in the permit for potentially dissolved lead to ensure that effluent quality continues to be characterized for this parameter, and for use in the next renewal reasonable potential analysis.

Potentially Dissolved Manganese - The RP analysis for potentially dissolved manganese was based upon the WQBEL as described in the WQA. With the available data, the MDLWIN program was used to determine the appropriate statistics to determine the MEPC. The MEPC was greater than the MAPC and therefore limitations are required. Therefore, 30-day average requirement has been added to the permit. These limitations are more stringent than the previous limit and the permittee may not be able to consistently meet these limitations; therefore, a compliance schedule has been added to the permit to give the permittee time to meet these limitations. Interim limitations based upon the maximum effluent concentration during the previous permit term apply during the period of the compliance schedule.

Total Mercury – Effluent data from 2007 through 2015 indicate that, for 28 out of 30 samples, total mercury concentrations were below the detection level of 0.2 ug/l. However, the proposed applicable WQBELs for total mercury are below this detection level, at 0.057 ug/l (March through June) and 0.082 ug/l (July through February). The concentration of two samples, in 2009 and 2011, was equal to the detection level of 0.2 ug/l. Therefore, there is qualitative reasonable potential for this parameter. This is a new limitation and it is unknown if the permittee can meet the limit and therefore a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Interim limitations based upon the maximum effluent concentration during the previous permit term apply during the period of the compliance schedule.

Total Recoverable Molybdenum - There were no effluent data available to determine the NIL or perform an RP analysis for molybdenum. However, the facility has submitted data for 14 years at pretreatment outfall 001P, and the maximum total molybdenum concentration was equal to 30 ug/l. Thirteen of the 14 annual averages were less than 10 ug/l. Therefore, there is no qualitative reasonable potential for molybedenum concentrations in the effluent in concentrations approaching the proposed WQBEL of 904 ug/l. Further, it is unlikely that effluent concentrations are greater than 50% of an ADBAC. However, to verify this assumption, semi-annual effluent monitoring will be required for this parameter.

Potentially Dissolved Nickel - The RP analysis for potentially dissolved nickel was based upon the ADBAC as calculated in the WQA. With the available data, the lognormal was used to determine the appropriate statistics to determine the MEPC. The MEPC was less than half of the MAPC for all potential limitations and therefore limitations are not required at this time. Semi-annual monitoring will remain in the permit to ensure that effluent quality continues to be characterized for this parameter, and for use in the next renewal reasonable potential analysis.

Potentially Dissolved Selenium - The RP analysis for potentially dissolved selenium was based upon the ADBAC as calculated in the WQA. With the available data, the lognormal was used to determine the appropriate statistics to determine the MEPC. The MEPC was less than half of the MAPC for all potential limitations and therefore limitations are not required at this time. Semi-annual monitoring will remain in the permit to ensure that effluent quality continues to be characterized for this parameter, and for use in the next renewal reasonable potential analysis.

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Potentially Dissolved Silver - Effluent data from October 2009 through 2014 displayed potentially dissolved silver concentrations less than the detection level 0.05 ug/l, while prior to that, the maximum concentration was equal to 0.22 ug/l. The maximum concentration is greater than 50% of of the 30 day average MAPC (the WQBEL), but less than the MAPC. Therefore, monitoring is required for this parameter.

Potentially Dissolved Zinc - The RP analysis for potentially dissolved zinc was based upon the ADBAC as calculated in the WQA. With the available data the normal statistics were used to determine the appropriate statistics to determine the MEPC. The MEPC is greater than 50% of of the 30 day average MAPC, but less than the MAPC. Therefore, monitoring is required for this parameter.

Boron - There were no data available to determine the NIL or perform an RP analysis for boron. Therefore, this parameter has been added to the permit with a weekly report only condition for the collection of data for determining a NIL and performing an RP analysis.

Chloride - There were no data available to determine the NIL or perform an RP analysis for chloride. Therefore, this parameter has been added to the permit with a weekly report only condition for the collection of data for determining a NIL and performing an RP analysis.

Sulfate - There were no data available to determine the NIL or perform an RP analysis for sulfate. Therefore, this parameter has been added to the permit with a weekly report only condition for the collection of data for determining a NIL and performing an RP analysis.

Sulfide - There were no data available to determine the NIL or perform an RP analysis for sulfide. Therefore, this parameter has been added to the permit with a weekly report only condition for the collection of data for determining a NIL and performing an RP analysis.

Nonylphenol - While the facility has submitted data for 14 years at pretreatment outfall 001P, the division notes that nonylphenol concentrations may increase during the treatment process, as nonylphenol is both created and eliminated in the wastewater treatment process. There were no effluent data available to determine the NIL or perform an RP analysis for nonyphenol. Therefore, monitoring is required for this parameter to complete an AD and RP analysis.

Temperature - The MWAT is the maximum weekly average temperature, as determined by a seven day rolling average, using at least 3 equally spaced temperature readings in a 24-hour day (at least every 8 hours for a total of at least 21 data points).

The daily maximum is defined as the maximum 2 hour average, with a minimum of 12 equally spaced measurements throughout the day. As both of these temperature requirements will likely require the use of automated temperature measurements and recordings, the permittee is given until October 1, 2015, to have the proper equipment in place to take the required readings.

As it is unknown whether there is reasonable potential for the facility to cause or contribute to an exceedance of the water quality standard for temperature, report only conditions will be required for the duration of this permit. Upon the next permit renewal, the collected temperature data will be used to determine if there is reasonable potential, and/or if the permittee can meet the limitation.

As continuous ambient water quality data, in accordance with the definition of the standard, is not available, the permittee is encouraged to collect instream data on a continuous basis. This data may be used during the next permit renewal, so that the assimilative capacity of the receiving water (if applicable) can be calculated and used to determine a limitation based on the streams dilution potential. If such data is not available, the Division will likely set the limitation at the water quality standard (i.e. end of pipe limit, no dilution).

Organics – The effluent is not expected or known to contain organic chemicals, and therefore, limitations for organic chemicals are not needed in this permit.

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Whole Effluent Toxicity (WET) Testing – For this facility, chronic WET testing has been determined to be applicable based on the instream waste concentrations calculated in the WQA. It is the division's practice to require WET limits in permits for all major domestic facilities. Due to the large number of taps in all major facility service areas, the likelihood that one or more dischargers to the collection system contributes toxic substances in toxic amounts is significant. Further, synergistic effects of the effluent on aquatic toxicity can be evaluated via Whole Effluent Toxicity testing. On this basis, the division believes there is reasonable potential for the discharge to interfere with attainment of applicable water quality classifications or standards and the chronic limit has been incorporated in this permit.

The permittee should read the WET testing section of Part I of the permit carefully, as this information has been updated in accordance with the Division's updated policy, Implementation of the Narrative Standard for Toxicity in Discharge Permits Using Whole Effluent Toxicity (Sept 30, 2010) . The permit outlines the test requirements and the required follow-up actions the permittee must take to resolve a toxicity incident. The permittee should also read the above mentioned policy which is available on the Permit Section website. The permittee should be aware that some of the conditions outlined above may be subject to change if the facility experiences a change in discharge, as outlined in Part II.A.2. of the permit. Such changes shall be reported to the Division immediately.

C. Parameter Speciation

For standards based upon the total and total recoverable methods of analysis, the limitations are based upon the same method as the standard.

For total recoverable arsenic, the analysis may be performed using a graphite furnace, however, this method may produce erroneous results and may not be available to the permittee. Therefore, the total method of analysis will be specified instead of the total recoverable method.

Until recently there has not been an effective method for monitoring low-level total mercury concentrations in either the receiving stream or the facility effluent. Monitoring for total mercury has been accomplished as part of past permit conditions and analytical results have all been found at less than detectable levels. However, detection levels only as low as 0.2 ug/l have been achieved, versus a total mercury limit of 0.057 ug/l.

To ensure that adequate data are gathered to show compliance with the limitation and consistent with Division initiatives for mercury, quarterly effluent monitoring for total mercury at low-level detection methods will be required by the permit.

For metals with aquatic life-based dissolved standards, effluent limits and monitoring requirements are typically based upon the potentially dissolved method of analysis, as required under Regulation 31, Basic Standards and Methodologies for Surface Water. Thus, effluent limits and/or monitoring requirements for these metals will be prescribed as the "potentially dissolved" form.

The dissolved iron and chronic manganese standards are drinking water-based standards. Thus, sample measurements for these two parameters must reflect the dissolved fraction of the metals.

For cyanide, the acute standard is in the form of "free" cyanide concentrations. Historically, analytical procedures were not readily available for measuring the concentration of free cyanide in a complex effluent therefore the Division required weak acid dissociable cyanide to be reported instead. Even though methods are now available to measure free cyanide, weak acid dissociable cyanide will be still required as this analytical procedure will detect free cyanide plus those forms of complex cyanide that are most readily converted to free cyanide. Therefore, ASTM (American Society for Testing and Materials) analytical procedure **D2036-81, Method C,** will be used to measure weak acid dissociable cyanide in the effluent.

For total recoverable trivalent chromium, the regulations indicate that standard applies to the total of both the trivalent and hexavalent forms. Therefore, monitoring for total recoverable chromium will be required.

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For hexavalent chromium, samples must be unacidified. Accordingly, dissolved concentrations will be measured rather than potentially dissolved concentrations.

VII. ADDITIONAL TERMS AND CONDITIONS

A. Monitoring

Effluent Monitoring – Effluent monitoring will be required as shown in the permit document. Refer to the permit for locations of monitoring points. Monitoring requirements have been established in accordance with the frequencies and sample types set forth in the Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Industrial and Domestic Wastewater Treatment Facilities. This policy includes the methods for reduced monitoring frequencies based upon facility compliance as well as for considerations given in exchange for instream monitoring programs initiated by the permittee. Table VI-2 shows the results of the reduced monitoring frequency analysis for Permitted Feature 001, Limit Set City of Steamboat Springs, based upon compliance with the previous permit. Monitoring frequency reductions are from the baseline monitoring requirements specified in Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Industrial and Domestic Wastewater Treatment Facilities, and are not from the current monitoring requirements specified in the permit.

Table VII-1 – Monitoring Reduction Evaluation

Parameter	*Proposed Permit Limit*	*Average of 30-Day (or Daily Max) Average Conc.*	*Standard Deviation*	*Long Term Characterization (LTC)*	*Reduction Potential*
pH (su) Minimum	*min 6.5*	*6.8*	*0.13*	*6.54*	*1 Step*
pH (su) Maximum	*max 9.0*	*7.1*	*0.13*	*7.36*	
E. coli (#/100 ml)	*372*	*12*	*37*	*86*	*3 Levels*
TRC (mg/l)	*0.016*	*0*	*0*	*0*	*3 Levels*
NH3 as N, Tot (mg/l)	*2.1*	*2*	*1.5*	*5*	*None*
BOD5, effluent (mg/l)	*30*	*7.2*	*2.8*	*12.8*	*3 Levels*
TSS, effluent (mg/l)	*30*	*8.1*	*2.8*	*13.7*	*3 Levels*
Oil and Grease (mg/l)	*10*	*0*	*0*	*0*	*3 Levels**
TDS (mg/l)	*500***	*344*	*25*	*394*	*1 Level*
Mn, Dis (µg/l)	*156*	*15*	*9.3*	*33.6*	*3 Levels*
Hg, Tot (µg/l)	*0.057*	*0.0083*	*0.041*	*0.0903*	*None*
Ag, Dis (µg/l)	*0.32*	*0*	*0*	*0*	*3 Levels*
Zn, Dis (µg/l)	*79*	*40*	*14*	*68*	*1 Level*

*Visual monitoring for oil and grease will remain at the same frequency as pH.
** While a 'report only' condition exists for TDS, the maximum allowable concentration at which a facility is exempt from further requirements is equal to 500 mg/l.

B. Reporting

1. Discharge Monitoring Report – The City of Steamboat Springs facility must submit Discharge Monitoring Reports (DMRs) on a monthly basis to the Division. These reports should contain the required summarization of the test results for all parameters and monitoring frequencies shown in Part I.A.2 of the permit. See the permit, Part I.D for details on such submission.

2. Special Reports – Special reports are required in the event of an upset, bypass, or other noncompliance. Please refer to Part II.A. of the permit for reporting requirements. As above, submittal of these reports to the US Environmental Protection Agency Region VIII is no longer required.

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4.2 Reasonable Potential Analysis (RP)

Title 40 of the Federal Code of Regulations, 40 CFR 122.44(d) requires delegated States to develop procedures for determining whether a discharge causes, has the reasonable potential to cause, or contributes to an instream excursion above a narrative or numeric criteria within a State water. If such reasonable potential is determined to exist, the NPDES permit must contain pollutant effluent limits and/or effluent limits for whole effluent toxicity. Georgia's Reasonable Potential Procedures are based on Georgia's Rules and Regulations for Water Quality Control (Rules), Chapter 391-3-6-.06(4)(d)5. The chemical specific and biomonitoring data and other pertinent information in EPD's files will be considered in accordance with the review procedures specified in the Rules in the evaluation of a permit application and in the evaluation of the reasonable potential for an effluent to cause an exceedance in the numeric or narrative criteria.

The permittee submitted the results of three priority pollutant scans with the permit application. A Reasonable Potential Analysis was performed on the data submitted with the permit application.

Non-Metals:

The constituents Chloroform and Dichlorobromomethane were detected in the priority pollutant scans. Based upon the evaluation of the priority pollutant scans, the instream concentrations for the pollutants were less than 50% of the applicable instream criteria. Therefore, there is no reasonable potential for Chloroform or Dichlorobromomethane to cause or contribute to a water quality standards violations in the receiving stream based on a dilution factor of 2.256. The dilution factor is equal to (mean annual streamflow at discharge + effluent flow/ effluent flow).

Metals:

Copper, Lead, Mercury, Nickel, and Zinc were detected in the priority pollutant scans submitted to EPD. Based upon the evaluation of these priority pollutant scans, the instream concentrations for the pollutants were not greater than 50% of the applicable instream criteria. Therefore, there is no reasonable potential for the pollutants to cause or contribute to a water quality standards violation in the receiving stream based on a stream hardness of 36 mg/L.

Refer to Appendix B for more information.

4.3 Whole Effluent Toxicity

Chronic WET test measures the effect of wastewater on indicator organisms' growth, reproduction and survival. Effluent toxicity is predicted when the No Observable Effect Concentrations (NOEC) for a test organism is less than the facility's Instream Wastewater Concentration (IWC). WET testing also requires a measure of test sensitivity known as the Percent Minimum Significant Difference (PMSD). See Table below from Section 10.2.8.3 (page 52) of EPA 821-R-02-013 *Short-term Methods for Estimating the Chronic Toxicity of Effluents and Receiving Waters to Freshwater Organisms*, 4th Edition, 2002 for PMSD variability criteria.

4.9 Comparison & Summary of Water Quality vs. Technology Based Effluent Limits

After preparing and evaluating applicable technology-based effluent limitations and water quality-based effluent limitations, the most stringent limits are applied in the permit.

Part I.B.1 (Discharge to Big Flat Creek)

Parameter	WQBELS [1]	TBELS [1]
Five-Day Biochemical Oxygen Demand	**10.0**	30.0
Total Suspended Solids	None	**10**
pH	**6.0 – 8.5**	6.0 – 9.0
Ammonia	**1.6**	None
Total Residual Chlorine	**0.012**	0.5

[1] Effluent limits in bold were included in the permit. Refer to Sections 4.5, 4.6, 4.7, and 4.8 above for more information.

Part I.B.2.b (Discharge to Big Flat Creek)

Parameter	WQBELS [1]	TBELS [1]
Five-Day Biochemical Oxygen Demand	**5.0**	30.0
Total Suspended Solids	None	**20**
pH	**6.0 – 8.5**	6.0 – 9.0
Ammonia	**0.5**	None
Total Residual Chlorine	**0.011**	0.5

[1] Effluent limits in bold were included in the permit. Refer to Sections 4.5, 4.6, 4.7, and 4.8 above for more information.

Part I.B.3.b (Discharge to Big Flat Creek)

Parameter	WQBELS [1]	TBELS [1]
Five-Day Biochemical Oxygen Demand	**5.0**	30.0
Total Suspended Solids	None	**20**
pH	**6.0 – 8.5**	6.0 – 9.0
Ammonia	**0.5**	None
Total Residual Chlorine	**0.011**	0.5

[1] Effluent limits in bold were included in the permit. Refer to Sections 4.5, 4.6, 4.7, and 4.8 above for more information.

Mixing Zone and Zone of Initial Dilution:
Approximately 1,600 feet downstream from the outfall of this facility the receiving stream, Unnamed Creek, flows into the Middle Raccoon River. Both streams are perennial. According to 567 IAC 61.2(4) "b" (2) & "e" (2) the length of the mixing zone is not to exceed 2,000 feet, and is limited by the distance to the juncture of two perennial streams for ammonia nitrogen and toxics. Thus, the mixing zone length for this facility for ammonia nitrogen and toxics is 1,600 feet. As a result, the mixing zone and zone of initial dilution percentages used for wasteload allocation calculations are reduced to (1,600 / 2,000) 80% of their default values for ammonia nitrogen and toxics for the protection of Unnamed Creek. However, the mixing zone length limitation does not apply to pH, thus the default dilution factor is used in the calculations.

2. ANTIDEGRADATION REVIEW REQUIREMENT:
According to the Iowa Antidegradation Implementation Procedure, effective February 17, 2010 (IAC 567-61.2(2).e), all new or expanded regulated activities (with limited exceptions, such as unsewered communities) are subject to antidegradation review requirements.

Table 2: Antidegradation Review Analysis

Item #	Factor or Scenario	Antidegradation Determination	Analysis/Comments
1	Design Capacity Increase	Yes ☐, No ☒, or Not Applicable ☐	1: Existing design capacity sheet attached
2	Significant Industrial Users (SIU) Contributing New Pollutant of Concern (POC)	Yes ☐, No ☒, or Not Applicable ☐	As indicated in the request form
3	New Process Contributing New Pollutant of Concern (POC)	Yes ☐, No ☒, or Not Applicable ☐	As indicated in the request form
4	Less Stringent Water Quality Based Limits?	Yes ☐, No ☒, or Not Applicable ☐	1: Current limits sheet attached
5	Outfall Location Change	Yes ☐, No ☒, or Not Applicable ☐	

Conclusion and discussion:

None of the factors trigger the antidegradation review; therefore a tier II antidegradation review is not required.

Please note that the antidegradation review conducted in this WLA is based on the current information available. Antidegradation could also be triggered during the NPDES permitting process based on new information.

3. TOTAL MAXIMUM DAILY LOAD (TMDL) LIMITATIONS:
The following stream segments in the discharge route are on the 2014 impaired waters list:

- The South Raccoon River for primary contact – indicator bacteria
- The Raccoon River for primary contact – indicator bacteria, drinking water – nitrate
- The Des Moines River for primary contact – indicator bacteria, aquatic life – biological (other), biological (unknown toxicity)
- Red Rock Reservoir for primary contact – indicator bacteria, turbidity

A TMDL for segments of the Raccoon River in the route of flow downstream from this facility was completed in 2008 for both bacteria and nitrate. This facility was assigned WLAs for both pollutants. See Section 4 for details.

A TMDL for segments of the Des Moines River in the route of flow downstream from this facility was completed in 2010 for bacteria. However, this facility was not assigned a WLA for bacteria in the TMDL since a TMDL for the Raccoon River watershed where this facility is located had already been prepared.

4.9 Comparison & Summary of Water Quality vs. Technology Based Effluent Limits

After preparing and evaluating applicable technology-based effluent limitations and water quality-based effluent limitations, the most stringent limits are applied in the permit.

Part I.B.1 (Discharge to Big Flat Creek)

Parameter	WQBELS [1]	TBELS [1]
Five-Day Biochemical Oxygen Demand	**10.0**	30.0
Total Suspended Solids	None	**10**
pH	**6.0 – 8.5**	6.0 – 9.0
Ammonia	**1.6**	None
Total Residual Chlorine	**0.012**	0.5

[1] Effluent limits in bold were included in the permit. Refer to Sections 4.5, 4.6, 4.7, and 4.8 above for more information.

Part I.B.2.b (Discharge to Big Flat Creek)

Parameter	WQBELS [1]	TBELS [1]
Five-Day Biochemical Oxygen Demand	**5.0**	30.0
Total Suspended Solids	None	**20**
pH	**6.0 – 8.5**	6.0 – 9.0
Ammonia	**0.5**	None
Total Residual Chlorine	**0.011**	0.5

[1] Effluent limits in bold were included in the permit. Refer to Sections 4.5, 4.6, 4.7, and 4.8 above for more information.

Part I.B.3.b (Discharge to Big Flat Creek)

Parameter	WQBELS [1]	TBELS [1]
Five-Day Biochemical Oxygen Demand	**5.0**	30.0
Total Suspended Solids	None	**20**
pH	**6.0 – 8.5**	6.0 – 9.0
Ammonia	**0.5**	None
Total Residual Chlorine	**0.011**	0.5

[1] Effluent limits in bold were included in the permit. Refer to Sections 4.5, 4.6, 4.7, and 4.8 above for more information.

Permitted Feature SM1 – Instream Monitoring
Instream monitoring location – Upstream – away from effluent influence

OUTFALL #001	TABLE A FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS	PERMIT NUMBER MO-0107581

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **April 1, 2017** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Flow	MGD	*		*	once/month	24 hr. total
Biochemical Oxygen Demand$_5$	mg/L		45	30	once/month	composite**
Total Suspended Solids	mg/L		45	30	once/month	composite**
E. coli (Note 1, Page 3)	#/100mL		630	126	once/week	grab
Ammonia as N (Apr 1 – Sep 30) (Oct 1 – Mar 31)	mg/L	5.5 12.1		1.0 2.3	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE MAY 28, 2017. THERE SHALL BE NO DISCHARGE OF FLOATING SOLIDS OR VISIBLE FOAM IN OTHER THAN TRACE AMOUNTS.						
Total Phosphorus	mg/L	*		*	once/quarter****	grab
Total Nitrogen	mg/L	*		*	once/quarter****	grab
Oil & Grease	mg/L	15		10	once/quarter****	grab
MONITORING REPORTS SHALL BE SUBMITTED QUARTERLY; THE FIRST REPORT IS DUE JULY 28, 2017.						
EFFLUENT PARAMETER(S)	UNITS	MINIMUM		MAXIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
pH – Units ***	SU	6.5		9.0	once/month	grab
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE MAY 28, 2017.						
EFFLUENT PARAMETER(S)	UNITS	DAILY MINIMUM		MONTHLY AVERAGE MINIMUM	MEASUREMENT FREQUENCY	SAMPLE TYPE
Biochemical Oxygen Demand$_5$ – Percent Removal (Note 2, Page 3)	%			85	once/month	calculated
Total Suspended Solids – Percent Removal (Note 2, Page 3)	%			85	once/month	calculated
MONITORING REPORTS SHALL BE SUBMITTED MONTHLY; THE FIRST REPORT IS DUE MAY 28, 2017.						

* Monitoring requirement only.
** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.
*** pH is measured in pH units and is not to be averaged.
**** See table on Page 3 for quarterly sampling requirements.

Quarterly Minimum Sampling Requirements			
Quarter	**Months**	**Total Nitrogen, Total Phosphorus and Oil and Grease**	**Report is Due**
First	January, February, March	Sample at least once during any month of the quarter	April 28th
Second	April, May, June	Sample at least once during any month of the quarter	July 28th
Third	July, August, September	Sample at least once during any month of the quarter	October 28th
Fourth	October, November, December	Sample at least once during any month of the quarter	January 28th

Note 1 - Effluent limitations and monitoring requirements for *E. coli* are applicable only during the recreational season from April 1 through October 31. The Monthly Average Limit for *E. coli* is expressed as a geometric mean. The Weekly Average for *E. coli* will be expressed as a geometric mean if more than one (1) sample is collected during a calendar week (Sunday through Saturday).

Note 2 – Influent sampling is not required when the facility does not discharge effluent during the reporting period. Samples are to be collected prior to any treatment process. Percent removal is calculated by the following formula: [(Influent –Effluent) / Influent] x 100% = Percent Removal. The Monthly Average Minimum Percent removal is to be reported as the average of all daily calculated removal efficiencies. Influent samples are to be collected as a 24-hour composite sample, composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

OUTFALL #001	**TABLE A-2. WHOLE EFFLUENT TOXICITY FINAL EFFLUENT LIMITATIONS AND MONITORING REQUIREMENTS**	PERMIT NUMBER MO-0107581

The permittee is authorized to discharge from outfall(s) with serial number(s) as specified in the application for this permit. The final effluent limitations shall become effective on **April 1, 2017** and remain in effect until expiration of the permit. Such discharges shall be controlled, limited and monitored by the permittee as specified below:

EFFLUENT PARAMETER(S)	UNITS	FINAL EFFLUENT LIMITATIONS			MONITORING REQUIREMENTS	
		DAILY MAXIMUM	WEEKLY AVERAGE	MONTHLY AVERAGE	MEASUREMENT FREQUENCY	SAMPLE TYPE
Acute Whole Effluent Toxicity (Note 3)	TU_a	*			once/permit cycle	composite**

MONITORING REPORTS SHALL BE SUBMITTED ONCE PER PERMIT CYCLE; THE FIRST REPORT IS DUE SEPTEMBER 28, 2017.

* Monitoring requirement only.

** A 24-hour composite sample is composed of 48 aliquots (subsamples) collected at 30 minute intervals by an automatic sampling device.

Note 3 – The Acute WET test shall be conducted once per permit cycle. See Special Condition #20 for additional requirements.

Q. Regulation Controlling discharges to Storm Sewers, Regulation No. 65, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective May 30, 2008.

R. Water and Wastewater Facility Operators Certification Requirements, Regulation No. 100, Colorado Department of Public Health and Environment, Water Quality Control Division, effective June 30, 2012.

S. Policy for Conducting Assessments for Implementation of Temperature Standards in Discharge Permits, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number WQP-23, effective July 3, 2008.

T. Permit Compliance Schedules, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number CW-3, effective December 2, 2010.

IX. PUBLIC NOTICE COMMENTS

The Public Notice period for the Steamboat Springs WWTF permit (CO0020834) was from July 17th through September 17th, 2015. The division received comments from the City of Steamboat Springs during the Public Notice period. The comments are listed below, followed by the division's response to each comment.

A. Comments to the Permit

1. Permit Pages 4-6 of 35, Part I.A.2., Permitted Feature/Limit Set 001A July through February and Permitted Feature/Limit Set 001B March through June

   a. In Permitted Feature/Limit Set 001A July through February, the 30-Day Average Effluent Flow limitation should be 5.0 MGD, not 75.0 MGD, in accordance with the previous permit with effective date of October 1, 2007.

      RESPONSE: *This was a typographical error in the draft permit. As described in the WQA and the Fact Sheet, the permitted flow is 5.0 MGD. The division has made this correction in the final permit.*

   b. 2-Year average effluent limitations should not be imposed for January, February, March, November, or December because, as indicated in Table A-15 on page 33 of 38 of the Water Quality Assessment, the Non Impact Limitations (NILs) were selected instead of the antidegradation based average concentrations (ADBACs), and as described in the Antidegradation Based Effluent Limitations (ADBELs) section on page 32 of 38 of the Water Quality Assessment, "A NIL is applied as a 30-day average…while the ADBAC would be applied as a 2 year rolling average concentration."

      RESPONSE: *The facility is correct that the Non Impact Limitations (NILs) were selected instead of the antidegradation based average concentrations (ADBACs) for January, February, March, November and December for ammonia, as shown below from the WQA.*

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Table A-15

Final Selection of WQBELs, NILs, and ADBACs

Pollutant	NIL	New WQBEL	ADBAC	Chosen Limit
NH3 as N, Tot (mg/l) Jan	5.5	15	2.3	NIL
NH3 as N, Tot (mg/l) Feb	4.7	16	2.5	NIL
NH3 as N, Tot (mg/l) Mar	2.2	10	1.6	NIL
NH3 as N, Tot (mg/l) Nov	3.0	12	1.9	NIL
NH3 as N, Tot (mg/l) Dec	3.9	12	2.0	NIL

*The 2-year average limitations for ammonia discussed in the comment that were applied in the permit are **interim** limitations, which are limitations based on the previous permit limits or effluent quality (as submitted on DMRs) that are effective only during the term of a compliance schedule. These limitations are based upon an evaluation of the current 2 year rolling average, as limited in the previous permit term (4.7 mg/l (march), 4.6 mg/l Jan, Feb, Nov, Dec)), and are implemented to hold the current effluent condition until the new limitations can be met. For these months, these are the same permit limitations that are currently in effect until the NILs, the new 30 day average final limitations can be met. In accordance with Clean Water Policy 3, Compliance Schedules, interim limits are applied during the period of a compliance schedule to protect for a level of water quality that can be achieved, in accordance with applicable antibacksliding provisions. Note that the 2- year rolling average interim limitations are effective only until July 31, 2021, when the new (NIL) limitations come into effect. Based on the division's evaluation of the ability of the permittee to meet the (new) 30-day average NIL limitations, (see the DMR 30 day average effluent data Table V.a.1), it appeared as if the permittee was not able to consistently meet the new NIL limitations in January, February, March, November, and December. Therefore, consistant with Clean Water Policy 3, Compliance Schedules, additional time was given for the permittee to ensure that the new 30-day average effluent limits can be met. During that timeframe, the interim limitations are applied. Please see Section VII.D for a discussion of the compliance schedules. The division acknowledges that in the draft permit, these interim limits were incorrectly set at the maximum 2 year rolling average of analyzed DMR data which in some cases was less than the current permit limit. However, as more stringent 2 year rolling averge limits are not the goal of interim limits as part of a compliance schedule, these have been set at the previous 2 year rolling average limits. Note that even though the NILs for January and February appear less stringent than the 2 year rolling average (previous) limitations, they are based on a 30-day average, and not a 2 year rolling average.*

The NILs are the applicable antidegradation based limitations that begin at the conclusion of the ammonia compliance schedule.

c. It would be good to clarify what is meant by "PWS intake", which is listed under TDS with ICIS Code 70295 3. Assuming "PWS" stands for "potable water supply", is the requirement to test the PWS intake two days per month for TDS listed in the 001A and 001B tables in Part I.A.2. identical in sample location and in reporting requirements to the requirement to test 1) "raw water supply" two days per month for TDS listed in the 300I table in Part I.A.3. and 2) "raw water source" two days per month for salinity mentioned in Part I.A.4? Listing this requirement in three separate sections of the permit suggests three separate samples are required, so this needs to be clarified. See also Comment 4.b. If so, there is a difference in the reporting requirements; daily maximum concentrations are required to be reported according to the Permitted Feature/Limit Set 001A/001B tables in Part I.A.2., but only 30 day average, and not daily maximum, concentrations are required under the Permitted Feature 300I table in Part I.A.3.

***RESPONSE**: "PWS" stands for "Public Water Supply," and is specified in Regulation 61.8(2) as the "intake water supply." This requirement is the same as specified in Part I.A.3 that requires testing two days per month of the "raw water supply." This is further clarified in section I.A.4 of the permit, which specifies that the permittee must take samples prior to treatment of the raw drinking water*

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source (with a composite sample proportioned to flow prepared from individual grab samples if more than one source is being utilized). This has been further clarified by separating this requirement into a new table, labeled Permited Feature/Limit Set 100I. Additionally, the division has clarified the requirement in sections I.A.3 and I.A.4.

Daily maximum reporting requirements have been added to the Permitted Feature 300I table in Part I.A.3, as these were inadvertently not included in the table in the draft permit.

d. Clarify that the percentage removal requirement for BOD_5 and TSS should be calculated by dividing the difference between the mean influent concentration for the DMR period of one month and the mean effluent concentrations for the DMR period of the same month by the aforementioned mean influent concentration for the DMR period, and multiplying the quotient by 100. This clarification is requested to confirm that the percentage removal does not need to be reported weekly in correspondence with the monitoring frequency.

RESPONSE: *As stated in the Discharge Monitoring Report Guidance document (May 2015), the percent hydraulic and organic capacities are calculated using the monthly hydraulic and organic loading, respectively. Therefore, the Permitted Feature 300I table that required "weekly" reporting has been changed to "monthly" monitoring frequency for percent capacities for 300I.*

e. The City requests that permit limits are offered for the tiered flow rates of 3.0 MGD for July through February and 5.0 MGD for March through June, similar to what was done for the current permit, effective October 1, 2007. If permit limits are not allowed for tiered flow rates, please provide the specific location in a regulation that disallows this request.

***RESPONSE**: Regulation 61.8(2)(f)(i) states the following:*

> *"In the case of POTWs, permit effluent limitations, standards, or prohibitions shall be calculated based on design flow. Where the facility design flow and actual flow are significantly different, the Division may implement a tiered approach to setting water-quality-standard-based effluent limitations, provided that one of the sets of effluent limitations reflects the design flow and the permittee demonstrates the ability to meet effluent limitations at the design flow rate" [Emphasis Added].*

While the design flow and actual flow can be significantly different at the facility, data gathered during the previous permit term does not demonstrate the ability to meet all of the new effluent limitations. For ammonia, the current effluent data exceeds the newly applicable NILs during January, February, March, November, and December, hence the requirement for a compliance schedule for this parameter. As acknowledged by the permittee in comment A.6.a, a 4 year compliance schedule is requested to meet the new ammonia limitions. Therefore, as the discharge does not meet conditions required under Regulation 61.8(2)(f)(i) for tiered limits (cited above) , tiered limitations cannot be authorized at this time. However, the seasonal flows specified in the facility's site approval have been included in the draft permit and will remain in place. This change from the previous permit has been added to section II.E of the Fact Sheet, and the division has not made any changes to the permit or accompanying documents as a result of this comment.

f. If the City's request to add copper, cyanide, iron, lead, selenium, silver, and nonylphenol in accordance with Comment 6.b.1. cannot be granted, the City requests that the effective date of the following effluent limitations be delayed one year until at least October 1, 2016 in order to allow the City time to perform more focused monitoring. Recent (within five years) monitoring has demonstrated that the effluent concentrations for these parameters have the potential to exceed the proposed limits and each sample has the potential for its results to be applied to the 30-day limitation because the monitoring frequency for most of these parameters is monthly or less frequent, the City requests this time to investigate strategies for compliance before the proposed limitations are enforced.

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RESPONSE: *Following reanalysis in the Water Quality Assessment which included the previously calculated NILs and ADBACs (refer to response to comment C.23.b), the division determined that limitations were not required for cyanide, lead, selenium, silver, or nonylphenol. For cyanide and silver, the MEPCs were greater than 50% of the newly calculated limits, but less than the MAPCs. For lead and selenium, the previously calculated ADBACs applied, and the MEPCs were less than 50% of the MAPC. Therefore, report only conditions will exist for these parameters, and no compliance schedule is required.*

Note that Copper and iron have been added to the compliance schedule for manganese and mercury, with interim limits equal to the maximum effluent concentration for each parameter.

2. Permit Page 6 of 35, Part I.A.2., Permitted Feature/Limit Set 001P

   a. We believe that the correct title of table should be "Permitted Feature/Limit Set 001P" instead of "Permitted Feature 001 Limit Set P."

      RESPONSE: *This correction has been made in the permit.*

   b. Understanding that Permitted Feature 001P is defined as the same location as Permitted Feature 001A and 001B, would it be acceptable for the results for the total metal species required under Permitted Feature/Limit Set 001P be reported as the total recoverable metal species required under the Permitted Feature/Limit Set 001A/001B requirements? This would include arsenic, chromium, iron, and molybdenum.

      RESPONSE*: The facility is correct that the results for the total metal species required under Permitted Feature/Limit Set 001P can be reported as the total recoverable metal species required under the Permitted Feature/Limit Set 001A/001B requirements. As stated in Part I.A.2 of the permit, under the heading of "Metals," metals concentrations measured in compliance with the effluent monitoring requirements listed in Part I.A of this permit may be used to satisfy any pretreatment or industrial waste management metals monitoring requirements listed in Part I.B.8, if the metals are in the same form (i.e. total). The special sampling procedures (e.g. 24-hour composite samples) specified in Part I.B.8 must be followed. The division has not made any changes to the permit or accompanying documents as a result of this comment*

3. Permit Page 7 of 35, Part I.A.3., Monitoring Frequency and Sample Type Influent Parameters

   a. The sub-title in the table in this section should be changed from "Discharge Limitations Maximum Concentrations" to "Influent Limitations Maximum Concentrations" because it applies to Permitted Feature 300I.

      RESPONSE: *This correction has been made in the permit.*

   b. A description should be included for Permitted Feature 300I such as "Self-monitoring samples taken in compliance with the monitoring requirements specified below shall be taken at the following location(s): **300I, at a representative point after preliminary treatment and prior to biological treatment**". This would clarify that Permitted Feature 300I is the influent sample point which is not clear just because the reporting requirements for 300I are listed in Part I.A.3.

      RESPONSE: *The division agrees that including a description of the location of Permitted Feature 300I adds clarity to this section of the permit. This label was inadvertently omitted. The Division has added the following change to Part I.A.3 of the permit(text);*

      *Self-monitoring samples taken in compliance with the monitoring requirements specified below shall be taken at the following location(s): **300I, at a representative point after preliminary treatment and prior to biological treatment.***

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c. Regarding TDS notes after asterisk below "Permitted Feature 300I" table:

i. The City of Steamboat Springs WWTF discharges to the Yampa River, which is a tributary of the Colorado River and, therefore, the discharge will always be in the Colorado River Basin. Remove the sentence, "TDS measurements only required when the discharge is in the Colorado River Basin."

RESPONSE: *The suggested language has been deleted from the permit.*

ii. Clarify that by "raw water supply" what is meant is "raw drinking water source". Saying "raw water supply" could be interpreted as the raw wastewater influent supplying the WWTF, especially since this parameter is listed in the table of parameters to be tested on the raw wastewater influent. See also Comment 1.c.

RESPONSE: *As described in the response to comment A.1.c, 'raw water supply' is defined in Regulation 61.8(2)(l)(vi)(A) as the "intake water supply," and further specifics can be found in Part I.A.4 of the permit. The term "raw water supply" has been replaced with "intake water supply" to better align with the regulations.*

4. Permit Page 7 of 35, Part I.A.4., Salinity Parameters

a. Clarify that the TDS requirements listed in Part I.A.3 for the raw water supply and in Part I.A.2. as "PWS intake" satisfy the salinity monitoring for raw drinking water source and that the TDS requirements listed in Part I.A.2. as "WWTF effluent" satisfy the salinity monitoring for wastewater effluent described in this section. In other words, no additional parameters (such as specific conductivity) need to be sampled for salinity. This is somewhat made clear regarding WWTF effluent in the Fact Sheet Part VI.A.4.f., Salinity Regulations, but not for the raw drinking water source. See also Comment 1c.

RESPONSE: *The facility is correct that parameters specified in the the Permitted Feature/Limit Set 001A July through February table and the Permitted Feature/Limit Set 001B March through June table as well as the Permitted Feature 300I table satisfy the monitoring requirements under 61.8 (2)(l), "Colorado Salinity Regulatins," and The division has added this clarification to the permit. See also the response to Comment A.1.c.*

b. Defining the raw drinking water source with a number (similar to 001A, 001B, or 300I) and in a separate permitted feature table is suggested to help clarify the sampling requirements for this sample location. Including these requirements for raw drinking water source in the tables for Permitted Features 001A (outfall), 001B (outfall), and 300I (wastewater influent) is confusing.

RESPONSE: *The division agrees with the suggested edit to the permit, and has included intake water supply sampling for TDS in a separate table, labeled 'Permitted Feature/Limit Set 100I,' to distinguish that these samples are from a different monitoring location than 001A, 001B, or 300I.*

5. Permit Page 7 of 35, Part I.A.5., Special Studies and Additional Monitoring

a. Additional time to research and select, allocate funds, purchase, and install temperature monitoring equipment is requested. An extension of 1 year in the compliance schedule is requested for these efforts in order to provide time to procure the equipment and have the equipment installed and placed into service after the snow has melted.

RESPONSE: *Temperature monitoring equipment installation is typically a straightforward process, and most facilities across the state of Colorado have demonstrated the ability to install temperature monitoring equipment within six months, which is the typical timeframe the division assigns for this installation. However, in this case, the division acknowledges that the city has expressed a need to allocate funds for this equipment. Therefore, the division has extended the time until temperature*

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