COLORADO
Department of Public Health & Environment

Colorado Discharge Permit System (CDPS)
Fact Sheet to Permit Number CO0024431
EAGLE RIVER WATER & SANITATION DISTRICT, AVON WWTF, EAGLE COUNTY

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I. INTRODUCTION

The National Pollutant Discharge Elimination System (NPDES) permit was created by Congress as the implementation tool under the Clean Water Act for the restriction of the quantity, rate, and concentration of pollutants that the point sources may discharge into water. The division, as the delegated authority for development and issuance of NPDES permits for the state of Colorado, is obligated to develop and issue NPDES permits in a manner that meets federal statutory requirements (the Clean Water Act, 33 U.S.C. § 1251 et seq.), state statutory requirements (the Colorado Water Quality Control Act, 25-8-101 et seq.) and state and federal regulations.

Routine review is an integral aspect of the NPDES and the Colorado Discharge Permitting System (CDPS) program.

The Clean Water Act incorporates a finite term for NPDES permits in order to allow for routine review of permit terms and conditions; the Colorado Water Quality Control Act similarly recognizes that the periodic renewal of permits is required. Routine review of CDPS permits provides a mechanism for the division and the public to scrutinize the existing conditions of the permit; to upgrade the permit requirements to reflect changing knowledge, law, or advances in science and technology; to ensure that the permit limits are protective of the most recent water quality classifications, standards, and antidegradation designations established by the Water Quality Control Commission; and, if necessary, to protect against human error by the permit writer introduced into previous permits. Routine review often results in the incorporation of new or different permit limitations or approaches.

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This fact sheet includes factors explaining the need for the proposed permit requirements, and presents evidence supporting the need for the proposed requirements, including information regarding pollutant potential and available controls, incidents of environmental damage, and permit violations. This fact sheet also includes some background information to provide context for the statutory and regulatory direction as to how permit terms and conditions are established.

II. TYPE OF PERMIT

A. Permit Type: Domestic – Major Municipal, Mechanical Plant, Seventh Renewal

B. Discharge To: Surface Water

III. FACILITY INFORMATION

A. SIC Code: 4952 Sewerage Systems

B. Facility Location: 950 W. Beaver Creek Blvd., Avon, CO 81620
Latitude: 39.635556° N, Longitude: 106.53111° W

C. Permitted Feature: 001A, following disinfection and prior to mixing with the receiving stream. 39.635350° N, 106.531234° W

UST1A is an in-stream ambient sampling location located upstream from the facility discharge and in the same water body segment to collect continuous ambient temperature data. The location for this permitted feature will be approximately at 39.635265° North latitude, 106.530665° West longitude, which is within 50 yards upstream from the outfall 001A.

The location(s) provided above will serve as the point(s) of compliance for this permit and are appropriate as they are located after all treatment and prior to discharge to the receiving water.

D. Facility Flows: 4.3 MGD

E. Major Changes From Last Renewal:

- Requirements for continuous ambient temperature monitoring have been added in order to collect adequate temperature data in accordance with the Division's policy, Procedures for Conducting Assessments for Implementation of Temperature Standards in Discharge Permits (WQP-23). For ambient temperature data, the Division will require the facility to establish an in-stream monitoring station within a mile or two upstream (the most suitable and representative location) from the facility discharge to collect ambient temperature data to be used in the next renewal. The collected ambient temperature data will be reported under outfall UST1A in the permit.

- Total recoverable trivalent chromium, dissolved hexavalent chromium, cyanide, total recoverable iron, dissolved manganese, potentially dissolved manganese, total recoverable molybdenum, potentially dissolved nickel, potentially dissolved selenium, potentially dissolved silver, total

recoverable uranium, and nonylphenol, are added to the permit with a report only requirement to monitor for future reasonable potential calculations.

- Potentially dissolved lead and sulfide now have limitations, based on the reasonable potential analysis.
- Total recoverable arsenic and potentially dissolved copper now has limitations, based on the reasonable potential analysis, with a compliance schedule.
- pH monitoring frequency has been decreased from daily to 5 days/week, due to a qualification for monitoring reduction in accordance with the Division's policy, Baseline Monitoring Frequency (WQP-20).
- TIN monitoring frequency has been decreased from 3 days/week to weekly, due to a qualification for monitoring reduction in accordance with the Division's policy, Baseline Monitoring Frequency (WQP-20).
- Regulation 85 TIN and phosphorus limitations have been added to the permit with compliance schedules added as per the MOU.
- E. coli monitoring frequency has been increased from monthly to weekly, to facilitate weekly average reporting.
- TSS, and BOD_5 monitoring frequency has been increased from 2 times per month to weekly, to facilitate weekly average reporting.

IV. RECEIVING STREAM

A. Waterbody Identification: *COUCEA09a, Eagle River*

B. Water Quality Assessment:

An assessment of the stream standards, low flow data, and ambient stream data has been performed to determine the assimilative capacities for the Eagle River for potential pollutants of concern. This information, which is contained in the Water Quality Assessment (WQA) for this receiving stream(s), also includes an antidegradation review, where appropriate. The Division's Permits Section has reviewed the assimilative capacities to determine the appropriate water quality-based effluent limitations as well as potential limits based on the antidegradation evaluation, where applicable. The limitations based on the assessment and other evaluations conducted as part of this fact sheet can be found in Part I.A of the permit.

The following table contains the dischargers to Segments COUCEA08 and COUCEA09a that have been identified and that are included in the modeling of those segments together in a shared WQA:

Facility Name	Permittee Name	Permit Number
Vail WWTF	Eagle River Water and Sanitation District	CO0021369
Avon WWTF	Eagle River Water and Sanitation District	CO0024431
Edwards WWTF	Eagle River Water and Sanitation District	CO0037311

Permitted Feature 001A will be the authorized discharge point to the receiving stream.

This discharge has been identified as posing a contaminant threat rating of Moderate to the following water system as identified by PWSID# CO0119329, Town of Gypsum water source.

V. FACILITY DESCRIPTION

A. Collection System

The permittee operates a separate sewer system that conveys wastewater to the WWTF. Infiltration and inflow (I/I) into the collection system has been evaluated for this renewal.

Inflow is water, other than wastewater, that enters a sewer system from sources such as roof leaders, cellar drains, yard drains, area drains, foundation drains, drains from springs and swampy areas, manhole covers, cross sections between storm drains and sanitary sewers, catch basins, cooling towers, storm waters, surface runoff, street wash waters or other drainage. Inflow does not include, and is distinguished from, infiltration. (40 CFR 35.2005 Definitions)

Infiltration is water other than wastewater that enters a sewer system (including sewer service connections and foundation drains) from the ground through such means as defective pipes, pipe joints, connections, or manholes. Infiltration does not include, and is distinguished from, inflow. (40 CFR 35.2005 Definitions)

I/I is assessed by calculating the gallons per capita per day. Gallons per capita per day is calculated by using the daily average influent flows for the three maximum flow months during the past calendar year, reported in Part D of the facility's permit application. If the data on the application is outdated or not reported in the application, the three maximum 30-day average influent flows for the past calendar year may be used instead. The facility reports the total estimated flows for residential, industrial, commercial, and also the population of the service area in Part C of the permit application. The calculation to determine gallons per capita per day is:

$$gallons\ per\ capita\ per\ day = \frac{gal.per\ day}{population}\ X\ \%residential\ flows$$

$$\%\ residential\ flows = \frac{residential\ flows}{residential + commercial\ + industrial\ flows}\ X\ 100\%$$

For this facility the average of the daily average influent flows for the maximum three flow months is 1,982,000 gallons per day. Based on data submitted in the permit application, the facility's percent of residential flows is 93%. Based on the service area population of 20,276, the estimated influent flow is 91 gallons per capita per day.

However, an analysis of influent flow data, and discussions with the permittee, indicate inflow and infiltration. Daily influent data shows some high values which may be a result of inflow from spring runoff. Low influent BOD associated with these influent flow spikes in the spring may indicate spring runoff inflow and infiltration into the collection system. The same gaps and cracks that allow groundwater to enter the collection system can also allow untreated sewage to leak out of the collection system. Conditions have been included in the permit for an I/I study and reduction to further explore and correct I/I.

B. Lift Stations

Table IV-1 summarizes the information provided in the renewal application for the lift stations in the service area.

Table IV-1 – Lift Station Summary

Station Name/#	Firm Pump Capacity (gpm)	Peak Flows (gpd)	% Capacity (based on peak flow)
Dowd Junction LS#4	2 pumps @ 1,050 gpm	274,000	9%

C. Chemical Usage

The permittee stated in the application that they utilize two chemicals in their treatment process. The MSDS sheets have been reviewed and the following chemicals have been approved for use and are summarized in the following table.

Table IV-2 – Chemical Additives

Chemical Name	Purpose	Constituents of Concern
Ammonium Hydroxide	*Developing biomass during peak times*	*Ammonia, pH*
Ferric Chloride	*Phosphorus Removal & Sludge conditioning*	*Iron Chloride*
Captor	*Quench chlorine*	*Sulfate*
Soda Ash	*Alkalinity/pH control*	*pH*
Caustic Soda	*pH adjustment*	*Sodium Hydroxide*
Sodium Hypochlorite	*Disinfection & Odor Control*	*Chlorine*
MicroC 2000	Dosed to anoxic zones in secondary treatment	*Glycerin, Methanol, Sodium Chloride*
Clarifloc	*dewatering of stabilized biosolids*	*None*

Chemicals deemed acceptable for use in waters that will or may be discharged to waters of the State are acceptable only when used in accordance with all state and federal regulations, and in strict accordance with the manufacturer's site-specific instructions.

D. Treatment Facility, Facility Modifications and Capacities

The facility has undergone changes and improvements that have altered the organic capacity. The upgraded facility consists of bar screen, grit removal, primary clarifiers, activated sludge with diffused aeration, secondary clarification, nitrification cells, and UV disinfection. The new hydraulic capacity is 4.3 MGD and the new organic capacity is 13,100 lbs BOD_5/day, which are specified in Site Approval 4214. That document should be referred to for any additional information.

The District's Vail, Avon and Edwards WWTFs have the capability to transfer solids between facilities. More specifically, the Avon WWTF receives solids from the Vail WWTF, and the Edwards WWTF can receive solids from the Avon WWTF.

Pursuant to Section 100.5.2 of the Water and Wastewater Facility Operator Certification Requirements, this facility will require a certified operator. If the facility has a question on the level of the certified operator it needs then the facility will need to contact the Engineering Section of the Division.

E. Biosolids Treatment and Disposal

There are no facilities to treat or store biosolids at the Avon WWTF. All biosolids are transported to the Edwards WWTF by the sanitary sewer for treatment. The Edwards WWTF screens the biosolids, then provides autothermal thermophilic digestion (ATAD) to meet Federal 503 class A criteria. The final product at Edwards is land applied under conditions outlined in permit CDPHE BMP 1145.

1. EPA Regulation

   The Facility is required under the Direct Enforceability provision of 40 CFR §503.3(b) to meet the applicable requirements of the regulation.

2. Biosolids Regulation (Regulation No. 64, Colorado Water Quality Control Commission)

   Colorado facilities that land apply biosolids must comply with requirements of Regulation No. 64, such as the submission of annual reports as discussed later in this fact sheet.

VI. PERFORMANCE HISTORY

A. Monitoring Data

1. Discharge Monitoring Reports – The following tables summarize the effluent data reported on the Discharge Monitoring Reports (DMRs) for the previous permit term, from February 2014 through January 2019.

Table V-1 – Summary of DMR Data for Permitted Feature 001A

Parameter	*# Samples or Reporting Periods*	*Reported Average Concentrations Avg/Min/Max*	*Reported Maximum Concentrations Avg/Min/Max*	*AD 2-Year Average Avg/Min/Max*	*Previous Avg/Max/AD Permit Limit*	*Number of Limit Excursions*
Effluent Flow (MGD)	*60*	*1.7/1.2/2.5*	*2.1/1.5/3.1*		*4.3/Report*	
Temp Daily Max (°C) July-Sept	*15*		*20/20/21*		*Report/Report*	
Temp Daily Max (°C) Oct 1-Oct 15	*5*		*19/18/20*		*Report/Report*	
Temp Daily Max (°C) Oct 16-May	*40*		*16/13/20*		*Report/Report*	
Temp Daily Max (°C) Jun	*5*		*18/17/18*		*Report/Report*	
Temp MWAT (°C) July-Sept	*15*	*20/19/21*			*Report/Report*	
Temp MWAT (°C) Oct 1-Oct 15	*5*	*18/18/19*			*Report/Report*	
Temp MWAT (°C) Oct 16-May	*40*	*15/13/19*			*Report/Report*	
Temp MWAT (°C) Jun	*5*	*17/16/18*			*Report/Report*	
*pH (su)**	*60*	*6.7/6.5/7*	*7.2/6.8/8.6*		*6.5 - 9*	
*E. coli (#/100 ml)***	*60*	*1.1/<1/4.2*	*1.6/<1/15*		*474/948*	
Total Inorganic Nitrogen as N (mg/l)	*60*	*13/4.7/29*	*16/8.2/33*	*NA/NA/NA*	*Report/36*	
NH3 as N, Tot (mg/l) Jan	*5*	*0.43/<0.2/1.8*	*4/<0.2/19*	*NA/NA/NA*	*7.3/13*	*1*
NH3 as N, Tot (mg/l) Feb	*5*	*0.098/<0.2/0.25*	*0.2/<0.2/0.54*	*NA/NA/NA*	*3.6/11.6*	
NH3 as N, Tot (mg/l) Mar	*5*	*0.18/<0.2/0.26*	*0.41/<0.2/1.1*	*NA/NA/NA*	*2.7/16.3*	
NH3 as N, Tot (mg/l) Apr	*5*	*0.4/<0.2/1.7*	*2.3/<0.2/11*	*NA/NA/NA*	*4/16*	
NH3 as N, Tot (mg/l) May	*5*	*0.06/<0.2/0.3*	*0.21/<0.2/1.1*	*NA/NA/NA*	*7.7/38*	

Table V-1 – Summary of DMR Data for Permitted Feature 001A

Parameter	*# Samples or Reporting Periods*	*Reported Average Concentrations Avg/Min/Max*	*Reported Maximum Concentrations Avg/Min/Max*	*AD 2-Year Average Avg/Min/Max*	*Previous Avg/Max/AD Permit Limit*	*Number of Limit Excursions*
NH3 as N, Tot (mg/l) Jun	*5*	*0.23/<0.2/1.1*	*1.3/<0.2/6.5*	*NA/NA/NA*	*10/30*	
NH3 as N, Tot (mg/l) Jul	*5*	*0/<0.2/0*	*0/<0.2/0*	*NA/NA/NA*	*4.3/15.5*	
NH3 as N, Tot (mg/l) Aug	*5*	*0.27/<0.2/0.8*	*1.4/<0.2/5.1*	*NA/NA/NA*	*3.8/14.6*	
NH3 as N, Tot (mg/l) Sep	*5*	*0.5/<0.2/2.3*	*2.5/<0.2/12*	*NA/NA/NA*	*3.1/15*	
NH3 as N, Tot (mg/l) Oct	*5*	*0.08/<0.2/0.4*	*0.44/<0.2/2.2*	*NA/NA/NA*	*3.3/17*	
NH3 as N, Tot (mg/l) Nov	*5*	*0.04/<0.2/0.2*	*0.068/<0.2/0.34*	*NA/NA/NA*	*3.4/13.2*	
NH3 as N, Tot (mg/l) Dec	*5*	*0.52/<0.2/1.4*	*2.9/<0.2/7.5*	*NA/NA/NA*	*3.7/12.5*	
BOD5, effluent (mg/l)	*60*	*1.7/1.3/4.5*	*2.1/1.4/5.8*		*30/45/*	
BOD5 (% removal)	*60*	*99/99/100*	*NA/NA/NA*		*85/NA/*	
TSS, effluent (mg/l)	*60*	*1.8/0.86/6.7*	*2.3/1.1/8.1*		*30/45/*	
TSS (% removal)	*60*	*100/99/100*	*NA/NA/NA*		*85/NA/*	
Oil and Grease (mg/l)	*60*	*NA/NA/NA*	*0/0/0*		*NA/10*	
TDS						
PWS intake (mg/l)	*60*	*184/38/356*	*NA/NA/NA*		*Report/Report*	
WWTF effluent (mg/l)	*60*	*416/332/528*	*NA/NA/NA*		*Report/Report*	
As, TR (µg/l)	*60*	*0.31/<0.07/1.3*	*NA/NA/NA*	*NA/NA/NA*	*Report/NA/NA*	
Cd, Dis (µg/l)	*60*	*0.0033/<0.1/0.2*	*0.0033/<0.1/0.2*	*0.0099/<0.1/0.1*	*Report/Report/Report*	
Cr+6, Dis (µg/l)	*20*	*0/<10/0*	*0/<10/0*	*NA/NA/NA*	*17/Report/NA*	
Cu, Dis (µg/l)	*20*	*13/7.9/21*	*14/8.6/24*	*NA/NA/NA*	*29/Report/NA*	
CN, Free (µg/l)	*20*	*NA/NA/NA*	*0/<5/0*	*0/<5/0*	*NA/14/2.2*	
Fe, Dis (µg/l)	*20*	*60/<5/499*	*NA/NA/NA*	*NA/NA/NA*	*Report/NA/NA*	
Mn, Dis (µg/l)	*20*	*7.3/3/18*	*NA/NA/NA*	*NA/NA/NA*	*64/NA/NA*	
Hg, Tot (µg/l)	*20*	*0.0014/0.0007/0.0036*	*NA/NA/NA*	*NA/NA/NA*	*0.04/NA/NA*	
Zn, Dis (µg/l)	*60*	*49/22/73*	*53/24/79*	*NA/NA/NA*	*Report/Report/NA*	
Chloride (mg/l)	*60*	*85/54/122*	*NA/NA/NA*	*85/80/88*	*Report/NA/Report*	
Sulfate (mg/l)	*60*	*60/38/83*	*NA/NA/NA*	*61/58/68*	*Report/NA/Report*	
Sulfide as H2S (mg/l)	*60*	*0.0017/<0.01/0.04*	*NA/NA/NA*	*0.0042/<0.01/0.02*	*Report/NA/Report*	

**The pH data shows the minimum reported values in the "average" column, and the maximum reported values in the "maximum column*
***Geometric mean*

2. Additional Data – The following table summarizes submitted DMR effluent TIN data, collected from November 2005 through October 2007.

Table V-2 – Summary of NIL TIN Data

Parameter	# Samples or Reporting Periods	*Reported Maximum Concentrations Avg/Min/Max*
Total Inorganic Nitrogen as N (µg/l)	24	25/17/60.6

Collection Date	*Total Inorganic Nitrogen (mg/l)*
11/30/2005	**60.6**
12/31/2005	17.9
01/31/2006	24.4
02/28/2006	17.1
03/31/2006	25.6
04/30/2006	19.
05/31/2006	18.
06/30/2006	17.09
07/31/2006	23.6
08/31/2006	24.2
09/30/2006	23.2
10/31/2006	25.1
11/30/2006	25.

Collection Date	*Total Inorganic Nitrogen (mg/l)*
12/31/2006	21.3
01/31/2007	27.1
02/28/2007	31.4
03/31/2007	34.3
04/30/2007	25.7
05/31/2007	22.6
06/30/2007	23.3
07/31/2007	21.4
08/31/2007	24.2
09/30/2007	25.6
10/31/2007	31.5

B. Compliance With Terms and Conditions of Previous Permit

1. Effluent Limitations – The data shown in the preceding table(s) indicate apparent violations of the permit.

   One effluent violation for the daily maximum ammonia limitation was reported on the January 2016 DMR. The reason for this violation was, the AWWTF had not been treating biosolids since early August, and then began again on December 8th. Sludge blankets in the secondary clarifiers had begun to rise around the middle of December, which caused operators to increase the wasting to their solids handling process. In addition to increased loads to their digesters and increased ammonia loads from centrate, due to running centrifuges, the influent ammonia loading was also on a steep rise due to the Christmas and New Year's Eve Holiday ski crowds. Two main factors contributed to this upset during the weekend of 1/2/2016:

   1) The plant staff had ran too many gallons of sludge through the centrifuge resulting in a very large additional load of ammonia to the secondary process.

   2) Going into the Holidays, the aeration configuration still favored a condition to achieve TIN removal through denitrification. Better removal of ammonia would have been achieved in aeration, if less anoxic zone space would have been utilized in the system, and increased dissolved oxygen concentrations in the aerobic zones been initiated prior to the peak loading of the year.

   Corrective actions were immediately taken to reduce the amount of ammonia being discharged from the facility. The results for ammonia since this upset have been well under permit limits and we are confident that the facility will continue meeting ammonia permit limits.

   In accordance with 40 CFR Part 122.41(a), any permit noncompliance constitutes a violation of the Clean Water Act and is grounds for enforcement action; for permit termination, revocation and reissuance, or modification; or denial of a permit renewal application.

2. Other Permit Requirements – The permittee has been in compliance with all other aspects of the previous permit.

VII. 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 Avon 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).

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 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) – The receiving stream to which the Avon WWTF discharges is currently listed on the State's 303(d) list for development of TMDLs for aquatic life parameters, sediment, and arsenic. However, the TMDL has not yet been finalized. Although this permit establishes limits for these pollutants, they do not represent the TMDLs and waste load allocations, and are therefore subject to change upon finalization of an approved TMDL for this segment.

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 permittee provided a mixing zone study during the previous permit. The facility is exempt from a mixing zone study based on its physical mixing zone being greater than the regulatory mixing zone and because the discharge is not to a T&E stream segment.

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 on a **Monthly** basis. Samples shall be taken at Permitted Feature 001A.

An evaluation of the discharge of total dissolved solids indicates that the Avon facility exceeds the threshold of 1 ton/day or 366 tons/year of salinity. To determine the TDS loading from this facility, the average reported TDS values were multiplied by the average flow, then by 8.34. The average was determined to be 3.0 tons/day.

The average concentration discharged is less than 400 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 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

Parameter	30-Day Average			7-Day Ave or Daily Max			Antideg (2 Year Roll. Ave.)		
	MEPC	WQBEL/NIL (MAPC)	Reasonable Potential	MEPC	WQBEL/NIL (MAPC)	Reasonable Potential	MEPC	ADBAC (MAPC)	Reasonable Potential
Total Inorganic Nitrogen as N (mg/l)				36	33	Yes			
As, TR (µg/l)*	1.4	0.02	Yes						
As, Dis (µg/l)				1.4	1,205	No	0.45	180	No
Cd, Dis (µg/l)	0.22	2.5	No	0.22	9.0	No	0.11	2.1	No
Cr+3, TR (µg/l)				NA	177	Monitor	NA	27	Monitor
Cr+3, Dis (µg/l)	NA	499	Monitor				NA	76	Monitor
Cr+6, Dis (µg/l)	<10	17	Monitor	<10	57	No			
Cu, Dis (µg/l)	25	17	Yes	29	70	No			
CN, Free (µg/l)				<5	8.0	Monitor			
Fe, Dis (µg/l) WS	948	1,095	Monitor						
Fe, TR (µg/l)	NA	3,798	Monitor				NA	1,526	Monitor
Pb, Dis (µg/l)	NA	18	Monitor	NA	393	Monitor	NA	1.9	Monitor
Mn, PD (µg/l) AQ	25	8,533	No	28	12,399	No	8.8	4,707	No
Mn, Dis (µg/l) WS	25	943	No						
Mo, TR (µg/l)	NA	713	Monitor				NA	107	Monitor
Hg, Tot (µg/l)	0.0043	0.045	No						
Ni, Dis (µg/l)	NA	352	Monitor	NA	2,535	Monitor	NA	53	Monitor
Se, Dis (µg/l)	NA	20	Monitor	NA	65	Monitor	NA	2.3	Monitor
Ag, Dis (µg/l)	NA	0.80	Monitor	NA	17	Monitor			
U, TR (µg/l)				NA	106	Monitor	NA	16	Monitor
Zn, Dis (µg/l)	80	702	No	87	784	No			
Chloride (mg/l)	134	1,069	No						
Sulfate (mg/l) WS	91	910	No						
Sulfide as H2S (mg/l)	0.044	0.0089	Yes						
Nonylphenol (µg/l)	NA	29	Monitor	NA	99	Monitor			

*Temporary modification applies

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. 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.

Total Inorganic Nitrogen - The calculated WQBEL for T.I.N. as set out in the WQA is imposed to protect downstream water supplies. Previous monitoring as shown in Table V-1 indicate that the daily maximum limitation can be met and is therefore imposed upon the effective date of the permit.

Ammonia - The limitation for ammonia is based upon the NIL, except for January which is based on the WQBEL, 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 effective immediately.

Total Arsenic – The RP analysis for total arsenic 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 a 30-day limitation has been added to the permit. Based upon previous monitoring, the permittee may not be able to consistently meet this limitation and a compliance schedule has been added to the permit to give the permittee time to meet this limitation. Because of the temporary modification (As (chronic) = hybrid), an interim limitation will be applied to the permit, effective immediately, until the completion of the compliance schedule that begins after the expiration of the temporary modification on 12/31/2024. In accordance with Division procedures, the maximum reported value from the previous 5 years of data is the interim limit. This interim limit is 1.3 µg/l, reflecting the 30-day average from July 2015.

Dissolved Arsenic – The total arsenic limitation is protective of the dissolved arsenic ADBAC; therefore, a qualitative no RP has been determined and no limitations will be added at this time.

Potentially Dissolved Cadmium – The RP analysis for potentially dissolved cadmium was based upon the WQBEL and ADBAC as calculated in the WQA. With the available data, the MDLWIN program was used to determine the appropriate statistics to determine the MEPC. The MEPC was less than half of the MAPC and therefore limitations are not necessary at this time. A monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Total Recoverable Trivalent Chromium – There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Potentially Dissolved Trivalent Chromium – The total recoverable trivalent chromium limitation is protective of the potentially dissolved trivalent chromium ADBAC; therefore, a qualitative no RP has been determined and no limitations will be added at this time.

Dissolved Hexavalent Chromium – A qualitative RP analysis was conducted as there was not enough detectable data to conduct a quantitative RP analysis. Sample results for dissolved hexavalent chromium were all below a detection limit of 10 µg/l, compared to the NIL of 17 µg/l. The detection limit was less than the proposed NIL but greater than half of the proposed NIL; therefore, report only requirements have been retained in the permit.

Potentially Dissolved Copper – The RP analysis for potentially dissolved copper was based upon the NIL of 17 µg/l, as described in the WQA. With the available data, the normal distribution was used to determine the appropriate statistics to determine the MEPC. The chronic MEPC was greater than the MAPC, therefore limitations are required and a 30-day average requirement has been retained in the permit. Because this limitation is more stringent than the previous limit, 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 limit of 21 µg/l is included. A numeric limitation for the daily maximum will also be included in the permit in accordance with the Reasonable Potential Policy (CW-1), because this parameter is present in the effluent, in order to assure source control and/or treatment is maintained.

Cyanide - A qualitative RP analysis was conducted as there was not enough detectable data to conduct a quantitative RP analysis. Sample results for cyanide were all below a detection limit of 5 µg/l, compared to the NIL of 8.0 µg/l. The detection limit was less than the proposed NIL but greater than half of the proposed NIL; therefore, report only requirements have been retained in the permit.

Total Recoverable Iron - There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Dissolved Iron - The RP analysis for dissolved iron was based upon the WQBEL as calculated in the WQA. With the available data, the MDLWIN program was used to determine the appropriate statistics to determine the MEPC. The MEPC was less than half of the MAPC and therefore limitations are not necessary at this time, however the MEPC was greater than 50% of the MAPC and therefore monitoring is required. Therefore, a report only requirement has been retained to the permit.

Potentially Dissolved Lead - There is no data available regarding the presence/absence or quantification of this parameter in the discharge. A qualitative determination of RP has been made for potentially dissolved lead based on the facility type, size, documented infiltration/inflow, and the presence of this parameter in the effluent. A numeric limitation will be included in the permit in accordance with the Reasonable Potential Policy (CW-1), because this parameter is present in the effluent, in order to assure source control and/or treatment is maintained. Total lead data collected between 2005 and 2010 show a maximum reported value of 0.7 µg/l, indicating that the facility does not require a compliance schedule to meet the ADBAC numeric limitation of 1.9 µg/l included in the permit. A two year delay is provided to calculate the ADBAC.

Potentially Dissolved Manganese - The RP analysis for potentially dissolved manganese was based upon the WQBEL and ADBAC as calculated in the WQA. With the available data, the normal program was used to determine the appropriate statistics to determine the MEPC. The MEPC was less than half of the MAPC and therefore limitations are not necessary at this time. A monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Dissolved Manganese - The RP analysis for dissolved manganese was based upon the NIL as calculated in the WQA. With the available data, the normal program was used to determine the appropriate

statistics to determine the MEPC. The MEPC was less than half of the MAPC and therefore limitations are not necessary at this time. A monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Total Recoverable Molybdenum - There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Total Mercury - The RP analysis for total mercury was based upon the WQBEL of 0.045 µg/l as calculated in the WQA. With the available data, the log-normal distribution was used to determine the appropriate statistics to determine the MEPC. A qualitative determination of RP has been made for total mercury based on the facility type, size, documented infiltration/inflow, and the presence of this parameter in the effluent. A numeric limitation will be included in the permit in accordance with the Reasonable Potential Policy (CW-1), because this parameter is present in the effluent, in order to assure source control and/or treatment is maintained.

Potentially Dissolved Nickel - There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Potentially Dissolved Selenium - There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Potentially Dissolved Silver - There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Total Recoverable Uranium – There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

Potentially Dissolved Zinc - The RP analysis for potentially dissolved zinc was based upon the WQBEL as described in the WQA. With the available data, the normal distribution was used to determine the appropriate statistics to determine the MEPC. The MEPC was less than half of the MAPC and therefore limitations are not necessary at this time. A monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Chloride – The RP analysis for chloride was based upon the WQBEL as calculated in the WQA. With the available data, the normal program was used to determine the appropriate statistics to determine the MEPC. The MEPC was less than half of the MAPC and therefore limitations are not necessary at this time. A monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Sulfate - The RP analysis for sulfate was based upon the WQBEL as calculated in the WQA. With the available data, the normal program was used to determine the appropriate statistics to determine the MEPC. The MEPC was less than half of the MAPC and therefore limitations are not necessary at this time. A monitoring requirement will be included to collect enough data to conduct a quantitative RP analysis at the next permit renewal.

Sulfide – A qualitative RP analysis was conducted as there was not enough detectable data to conduct a quantitative RP analysis. Sample results for sulfide were as high as 0.044 mg/l, compared to the

WQBEL of 0.0089 mg/l, as calculated in the WQA. Therefore, a qualitative determination of RP has been made and limitations will be added. It is unknown if the permittee can 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 limit of 0.044 mg/l is included.

Nonylphenol - There is no data available regarding the presence/absence or quantification of this parameter in the discharge. Since the potential exists for this parameter to be present, monitoring has been added to the permit.

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.

In order to determine the available assimilative capacity for temperature, continuous ambient water quality data is needed directly upstream of the discharge. Continuous instream temperature data directly upstream of the discharge is currently not available. Therefore, a requirement to collect instream temperature data on a continuous basis at a location directly upstream of the discharge has been added to the permit. As this temperature requirement will likely require the use of automated temperature measurements and recordings, the temperature monitoring requirements in the permit have a delayed effective date in order to have the proper equipment in place to take the required readings.

Regulation 85 Nutrients:

Total Inorganic Nitrogen – Although there was some assimilative capacity available for potential interim numeric nitrogen standards at 31.17; the interim limits (Regulation 85.5(1)(a)(iii)) will apply since they are less stringent. The agreed upon Regulation 85 MOU compliance schedule will give the permittee time to meet the Regulation 85 limitations. The event dates in the compliance schedule are specified by the MOU. A reporting requirement will be added as the interim limit.

Total Phosphorus – Although there was some assimilative capacity available for potential interim numeric nitrogen standards at 31.17; the interim limits (Regulation 85.5(1)(a)(iii)) will apply since they are less stringent. The agreed upon Regulation 85 MOU compliance schedule will give the permittee time to meet the Regulation 85 limitations. A reporting requirement will be added as the interim limit.

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

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. Because the discharge is expected to contain metals and ammonia, a qualitative RP has been determined for WET testing. WET testing is expected to occur such that, by the end of the permit term, each calendar month has a WET test.

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

Total / Total Recoverable Metals (EXCEPT Arsenic)
For standards based upon the total and total recoverable methods of analysis, the limitations are based upon the same method as the standard.

Total / Total Recoverable Arsenic
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. An August 19, 1998 EPA memo states that the terms "total metals" and "total recoverable metals" are synonymous. Total metals and total recoverable metals are used to describe methods of hard mineral acid digestion.

Total Mercury
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 0.02 ug/l.

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

Dissolved Metals / Potentially Dissolved
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.

Dissolved Iron and Dissolved Manganese if WS based
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.

Cyanide
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 **D2036-09, Method C,** will be used to measure weak acid dissociable cyanide in the effluent.

TR Trivalent Chromium/Total Chromium
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.

Dissolved Hexavalent Chromium
For hexavalent chromium, samples must be appropriately buffered. Dissolved concentrations will be measured rather than potentially dissolved concentrations.

VIII. 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 VII-1 shows the results of the reduced monitoring frequency analysis for Permitted Feature 001, Limit Set A, based upon compliance with the previous permit.

Based upon the reduced monitoring frequency analysis for Permitted Feature 001, Limit Set A, shown in Table VII-1, the permittee is not eligible for reduced monitoring for TIN and total recoverable arsenic.

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*	*New Schedule*
pH (su) Minimum	min 6.5	6.8	0.14	6.52	1 Step	3 Days/Week
pH (su) Maximum	max 9.0	7.3	0.32	7.94		
E. coli (#/100 ml)	314	1.0	0.10	1.2	3 Levels	Weekly*
Total Inorganic Nitrogen as N (mg/l)	33	14	2.2	18	2 Levels	Weekly
BOD5, effluent (mg/l)	30	1.5	0.21	1.9	3 Levels	Weekly*
TSS, effluent (mg/l)	30	1.4	0.46	2.3	3 Levels	Weekly*
As, TR (µg/l)	0.02	0.18	0.14	0.46	None	2 Days/Month
Cr+6, Dis (µg/l)	17	<10	0	<10	2 Levels	Quarterly
Cu, Dis (µg/l)	17	15	2.9	20.8	None	2 Days/Month
CN, Free (µg/l)	8.0	<5	0	<5	2 Levels	Monthly
Fe, Dis (µg/l)	1,095	75	134	343	3 Levels	Quarterly
Mn, Dis (µg/l)	55	6.7	3.5	14	3 Levels	Quarterly
Hg, Tot (µg/l)	0.045	0.0015	0.00084	0.0032	3 Levels	Quarterly
Zn, Dis (µg/l)	702	53	11	75	3 Levels	Quarterly
Chloride (mg/l)	1,069	84	15	114	3 Levels	Quarterly
Sulfate (mg/l)	910	60	14	88	3 Levels	Quarterly
Sulfide as H2S (mg/l)	0.0089	<.01	0	<.01	None	2 Days/Month

* Weekly sampling will be the minimum allowed to facilitate the 7-day average calculation.

B. Reporting

1. Discharge Monitoring Report – The permittee 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.

3. 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.

C. Signatory and Certification Requirements

Signatory and certification requirements for reports and submittals are discussed in Part I.D.8. of the permit.

D. Compliance Schedules

The following compliance schedules are included in the permit. As discussed in the Colorado WQCD Compliance Schedule Policy CW-3 and federal requirements, the division evaluates the need for compliance schedules for discharges that are not new on the basis of what is necessary, appropriate, and whether the compliance schedule will achieve compliance with the underlying water quality based effluent limit as soon as possible. In this instance, the permittee agreed to begin implementing capital improvements for the Avon WWTF to meet or achieve Regulation 85 requirements before the Avon WWTF was issued a permit requiring compliance with Regulation 85. Permittee also agreed to immediately follow the Avon WWTF capital improvements with the planning and implementation of capital improvements at the Edwards WWTF to meet or achieve Regulation 85. Upon completion of the Edwards WWTF improvements, permittee will implement improvements at the Vail WWTF as may be necessary to meet effluent limitations required under Regulation 31. The Vail WWTF has the lowest rated capacity of the permittee's WWTF's and currently is largely in compliance with Regulation 85 on an annual median basis. The division believes that phasing in the improvements in this manner will, under the circumstances, maximize near-term environmental benefits in the watershed, is consistent with the permittee's available resources, and is consistent with applicable regulations and public policy. Further basis for this approach is reflected in the Memorandum of Understanding between the division and permittee dated June 29, 2018.

Necessary
"Necessity" for a compliance schedule is determined on the basis of whether associated effluent limits can be met upon the effective date of the permit. A compliance schedule is necessary if there is information in the permit record that shows that the discharger cannot immediately comply with the underlying permit limits. A compliance schedule is only necessary if the effluent limitations are being added to the permit for the first time or if more stringent effluent limits are being added to a renewal permit based on a change in water quality standards. If water quality data exists to establish a level of water quality that can be achieved, then it is also necessary to establish an interim limit in the permit for the pollutant of concern. If data does not exist, then a report-only requirement should be included in the permit. A compliance schedule is not necessary if it is being proposed for a new discharger, if the compliance schedule is being issued to meet federal technology-based effluent limitation guidelines, or if a compliance schedule is based solely on the time needed to develop a use attainability analysis, site specific standard, alternatives analysis for antidegredation or a discharger specific variance.

The division evaluated the necessity of a permit compliance schedule for Total Inorganic Nitrogen and Total Phosphorus and determined that a compliance schedule for Total phosphorus is necessary as the permittee cannot meet the applicable limitations in the permit upon the effective date. Regulation 85 limits are being applied for the first time to the Avon WWTF and Edwards WWTF and deadlines for infrastructure improvements for those facilities were placed ahead of the Vail WWTF to maximize nutrient reductions. Effluent limitations based upon Regulation 31 for Total Inorganic Nitrogen and Total Phosphorus will be applied for the first time to the Vail WWTF and, given the physical constraints of that location, this sequence of improvements will allow the permittee to conduct just one major infrastructure improvement project at the Vail WWTF to reduce nutrients as may be needed under Regulation 31.

The division has also evaluated the necessity of a permit compliance schedule for total recoverable arsenic, dissolved copper, as well as sulfide in Section VI.B of this fact sheet. Based on this review, the division has determined that a compliance schedule for total recoverable arsenic, dissolved copper, and sulfide at outfall 001A is "necessary" as the permittee cannot meet the effluent limitations in the permit upon the effective date. These outfalls were previously covered under the previous permit, and effluent limits for total recoverable arsenic and sulfide are being applied for the first time, while effluent limits for dissolved copper are lower than they were in the previous permit. Data does exist to establish interim limits for total recoverable arsenic, dissolved copper, and sulfide.

Appropriate
Once necessity has been determined, the Division evaluates the "appropriateness" of a compliance schedule. Factors relevant to whether a compliance schedule in a specific permit is "appropriate" under 40 C.F.R. § 122.47(a) include: how much time the discharger has already had to meet the WQBEL(s) under prior permits; the extent to which the discharger has made good faith efforts to comply with the WQBELs and other requirements in its prior permit(s); whether there is any need for modifications to treatment facilities, operations or measures to meet the WQBELs and if so, how long would it take to implement the modifications to treatment, operations or other measures; or whether the discharger would be expected to use the same treatment facilities, operations or other measures to meet the WQBEL as it would have used to meet the WQBEL in its prior permit. The compliance schedule proposed must be an enforceable sequence of events that contains milestones. If the compliance schedule lasts longer than one year, the milestones must be no more than one year apart and must describe how the compliance schedule will lead to compliance with the underlying permit limit at the end of the compliance schedule. The final effluent limits must be contained in the permit and should be included at the end of the compliance schedule.

In this case, the division has determined that the compliance schedule is appropriate. The permittee is embarking upon 15 years of capital improvement projects at three WWTFs at an estimated cost of $105 million to meet Regulation 31 nutrient limits that are or will be applied for the first time. The permittee has satisfied not only the Compliance Schedule Policy CW-3 and federal requirements, but also the compliance schedule parameters set forth in Regulation 85. For total recoverable arsenic, dissolved zinc, and sulfide, the discharger is being subject to these permit limits for the first time, whereas for dissolved copper the permit limits are lower than they were in the previous permit. The discharger may need to make modifications to treatment facilities, operations or other measures in order to meet the new effluent limits.

As soon as possible
Once the Division determines that a compliance schedule is necessary and appropriate, the Division then uses information to develop a permit compliance schedule with enforceable milestones appropriate for the type of actions that are anticipated to be conducted to attain the underlying permit limits that ensure that compliance with the effluent limitations is achieved "as soon as

possible." In determining the duration of the compliance schedule to meet the underlying permit limits, the division intends to provide adequate time to conduct the actions needed leading to compliance with the limits, including the steps necessary to modify or install treatment facilities, retaining expertise, securing funding, characterizing sources, identifying control alternatives, and/or planning, designing and implementing the preferred alternative.

The division has evaluated the timelines for each parameter in the compliance schedule and has determined that the schedule will ensure compliance "as soon as possible" and is consistent with the applicable regulations and policies. This takes into account the fact that the permittee needs time to evaluate and implement improvements at three wastewater treatment facilities that are on the same permit renewal schedule. Eighteen months for dissolved copper, and sulfide is an appropriate amount of time to determine if the plant can meet the effluent limitations for dissolved copper and sulfide associated with WWTF discharges. For total recoverable arsenic, three years after the completion of the temporary modification is an appropriate amount of time to retain expertise to characterize water quality, make changes to water quality treatment, or make adjustments to meet the underlying effluent limitations for total arsenic for outfall 001. The duration of the schedule until December 31, 2027 allows for time to collect the necessary data to determine whether the limitation can be met and to meet the final effluent limit.

E. Stormwater

Pursuant to 5 CCR 1002-61.3(2), wastewater treatment facilities with a design flow of 1.0 mgd or more, or that are required to have an approved pretreatment program, are specifically required to obtain stormwater discharge permit coverage or a Stormwater No Exposure Certification, in order to discharge stormwater from their facilities to state waters. The stormwater discharge permit applicable to wasterwater treatment facilities is the CDPS General Permit for Stormwater Discharges Associated with Non-Extractive Industrial Activity.

Division records indicate that Eagle River Water & Sanitation District applied for and obtained coverage under this permit for the Avon WWTF. The CDPS certification number is COR901387.

F. Additional Permit Requirements

The Use of the Pretreatment Framework to identify, characterize, and control sources of pollutants to POTWs

The Division reviewed the pretreatment framework and its implementation in Colorado, and determined that this framework is the most appropriate tool to identify, characterize, and control sources of pollutants to the POTW. The Division reviewed both the AVON WWTF permit provisions, and the Division's standard permit provisions to ensure that the requirements are equivalent to those provided by EPA (EPA implements the federal pretreatment program in Colorado because the state has not been delegated its own pretreatment program).

Permit provisions differ for POTWs required to maintain a pretreatment program and for POTWs not required to maintain a pretreatment program. The Division found that the provisions for POTWs that are required to maintain a pretreatment program met these requirements, and therefore there is no need to change these provisions in Colorado's permits. These POTWs are required to identify and locate all possible industrial users ("IUs"), identify the character and volume of pollutants, maintain current information regarding IUs and conduct periodic pollutant scans of both influent and effluent for a list of parameters. The permit provisions also conformed to those provided by EPA for inclusion in Division issued permits.

POTWs not required to maintain a pretreatment program are not held to this level of requirement, and as such are less likely to generate the level of information described in the statement of basis and purpose. These POTWs are required to submit information in their permit applications regarding industrial discharges. EPA as the pretreatment authority also notifies POTWs without pretreatment programs to conduct a comprehensive industrial user survey, as needed, to further evaluate these POTWs for development of a program. EPA also recommends that permits for all POTWs require periodic pollutant scans of effluent.

EPA has provided the following permit language for POTWs without approved programs.

The Permittee shall sample and analyze the effluent for the following pollutants:

Total Arsenic	Total Nickel
Total Cadmium	Total Selenium
Total Chromium	Total Silver
Total Copper	Total Zinc
Total Lead	Total Cyanide
Total Mercury	Total Phenols
Total Molybdenum	

The sampling shall commence within thirty (30) days of the effective date of this permit and continue at the following frequency:

Sampling Schedule for Non-Approved Programs:
Majors (above 1 MGD) 1 per year

G. Economic Reasonableness Evaluation

Section 25-8-503(8) of the revised (June 1985) Colorado Water Quality Control Act required the Division to "determine whether or not any or all of the water quality standard based effluent limitations are reasonably related to the economic, environmental, public health and energy impacts to the public and affected persons, and are in furtherance of the policies set forth in sections 25-8-192 and 25-8-104."

The Colorado Discharge Permit System Regulations, Regulation No. 61, further define this requirement under 61.11 and state: "Where economic, environmental, public health and energy impacts to the public and affected persons have been considered in the classifications and standards setting process, permits written to meet the standards may be presumed to have taken into consideration economic factors unless:

a. A new permit is issued where the discharge was not in existence at the time of the classification and standards rulemaking, or

b. In the case of a continuing discharge, additional information or factors have emerged that were not anticipated or considered at the time of the classification and standards rulemaking."

The evaluation for this permit shows that the Water Quality Control Commission, during their proceedings to adopt the Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River, considered economic reasonableness.

Furthermore, this is not a new discharger and no new information has been presented regarding the classifications and standards. Therefore, the water quality standard-based effluent limitations of this permit are determined to be reasonably related to the economic, environmental, public health and energy impacts to the public and affected persons and are in furtherance of the policies set forth in Sections 25-8-102 and 104. If any party disagrees with this finding, pursuant to 61.11(b)(ii) of the Colorado Discharge Permit System Regulations, that party should submit all pertinent information to the Division during the public notice period.

H. Opportunities for public comment, public meetings, and administrative adjudication

1. Opportunity to Submit Public Comment on the Draft Permit

Interested persons may submit written comments to the Division on this draft permit and fact sheet during the term of the public comment period. Note that if you do not identify an issue in your comments on the draft permit, you may not be allowed to raise that issue in an administrative adjudication.

2. Opportunity to Request an Extension to the Public Comment Period

Interested persons may also request an extension of the comment period. This should be a stand-alone request via email or letter to the permit writer during the duration of the public comment period. The request should include specific reasons why the extension is needed.

3. Opportunity to Request a Responsive Public Comment Period

Interested persons may also request a responsive period of public comment in which any person may file a written response to the material filed by any other person during the comment period. This should be a stand-alone request via email or letter to the permit writer during the duration of the public comment period or within 10 days of the close of the public comment period. If the division grants a responsive comment period, there will also be a 10-day rebuttal period immediately following the close of the deadline for responsive comments. Filing of rebuttal comments is optional.

4. Opportunity to Request a Public Meeting

Interested persons, states, agencies, and groups may request a public meeting on the terms of the draft permit in accordance with 61.5(3). This should be a stand-alone request via email or letter to the permit writer during the duration of the public comment period. The request should discuss the degree of public interest regarding the draft, including the reasons why a public meeting is warranted. The Division shall hold a meeting if there is a significant degree of public interest.

5. Opportunity for Administrative Adjudication

Once the final permit is issued, the applicant or any other person affected or aggrieved by the Division's final determination may request an adjudicatory hearing within thirty (30) calendar days of the date of issuance, under 5 CCR 1002-61 (Colorado Discharge Permit System Regulations), Regulation 61.7. Any request must comply with the Water Quality Control Act, 24-4-101, C.R.S., et seq. and the Water Quality Control Commission's regulations, including Regulation 61.7 and 5 CCR 1002-21 (Procedural Rules), Regulation 21.4(B). Failure to contest any term and condition of the permit in this request for an adjudicatory hearing constitutes consent to the condition by the permittee.

6. Opportunity to Request a Stay of Terms and Conditions of Final Permit

If an applicant for a renewal permit files a request for an administrative hearing in accordance with section 24-4-105, C.R.S., the applicant may also request that the Division stay the contested terms and conditions of the renewal permit. This request must be made within thirty (30) days of issuance of the final permit.

IX. REFERENCES

A. Colorado Department of Public Health and Environment, Water Quality Control Division Files, for Permit Number CO0024431.

B. "Design Criteria Considered in the Review of Wastewater Treatment Facilities", Policy 96-1, Colorado Department of Public Health and Environment, Water Quality Control Commission, April, 2007.

C. Basic Standards and Methodologies for Surface Water, Regulation No. 31, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective January 31, 2018.

D. Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River, Regulation No. 33, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective December 31, 2019.

E. Colorado Discharge Permit System Regulations, Regulation No. 61, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective June 14, 2020.

F. Regulations for Effluent Limitations, Regulation No. 62, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective June 14, 2020.

G. Pretreatment Regulations, Regulation No. 63, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective March 1, 2017.

H. Biosolids Regulation, Regulation No. 64, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective June 30, 2014.

I. Colorado River Salinity Standards, Regulation No. 39, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective July 30, 2012.

J. Section 303(d) List of Water Quality Limited Segments Requiring TMDLs, Regulation No 93, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective June 14, 2020.

K. Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List, Regulation No 93, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective June 14, 2020.

L. Antidegradation Significance Determination for New or Increased Water Quality Impacts, Procedural Guidance, Colorado Department of Public Health and Environment, Water Quality Control Division, effective December 2001.

M. Memorandum Re: First Update to (Antidegradation) Guidance Version 1.0, Colorado Department of Public Health and Environment, Water Quality Control Division, effective April 23, 2002.

N. Determination of the Requirement to Include Water Quality Standards-Based Limits in CDPS Permits Based on Reasonable Potential, Policy Number CW-1, Colorado Department of Public Health and Environment, Water Quality Control Division, effective November 18, 2013.

O. The Colorado Mixing Zone Implementation Guidance, Colorado Department of Public Health and Environment, Water Quality Control Division, effective April 2002.

P. Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Domestic and Industrial Wastewater Treatment Facilities, Water Quality Control Division Policy WQP-20, May 1, 2007.

Q. Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops, Water Quality Control Division Policy WQP-24, March 10, 2008.

R. Implementing Narrative Standard for Toxicity in Discharge Permits Using Whole Effluent Toxicity (WET) Testing. Colorado Department of Public Health and Environment, Water Quality Control Division Policy Permits-1, September 30, 2010.

S. Policy for Conducting Assessments for Implementation of Temperature Standards in Discharge Permits, Colorado Department of 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 March 4, 2014.

U. Procedural Regulations for Site Applications for Domestic Wastewater Treatment Works, Regulation No. 22, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective September 30, 2009.

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

W. Water and Wastewater Facility Operator Certification Requirements, Regulation No. 100, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective January 31, 2020.

X. ATTACHMENTS

Attachment 1: Final Water Quality Assessment for Gore Creek and Eagle River – COUCEA08 and COUCEA09a (August 13, 2020).

FOR DIVISION USE ONLY	
G04	Sewage Sludge/Biosolids Annual Program Reports
G09	Sewer Overflow/Bypass Event Reports
G3A	DMRs: Regular Submission Frequency
G8B	SIU Compliance Reports (State is Control Authority)

Attachment 1
Water Quality Assessment
Gore Creek and Eagle River
Eagle River Water & Sanitation District; Vail, Avon, and Edwards WWTFs
Jon Wallace
Public Notice Draft 8/13/2020

Table of Contents

I. Water Quality Assessment Summary

Table A-1 includes summary information related to this WQA. This summary table includes key regulatory starting points used in development of the WQA such as: receiving stream information; threatened and endangered species; 303(d) and Monitoring and Evaluation listings; low flow and facility flow summaries; and a list of parameters evaluated.

Table A-1
WQA Summary

Facility Information

Facility Name	Permit Number	Design Flow (max 30-day ave, MGD)	Design Flow (max 30-day ave, CFS)
F1. Vail WWTF	CO0021369	2.7	4.2
F2. Avon WWTF	CO0024431	4.3	6.7
F3. Edwards WWTF	CO0037311	2.83	4.4

Receiving Stream Information

Receiving Stream Name	Segment ID	Designation	Classification(s)
S1. Gore Creek	COUCEA08	Undesignated	Aquatic Life Cold 1, Recreation Class E Agriculture, Water Supply
S2. Eagle River	COUCEA09a	Undesignated	Aquatic Life Cold 1, Recreation Class E Agriculture, Water Supply

Low Flows (cfs)

Receiving Stream Name	1E3 (1-day)	7E3 (7-day)	30E3 (30-day)	Ratio of 30E3 to the Design Flow (cfs)
S1. Gore Creek	F1: 7.2	F1: 8.2	F1: 10	F1: 2.4
S2. Eagle River	F2: 28 F3: 41*	F2: 33 F3: 45*	F2: 38 F3: 49*	F2: 5.7 F3: 11*

Regulatory Information

T&E Species	303(d) (Reg 93)	Monitor and Eval (Reg 93)	Existing TMDL	Temporary Modification(s)	Control Regulation
No	Aquatic Life (provisional) (COUCEA08 & COUCEA09a) Sediment (COUCEA09a) Arsenic (COUCEA09a)	Temperature (COUCEA09a)	No	As(ch) = hybrid; Expiration date of 12/31/24	Regulation 85 Regulation 39

Pollutants Evaluated

F1: Ammonia, E. Coli, TRC, TIN, Metals, Temp, Nutrients, TDS
F2: Ammonia, E. Coli, TRC, TIN, Metals, Temp, Nutrients, TDS
F3: Ammonia, E. Coli, TRC, TIN, Metals, Temp, Nutrients, TDS

*Low flows provided here are used for non-conservative parameters and WET analysis for the Edwards WWTF. The Avon and Edwards facilities are modeled together for conservative parameters, using the low flows in the Eagle River available to the Avon WWTF (F2).

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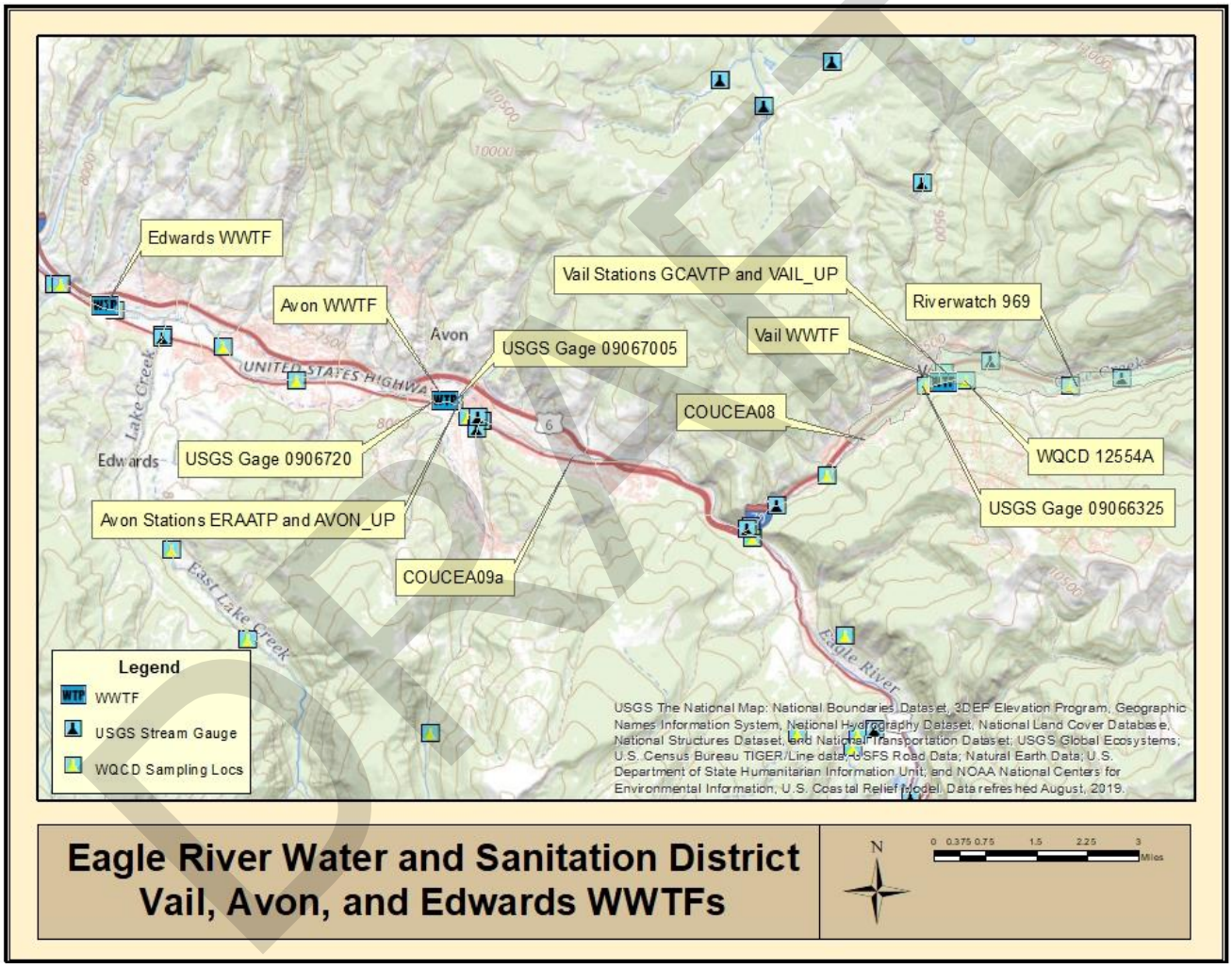
II. Introduction

The water quality assessment (WQA) of Gore Creek and the Eagle River near the Vail WWTF, Avon WWTF, and Edwards WWTF (WWTF), located in Eagle County, is intended to determine the assimilative capacities available for pollutants found to be of concern. This WQA describes how the water quality based effluent limits (WQBELs) are developed. These parameters may or may not appear in the permit with limitations or monitoring requirements, subject to other determinations such as reasonable potential analysis, evaluation of federal effluent limitation guidelines, implementation of state-based technology based limits, mixing zone analyses, 303(d) listings, threatened and endangered species listing, or other requirements as discussed in the permit rationale. Figure A-1 contains a map of the study area evaluated as part of this WQA.

FIGURE A-1



The Vail WWTF discharges to Gore Creek, which is stream segment COUCEA08. This means the Upper Colorado Basin, Eagle Sub-basin, Stream Segment 08. This segment is composed of the "Mainstem of Gore Creek from the confluence with Black Gore Creek to the confluence with the Eagle River." Stream segment COUCEA08 is classified for Aquatic Life Cold 1, Recreation Class E, Water Supply, and Agriculture.

The Avon and Edwards WWTFs discharge to the Eagle River, which is stream segment COUCEA09a. This means the Upper Colorado Basin, Eagle Sub-basin, Stream Segment 09a. This segment is composed of the "Mainstem of Eagle River from Gore Creek to a point immediately below the confluence with Squaw Creek." Stream segment COUCEA09a is classified for Aquatic Life Cold 1, Recreation Class E, Water Supply, and Agriculture.

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Note that due to dilution into Gore Creek between the Vail WWTF and the Avon WWTF, it was not necessary to model Vail WWTF with the other facilities. The ambient water quality upstream of the Edwards WWTF is influenced by potentially fluctuating effluent from the Avon WWTF, which discharges approximately 6 miles upstream of the Edwards WWTF. For this reason, these two facilities will be modeled together for all shared parameters of concern with the exception of temperature, TRC, and *E. Coli*.

Information used in this assessment includes data gathered from the Vail, Avon, and Edwards WWTFs, the Division, the Colorado Division of Water Resources (DWR), Riverwatch, the U.S. Environmental Protection Agency (EPA), the U.S. Geological Survey (USGS), and communications with the local water commissioner. The data used in the assessment consist of the best information available at the time of preparation of this WQA analysis.

III. Water Quality Standards

Narrative Standards

Narrative Statewide Basic Standards have been developed in Section 31.11(1) of the regulations, and apply to any pollutant of concern, even where there is no numeric standard for that pollutant. Waters of the state shall be free from substances attributable to human-caused point source or nonpoint source discharges in amounts, concentrations or combinations which:

for all surface waters except wetlands;

(i) can settle to form bottom deposits detrimental to the beneficial uses. Depositions are stream bottom buildup of materials which include but are not limited to anaerobic sludge, mine slurry or tailings, silt, or mud; or (ii) form floating debris, scum, or other surface materials sufficient to harm existing beneficial uses; or (iii) produce color, odor, or other conditions in such a degree as to create a nuisance or harm existing beneficial uses or impart any undesirable taste to significant edible aquatic species or to the water; or (iv) are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life; or (v) produce a predominance of undesirable aquatic life; or (vi) cause a film on the surface or produce a deposit on shorelines; and

for surface waters in wetlands;

(i) produce color, odor, changes in pH, or other conditions in such a degree as to create a nuisance or harm water quality dependent functions or impart any undesirable taste to significant edible aquatic species of the wetland; or (ii) are toxic to humans, animals, plants, or aquatic life of the wetland.

In order to protect the Basic Standards in waters of the state, effluent limitations and/or monitoring requirements for any parameter of concern could be put in CDPS discharge permits.

Standards for Organic Parameters and Radionuclides

Radionuclides: Statewide Basic Standards have been developed in Section 31.11(2) and (3) of The Basic Standards and Methodologies for Surface Water to protect the waters of the state from radionuclides and organic chemicals.

In no case shall radioactive materials in surface waters be increased by any cause attributable to municipal, industrial, or agricultural practices or discharges to as to exceed the following levels, unless alternative site-specific standards have been adopted. Standards for radionuclides are shown in Table A-2.

Table A-2 Radionuclide Standards	
Parameter	**Picocuries per Liter**
Americium 241*	0.15
Cesium 134	80
Plutonium 239, and 240*	0.15
Radium 226 and 228*	5
Strontium 90*	8
Thorium 230 and 232*	60
Tritium	20,000

*Samples for these materials should be analyzed using unfiltered (total) samples. These Human Health based standards are 30-day average values.

Organics: The organic pollutant standards contained in the Basic Standards for Organic Chemicals Table are applicable to all surface waters of the state for the corresponding use classifications, unless alternative site-specific standards have been adopted. These standards have been adopted as "interim standards" and will remain in effect until alternative permanent standards are adopted by the Commission. These interim standards shall not be considered final or permanent standards subject to antibacksliding or downgrading restrictions. Although not reproduced in this WQA, the specific standards for organic chemicals can be found in Regulation 31.11(3).

In order to protect the Basic Standards in waters of the state, effluent limitations and/or monitoring requirements for radionuclides, organics, or any other parameter of concern could be put in CDPS discharge permits.

The aquatic life standards for organics apply to all stream segments that are classified for aquatic life. The water supply standards apply only to those segments that are classified for water supply. The water + fish standards apply to those segments that have a Class 1 aquatic life and a water supply classification. The fish ingestion standards apply to Class 1 aquatic life segments that do not have a water supply designation. The water + fish and the fish ingestion standards may also apply to Class 2 aquatic life segments, where the Water Quality Control Commission has made such determination.

Because Gore Creek and the Eagle River are classified for Aquatic Life Cold 1, with a water supply designation, the water + fish, and aquatic life standards apply to this discharge.

Salinity and Nutrients

Salinity: Regulation 61.8(2)(l) contains requirements regarding salinity for any discharges to the Colorado River Watershed. For industrial dischargers and for the discharge of intercepted groundwater, this is a no-salt discharge requirement. However, the regulation states that this requirement may be waived where the salt load reaching the mainstem of the Colorado River is less than 1 ton per day, or less than 350 tons per year. The Division may permit the discharge of salt upon a satisfactory demonstration that it is not practicable to prevent the discharge of all salt. See Regulation 61.8(2)(l)(i)(A)(1) for industrial discharges and 61.8(2)(l)(iii) for discharges of intercepted groundwater for more information regarding this demonstration.

For municipal dischargers, an incremental increase of 400 mg/l above the flow weighted averaged salinity of the intake water supply is allowed. This may be waived where the salt load reaching the mainstem of the Colorado River is less than 1 ton per day, or less than 366 tons per year. The Division may permit the discharge of salt in excess of the 400 mg/l incremental increase, upon a satisfactory demonstration that it is not practicable to attain this limit. See Regulation 61.8(2)(l)(vi)(A)(1) for more information regarding this demonstration.

In addition, the Division's policy, Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops, may be applied to discharges where an agricultural water intake exists downstream of a discharge point. Limitations for electrical conductivity and sodium absorption ratio may be applied in accordance with this policy.

Nutrients

Phosphorus and Total Inorganic Nitrogen: Regulation 85, the *Nutrients Management Control Regulation* has been adopted by the Water Quality Control Commission and became effective September 30, 2012. This regulation contains requirements for phosphorus and Total Inorganic Nitrogen (TIN) concentrations for some point source dischargers. Limitations for phosphorus and TIN may be applied in accordance with this regulation.

Temperature

Temperature shall maintain a normal pattern of diurnal and seasonal fluctuations with no abrupt changes and shall have no increase in temperature of a magnitude, rate, and duration deemed deleterious to the resident aquatic life. This standard shall not be interpreted or applied in a manner inconsistent with section 25-8-104, C.R.S.

Segment Specific Numeric Standards

Numeric standards are developed on a basin-specific basis and are adopted for particular stream segments by the Water Quality Control Commission. The standards in **Error! Reference source not found.**a and A-3b have been assigned to stream segments COUCEA08 and COUCEA09a, respectively, in accordance with the *Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River*. The parameters in Table A-3c are also being evaluated as they are parameters of concern for this facility type. These parameters are being included based on the numeric standards in Regulation 31.

Table A-3a In-stream Standards for Stream Segment COUCEA08
Physical and Biological
Dissolved Oxygen (DO) = 6 mg/l, minimum (7 mg/l, minimum during spawning)
pH = 6.5 - 9 su
E. coli chronic = 126 colonies/100 ml
Temperature July 1-Sept 30 = 17° C MWAT and 21.7° C DM
Temperature Oct 1-Oct 15 = 12° C MWAT and 13° C DM
Temperature Oct 16-May 31 = 9° C MWAT and 13° C DM
Temperature Jun 1-Jun 30 = 14° C MWAT and 21.7° C DM
Inorganic
Total Ammonia acute and chronic = TVS
Chlorine acute = 0.019 mg/l
Chlorine chronic = 0.011 mg/l
Free Cyanide acute = 0.005 mg/l
Sulfide chronic = 0.002 mg/l
Boron chronic = 0.75 mg/l
Nitrite acute = 0.05 mg/l
Nitrate acute = 10 mg/l
Chloride chronic = 250 mg/l
Sulfate chronic = For WS, the greater of ambient water quality as of January 1, 2000 or 250 mg/l
Metals
Dissolved Arsenic acute = 340 µg/l
Total Recoverable Arsenic chronic = 0.02 µg/l

Table A-3a In-stream Standards for Stream Segment COUCEA08
Temporary Modification, Total Recoverable Arsenic chronic = hybrid; Exp. date of 12/31/24
Dissolved Cadmium acute for trout and Dissolved Cadmium chronic = TVS
Total Recoverable Trivalent Chromium acute = 50 µg/l
Dissolved Trivalent Chromium chronic = TVS
Dissolved Hexavalent Chromium acute and chronic = TVS
Dissolved Copper acute and chronic = TVS
Dissolved Iron chronic = For WS, the greater of ambient water quality as of January 1, 2,000, or 300 µg/l
Total Recoverable Iron chronic = 1,000 µg/l
Dissolved Lead acute and chronic = TVS
Dissolved Manganese chronic = For WS, the greater of ambient water quality as of January 1, 2,000, or 50 µg/l
Dissolved Manganese acute and chronic = TVS
Total Recoverable Molybdenum chronic = 160 µg/l
Total Mercury chronic = 0.01 µg/l
Dissolved Nickel acute and chronic = TVS
Dissolved Selenium acute and chronic = TVS
Dissolved Silver acute and Dissolved Silver chronic for trout = TVS
Dissolved Uranium acute and chronic = TVS
Total Recoverable Uranium acute = 30 µg/l
Dissolved Zinc acute and chronic = TVS

Note that the temporary modification for chronic arsenic is specificied 'hybrid', which applies "current condition" to discharges existing on or before 6/1/2013. This is further described in the Statement of Basis and Purpose, Regulation No. #33, June, 2019.

Table A-3b In-stream Standards for Stream Segment COUCEA09a
Physical and Biological
Dissolved Oxygen (DO) = 6 mg/l, minimum (7 mg/l, minimum during spawning)
pH = 6.5 - 9 su
E. coli chronic = 126 colonies/100 ml
Temperature July 1-Sept 30 = 17° C MWAT and 21.7° C DM
Temperature Oct 1-Oct 15 = 12° C MWAT and 13° C DM
Temperature Oct 16-Oct 31 = 11° C MWAT and 13° C DM
Temperature Nov 1-May 31 = 9° C MWAT and 13° C DM
Temperature Jun 1-Jun 30 = 16° C MWAT and 21.7° C DM
Inorganic
Total Ammonia acute and chronic = TVS
Chlorine acute = 0.019 mg/l
Chlorine chronic = 0.011 mg/l
Free Cyanide acute = 0.005 mg/l
Sulfide chronic = 0.002 mg/l
Boron chronic = 0.75 mg/l
Nitrite acute = 0.05 mg/l
Nitrate acute = 10 mg/l
Chloride chronic = 250 mg/l
Sulfate chronic = For WS, the greater of ambient water quality as of January 1, 2,000 or 250 mg/l
Metals

Table A-3b In-stream Standards for Stream Segment COUCEA09a
Dissolved Arsenic acute = 340 µg/l
Total Recoverable Arsenic chronic = 0.02 µg/l
Temporary Modification, Total Recoverable Arsenic chronic = hybrid; Exp. date of 12/31/24
Dissolved Cadmium acute for trout and Dissolved Cadmium chronic = TVS
Total Recoverable Trivalent Chromium acute = 50 µg/l
Dissolved Trivalent Chromium chronic = TVS
Dissolved Hexavalent Chromium acute and chronic = TVS
Dissolved Copper acute and chronic = TVS
Dissolved Iron chronic = For WS, the greater of ambient water quality as of January 1, 2,000, or 300 µg/l
Total Recoverable Iron chronic = 1,000 µg/l
Dissolved Lead acute and chronic = TVS
Dissolved Manganese chronic = For WS, the greater of ambient water quality as of January 1, 2,000, or 50 µg/l
Dissolved Manganese acute and chronic = TVS
Total Recoverable Molybdenum chronic = 160 µg/l
Total Mercury chronic = 0.01 µg/l
Dissolved Nickel acute and chronic = TVS
Dissolved Selenium acute and chronic = TVS
Dissolved Silver acute and Dissolved Silver chronic for trout = TVS
Dissolved Uranium acute and chronic = TVS
Dissolved Zinc acute and chronic = TVS

Table A-3c Additional Standards Being Evaluated Based on Regulation 31
Nonylphenol acute = 28 µg/l
Nonylphenol chronic = 6.6 µg/l
Total Recoverable Uranium acute = 16.8 - 30 µg/l

Table Value Standards and Hardness Calculations

Standards for metals are generally shown in the regulations as Table Value Standards (TVS), and these often must be derived from equations that depend on the receiving stream hardness or species of fish present; for ammonia, standards are discussed further in Section IV of this WQA. The Classification and Numeric Standards documents for each basin include a specification for appropriate hardness values to be used. Specifically, the regulations state that:

> The hardness values used in calculating the appropriate metal standard should be based on the lower 95% confidence limit of the mean hardness value at the periodic low flow criteria as determined from a regression analysis of site-specific data. Where insufficient site-specific data exists to define the mean hardness value at the periodic low flow criteria, representative regional data shall be used to perform the regression analysis. Where a regression analysis is not appropriate, a site-specific method should be used.

For Vail WWTF a regression analysis was conducted using data from the USGS station 09066510 (Gore Creek at Mouth Near Minturn, CO), which is approximately three miles downstream from the Vail WWTF. Forty-two paired flow and hardness data points were available based on a period of record from July 2011 to November 2018, but five data points were excluded because they did not represent low flow conditions. A regression analysis was computed to a low flow of 13 cfs, which was the lowest of the measured flows in the data set. The 95th confidence interval was then calculated, resulting in a hardness value equal to 183 mg/l. This hardness

value and the formulas contained in the TVS were used to calculate the in-stream water quality standards for metals with the results shown in Table A-4a.

Table A-4a
TVS-Based Metals Water Quality Standards for CO0021369
Based on the Table Value Standards Contained in the Colorado Department of Public Health and Environment Water Quality Control Commission *Regulation 33*

Parameter	*In-Stream Water Quality Standard*			*TVS Formula: Hardness (mg/l) as CaCO3 =* 183
Cadmium, Dissolved	Acute	2.9	µg/l	$[1.136672-0.041838\ln(\text{hardness})]e^{(0.9151(\ln(\text{hardness}))-3.6236)}$
	Chronic	0.67	µg/l	$[1.101672-0.041838\ln(\text{hardness})]e^{(0.7998(\ln(\text{hardness}))-4.4451)}$
Trivalent Chromium, Dissolved	Acute	9,35	µg/l	$e^{(0.819(\ln(\text{hardness}))+2.5736)}$
	Chronic	122	µg/l	$e^{(0.819(\ln(\text{hardness}))+0.5340)}$
Hexavalent Chromium, Dissolved	Acute	16	µg/l	Numeric standards provided, formula not applicable
	Chronic	11	µg/l	Numeric standards provided, formula not applicable
Copper, Dissolved	Acute	24	µg/l	$e^{(0.9422(\ln(\text{hardness}))-1.7408)}$
	Chronic	15	µg/l	$e^{(0.8545(\ln(\text{hardness}))-1.7428)}$
Lead, Dissolved	Acute	124	µg/l	$[1.46203-0.145712\ln(\text{hardness})][e^{(1.273(\ln(\text{hardness}))-1.46)}]$
	Chronic	4.8	µg/l	$[1.46203-0.145712\ln(\text{hardness})][e^{(1.273(\ln(\text{hardness}))-4.705)}]$
Manganese, Dissolved	Acute	3,651	µg/l	$e^{(0.3331(\ln(\text{hardness}))+6.4676)}$
	Chronic	2,017	µg/l	$e^{(0.3331(\ln(\text{hardness}))+5.8743)}$
Nickel, Dissolved	Acute	781	µg/l	$e^{(0.846(\ln(\text{hardness}))+2.253)}$
	Chronic	87	µg/l	$e^{(0.846(\ln(\text{hardness}))+0.0554)}$
Selenium, Dissolved	Acute	18.4	µg/l	Numeric standards provided, formula not applicable
	Chronic	4.6	µg/l	Numeric standards provided, formula not applicable
Silver, Dissolved	Acute	5.7	µg/l	$\frac{1}{2}\ e^{(1.72(\ln(\text{hardness}))-6.52)}$
	Chronic	0.21	µg/l	$e^{(1.72(\ln(\text{hardness}))-10.51)}$
Uranium, Dissolved	Acute	4,676	µg/l	$e^{(1.1021(\ln(\text{hardness}))+2.7088)}$
	Chronic	2,921	µg/l	$e^{(1.1021(\ln(\text{hardness}))+2.2382)}$
Zinc, Dissolved (sculpin)	Acute	277	µg/l	$0.978e^{(0.8525(\ln(\text{hardness}))+1.0617)}$
Zinc, Dissolved	Chronic	210	µg/l	$0.986\ e^{(0.9094(\ln(\text{hardness}))+0.6235)}$
	Acute	240	µg/l	$0.978e^{(0.9094(\ln(\text{hardness}))+0.9095)}$

Hardness data for the Eagle River near the point of discharge of the Avon WWTF were insufficient to conduct a regression analysis based on the low flow. Therefore, the mean hardness was used.

The mean hardness for Avon and Edwards WWTF was computed to be 165 mg/l based on sampling data from WQX-3293 (Eagle-Arrowhead), WQX-966 (Eagle River Walk Bridge), and WQX-12502H (Below Lake Circle in Edwards) located on the Eagle River approximately 0.7 miles, 3.6 miles, and 5.8 miles respectively downstream from the Avon WWTF. This hardness value and the formulas contained in the TVS were used to calculate the in-stream water quality standards for metals, with the results shown in **Error! Reference source not found.**b.

Table A-4b
TVS-Based Metals Water Quality Standards for CO0024431 and CO0037311
Based on the Table Value Standards Contained in the Colorado Department of Public Health and Environment Water Quality Control Commission *Regulation 33*

Parameter	*In-Stream Water Quality Standard*			*TVS Formula: Hardness (mg/l) as CaCO3 =* 165
Cadmium, Dissolved	Acute	2.6	µg/l	$[1.136672-0.041838\ln(\text{hardness})]e^{(0.9151(\ln(\text{hardness}))-3.6236)}$
	Chronic	0.62	µg/l	$[1.101672-0.041838\ln(\text{hardness})]e^{(0.7998(\ln(\text{hardness}))-4.4451)}$

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Table A-4b TVS-Based Metals Water Quality Standards for CO0024431 and CO0037311 Based on the Table Value Standards Contained in the Colorado Department of Public Health and Environment Water Quality Control Commission *Regulation 33*			
Parameter	***In-Stream Water Quality Standard***		***TVS Formula:*** ***Hardness (mg/l) as CaCO3 =*** **165**
Trivalent Chromium, Dissolved	Acute	859 µg/l	$e^{(0.819(\ln(\text{hardness}))+2.5736)}$
	Chronic	112 µg/l	$e^{(0.819(\ln(\text{hardness}))+0.5340)}$
Hexavalent Chromium, Dissolved	Acute	16 µg/l	Numeric standards provided, formula not applicable
	Chronic	11 µg/l	Numeric standards provided, formula not applicable
Copper, Dissolved	Acute	22 µg/l	$e^{(0.9422(\ln(\text{hardness}))-1.7408)}$
	Chronic	14 µg/l	$e^{(0.8545(\ln(\text{hardness}))-1.7428)}$
Lead, Dissolved	Acute	111 µg/l	$[1.46203-0.145712\ln(\text{hardness})][e^{(1.273(\ln(\text{hardness}))-1.46)}]$
	Chronic	4.3 µg/l	$[1.46203-0.145712\ln(\text{hardness})][e^{(1.273(\ln(\text{hardness}))-4.705)}]$
Manganese, Dissolved	Acute	3528 µg/l	$e^{(0.3331(\ln(\text{hardness}))+6.4676)}$
	Chronic	1949 µg/l	$e^{(0.3331(\ln(\text{hardness}))+5.8743)}$
Nickel, Dissolved	Acute	715 µg/l	$e^{(0.846(\ln(\text{hardness}))+2.253)}$
	Chronic	79 µg/l	$e^{(0.846(\ln(\text{hardness}))+0.0554)}$
Selenium, Dissolved	Acute	18.4 µg/l	Numeric standards provided, formula not applicable
	Chronic	4.6 µg/l	Numeric standards provided, formula not applicable
Silver, Dissolved	Acute	0.18 µg/l	$½\ e^{(1.72(\ln(\text{hardness}))-6.52)}$
	Chronic	0.76 µg/l	$e^{(1.72(\ln(\text{hardness}))-10.51)}$
Uranium, Dissolved	Acute	4172 µg/l	$e^{(1.1021(\ln(\text{hardness}))+2.7088)}$
	Chronic	2606 µg/l	$e^{(1.1021(\ln(\text{hardness}))+2.2382)}$
Zinc, Dissolved	Chronic	252 µg/l	$0.986\ e^{(0.9094(\ln(\text{hardness}))+0.6235)}$
	Acute	191 µg/l	$0.978e^{(0.9094(\ln(\text{hardness}))+0.9095)}$

Total Maximum Daily Loads and Regulation 93 – Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List

Stream segment COUCEA09a is listed for monitoring and evaluation for temperature. According to Division standard procedure, the Division's Environmental Data Unit investigates issues of water quality standard exceedances. If it is determined that the water body is impaired, the segment will be added to the 303(d) list. At a minimum, the permit may contain monitoring requirements to support a future TMDL if the segment is listed.

Stream segments COUCEA08 and COUCEA09a are on the Division's 303(d) list of water quality impacted streams for aquatic life parameters.

The multi-metric bioassessment tool used to evaluate impairment of aquatic life use does not identify specific stressors. Once a segment is listed for aquatic life use impairment, the pollutant and/or cause of impairment must be identified in order for calculate assimilative capacities for TMDL development. The cause of aquatic life use impairment has not been identified for this stream segment, and therefore, a TMDL has not been developed.

Stream segments COUCEA09a is on the Division's 303(d) list of water quality impacted streams for total arsenic and sediment.

For a receiving water placed on this list, the Restoration and Protection Unit is tasked with developing the Total Maximum Daily Loads (TMDLs) and the Waste Load Allocation (WLAs) to be distributed to the affected facilities. WLAs for total arsenic have not yet been established and the allowable concentration calculated in the

following sections may change upon further evaluation by the Division. There are no numeric water quality standards for sediment and therefore assimilative capacities are not calculated.

IV. Receiving Stream Information

Low Flow Analysis

The Colorado Regulations specify the use of low flow conditions when establishing water quality based effluent limitations, specifically the acute and chronic low flows. The acute low flow, referred to as 1E3, represents the one-day low flow recurring in a three-year interval, and is used in developing limitations based on an acute standard. The 7-day average low flow, 7E3, represents the seven-day average low flow recurring in a 3 year interval, and is used in developing limitations based on a Maximum Weekly Average Temperature standard (MWAT). The chronic low flow, 30E3, represents the 30-day average low flow recurring in a three-year interval, and is used in developing limitations based on a chronic standard.

To determine the low flows available to the Vail WWTF, USGS gage station 09066325 (Gore Creek above Red Sandstone at Vail, CO) was used. Because this flow gage is below the Vail WWTF, the Division subtracted average daily flow data provided by the facility before calculating annual 1E3 and 30E3 low flows using U.S. Environmental Protection Agency (EPA) DFLOW software. The output from DFLOW provides calculated acute and chronic low flows for each month.

Flow data from October 1, 2008 through September 30, 2018 were available from the gage station and facility. The gage station and time frames were deemed the most accurate and representative of current flows and were therefore used in this analysis.

Based on the low flow analysis described previously, the upstream low flows available to the Vail WWTF were calculated and are presented in **Error! Reference source not found.**5a.

Table A-5a
Low Flows for Gore Creek at the Vail WWTF

Low Flow (cfs)	*Annual*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*
1E3 Acute	7.2	7.2	9.2	8.5	11	22	37	21	13	12	14	7.4	7.2
7E3 Chronic	8.2	8.2	10	9.2	11	22	37	21	13	12	14	11	8.2
30E3 Chronic	10	10	10	10	11	22	37	21	13	13	14	11	10

During the months of April, May, June, July, and August, the acute low flow calculated by DFLOW exceeded the chronic low flow. In accordance with Division standard procedures, the acute low flow was thus set equal to the chronic low flow for these months.

The ratio of the low flow of Gore Creek to the Vail WWTF design flow is 2.4:1.

When determining the assimilative capacities for Ammonia, low flow conditions must be determined for confluences adding water to the receiving stream, which could affect the assimilative capacities for ammonia. In this case, the more water is added to the stream at the confluence of Gore Creek and the Eagle River; therefore, it is necessary to determine the low flows in the Eagle River above the confluence to be used as an input in AMMTOX.

To determine low flows available in the Eagle River above its confluence with Gore Creek, for the AMMTOX modelling, the Division combined the flow records of USGS gage station 09064600 (Eagle River near Minturn, CO) and USGS gage station 09065100 (Cross Creek near Minturn, CO). Note that stream gage data for Cross Creek was added because it is a tributary between USGS gage station 09064600 and the confluence of Gore Creek.

The acute and chronic low flows, as calculated by DFLOW, upstream of the confluence are presented in Table A-5c.

Flow data from October 1, 2008 through September 30, 2018 were available from the gage stations. The gage stations and time frames were deemed the most accurate and representative of current flows and were therefore used in this analysis.

Table A-5c
Low Flows at the Eagle River above the confluence with Gore Creek

Low Flow (cfs)	*Annual*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*
1E3 Acute	11	11	12	12	16	46	86	47	36	31	22	12	11
30E3 Chronic	12	12	12	12	16	46	86	47	36	34	22	13	12

During the months of April, May, June, July, and October; the acute low flow calculated by DFLOW exceeded the 30E3 chronic low flow. In accordance with Division standard procedures, the acute low flow was thus set equal to the 30E3 chronic low flow for these months.

To determine the low flows available to the Avon and Edwards WWTF, USGS gage station 09067020 (Eagle River Below Wastewater Treatment Plant at Avon, CO) was used. Because this flow gage is below the Avon WWTF, the Division subtracted average daily flow data provided by the facility before calculating annual 1E3 and 30E3 low flows using U.S. Environmental Protection Agency (EPA) DFLOW software. The output from DFLOW provides calculated acute and chronic low flows for each month.

Flow data from October 1, 2008 through September 30, 2018 were available from the gage station and facility. The gage station and time frames were deemed the most accurate and representative of current flows and were therefore used in this analysis.

Based on the low flow analysis described previously, the upstream low flows available to the Avon and Edwards WWTF were calculated and are presented in **Error! Reference source not found.**5d.

Table A-5d
Low Flows for the Eagle River at the Avon WWTF

Low Flow (cfs)	*Annual*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*
1E3 Acute	28	28	36	37	46	93	143	75	53	45	48	33	28
7E3 Chronic	33	33	38	39	46	93	143	75	53	46	48	38	33
30E3 Chronic	38	38	38	39	46	93	143	75	53	53	48	38	38

During the months of April, May, June, July, August, and October, the acute low flow calculated by DFLOW exceeded the chronic low flow. In accordance with Division standard procedures, the acute low flow was thus set equal to the chronic low flow for these months.

The ratio of the low flow of the Eagle River to the Avon WWTF design flow is 5.7:1.

For the Avon and Edwards WWTF, conservative parameters are modelled according to the dilution flows available upstream of the Avon WWTF, which are presented in Table A-5d with the flows upstream of each discharge used to model non-conservative parameters.

For estimation of non-conservative parameters and WET testing analysis, low flows available to the Edwards WWTF, USGS gage station 09067020 (Eagle River Below Wastewater Treatment Plant at Avon, CO) was used. Lake Creek, USGS 09067200 (Lake Creek Near Edwards, CO) flows in to the Eagle River between USGS gage station 09067020 and the Edwards WWTF, so it was added to the gage station information. The output from DFLOW provides calculated acute and chronic low flows for each month.

Flow data from October 1, 2008 through September 30, 2018 were available from the gage station and facility. The gage station and time frames were deemed the most accurate and representative of current flows and were therefore used in this analysis.

Based on the low flow analysis described previously, the upstream low flows available to the Edwards WWTF were calculated and are presented in **Error! Reference source not found.**5e.

Table A-5e
Low Flows for the Eagle River at the Edwards WWTF

Low Flow (cfs)	*Annual*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*
1E3 Acute	41	41	44	45	56	107	174	94	66	55	66	45	41
7E3 Chronic	45	45	48	49	56	107	174	94	66	58	66	49	45
30E3 Chronic	49	49	49	50	56	107	174	94	66	65	66	49	49

During the months of April, May, June, July, August, and October, the acute low flow calculated by DFLOW exceeded the chronic low flow. In accordance with Division standard procedures, the acute low flow was thus set equal to the chronic low flow for these months.

The ratio of the low flow of the Eagle River to the Avon WWTF design flow is 11:1. Note, that these calculated low flows are for the purpose determining limitations for parameters that are not modeled with other facilities.

Mixing Zones

The amount of the available assimilative capacity (dilution) that may be used by the permittee for the purposes of calculating the WQBELs may be limited in a permitting action based upon a mixing zone analysis or other factor. These other factors that may reduce the amount of assimilative capacity available in a permit are: presence of other dischargers in the vicinity; the presence of a water diversion downstream of the discharge (in the mixing zone); the need to provide a zone of passage for aquatic life; the likelihood of bioaccumulation of toxins in fish or wildlife; habitat considerations such as fish spawning or nursery areas; the presence of threatened and endangered species; potential for human exposure through drinking water or recreation; the possibility that aquatic life will be attracted to the effluent plume; the potential for adverse effects on groundwater; and the toxicity or persistence of the substance discharged.

Unless a facility has performed a mixing zone study during the course of the previous permit, and a decision has been made regarding the amount of the assimilative capacity that can be used by the facility, the Division assumes that the full assimilative capacity can be allocated. Note that the review of mixing study considerations, exemptions and perhaps performing a new mixing study (due to changes in low flow, change in facility design flow, channel geomorphology or other reason) is evaluated in every permit and permit renewal.

If a mixing zone study has been performed and a decision regarding the amount of available assimilative capacity has been made, the Division may calculate the water quality based effluent limitations (WQBELs) based on this available capacity. In addition, the amount of assimilative capacity may be reduced by T&E implications.

For Vail WWTF, 100% of the available assimilative capacity may be used as the results of the previous mixing zone study, dated March 2008, determined that the Gore Creek is exempt from a mixing zone study based on its dimensions as a montane stream, the discharge is not to a T&E stream segment, and is not expected to have an influence on any of the other factors listed above. The 2008 mixing zone study is still valid as low flows have not significantly changed and the previous mixing zone study showed that the stream was well within the exclusion zone.

For Avon and Edwards WWTFs, 100% of the available assimilative capacity may be used as these facilities have not had to perform mixing zone studies and the discharges are not to a T&E stream segment, and are not expected to have any influence on any of the other factors listed above.

Ambient Water Quality

The Division evaluates ambient water quality based on a variety of statistical methods as prescribed in Section 31.8(2)(a)(i) and 31.8(2)(b)(i)(B) of the *Colorado Department of Public Health and Environment Water Quality Control Commission Regulation No. 31*, and as outlined in the Division's Policy for Characterizing Ambient Water Quality for Use in Determining Water Quality Standards Based Effluent Limits (WQP-19). Ambient water quality is evaluated in this WQA analysis for use in determining assimilative capacities and in completing antidegradation reviews for pollutants of concern, where applicable.

To conduct an assessment of the ambient water quality upstream of the Vail WWTF, data were primarily provided by the permittee from two monitoring stations (Gore Creek Above Vail Treatment Plant, GCAVTP and Vail WWTF Upstream) located just upstream of the facility. Data were available for a period of record from May 2011 through March 2019. In addition, data for TIN, dissolved arsenic, dissolved cadmium, dissolved chromium, dissolved copper, total recoverable and dissolved iron, dissolved lead, dissolved manganese, total recoverable molybdenum, dissolved nickel, dissolved selenium, dissolved silver, dissolved zinc, chloride, and sulfate were obtained from Riverwatch Station 969 (E Vail Exit), located 2.2 miles upstream of the facility, and WQX-12554A (Gore Creek at Forest Rd in Vail), located immediately upstream of the facility. Data from these sources were available for a period of record from May 2011 through September 2016. Data from these sources were used to reflect upstream water quality. These data are summarized in Table A-6a.

Table A-6a
Ambient Water Quality for Gore Creek

Parameter	*Number of Samples*	*15th Percentile*	*50th Percentile*	*85th Percentile*	*Mean*	*Maximum*	*Chronic Stream Standard*	*Notes*
pH (su)	177	7.9	8.3	8.7	8.3	9	6.5-9.0	
E. coli (#/100 ml)	32	1	6	35	6	91	126	1, 2
Total Inorganic Nitrogen as N (mg/l)	48	0.03	0.16	0.38	0.32	5.8	NA	
NH_3 as N, Tot (mg/l)	177	0	0	0	0.0024	0.16	TVS	2
NH_3 as N, Tot (mg/l) Jan	18	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Feb	11	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Mar	12	0	0	0	0.0058	0.07	TVS	2
NH_3 as N, Tot (mg/l) Apr	10	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) May	14	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Jun	18	0	0	0	0.013	0.16	TVS	2
NH_3 as N, Tot (mg/l) Jul	14	0	0	0	0.0036	0.05	TVS	2
NH_3 as N, Tot (mg/l) Aug	15	0	0	0	0.0009	0.013	TVS	2
NH_3 as N, Tot (mg/l) Sep	25	0	0	0.0025	0.0027	0.05	TVS	2
NH_3 as N, Tot (mg/l) Oct	16	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Nov	13	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Dec	11	0	0	0	0	0	TVS	2
TDS (mg/l)	40	80	158	244	169	290		
As, TR (µg/l)	40	0	0.1	0.2	0.12	0.95	0.02	2, 3
As, Dis (µg/l)	10	0	0	0.11	0.041	0.2	340	2
Cd, Dis (µg/l)	42	0	0	0	0	0	0.67	2
Cr, Dis (µg/l)	2	0	0	0	0	0	NA	2
Cu, Dis (µg/l)	42	0	1	2.3	1.2	3.1	15	2

Table A-6a Ambient Water Quality for Gore Creek								
Parameter	*Number of Samples*	*15th Percentile*	*50th Percentile*	*85th Percentile*	*Mean*	*Maximum*	*Chronic Stream Standard*	*Notes*
Fe, Dis (µg/l)	28	0	0	17	4.4	23	300	2, 4
Fe, TR (µg/l)	68	0	32	130	73	610	1,000	2
Pb, Dis (µg/l)	34	0	0	0.1	0.029	0.34	4.8	2
Mn, Dis (µg/l)	68	0	2	4.1	2.6	37	50	2, 4
Mo, TR (µg/l)	2	0.47	1.6	2.6	1.6	3.1	160	
Ni, Dis (µg/l)	34	0	0	0	0.088	2	87	2
Se, Dis (µg/l)	28	0	0	0	0.0079	0.22	4.6	2
Ag, Dis (µg/l)	34	0	0	0	0	0	0.21	2
U, Dis (µg/l)	2	1.6	1.7	1.8	1.7	1.9	NA	
Zn, Dis (µg/l)	42	0	2	4	2.4	10	210	2
Chloride (mg/l)	32	3.7	7.5	11	7.8	18	250	
Sulfate (mg/l)	42	5	28	46	28	73	250	4
Phosphorus (mg/l)	177	0	0.005	0.012	0.006	0.054	NA	2
Note 1: The calculated mean is the geometric mean. Note that for summarization purposes, the value of one was used where there was no detectable amount because the geometric mean cannot be calculated using a value equal to zero.								
Note 2: When sample results were below detection levels, the value of zero was used in accordance with the Division's standard approach for summarization and averaging purposes.								
Note 3: The ambient water quality exceeds the water quality standards for these parameters.								
Note 4: The standard for dissolved manganese/dissolved iron/sulfate for water supply segments is the greater of ambient water quality as of January 1, 2000, or 50 µg/l. Per division practice, ambient water quality as of January 1, 2000, for manganese is the 85th percentile of data as listed in the Assessment unit database from January 1995 to December 1999 if there are at least 10 data points. If there are less than 10 data points from January 1995 to December 1999, then the date range expands from January 1995 to December 2004 to capture 10 data points. If 10 data points are not captured in this date range, the data range expands further from January 1995 to December 2009.								

To conduct an assessment of the ambient water quality upstream of the Avon WWTF, data were primarily provided by the permittee from two monitoring stations (Eagle River above Avon Treatment Plant, ERAATP and Avon WWTF Upstream) located just upstream of the facility. Data were available for a period of record from May 2011 through August 2019. In addition, data for dissolved cadmium, dissolved copper, dissolved iron, dissolved lead, dissolved manganese, dissolved selenium, dissolved silver, dissolved zinc, chloride, and sulfate were obtained from USGS 09067005 (Eagle River at Avon), located 0.6 miles upstream of the Avon WWTF. Data from these sources were available for a period of record from June 2011 through May 2019. Data from these sources were used to reflect upstream water quality. These data are summarized in Table A-6b.

Table A-6b Ambient Water Quality for Eagle River above Avon WWTF								
Parameter	*Number of Samples*	*15th Percentile*	*50th Percentile*	*85th Percentile*	*Mean*	*Maximum*	*Chronic Stream Standard*	*Notes*
pH (su)	148	7.6	8.1	8.3	8	8.6	6.5-9.0	
E. coli (#/100 ml)	83	1	8	29	7	124	126	1
Nitrate as N (mg/l)	57	0.28	0.63	1.8	0.97	4.2	10	
Nitrite as N (mg/l)	57	0	0.004	0.007	0.0036	0.02	0.05	2
Total Inorganic Nitrogen	106	0	0.36	0.77	0.4	1.1	NA	2

Table A-6b Ambient Water Quality for Eagle River above Avon WWTF								
Parameter	*Number of Samples*	*15th Percentile*	*50th Percentile*	*85th Percentile*	*Mean*	*Maximum*	*Chronic Stream Standard*	*Notes*
as N (mg/l)								
NH_3 as N, Tot (mg/l)	177	0	0	0	0.001	0.02	TVS	2
NH_3 as N, Tot (mg/l) Jan	18	0	0	0	0.0011	0	TVS	2
NH_3 as N, Tot (mg/l) Feb	11	0	0	0	0.0013	0.014	TVS	2
NH_3 as N, Tot (mg/l) Mar	12	0	0	0	0.0013	0.015	TVS	2
NH_3 as N, Tot (mg/l) Apr	13	0	0	0	0.0011	0.014	TVS	2
NH_3 as N, Tot (mg/l) May	21	0	0	0	0.0009	0	TVS	2
NH_3 as N, Tot (mg/l) Jun	19	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Jul	10	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Aug	11	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Sep	28	0	0	0.0057	0.0015	0.0071	TVS	2
NH_3 as N, Tot (mg/l) Oct	11	0	0	0	0	0	TVS	2
NH_3 as N, Tot (mg/l) Nov	12	0	0	0.0046	0.0027	0.019	TVS	2
NH_3 as N, Tot (mg/l) Dec	10	0	0	0	0	0	TVS	2
TSS (mg/l)	38	1.1	3	6.2	4	0	30	
TDS (mg/l)	91	78	149	218	155	480		
As, TR (µg/l)	42	0	0.2	0.3	0.21	1	0.02	2, 3
As, Dis (µg/l)	8	0	0.15	0.32	0.15	0.32	340	2
Cd, Dis (µg/l)	85	0	0.03	0.09	0.045	0.5	0.62	2
Cu, Dis (µg/l)	85	1.1	1.6	3.3	2.1	6.4	14	
Fe, Dis (µg/l)	8	26	58	70	58	123	300	4
Fe, TR (µg/l)	85	125	190	393	267	1540	1,000	
Pb, Dis (µg/l)	77	0	0.1	0.3	0.15	0.9	4.3	2
Mn, Dis (µg/l)	85	8.1	17	43	28	125	245	4
Ni, Dis (µg/l)	34	0	0	0	0.059	1	79	2
Se, Dis (µg/l)	43	0.1	0.16	0.23	0.17	0.32	4.6	
Ag, Dis (µg/l)	77	0	0	0	9E-05	0.007	0.18	2
Zn, Dis (µg/l)	85	9.4	18	43	27	156	191	
Chloride (mg/l)	57	3.1	7	13	8.2	29	250	
Sulfate (mg/l)	41	8	37	59	37	106	250	4
Phosphorus (mg/l)	170	0.0054	0.013	0.03	0.02	0.23	NA	
Note 1: The calculated mean is the geometric mean. Note that for summarization purposes, the value of one was used where there was no detectable amount because the geometric mean cannot be calculated using a value equal to zero.								
Note 2: When sample results were below detection levels, the value of zero was used in accordance with the Division's standard approach for summarization and averaging purposes.								
Note 3: The ambient water quality exceeds the water quality standards for these parameters.								
Note 4: The standard for dissolved manganese/dissolved iron/sulfate for water supply segments is the greater of ambient water quality as of January 1, 2000, or 50 µg/l. Per division practice, ambient water quality as of January 1, 2000, for manganese is the 85th percentile of data as listed in the Assessment unit database from January 1995 to December 1999 if there are at least 10 data points. If there are less than 10 data points from January 1995 to December 1999, then the date range expands from January 1995 to December 2004 to capture 10 data points. If 10 data points are not captured in this date range, the data range expands further from January 1995 to December 2009.								

V. Facility Information and Pollutants Evaluated

Facility Information

The Vail WWTF is located in the NW 1/4 of the NW 1/4 of S7, T5S, R80W; at 846 Forest Road in Vail, CO; at 39.640833° latitude North and 106.394167° longitude West in Eagle County. The current design capacity of the facility is 2.7 MGD (4.2 cfs). Wastewater treatment is accomplished using a mechanical wastewater treatment process. The technical analyses that follow include assessments of the assimilative capacity based on this design capacity.

There are two wastewater facilities on the Eagle River below the confluence with Gore Creek, Avon and Edwards WWTFs, and these two facilities are being modelled together. The information about these two facilities is given below:

The Avon WWTF is located in the NE 1/4 of the NE 1/4 of S7, T5S, R80W; at 950 Beaver Creek Blvd. in Avon, CO; at 39.635556° latitude North and 106.53111° longitude West in Eagle County. The current design capacity of the facility is 4.3 MGD (6.7 cfs). Wastewater treatment is accomplished using a mechanical wastewater treatment process. The technical analyses that follow include assessments of the assimilative capacity based on this design capacity.

The Edwards WWTF is located in the SW 1/4 of the SW 1/4 of S31, T4S, R82W; at 3101 Lake Creek Blvd. in Edwards, CO; at 39.654° latitude North and 106.625° longitude West in Eagle County. The current design capacity of the facility is 2.83 MGD (4.4 cfs). Wastewater treatment is accomplished using a mechanical wastewater treatment process. The technical analyses that follow include assessments of the assimilative capacity based on this design capacity.

Due to the introduction of a major confluence (the Eagle River), it was not necessary to model Avon WWTF or Edwards WWTF with the Vail WWTF at this time.

An assessment of Division records indicate that there are approximately 15 facilities discharging to the same stream segment or other stream segments immediately upstream or downstream from these facilities. Several of these facilities are covered by general permits and have limitations set at the water quality standards. These facilities were not modeled in this WQA as they have a minimal impact on the ambient water quality. Other facilities were located more than twenty miles from the Vail WWTF, Avon WWTF and Edwards WWTF, and thus were not considered.

Pollutants of Concern

Pollutants of concern may be determined by one or more of the following: facility type; effluent characteristics and chemistry; effluent water quality data; receiving water quality; presence of federal effluent limitation guidelines; or other information. Parameters evaluated in this WQA may or may not appear in a permit with limitations or monitoring requirements, subject to other determinations such as a reasonable potential analysis, mixing zone analyses, 303(d) listings, threatened and endangered species listings or other requirement as discussed in a permit rationale.

There are no site-specific in-stream water quality standards for BOD_5 or $CBOD_5$, TSS, percent removal, and oil and grease for this receiving stream. Thus, assimilative capacities were not determined for these parameters. The applicable limitations for these pollutants can be found in Regulation No. 62 and will be applied in the permit for the WWTF.

The following parameters were identified by the Division as pollutants to be evaluated for this facility:

- Total Residual Chlorine
- *E. coli*
- Nitrate (TIN)

- Ammonia
- Temperature
- Metals, Uranium, and Cyanide
- TDS
- Nutrients

It is the Division's standard procedure to consider metals and cyanide as potential pollutants of concern for all major domestic WWTFs.

According to the *Rationale for Classifications, Standards and Designations of the Upper Colorado and North Platte*, stream segments COUCEA08 and COUCEA09a are designated a water supply.

Effective December 31, 2022 Regulation 31 requires implementation of a nitrate water supply standard of 10 mg/l (as Total Inorganic Nitrogen) in segments COUCEA08 and COUCEA09a, regardless of the presence or the location of domestic water supply wells within the segment. This is based on the results of the June 2016 Water Quality Control Commission (WQCC) hearing, during which the WQCC repealed footnote 4 to Table II (Inorganic Parameters) of Regulation 31 with an effective date of December 31, 2022. The removal of footnote 4 will result in a requirement to calculate permit limits to implement the nitrate water supply standard of 10 mg/l for any discharge to a segment designated as water supply, and to apply the standard either at the point of discharge or, where a mixing zone is allowable, at the end of the mixing zone. The WQCC chose the delayed effective date to allow time to thoroughly evaluate the receiving water below outfalls to determine whether there is an actual existing Water Supply use and to propose modifications of the segments or standards if warranted.

Additionally, because the Eagle River Water and Sanitation District diverts water from Gore Creek and the Eagle River and has several wells completed in the Gore Creek alluvium as well as an intake on the Eagle River. In order to protect future drinking water uses of Gore Creek below Vail WWTF discharge Vail WWTF will have drinking water standards applied at the point of discharge.

Thus, the nitrate, dissolved iron, dissolved manganese (water supply), and sulfate standard(s) are further evaluated as part of this WQA.

During assessment of the facility, nearby facilities, and receiving stream water quality, no additional parameters were identified as pollutants of concern.

VI. Determination of Water Quality Based Effluent Limitations (WQBELs)

Technical Information

Note that the WQBELs developed in the following paragraphs, are calculations of what an effluent limitation may be in a permit. The WQBELs for any given parameter, will be compared to other potential limitations (federal effluent limitations guidelines, state effluent limitations, or other applicable limitation) and typically the more stringent limit is incorporated into a permit. If the WQBEL is the more stringent limitation, incorporation into a permit is dependent upon a reasonable potential analysis.

In-stream background data and low flows evaluated in Sections II and III are used to determine the assimilative capacity of Gore Creek and the Eagle River near the Vail, Avon, and Edwards WWTFs for pollutants of concern, and to calculate the WQBELs. For all parameters except ammonia, it is the Division's approach to calculate the WQBELs using the lowest of the monthly low flows (referred to as the annual low flow) as determined in the low flow analysis. For ammonia, it is the standard procedure of the Division to determine monthly WQBELs using the monthly low flows, as the regulations allow the use of seasonal flows.

The Division's standard analysis consists of steady-state, mass-balance calculations for most pollutants and modeling for pollutants such as ammonia. The mass-balance equation is used by the Division to calculate the WQBELs, and accounts for the upstream concentration of a pollutant at the existing quality, critical low flow (minimal dilution), effluent flow and the water quality standard. The mass-balance equation is expressed as:

$$M_2 = \frac{M_3 Q_3 - M_1 Q_1}{Q_2}$$

Where,

Q_1 = Upstream low flow (1E3 or 30E3)
Q_2 = Average daily effluent flow (design capacity for domestic wastewater treatment facilities)
Q_3 = Downstream flow (Q_1 + Q_2)
M_1 = In-stream background pollutant concentrations at the existing quality
M_2 = Calculated WQBEL
M_3 = Water Quality Standard, or other maximum allowable pollutant concentration

The upstream background pollutant concentrations used in the mass-balance equation will vary based on the regulatory definition of existing ambient water quality. For most pollutants, existing quality is determined to be the 85th percentile. For metals in the total or total recoverable form, existing quality is determined to be the 50th percentile. For pathogens such as fecal coliform and *E. coli*, existing quality is determined to be the geometric mean.

For temperature, the highest 7-day mean (for the chronic standard) of daily average stream temperature, over a seven consecutive day period will be used in calculations of the chronic temperature assimilative capacity, where the daily average temperature should be calculated from a minimum of three measurements spaced equally through the day. The highest 2-hour mean (for the acute standard) of stream temperature will be used in calculations of the acute temperature assimilative capacity. The highest 2-hour mean should be calculated from a minimum of 12 measurements spaced equally through the day.

Because the Avon and Edwards facilities are in proximity, they must be modeled together for shared parameters of concern. When facilities are modeled together, the design flow, Q_2, reflects the combined design flow of the facilities modeled together for a particular parameter, thereby resulting in the calculation of the WQBELs, M_2, applicable to the modeled facilities as set forth below. The facilities will be modeled together for metals, ammonia and sulfate. Temperature, Chlorine, and E. coli will be analyzed separately due to the distance between the facilities.

Calculation of WQBELs

Using the mass-balance equation provided in the beginning of Section VI, the acute and chronic low flows set out in Section IV, ambient water quality as discussed in Section IV, and the in-stream standards shown in Section III, the WQBELs were calculated. The data used and the resulting WQBELs, M_2, are set forth in Table A-7a for the chronic WQBELs and A-7b for the acute WQBELs.

When the ambient water quality exceeds the in-stream standard, the Division standard procedure is to allocate the water quality standard to prevent further degradation of the receiving waters.

Chlorine: There are no point sources discharging total residual chlorine within one mile of the Vail, Avon, or Edwards WWTFs. Because chlorine is rapidly oxidized, in-stream levels of residual chlorine are detected only for a short distance below a source. Ambient chlorine was therefore assumed to be zero.

***E. coli*:** There are no point sources discharging E. coli within one mile of the Vail, Avon, and Edwards WWTFs.

Thus, WQBELs were evaluated separately. In the absence of *E. coli* ambient water quality data, fecal coliform ambient data are used as a conservative estimate of *E. coli* existing quality. For *E. coli*, the Division establishes the 7-day geometric mean limit as two times the 30-day geometric mean WQBEL and also includes maximum limits of 2,000 colonies per 100 ml (30-day geometric mean) and 4,000 colonies per 100 ml (7-day geometric mean). This 2000 colony limitation also applies to discharges to ditches.

Temperature: A WQBEL for temperature can only be calculated if there is representative data, in the proper form, to determine what the background Maximum Weekly Average Temperature and Daily Maximum ambient temperatures are. As this data is not available at this time for Avon and Edwards WWTFs, the temperature limitation will be set at the water quality standard and will be revisited in the future when representative temperature data becomes available.

Temperature data in the proper form for Vail WWTF, were available and therefore the background Maximum Weekly Average Temperature and the Daily Maximum ambient temperatures have been calculated and presented in Table A-6a. Using the mass-balance equation provided in the beginning of Section VI, the 7E3 low flows and background concentrations contained in Section IV, and the in-stream standard for temperature as shown in Section III, the WQBELs were calculated. The data used and the resulting WQBELs, M_2, are set forth in Table A-7c for chronic standards and in Table A-7d for acute standards.

Nitrate / Total Inorganic Nitrogen (T.I.N.): An acute nitrate standard of 10 mg/l is assigned to these segments. Because nitrite and ammonia can also form nitrate, compliance with the nitrate standard is achieved through implementation of a Total Inorganic Nitrogen (T.I.N.) limit. T.I.N. effectively measures nitrate and its precursors including nitrite and ammonia.

For Total Recoverable Arsenic WQBEL, this limit will be effective, following the expiration of the temporary modification (12/31/2024), on 1/1/2025. An interim limit will be established as follows:

The Water Quality Control Commission's regulations state that current conditions be maintained and existing uses protected during the duration of a temporary modification. Per Reg. 31.7(3), "the adoption of a temporary modification recognizes current conditions while providing an opportunity to resolve the uncertainty." Similarly, Regulation 31.7(3)(d) states that "In order to protect existing uses, the operative value during the time of the temporary modification will be set to represent the current condition of the waterbody." For existing discharges, the commission has further directed the division to protect the current conditions by determining limitations or other conditions "based on an assessment of the level of effluent quality reasonably achievable without requiring significant investment in facility infrastructure (e.g., based on past facility performance)." Reg. 31.9(4)(c). Therefore, consistent with WQCD Clean Water Policy 13 (Permit Implementation Method for Narrative (Current Condition) Temporary Modifications) and current division practice, the division will establish numeric limits for Total Recoverable Arsenic based on the maximum 30-day average value of the effluent, which is applicable for the duration of the arsenic temporary modification.

Table A-7a
Vail WWTF Chronic WQBELs

Parameter	Q_1 *(cfs)*	Q_2 *(cfs)*	Q_3 *(cfs)*	M_1	M_3	M_2	*Notes*
E. coli (#/100 ml)	10	4.2	14.2	6	126	***412***	
TRC (mg/l)	10	4.2	14.2	0	0.011	***0.037***	
As, TR (µg/l)*	10	4.2	14.2	0.10	0.02	***0.02***	1
Cd, Dis (µg/l)	10	4.2	14.2	0	0.78	***2.3***	
Cr+3, Dis (µg/l)	10	4.2	14.2	0	145	***412***	
Cr+6, Dis (µg/l)	10	4.2	14.2	0	11	***37***	
Cu, Dis (µg/l)	10	4.2	14.2	2.3	18	***45***	

Table A-7a Vail WWTF Chronic WQBELs							
Parameter	***Q_1 (cfs)***	***Q_2 (cfs)***	***Q_3 (cfs)***	***M_1***	***M_3***	***M_2***	***Notes***
Fe, Dis (µg/l), WS	10	4.2	14.2	17	300	***974***	
Fe, TR (µg/l)	10	4.2	14.2	32	1,000	***3,305***	
Pb, Dis (µg/l)	10	4.2	14.2	0.1	6	***16***	
Mn, Dis (µg/l), AQ	10	4.2	14.2	4.1	2,164	***6,810***	
Mn, Dis (µg/l), WS	10	4.2	14.2	4.1	50	***159***	
Mo, TR (µg/l)	10	4.2	14.2	1.6	160	***537***	
Hg, Tot (µg/l)	10	4.2	14.2	0	0.01	***0.034***	
Ni, Dis (µg/l)	10	4.2	14.2	0	104	***294***	
Se, Dis (µg/l)	10	4.2	14.2	0	4.6	***16***	
Ag, Dis (µg/l)	10	4.2	14.2	0	0.31	***0.71***	
U, Dis (µg/l)	10	4.2	14.2	1.8	3,686	***9, 871***	
Zn, Dis (µg/l)	10	4.2	14.2	4	254	***700***	
B, Tot (mg/l)	10	4.2	14.2	0	0.75	***2.5***	
Chloride (mg/l)	10	4.2	14.2	11	250	***819***	
Sulfate (mg/l), WS	10	4.2	14.2	46	250	***736***	
Sulfide as H2S (mg/l)	10	4.2	14.2	0	0.002	***0.0068***	
Nonylphenol (µg/l)	10	4.2	14.2	0	6.6	***22***	
Note 1: The existing water quality for this parameter exceeds the water quality standard; see the text for further discussion.							
*Temporary Modification, Total Recoverable Arsenic chronic = hybrid; Exp. date of 12/31/24 at which point this limit becomes effective.							

Table A-7b Vail WWTF Acute WQBELs							
Parameter	***Q_1 (cfs)***	***Q_2 (cfs)***	***Q_3 (cfs)***	***M_1***	***M_3***	***M_2***	***Notes***
E. coli (#/100 ml)	chronic X 2 = acute					824	
TRC (mg/l)	7.2	4.2	11.4	0	0.019	***0.052***	
Total Inorganic Nitrogen as N (mg/l)	7.2	4.2	11.4	0.38	10	***26***	
As, Dis (µg/l)	7.2	4.2	11.4	0.11	340	***923***	
Cd, Dis (µg/l)	7.2	4.2	11.4	0	3.5	***7.9***	
Cr+3, TR (µg/l)	7.2	4.2	11.4	0	50	***136***	
Cr+3, Dis (µg/l)	7.2	4.2	11.4	0	1111	***2,538***	
Cr+6, Dis (µg/l)	7.2	4.2	11.4	0	16	***43***	
Cu, Dis (µg/l)	7.2	4.2	11.4	2.3	29	***61***	
CN, Free (µg/l)	7.2	4.2	11.4	0	5.0	***14***	
Pb, Dis (µg/l)	7.2	4.2	11.4	0.10	155	***336***	
Mn, Dis (µg/l), AQ	7.2	4.2	11.4	4.1	3,917	***9,903***	
Ni, Dis (µg/l)	7.2	4.2	11.4	0	933	***2,120***	
Se, Dis (µg/l)	7.2	4.2	11.4	0	18.4	***50***	
Ag, Dis (µg/l)	7.2	4.2	11.4	0	8.2	***15***	
U, TR (µg/l)	7.2	4.2	11.4	1.7	30	***79***	1
U, Dis (µg/l)	7.2	4.2	11.4	1.8	5,900	***12,689***	
Zn, Dis (µg/l)	7.2	4.2	11.4	4.0	336	***745***	
Nonylphenol (µg/l)	7.2	4.2	11.4	0	28	***76***	
Note 1: The calculated WQBEL for TR Uranium is more stringent that the acute WQBEL for dissolved uranium, and therefore only the TR uranium limit will be imposed.							

Table A-7c Vail WWTF Chronic Temperature WQBELs						
Parameter	***Q_1 (cfs)***	***Q_2 (cfs)***	***Q_3 (cfs)***	***M_1***	***M_3***	***M_2***
Temp MWAT (°C) Jan	8.2	4.2	12.4	1.9	9	**23**
Temp MWAT (°C) Feb	9.5	4.2	13.7	2.8	9	**23**
Temp MWAT (°C) Mar	9.3	4.2	13.5	4.1	9	**20**
Temp MWAT (°C) Apr	11	4.2	15.2	5.6	9	**18**
Temp MWAT (°C) May	22	4.2	26.2	5.7	9	**19**
Temp MWAT (°C) Jun	37	4.2	41.2	10.3	14	**47**
Temp MWAT (°C) Jul	25	4.2	29.2	13.8	17	**36**
Temp MWAT (°C) Aug	17	4.2	21.2	13.7	17	**30**
Temp MWAT (°C) Sep	14	4.2	18.2	12.1	17	**33**
Temp MWAT (°C) Oct 1-Oct 15	14	4.2	18.2	9.1	12	**14**
Temp MWAT (°C) Oct 16-31	14	4.2	18.2	6.7	9	**17**
Temp MWAT (°C) Nov	10	4.2	14.2	5.8	9	**17**
Temp MWAT (°C) Dec	8.2	4.2	12.4	2.0	9	**23**

Table A-7d Vail WWTF Acute Temperature WQBELs						
Parameter	***Q_1 (cfs)***	***Q_2 (cfs)***	***Q_3 (cfs)***	***M_1***	***M_3***	***M_2***
Temp Daily Max (°C) Jan	6.9	4.2	11.1	3.8	13	**28**
Temp Daily Max (°C) Feb	8.9	4.2	13.1	5.9	13	**28**
Temp Daily Max (°C) Mar	8.3	4.2	12.5	8.7	13	**22**
Temp Daily Max (°C) Apr	11	4.2	15.2	10.9	13	**19**
Temp Daily Max (°C) May	22	4.2	26.2	11.8	13	**19**
Temp Daily Max (°C) Jun	37	4.2	41.2	15.0	21.7	**81**
Temp Daily Max (°C) Jul	25	4.2	29.2	18.5	21.7	**41**
Temp Daily Max (°C) Aug	17	4.2	21.2	18.6	21.7	**34**
Temp Daily Max (°C) Sep	13	4.2	17.2	16.1	21.7	**39**
Temp Daily Max (°C) Oct	14	4.2	18.2	12.6	13	**14**
Temp Daily Max (°C) Nov	7.5	4.2	11.7	6.9	13	**24**
Temp Daily Max (°C) Dec	7.0	4.2	11.2	3.8	13	**28**

Note that the chronic WQBEL is greater than the acute WQBEL in May and October 1-15; therefore, the chronic WQBEL will be set to the acute WQBEL.

Table A-7e Avon and Edwards WWTFs Chronic WQBELs							
Parameter	***Q_1 (cfs)***	***Q_2 (cfs)***	***Q_3 (cfs)***	***M_1***	***M_3***	***M_2***	***Notes***
As, TR (µg/l)	38	11	49	0.2	0.02	***0.02***	***1,2***
Cd, Dis (µg/l)	38	11	49	0.09	0.62	***2.5***	
Cr+3, Dis (µg/l)	38	11	49	0	112	***499***	
Cr+6, Dis (µg/l)	38	11	49	0	11	***49***	
Cu, Dis (µg/l)	38	11	49	3.3	14	***51***	
Fe, Dis (µg/l), WS	38	11	49	70	300	***1,095***	
Fe, TR (µg/l)	38	11	49	190	1,000	***3,798***	
Pb, Dis (µg/l)	38	11	49	0.3	4.3	***18***	
Mn, Dis(µg/l), WS	38	11	49	43	245	***943***	

Table A-7e Avon and Edwards WWTFs Chronic WQBELs							
Parameter	***Q_1 (cfs)***	***Q_2 (cfs)***	***Q_3 (cfs)***	***M_1***	***M_3***	***M_2***	***Notes***
Mn, Dis (µg/l), AQ	38	11	49	43	1,949	***8,533***	
Mo, TR (µg/l)	38	11	49	0	160	***713***	
Hg, Tot (µg/l)	38	11	49	0	0.01	***0.045***	
Ni, Dis (µg/l)	38	11	49	0	79	***352***	
Se, Dis (µg/l)	38	11	49	0.23	4.6	***20***	
Ag, Dis (µg/l)	38	11	49	0	0.18	***0.80***	
U, Dis (µg/l)	38	11	49	0	2,606	***11,609***	
Zn, Dis (µg/l)	38	11	49	43	191	***702***	
Chloride (mg/l)	38	11	49	13	250	***1,069***	
Sulfate (mg/l), WS	38	11	49	59	250	***910***	
Sulfide as H2S (mg/l)	38	11	49	0	0.002	***0.0089***	
Nonylphenol (µg/l)	38	11	49	0	6.6	***29***	
Note 1: The existing water quality for this parameter exceeds the water quality standard; see the text for further discussion.							
Note 2: Temporary Modification, Total Recoverable Arsenic chronic = hybrid; Exp. date of 12/31/24 at which point this value becomes effective.							

Table A-7f Avon and Edwards WWTFs Acute WQBELs							
Parameter	***Q_1 (cfs)***	***Q_2 (cfs)***	***Q_3 (cfs)***	***M_1***	***M_3***	***M_2***	***Notes***
Total Inorganic Nitrogen as N (mg/l)	28	11	39	0.77	10	***33***	
As, Dis (µg/l)	28	11	39	0.32	340	***1,205***	
Cd, Dis (µg/l)	28	11	39	0.09	2.6	***9.0***	
Cr+3, TR (µg/l)	28	11	39	0	50	***177***	
Cr+3, Dis (µg/l)	28	11	39	0	859	***3,046***	
Cr+6, Dis (µg/l)	28	11	39	0	16	***57***	
Cu, Dis (µg/l)	28	11	39	3.3	22	***70***	
CN, Free (µg/l)	28	11	39	0	5	***18***	
Pb, Dis (µg/l)	28	11	39	0.3	111	***393***	
Mn, Dis (µg/l), AQ	28	11	39	43	3,528	***12,399***	
Ni, Dis (µg/l)	28	11	39	0	715	***2,535***	
Se, Dis (µg/l)	28	11	39	0.23	18.4	***65***	
Ag, Dis (µg/l)	28	11	39	0	4.8	***17***	
U, TR (µg/l)	28	11	39	0	30	***106***	***1***
U, Dis (µg/l)	28	11	39	0	4,172	***14,792***	
Zn, Dis (µg/l)	28	11	39	43	252	***784***	
Nonylphenol (µg/l)	28	11	39	0	28	***99***	
Note 1: The calculated WQBEL for TR Uranium is more stringent that the acute WQBEL for dissolved uranium, and therefore only the TR uranium limit will be imposed.							

Table A-7g Avon WWTF specific WQBELs						
Parameter	***Q_1 (cfs)***	***Q_2 (cfs)***	***Q_3 (cfs)***	***M_1***	***M_3***	***M_2***
Chronic *E. coli* (#/100 ml)	38	6.7	44.7	7.0	126	***801***
Acute *E. coli* (#/100 ml)	Acute limit is set equal to 2X the chronic WQBEL					***1,602***
Chronic TRC (mg/l)	38	6.7	44.7	0	0.011	***0.073***
Acute TRC (mg/l)	28	6.7	34.7	0	0.019	***0.098***

Table A-7h Edwards WWTF specific WQBELs

Parameter	*Q_1 (cfs)*	*Q_2 (cfs)*	*Q_3 (cfs)*	*M_1*	*M_3*	*M_2*
Chronic *E. coli* (#/100 ml)	49	4.4	53.4	7.0	126	***1,451***
Acute *E. coli* (#/100 ml)	Acute limit is set equal to 2X the chronic WQBEL					***2,902***
Chronic TRC (mg/l)	49	4.4	53.4	0	0.011	***0.13***
Acute TRC (mg/l)	41	4.4	45.4	0	0.019	***0.20***

Ammonia: The Ammonia Toxicity Model (AMMTOX) is a software program designed to project the downstream effects of ammonia and the ammonia assimilative capacities available to each discharger based on upstream water quality and effluent discharges. To develop data for the AMMTOX model, an in-stream water quality study should be conducted of the upstream receiving water conditions, particularly the pH and corresponding temperature, over a period of at least one year.

For Vail WWTF, temperature, ammonia, and corresponding pH data sets reflecting upstream ambient receiving water conditions were available for Gore Creek based on data provided by the permittee, which reflects a period of record from May 2011 to January May 2019. Effluent pH and temperature data were also available from the Vail WWTF and were used to establish the average facility contributions in the AMMTOX model.

For Avon and Edwards WWTFs, temperature, ammonia, and corresponding pH data sets reflecting upstream ambient receiving water conditions were available for the Eagle River based on data provided by the permittee, which reflects a period of record from May 2011 to January August 2019. Effluent pH and temperature data were also available from the Avon and Edwards WWTF and were used to establish the average facility contributions in the AMMTOX model. The Lake Creek contribution to the Eagle River between Avon and Edwards WWTFs was included in the AMMTOX model. Flow data, from USGS 09067200 (Lake Creek Near Edwards, CO) which reflects a period of record from October 1, 2008 through September 30, 2018. There were no pH or temperature data available for Lake Creek that could be used as adequate input data for the AMMTOX model. Therefore, the Division standard procedure is to rely on statistically-based, regionalized data for pH and temperature compiled from similar receiving waters. A single Lake Creek ammonia sample was gathered from WQX-12502D, dated September 22, 2016, and was used to establish ambient ammonia concentrations in Lake Creek.

The AMMTOX model may be calibrated for a number of variables in addition to the data discussed above. The values used for the other variables in the model are listed below:

- Stream velocity = $0.3Q^{0.4d}$
- Default ammonia loss rate = 6/day
- pH amplitude was assumed to be medium
- Default times for pH maximum, temperature maximum, and time of day of occurrence
- pH rebound was set at the default value of 0.2 su per mile
- Temperature rebound was set at the default value of 0.7 degrees C per mile.

The results of the ammonia analyses for the Vail, Avon, and Edwards WWTFs are presented in Tables A-8a, A-8b, and A-8c.

Table A-8a
AMMTOX Results for Gore Creek at the Vail WWTF

Month	*Total Ammonia Chronic (mg/l)*	*Total Ammonia Acute (mg/l)*
January	8.2	16
February	7.4	14
March	7.8	15
April	7.3	14
May	9.9	19
June	21	42
July	12	27

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Table A-8a AMMTOX Results for Gore Creek at the Vail WWTF		
Month	*Total Ammonia Chronic (mg/l)*	*Total Ammonia Acute (mg/l)*
August	9.2	20
September	9.9	20
October	8.2	15
November	6.6	12
December	7.0	14

Table A-8b AMMTOX Results for the Eagle River at the Avon WWTF		
Month	*Total Ammonia Chronic (mg/l)*	*Total Ammonia Acute (mg/l)*
January	5.2	9.4
February	5.3	9.8
March	6.2	11
April	7.1	13
May	8.8	17
June	13	25
July	9.0	23
August	8.5	23
September	7.3	17
October	7.3	13
November	5.4	9.6
December	5.1	9.2

Table A-8c AMMTOX Results for the Eagle River at the Edwards WWTF		
Month	*Total Ammonia Chronic (mg/l)*	*Total Ammonia Acute (mg/l)*
January	5.3	9.5
February	5.3	9.9
March	6.2	11
April	7.1	13
May	8.9	18
June	13	25
July	9.0	24
August	8.6	23
September	7.4	18
October	7.3	14
November	5.3	9.7
December	5.1	9.3

Whole Effluent Toxicity (WET) Testing:

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.

In-Stream Waste Concentration (IWC) – Where monitoring or limitations for WET are deemed appropriate by the Division, the chronic in-stream dilution is critical in determining whether acute or chronic conditions shall apply. In accordance with Division policy, for those discharges where the chronic IWC is greater than 9.1% and the receiving stream has a Class 1 Aquatic Life use or Class 2 Aquatic Life use with all of the appropriate aquatic life numeric standards, chronic conditions will normally apply. Where the chronic IWC is less than or equal to 9.1, or the stream is not classified as described above, acute conditions will normally apply. The chronic IWC is determined using the following equation:

IWC = [Facility Flow (FF)/(Stream Chronic Low Flow (annual) + FF)] X 100%

The flows and corresponding IWC for the appropriate discharge point are:

Permitted Feature	Chronic Low Flow, 30E3 (cfs)	Facility Design Flow (cfs)	IWC, (%)
001A Vail	10	4.2	30
001A Avon	38	6.7	15
001A Edwards	49	4.4	8

The IWC for Vail WWTF is 30%, which represents a wastewater concentration of 30% effluent to 70% receiving stream. This IWC correlates to chronic WET testing. The fact sheet and the permit will contain additional information regarding the type of WET testing applicable to this facility.

The IWC for Avon WWTF is 15%, which represents a wastewater concentration of 15% effluent to 85% receiving stream. This IWC correlates to chronic WET testing. The fact sheet and the permit will contain additional information regarding the type of WET testing applicable to this facility.

The IWC for Edwards WWTF is 8%, which represents a wastewater concentration of 8% effluent to 92% receiving stream. This IWC correlates to acute WET testing. The fact sheet and the permit will contain additional information regarding the type of WET testing applicable to this facility.

VII. Antidegradation Evaluation

As set out in *The Basic Standards and Methodologies for Surface Water*, Section 31.8(2)(b), an antidegradation analysis is required except in cases where the receiving water is designated as "Use Protected." Note that "Use Protected" waters are waters "that the Commission has determined do not warrant the special protection provided by the outstanding waters designation or the antidegradation review process" as set out in Section 31.8(2)(b). The antidegradation section of the regulation became effective in December 2000, and therefore antidegradation considerations are applicable to this WQA analysis.

According to the *Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River*, stream segments COUCEA08 and COUCEA09a are Undesignated. Thus, an antidegradation review is required for this segment if new or increased impacts are found to occur.

Basic Standards and Methodologies for Surface Water, Regulation 31 exempts dissolved iron, dissolved manganese, and sulfate from antidegradation consideration on the basis that this level of protection extends to standards that protect "fishable/swimmable" uses, and not water supply uses. Dissolved iron, dissolved manganese and sulfate are based on secondary Safe Drinking Water Act criteria and are not surrogates for any swimmable criteria, and are therefore exempt from further antidegradation review.

The Water Quality Control Commission has decided that the existing general practice for addressing antidegradation will apply with respect to nutrients. Since total phosphorus and total nitrogen WQBELs apply to this facility, the division will also calculate antidegradation limits for these parameters.

Introduction to the Antidegradation Process

The antidegradation process conducted as part of this water quality assessment is designed to determine if an antidegradation review is necessary and if necessary, to complete the required calculations to determine the limits that can be selected as the antidegradation-based effluent limit (ADBEL), absent further analyses that must be conducted by the facility.

As outlined in the *Antidegradation Significance Determination for New or Increased Water Quality Impacts, Procedural Guidance* (AD Guidance), the first consideration of an antidegradation evaluation is to determine if new or increased impacts are expected to occur. This is determined by a comparison of the newly calculated WQBELs verses the existing permit limitations in place as of September 30, 2000, and is described in more detail in the analysis. Note that the AD Guidance refers to the permit limitations as of September 30, 2000 as the existing limits.

If a new or increased impact is found to occur, then the next step of the antidegradation process is to go through the significance determination tests. These tests include: 1) bioaccumulative toxic pollutant test; 2) temporary impacts test; 3) dilution test (100:1 dilution at low flow) and; 4) a concentration test.

As the determination of new or increased impacts, and the bioaccumulative and concentration significance determination tests require more extensive calculations, the Division will begin the antidegradation evaluation with the dilution and temporary impact significance determination tests. These two significance tests may exempt a facility from further AD review without the additional calculations.

Note that the antidegradation requirements outlined in *The Basic Standards and Methodologies for Surface Water* specify that chronic numeric standards should be used in the antidegradation review; however, where there is only an acute standard, the acute standard should be used. The appropriate standards are used in the following antidegradation analysis.

Significance Tests for Temporary Impacts and Dilution

This is not a temporary discharge and therefore exclusion based on a temporary discharge cannot be granted and the AD evaluation must continue.

The ratio of the chronic (30E3) low flow to the design flow for Vail, Avon, and Edwards WWTFs is 2.4:1, 5.7:1, and 11:1, respectively, and are all less than the 100:1 significance criteria. Therefore, these facilities are not exempt from an AD evaluation based on the dilution significance determination test, and the AD evaluation must continue.

For the determination of a new or increased impact and for the remaining significance determination tests, additional calculations are necessary. Therefore, at this point in the antidegradation evaluation, the Division will go back to the new or increased impacts test. If there is a new or increased impact, the last two significance tests will be evaluated.

New or Increased Impact and Non Impact Limitations (NILs)

To determine if there is a new or increased impact to the receiving water, a comparison of the new WQBEL concentrations and loadings verses the concentrations and loadings as of September 30, 2000, needs to occur. If either the new concentration or loading is greater than the September 2000 concentration or loading, then a

new or increased impact is determined. If this is a new facility (commencement of discharge after September 30, 2000) it is automatically considered a new or increased impact.

Note that the AD Guidance document includes a step in the New or Increased Impact Test that calculates the Non-Impact Limit (NIL). The permittee may choose to retain a NIL if certain conditions are met, and therefore the AD evaluation for that parameter would be complete. As the NIL is typically greater than the ADBAC, and is therefore the chosen limit, the Division will typically conclude the AD evaluation after determining the NIL. Where the NILs are very stringent, or upon request of a permittee, the Division will calculate both the NIL and the AD limitation so that the limitations can be compared and the permittee can determine which of the two limits they would prefer, one which does not allow any increased impact (NIL), or the other which allows an insignificant impact (AD limit).

The non impact limit (NIL) is defined as the limit which results in no increased water quality impact (no increase in load or limit over the September 2000 load or limit). The NIL is calculated as the September 2000 loading, divided by the new design flow, and divided by a conversion factor of 8.34. If there is no increase in design flow, then the NIL is equal to the September 2000 permit limitation.

If the facility was in place, but did not have a limitation for a particular parameter in the September 2000 permit, the Division may substitute an implicit limitation. Consistent with the First Update to the AD Guidance of April 2002, an implicit limit is determined based on the approach that specifies that the implicit limit is the maximum concentration of the effluent from October 1998 to September 2000. If this data is unavailable, the Division may substitute more recent representative data, if appropriate, on a case by case basis. Note that the AD requirements specify that chronic values should be used in the AD review; however, where there is only an acute standard, the acute value should be used. Thus, for determining implicit limitations for chronic standards, the 30 day average effluent values are used, while for acute standards, the daily maximum values are used. Note that if there is an increase in design flow, the implicit limit/loading is subject to recalculation based on the increased design flow. For parameters that are undisclosed by the permittee, and unknown to the Division to be present, an implicit limitation may not be recognized.

All three facilities were in place as dischargers prior to September 30, 2000, therefore the new or increased impacts test must be conducted. The design flows for Vail and Avon WWTFs have not increased since September 2000, and therefore the NILs are equal to the permit limitations as of September 2000. For Edwards WWTF, the design flow has increased from 1.92 MGD to 2.83 MGD, and the equation for the NIL calculations are shown below.

Vail WWTF

For total residual chlorine, total ammonia, dissolved cadmium, dissolved copper, total mercury, and dissolved silver, the limitations as of September 2000 were used in the evaluation of new or increased impacts.

For total recoverable trivalent chromium, total recoverable iron, dissolved lead, dissolved nickel, and dissolved selenium; data from this timeframe were used to determine an implicit limitation. For dissolved trivalent chromium, dissolved chromium data were used to determine an implicit NIL. For total recoverable trivalent chromium, total chromium data were used to determine an implicit NIL. For total recoverable iron, total iron data were used to determine an implicit NIL. For *E. coli*, data from this timeframe were used to determine an implicit limitation. In accordance with the Division's practice regarding *E. coli*, an implicit limit for *E. coli* is determined as 0.32 times the permit limit for fecal coliform.

For total inorganic nitrogen, data prior to 2000 were not available. Therefore, data from Regulation 85 sampling from March 2013 to February 2015 were used to determine the implicit limitations for total inorganic nitrogen. For dissolved manganese and dissolved hexavalent chromium, data prior to 2000 were not available. Therefore, data from March 2007 to December 2008 were determined to be adequate and were used to determine the implicit limitations for dissolved manganese and dissolved hexavalent chromium. For free cyanide, data prior to 2000 were not available. Therefore, free cyanide data from December 2015 to November

2017 were used to determine the implicit limitations for free cyanide. For total recoverable arsenic, and total recoverable molybdenum, data prior to 2000 were not available. Therefore, total recoverable arsenic and total molybdenum data from pretreatment sampling from February 2002 to February 2004 were used to determine the implicit limitations for total recoverable arsenic, and total recoverable molybdenum.

For total recoverable uranium, dissolved zinc, dissolved arsenic, and sulfide; there are no effluent data available and therefore, the Division will include monitoring requirements in the permit so that data can be collected in order to make such a determination of an implicit limit.

Avon WWTF

For Avon WWTF total residual chlorine, total ammonia, total mercury, and dissolved silver, the limitations as of September 2000 were used in the evaluation of new or increased impacts.

For total recoverable and dissolved trivalent chromium, dissolved manganese, and dissolved zinc; data from this timeframe were used to determine an implicit limitation. For total recoverable trivalent chromium, total chromium data were used to determine an implicit NIL. For total recoverable iron, total iron data were used to determine an implicit NIL. For *E. coli*, data from this timeframe were used to determine an implicit limitation. In accordance with the Division's practice regarding *E. coli*, an implicit limit for *E. coli* is determined as 0.32 times the permit limit for fecal coliform.

For sulfide, total recoverable arsenic, and dissolved cadmium, data prior to 2000 were not available. Therefore, total recoverable arsenic, dissolved cadmium, and sulfide data from February 2011 to January 2013 were used to determine the implicit limitations for total recoverable arsenic, dissolved cadmium, and sulfide. For free cyanide, data prior to 2000 were not available. Therefore, free cyanide data from December 2006 to November 2008 were used to determine the implicit limitations for free cyanide. For TIN, dissolved hexavalent chromium, dissolved copper, and total recoverable iron, data prior to 2000 were not available. Therefore, data from November 2005 to October 2007 were used to determine the implicit limitations for TIN, dissolved hexavalent chromium, dissolved copper, and total recoverable iron. For total recoverable molybdenum, data prior to 2000 were not available. Therefore, total molybdenum data from pretreatment sampling from December 2005 to December 2007 were used to determine the implicit limitations for total recoverable molybdenum.

For dissolved arsenic, dissolved trivalent chromium, dissolved lead, dissolved nickel, dissolved selenium, and total recoverable uranium; there are no effluent data available and therefore, the Division will include monitoring requirements in the permit so that data can be collected in order to make such a determination of an implicit limit.

Edwards WWTF

For Edwards WWTF total residual chlorine and total ammonia, the limitations as of September 2000 were used in the evaluation of new or increased impacts.

For *E. coli*, data from this timeframe were used to determine an implicit limitation. In accordance with the Division's practice regarding *E. coli*, an implicit limit for *E. coli* is determined as 0.32 times the permit limit for fecal coliform.

For sulfide data prior to 2000 were not available. Therefore, sulfide data from February 2011 to January 2013 were used to determine the implicit limitations for sulfide. For total recoverable arsenic dissolved cadmium, and dissolved selenium, data prior to 2000 were not available. Therefore, total recoverable arsenic, dissolved cadmium, and dissolved selenium data from January 2006 to December 2007 were used to determine the implicit limitations for total recoverable arsenic, dissolved cadmium, and dissolved selenium. For total recoverable trivalent chromium, data prior to 2000 were not available. Therefore, total chromium data from December 2008 to December 2009 were used to determine the implicit limitations for total recoverable trivalent chromium. For TIN, dissolved hexavalent chromium, dissolved copper, total recoverable iron,

dissolved lead, and dissolved nickel, data prior to 2000 were not available. Therefore, TIN, dissolved hexavalent chromium, dissolved copper, total recoverable iron, dissolved lead, and dissolved nickel data from December 2005 to November 2007 were used to determine the implicit limitations for TIN, dissolved hexavalent chromium, dissolved copper, total recoverable iron, and dissolved lead. For dissolved manganese, dissolved silver, and dissolved zinc, data prior to 2000 were not available. Therefore, dissolved manganese, dissolved silver, and dissolved zinc data from September 2000 to June 2002 were used to determine the implicit limitations for dissolved manganese, dissolved silver, and dissolved zinc. For free cyanide, data prior to 2000 were not available. Therefore, free cyanide data from September 2008 to June 2010 were used to determine the implicit limitations for free cyanide. For total recoverable molybdenum, data prior to 2000 were not available. Therefore, data from pretreatment sampling from December 2008 to December 2010 were used to determine the implicit limitations for total recoverable molybdenum. For total mercury, data prior to 2000 were not available. Therefore, data from September 2001 to August 2003 were used to determine the implicit limitations for total mercury.

For dissolved arsenic, dissolved trivalent chromium, total recoverable uranium; there are no effluent data available and therefore, the Division will include monitoring requirements in the permit so that data can be collected in order to make such a determination of an implicit limit.

Calculation of Loadings for New or Increased Impact Test

The equations for the loading calculations are given below. Note that the AD requirements outlined in *The Basic Standards and Methodologies for Surface Water* specify that chronic numeric standards should be used in the AD review; however, where there is only an acute standard, the acute standard should be used. Thus, the chronic low flows will be used later in this AD evaluation for all parameters with a chronic standard, and the acute low flows will be used for those parameters with only an acute standard.

$$\text{Previous permit load} = M_{permitted}\ (mg/l) \times Q_{permitted}\ (mgd) \times 8.34$$
$$\text{New WQBELs load} = M_2\ (mg/l) \times Q_2\ (mgd) \times 8.34$$

Where,

$M_{permitted}$ = September 2000 permit limit (or implicit limit) **(mg/l)**
$Q_{permitted}$ = design flow as of September 2000 **(mgd)**
Q_2 = current design flow (same as used in the WQBEL calculations)
M_2 = new WQBEL concentration **(mg/l)**
8.34 = unit conversion factor

Tables A-9a, A-9b, and A-9c shows the results of these calculations and the determination of a new or increased impact.

Calculation of Non-Impact Limitations

The design flow of the Edwards WWTF as of September 30, 2000 was 1.92 MGD. The new design flow of this facility is 2.83 MGD. To determine if new or increased impacts are to occur, the September 2000 permit concentrations need to be adjusted for this new design flow. The equations are shown below.

$$\text{September 2000 permit load} = M_{permitted} \times Q_{permitted} \times 8.34$$
$$\text{Non Impact Limit (NIL)} = \text{September 2000 permitted load} \div \text{New Design Flow} \div 8.34$$

Where,

$M_{permitted}$ = September 2000 permit limit or implicit limit **(mg/l)**
$Q_{permitted}$ = September 2000 design flow **(mgd)**
Q_2 = new or current design flow **(mgd)**
8.34 = Unit conversion factor

Table A-9a
Determination of New or Increased Impacts for Vail WWTF

Pollutant	*Sept 2000 Permit Limit or Implicit NIL*	*Sept 2000 Permit Load (lbs/day)*	*NIL or Implicit NIL*	*New WQBEL*	*New WQBEL Load (lbs/day)*	*New or Increased Impact*
E. coli (#/100 ml)*	1,350	30,408	1,350	412	9,277	No
TRC (mg/l)	0.010	0.23	0.010	0.037	0.83	Yes
Total Inorganic Nitrogen as N (mg/l)	22.7	NA	22.7**	26	585	Yes
NH_3, Tot as N (mg/l), Jan	2.0	45	2.0	8.2	185	Yes
NH_3, Tot as N (mg/l), Feb	2.0	45	2.0	7.4	167	Yes
NH_3, Tot as N\(mg/l) Mar	2.0	45	2.0	7.8	176	Yes
NH_3, Tot as N (mg/l) Apr	2.0	45	2.0	7.3	164	Yes
NH_3, Tot as N (mg/l) May	2.0	45	2.0	9.9	223	Yes
NH_3, Tot as N (mg/l) Jun	2.0	45	2.0	21	473	Yes
NH_3, Tot as N (mg/l) Jul	2.0	45	2.0	12	270	Yes
NH_3, Tot as N (mg/l) Aug	2.0	45	2.0	9.2	207	Yes
NH_3, Tot as N (mg/l) Sep	2.0	45	2.0	9.9	223	Yes
NH_3, Tot as N (mg/l) Oct	2.0	45	2.0	8.2	185	Yes
NH_3, Tot as N (mg/l) Nov	2.0	45	2.0	6.6	149	Yes
NH_3, Tot as N (mg/l) Dec	2.0	45	2.0	7.0	158	Yes
As, TR (µg/l)	0.4**	0.0090	0.4**	0.02	0.00045	No
As, Dis (µg/l)	NA	NA	NA	923	21	Yes
Cd, Dis (µg/l)	3.1	0.07	3.1	2.3	0.052	No
Cr+3, TR (µg/l)	40**	0.90	40**	136	3.1	Yes
Cr+3, Dis (µg/l)	10**	0.23	10**	412	9.3	Yes
Cr+6, Dis (µg/l)	8.0**	0.18	8.0**	37	0.83	Yes
Cu, Dis (µg/l)	25	0.56	25	45	1.0	Yes
CN, Free (µg/l)	5.0**	0.11	5.0**	14	0.32	Yes
Fe, TR (µg/l)	80**	1.8	80**	3,305	74	Yes
Pb, Dis (µg/l)	11.5**	0.26	11.5**	16	0.36	Yes
Mn, Dis (µg/l), AQ	13.7**	0.31	13.7**	6,810	153	Yes
Mo, TR (µg/l)	12**	0.27	12**	537	12	Yes
Hg, Tot (µg/l)	0.020	0.00045	0.020	0.034	0.00077	Yes
Ni, Dis (µg/l)	350**	7.9	350**	294	6.6	No
Se, Dis (µg/l)	5.0**	0.11	5.0**	16	0.36	Yes
Ag, Dis (µg/l)	6.4	0.14	6.4	0.71	0.016	No
U, TR (µg/l)	NA	NA	NA	79	1.8	Yes
U, Dis (µg/l)	NA	NA	NA	9,871	222	Yes
Zn, Dis (µg/l)	NA	NA	NA	700	16	Yes
Sulfide as H2S (mg/l)	NA	NA	NA	0.0068	0.15	Yes

*The loading for *E. coli* cannot be calculated; but, for comparison purposes, the approach is sufficient.
**Implicit NIL

Table A-9b Determination of New or Increased Impacts for Avon WWTF						
Pollutant	***Sept 2000 Permit Limit or implicit NIL***	***Sept 2000 Permit Load (lbs/day)***	***NIL or Implicit NIL***	***New WQBEL***	***New WQBEL Load (lbs/day)***	***New or Increased Impact***
E. coli (#/100 ml)*	314	11,216	314	801	28,725	Yes
TRC (mg/l)	0.030	1.1	0.030	0.073	2.6	Yes
Total Inorganic Nitrogen as N (mg/l)	60.6**	NA	60.6**	33	1,962	No
NH_3, Tot as N (mg/l), Jan	7.3	379	6.4	5.2	309	No
NH_3, Tot as N (mg/l), Feb	3.6	187	3.1	5.3	315	Yes
NH_3, Tot as N\(mg/l) Mar	2.7	140	2.4	6.2	369	Yes
NH_3, Tot as N (mg/l) Apr	4.0	207	3.5	7.1	422	Yes
NH_3, Tot as N (mg/l) May	7.7	399	6.7	8.8	523	Yes
NH_3, Tot as N (mg/l) Jun	10	519	8.7	13	773	Yes
NH_3, Tot as N (mg/l) Jul	4.3	223	3.8	9	535	Yes
NH_3, Tot as N (mg/l) Aug	3.8	197	3.3	8.5	505	Yes
NH_3, Tot as N (mg/l) Sep	3.1	161	2.7	7.3	434	Yes
NH_3, Tot as N (mg/l) Oct	3.3	171	2.9	7.3	434	Yes
NH_3, Tot as N (mg/l) Nov	3.4	176	3.0	5.4	321	Yes
NH_3, Tot as N (mg/l) Dec	3.7	192	3.2	5.1	303	Yes
As, TR (µg/l)	0.73**	0.043	0.73**	0.020	0.0012	No
As, Dis (µg/l)	NA	NA	NA	1,205	72	Yes
Cd, Dis (µg/l)	0.26**	0.015	0.26**	2.5	0.15	Yes
Cr+3, TR (µg/l)	10**	0.59	10**	177	11	Yes
Cr+3, Dis (µg/l)	NA	NA	NA	499	30	Yes
Cr+6, Dis (µg/l)	17**	1.0	17**	49	2.9	Yes
Cu, Dis (µg/l)	17**	1.0	17**	51	3.0	Yes
CN, Free (µg/l)	8.0**	0.48	8.0**	18	1.1	Yes
Fe, TR (µg/l)	210**	12	210**	3,798	226	Yes
Pb, Dis (µg/l)	NA	NA	NA	18	1.1	Yes
Mn, Dis (µg/l), AQ	55**	3.3	55**	8,553	507	Yes
Mo, TR (µg/l)	1.5**	0.089	1.5**	713	42	Yes
Hg, Tot (µg/l)	0.059	0.0035	0.059	0.045	0.0027	No
Ni, Dis (µg/l)	NA	NA	NA	352	21	Yes
Se, Dis (µg/l)	NA	NA	NA	20	1.2	Yes
Ag, Dis (µg/l)	1.04	0.062	1.04	0.80	0.048	No
U, TR (µg/l)	NA	NA	NA	106	6.3	Yes
U, Dis (µg/l)	NA	NA	NA	11,609	690	Yes
Zn, Dis (µg/l)	70**	4.2	70**	702	42	Yes
Sulfide as H2S (mg/l)	0.090**	5.4	0.090**	0.0089	0.53	No
*The loading for *E. coli* cannot be calculated; but, for comparison purposes, the approach is sufficient.						
**Implicit NIL						

Table A-9c Determination of New or Increased Impacts for Edwards WWTF						
Pollutant	***Sept 2000 Permit Limit or Implicit NIL***	***Sept 2000 Permit Load (lbs/day)***	***NIL or Implicit NIL***	***New WQBEL***	***New WQBEL Load (lbs/day)***	***New or Increased Impact***

Table A-9c Determination of New or Increased Impacts for Edwards WWTF						
Pollutant	***Sept 2000 Permit Limit or Implicit NIL***	***Sept 2000 Permit Load (lbs/day)***	***NIL or Implicit NIL***	***New WQBEL***	***New WQBEL Load (lbs/day)***	***New or Increased Impact***
E. coli (#/100 ml)*	314	5,022	213	1,451	34,247	Yes
TRC (mg/l)	0.030	0.48	0.020	0.13	3.1	Yes
Total Inorganic Nitrogen as N (mg/l)	37**	NA	37**	33	1,962	No
NH_3, Tot as N (mg/l), Jan	7.3	379	6.4	5.3	315	No
NH_3, Tot as N (mg/l), Feb	3.6	187	3.1	5.3	315	Yes
NH_3, Tot as N\(mg/l) Mar	2.7	140	2.4	6.2	369	Yes
NH_3, Tot as N (mg/l) Apr	4.0	207	3.5	7.1	422	Yes
NH_3, Tot as N (mg/l) May	7.7	399	6.7	8.9	529	Yes
NH_3, Tot as N (mg/l) Jun	10	519	8.7	13	773	Yes
NH_3, Tot as N (mg/l) Jul	4.7	244	4.1	9	535	Yes
NH_3, Tot as N (mg/l) Aug	3.3	171	2.9	8.6	511	Yes
NH_3, Tot as N (mg/l) Sep	3.1	161	2.7	7.4	440	Yes
NH_3, Tot as N (mg/l) Oct	4.2	218	3.7	7.3	434	Yes
NH_3, Tot as N (mg/l) Nov	3.4	176	3.0	5.3	315	Yes
NH_3, Tot as N (mg/l) Dec	3.7	192	3.2	5.1	303	Yes
As, TR (µg/l)	8.0**	0.41	7.0**	0.020	0.0012	No
As, Dis (µg/l)	NA	NA	NA	1,205	72	Yes
Cd, Dis (µg/l)	0.20**	0.010	0.17**	2.5	0.15	Yes
Cr+3, TR (µg/l)	10**	0.52	8.7**	177	11	Yes
Cr+3, Dis (µg/l)	NA	NA	NA	499	30	Yes
Cr+6, Dis (µg/l)	13**	0.67	11**	49	2.9	Yes
Cu, Dis (µg/l)	113**	5.9	99**	51	3.0	No
CN, Free (µg/l)	5.0**	0.26	4.4**	18	1.1	Yes
Fe, TR (µg/l)	70**	3.6	61**	3,798	226	Yes
Pb, Dis (µg/l)	1.0**	0.052	0.87**	18	1.1	Yes
Mn, Dis (µg/l), AQ	28**	1.5	24**	8,533	507	Yes
Mo, TR (µg/l)	5.0**	0.26	4.4**	713	42	Yes
Hg, Tot (µg/l)	0.2**	0.010	0.174**	0.045	0.0027	No
Ni, Dis (µg/l)	5.9**	0.31	5.1**	352	21	Yes
Se, Dis (µg/l)	0.50**	0.026	0.44**	20	1.2	Yes
Ag, Dis (µg/l)	0.65**	0.034	0.57**	0.80	0.048	Yes
U, TR (µg/l)	NA	NA	NA	106	6.3	Yes
U, Dis (µg/l)	NA	NA	NA	11,609	690	Yes
Zn, Dis (µg/l)	110**	5.7	96**	702	42	Yes
Sulfide as H2S (mg/l)	0.10**	5.2	0.087**	0.0089	0.53	No
*The loading for *E. coli* cannot be calculated; but, for comparison purposes, the approach is sufficient.						
**Implicit NIL						

For Vail WWTF, as shown in Table A-9a, there are no new or increased impacts to the receiving stream based on the new WQBELS for E. coli, total recoverable arsenic, and dissolved cadmium, nickel, and silver, and for these parameters the AD evaluation is complete and the WQBELs are the final result of this WQA.

For Avon WWTF, as shown in Table A-9b, there are no new or increased impacts to the receiving stream based on the new WQBELS for ammonia in January, TIN, total recoverable arsenic, total mercury, dissolved silver, and

sulfide, and for these parameters the AD evaluation is complete and the WQBELs are the final result of this WQA.

For Edwards WWTF, as shown in Table A-9c, there are no new or increased impacts to the receiving stream based on the new WQBELS for January ammonia, TIN, total recoverable arsenic, dissolved copper, total mercury, and sulfide, and for these parameters the AD evaluation is complete and the WQBELs are the final result of this WQA.

For the remaining parameters, there are new or increased impacts and in accordance with regulation, the permittee has the option of choosing either the NILs or ADBACs. Normally, the Division would assign the NILs as permit limitations, or prescribe monitoring to determine the appropriate implicit limitations as necessary, however, in this case, the NILs are very stringent and therefore the Division will automatically calculate the ADBACs for comparison.

The final two significance determination tests (bioaccumulative and concentration) need to be applied, to determine if AD limits are applicable. For the bioaccumulative test, the determination of the baseline water quality (BWQ), the baseline water quality loading (BWQload), the threshold load (TL) and the threshold load concentration (TL conc) needs to occur. For the concentration test, the BWQ, significant concentration thresholds (SCT) and antidegradation based average concentrations (ADBACs) need to be calculated. These calculations are explained in the following sections, and each significance determination test will be performed as the necessary calculations are complete. The AD low flow may also need to be calculated when determining the BWQ for an existing discharger (as of Sept 2000) when upstream water quality data are used.

Determination of Baseline Water Quality (BWQ)

The BWQ is the ambient condition of the water quality as of September 30, 2000. The BWQ defines the baseline low flow pollutant concentration, and for bioaccumulative toxic pollutants, the baseline load. The BWQ is to take into account the influence of the discharger if the discharge was in place prior to September 30, 2000. In such a case, data from a downstream location should be used to determine the BWQ. If only upstream data is available, then a mass balance equation may be applied, using the facilities effluent data to determine the BWQ. If the discharge was not present prior to September 30, 2000, then the influence of that discharge would not be taken into account in determining the BWQ. If the BWQ has already been determined in a previous WQA AD evaluation, it may not need to be recalculated as the BWQ is the water quality as of September 30, 2000, and therefore should not change unless additional data is obtained or the calculations were in error.

Vail

The BWQ concentrations for Vail WWTF were correctly determined for all pollutants except TIN, total recoverable molybdenum, total recoverable and dissolved uranium, and sulfide as part of a previous WQA. These are summarized in Table A-10a.

Table A-10a
Vail WWTF BWQ Concentrations Based on Previous Determinations

Pollutant	*BWQ*	*WQS*
TRC (mg/l)	0	0.011
As, Dis (µg/l)	0	340
Cr+3, TR (µg/l)	0	50
Cr+3, Dis (µg/l)	0	145
Cr+6, Dis (µg/l)	4.1	11
Cu, Dis (µg/l)	12	18
CN, Free (µg/l)	0	5
Fe, TR (µg/l)	37	1000

Table A-10a Vail WWTF BWQ Concentrations Based on Previous Determinations		
Pollutant	***BWQ***	***WQS***
Pb, Dis (µg/l)	1.0	6
Mn, Dis (µg/l)	163	2164
Hg, Tot (µg/l)	0	0.01
Ni, Dis (µg/l)	0	104
Se, Dis (µg/l)	0	4.6
Zn, Dis (µg/l)	40	254

Consistent with current Division procedures, the BWQ concentrations for TIN, total recoverable molybdenum, dissolved and total recoverable uranium, and sulfide should be established so that it can be used as part of an antidegradation review.

This discharger was in place as of September 30, 2000, and therefore the BWQ will include the influence of the discharger. TIN and total recoverable molybdenum, data collected at USGS 393823106240000 (Gore Creek below Red Sandstone Creek at Vail , CO), located approximately 0.4 miles downstream from the Vail WWTF, and dissolved uranium data collected at CDPHE WQX-12554B (Gore Creek at Westhaven Ln blw Vail WWTP), located approximately 0.3 miles downstream from the Vail WWTF, were determined to be representative of fully mixed condition downstream from the facility, without other influences, and thus the data were used to determine the BWQ concentrations. Since the data were collected downstream of the discharge, it takes into account the contribution of the facility.

Currently, it is the Division's approach to evaluate five years of ambient water quality data, if available, for the five years prior to September 30, 2000, when determining the BWQ. Data from these locations were available for August 1996 for TIN and total recoverable molybdenum and 2013 for dissolved uranium.

The ambient water quality data are summarized in Table A-10b. The BWQ concentrations based on these data, represented by the 50th percentile for total recoverable metals and total metals, the geometric mean for coliforms, and the 85th percentile for dissolved metals and other pollutants, are summarized in Table A-10c.

Table A-10b Vail WWTF Ambient Water Quality Data Summary for AD Period						
Parameter	***Number of Samples***	***15th Percentile***	***50th Percentile***	***85th Percentile***	***Mean***	***Location***
Total Inorganic Nitrogen as N (mg/l)	1	0.57	0.57	0.57	0.57	Downstream
Mo, TR (µg/l)	1	0	0	0	0	Downstream
U, Dis (µg/l)	2	1.5	1.6	1.7	1.6	Downstream

Table A-10c Vail WWTF BWQ Concentrations for Potential Pollutants of Concern Based on Downstream Ambient Water Quality Concentrations		
Pollutant	***BWQ***	***WQS***
Total Inorganic Nitrogen as N (mg/l)	0.57	10
Mo, TR (µg/l)	0	160
U, Dis (µg/l)	1.7	3,686

No data were available for total recoverable uranium and sulfide, and it was not appropriate to assume an effluent concentration equal to zero. Absent effluent data for these parameters, the Division procedures are to forgo calculations of BWQ concentrations until such time as comparable data are available. For this reason, the

BWQ concentrations for total recoverable uranium and sulfide are not calculated and these parameters are not included in the evaluation that follows.

In cases where the BWQ concentration exceeds the water quality standard, the calculated BWQ concentration must then be set equal to the water quality standard. This did not occur for any of the pollutants.

Avon

The BWQ concentrations for Avon WWTF were correctly determined for all pollutants except TIN, dissolved arsenic, dissolved and total recoverable trivalent chromium, dissolved hexavalent chromium, total recoverable molybdenum, and dissolved and total recoverable uranium as part of a previous WQA. These are summarized in Table A-10d.

Table A-10d
Avon WWTF BWQ Concentrations Based on Previous Determinations

Pollutant	*BWQ*	*WQS*
E. coli (#/100 ml)	0	126
TRC (mg/l)	0	0.011
Cd, Dis (µg/l)	0.53	0.64
Cu, Dis (µg/l)	3.8	14
CN, Free (µg/l)	0.020	5.0
Fe, TR (µg/l)	400	1,000
Pb, Dis (µg/l)	0	4.5
Mn, Dis (µg/l)	938	1,976
Ni, Dis (µg/l)	0	82
Se, Dis (µg/l)	0	4.6
Zn, Dis (µg/l)	262	198

Consistent with current Division procedures, the BWQ concentrations for TIN, dissolved arsenic, dissolved and total recoverable trivalent chromium, dissolved hexavalent chromium, total recoverable molybdenum, and dissolved and total recoverable uranium should be established so that it can be used as part of an antidegradation review.

This discharger was in place as of September 30, 2000, and therefore the BWQ will include the influence of the discharger. TIN and dissolved arsenic data collected at WQCD 21COL001-000076 (Eagle River at Edwards, CO), located approximately 2.5 miles downstream from the Avon WWTF, and dissolved uranium data collected from WQCD 12502H (Eagle River blw Lake Creek in Edwards), located 5.8 miles downstream from the Avon WWTF, were determined to be representative of fully mixed condition downstream from the facility, without other influences, and thus the data were used to determine the BWQ concentrations. Since the data were collected downstream of the discharge, it takes into account the contribution of the facility.

Currently, it is the Division's approach to evaluate five years of ambient water quality data, if available, for the five years prior to September 30, 2000, when determining the BWQ. Data from these locations were available for a period of record of October 1996 through October 1997 for TIN and dissolved arsenic and 2016 for dissolved uranium.

The ambient water quality data are summarized in Table A-10e. The BWQ concentrations based on these data, represented by the 50th percentile for total recoverable metals and total metals, the geometric mean for coliforms, and the 85th percentile for dissolved metals and other pollutants, are summarized in Table A-10f.

Table A-10e
Avon WWTF Ambient Water Quality Data Summary for AD Period

Parameter	*Number of Samples*	*15th Percentile*	*50th Percentile*	*85th Percentile*	*Mean*	*Location*

Table A-10e Avon WWTF Ambient Water Quality Data Summary for AD Period						
Parameter	*Number of Samples*	*15th Percentile*	*50th Percentile*	*85th Percentile*	*Mean*	*Location*
As, Dis (µg/l)	4	0	0	0	0	Downstream
U, Dis (µg/l)	1	1.2	1.2	1.2	1.2	Downstream

Table A-10f Avon WWTF BWQ Concentrations for Potential Pollutants of Concern Based on Downstream Ambient Water Quality Concentrations		
Pollutant	*BWQ*	*WQS*
As, Dis (µg/l)	0	340
Cr+6, Dis (µg/l)	0	11
Mo, TR (µg/l)	0.14	160
U, Dis (µg/l)	1.2	2,728

No data were available for total recoverable and dissolved trivalent chromium and total recoverable uranium, and it was not appropriate to assume an effluent concentration equal to zero. Absent effluent data for these parameters, the Division procedures are to forgo calculations of BWQ concentrations until such time as comparable data are available. For this reason, the BWQ concentrations for total recoverable and dissolved trivalent chromium and total recoverable uranium are not calculated and these parameters are not included in the evaluation that follows.

In cases where the BWQ concentration exceeds the water quality standard, the calculated BWQ concentration must then be set equal to the water quality standard. This occurred for dissolved zinc.

Edwards

The BWQ concentrations for Edwards WWTF were correctly determined for all pollutants except TIN, total recoverable trivalent chromium, total recoverable molybdenum, and total recoverable and dissolved uranium as part of a previous WQA. These are summarized in Table A-10g.

Table A-10g Edwards WWTF BWQ Concentrations Based on Previous Determinations		
Pollutant	*BWQ*	*WQS*
E. coli (#/100 ml)	15	126
TRC (mg/l)	0	0.011
As, Dis (µg/l)	0	340
Cd, Dis (µg/l)	0.17	0.62
Cr+3, TR (µg/l)	0	50
Cr+6, Dis (µg/l)	0	11
CN, Free (µg/l)	0	5
Fe, TR (µg/l)	557	1,000
Pb, Dis (µg/l)	0	4.3
Mn, Dis (µg/l)	76	1,949
Ni, Dis (µg/l)	0	79
Se, Dis (µg/l)	0	4.6
Ag, Dis (µg/l)	0	0.18
Zn, Dis (µg/l)	45	191

Consistent with current Division procedures, the BWQ concentrations for TIN, dissolved trivalent chromium, total recoverable molybdenum, and total recoverable and dissolved uranium should be established so that it can be used as part of an antidegradation review.

This discharger was in place as of September 30, 2000, and therefore the BWQ will include the influence of the discharger. Data collected at WQX-12502A (Eagle River at Eagle Springs Golf Course), located approximately 4 miles downstream from the Edwards WWTF, were determined to be representative of fully mixed condition downstream from the facility, without other influences, and thus the data were used to determine the BWQ concentrations. Since the data were collected downstream of the discharge, it takes into account the contribution of the facility.

Currently, it is the Division's approach to evaluate five years of ambient water quality data, if available, for the five years prior to September 30, 2000, when determining the BWQ. Data from this location were available for a period of record of October 1997 through March 1999 for the following pollutants: TIN and total recoverable molybdenum.

The ambient water quality data are summarized in Table A-10h. The BWQ concentrations based on these data, represented by the 50th percentile for total recoverable metals and total metals, the geometric mean for coliforms, and the 85th percentile for dissolved metals and other pollutants, are summarized in Table A-10i.

Table A-10h
Edwards WWTF Ambient Water Quality Data Summary for AD Period

Parameter	*Number of Samples*	*15th Percentile*	*50th Percentile*	*85th Percentile*	*Mean*	*Location*
Mo, TR (µg/l)	1	2.5	2.5	2.5	2.5	Downstream

Table A-10i
Edwards WWTF BWQ Concentrations for Potential Pollutants of Concern Based on Downstream Ambient Water Quality Concentrations

Pollutant	*BWQ*	*WQS*
Cr+3, Dis (µg/l)	0	112
Mo, TR (µg/l)	0	160

No data were available for total recoverable and dissolved uranium, and it was not appropriate to assume an effluent concentration equal to zero. Absent effluent data for these parameters, the Division procedures are to forgo calculations of BWQ concentrations until such time as comparable data are available. For this reason, the BWQ concentrations for total recoverable and dissolved trivalent chromium and total recoverable uranium are not calculated and these parameters are not included in the evaluation that follows.

In cases where the BWQ concentration exceeds the water quality standard, the calculated BWQ concentration must then be set equal to the water quality standard. This occurred for none of the pollutants.

Note that the AD requirements outlined in *The Basic Standards and Methodologies for Surface Water* specify that chronic numeric standards should be used in the antidegradation review; however, where there is only an acute standard, the acute standard should be used. Chronic standards were available for all pollutants except TIN, dissolved arsenic, total recoverable trivalent chromium, and cyanide.

Bioaccumulative Significance Test

Vail WWTF

For mercury, which is a bioaccumulative toxic pollutant, the bioaccumulative significance test can now be completed with some minor additional calculations for the baseline water quality load (BWQload), the threshold

load (TL), the new load based on the WQBELs, and the threshold load concentration (TL conc). These terms are defined by the following equations:

BWQload = BWQ (from Table A-10a*) * AD low flow (chronic) * 8.34

Threshold Load (TL) = 0.1 * BWQload

Threshold Load Concentration (TL Conc) = TL ÷ new design flow ÷ 8.34

WQBEL Load = new WQBEL (concentration) * new design flow * 8.34

The discharge is considered to be insignificant if the new load (WQBEL load) is less than the threshold load (TL), or if the new WQBEL (concentration) is less than the TL Conc. The results of the calculations and the comparisons are shown in Table A-11.

Table A-11
Bioaccumulative Significance Test

Parameter	Threshold Load Concentration (TL Conc)	Threshold Load (TL)	WQBEL Conc	WQBEL Load
Mercury, Total	0	0	0.034	0.77

For mercury the TL Conc is less than the WQBEL Conc. The antidegradation review for this parameter will continue with the calculation of the SCT and ADBACs, in the same manner as the other non-bioaccumulative toxic pollutants.

Significant Concentration Threshold

The SCT is defined as the BWQ plus 15% of the baseline available increment (BAI), and is calculated by the following equation:

$$SCT = (0.15 \times BAI) + BWQ$$

The BAI is the concentration increment between the baseline water quality and the water quality standard, expressed by the term (WQS – BWQ). Substituting this into the SCT equation results in:

$$SCT = 0.15 \times (WQS\text{-}BWQ) + BWQ$$

Where,

WQS = Chronic standard or, in the absence of a chronic standard, the acute standard
BWQ = Value from Table A-10

The AMMTOX model is used to determine the SCTs for ammonia. Because the new ammonia standard is based on a function of the pH and temperature of the receiving stream, the WQS changes moving downstream from a discharge point. The BWQ and the SCT also change moving downstream. The AMMTOX model calculates these values for every tenth of a mile, for up to 20 miles. Therefore, it is impractical to show the SCTs for every part of the stream for all 12 months. These values are available in the AMMTOX model, if requested.

Determination of the Antidegradation Based Average Concentrations

Antidegradation based average concentrations (ADBACs) are determined for all parameters except ammonia, by using the mass-balance equation, and substituting the SCT in place of the water quality standard, as shown in the following equation:

$$ADBAC = \frac{SCT \times Q_3 - M_1 \times Q_1}{Q_2}$$

Where,

Q_1 = Upstream low flow (1E3 or 30E3 based on either the chronic or acute standard)
Q_2 = Current design capacity of the facility
Q_3 = Downstream flow (Q_1 + Q_2)
M_1 = Current ambient water quality concentration (From Section III)
SCT = Significant concentration threshold

The ADBACs were calculated using the SCTs, and are set forth in Table A-12a, A-12b, and A-12c for Vail, Avon, and Edwards WWTFs respectively.

Table A-12a
Vail WWTF SCTs and ADBACs

Pollutant	Q_1(cfs)	Q_2 (cfs)	Q_3 (cfs)	M_1	*SCT*	*ADBAC*
TRC (mg/l)	10	4.2	14.2	0	0.0017	0.0057
Total Inorganic Nitrogen as N (mg/l)	7.2	4.2	11.4	0.38	2.0	4.8
As, Dis (µg/l)	7.2	4.2	11.4	0.11	51	138
Cr+3, TR (µg/l)	7.2	4.2	11.4	0	7.5	20
Cr+3, Dis (µg/l)	10	4.2	14.2	0	18	61
Cr+6, Dis (µg/l)	10	4.2	14.2	0	5.1	17
Cu, Dis (µg/l)	10	4.2	14.2	2.3	12	35
CN, Free (µg/l)	7.2	4.2	11.4	0	0.75	2.0
Fe, TR (µg/l)	10	4.2	14.2	32	181	536
Pb, Dis (µg/l)	10	4.2	14.2	0.10	1.6	5.2
Mn, Dis (µg/l)	10	4.2	14.2	4.1	441	1,481
Mo, TR (µg/l)	10	4.2	14.2	1.6	24	77
Hg, Tot (µg/l)	10	4.2	14.2	0	0.0015	0.0051
Se, Dis (µg/l)	10	4.2	14.2	0	0.69	2.3
U, TR (µg/l)	7.2	4.2	11.4	1.7	5.9	13
U, Dis (µg/l)	10	4.2	14.2	1.8	44	1,483
Zn, Dis (µg/l)	10	4.2	14.2	4.0	66	214
Sulfide as H2S (mg/l)	10	4.2	14.2	0	0.00030	0.0010

Table A-12b
Avon WWTF SCTs and ADBACs

Pollutant	Q_1(cfs)	Q_2 (cfs)	Q_3 (cfs)	M_1	*SCT*	*ADBAC*
E. coli (#/100 ml)	38	6.7	44.7	7.0	19	87
TRC (mg/l)	38	6.7	44.7	0	0.0017	0.011
As, Dis (µg/l)	28	11	39	0.32	51	180
Cd, Dis (µg/l)	38	11	49	0.090	0.54	2.1
Cr+3, TR (µg/l)	28	11	39	0	7.5	27
Cr+3, Dis (µg/l)	38	11	49	0	17	76
Cr+6, Dis (µg/l)	38	11	49	0	1.7	7.6
Cu, Dis (µg/l)	38	11	49	3.3	5.3	12
CN, Free (µg/l)	28	11	39	0	0.77	2.7
Fe, TR (µg/l)	38	11	49	190	490	1,526

Table A-12b Avon WWTF SCTs and ADBACs						
Pollutant	***Q_1(cfs)***	***Q_2 (cfs)***	***Q_3 (cfs)***	***M_1***	***SCT***	***ADBAC***
Pb, Dis (µg/l)	38	11	49	0.30	0.65	1.9
Mn, Dis (µg/l)	38	11	49	43	1,090	4,707
Mo, TR (µg/l)	38	11	49	0	24	107
Ni, Dis (µg/l)	38	11	49	0	12	53
Se, Dis (µg/l)	38	11	49	0.23	0.69	2.3
U, TR (µg/l)	28	11	39	0	4.5	16
U, Dis (µg/l)	38	11	49	0	392	1,746
Zn, Dis (µg/l)	38	11	49	43	191	702

Table A-12c Edwards WWTF SCTs and ADBACs						
Pollutant	***Q_1(cfs)***	***Q_2 (cfs)***	***Q_3 (cfs)***	***M_1***	***SCT***	***ADBAC***
E. coli (#/100 ml)	49	4.4	53.4	7.0	32	310
TRC (mg/l)	49	4.4	53.4	0	0.0017	0.021
As, Dis (µg/l)	28	11	39	0.32	51	180
Cd, Dis (µg/l)	38	11	49	0.090	0.24	0.76
Cr+3, TR (µg/l)	28	11	39	0	7.5	27
Cr+3, Dis (µg/l)	38	11	49	0	17	76
Cr+6, Dis (µg/l)	38	11	49	0	1.7	7.6
CN, Free (µg/l)	28	11	39	0	0.75	2.7
Fe, TR (µg/l)	38	11	49	190	640	2,195
Pb, Dis (µg/l)	38	11	49	0.30	0.65	1.9
Mn, Dis (µg/l)	38	11	49	43	357	1,442
Mo, TR (µg/l)	38	11	49	0	24	107
Ni, Dis (µg/l)	38	11	49	0	12	53
Se, Dis (µg/l)	38	11	49	0.23	0.69	2.3
Ag, Dis (µg/l)	38	11	49	0	0.027	0.12
U, TR (µg/l)	28	11	39	0	4.5	16
U, Dis (µg/l)	38	11	49	0	391	1,742
Zn, Dis (µg/l)	38	11	49	43	67	150

ADBACs for total ammonia are calculated by substituting the SCT in place of the chronic standard in the AMMTOX model, which generates monthly ADBACs as shown in Tables A-12a, A-12b, and A12-c respectively for Vail, Avon, and Edwards WWTFs. However, it is the procedure of the Division to either impose the minimum of the calculated monthly ADBACs or determine average ADBACs for three groups. The ADBAC groups that were determined are summarized in Tables A-12d, A-12e, and A-12f for Vail, Avon, and Edwards WWTFs respectively.

Table A-12d Vail WWTF ADBACs for Ammonia	
Pollutant	***Monthly ADBAC***
NH_3, Total (mg/l) Jan	1.1
NH_3, Total (mg/l) Feb	1.0
NH_3, Total (mg/l) Mar	1.1
NH_3, Total (mg/l) Apr	0.9
NH_3, Total (mg/l) May	1.2
NH_3, Total (mg/l) Jun	3.0
NH_3, Total (mg/l) Jul	1.8
NH_3, Total (mg/l) Aug	1.3

Table A-12d Vail WWTF ADBACs for Ammonia	
Pollutant	***Monthly ADBAC***
NH_3, Total (mg/l) Sep	1.4
NH_3, Total (mg/l) Oct	1.0
NH_3, Total (mg/l) Nov	0.8
NH_3, Total (mg/l) Dec	0.9

Table A-12e Avon WWTF ADBACs for Ammonia	
Pollutant	***Monthly ADBAC***
NH_3, Total (mg/l) Jan	0.7
NH_3, Total (mg/l) Feb	0.7
NH_3, Total (mg/l) Mar	0.9
NH_3, Total (mg/l) Apr	1.0
NH_3, Total (mg/l) May	1.2
NH_3, Total (mg/l) Jun	1.4
NH_3, Total (mg/l) Jul	1.1
NH_3, Total (mg/l) Aug	1.1
NH_3, Total (mg/l) Sep	1.1
NH_3, Total (mg/l) Oct	0.9
NH_3, Total (mg/l) Nov	0.7
NH_3, Total (mg/l) Dec	0.6

Table A-12f Edwards WWTF ADBACs for Ammonia	
Pollutant	***Monthly ADBAC***
NH_3, Total (mg/l) Jan	0.8
NH_3, Total (mg/l) Feb	0.8
NH_3, Total (mg/l) Mar	0.9
NH_3, Total (mg/l) Apr	1.0
NH_3, Total (mg/l) May	1.3
NH_3, Total (mg/l) Jun	1.4
NH_3, Total (mg/l) Jul	1.1
NH_3, Total (mg/l) Aug	1.1
NH_3, Total (mg/l) Sep	1.0
NH_3, Total (mg/l) Oct	0.9
NH_3, Total (mg/l) Nov	0.8
NH_3, Total (mg/l) Dec	0.6

Concentration Significance Tests

The concentration significance determination test considers the cumulative impact of the discharges over the baseline condition. In order to be insignificant, the new or increased discharge may not increase the actual instream concentration by more than 15% of the available increment over the baseline condition. The insignificant level is the ADBAC calculated in Tables A-12a through A-12f above. If the new WQBEL concentration (or potentially the TL Conc for bioaccumulatives) is greater than the ADBAC, an AD limit would be applied. This comparison is shown in Tables A-13a through A-13c.

Table A-13a Vail WWTF Concentration Significance Test			
Pollutant	***New WQBEL***	***ADBAC***	***Concentration Test Result***
TRC (mg/l)	0.037	0.0057	Significant
Total Inorganic Nitrogen as N (mg/l)	26	4.8	Significant
NH3, Total (mg/l) Jan	8.2	1.1	Significant
NH3, Total (mg/l) Feb	7.4	1.0	Significant
NH3, Total (mg/l) Mar	7.8	1.1	Significant
NH3, Total (mg/l) Apr	7.3	0.9	Significant
NH3, Total (mg/l) May	9.9	1.2	Significant
NH3, Total (mg/l) Jun	21	3.0	Significant
NH3, Total (mg/l) Jul	12	1.8	Significant
NH3, Total (mg/l) Aug	9.2	1.3	Significant
NH3, Total (mg/l) Sep	9.9	1.4	Significant
NH3, Total (mg/l) Oct	8.2	1.0	Significant
NH3, Total (mg/l) Nov	6.6	0.8	Significant
NH3, Total (mg/l) Dec	7.0	0.9	Significant
As, Dis (µg/l)	923	138	Significant
Cr+3, TR (µg/l)	136	20	Significant
Cr+3, Dis (µg/l)	412	61	Significant
Cr+6, Dis (µg/l)	37	17	Significant
Cu, Dis (µg/l)	45	35	Significant
CN, Free (µg/l)	14	2.0	Significant
Fe, TR (µg/l)	3,305	536	Significant
Pb, Dis (µg/l)	16	5.2	Significant
Mn, Dis (µg/l)	6,810	1,481	Significant
Mo, TR (µg/l)	537	77	Significant
Hg, Tot (µg/l)	0.034	0.0051	Significant
Se, Dis (µg/l)	16	2.3	Significant
U, TR (µg/l)	79	13	Significant
U, Dis (µg/l)	9,871	1,483	Significant
Zn, Dis (µg/l)	700	214	Significant
Sulfide as H2S (mg/l)	0.0068	0.0010	Significant

Table A-13b Avon WWTF Concentration Significance Test			
Pollutant	***New WQBEL***	***ADBAC***	***Concentration Test Result***
E. coli (#/100 ml)	801	87	Significant
TRC (mg/l)	0.073	0.011	Significant
NH3, Total (mg/l) Feb	5.3	0.7	Significant
NH3, Total (mg/l) Mar	6.2	0.9	Significant
NH3, Total (mg/l) Apr	7.1	1.0	Significant
NH3, Total (mg/l) May	8.8	1.2	Significant
NH3, Total (mg/l) Jun	13	1.4	Significant
NH3, Total (mg/l) Jul	9.0	1.1	Significant
NH3, Total (mg/l) Aug	8.5	1.1	Significant
NH3, Total (mg/l) Sep	7.3	1.1	Significant
NH3, Total (mg/l) Oct	7.3	0.9	Significant

Table A-13b Avon WWTF Concentration Significance Test			
Pollutant	***New WQBEL***	***ADBAC***	***Concentration Test Result***
NH3, Total (mg/l) Nov	5.4	0.7	Significant
NH3, Total (mg/l) Dec	5.1	0.6	Significant
As, Dis (µg/l)	1,205	180	Significant
Cd, Dis (µg/l)	2.5	2.1	Significant
Cr+3, TR (µg/l)	177	27	Significant
Cr+3, Dis (µg/l)	499	76	Significant
Cr+6, Dis (µg/l)	49	7.6	Significant
Cu, Dis (µg/l)	51	12	Significant
CN, Free (µg/l)	18	2.7	Significant
Fe, TR (µg/l)	3,798	1,526	Significant
Pb, Dis (µg/l)	18	1.9	Significant
Mn, Dis (µg/l)	8,533	4,707	Significant
Mo, TR (µg/l)	713	107	Significant
Ni, Dis (µg/l)	352	53	Significant
Se, Dis (µg/l)	20	2.3	Significant
U, TR (µg/l)	106	16	Significant
U, Dis (µg/l)	11,609	1,746	Significant
Zn, Dis (µg/l)	702	702	Insignificant

Table A-13c Edwards WWTF Concentration Significance Test			
Pollutant	***New WQBEL***	***ADBAC***	***Concentration Test Result***
E. coli (#/100 ml)	1,451	310	Significant
TRC (mg/l)	0.13	0.021	Significant
NH3, Total (mg/l) Feb	5.3	0.8	Significant
NH3, Total (mg/l) Mar	6.2	0.9	Significant
NH3, Total (mg/l) Apr	7.1	1.0	Significant
NH3, Total (mg/l) May	8.9	1.3	Significant
NH3, Total (mg/l) Jun	13	1.4	Significant
NH3, Total (mg/l) Jul	9	1.1	Significant
NH3, Total (mg/l) Aug	8.6	1.1	Significant
NH3, Total (mg/l) Sep	7.4	1.0	Significant
NH3, Total (mg/l) Oct	7.3	0.9	Significant
NH3, Total (mg/l) Nov	5.3	0.8	Significant
NH3, Total (mg/l) Dec	5.1	0.6	Significant
As, Dis (µg/l)	1,205	180	Significant
Cd, Dis (µg/l)	2.5	0.76	Significant
Cr+3, TR (µg/l)	177	27	Significant
Cr+3, Dis (µg/l)	499	76	Significant
Cr+6, Dis (µg/l)	49	7.6	Significant
CN, Free (µg/l)	18	2.7	Significant
Fe, TR (µg/l)	3,798	2,195	Significant
Pb, Dis (µg/l)	18	1.9	Significant
Mn, Dis (µg/l)	8,533	1,442	Significant
Mo, TR (µg/l)	713	107	Significant
Ni, Dis (µg/l)	352	53	Significant

Table A-13c Edwards WWTF Concentration Significance Test			
Pollutant	***New WQBEL***	***ADBAC***	***Concentration Test Result***
Se, Dis (µg/l)	20	2.3	Significant
Ag, Dis (µg/l)	0.80	0.12	Significant
U, TR (µg/l)	106	16	Significant
U, Dis (µg/l)	11,609	1,742	Significant
Zn, Dis (µg/l)	702	150	Significant

For dissolved zinc at the Avon WWTF, the WQBELs are less than the ADBAC and therefore, the concentration test results in an insignificant determination. The WQBELs are the final result of this WQA for these parameters and AD limitations are not necessary.

For all other parameters, the WQBELs are greater than the ADBACs and therefore, the concentration test results in a significance determination, and the antidegradation based effluent limitations (ADBELs) must be determined.

Antidegradation Based Effluent Limitations (ADBELs)

The ADBEL is defined as the potential limitation resulting from the AD evaluation, and may be either the ADBAC, the NIL, or may be based on the concentration associated with the threshold load concentration (for the bioaccumulative toxic pollutants). ADBACs, NILs and TLs have already been determined in the AD evaluation, and therefore to complete the evaluation, a final comparison of limitations needs to be completed.

Note that ADBACs and NILs are not applicable when the new WQBEL concentration (and loading as evaluated in the New and Increased Impacts Test) is less than the NIL concentration (and loading), or when the new WQBEL is less than the ADBAC.
Where an ADBAC or NIL applies, the permittee has the final choice between the two limitations. A NIL is applied as a 30-day average (and the acute WQBEL would also apply where applicable) while the ADBAC would be applied as a 2 year rolling average concentration. For the purposes of this WQA, the Division has made an attempt to determine whether the NIL or ADBAC will apply. The end results of this AD evaluation are in Tables A-14a through A-14c for Vail, Avon, and Edwards WWTFs respectively, including any parameter that was previously exempted from further AD evaluation, with the final potential limitation identified (NIL, WQBEL or ADBAC).

Table A-14a Vail WWTF Final Selection of WQBELs, NILs, and ADBACs				
Pollutant	***NIL***	***New WQBEL***	***ADBAC***	***Chosen Limit***
E. coli (#/100 ml)	1,350	412	NA	WQBEL
TRC (mg/l)	0.010	0.037	0.0057	NIL
Total Inorganic Nitrogen as N (mg/l)	22.7	26	4.8	NIL
NH3 as N, Tot (mg/l) Jan	2.0	8.2	1.1	NIL
NH3 as N, Tot (mg/l) Feb	2.0	7.4	1.0	NIL
NH3 as N, Tot (mg/l) Mar	2.0	7.8	1.1	NIL
NH3 as N, Tot (mg/l) Apr	2.0	7.3	0.9	NIL
NH3 as N, Tot (mg/l) May	2.0	9.9	1.2	NIL
NH3 as N, Tot (mg/l) Jun	2.0	21	3.0	NIL*
NH3 as N, Tot (mg/l) Jul	2.0	12	1.8	NIL
NH3 as N, Tot (mg/l) Aug	2.0	9.2	1.3	NIL
NH3 as N, Tot (mg/l) Sep	2.0	9.9	1.4	NIL
NH3 as N, Tot (mg/l) Oct	2.0	8.2	1.0	NIL

Table A-14a Vail WWTF Final Selection of WQBELs, NILs, and ADBACs				
Pollutant	***NIL***	***New WQBEL***	***ADBAC***	***Chosen Limit***
NH3 as N, Tot (mg/l) Nov	2.0	6.6	0.8	NIL
NH3 as N, Tot (mg/l) Dec	2.0	7.0	0.9	NIL
As, TR (µg/l)	0.40	0.02	NA	WQBEL
As, Dis (µg/l)	NA	923	138	ADBAC
Cd, Dis (µg/l)	3.1	2.3	NA	WQBEL
Cr+3, TR (µg/l)	40	136	20	NIL
Cr+3, Dis (µg/l)	10	412	61	ADBAC
Cr+6, Dis (µg/l)	8.0	37	17	ADBAC
Cu, Dis (µg/l)	25	45	35	ADBAC
CN, Free (µg/l)	5.0	14	2.0	NIL
Fe, Dis (µg/l)	NA	974	NA	WQBEL
Fe, TR (µg/l)	80	3,305	536	ADBAC
Pb, Dis (µg/l)	11.5	16	5.2	NIL
Mn, Dis (µg/l) WS	NA	159	NA	WQBEL
Mn, Dis (µg/l) AQ	13.7	6,810	1,481	ADBAC
Mo, TR (µg/l)	12	537	77	ADBAC
Hg, Tot (µg/l)	0.020	0.034	0.0051	NIL
Ni, Dis (µg/l)	350	294	NA	WQBEL
Se, Dis (µg/l)	5.0	16	2.3	NIL
Ag, Dis (µg/l)	6.4	0.71	NA	WQBEL
U, TR (µg/l)	NA	79	13	ADBAC
U, Dis (µg/l)	NA	9,871	1,483	ADBAC
Zn, Dis (µg/l)	NA	700	214	ADBAC
Chloride (mg/l)	NA	819	NA	WQBEL
Sulfate (mg/l)	NA	736	NA	WQBEL
Sulfide as H2S (mg/l)	NA	0.0068	0.0010	ADBAC
Nonylphenol (µg/l)	NA	22	NA	WQBEL

*Although the ADBAC is higher than the NIL, the NIL will be chosen unless the permittee requests otherwise.

For the following parameters, TRC, TIN, Ammonia, total recoverable trivalent chromium, cyanide, dissolved lead, total mercury, and dissolved selenium, the NILs have been established for this facility. The NILs were selected as they are less stringent than the ADBACs. However, the facility has the final choice between the NILs and ADBACs, and if the ADBAC is preferred, the permit writer should be contacted.

For the following parameters, dissolved arsenic, dissolved trivalent and hexavalent chromium, dissolved copper, total recoverable iron, dissolved manganese, total recoverable molybdenum, total recoverable and dissolved uranium, dissolved zinc, and sulfide, the ADBACs have been established for this facility. The ADBACs were selected as they are more stringent than the WQBELs and less stringent than the NILs, or perhaps due to the application as a two-year rolling average. However, the facility has the final choice between the NILs and ADBACs, and if the NIL is preferred, the permit writer should be contacted.

Table A-14b Avon WWTF Final Selection of WQBELs, NILs, and ADBACs				
Pollutant	***NIL***	***New WQBEL***	***ADBAC***	***Chosen Limit***
E. coli (#/100 ml)	314	801	87	NIL
TRC (mg/l)	0.030	0.073	0.011	NIL
Total Inorganic Nitrogen as N (mg/l)	60.6	33	NA	WQBEL
NH3 as N, Tot (mg/l) Jan	6.4	5.2	NA	WQBEL
NH3 as N, Tot (mg/l) Feb	3.1	5.3	0.7	NIL

Table A-14b Avon WWTF Final Selection of WQBELs, NILs, and ADBACs				
Pollutant	***NIL***	***New WQBEL***	***ADBAC***	***Chosen Limit***
NH3 as N, Tot (mg/l) Mar	2.4	6.2	0.9	NIL
NH3 as N, Tot (mg/l) Apr	3.5	7.1	1.0	NIL
NH3 as N, Tot (mg/l) May	6.7	8.8	1.2	NIL
NH3 as N, Tot (mg/l) Jun	8.7	13	1.4	NIL
NH3 as N, Tot (mg/l) Jul	3.8	9	1.1	NIL
NH3 as N, Tot (mg/l) Aug	3.3	8.5	1.1	NIL
NH3 as N, Tot (mg/l) Sep	2.7	7.3	1.1	NIL
NH3 as N, Tot (mg/l) Oct	2.9	7.3	0.9	NIL
NH3 as N, Tot (mg/l) Nov	3.0	5.4	0.7	NIL
NH3 as N, Tot (mg/l) Dec	3.2	5.1	0.6	NIL
As, TR (µg/l)	0.73	0.02	NA	WQBEL
As, Dis (µg/l)	NA	1,205	180	ADBAC
Cd, Dis (µg/l)	0.26	2.5	2.1	ADBAC
Cr+3, TR (µg/l)	10	177	27	ADBAC
Cr+3, Dis (µg/l)	NA	499	76	ADBAC
Cr+6, Dis (µg/l)	17	49	7.6	NIL
Cu, Dis (µg/l)	17	51	12	NIL
CN, Free (µg/l)	8.0	18	2.7	NIL
Fe, Dis (µg/l)	NA	1,095	NA	WQBEL
Fe, TR (µg/l)	210	3,798	1,526	ADBAC
Pb, Dis (µg/l)	NA	18	1.9	ADBAC
Mn, Dis (µg/l) WS	NA	943	NA	WQBEL
Mn, Dis (µg/l) AQ	55	8,533	4,707	ADBAC
Mo, TR (µg/l)	1.5	713	107	ADBAC
Hg, Tot (µg/l)	0.059	0.045	NA	WQBEL
Ni, Dis (µg/l)	NA	352	53	ADBAC
Se, Dis (µg/l)	NA	20	2.3	ADBAC
Ag, Dis (µg/l)	1.0	0.80	NA	WQBEL
U, TR (µg/l)	NA	106	16	ADBAC
U, Dis (µg/l)	NA	11,609	1,746	ADBAC
Zn, Dis (µg/l)	NA	702	702	WQBEL
Chloride (mg/l)	NA	1,069	NA	WQBEL
Sulfate (mg/l)	NA	910	NA	WQBEL
Sulfide as H2S (mg/l)	0.090	0.0089	NA	WQBEL
Nonylphenol (µg/l)	NA	29	NA	WQBEL

For the following parameters, E. coli, TRC, ammonia (Feb-Dec), dissolved hexavalent chromium, dissolved copper, and cyanide, the NILs have been established for this facility. The NILs were selected as they are less stringent than the ADBACs. However, the facility has the final choice between the NILs and ADBACs, and if the ADBAC is preferred, the permit writer should be contacted.

For the following parameters, dissolved arsenic, dissolved cadmium, total recoverable and dissolved trivalent chromium, total recoverable iron, dissolved lead, dissolved manganese, total recoverable molybdenum, dissolved nickel, dissolved selenium, and total recoverable and dissolved uranium, the ADBACs have been established for this facility. The ADBACs were selected as they are more stringent than the WQBELs and less stringent than the NILs, or perhaps due to the application as a two-year rolling average. However, the facility has the final choice between the NILs and ADBACs, and if the NIL is preferred, the permit writer should be contacted.

Table A-14c Edwards WWTF Final Selection of WQBELs, NILs, and ADBACs				
Pollutant	***NIL***	***New WQBEL***	***ADBAC***	***Chosen Limit***
E. coli (#/100 ml)	274	1,451	310	ADBAC
TRC (mg/l)	0.026	0.13	0.021	NIL
Total Inorganic Nitrogen as N (mg/l)	37	33	NA	WQBEL
NH3 as N, Tot (mg/l) Jan	6.4	5.3	NA	WQBEL
NH3 as N, Tot (mg/l) Feb	3.1	5.3	0.8	NIL
NH3 as N, Tot (mg/l) Mar	2.4	6.2	0.9	NIL
NH3 as N, Tot (mg/l) Apr	3.5	7.1	1.0	NIL
NH3 as N, Tot (mg/l) May	6.7	8.9	1.3	NIL
NH3 as N, Tot (mg/l) Jun	8.7	13	1.4	NIL
NH3 as N, Tot (mg/l) Jul	4.1	9.0	1.1	NIL
NH3 as N, Tot (mg/l) Aug	2.9	8.6	1.1	NIL
NH3 as N, Tot (mg/l) Sep	2.7	7.4	1.0	NIL
NH3 as N, Tot (mg/l) Oct	3.7	7.3	0.9	NIL
NH3 as N, Tot (mg/l) Nov	3.0	5.3	0.8	NIL
NH3 as N, Tot (mg/l) Dec	3.2	5.1	0.6	NIL
As, TR (µg/l)	7.0	0.02	NA	WQBEL
As, Dis (µg/l)	NA	1,205	180	ADBAC
Cd, Dis (µg/l)	0.17	2.5	0.76	ADBAC
Cr+3, TR (µg/l)	8.7	177	27	ADBAC
Cr+3, Dis (µg/l)	NA	499	76	ADBAC
Cr+6, Dis (µg/l)	11	49	7.6	NIL
Cu, Dis (µg/l)	99	51	NA	WQBEL
CN, Free (µg/l)	4.4	18	2.7	NIL
Fe, Dis (µg/l)	NA	1,095	NA	WQBEL
Fe, TR (µg/l)	61	3,798	2,195	ADBAC
Pb, Dis (µg/l)	0.87	18	1.9	ADBAC
Mn, Dis (µg/l) WS	NA	943	NA	WQBEL
Mn, Dis (µg/l) AQ	24	8,533	1,442	ADBAC
Mo, TR (µg/l)	4.4	713	107	ADBAC
Hg, Tot (µg/l)	0.174	0.045	NA	WQBEL
Ni, Dis (µg/l)	5.1	352	53	ADBAC
Se, Dis (µg/l)	0.44	20	2.3	ADBAC
Ag, Dis (µg/l)	0.57	0.80	0.12	NIL
U, TR (µg/l)	NA	106	16	ADBAC
U, Dis (µg/l)	NA	11,609	1,742	ADBAC
Zn, Dis (µg/l)	96	702	150	ADBAC
Chloride (mg/l)	NA	1,069	NA	WQBEL
Sulfate (mg/l)	NA	910	NA	WQBEL
Sulfide as H2S (mg/l)	NA	0.0089	NA	WQBEL
Nonylphenol (µg/l)	NA	29	NA	WQBEL

For the following parameters, TRC, TIN, ammonia (Feb-Dec), dissolved hexavalent chromium, cyanide, and dissolved silver, the NILs have been established for this facility. The NILs were selected as they are less stringent than the ADBACs. However, the facility has the final choice between the NILs and ADBACs, and if the ADBAC is preferred, the permit writer should be contacted.

For the following parameters, E. coli, dissolved arsenic, dissolved cadmium, total recoverable and dissolved trivalent chromium, total recoverable iron, dissolved lead, dissolved manganese, total recoverable molybdenum, dissolved nickel, dissolved selenium, total recoverable and dissolved uranium, and dissolved zinc, the ADBACs have been established for this facility. The ADBACs were selected as they are more stringent than the WQBELs and less stringent than the NILs, or perhaps due to the application as a two-year rolling average. However, the facility has the final choice between the NILs and ADBACs, and if the NIL is preferred, the permit writer should be contacted.

Alternatives Analysis

If the permittee does not want to accept an effluent limitation that results in no increased impact (NIL) or in insignificant degradation (ADBAC), the applicant may conduct an alternatives analysis (AA). The AA examines alternatives that may result in no degradation or less degradation, and are economically, environmentally, and technologically reasonable. If the proposed activity is determined to be important economic or social development, a determination shall be made whether the degradation that would result from such regulated activity is necessary to accommodate that development. The result of an AA may be an alternate limitation between the ADBEL and the WQBEL, and therefore the ADBEL would not being applied. This option can be further explored with the Division. See Regulation 31.8 (3)(d), and the Antidegradation Guidance for more information regarding an alternatives analysis.

For a PEL, an AA must already be completed in conjunction with the facility's site application. Where the facility makes a reasonable effort to identify and assess less-degrading alternatives and can demonstrate that these alternatives are not economically feasible, the alternatives analysis that currently must be completed as part of the site application should be sufficient to satisfy the antidegradation review requirements set forth in *The Basic Standards and Methodologies for Surface Water, Regulation 31*, Section 31.8(3)(d).

VIII. Technology Based Limitations

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.

Regulations for Effluent Limitations

Regulation No. 62, the Regulations for Effluent Limitations, includes effluent limitations that apply to all discharges of wastewater to State waters, with the exception of storm water and agricultural return flows. These regulations are applicable to the discharge from the proposed discharge.

Table A-15 contains a summary of the applicable limitations for pollutants of concern at this facility.

Table A-15 Regulation 62 Based Limitations

Parameter	*30-Day Average*	*7-Day Average*	*Instantaneous Maximum*
BOD_5	30 mg/l	45 mg/l	NA
BOD_5 Percent Removal	85%	NA	NA
TSS, mechanical plant	30 mg/l	45 mg/l	NA
TSS Percent Removal	85%	NA	NA
Total Residual Chlorine	NA	NA	0.5 mg/l
pH	NA	NA	6.0-9.0 s.u.
Oil and Grease	NA	NA	10 mg/l

Nutrient Effluent Limitation Considerations

WQCC Regulation No. 85, the new *Nutrients Management Control Regulation*, includes technology based effluent limitations for total inorganic nitrogen and total phosphorus that currently, or will in the future, apply to many domestic wastewater discharges to State surface waters. These effluent limits for dischargers are to start being implemented in permitting actions as of July 1, 2013, and are shown in the two tables below:

Effluent Limitations Table at 85.5(1)(a)(iii)

For all Domestic Wastewater Treatment Works not identified in subsections (a)(i) or (ii) above(in Reg. 85) *and discharging prior to May 31, 2012 or for which a complete request for preliminary effluent limits has been submitted to the Division prior to May 31, 2012, the following numeric limits shall apply:*

Parameter	*Parameter Limitations*	
	Annual Median [1]	*95th Percentile [2]*
Total Phosphorus	*1.0 mg/l*	*2.5 mg/l*
Total Inorganic Nitrogen[3]	*15 mg/l*	*20 mg/l*

[1]Running Annual Median: The median of all samples taken in the most recent 12 calendar months.
[2]The 95th percentile of all samples taken in the most recent 12 calendar months.
[3]Determined as the sum of nitrate as N, nitrite as N, and ammonia as N.

Effluent Limitations Table at 85.5(1)(b)

For New Domestic Wastewater Treatment Works which submit a complete request for preliminary effluent limits to the Division on or after May 31, 2012, the following numeric limits shall apply:

Parameter	*Parameter Limitations*	
	Annual Median [1]	*95th Percentile [2]*
Total Phosphorus	*0.7 mg/l*	*1.75 mg/l*
Total Inorganic Nitrogen[3]	*7 mg/l*	*14 mg/l*

[1]Running Annual Median: The median of all samples taken in the most recent 12 calendar months.
[2]The 95th percentile of all samples taken in the most recent 12 calendar months.
[3]Determined as the sum of nitrate as N, nitrite as N, and ammonia as N.

Requirements in Reg. 85 also apply to non-domestic wastewater for industries in the Standard Industrial Class 'Major Group 20,' and any other non-domestic wastewater where the facility is expected, without treatment, to discharge total inorganic nitrogen or total phosphorus concentrations in excess of the numeric limits listed in 85.5 (1)(a)(iii). The facility must investigate, with the Division's approval, whether different considerations should apply.

All permit actions based on this WQA will occur after the July 1, 2013 permit implementation date of Reg. 85. Therefore, total inorganic nitrogen and total phosphorus effluent limitations potentially imposed because of

Reg. 85 must be considered. However, also based on Reg. 85, there are direct exemptions from these limitations for smaller domestic facilities that discharge less than or equal to 1 million gallons per day (MGD), or are a domestic facility owned by a disadvantaged community.

Delayed implementation (until 12/31/2027) is also specified in Reg. 85 to occur for domestic WWTFs that discharge more than 1 MGD, and less than or equal to 2.0 MGD, or have an existing watershed control regulations (such as WQCC Reg.'s 71-74), or where the discharge is to waters in a low-priority 8-digit HUC.

For all other larger domestic WWTFs, the nutrient effluent limitations from the two tables above will apply, unless other considerations allowed by Reg. 85 at 85.5(3) are utilized to show compliance with exceptions or variances to these limitations. Since the design capacities of the Vail, Avon, and Edwards WWTFs are 2.7, 4.3, and 2.83 MGD, respectively, the facilities are required to address the new technology based effluent limits as of 7/1/2013.

Because of the potential for allowing other (less stringent) nutrient effluent limitations than the standard Reg. 85 technology based limits, and as provided in Reg. 85, the Division proactively investigated if these other effluent limits would be allowable for the Vail, Avon, and Edwards WWTFs.

The following mass balance equation is commonly used to calculate WQBELs. This equation was used to calculate what the maximum WQBELs for nutrients for the facilities that are shown below in Tables A-15a and A-15b.

$$M_2 = \frac{M_3 Q_3 - M_1 Q_1}{Q_2}$$

Where:

Q_1 = Upstream low flow (annual median 1-in-5 yr low flow), cfs
M_1 = Upstream nutrient concentration, mg/l
Q_2 = Facility discharge flow, cfs
M_2 = Allowable effluent nutrient concentration, mg/l
Q_3 = Downstream flow (total flow), cfs
M_3 = Interim nutrient stream standards from Reg. 31.17, mg/l

Vail WWTF

The Gore Creek flow data was used to calculate the 1-in-5 year annual median is the same flow information used to calculate the 1E3 and 30E3 low flows utilized in other effluent limits. This annual median flow was estimated to be 20.7 cfs. The ambient water quality data were provided by the permittee from two monitoring stations (Gore Creek Above Vail Treatment Plant, GCAVTP and Vail WWTF Upstream) and Riverwatch Station 969 (E Vail Exit) where the median TP level is 0.0050 mg/l and TN = 0.16 mg/l upstream of the proposed discharge point.

Table A-15a
Total Nitrogen and Total Phosphorus Assimilative Capacities for Gore Creek at the Vail WWTF

Parameter	Q_1 (cfs)	Q_2 (cfs)	Q_3 (cfs)	M_1 (mg/l)	M_3 (mg/l)	M_2 (mg/l)
Total Phosphorus	**20.7**	**4.2**	**24.9**	**0.0050**	**0.11**	**0.63***
Total Nitrogen	**20.7**	**4.2**	**24.9**	**0.16**	**1.25**	**6.62***

* - Technology based limits will apply, but will not be protective of currently proposed interim numeric standards.

Avon and Edwards WWTFs

The Eagle River flow data was used to calculate the 1-in-5 year annual median is the same flow information used to calculate the 1E3 and 30E3 low flows utilized in other effluent limits. This annual median flow was

estimated to be 83 cfs. The ambient water quality data were provided by the permittee from two monitoring stations (Eagle River Above Avon Treatment Plant, ERAATP and Avon WWTF Upstream) and USGS 09067005 (Eagle River at Avon) where the median TP = 0.013 mg/l and TN = 0.36 mg/l upstream of the proposed discharge point.

Table A-15b
Total Nitrogen and Total Phosphorus Assimilative Capacities for the Eagle River at the Avon and Edwards WWTFs

Parameter	Q_1 (cfs)	Q_2 (cfs)	Q_3 (cfs)	M_1 (mg/l)	M_3 (mg/l)	M_2 (mg/l)
Total Phosphorus	**83**	**11**	**94**	**0.013**	**0.11**	**0.84***
Total Nitrogen	**83**	**11**	**94**	**0.36**	**1.25**	**7.97***

* - Technology based limits will apply, but will not be protective of currently proposed interim numeric standards.

It was found that with the current ambient water quality and lack of dilution in the Gore Creek and the Eagle River, that the proposed technology based limits will not be protective of the current interim numeric nutrient criteria at 31.17. Therefore, future decision's will need to be made about what the appropriate (potentially different site-specific standards) nutrient standards should be for Gore Creek, the Eagle River, and the effected portions of the Colorado River downstream of the Vail, Avon, and Edwards WWTFs. Characteristic influent to a normal domestic WWTF would probably have about 5-10 mg/l of total phosphorus and 50-150 mg/l of total nitrogen. Therefore, the reasonable potential for the Vail, Avon, and Edwards WWTFs to cause nutrient exceedances of the interim nutrient standards does exist. However, as required in Reg. 85, the technology based effluent limits will apply until appropriate alternative limits are developed.

The Division knows that Eagle River Water and Sanitation District is currently working on nutrient control with Avon, Vail, and Edwards WWTFs, and wishes to encourage Eagle River Water and Sanitation District to further work with other discharges (i.e. Eagle WWTF and Gypsum WWTF) along the Eagle River. These dischargers and others upstream and downstream of Gore Creek and the Eagle River have the potential to create future nutrient issues in the Eagle and Colorado River watersheds. The Division encourages these entities to all work together to create the most efficient and cost effective solutions for nutrient control in the Eagle and Colorado River watersheds.

Supplemental Reg. 85 Nutrient Monitoring

Reg. 85 also requires that some monitoring for nutrients in wastewater effluent and streams take place, independent of what nutrient effluent limits or monitoring requirements may be established in a discharge permit. The requirements for the type and frequency of this monitoring are set forth in Reg. 85 at 85.6. This nutrient monitoring is not currently required by a permitting action, but is still required to be done by the Reg. 85 nutrient control regulation. Nutrient monitoring for the Reg. 85 control regulation is currently required to be reported to the WQCD Environmental Data Unit.

IX. References

Regulations:

The Basic Standards and Methodologies for Surface Water, Regulation 31, Colorado Department Public Health and Environment, Water Quality Control Commission, effective January 31, 2018.

Classifications and Numeric Standards for Upper Colorado River Basin and North Platte River, Regulation No. 33, Colorado Department Public Health and Environment, Water Quality Control Commission, effective December 31, 2019.

Colorado River Salinity Standards, Regulation 39, CDPHE, WQCC (last update effective 8/30/97)
Regulations for Effluent Limitations, Regulation 62, CDPHE, WQCC, July 30, 2012.

Nutrients Management Control Regulation, Regulation 85, Colorado Department Public Health and Environment, Water Quality Control Commission, effective December 30, 2017.

Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List, Regulation 93, Colorado Department Public Health and Environment, Water Quality Control Commission, effective June 14, 2020.

Policy and Guidance Documents:

Antidegradation Significance Determination for New or Increased Water Quality Impacts, Procedural Guidance, Colorado Department Public Health and Environment, Water Quality Control Division, December 2001.

Memorandum Re: First Update to (Antidegradation) Guidance Version 1.0, Colorado Department Public Health and Environment, Water Quality Control Division, April 23, 2002.

Rationale for Classifications, Standards and Designations of Segments of the Upper Colorado and North Platte, Colorado Department Public Health and Environment, Water Quality Control Division, effective October 29, 2002.

Policy Concerning Escherichia coli versus Fecal Coliform, CDPHE, WQCD, July 20, 2005.

Colorado Mixing Zone Implementation Guidance, Colorado Department Public Health and Environment, Water Quality Control Division, effective April 2002.

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.

Implementing Narrative Standards in Discharge Permits for the Protection of Irrigated Crops, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number WQP-24, effective March 10, 2008.

Policy for Characterizing Ambient Water Quality for Use in Determining Water Quality Standards Based Effluent Limits, Colorado Department Public Health and Environment, Water Quality Control Division Policy Number WQP-19, effective May 2002.