Colorado Discharge Permit System (CDPS)
Fact Sheet to Permit Number CO0032999
LITTLETON/ENGLEWOOD WASTEWATER TREATMENT PLANT, ARAPAHOE COUNTY

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TABLE OF CONTENTS

I. TYPE OF PERMIT 1
II. FACILITY INFORMATION 1
III. RECEIVING STREAM 2
IV. FACILITY DESCRIPTION 3
V. PERFORMANCE HISTORY 5
VI. DISCUSSION OF EFFLUENT LIMITATIONS 7
VII. ADDITIONAL TERMS AND CONDITIONS 18
VIII. REFERENCES 21
IX. ATTACHMENTS 23
X. PUBLIC NOTICE COMMENTS 23

I. TYPE OF PERMIT

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

B. Discharge To: Surface Water

II. FACILITY INFORMATION

A. SIC Code: 4952 Sewerage Systems

B. Facility Location: 2900 South Platte River Drive,
Englewood, CO 80110
Latitude: 39.667983°N
Longitude: -104.999983°N

C. Permitted Feature: 001A, following disinfection and prior to mixing with the receiving stream; 39.667983°N, -104.999983°W

UST1A is an in-stream outfall located upstream from the facility discharge and in the same water body segment to collect continous ambient temperature data. The location for this outfall is approximately at 39.666569° North latitude, 105.004258° longitude West, which is about ¼ miles 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: 50 MGD

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E. Major Changes From Last Renewal:

The 42 MGD tier has been removed from the permit.

Implicit NILs were re-evaluated based on change of design flow.

The L/E WWTP was modeled together with several downstream dischargers, as described in section III.B. of the fact sheet.

An AD based limit was included for copper to meet the regulatory requirement to maintain the level of degradation allowed.

New effluent limits have been included for total phosphorus and temperature and more stringent effluent limits are included for total inorganic nitrogen for which compliance schedules have been added.

A compliance schedule for ammonia has been added as the new limitations are more stringent than the previous permit.

III. RECEIVING STREAM

A. Waterbody Identification: COSPUS14, the South Platte 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 South Platte 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.

Note, that the Segment 14 WQA framework public noticed in July 2016 for Littleton/Englewood WWTP (CO0032999) and Arapahoe/Southwest Generation facility (CO0000002) included 5 MGD 'reserve capacity' for anticipated dischargers to Segment 14. The division received extensive public comment on CO0032999 and CO0000002. The division has updated the L/E WWTP WQA and has included all facilities that discharge to Segment 14. The division has determined that this Segment 14 WQA, is the most accurate and efficient framework for applicable discharge permits to this segment. The Division has allocated assimilative capacity to the dischargers with Individual permits or Individual permit applications submitted to the division as listed in the table below.

Note that the Division has received public inquiries about the Globeville Landing Outfall Project permit (CO0049002) that was issued prior to the Segment 14 WQA public notice. Permit CO0049002 was not modeled into Segment 14 with additional dischargers and received the full assimilative capacity. This permit highlights that need for a different approach as is captured in the Segment 14 WQA.

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

The following table contains the dischargers to Segment 14 that have been identified that are included in the modeling of Segment 14:

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Facility Name	Permittee Name	Permit Number
L/E WWTP	Cities of Littleton and Englewood	CO0032999
Arapahoe Facility	Southwest Generation	CO0000002
Z Block Project	Block 22 Denver, LLC	CO0049007
McDonald Farms	McDonald Farms Enterprises Inc. (MFEI)	CO0049005
Globeville Landing Outfall Project	City and County of Denver	CO0049002
Confluence Apartments	PM Realty Group	CO0049003
17 and York Apartments	Shea Properties	CO0049006
JP wewatta LLC and BH Wewatta LLC	1601 Wewatta Office Building Garage	CO0000008
Primate Panorama Discharge	Denver Zoological Foundation	CO0048951
Denver Water Reuse Hydrostatic Discharge	Denver Water	CO0048955
Denver Zoo Flamingo Pond	Denver Zoological Foundation	CO0048682
Owens Corning Trumbull Asphalt	Owens Corning Roofing and Asphalt, LLC	CO0049011
Airgas – Denver ASU	Airgas USA, LLC	CO0049012
Union Station North Wing Office Building	GLL 2160 E Gran LLC c/o Hines	CO0049017

IV. FACILITY DESCRIPTION

A. Infiltration/Inflow (I/I)

No infiltration/inflow problems have been documented in the service area.

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	Peak Flows (gpd)*	% Capacity (based on peak flow)
South Park #11	125 gpm	72,000	40
Stene Drive	120 gpm	4,000	2
Massey Drive	240 gpm	4,000	1
World Headquarters	4.5 MGD	3,000,000	67
North Ranch	1.0 MGD	600,000	60
Northeast #1	450 gpm	260,000	40
Chanson Plaza #2	170 gpm	148,000	60
Happy Homes	150 gpm	78,000	36
Chatfield Green #1	1.50 MGD	600,000	40
Chatfield Green #2	1.0 MGD	400,000	40
Roxborough	6.13 MGD	1,640,000	27

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*****Peak flows were calculated as two times the average flows reported by the permittee.

C. Chemical Usage

The permittee stated in the application that they utilize nine 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
Ferric Sulfate (50%)	***Coagulent***	*Iron, Sulfate*
Methanol (99.99%)	***Denitrification***	*pH*
Sodium Hypochlorite (12%)	***Disinfection***	*Chlorine*
Sodium Bisulfite (39%)	***Dechlorination***	*Sodium Bisulfite*
Sodium Hypochlorite (10%)	***Odor control***	*Chlorine*
Sodium Hydroxide (50%)	***Odor control***	*pH*
Polymer (dry)	***Dewatering***	*None*
Sodium chloride	***Water softener***	*Chloride, Chlorine, pH*
Green Fire	***Ice melter***	*None*
JS 9325	***Struvite Removal***	*pH*

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 consists of preliminary, primary, and secondary treatment (trickling filters/solids contact); secondary clarifiers, nitrifying trickling filters, denitrification, and chlorination/dechlorination. The permittee has not performed any construction at this facility that would change the hydraulic capacity of 50 MGD or the organic capacity of 93,825 lbs BOD_5/day, which were specified in Site Approval #4727. That document should be referred to for any additional information.

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.

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E. Biosolids Treatment and Disposal

Biosolids are stored for less than a day in a sludge silo and transported to approved biosolids application sites for land application. When travel to the land application site is limited due to weather, biosolids may be stored onsite on a temporary basis, less than two weeks. Currently, a biosolids temporary storage site is located at the city-owned biosolids application site when application is restricted by field conditions (i.e. wet). This site is designed to minimize storage of biosolids at the wastewater treatment plant.

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 in part I.D.2 of the permit.

V. 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 August 2010 to July 2015.

Table V-1 – Summary of DMR Data for Permitted Feature 001A, 001B, and 001C*

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*	*22/20/29*	*24/21/42*		*50/Report/NA*	
Temperature (°C)	*60*	*19/15/23*	*19/15/24*		*Report/Report/NA*	
Temperature (°C) Jan	*5*	*16/15/16*	*16/16/16*		*Report/Report/NA*	
Temperature (°C) Feb	*5*	*15/15/16*	*15/15/16*		*Report/Report/NA*	
Temperature (°C) Mar	*5*	*16/15/16*	*16/16/17*		*Report/Report/NA*	
Temperature (°C) Apr	*5*	*17/16/18*	*18/17/18*		*Report/Report/NA*	
Temperature (°C) May	*5*	*18/17/19*	*19/18/20*		*Report/Report/NA*	
Temperature (°C) Jun	*5*	*20/19/22*	*21/20/22*		*Report/Report/NA*	
Temperature (°C) Jul	*5*	*22/21/23*	*23/22/23*		*Report/Report/NA*	
Temperature (°C) Aug	*5*	*23/22/23*	*23/23/24*		*Report/Report/NA*	
Temperature (°C) Sep	*5*	*23/22/23*	*23/23/24*		*Report/Report/NA*	
Temperature (°C) Oct	*5*	*22/21/22*	*22/21/22*		*Report/Report/NA*	
Temperature (°C) Nov	*5*	*19/19/20*	*20/19/20*		*Report/Report/NA*	
Temperature (°C) Dec	*5*	*17/17/18*	*18/17/18*		*Report/Report/NA*	
pH (su)	*60*	*7.2/7/7.5*	*7.5/7.3/7.9*		*6.5 - 9*	
Fecal Coliform (#/100 ml)	*41*	*1.4/1/3*	*2.3/1/10*		*245/490/NA*	
E. coli (#/100 ml)	*60*	*2.6/1/16*	*7.6/1/98*		*126/252/NA*	
TRC (mg/l)	*60*	*BDL/BDL/BDL*	*BDL/BDL/BDL*		*0.0019/0.022*	
Nitrate as N (mg/l)	*60*		*16/11/20*		*NA/Report/NA*	
Nitrite as N (mg/l)	*60*		*0.47/0.23/2.2*		*NA/Report/NA*	
Total Inorganic Nitrogen as N (mg/l)	*60*	*3347/2215/5863*	*18/13/22*		*NA/Varied*	

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Table V-1 – Summary of DMR Data for Permitted Feature 001A, 001B, and 001C*

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
					Monthly/NA	
NH3 as N, Tot (mg/l) Jan	5	1.8/1.4/2.2	4.6/2.1/7.8		7.6/19/NA	
NH3 as N, Tot (mg/l) Feb	5	2/1.2/3	4.8/2/9.2		6.5/15/NA	
NH3 as N, Tot (mg/l) Mar	5	2/1.6/2.8	3.5/2.2/5.3		6.2/14/NA	
NH3 as N, Tot (mg/l) Apr	5	2/1.4/2.7	4.5/1.6/6.8		5.3/14/NA	
NH3 as N, Tot (mg/l) May	5	1.6/1.2/1.9	2.4/1.4/3.5		4.5/19/NA	
NH3 as N, Tot (mg/l) Jun	5	1.7/1.2/2.6	3.5/1.5/8.3		4.3/23/NA	
NH3 as N, Tot (mg/l) Jul	5	1.5/1.2/1.9	1.8/1.4/2.2		3.8/29/NA	
NH3 as N, Tot (mg/l) Aug	5	1.4/1/1.8	1.8/1.4/2.3		3.2/28/NA	
NH3 as N, Tot (mg/l) Sep	5	1.5/1.3/1.7	2.1/1.9/2.7		3.2/19/NA	
NH3 as N, Tot (mg/l) Oct	5	1.8/1.5/2.1	3.2/1.8/4.8		4.1/16/NA	
NH3 as N, Tot (mg/l) Nov	5	1.7/1.4/2	2.3/1.7/3.3		5.3/16/NA	
NH3 as N, Tot (mg/l) Dec	5	1.7/1.4/2.2	3.5/1.7/7.5		6.4/16/NA	
CBOD5, effluent (mg/l)	60	2.5/2/9	3.3/2/29		20/30/NA	
CBOD5 (% removal)	60	99/97/99			85/NA/NA	
TSS, effluent (mg/l)	60	2/2/2	2/2/3		30/45/NA	
TSS (% removal)	60	99/99/99			85/NA/NA	
Oil and Grease (mg/l)	29		0/0/0		NA/10/NA	
Cr+6, Dis (µg/l)	20	0.5/<10/10	0.5/<10/10	<10/<10/<10	Report/Report/Report	
Cu, Dis (µg/l)	20	9.1/6.6/12	11/8.1/16		Report/Report/NA	
CN, Free (µg/l)	60		1.4/<5/10		NA/5.8/NA	
Fe, Dis (µg/l)	60	90/54/128			300/NA/NA	
Fe, TR (µg/l)	20	112/<100/176		128/70/151	Report/NA/Report	
Hg, Tot (µg/l)	20	0/<0.007/0			0.007/NA/NA	
Se, Dis (µg/l)	60	1.9/1.1/3.4	2.3/1.4/5.3	1.9/1.8/2.3	4.6/Report/Report	
U, TR (µg/l)	60	NA/NA/NA	8.1/2.8/32	5.9/5.2/7.4	NA/Report/Report	
Zn, Dis (µg/l)	20	33/21/42	46/34/71	35/29/37	Report/Report/Report	
Chloride (mg/l)	20	103/88/135		102/97/107	Report/NA/Report	
Sulfate (mg/l)	60	148/131/200			Report/NA/NA	
Gamma-BHC (µg/l)	26	0.0015/<0.02/0.04	0.0015/<0.02/0.04		Report/Report/NA	
WET, chronic						
pimephales lethality, Stat Diff	20	/ /	100/100/100	/ /	Varied Quarterly	
pimephales lethality, IC25	20	/ /	100/100/100	/ /		
ceriodaphnia lethality, Stat Diff	20	/ /	100/100/100	/ /	Varied Quarterly	
ceriodaphnia lethality, IC25	20	/ /	100/100/100	/ /		
pimephales toxicity, Stat Diff	20	/ /	98/62/100	/ /	Varied Quarterly	
pimephales toxicity, IC25	20	/ /	100/100/100	/ /		
ceriodaphnia toxicity, Stat Diff	20	/ /	100/100/100	/ /	Varied Quarterly	
ceriodaphnia toxicity, IC25	20	/ /	100/100/100	/ /		

*The pH data shows the minimum reported values in the "average" column, and the maximum reported values in the "maximum" column
*The temperature data shows the MWAT values in the "average" column, and the daily maximum reported values in the "maximum" column
*The total inorganic nitrogen reported loads are shown in the "average" column, and the daily maximum is reported in the "maximum" column
*Note that while the facility contains three outfalls, the Division aggregated all DMR data for simplicity. Note that the previous limits shown are those

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Table V-1 – Summary of DMR Data for Permitted Feature 001A, 001B, and 001C*

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*
for outfall 001C (50 MGD).						
**Average for E. coli and fecal coliforms is the geometric mean.*						
**All DMR results for TRC were below the detection limit.*						

2. Additional Data –The following table summarizes effluent pretreatment data submitted by the permittee for consideration in determining reasonable potential.

Table V-2 – Summary of Additional Data provided by the facility

Parameter	*# Samples or Reporting Periods*	*Avg/Min/Max Concentrations*
Total Arsenic (µg/l)	*17*	*<2/<2/<2*
Total Cadmium (µg/l)	*18*	*<0.5/<0.5/<0.5*
Total Chromium (µg/l)	*19*	*<2.2/<2.2/3.3*
Total Lead (µg/l)	*13*	*<1/2/8.4*
Total Nickel (µg/l)	*19*	*<4/3.1/9*
Total Phenol (µg/l)	*18*	*<0.1/<50/<50*

B. Compliance With Terms and Conditions of Previous Permit

1. Effluent Limitations – The data shown in the preceding table(s) indicates compliance with the numeric limitations of the previous permit.

   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.

VI. DISCUSSION OF EFFLUENT LIMITATIONS

A. Regulatory Basis for Limitations

1. Technology Based Limitations

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

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

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

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in Section VI of the Water Quality Assessment developed for this permitting action.

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

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

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

4. Water Quality Regulations, Policies, and Guidance Documents

   a. Antidegradation - Since the receiving water Reviewable, an antidegradation evaluation 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) – Segment COSPUS14 has completed TMDLs. This factsheet and the accompanying permit include TMDLs developed as specified in the following documents with corresponding wasteload allocations (WLAs):

      - South Platte River, Segment 14 Bowles Avenue to the Burlington Ditch Diversion Arapahoe and Denver Counties, Colorado, approved June 4, 2004 for Nitrate

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- South Platte River, Segment 14 Bowles Avenue to the Burlington Ditch Diversion Arapahoe and Denver Counties, Colorado, approved October 30, 2007 for E coli.

The discharge to the South Platte Segment 14 can enter the Burlington Ditch, which flows to Barr-Milton Reservoirs. These TMDLs indicate that reductions of total phosphorus will address both the pH and DO impairments in this segment as exceedances for pH and Dissolved Oxygen are related to excess nutrients. The level of total phosphorus reduction needed to implement the TMDL is the same as required by Regulation 85. This factsheet and the accompanying permit include TMDLs developed as specified in the following documents with corresponding wasteload allocations (WLAs):

- South Platte River, Segment 04 (COSPMS04) Barr Lake and Milton Reservoir, Colorado, approved June 27, 2013 for pH/Dissolved Oxygen/Total Phosphorous.

As required under the Clean Water Act Section 303(d), these TMDLs have been submitted, through the normal public notification process, to EPA Region VIII for their review and approval. Note that the TMDLs were compared to WQBELs for the current ambient conditions, and the more stringent limit was applied.

The receiving stream to which the L/E WWTP discharges is currently listed on the State's 303(d) list for development of TMDLs for Arsenic. However, the TMDL has not yet been finalized. Consistent with Division practice, this permit establishes monitoring requirements for these pollutants until such time as the TMDLs is complete and waste load allocations have been determined. The permit may be reopened to include limitations based upon a finalized TMDL.

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

   The guidance document provides a mandatory, stepwise decision-making process for determining if the permit limits will not be affected by this regulation. Exclusion, based on Extreme Mixing Ratios, may be granted if the ratio of the facility design flow to the chronic low flow (30E3) is greater than 2:1. Since the ratio of the design flow to the chronic low flow is 3.2:1, the permittee is eligible for an exclusion from further analysis under the regulation.

e. 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.

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

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 for 50 MGD Tier*

Parameter	30-Day Average			7-Day Ave or Daily Max			Antideg (2 Year Roll. Ave)		
	MEPC	WQBEL (MAPC)	Reasonable Potential	MEPC	WQBEL (MAPC)	Reasonable Potential	MEPC	ADBAC (MAPC)	Reasonable Potential
E. coli (#/100 ml)	18	126	Yes (Qual)	108	252	Yes (Qual)			
TRC (mg/l)	BDL[1]	0.014	Yes (Qual)	BDL[1]	0.023	Yes (Qual)	BDL[1]	0.0022	Yes (Qual)
Temperature, Jan (C)[2]	18	14.0	Yes	18	29.0	Monitor			
Temperature, Feb 1-13 (C)[2]	17	13.6	Yes	17	28.8	Monitor			
Temperature, Feb 14-28 (C)[2]	17	29.7	Monitor	17	34.4	Monitor			
Temperature, Mar (C)[2]	18	28.6	Monitor	19	32.9	Monitor			
Temperature, Apr (C)[2]	20	27.3	Monitor	20	32.0	Monitor			
Temperature, May (C)[2]	21	26.5	Monitor	22	30.7	Monitor			
Temperature, Jun (C)[2]	24	24.7	Monitor	24	29.3	Monitor			
Temperature, Jul (C)[2]	25	24.2	Yes	26	29.1	Monitor			
Temperature, Aug (C)[2]	25	24.5	Yes	26	29.4	Monitor			
Temperature, Sep (C)[2]	26	24.7	Yes	26	29.6	Monitor			

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

Table VI-1 – Quantitative Reasonable Potential Analysis for 50 MGD Tier*

Parameter	30-Day Average			7-Day Ave or Daily Max			Antideg (2 Year Roll. Ave)		
	MEPC	WQBEL (MAPC)	Reasonable Potential	MEPC	WQBEL (MAPC)	Reasonable Potential	MEPC	ADBAC (MAPC)	Reasonable Potential
Temperature, Oct (C)[2]	24	26.6	Monitor	25	32.8	Monitor			
Temperature, Nov (C)[2]	22	28.1	Monitor	22	34.0	Monitor			
Temperature, Dec (C)[2]	20	13.6	Yes	20	28.9	Monitor			
Total Inorganic Nitrogen as N, Jan[3]	19	16	Yes (Qual)	3296	9771	Yes (Qual)			
Total Inorganic Nitrogen as N, Feb[3]	19	18	Yes (Qual)	3292	9687	Yes (Qual)			
Total Inorganic Nitrogen as N, Mar[3]	18	20	Yes (Qual)	3822	9467	Yes (Qual)			
Total Inorganic Nitrogen as N, Apr[3]	20	21	Yes (Qual)	3878	10313	Yes (Qual)			
Total Inorganic Nitrogen as N, May[3]	22	19	Yes (Qual)	5863	15157	Yes (Qual)			
Total Inorganic Nitrogen as N, Jun[3]	22	19	Yes (Qual)	5466	16325	Yes (Qual)			
Total Inorganic Nitrogen as N, Jul[3]	22	19	Yes (Qual)	4225	15408	Yes (Qual)			
Total Inorganic Nitrogen as N, Aug[3]	21	16	Yes (Qual)	3811	16660	Yes (Qual)			
Total Inorganic Nitrogen as N, Sep[3]	21	16	Yes (Qual)	4429	13611	Yes (Qual)			
Total Inorganic Nitrogen as N, Oct[3]	21	19	Yes (Qual)	3738	12275	Yes (Qual)			
Total Inorganic Nitrogen as N, Nov[3]	18	18	Yes (Qual)	3218	10732	Yes (Qual)			
Total Inorganic Nitrogen as N, Dec[3]	18	17	Yes (Qual)	3275	11065	Yes (Qual)			
NH3 as N, Tot (mg/l) Jan	2.2	5.2	Yes (Qual)	7.8	9.1	Yes (Qual)			
NH3 as N, Tot (mg/l) Feb	3	5.4	Yes (Qual)	9.2	9.8	Yes (Qual)			
NH3 as N, Tot (mg/l) Mar	2.8	4.8	Yes (Qual)	5.3	9.1	Yes (Qual)			
NH3 as N, Tot (mg/l) Apr	2.7	4.6	Yes (Qual)	6.8	9.8	Yes (Qual)			
NH3 as N, Tot (mg/l) May	1.9	4.3	Yes (Qual)	3.5	10	Yes (Qual)			
NH3 as N, Tot (mg/l) Jun	2.6	4.0	Yes (Qual)	8.3	12	Yes (Qual)			
NH3 as N, Tot (mg/l) Jul	1.9	3.5	Yes (Qual)	2.2	14	Yes (Qual)			
NH3 as N, Tot (mg/l) Aug	1.8	3.4	Yes (Qual)	2.3	14	Yes (Qual)			
NH3 as N, Tot (mg/l) Sep	1.7	3.6	Yes (Qual)	2.7	12	Yes (Qual)			
NH3 as N, Tot	2.1	4.2	Yes (Qual)	4.8	13	Yes (Qual)			

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

Table VI-1 – Quantitative Reasonable Potential Analysis for 50 MGD Tier*

Parameter	30-Day Average			7-Day Ave or Daily Max			Antideg (2 Year Roll. Ave)		
	MEPC	WQBEL (MAPC)	Reasonable Potential	MEPC	WQBEL (MAPC)	Reasonable Potential	MEPC	ADBAC (MAPC)	Reasonable Potential
(mg/l) Oct									
NH3 as N, Tot (mg/l) Nov	2	4.6	Yes (Qual)	3.3	12	Yes (Qual)			
NH3 as N, Tot (mg/l) Dec	2.2	4.9	Yes (Qual)	7.5	11	Yes (Qual)			
As, TR (µg/l)	0.49	0.02	Yes (Qual)						
As, Dis (µg/l)				0.49	406	No (Qual)	0.49	61	No (Qual)
Cd, Dis (µg/l)	<0.5	1.2	No (Qual)	<0.5	8.1	No (Qual)	<0.5	0.18	Monitor
Cr+3, TR (µg/l)				3.3	13	No (Qual)			
Cr+3, Dis (µg/l)	3.3	226	No (Qual)				3.3	34	No (Qual)
Cr+6, Dis (µg/l)	10	13	Monitor	10	19	Monitor			
Cu, Dis (µg/l)[4]	13	25	Monitor	17	37	No	10.6	12.6	Yes (Qual)
CN, Free (µg/l)				<5	6.0	Monitor			
Fe, Dis (µg/l)	141	375	No						
Fe, TR (µg/l)	194	1155	No				181	667	No
Pb, TR (µg/l)				20	60	No (Qual)			
Pb, Dis (µg/l)	0.9	9.7	No	1.1	236	No	0.4	1.8	No
Mn, Dis (µg/l)	38	190	No	42	5015	No			
Mo, TR (µg/l)	32	193	No				9.5	37	No
Hg, Tot (µg/l)	<0.007	0.013	No (Qual)				<0.007	0.0019	Monitor
Ni, TR (µg/l)	12	128	No						
Ni, Dis (µg/l)	12	163	No	12	1360	No	6.3	30	No
Se, Dis (µg/l)	3.8	4.9	Monitor	5.8	21	No	2.6	3.5	Monitor
Ag, Dis (µg/l)	<0.2	2.6	No (Qual)	<0.2	14	No (Qual)	<0.2	0.39	Monitor
U, TR (µg/l)	35	30	Yes						
Zn, Dis (µg/l)	46	397	No	78	491	No	41	84	No
Chloride (mg/l)	149	286	Monitor				118	136	Monitor
Sulfate (mg/l)	220	270	Monitor						
Nonylphenol (µg/l)	<50	8.6	Monitor	<50	34	Monitor			
Gamma-BHC (µg/l)	0.04	0.1	No (Qual)	0.04	1.1	No (Qual)			
Total Inorganic Nitrogen as N (mg/l)[5]	17	15	Yes	22	20	Yes			
Total Phosphorus (mg/l)[5]	2.7	1.0	Yes	3.3	2.5	Yes			

*Note that all reasonable potential results are the same for the 34 MGD unless specified other wise in the parameter evaluations below.

[1]All TRC DMR results were below the detection limit.

[2]MWAT listed in '30-day average' column and DM listed in '7-Day Ave or Daily Max' column. Note that a temporary modification of current conditions applies from 12/1 to 2/13, expiring on 12/31/2020.

[3]Concentration listed in '30-day average' column and loading listed in '7-Day Ave or Daily Max' column

[4]Limitation is based on alternatives analysis (see below)

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

[5]Median listed in '30-day average' column and 95th percentile listed in '7-Day Ave or Daily Max' column

B. Parameter Evaluation

BOD_5 - The BOD_5 concentrations in Reg 62 are the most stringent effluent limits and are therefore applied. The removal percentages for BOD_5 also apply based on the Regulations for Effluent Limitations. Note that $CBOD_5$ limits were imposed in lieu of the BOD_5 limits pursuant to the facility's request and in accordance with Section 62.5(6) of the regulations. These limitations are the same as those contained in the previous permit and are imposed upon the effective date of this permit.

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

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

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

E. coli – The limitation for *E. coli* is based upon the TMDL 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 WQBEL and ADBAC as described in the WQA. A qualitative determination of RP has been made as chlorine may be used in the treatment process. Previous monitoring as shown in Table V-1 indicate that this limitation can be met and is therefore imposed upon the effective date of the permit.

Total Inorganic Nitrogen - The calculated WQBEL for T.I.N. as set out in the WQA is imposed to protect downstream water supplies. A qualitative determination of RP has been made as the facility is expected to have ammonia, nitrate, and nitrite in the discharge. This limitation is more stringent than the previous limit, the permittee may not be able to consistently meet this limitation (for some months) and a compliance schedule has been added to the permit to give the permittee time to meet this limitation. The interim limits will be the concentration limits from the previous permit term which are now being met. Load limits are included to implement the wasteload allocation from the TMDL. Upon further discussion with the permittee after August 2017 public notice, the division provided more detail in the compliance schedule to be clear that there is a deadline for Regulation 85 T.I.N. versus the drinking water T.I.N.

Ammonia - The limitation for ammonia is based upon the WQBEL or 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. The permittee has provided detail in Response to Comment 59 explained that the compliance activities to Regulation 85 limitations can alter the previous performance for ammonia because phosphorous treatment may increase ammonia availability. Because of this change, the permittee may not be able to consistently meet this limitation and a compliance schedule has been added to the permit for all months except the chronic limitations for August and September to give the permittee time to meet this limitation. Note that the chronic limitations for August and September are less stringent than the previous permit.

Total Arsenic – A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent data submitted by the facility for total arsenic were used to conduct this qualitative RP analysis. Sample results for were as high as 0.49, compared to the WQBEL of 0.02 µg/l. However, because of the temporary modification (As (ch) = hybrid), only a report only requirement will be applied to the permit,

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

effective immediately.

Dissolved Arsenic - A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent data submitted by the facility for total arsenic were used to conduct this qualitative RP analysis. Sample results for were as high as 0.49 µg/l, compared to the WQBEL of 406 µg/l and ADBAC of 61 µg/l. The maximum reported sample was less than half of the WQBELs and ADBACs and therefore limitations and monitoring are not necessary at this time.

Potentially Dissolved Cadmium – A qualitative RP analysis was conducted as there was not enough detectable enough data to conduct a quantitative RP analysis. Effluent data submitted by the facility for total cadmium were used to conduct this qualitative RP analysis. All sample results were below a detection limit of 0.5 µg/l, compared to the chronic WQBEL of 1.2 µg/l, acute WQBEL of 8.1 µg/l, and ADBAC of 0.18 µg/l. The detection limit used was less than half of the chronic and acute WQBELs and therefore 30-day average and daily maximum limitations and monitoring are not necessary at this time. However, the detection limit used was less than the ADBAC but greater than 50% of the ADBAC, therefore a report only requirement will be required for the two year rolling average, effective immediately.

Potentially Dissolved Trivalent Chromium – A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent data submitted by the facility for total chromium were used to conduct this qualitative RP analysis. Sample results for were as high as 3.3 µg/l, compared to the NIL of 13 µg/l. The maximum reported sample was less than half of the NILs and therefore limitations and monitoring are not necessary at this time.

Dissolved Trivalent Chromium – A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Effluent data submitted by the facility for total arsenic were used to conduct this qualitative RP analysis. Sample results for were as high as 3.3 µg/l, compared to the WQBEL of 226 µg/l and ADBAC of 34 µg/l. The maximum reported sample was less than half of the WQBELs and ADBACs and therefore limitations and monitoring are not necessary at this time.

Dissolved Hexavalent Chromium – A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. Sample results for were as high as 10 µg/l, compared to the NIL of 13 µg/l and acute WQBEL of 19 µg/l. The maximum DMR result is more than 50% of the NIL/chronic WQBELs for all outfalls; therefore a report only requirement will be required, effective immediately.

Potentially Dissolved Copper – The permittee had submitted an Alternatives Analysis (AA) for copper during the previous two permit terms. Prior to developing the analysis the Cities of Littleton and Englewood implemented economically, environmentally, and technologically reasonable controls including elimination of the use of copper sulfate as an algae control agent in water supply reservoirs and elimination of copper contributions from permitted SIUs. Copper leaching from the drinking water supply piping was identified as the major remaining source of copper being conveyed to the WWTP and subsequently discharged. The Cities of Littleton and Englewood implement copper corrosion control programs to minimize leaching from copper piping. For this renewal, the division has relied upon the analysis from December 2004 that demonstrates that the treatment alternatives to meet the ADBAC limits for copper at the WWTF are economically, environmentally, and technologically unreasonable and that degradation is necessary. Regulation 31.8(3)(d)(iii) states the following:

> (iii) If the proposed regulated 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 degradation shall be considered necessary if there are no water quality control alternatives available that (A) would result in no degradation or less degradation of the state waters and (B) are determined to be economically, environmentally, and technologically reasonable.

The Division accepted the analysis; and will set the AD limit to 12.6 µg/l, which is the limitation proposed in the AA. This effluent limit that is more stringent than the WQBEL and less stringent than the NIL or ADBAC. This allows the level of degradation necessary, which is the level that has occurred during the previous permit term with implementation of the source controls and the ongoing corrosion control practices.

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

With the available data, the log-normal distribution was used to determine the appropriate statistics to determine the MEPC. The MEPC was greater than 50% of the chronic WQBELs for all outfalls; therefore report only requirements will be required. For the AA limit, because there is a potential for copper to be in influent from drinking water supply and copper piping and corrosion control plans to minimize leaching from copper piping, a qualitative RP has been made and a 2-year rolling average limitation of 12.6 µg/l has been added to the permit. Because the AA limitation is a new copper limitation, L/E WWTP is eligible for a compliance schedule. Therefore a compliance schedule has been added to the permit. See Comment 4 for additional detail.

Cyanide - A qualitative RP analysis was conducted as there was not enough detectable data to conduct a quantitative RP analysis. Note that only data from May 2014 were used to conduct this RP analysis as there was a compliance schedule for the previous permit in effect until the end of April 2014. All DMR sample results (beginning in May 2014) were below a detection limit of 5 µg/l, compared to the NIL of 6.0 µg/l. The detection limit was less than the NILs but was greater than 50% of the NILs; therefore, therefore a report only requirement will be required, effective immediately.

Dissolved Iron - The RP analysis for dissolved iron was based upon the WQBEL as calculated 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 and monitoring are not necessary at this time.

Total Recoverable Iron - The RP analysis for total recoverable iron was based upon the WQBEL and ADBAC as calculated in the WQA. With the available data, the MDLWIN program (30-day average) and normal distribution (2-year rolling average) were used to determine the appropriate statistics to determine the MEPC. The MEPC was less than half of the MAPC and therefore limitations and monitoring are not necessary at this time.

Total Recoverable Lead - The RP analysis for total recoverable lead 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 and monitoring are not necessary at this time.

Potentially Dissolved Lead - The RP analysis for potentially dissolved lead was based upon the WQBEL as calculated in the WQA. With the available data (provided by the facility during public notice), 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 and monitoring are not necessary at this time.

Dissolved Manganese - The RP analysis for potentially dissolved manganese was based upon the WQBEL as calculated in the WQA. With the available data (provided by the facility during public notice), 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 and monitoring are not necessary at this time. However, the division will add semi-annual monitoring for this parameter to conduct an RP analysis at the next renewal as it is not a parameter listed in outfall 001P.

Total Mercury - A qualitative RP analysis was conducted as there was not enough detectable data to conduct a quantitative RP analysis. All sample results were below a PQL of 0.007 µg/l. Therefore, it is still possible for the effluent to have a concentration of greater than half of the limitations proposed (WQBEL 0.013 µg/l and ADBAC of 0.0019 µg/l). Therefore, a report only requirement will be required effective immediately. Note that for the 34 MGD tier, the WQBEL is 0.014 µg/l and all sample results are less than half of this WQBEL; therefore, no limitation or monitoring is necessary for the 30-day average for the 34 MGD tier. The ADBAC for the 34 MGD tier is 0.0022 µg/l and is less than the PQL of 0.007 µg/l; therefore, a report only requirement for the two-year rolling average will be required effective immediately for the 34 MGD tier.

Total Recoverable Nickel - The RP analysis for total recoverable nickel 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 and

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

monitoring are not necessary at this time.

Potentially Dissolved Nickel - The RP analysis for potentially dissolved nickel was based upon the WQBEL and ADBAC as calculated in the WQA. Note that total recoverable nickel data were used for this RP analysis. 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 and monitoring are not necessary at this time.

Potentially Dissolved Selenium - The limitation for potentially dissolved selenium is based upon the WQBEL and ADBAC as described in the WQA. With the available data, log-normal distribution (30-day average and daily maximum) or normal distribution (2-year rolling average) was used to determine the appropriate statistics to determine the MEPC. The MEPC was less than 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 added to the permit, effective immediately.

Potentially Dissolved Silver – A qualitative RP analysis was conducted as there was not enough detectable enough data to conduct a quantitative RP analysis. All sample results were below a detection limit of 0.2 µg/l, compared to the chronic WQBEL of 2.6 µg/l, acute WQBEL of 14 µg/l, and ADBAC of 0.39 µg/l. The detection limit used was less than half of the chronic and acute WQBELs; therefore 30-day and daily maximum limitations and monitoring are not necessary at this time.

Based on a PQL of 0.2 µg/l, it is still possible for the effluent to have a concentration of greater than half of the ADBAC limitation proposed. Therefore, 2-year rolling average reporting requirements have been added at this time.

Note that for the 34 MGD tier, the ADBAC is 0.43 µg/l and all sample results are less than half of this WQBEL; therefore, no limitation or monitoring is necessary for the 30-day average for the 34 MGD tier.

Total Recoverable Uranium - The RP analysis for total recoverable uranium 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 greater than the MAPC and therefore limitations are required. Because this WQBEL is less than the second number in the standard range, the limit will be set to the second number of 30 µg/l. Therefore, a 30-day average requirement has been added to the permit. Previous monitoring as shown in Table V-1 indicate that this limitation can be met consistently and is therefore imposed upon the effective date of the permit.

Potentially Dissolved Zinc - The RP analysis for potentially dissolved zinc was based upon the WQBEL and ADBAC as calculated in the WQA. With the available data, the log-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.

Chloride - The RP analysis for chloride was based upon the WQBEL and ADBAC as described in the WQA. With the available data the log-normal distribution (30-day average) and normal distribution (2-year rolling average) was used to determine the appropriate statistics to determine the MEPC. The MEPC was less than 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 added to the permit, effective immediately.

Note that for the 34 MGD tier, the WQBEL is 303 mg/l and the MEPC is less than half of this WQBEL; therefore, no limitation or monitoring is necessary for the 30-day average for the 34 MGD tier. The ADBAC for the 34 MGD tier is 137 mg/l and the MEPC is greater than half of this ADBAC; therefore, a report only requirement for the two-year rolling average will be required effective immediately for the 34 MGD tier.

Sulfate - The RP analysis for sulfate 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 the MAPC and therefore limitations are not necessary at this time, however the MEPC was

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

greater than 50% of the MAPC and therefore monitoring is required. Therefore, a report only requirement has been added to the permit, effective immediately.

Nonylphenol - A qualitative RP analysis was conducted as there was not enough data to conduct a quantitative RP analysis. The maximum sample result was 1.2 µg/l, compared to a chronic WQBEL of 8.6 µg/l. The maximum result is less than half of the proposed WQBEL and therefore limitations are not necessary at this time. However, the division will add semi-annual monitoring for this parameter to conduct an RP analysis at the next renewal as it is not a parameter listed in outfall 001P.

Total Inorganic Nitrogen – There was no assimilative capacity available for potential interim numeric nitrogen standards at 31.17; therefore, the interim limits (Regulation 85.5(1)(a)(iii)) will apply. Regulation 85 effluent data from 2013 indicate that this limit cannot be met consistently; therefore, a compliance schedule has been added for this parameter. A reporting requirement will be added as the interim limit.

Total Phosphorus - There was no assimilative capacity available; therefore, the interim limits (Regulation 85.5(1)(a)(iii)) will apply. Regulation 85 effluent data from 2013 indicate that this limit cannot be met consistently; therefore, a compliance schedule has been added for this parameter. A reporting requirement will be added as the interim limit.

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.

The facility provided effluent MWAT and DM data from the previous permit term to conduct the RP analysis. The Division's practice for temperature is to use a multiplier of 1.1, rather than to statistically derive a multiplier from the data set based on sample size and coefficient of variation. This is because the sample size is expected to be greater than 46 samples in all cases.

Based on the RP analysis, the MEPC is greater than the MAPC for the MWAT in January, February 1-14, July, August, September, and December. For these months, MWAT limitations has been added to the permit. For all other months, a report only requirement will be added for MWAT, effective immediately. The MWAT limitations for January, February 1-14, July, August, September, and December are more stringent than the previous limits, and the permittee may not be able to consistently meet this limitation. Therefore, a compliance schedule has been added to the permit to give the permittee time to meet these limitations for January, February, July, August, September, and December. An interim reporting requirement will be added during the length of the compliance schedule. Note that a temporary modification expiring on 12/31/2020 of current conditions exists between 12/1 to 2/13. Therefore, for these months the compliance schedules will be delayed until after the temporary modification expires.

Note that during the Public Notice period, the permittee requested limitations for the 34 MGD tier. The division has not added a 34 MGD tier as the facility is unable to meet the limitations for the 50 MGD tier at this time. The permittee may elect to submit a permit modification after the conclusion of the compliance schedule to add in a 34 MGD tier provided that the limitations at the 50 MGD tier can be met.

Organics – The effluent is not expected or known to contain organic chemicals, and 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. A qualitative RP has been made as this is a major domestic wastewater treatment facility and may contain ammonia, total residual chlorine, and metals in its effluent.

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

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

requirements and the required follow-up actions the permittee must take to resolve a toxicity incident. The permittee should also read the above mentioned policy which is available on the Permit Section website. The permittee should be aware that some of the conditions outlined above may be subject to change if the facility experiences a change in discharge, as outlined in Part II.A.2. of the permit. Such changes shall be reported to the Division immediately.

C. Parameter Speciation

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

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

Until recently there has not been an effective method for monitoring low-level total mercury concentrations in either the receiving stream or the facility effluent. 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.

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

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

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

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

VII. ADDITIONAL TERMS AND CONDITIONS

A. Monitoring

Effluent Monitoring – Effluent monitoring will be required as shown in the permit document. Refer to the permit for locations of monitoring points. Monitoring requirements have been established in accordance with the frequencies and sample types set forth in the Baseline Monitoring Frequency, Sample Type, and Reduced Monitoring Frequency Policy for Industrial and Domestic Wastewater Treatment Facilities. This policy includes the methods for reduced monitoring frequencies based upon facility compliance as well as for considerations given in exchange for instream monitoring programs initiated by the permittee. Table VII-1 shows the results of the reduced monitoring frequency analysis for Permitted Feature 001A, based upon compliance with the previous permit.

Based upon the reduced monitoring frequency analysis for Permitted Feature 001A, the permittee is eligible for reduced monitoring for pH, *E. coli*, TRC, ammonia, $CBOD_5$, TSS, oil and grease, dissolved cadmium, dissolved hexavalent chromium, free cyanide, dissolved lead, total mercury, dissolved selenium, dissolved silver, total recoverable uranium, chloride, and sulfate.

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

The quarterly monitoring frequency for mercury is imposed consistent with the Divisions' recent initiative to include quarterly monitoring for mercury because of the changes in analytical procedure that will allow total mercury to be quantified at much lower concentrations.

Table VII-1 – Monitoring Reduction Evaluation*

Parameter	*Proposed Permit Limit*	*Average of 30-Day (or Daily Max) Average Conc.*	*Standard Deviation*	*Long Term Characterization (LTC)*	*Reduction Potential*
pH (su) Minimum	*min 6.5*	*7.2*	*0.12*	*6.96*	*1 Step*
pH (su) Maximum	*max 9.0*	*7.5*	*0.12*	*7.74*	
E. coli (#/100 ml)	*126*	*1.8*	*1.2*	*4.2*	*3 Levels*
TRC (mg/l)	*0.014*	*0*	*0*	*0*	*3 Levels*
NH3 as N, Tot (mg/l) Jan	5.2	*1.8*	*0.3*	*2.4*	*3 Levels*
NH3 as N, Tot (mg/l) Feb	5.4	*2*	*0.69*	*3.38*	*2 Levels*
NH3 as N, Tot (mg/l) Mar	4.8	*2*	*0.48*	*2.96*	*2 Levels*
NH3 as N, Tot (mg/l) Apr	4.6	*2*	*0.48*	*2.96*	*2 Levels*
NH3 as N, Tot (mg/l) May	4.3	*1.6*	*0.25*	*2.1*	*3 Levels*
NH3 as N, Tot (mg/l) Jun	4.0	*1.7*	*0.59*	*2.88*	*2 Levels*
NH3 as N, Tot (mg/l) Jul	3.5	*1.5*	*0.26*	*2.02*	*2 Levels*
NH3 as N, Tot (mg/l) Aug	3.3	*1.4*	*0.3*	*2*	*2 Levels*
NH3 as N, Tot (mg/l) Sep	3.3	*1.5*	*0.16*	*1.82*	*2 Levels*
NH3 as N, Tot (mg/l) Oct	4.2	*1.8*	*0.23*	*2.26*	*2 Levels*
NH3 as N, Tot (mg/l) Nov	4.6	*1.7*	*0.22*	*2.14*	*3 Levels*
NH3 as N, Tot (mg/l) Dec	4.9	*1.7*	*0.37*	*2.44*	*3 Levels*
CBOD5, effluent (mg/l)	*25*	*2.9*	*1.5*	*5.9*	*3 Levels*
TSS, effluent (mg/l)	*30*	*2*	*0*	*2*	*3 Levels*
Oil and Grease (mg/l)	*10*	*0*	*0*	*0*	*3 Levels*
*Cd, Dis (µg/l)***	*0.18*	*0*	*0*	*0*	*3 Levels*
Cr+6, Dis (µg/l)	*13*	*0.83*	*2.9*	*6.63*	*2 Levels*
CN, Free (µg/l)	*6*	*0.42*	*2*	*4.42*	*2 Levels*
Cu, Dis (µg/l)	*12.6*	*9.6*	*0.99*	*11.58*	*1 Level*
*Se, Dis (µg/l)***	*4.8*	*2*	*0.56*	*3.12*	*2 Levels*
Ag, Dis (µg/l)	*2.6*	*0*	*0*	*0*	*3 Levels*
U, TR (µg/l)	*30*	*9.8*	*7.1*	*24*	*1 Level*
Chloride (mg/l)	*286*	*106*	*14*	*134*	*3 Levels*
Sulfate (mg/l)	*270*	*147*	*17*	*181*	*2 Levels*

*Note that the monitoring reduction evaluation is the same for the 34 MGD tier where a parameter is applicable for both tiers.
**Reduction Evaluation based on the total data provided by the facility.

B. Reporting

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

for details on such submission.

2. Additional Reporting –There are no additional reporting requirements at this time.

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. See Part I.B of the permit for more information.

Total Inorganic Nitrogen – A compliance schedule has been given for this parameter to provide the facility time to evaluate the treatment needed to meet the limit and to construct treatment facilities.
Total Phosphorus - A compliance schedule has been given for this parameter to provide the facility time to evaluate the treatment needed to meet the limit and to construct treatment facilities.
Temperature - A compliance schedule has been given for this parameter. The duration of the scheduled was determined based on the time it is expected to take to characterize the effluent in future operational conditions to establish the level of reduction needed, to evaluate source control strategies, and if necessary, to implement in plant controls to reduce effluent temperature.

All information and written reports required by the following compliance schedules should be directed to the Permits Section for final review unless otherwise stated.

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 wastewater treatment facilities is the CDPS General Permit for Stormwater Discharges Associated with Non-Extractive Industrial Activity.

Division records indicate that Cities of Littleton and Englewood applied for and obtained coverage under this permit for the L/E WWTP. The CDPS certification number is COR900821.

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 included 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).

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 South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin, 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 the permittee disagrees with this finding, pursuant to 61.11(b)(ii) of the Colorado Discharge Permit System Regulations, the permittee should submit all pertinent information to the Division during the public notice period.

VIII. REFERENCES

A. Colorado Department of Public Health and Environment, Water Quality Control Division Files, for Permit Number CO0032999.

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 March 1, 2017.

D. Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin, Regulation No. 38, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective June 30, 2017.

E. Colorado Discharge Permit System Regulations, Regulation No. 61, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective April 30, 2017.

F. Regulations for Effluent Limitations, Regulation No. 62, Colorado Department of Public Health and Environment, Water Quality Control Commission, effective July 30, 2012.

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 May 9, 2007.

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

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 November 30, 2016.

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 November 30, 2016.

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 August 31, 2017.

FOR DIVISION USE ONLY	
G04	Sewage Sludge/Biosolids Annual Program Reports
G07	Pretreatment Program Reports

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

G09	Sewer Overflow/Bypass Event Reports
G3A	DMRs: Regular Submission Frequency
G8A	SIU Compliance Reports (EPA is Control Authority)

IX. ATTACHMENTS

Attachment 1: Final Water Quality Assessment for Segment 14 (October 31, 2017).

X. PUBLIC NOTICE COMMENTS

The public notice period was from July 22, 2016, to September 22, 2016. Comments were received from the following:

A. L/E WWTP
B. Vranesh and Raisch, LLP on behalf of Centennial Water and Sanitation District
C. AF Cure
D. Metro Wastewater Reclamation District
E. LT Environmental, Inc. on behalf of the Regional Transportation District
F. Laurie Rink on behalf of the Farmer's Reservoir and Irrigation Company
G. Roxborough Water and Sanitation District (Received October 14, 2016)

Verbatim comments and the responses of the Division are given below.

Comments about the third version of the Segment 14 WQA were received in a public notice period from July 13, 2017 to August 14, 2017 from two parties.

H. Littleton Englewood Wastewater Treatment Plant
I. Barr Lake and Milton Reservoir Watershed Association

These additional comments and the responses thereto from are included in this permit to complete the record, as changes were made to the final permit in response to these comments

Note that several other changes have been made to the WQA, which are not addressed in the comments below. This includes:

1. A modification to the ammonia modeling approach. The downstream dischargers were added into the AMMTOX model at a distance closer to the confluence of Cherry Creek and the South Platte River rather than at same outfall of L/E WWTP.
2. Total Inorganic Nitrogen was remodeled to give downstream dischargers a WQBEL of 10 mg/l.
3. Acute temperature standards have been corrected based on changes in Regulation 31. These changes have changed the result of RP from a quantitative RP to monitoring for acute (Daily Maximum) temperature limitations.
4. JS 9325 has been added to the chemical approval list. Note that the division sent a memo authorizing the use of JS 9325 for a pilot study (CO0032999).
5. Minor corrections have been made to typographical errors in the documents.

A. L/E WWTP COMMENTS (July 22, 2016 Public Notice, received 9/22/2016)

General Comments

Reserve Capacity

Comment 1. The draft renewal discharge permit for L/E contains a number of water quality based effluent limits ("WQBELs") that were developed in conjunction with a water quality assessment ("WQA") of the South Platte River for

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

Segment 14 of the Upper South Platte River sub-basin. The WQA was attached as Appendix A to the draft permit.

In the WQA, the Water Quality Control Division (the "Division") included a 5 million gallons per day ("MGD") allotment, or "reserve capacity," to account for "the current proposed discharge flows and probable new discharges" in Segment 14 of the South Platte River downstream of L/E (page 3 of the WQA). Page 14 of the WQA states that this reserve capacity was included in the WQA to account for anticipated future development in Denver, particularly underground parking lots.[1] According to the Division, the reserve capacity amounts to "approximately 10% of the known current loading for which assimilative capacity is being allocated" and "is expected to be adequate…based on the [Division's] estimates of the number and size of discharges likely to request assimilative capacity."

The Division, however, does not have legal authority to implement WQBELs that include "reserve capacity." Regulation 61 § 61.8(2)(b)(i) provides that "[e]ffluent limitations designed to meet water quality standards shall be based on the application of appropriate physical, chemical, and biological factors reasonably necessary to achieve the levels of protection required by the standard." The inclusion of the reserve capacity impermissibly makes the WQBELs more-stringent than required by the existing standards in order to account for the possibility of new discharges in the future. *See* C.R.S. § 24-4-106(7); *Chostner v. Colo. Water Quality Contrl. Comm'n*, 327 P.3d 290, 296 (Colo. App. 2013) (agency decision may not be "arbitrary and capricious or contrary to the rule of law."). The Division cannot single out L/E with a standard that is "x" percent more-rigorous than the applicable-statewide standard adopted by the Water Quality Control Commission (the "Commission").

In addition, the inclusion of reserve capacity is contrary to the procedures for adopting WQBELs promulgated by the Commission. The design flow of L/E is 50 MGD. In order to implement the reserve capacity, however, the Division modeled L/E together with an additional 5 MGD for other facilities, some of which have not submitted an application for a discharge permit.

Commission regulations explicitly provide that in the case of publicly-owned treatment works, such as L/E, "permit effluent limitations, standards, or prohibitions shall be calculated based on design flow" (Regulation 61 § 61.8(2)(f)(i)). In addition, Commission regulations provide that, for industrial discharges, WQBELs are to be calculated using a "reasonable measure of actual production" (Regulation 61 § 61.8(2)(f)(ii)). The Division, therefore, may not calculate the WQBELs using assumed flows, or potential future flows, that exceed the design flow (POTWs) and actual flow (industrial discharges). *See* C.R.S. § 24-4-106(7); *Chostner v. Colo. Water Quality Contrl. Comm'n*, 327 P.3d 290, 296 (Colo. App. 2013). The Clean Water Act, and its state analog, require dischargers to acquire permits for their "discharge," not for their discharge and the anticipated future discharges of others. *See* 33 U.S.C. § 1342(a)(1); C.R.S. § 28-8-501.

Although some of the other facilities included in the modeling have submitted requests for Preliminary Effluent Limitations ("PELs"), this is not the same as formally applying for a discharge permit, and not all facilities that request PELs actually apply for a discharge permit. According to the table on p 14 of the WQA, there are only 2 facilities that have submitted an application for a discharge permit, one of which has been issued and the other which is pending. L/E questions why the issued permit was not included in Table A-1 as an existing discharger and why the other permittee, Confluence Apartments, was not only omitted from this same table, but also not sent to public notice along with the L/E renewal permit and the Southwest Generation permit. The facilities that are mentioned in the WQA as potential future discharges are stated to be in downtown Denver (page 14 of the WQA), and may be discharging to Cherry Creek (page 4 of the WQA), which enters the South Platte River near downtown.

The WQA (page 14) states that Public Service Company's Zuni Station also discharges to the South Platte River approximately 5 miles downstream of the L/E discharge, but that due to distance and dilution, that it was not necessary to include this discharge in the WQA. L/E agrees with this assessment. These other facilities are even further away than Zuni Station, likely with smaller discharge flows, and therefore should also not need to be included in the WQA. Additionally, the difference between L/E's design flow (50 MGD) and actual flow (approximately 25 MGD),

1 In Denver, underground parking facilities often extend beneath the shallow water table created by the South Platte River, and, as a result, these facilities must be constantly dewatered to prevent flooding. It is L/E WWTP's understanding that Metro Wastewater will not accept the introduction of the groundwater that is produced by these dewatering operations into its system, and consequently, that the parking lot owners must obtain discharge permits from the Division to discharge the produced groundwater to the South Platte River.

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

provides a significant buffer in the receiving stream for the Division to consider when determining whether a new discharger to the segment would require that the WQA be reassessed for any future applicant, with the submission of a permit application.

Finally, the inclusion of the reserve capacity imposes an unfunded mandate on L/E. In effect, the reserve capacity requires ratepayers in Littleton and Englewood to pay for additional water treatment at their location upstream in order to offset the anticipated impacts of new discharges that may occur downstream in Denver. The Division cannot require the ratepayers in Littleton and Englewood to subsidize, through higher treatment costs, development that may occur in Denver. *See* C.R.S. § 29-1-304.5(1).

Instead, state regulations specifically set forth the procedures that these new commercial dischargers must follow to apply for discharge permits, *see, e.g.*, Regulation 61 § 61.4(7); and, the regulations specifically set forth the procedures that the Division must follow if these new dischargers will cause pollutant levels in the river to exceed the existing water quality standards. *See, e.g., id.* § 61.8(1)(b)(iv). The Division cannot excuse developers from complying with these requirements in favor of imposing a reserve capacity requirement on L/E WWTP that has no basis in the law. This is a significant change in practice for the Division that has not been vetted with stakeholders, and does not have explicit regulatory support. Accordingly, L/E WWTP respectfully requests that the Division remove the reserve capacity allotment from the WQA, and recalculate the WQBELs using the procedures promulgated by the Commission.

***Response 1**. The division has eliminated the reserve capacity concept from the South Platte Segment 14 (COSPUS14) permitting framework. The 5 MGD that was initially set aside as "reserve capacity" for existing and anticipated individual permit dischargers, existing general permits expecting to apply for individual permits, and completed PELs; has been changed to the actual discharge flows from individual permits and individual permit applications already submitted to the division for Segment 14. The division has therefore removed PELs which have not requested individual permits, which include: PEL230037 (ECI Site Construction Management Inc. – Confluence Park; 0.864 MGD), PEL230038 (Regional Transportation District Tunnel 16; 0.144 MGD), and PEL230041 (Artis HRA Hudson Bay; 0.0144 MGD) from the analysis. In addition, the facilities that were expected to convert from a general groundwater remediation permit to an individual permit but have not yet applied for an individual permit have also been removed. These facilities include COG315445 (Saunders Construction Inc.; 0.576 MGD), and COG315385 (AP Mountain States LLC; 0.216 MGD). Note that GLL 2160 East Grand LLC (COG315293) submitted an application for an individual permit and will not be removed; however, they requested a different design flow (0.144 MGD) than in their general certification (0.576 MGD), and therefore, that change has been incorporated into the revised assimilative capacity modeling. Verve Delgany Apartments LLC has also submitted an application for an individual permit; however, the permit will be written as a discharge to Cherry Creek, because the facility discharges directly to Cherry Creek. Lastly, two conversions from the COG605000 general permit have been added to the flow summations: Owens Corning Trumbull Asphalt (COG605019 with a flow of 0.00045 MGD) and Airgas – Denver ASU (COG605040 with a flow of (0.05 MGD).*

This results in a change in flow from 5 MGD in the draft WQA to 2.8 MGD in the revised WQA. (see Fact Sheet Attachment 1, Water Quality Assessment). Note that the assimilative capacity will be allocated to the existing individual permit dischargers and individual permit applications for discharge to Segment 14. Any additional individual permits will be accounted for in assimilative capacity at the next renewal for these Segment 14 individual permit dischargers. Additional individual permit facilities may be expected to meet end-of-pipe (no dilution) limits for all parameters until that time.

Note that the reason for Zuni's exclusion from this modeling approach was because the division was anticipating receiving a termination application for the Zuni Permit during the WQA development. Since public notice, the division has received this termination request; and therefore, the facility's flows were not considered in the model.

Tiers

Comment 2. With this renewal permit the Division has eliminated the tier system that has been included in previous permit renewals. Tiers are allowable under Regulation 61.8(2)(f), where the actual flows from a treatment facility are significantly different from the facility design flow. For the L/E facility, the design flow is 50 MGD; but the average flows are approximately 25 MGD. Previous permit renewals have set effluent limitations for 34, 42 and 50 MGD. The differences in effluent limitations based on the tier approach are significant enough that tiers are preferable, especially as effluent limitations and permitting approaches continue to become more stringent. Three tiers may not

be needed at this time, but L/E requests that the lower 34 mgd tier be added to the permit.

***Response 2**. Regulation 61.8(2)(f) states "Where the facility design flow and actual flow are significantly different, the Division may implement a tiered approach to setting water-quality-standard-based effluent limitations". Therefore, it is at the division's discretion to evaluate a permit at different tiers. As discussed with the permittee after the public notice period, the division will add the lower 34 MGD tier to the permit as requested in order to reflect actual design flow for this permit term. However, the division will require the facility to provide justification for tiers (for all or select parameters) at the next renewal.*

Nitrate and Total Inorganic Nitrogen

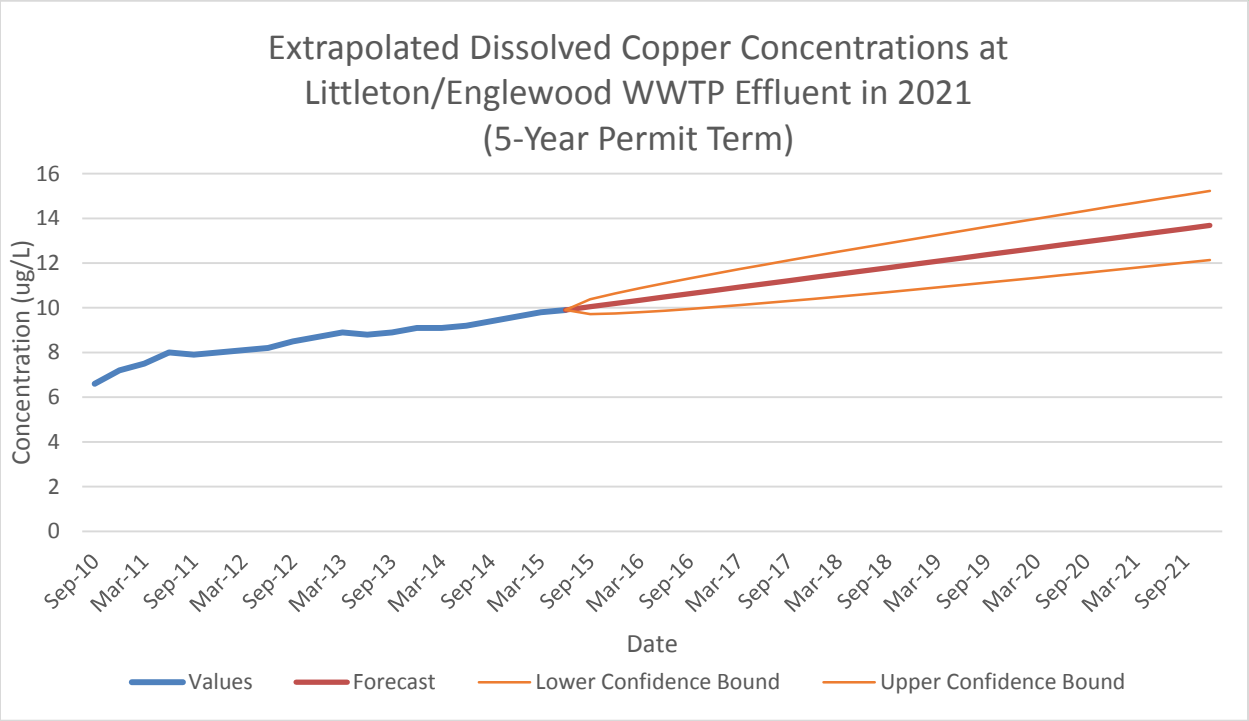
Comment 3. In the draft permit, the Division has included limitations for total inorganic nitrogen ("TIN"). To derive these limitations, the Division calculated WQBELs based on: (1) the 10 mg/L stream standard for nitrate; (2) Regulation 85 limitations; and (3) the existing total maximum daily load ("TMDL") for nitrate on Segment 14, and then applied the more stringent of these standards. L/E does not agree with this approach. The TMDL values were developed based on a nitrate model that took into account instream changes in nitrogen speciation and other site specific factors. The TIN limitations included in the draft renewal were developed based on a generic mass balance approach that did not account for site specific conditions. L/E requests that it be allowed to update the model that was used to develop the TMDL allocations for nitrate based on the same site specific considerations that were included in the original modeling. This approach would result in the development of nitrate limitations that are protective of the stream standards. L/E further requests that this modeling update be added in as part of the compliance schedule for the TIN limits. This would result in development of the limitations followed by a modification of the permit to include these limits in place of the mass-balanced based nitrate limitations. The development of the appropriate limitations for TIN should take place prior to the compliance schedule for construction to meet the new TIN limitations.

***Response 3**. The division agrees with the comment that the T.I.N limitations are based on (1) the 10 mg/L stream standard for nitrate; (2) Regulation 85 limitations; and (3) the existing total maximum daily load ("TMDL") for nitrate on Segment 14. However, the division did not apply the most stringent limit. The permit contains all three types of T.I.N limitations because there are different reporting types and timeframes. The WQBEL is a daily max and is calculated from the stream standard of 10 mg/l of nitrate. The Regulation 85 limitation is calculated as a yearly rolling average and 95th percentile. The TMDL is reported in lbs/day. If L/E disputes the accepted model in the TMDL framework, then L/E would need to coordinate with the division to update the EPA approved TMDL and submit a permit modification request.*

Additionally, upon further discussion with the permittee on 10/11/ 2017, the permittee expressed the desire to have two compliance schedules for T.I.N to account for the different limitations and timeframe for Regulation 85 and drinking water. The permittee also explained the potential options that they will pursue, which will likely change the compliance schedule events, due dates, and potentially the final limitations in the permit. The division has added language in the existing compliance schedule to be more specific that the compliance schedule initially pertains to Regulation 85 limitations and has added in language to report on the status of meeting drinking water T.I.N in the compliance schedule.

Copper Alternative Analysis and Antidegradation Limits

Comment 4. In the draft renewal permit, the Division has altered its approach to setting the alternative analysis ("AA") based limit for copper. In previous permits, the Division set the AA limit at the WQBEL. In the draft renewal permit, the Division developed the copper WQBEL using an antidegradation ("AD") limit based on the maximum two-year rolling average for copper based on the last five years of effluent data, resulting in a two-year rolling average limitation of 9.9 µg/L. L/E is concerned with this approach because copper concentrations in the effluent have been increasing slightly with every newly calculated two-year average over the course of the previous permit term. Assuming that the trend in copper concentrations continues, L/E predicts that the AD-based WQBEL limitation will be exceeded. In addition, this approach does not allow for any type of operational flexibility or margin of safety. The following figure shows the gradual but continuing increase in two-year average concentrations, forecasts the future concentrations based on this data, and applies a 95% confidence boundary to the prediction.



With an accepted AA, an alternate limitation is developed and the resulting limit would be somewhere between the AD limit and the WQBEL. L/E requests that the two-year average concentration for copper, based on the AA, be set at 15.2 µg/L. This is more stringent than the previously allowed AA limitation, will continue to protect the receiving stream and the AD regulation, and will allow for L/E to maintain compliance with the permit.

***Response 4**. In the AA submitted on December 20, 2004 titled "Littleton/Englewood Wastewater Treatment Plant Necessity of Degradation Determination", the facility stated that it was possible to meet a two-year rolling average concentration of 12.6 µg/l. Therefore, the two-year rolling average concentration has been changed from 9.9 to 12.6 µg/l. Changes have been made to Part I.A.2 of the permit. If a less stringent limit is desired, then the facility will be required to submit a new AA and request for a permit modification.*

In a correspondence with the division on October 19, 2017, the facility submitted a request for a compliance schedule for the copper AA limit. The correspondence stated:

> "We are requesting additional time under a compliance schedule in order to achieve the proposed more stringent ADBAC for potentially dissolved copper. It is our understanding that the limit will be changed from a report-only value to 12.6 µg/L as a 2-year rolling average. The compliance schedule is requested to implement our new local limits for permitted industrial facilities regulated by our pretreatment program and implement those local limits into the facility permits. We understand that the permit will require us to develop local limits within 12 months of the effective date of the new permit. We expect that new permits including the new local limits can then be issued over the next 6 to 12 months after that time. The previous Alternatives Analysis identified that there were no economically reasonable solutions to achieve higher levels of copper treatment at the WWTP; therefore, adequate control of our permitted industries is essential to meeting more stringent levels consistently. The currently authorized load in our permitted industries' permits is about 19 times higher than the levels that they have discharged per recent pretreatment data, and the authorized loads will need to be drastically reduced in the new local limits. There is a real risk of violations of the new copper limits at our WWTP if just a few of the permitted industries were to discharge at levels closer to their current permitted levels.
>
> Local limits were developed in 2009 based on allocating a portion of maximum allowable headworks loading to our permitted industries. In the renewal permit requirements, L/E WWTP will be required to recalculate local limits. Previously in 2009, local limits were established based on a much less stringent chronic water quality standard of

60.4 µg/L, and since most permitted industries don't currently discharge at their design flow or at their permitted concentrations, L/E has no way of guaranteeing that the proposed antidegradation limits can be achieved until local limits are recalculated and permits are reissued in order to provide us with enforcement authority. For example, if some of the permitted industries utilize more of their permitted loading for copper, which was developed under the previous local limits analysis, copper loading to our headworks could be significantly higher than current levels. Our plant is not designed to remove metals, and if this were to happen, which it legally could, we would have no way to treat the additional copper loading to meet our permit limits.

We request a 24-month compliance schedule with 12 months to revise local limits, and 12 months to incorporate new local limits for potentially dissolved copper that will be protective of the new antidegradation limit. This will also provide time to update the Alternatives Analysis, if necessary, potentially including an evaluation of economic impacts to the industrial users that we serve."

Because the AA limitation is a new copper limitation, L/E WWTP is eligible for a compliance schedule. Therefore a compliance schedule has been added to the permit. The effective date when the AA limit will be January 1, 2022 as it will allow gives the facility two years to complete the required work to meet the limitation and another two years of collecting data for the evaluation of a two-year average after they have completed the required work to meet the limitation. Permit limit tables in Part I.A.2 of the permit have been updated with the new effective date to meet the copper AA limit. A compliance schedule for copper has been added to Part I.B.6 of the permit. The RP section of the factsheet has also been updated.

Reasonable Potential

Comment 5. There are several instances in the draft permit where the Division has concluded that there is reasonable potential ("RP") for a given parameter to cause or contribute to an instream violation of a water quality standard based exclusively on the fact that the practical quantitation limit ("PQL") for that parameter is approximately half of the permit limit. In these cases, however, all available data indicates that parameter concentrations are less than the PQL. In addition, there are other cases where effluent data indicates that parameter concentrations are greater than the PQL, but the expected effluent quality is below the 50% cutoff. Parameters included in this comment include chloride, cadmium, mercury and silver. Additionally, L/E notes that, for silver, if the previous AA based limit was used (or an alternate AA limit), the PQL would be less than half of the limitation and would result in a no RP determination. L/E requests that the Division remove the monitoring requirements for cadmium, chloride, mercury and silver. Additional comments on the RP analysis are provided below.

Response 5*. This comment will be addressed in responses 38 through 45.*

Permit Specific Comments

Part I.A.1. Instream temperature monitoring point

Comment 6. The location of the upstream, instream, temperature monitoring location is the USGS station 06711565. The latitude/longitude of this location should be changed to 39.665000º N, 105.003611 º W.

Response 6*. This has been changed in response to the comment.*

Part I.A.2. Percent Removal Requirements

Comment 7. CBOD is measured for permit compliance as opposed to BOD.

Response 7. *This has been changed in response to the comment.*

Part I.A.2. Permit Limits Table

Comment 8. Please include limitations for a 34 mgd tier.

Response 8*.* ***See response A.2****; this has been changed in response to the comment.*

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

Comment 9. TRC – L/E would prefer the NIL value of 0.0019 µg/L as a 30-day average limit, as opposed to the two-year rolling average of 0.0022 µg/L.

***Response 9**. This has been changed.*

Comment 10. Ammonia – The AMMTOX model should be developed using the site-specific ammonia degradation values and information as done in previous permits. Additional information on this comment is provided in the WQA comments.

Response 10. See response to comment A.59.

Comment 11. Temperature limits effective immediately – As the numeric limitations in June, July and August are new or more stringent limits, L/E requests that they be added to the compliance schedule becoming effective January 1, 2027. Although data indicate that these limits have been attained, there is little room for error between the maximum effluent temperature and the limit (approximately 1 degree), and the facility does not have a treatment system in place for temperature in order to assure compliance with these limitations.

***Response 11**. Because these limits are new, the facility is eligible for a compliance schedule. The Division has added a compliance schedule in Part I.B.6 of the permit for* June, July and August *due to the uncertainty of compliance with the limit.*

Comment 12. Temperature limits effective 1/1/27 – The limits for Feb 14 - Feb 28 should be based on the summertime standard instead of the wintertime standard.

***Response 12**. This has been fixed in section VI of the WQA, section VII of the fact sheet and part I.A.2 of the permit.*

Comment 13. Temperature limits effective 1/1/31 – The limits for February should be split in to wintertime (Feb 1 – Feb 13) and summertime limits (Feb 14 – Feb 28).

***Response 13**. This has been fixed in section VI of the WQA, section VII of the fact sheet and part I.A.2 of the permit. See Attachement 1 to Fact Sheet.*

Comment 14. Temperature limits – It appears that the WQBEL calculations used only a portion of the available record for determining the ambient quality, and did not apply the adopted changes to the definition of ambient water quality. The WQA appears to have used a period of record of January 2011 to August 2015 for ambient water quality. However, the USGS station has 15-minute temperature data dating back to 1985. L/E requests that the determination of ambient water quality for temperature follow the definition in Regulation 31, and that the period of record be extended to a minimum of 10 years. L/E can provide upstream temperature data in an Excel file.

***Response 14**. The WQBELs were calculated using a longer period of record using USGS gage 06711565 (South Platte River at Englewood, CO), which is located approximately ¼ miles upstream of the facility. Note that although data were available for a long period of record, data prior to October 1, 2007 were only available as a daily average. Data from October 1, 2007 to September 30, 2016 represents a minimum of 10 years and the division has determined is the most appropriate to determine new WQBELs.*

Comment 15. TIN effective 1/1/21 – We request that the concentration based TIN limits be developed based on an update to the model used to develop the TMDL, which takes into account site-specific conditions present on Segment 14 as opposed to the mass-balance approach (see the TIN comment under the General Comments section above).

Response 15. See response to comment A.3.

Comment 16. TIN (lbs/day) – The values listed in parenthesis, indicating lbs/day, in the permit limits table do not match those indicated in Table V of the WQA. The values in the permit limits table should be corrected to match those in the WQA.

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
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***Response 16**. This has been fixed in the 50 MGD limit table in part I.A.2 of the permit in response to the comment.*

Comment 17. Metals – Please remove the monitoring requirements for chloride, cadmium, lead (data is being submitted), manganese (data is being submitted), mercury and silver. Additional information on this comment is provided in the WQA comments.

***Response 17**. Monitoring requirements for lead and were removed based on data submitted in comment A.41 and because quarterly data will be collected at outfall 001P to be used for the RP analysis at the next renewal. Monitoring requirements will remain for manganese as manganese data is not collected at outfall 001P; however, the facility will be eligible for reduced monitoring based on the data provided in comment A.42. This will allow for an RP analysis at the next renewal. Requirements for chloride, cadmium, mercury, and silver were unchanged.*
***See Response A.38, A.41, A.42, A.43, A.44, and A.45 for explanations**.*

Comment 18. Metals Monitoring Frequency – For copper, uranium, and nonylphenol, please alter the monitoring frequencies to monthly in order to streamline sampling events and reporting. With the exception of uranium, these parameters are all report only and this would still provide at least 60 data points for the next permit renewal, which is more than sufficient for the purposes of a future RP analysis.

For nonylphenol alone, the analytical costs of monitoring this parameter on weekly basis is approximately $16,500 per year, or $82,500 for the 5-year permit term.

***Response 18**. Metals monitoring frequencies were re-evaluated based on the new WQBELs that were determined after the public notice period as displayed in section V of the WQA. The monitoring reductions are based on the reduced monitoring policy (WQP-20) and parameters will only receive monthly monitoring frequency if the data indicate the required reduction potential. Updates to monitoring frequency have been made in the limit tables in Part I.A.2. of the permit. Note that the reduced monitoring frequencies are the same for both the 34 MGD and 50 MGD tiers.*

Comment 19. Please reduce the monitoring frequency for hexavalent chromium from monthly to quarterly, as is the case in the current permit. There was only one data result for hexavalent chromium above the PQL (at the PQL) while the other 19 data points were below detection.

***Response 19**. Per WQP 20, reduction potential is based on the last three years of data when the facility is monitoring quarterly. Because the one data result for hexavalent chromium above the PQL occurred in March 2013 (more than 4 years ago, and all other results were below detect, the division has removed the data point from the analysis, resulting in quarterly monitoring. Changes have been made to the limit tables in Part I.A.2. of the permit.*

<u>Part I.A.3. Permitted Feature 300I</u>

Comment 20. Please remove total dissolved solids from this table as it applies to Colorado River basin discharges only.

***Response 20**. This has been removed.*

<u>Part I.B.5. Chronic or Acute WET Testing</u>

Comment 21. In parts b (3rd paragraph) and c (2nd bullet) of this section L/E requests that the words "for a single species" follow the words "failure of one of the two statistical endpoints". L/E believes that this clarifies the Division's intent that the evaluation of failure of one statistical endpoint is for each species individually.

***Response 21**. The division agrees that clarification of what constitutes a permit violation for chronic WET tests is appropriate in the context of this comment. The division evaluates failures of the NOEC and IC25 for <u>each</u> test species, independent of the other. The purpose of the dual limit is to show that there is a biological effect (IC25) and that the biological effect is also statistically significant in relation to the control (NOEC). Because the NOEC is used in evaluating whether the biological effect is statistically significant, it follows that this determination must occur within a test species, not across species. Thus, the division modified the referenced language as follows (where underlined):*

"A chronic WET test is considered a violation of a permit limitation when both the NOEC and the IC25 are at any concentration less than the IWC. This determination is made independently for each test species."

Note that the division added a dilution series in Part I.B.5.a for the 34 MGD tier and referenced the IWC for the 34 MGD tierin Part I.B.5.b.

The permit documents were modified accordingly.

Part I.B.6.a

Comment 22. L/E requests an additional three years for the TIN and TP compliance schedules as additional time is needed for construction activities. Once design approval is obtained, L/E will need to work through a request for proposals for construction, select a contractor, and complete the construction activities. For a large WWTF, this will take more than one year. Additionally, L/E will need time to start up and implement the new portions of the treatment facility, which will also take additional time.

L/E also questions whether the PEL task is needed, as the WQA that is issued with this permit action should serve as the basis for the limitations. L/E requests that this task be replaced with a requirement to update the nitrate model for Segment 14 to determine the applicable TIN limits.

Response 22. See response A.3*. PELs may be required for the facility depending on the path the permittee takes in order to meet the final limitations. The division has revised the compliance schedule event by adding "if needed" to the PEL task event description.*

Part I.B.6.b

Comment 23. Both of the temperature compliance schedules are listed as Part I.B.6.b (instead of the second one being 6.c). L/E requests that these two compliance schedules for temperature be combined into one, so that separate reports that contain the same information are not needed during the overlapping timeframes.

Response 23*. Because there is a temporary modification for the winter months (December, January, and February 1-13), a compliance schedule is not applicable until the end of the temporary modification. However, because there is no temporary modification for July, August, and December, the compliance schedule comes into effect immediately on the effective date. Therefore, the two compliance schedules will remain.*

Part I.B.7.a

Comment 24. The correct reference to the Colorado Pretreatment Regulation is Regulation 63 instead of Regulation 60.

Response 24*. This has been corrected in response to the comment.*

Part I.B.7.b

Comment 25. The language in this section lists specific prohibitions for all industrial users. Item (x) states "Any specific pollutant that exceeds a local limitation established by the POTW in accordance with the requirements of 40 CFR 403.5(c) and (d)." This is not a specific prohibition as listed in 40 CFR 403.5 (b) and the Local Limits developed and authorized in the municipal codes are applicable to Significant Industrial Users only. Please remove (B)(7)(b)(x) from the permit or correct the language to reflect only applicable to SIUs.

Response 25*. The language regarding the prohibition for exceedances of local limits was intended to ensure the program enforces the local limits and are only applicable to SIUs because of the development of their local limits. As a result, the language was removed from the specific discharge prohibitions.*

Part I.B.7.c

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

Comment 26. L/E requests additional time for the development of revised local limits, if determined to be necessary. By the time the permit is likely issued and effective, L/E will have only six months to complete this evaluation. Per EPA audit of the L/E WWTP Pretreatment Division (February 24 – 27, 2014) "a technical evaluation of the current local limits shall be submitted to the EPA within 12 months of the permit reissuance date." Please correct the hard date of June 30, 2017 to "within twelve months of issuance"

***Response 26**. The The hard date of June 30, 2017 has been changed to October 31, 2018, which will be one year from the issuance date of the permit. Note that the division has the choice whether to use a hard date or the language "within twelve months of issuance" and has chosen to use a hard date.*

Part I.B.7.d.i

Comment 27. The reference to "8.d" should be changed to "7.d".

***Response 27**. This has been corrected.*

Part I.B.7.h

Comment 28. The language pertaining to the requirement to list industrial users whom have "significantly" violated Pretreatment Standards or requirements annually in a newspaper is not consistent with 40 CFR Part 403.8(f)(2)(viii) language. L/E requests that the language in Part I.B.7.h be altered to match the requirements of 40 CFR Part 403.8(f)(2)(viii), shown below.

> (viii) Comply with the public participation requirements of 40 CFR part 25 in the enforcement of National Pretreatment Standards. These procedures shall include provision for at least annual public notification in a newspaper(s) of general circulation that provides meaningful public notice within the jurisdiction(s) served by the POTW of Industrial Users which, at any time during the previous 12 months, were in significant noncompliance with applicable Pretreatment requirements. For the purposes of this provision, a Significant Industrial User (or any Industrial User which violates paragraphs (f)(2)(viii)(C), (D), or (H) of this section) is in significant noncompliance if its violation meets one or more of the following criteria:
>
> (A) Chronic violations of wastewater Discharge limits, defined here as those in which 66 percent or more of all of the measurements taken for the same pollutant parameter during a 6-month period exceed (by any magnitude) a numeric Pretreatment Standard or Requirement, including instantaneous limits, as defined by 40 CFR 403.3(l);
>
> (B) Technical Review Criteria (TRC) violations, defined here as those in which 33 percent or more of all of the measurements taken for the same pollutant parameter during a 6-month period equal or exceed the product of the numeric Pretreatment Standard or Requirement including instantaneous limits, as defined by 40 CFR 403.3(l) multiplied by the applicable TRC (TRC = 1.4 for BOD, TSS, fats, oil, and grease, and 1.2 for all other pollutants except pH);
>
> (C) Any other violation of a Pretreatment Standard or Requirement as defined by 40 CFR 403.3(l) (daily maximum, long-term average, instantaneous limit, or narrative Standard) that the POTW determines has caused, alone or in combination with other Discharges, Interference or Pass Through (including endangering the health of POTW personnel or the general public);
>
> (D) Any discharge of a pollutant that has caused imminent endangerment to human health, welfare or to the environment or has resulted in the POTW's exercise of its emergency authority under paragraph (f)(1)(vi)(B) of this section to halt or prevent such a discharge;
>
> (E) Failure to meet, within 90 days after the schedule date, a compliance schedule milestone contained in a local control mechanism or enforcement order for starting construction, completing construction, or attaining final compliance;

(F) Failure to provide, within 45 days after the due date, required reports such as baseline monitoring reports, 90-day compliance reports, periodic self-monitoring reports, and reports on compliance with compliance schedules;

(G) Failure to accurately report noncompliance;

(H) Any other violation or group of violations, which may include a violation of Best Management Practices, which the POTW determines will adversely affect the operation or implementation of the local Pretreatment program.

Response 28*. The language in this section has been modified to align with the Federal Regulations. However, a reference to the Significant Noncompliance (SNC) criteria has been added for space considerations:*

This paragraph has been placed in Part I.B.7.h of the permit.

'Comply with the public participation requirements of 40 CFR part 25 in the enforcement of National Pretreatment Standards. These procedures shall include provision for at least annual public notification in a newspaper(s) of general circulation that provides meaningful public notice within the jurisdiction(s) served by the POTW of Industrial Users which, at any time during the previous 12 months, were in significant noncompliance with applicable Pretreatment requirements. For the purposes of this provision, a Significant Industrial User (or any Industrial User which violates paragraphs (f)(2)(viii)(C), (D), or (H) of this section) is in significant noncompliance if its violation meets one or more of the following criteria listed in 40 CFR Part 403.8(f)(2)(viii)(A-H).'

Part I.B.7.h.ix

Comment 29. The reference to "all changes" is ambiguous because minor changes to policies, procedures, templates, forms, etc. are made frequently as needed. Please provide clarification pertaining to "all changes".

Response 29*. Language has been deleted.*

Part I.B.7.l

Comment 30. For clarification of terms used throughout the Part I.B.7, the following definitions should be added to Part I.B.7.l. "Pretreatment Definitions" per 40 CFR part 403.3 & Regulation 63 part 63.7:

"Approval Authority" means the Director of the Water Quality Control Division at such time that Colorado has an approved State pretreatment program, and until such time, the EPA Region 8 Administrator.

"Approved POTW Program" or "Program" or "POTW Pretreatment Program" means a program administered by a POTW that has been approved by the Director in accordance with 40 CFR 403.11, or a program previously approved by EPA as described in the approved program document.

Response 30*. The division has added the provided language to Part I.B.7.l. as the L/E WWTP has an EPA-approved pretreatment program.*

Part I.B.7.l.v

Comment 31. This section states: "Pretreatment Standards and requirements" means any regulation containing pollutant discharge limits promulgated by the Environmental Protection Agency in accordance with § 307 (b) and (c) of the clean water act, including prohibitive discharge limits established pursuant to 40 C.F.R. 403.5 and which applies to industrial users and any substantive or procedural requirement related to pretreatment other than a National Pretreatment Standard, imposed on an industrial user."

This combined definition is not consistent with the individual definitions provided in 40 CFR Part 403.3 or Regulation 63 part 63.7.

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

Reference subparts (a.)(i.), (a.)(iii.), (a.)(v.), (a)(vii.), (h.), (j.), and (k.). L/E believes that it is not the intent of the Division to remove the requirements for implementation of "National Pretreatment Standards" from the L/E permit. L/E requests that the Division replace the draft permit definition of Pretreatment Standards and requirements" with the two definitions provided in 40 CFR Part 403.3 and Colorado Regulation 63 part 63.7.

"Pretreatment Requirements" means any substantive or procedural requirement related to pretreatment other than a National Pretreatment Standard, imposed on an Industrial User.

"National Pretreatment Standard," "Pretreatment Standard," or "Standard" means any regulation containing pollutant discharge limits promulgated by the Environmental Protection Agency in accordance with section 307 (b) and (c) of the Clean Water Act, including prohibitive discharge limits established pursuant to 40 CFR 403.5 and which applies to Industrial Users.

Response 31*. This change has been made in part I.B.7.l. of the permit.*

Part I.C

Comment 32. Please provide a definition and calculation requirements for the annual median and annual 95th percentile calculations. Sample frequencies for the TIN and TP are daily, and confirmation is needed on whether the stats are based on monthly averages of all individual daily samples.

Response 32*. The WQCC provided explanantion regarding running annual median and 95th percentile in Regulation 85:*

> *"…the Commission established annual median and 95th percentile compliance statistics. The Commission decided to require the limits to apply on a rolling basis so compliance will be determined based on the sample results for the most recent twelve months."*

Therefore, the statistics to be calculated and reported are not based on the median of monthly averages of all individual daily samples. The calculation is based on all samples. Furthermore, footnotes for the table found in Regulation 85.5(1)(a)(iii) and the DMR guidance document state that the running annual median and 95th percentiles shall be calculated for all samples in the most recent 12 calendar months.

Part I.D.1

Comment 33. As L/E is now required to report electronically, the language in this part of the permit should be altered.

Response 33*. Language is provided to report DMRs electronically via the Division's Net-DMR service.*

Part I.D.2

Comment 34. EPA is moving to an electronic annual report format in 2017. L/E requests that the language in this section allow for submittal of the report to EPA via this electronic format.

Response 34*. Language has been modified to allow submission of the biosolids report to be sent electronically to the EPA.*

Part I.D.4

Comment 35. This part of the draft permit states that influent samples should be taken after preliminary treatment. L/E requests that this be modified to state prior to preliminary treatment as this is where our influent sampling point is located.

Response 35*. Language has been modified so that the facility can take influent samples prior to preliminary treatment.*

Fact Sheet Comments

Section IV.e – Biosolids

Comment 36. L/E requests that the first paragraph in this section be altered to read as follows:

> Biosolids are stored for less than a day in a sludge silo and transported to approved biosolids application sites for land application. When travel to the land application site is limited due to weather, biosolids may be stored onsite on a temporary basis, less than two weeks. Currently, a biosolids temporary storage site is located at the city-owned biosolids application site when application is restricted by field conditions (i.e. wet). This site is designed to minimize storage of biosolids at the wastewater treatment plant.

Section IV.e.2 provides that the annual reports will be discussed later in the fact sheet; however, there is no discussion of the annual reports, and the only other mention of biosolids is in the references section.

Response 36*. The language for biosolids treatment and disposal has been changed to the paragraph provided. In addition, the reference to annual biosolids reporting has been clarified.*

Section V – Table V-1

Comment 37. The DMR data summary does not breakdown the temperature data monthly, so it is difficult to determine whether the WQBELs for the given months can be met, whether the data is correct, and if RP was correctly determined. Please provide a breakout of the temperature data by month.

Response 37*. Monthly maximum data has been added to Table V-1. Note that the data in the table were submitted in the DMRs, and that RP is treated differently for temperature than it is for other parameters and receives an automatic 1.1 multiplier because there are more than 60 WAT and Daily Maximum results in 5 years for each month.*

Section VI.A.4.e and Section VI.B - Reasonable Potential

Comment 38. Cadmium – The PQL requirement in the permit is 1 µg/L while L/E has used a PQL of 0.5 µg/L. The RP determination in the draft permit is that because the PQL is greater than 50% of the ADBAC, that monitoring is required. There were 18 data points for total cadmium that were evaluated for RP, all 18 were less than the PQL of 0.5 µg/L. L/E requests that the monitoring requirement for cadmium be removed as a qualitative RP determination as we would not expect any results different than these 18 data points, and that the 18 data points all measured total cadmium, of which the dissolved cadmium would be even less. If cadmium becomes an issue, it would be evident in the pretreatment data that is required to be collected for Permitted Feature/Limit Set 001P.

Response 38*. The Division added a monitoring requirement because of the uncertainty of non-detect results. While it is possible that the dissolved cadmium concentration can be less than half of the proposed limit of 0.18 µg/l, it is also possible that this limit can be exceeded. Because of this uncertainty and because the PQL used is greater than the potential limiation and because there is an industrial contribution in the influent to the plant, the Division has determined that a monitoring requirement is appropriate and the RP determination for this parameter will not change.*

Comment 39. Hexavalent Chromium – The RP determination for hexavalent chromium was made based on 1 data point out of 20 coming back at 10 µg/L. All other data points were less than the PQL of 10 µg/L. The one value that was at the PQL was from the 1st quarter 2013, and is still below the potential permit limitation. L/E does not believe that hexavalent chromium is an issue for the facility and would request that a qualitative determination of RP remove this requirement. If hexavalent chromium becomes an issue, it would be evident in the pretreatment data that is required to be collected for Permitted Feature/Limit Set 001P.

Resopnse 39*. Based on the Clean Water 1 policy titled "Determination of the Requirement to Include Water Quality Standards-Based Limits in CDPS Permits Based on Reasonable Potential", the Division must use all recent data (5 years old or less) for the analysis. Therefore, the maximum result will be used to determine reasonable potential for this*

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parameter and the RP determination will not change.

Comment 40. Copper – With the adoption of an alternate AD limitation for copper, L/E believes that this will change the RP determination for the AD-based limit to report.

***Response 40**. Based on the adoption of an AA limit of 12.6 µg/l as described in response 4, the quantitative determination of RP would result in a report only requirement. However, because there is potential for copper to be in the influent from drinking water and copper piping as mentioned in their Alternatives Analysis from December 2004, a qualitative RP has been made. Therefore, the AA limitation will remain in the permit as a two-year rolling average.*

Comment 41. Lead – Dissolved lead data is being submitted with these comments, which results in a no RP determination (Table 1). Monitoring for lead should be removed from this permit.

Table 1. Effluent Data for Lead (µg/L)

Date	30-day Ave	Daily Max	Date	30-day Ave	Daily Max
8/29/2016	0.21	0.37	8/26/2013	0.48	1.08
7/20/2016	0.19	0.19	7/29/2013	0.21	0.27
6/20/2016	0.19	0.22	6/24/2013	0.85	2.35
5/30/2016	0.16	0.21	5/13/2013	0.23	0.25
4/25/2016	0.20	0.31	4/29/2013	0.33	0.48
3/28/2016	0.19	0.24	3/25/2013	0.32	0.55
2/29/2016	0.34	0.86	2/25/2013	0.38	0.55
1/26/2016	0.17	0.20	1/28/2013	0.35	0.51
12/21/2015	0.39	0.75	12/24/2012	0.26	0.28
11/30/2015	0.21	0.27	11/26/2012	0.21	0.23
10/26/2015	0.22	0.33	10/29/2012	0.23	0.27
9/28/2015	0.22	0.27	9/24/2012	0.18	0.21
8/31/2015	0.20	0.31	8/27/2012	0.21	0.25
7/29/2015	0.23	0.33	7/30/2012	0.23	0.36
2/18/2015	0.32	0.32	6/25/2012	0.28	0.35
1/26/2015	0.34	0.39	5/28/2012	0.25	0.30
12/31/2014	0.35	0.62	4/23/2012	0.29	0.34
11/30/2014	0.56	0.81	3/26/2012	0.48	0.97
10/31/2014	0.49	0.97	2/27/2012	0.30	0.41
9/30/2014	0.39	0.54	1/30/2012	0.30	0.37
8/31/2014	0.33	0.43	12/26/2011	0.21	0.36
7/31/2014	0.28	0.34	11/28/2011	0.29	0.40
6/30/2014	0.46	0.54	10/31/2011	0.26	0.38
5/31/2014	0.28	0.35	9/26/2011	0.18	0.40
4/30/2014	0.24	0.29	8/29/2011	0.17	0.30
3/31/2014	0.32	0.36	7/25/2011	0.26	0.29
2/28/2014	0.41	0.51	6/20/2011	0.38	0.59
1/27/2014	0.52	0.90	5/30/2011	0.26	0.32
12/30/2013	0.45	0.77	4/25/2011	0.30	0.38

Table 1. Effluent Data for Lead (µg/L)					
Date	30-day Ave	Daily Max	Date	30-day Ave	Daily Max
11/25/2013	0.56	0.59	3/29/2011	0.51	0.73
10/28/2013	0.32	0.37	2/21/2011	0.30	0.37
9/30/2013	0.42	0.66	1/31/2011	0.38	0.62

Response 41*. Using the data provided, the Division can determine a reasonable potential quantitatively. Using the normal distribution, MEPCs were calculated to be 0.9 µg/l (30-day average) and 1.1 µg/l (daily maximum). The MEPCs were both less than half of the proposed limits; therefore, it was determined that no limitations are necessary at this time. Therefore, dissolved lead has been removed from the permit. The fact sheet and permit have been updated to reflect this change. Note that quarterly total data reported for outfall 001P will be sufficient to determine RP at the next renewal for the dissolved form.*

Comment 42. Manganese - Dissolved manganese data is being submitted with these comments, which results in a no RP determination (Table 2). Monitoring for manganese should be removed from this permit.

Table 2. Effluent Data for Dissolved Manganese (µg/L)					
Date	30-day Ave	Daily Max	Date	30-day Ave	Daily Max
8/29/2016	12.53	14.28	8/26/2013	13.82	18.34
7/20/2016	13.80	13.80	7/29/2013	21.78	25.63
6/20/2016	10.38	11.02	6/24/2013	25.18	29.20
5/30/2016	11.19	14.30	5/13/2013	23.20	24.30
4/25/2016	18.64	22.24	4/29/2013	29.05	31.30
3/28/2016	23.43	38.32	3/25/2013	26.45	27.80
2/29/2016	24.56	27.75	2/25/2013	21.66	22.70
1/26/2016	23.81	24.30	1/28/2013	20.46	21.21
12/21/2015	24.40	27.70	12/24/2012	19.74	21.07
11/30/2015	28.90	34.02	11/26/2012	14.86	17.60
10/26/2015	18.89	22.60	10/29/2012	10.81	12.95
9/28/2015	11.78	12.80	9/24/2012	8.30	9.70
8/31/2015	11.19	16.90	8/27/2012	7.99	8.62
7/29/2015	7.50	8.24	7/30/2012	10.11	11.72
2/18/2015	30.55	30.55	6/25/2012	14.31	15.74
1/26/2015	26.77	33.33	5/28/2012	18.58	20.47
12/31/2014	22.79	27.63	4/23/2012	27.21	31.95
11/30/2014	16.01	17.49	3/26/2012	27.57	29.34
10/31/2014	18.04	20.81	2/27/2012	29.31	30.80
9/30/2014	11.74	13.92	1/30/2012	28.71	33.64
8/31/2014	12.41	14.6	12/26/2011	21.14	22.52
7/31/2014	13.2	14.29	11/28/2011	16.48	21.70
6/30/2014	22.3	28.09	10/31/2011	8.81	11.00
5/31/2014	25.62	31.8	9/26/2011	7.42	7.81
4/30/2014	34.13	36.8	8/29/2011	8.01	10.54
3/31/2014	34.91	37.59	7/25/2011	9.42	9.71

Table 2. Effluent Data for Dissolved Manganese (µg/L)					
Date	30-day Ave	Daily Max	Date	30-day Ave	Daily Max
2/28/2014	33.99	36.4	6/20/2011	10.91	12.97
1/27/2014	33.86	38.30	5/30/2011	19.56	23.68
12/30/2013	29.13	35.60	4/25/2011	19.76	21.78
11/25/2013	19.00	19.79	3/29/2011	24.56	27.28
10/28/2013	17.57	22.01	2/21/2011	30.07	32.27
9/30/2013	17.34	20.54	1/31/2011	22.58	25.12

***Response 42**. Using the data provided, the Division can determine a reasonable potential quantitatively. Using the normal distribution, MEPCs were calculated to be 38 µg/l (30-day average) and 42 µg/l (daily maximum). The MEPCs were both less than half of the proposed limits; therefore, it was determined that no limitations are necessary at this time. However, the report only requirement limitation will remain in the permit at a semi-annual frequency to continue quantitative RP at the next renewal because manganese data is not collected at outfall 001P. Note that the reasonable potential policy (CW-1) states that continued monitoring may be appropriate in situations of uncertainty such as changes in industrial sources to the facility.*

Comment 43. Mercury – All of the 20 data points for mercury have been less than detect at a PQL of 0.007 µg/L. A determination of RP was made as the PQL is more than 50% of the potential permit limitation (54%). L/E requests that the monitoring requirement for mercury be removed from the permit as there are unlikely to be any changes in the mercury results. This is due to the mercury reduction activities that have occurred as a part of the pretreatment program for dentists, hospitals, and any other source of mercury to the WWTF. If mercury becomes an issue, it would be evident in the pretreatment data that is required to be collected for Permitted Feature/Limit Set 001P.

***Response 43**. Based on a PQL of 0.007 µg/l, it is still possible for the effluent to have a concentration of greater than half of the limitations proposed. Therefore reporting requirements will remain in the permit. Note that because of a comment in a subsequent WQA for the facilities of segment 14 received on August 14, 2017, the AD evaluation for mercury was redone and the facility a new ADBAC has been determined (0.0019 µg/l). Because the PQL is greater than this new ADBAC and because there is an industrial contribution in the influent to the plant; therefore, a reporting requirement has also been added for the two-year rolling average.*

Comment 44. Silver – An RP determination was made based on the fact that the PQL for silver is 0.2 µg/L compared to an ADBAC of 0.38 µg/L. The PQL is greater than 50% of the potential limitation (53%). The permit requirement is a PQL of 0.5 µg/L. As discussed previously, if an AA based limit were used, as has been done in previous permits based on an accepted AA analysis, RP would not exist. L/E requests that the monitoring requirement for silver be removed from the permit as there are unlikely to be any changes in the silver results. This is due to the silver reduction activities that have occurred as a part of the pretreatment program for dentists, hospitals, film developers and any other source of silver to the WWTP. If silver becomes an issue, it would be evident in the pretreatment data that is required to be collected for Permitted Feature/Limit Set 001P.

***Response 44**. Based on a PQL of 0.2 µg/l, it is still possible for the effluent to have a concentration of greater than half of the limitations proposed. Therefore, reporting requirements for the ADBAC will remain in the permit.*

Comment 45. Chloride – An RP determination was made based on an expected value for chloride (149 mg/L) that exceeded 50% of the potential limitation of 285 mg/L (52%). The 20 data points available for chloride, however, show concentrations that range from 88 to 135 mg/L. L/E requests that chloride be removed from the permit based on a qualitative determination of no RP.

***Response 45**. Based on policy the Clean Water 1 policy titled "Determination of the Requirement to Include Water Quality Standards-Based Limits in CDPS Permits Based on Reasonable Potential", the Division will use the quantitative method for RP if there are 10 or more samples. The quantitative method for RP determines a multiplier based on the number of results and their coefficient of variation, which it then multiplies by the maximum result to obtain an expected value. The expected value determined for chloride was greater than half of the potential limitation.*

Therefore, the RP determination for chloride will not be changed.

Comment 46. Nonylphenol – An RP determination was made, even though all available data indicated that total phenol concentrations were less than 50 µg/L. L/E requests that the Division alter the RP evaluation to say that there were no data available for nonylphenol, and therefore, a monitoring requirement is being added.

Response 46*. On September 7, 2017, the permittee submitted data to the division to use for a reasonable potential analysis. The data submitted is presented below:*

Date	*Nonylphenol (µg/l)*
2/6/2017	*1.3*
2/27/2017	*1.1*
3/27/2017	*1.1*
4/10/2017	*0.0*
4/27/2017	*0.9*
5/12/2017	*1.2*
5/26/2017	*0.6*
6/8/2017	*0.8*

This data indicates a qualitative no RP as the highest 30-day average is 1.2 µg/l compared to a chronic limit of 8.6 µg/. Therefore, no limitation is necessary in the permit. However, the report only requirement limitation will remain in the permit at a semi-annual frequency to continue quantitative RP at the next renewal because manganese data is not collected at outfall 001P. Note that the reasonable potential policy (CW-1) states that continued monitoring may be appropriate in situations of uncertainty such as changes in industrial sources to the facility. Changes in this analysis have been updated in the RP section of the factsheet and Part I.A.2 of the permit.

Comment 47. WET – The second paragraph indicates that there is no RP for WET and that WET testing is not a requirement of this permit. L/E believes that this statement is in error, as a WET limit has been included in the permit limit table; and therefore, this statement should be removed from the fact sheet.

Response 47*. This has been corrected in the RP section of the factsheet.*

Comment 48. Temperature – The RP analysis for February may be flawed because all February data were considered, even though the standard (and therefore the limitation) for the month is split into both winter and summer periods. The MWATs and daily maximums for the first half of the month should be determined against the winter WQBEL, while the values for the second half of the month should be determined against the summer WQBEL. This same issue also applies to the calculation of the WQBEL. The ambient data for the month should be split into winter and summer periods. The WQBELs and RP analysis should be corrected for this month.

Response 48*. While the analysis for February maybe flawed as all February data were considered, the facility has a no RP determination for the second half of the month when calculating the WQBEL using the summertime standard. Note that all February data were used as the previous DMR did not separate the months into halves.*

Section VII.A

Comment 49. Based on other requests, some of the limitations (TRC, ammonia, copper) will change, and therefore, Table VII-1 will need to be altered. Additionally, some parameters may be removed. For ease of sample requirements, L/E requests that either all metals be required at a monthly monitoring frequency or that the weekly requirements be matched with the 2 day/month requirement.

Response 49*. Table VII-1 has been updated to reflect changes made to preceding comments. Note that monitoring frequencies were determined based on the Baseline Monitoring Frequency Policy (WQP 20); and therefore, different metals may have different monitoring frequencies.*

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WQA Comments

Reserve Capacity

Comment 50. As outlined in previous comments (Reserve Capacity in the General Comments section), L/E does not believe that the Division may include a "reserve capacity" allocation for potential dischargers who may, or may not, be submitting applications for a discharge permit. L/E requests that all references to the reserve capacity be removed from the WQA, and that the assimilative capacity calculations be corrected to include only the design capacity of the facilities that have submitted an application for a discharge permit.

Additionally, L/E questions whether all of the parameters in the WQA are actually shared parameters of concern for all the listed, and potential, facilities. For example, it is doubtful that ammonia, TRC, and nonylphenol would be a parameter of concern for discharges of groundwater. Also, for the AD calculations, all of these other facilities would be exempt based on 100:1 dilution ratios and therefore the assimilative capacity calculations for AD should not include the additional 5 MGD.

Although this comment would be applicable in several places of this WQA, it is not incorporated into the other specific comments. However, it should be viewed as pertaining to the WQA in its entirety.

***Response 50. See response A.1** for discussion regarding reserved capacity. Not all parameters were treated as shared parameters of concern. Refer to section V of the WQA for an updated breakdown of parameters of concern for all facilities.*

Ammonia has been modeled with L/E because other dischargers have proposed to accept ammonia waste (McDonalds Farms) or have submitted data which indicate ammonia as a pollutant of concern in their sourcewater. Some facilities have indicated a reasonable potential for TRC based on treatment method; however, TRC has been recalculated for the downstream dischargers as they are more than one mile downstream of the L/E WWTP. Nonylphenol has been added because of historical industrial uses in the area where the new facilities are located that may be contained in the wastewater.

*The AD calculations have been updated to only using the facilities (L/E, **MFEI WWTF and Denver Zoo Primate Panorama**) that are required to complete the AD analysis.*

Part I Table A-1

Comment 51. The other facilities for which a permit application has been submitted should be included under the Facility section of this table.

***Response 51**. The other facilities which have submitted permit applications have been added to this table in the WQA.*

Part II – Introduction

Comment 52. Southwest Generation is referred to throughout the WQA as the Arapahoe facility. All references to the Arapahoe facility should be changed to Southwest Generation.

***Response 52**. Southwest Generation refers to their facility as the "Arapahoe Facility"; therefore, the references to the Arapahoe facility will not be changed.*

Part V.

Comment 53. The other facilities that should be included in this WQA are not described in this section.

***Response 53**. The other facilities which have submitted a permit application have been added to this section. Note that, per response 1, facilities with PELs orcertifications under a general permit are no longer modeled in this WQA.*

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Comment 54. The model that was previously completed as a part of the TMDL for nitrate should be updated to calculate the appropriate nitrate limitations that are protective of the water supply intake. This model takes into account site-specific conditions and would develop limits that ensure protection of the nitrate standard at the intake. Either the previous model should continue to be relied upon for these limitations or L/E should be allowed to update the model to develop the appropriate nitrate limitations.

Response 54. See response A.3.

Comment 55. The parameters of concern for the different discharge types should be re-evaluated. Parameters such as TRC, nonylphenol and ammonia are unlikely to be parameters of concern for discharges of groundwater.

Response 55. See response A.50.

Comment 56. For temperature, February should include calculations for both the winter and summer standards as the site-specific standard for temperature states that summer begins on Feb 14.

Response 56. *This has been corrected in table A-8l and A-8m and the corrections are reflected in section VI.e of the fact sheet and part I.A.2 of the permit.*

Comment 57. Ambient temperature data and sources of this data are not shown. Text on p18 indicates that the ambient MWAT and daily maximum temperatures are shown in Table A-6, however, there is only a Table A-6a, which is a low flow table.

Response 57. *The ambient temperature has been added to Section IV under the Ambient Water Quality Subsection as Table A-7b.*

Comment 58. The existing quality definition for temperature has not been included in the evaluation of ambient water quality. Instead, only the maximum monthly value was used. Additionally, data from 2011 to 2015 were used when there is a much longer period of record available (back to 1985).

Response 58. *Per 31.53.I.A., the definition for existing quality of MWAT and maximum DM temperature has been revised to allow for one warming event with a 3-year average exceedance frequency. For implementation in permits, this means that the "EQ will be the maximum DM or WAT with 3 or less years of representative upstream data. For data records with 4-6 years, the second highest monthly DM or WAT may be selected for one month in either winter or summer and the remaining months shall be the max DM or WAT." Because L/E has more than 4 years of data, they have the option to use the second highest DM or WAT for one month. L/E did not notify the division which months to apply the 2nd highest ambient value for the calculations of WQBELs. L/E may submit a modification request for the recalculation of temperature WQBELs with their selected months for which the 2nd highest ambient temperature will apply to.*

Note that although there is a much longer period of record available, the period of record used is the most representative of recent upstream ambient conditions.

Comment 59. For the ammonia modeling, the AMMTOX model should take into account the site-specific ammonia decay (9.5) as opposed to using the default values (6.0) given in the model. This would alter the WQBELs as well as the AD evaluation. Additionally, it appears that the same ambient condition was used in all months instead of breaking out the ambient condition by month.

Response 59. *The Division's rationale during the last permit term (issued September 30, 2009) was that the site-specific ammonia decay (9.5) was used because it was used in the determination of ammonia in previous permits. The original study appears to have been completed 2001 or earlier. L/E will need to submit an updated study for the decay rate to be incorporated into the AMMTOX model.*

The same ambient condition were used in all months instead of breaking out the ambient condition by month because the ambient data for some months were below detect; therefore, the Division calculated the 85th percentile of all

data and applied it to all months to take the most conservative approach.

In a correspondence from 10/19/2017, the L/E WWTP requested a compliance schedule for the new ammonia limitations. The request for the compliance schedule and justification are below:

"We are requesting additional time under a compliance schedule in order to plan for, design, and construct (if necessary) plant improvements needed to consistently meet the more stringent 30-day average and daily maximum ammonia limits that were included in our new discharge permit (2016 draft, as updated in Segment 14 Master Water Quality Assessment). In order to grant a compliance schedule, the Division must make a determination that the schedule is appropriate. Of particular concern to the Division was that our facility was meeting the more stringent proposed limits over the course of our last permit term, and the Division requires a demonstration that WQBELs cannot be immediately met in order to grant a compliance schedule:

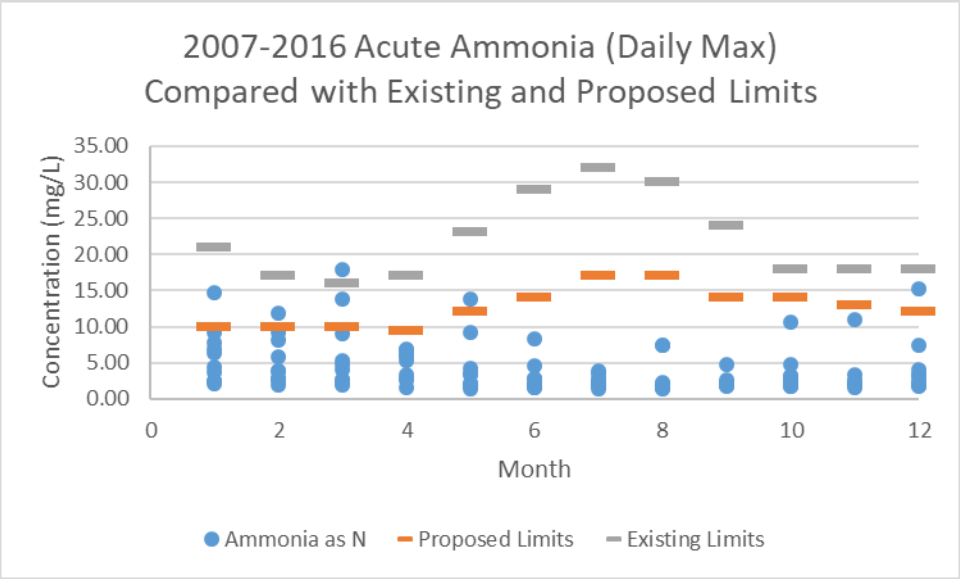
> *In order to grant a compliance schedule in an NPDES permit, the permitting authority has to make a reasonable finding, adequately supported by the administrative record, that the discharger cannot immediately comply with the WQBEL upon the effective date of the permit. 40 C.F.R. §§ 122.47, 122.47(a)(1). (CWP-3, pg. 3)*

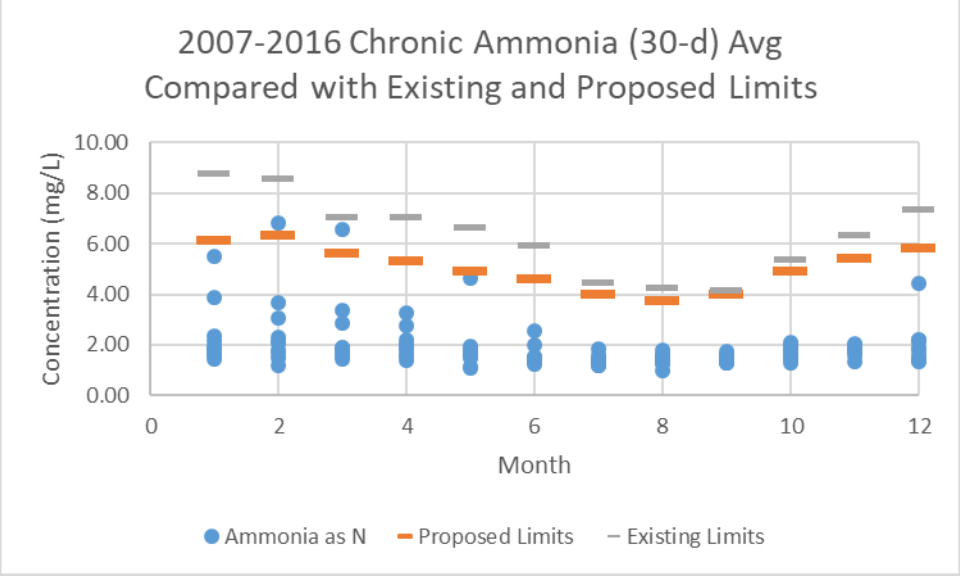
There is sufficient information to demonstrate that the L/E WWTP cannot meet WQBELs on the effective date of the permit.

1) The plant will need to make significant process changes in order to meet Regulation No. 85 requirements. A long-term compliance schedule will be provided in the final permit to meet the new Regulation No. 85 total inorganic nitrogen (TIN) and total phosphorus (TP) limits, as well as the water supply-based acute TIN limits. L/E WWTP has recently initiated a Strategic Operating Plan (SOP) to determine the best options to meet Regulation No. 85 limits while maintaining compliance with other discharge permit requirements. In order to meet these limits, substantial changes to the current treatment processes may be necessary, particularly if biological phosphorus treatment is the selected alternative. Temporary increases in the variability of nutrient constituents, including ammonia, are to be expected as the processes are implemented and refined over the course of the permit term.

2) Although our ammonia concentrations have been below the proposed new rates over the last permit term, higher flow rates will lead to higher ammonia concentrations in the future. As flows increase, the contact time with the nitrifying trickling filters will be reduced, thereby decreasing removal efficiency. Our facility is currently operating with a typical discharge rate between 20 and 25 MGD, which is less than half the rated capacity. As the flow rate increases toward the tier limit of 34 MGD, and ultimately the maximum rated capacity of 50 MGD, ammonia concentrations will increase if all other factors are held equal. This is because ammonia removal within the nitrifying trickling filters is directly linked to the pounds of loading per day per square foot of filter media (see WPC-DR-1, Table 7.8). As the filters become more heavily loaded, the removal efficiency will be reduced. This concern will be further exacerbated if the past trend holds up by which wastewater influent becomes more highly concentrated due to water conservation efforts. As part of the SOP project, new process modeling will be conducted to determine the expected effluent ammonia concentrations, including the predicted impacts of process changes to meet other nutrient requirements. Process modeling will be needed that incorporates proposed changes for Regulation No. 85, to determine whether the new limits can be met under a wide range of conditions and hydraulic loading rates.

3) Past data shows that even at current flows rates, there is potential to exceed the limits, particularly during cold-weather months, when the ammonia removal rates for the nitrifying trickling filters are not as high. There have been several high ammonia results in the past 10 years, which would have exceeded the proposed limits for multiple months of the year (see Figures below)





The plant components that are responsible for ammonia removal have not been changed since the mid-1990s; therefore, similar high values may be expected in the future, even without flow increases. The only mechanism currently available to us to further reduce ammonia is to reduce the amount of ammonia that is bypassed for chloramine creation in the disinfection process. Doing so increases the risks of higher E. coli levels in the effluent, and the maximum reductions would not be substantial (less than 1 mg/L).

We are also providing information to address other "appropriateness" considerations that must be weighed by the Division before issuing a compliance schedule. Per the Compliance Schedule Policy (CWP-3), other 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;

  No time was included in prior permits to meet the more stringent values.

- the extent to which the discharger has made good faith efforts to comply with the WQBELs and other requirements in its prior permit(s);

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The facility has met all ammonia limits of the previous permit term, which were based on WQBELs.

- whether there is any need for modifications to treatment facilities,

  This will be determined in conjunction w/ Reg. 85 process improvements, which are currently under evaluation as part of our Strategic Operating Plan

- 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.

  This will be determined in conjunction w/ Reg. 85 process improvements, which are currently under evaluation as part of our Strategic Operating Plan

Compliance Schedule Request

We request that the ammonia compliance schedule be linked to the same timeframe as the Regulation No. 85 compliance schedule. The presence of a compliance schedule will provide us with the flexibility needed to work toward attainment of Regulation No. 85 limits, and linking the compliance schedule directly to the Regulation No. 85 requirements will highlight to our design consultants for the SOP project that lower levels of ammonia must be considered in tandem with process improvements to meet Regulation No. 85. At this time, due to the uncertainties described above, the compliance schedule is needed for both the 34 MGD and 50 MGD flow tiers, and both acute and chronic limits. We are requesting that the current permit limits should be maintained until the effective date of the new limits."

Based on the justification provided, ammonia has been added to T.I.N. compliance schedule and with the final limitations to be met on the same date as the Reg. 85 limitations. The interim permit limitations will be the limits from the previous permit. Updates have been made to the permit limit tables in part I.A.2 of the permit and the compliance schedules in part I.B.6 of the permit. The RP section of the factsheet has also been updated. Note that the new limitation for 30-day average ammonia is less stringent at the 50 MGD tier for the months of August and September and were applied as the limitation during the duration of the compliance schedule.

Part VII

Comment 60. With the dilution tests, most of the "potential" discharges would be excluded from an antidegradation analysis and therefore the calculations should remove the design flows of these facilities from this analysis.

Response 60. See response A.50.

Comment 61. The ADBAC for selenium should be equal to the SCT (3.5) as the baseline water quality exceeds the SCT value.

Response 61*. This has been corrected in Table A-14a and Table A-14b of the WQA.*

Comment 62. Manganese is not included in the SCT and ADBAC table (Table A-12), although discussed in the paragraph that follows. Manganese is not shown in any of the AD evaluation tables (A-11 through A-13).

Response 62*. Dissolved manganese was initially omitted from the antidegradation review because the WQBEL was based on the water supply standard. However, the Division re-evaluated the antidegradation review for dissolved manganese based on the hardness based aquatic life standard and added it back into this section. The same conclusion was reached in that the ADBAC calculated based on the aquatic life standard was greater than the water supply WQBEL, resulting in the WQBELs as the final result for this parameter.*

Comment 63. For TRC, L/E would prefer to have the NIL applied instead of the ADBAC value (Table A-14a).

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

Response 63*. The table has been corrected to reflect the facility's preference and has been reflected in part I.A.2 of the permit.*

B. CENTENNIAL WATER AND SANITATION DISTRICT (July 22, 2016 Public Notice ,received 9/22/2016)

Summary of reserve capacity

Comment 1. The Division has included a 5 million gallons per day ("MGD") "reserve capacity" in developing the draft discharge permit for Littleton/Englewood. *See* Water Quality Assessment, CO0032999/CO0000002, pp. 13-14, 17, 21, 30. The Division coupled the 5 MGD reserve capacity with Littleton/Englewood's design flow of 50 MGD, and modeled the Littleton/Englewood facility at 55 MGD instead of the design flow to determine water quality-based effluent limitations ("WQBELs").

The Division's rationale for including this 5 MGD reserve capacity was "to account for other possible future dischargers [on Upper South Platte Segment 14] . . . which will need permits to discharge to this segment of the South Platte River." Water Quality Assessment, p. 21. The reserve capacity was factored into the development of Littleton/Englewood's WQBELs. *See* Water Quality Assessment, pp. 17, 30; Fact Sheet Permit No. CO0032999, p. 2. The Fact Sheet does not disclose any legal basis for the use of 55 MGD or the inclusion of a "reserve capacity" to develop proposed WQBELs.

Response 1*. See response A.1.*

Centennial's interests in the reserve capacity issue

Comment 2. Centennial is submitting comments as an interested person under Regulation 61.5(2)(d). Centennial is a person as defined by Regulation 61.2 and C.R.S. § 24-4-102, and has an interest in the Draft Permit as Centennial discharges upstream of Littleton/Englewood.

Centennial has a permit to discharge to Marcy Gulch, Upper South Platte Segment 16g. The discharge is less than a mile upstream of the confluence with the South Platte River, Upper South Platte Segment 14. Due to the proximity of the South Platte, Centennial's permit expressly considers the discharge's effect on both Upper South Platte Segments 16g and 14.

Centennial questions whether the Division will in the future seek to include a reserve capacity on the upstream dischargers to Segment 14, including Centennial. The reserve capacity issue could impact Centennial's own operations and ability to plan for the future.

On a broad scale, Centennial has concerns regarding the Division's authority to include reserve capacity in Littleton/Englewood's permit, and potentially in future permits. The use of a reserve capacity appears to depart from well-established permitting practices, and it is unclear whether the Division is applying any written policy relevant to reserve capacity. Because there is no policy, guidance, or regulation defining "reserve capacity," it is impossible for permittees to determine whether "reserve capacity" may be incorporated into their permits in the future.

Further, Centennial questions whether the use of a "reserve capacity" is good policy. The use of reserve capacity could have far-reaching effects and consequences on many permit holders in similarly urban areas, and potentially across the State of Colorado. This is especially troubling as it does not appear that the Division has discussed this issue previously with any stakeholders. It is unclear what policy is promoted by requiring existing domestic discharges to create assimilative capacity for future dischargers that have not been clearly identified.

Response 2. See response A.1.

The Division has no authority to include a reserve capacity when determining WQBELs

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

Comment 3. Colorado regulation requires that "[i]n the case of POTWs [publicly owned treatment works], permit effluent limitations, standards, or prohibitions shall be calculated based on design flow." Reg. 61.8(2)(f)(i). A POTW is defined as a publicly owned domestic treatment facility. *See* Reg. 61.2(87). Regulation 61.8(2)(f) does make an exception from this design flow requirement where the facility design flow and actual flow are significantly different, but the regulation does not authorize the Division to calculate effluent limits based on a flow that is higher than design flow and there there is no provision that makes an exception for reserve capacity. *See* Reg. 61.8(2)(f)(i).

Federal regulations likewise require the permitting authority to use the design flow when developing permit limits for POTWs. *See* 40 C.F.R. § 122.45(b)(1); *see also* 40 C.F.R. § 403.3(q) (definition of POTW).

The Division must use Littleton/Englewood's design flow in developing Littleton/Englewood's permit limits. There is no authority for the Division to add a 5 MGD "reserve capacity" to Littleton/Englewood's 50 MGD design flow, with the result of modeling the facility at a rate higher than its design flow and discharge rate.

Response 3. See response A.1.

C. AF CURE (July 22, 2016 Public Notice**)**

Comment 1. The Arkansas Fountain Coalition for Urban River Evaluation (AF CURE) is pleased to submit comments on the above referenced draft renewal discharge permit for the Cities of Littleton and Englewood (L/E), which was sent to Public Notice on July 22, 2016. AF CURE is an association of eleven independent wastewater discharging entities located in El Paso and Pueblo Counties. These include:

1. Cherokee Metropolitan District
2. City of Pueblo Wastewater Department
3. Colorado Springs Utilities
4. Fountain Sanitation District
5. Lower Fountain Metropolitan Sewage Disposal District
6. Pueblo West Metropolitan District
7. Security Sanitation District
8. Tri Lakes Wastewater Treatment Facility
9. Upper Monument Creek Regional Wastewater Treatment Facility
10. Widefield Water and Sanitation District
11. Woodmen Hills Metropolitan District

AF CURE was formed in 2012 in response to Regulation No. 85 nutrient monitoring requirements and its members have considerable interest in the implementation of effective, cooperative, and predictable wastewater treatment planning processes. Accordingly, AF CURE is submitting comments on one potentially troubling aspect of the L/E draft permit, specifically, the inclusion of a "reserve capacity" allotment.

The development of effluent limitations on a value other than the design capacity or the requested flow rate from facilities that have actually submitted an application for a discharge permit is a departure from well-established permitting practices. In this instance, effluent limitations would become more stringent than if the actual design capacities had been used in the calculations.

Even though AF CURE understands the rationale for this approach (i.e., to accommodate potential new or expanding discharges to Upper South Platte Segment 14), current federal and state permitting regulations do not appear to authorize the Division to hold a reserve capacity for potential future use, and the Division does not reference the source of its perceived regulatory authority. This approach decreases the assimilative capacity previously available to L/E without having actual stated intent (i.e. discharge applications) from the potential future dischargers. The potential dischargers may find alternate methods of disposal, or obtain (or continue with) coverage under a general permit and never submit an individual permit application.

Even though this permitting approach principally affects only one wastewater treatment facility at this time, AF CURE is concerned that it could set a precedent for facilities located in other basins. There is a risk of unintended consequences if input regarding the allocation of limited (or non-existent) assimilative capacity is not actively sought

from all interested stakeholders. Such consequences potentially could include permit appeals, protracted litigation, or legislative action.

This approach also could potentially call into question facilities' ability to provide service (since they cannot predict how much reserve capacity the Division will require at the time of permit renewal) or could prematurely require expansion under the site location approval regulations (Regulation No. 22). Also troubling is the fact that stakeholders, including local ratepayers who have financed the L/E facility's current capacity, were not included in the decision-making process.

Front Range communities, including those served by AF CURE members, are expected to experience significant population growth over the next several decades, as described in Colorado's Water Plan. Although the Water Plan is focused primarily on water resource-related issues, concurrent with such planning municipalities also will need to rely on defensible wastewater treatment need predictions in order to plan for growth as well as address anticipated enhanced wastewater treatment requirements for parameters such as nutrients and temperature.

In light of these challenges, AF CURE believes that it is most appropriate to calculate effluent limitations based solely on a facility's approved design capacity, without reserving assimilative capacity for potential future dischargers, to ensure that municipalities such as the cities of Littleton and Englewood can develop well thought out facility improvement plans and ensure adequate financing for such infrastructure.

Foundation dewatering is a common practice across the state, and therefore this issue has the potential to come up in numerous other permits. Accordingly, AF CURE believes that input on this important issue should actively be sought from potentially impacted municipalities and ratepayers, as well as from new or expanding dischargers in order to develop robust and legally defensible permitting practices related to the allocation of scarce assimilative capacity outside of the permit writing context. There may be numerous interested parties who may not be aware of this issue as they would not be concerned with the Littleton/Englewood permit renewal. Options moving forward include discussion in the Permits Issues Forum (PIF) or the creation of a new focused Water Quality Forum workgroup (since this issue may not be of interest to all PIF members). The Water Quality Forum would be an appropriate venue for future discussion of this topic as interest in this issue may reach across other disciplines such as stormwater control. Because this issue likely will become more contentious over time in parallel with population growth, AF CURE recommends addressing it head-on sooner rather than later.

Response 1. See response A.1.

D. <u>METRO WASTEWATER RECLAMATION DISTRICT</u> <u>(July 22, 2016 Public Notice, received 9/22/2016)</u>

Comment 1. The District is concerned about the Water Quality Control Division's ("Division") decision to include a reserve capacity in its evaluation of assimilative capacity in the Water Quality Assessment associated with draft permit number CO0032999. The inclusion of a reserve capacity for the parameters listed on page fifteen of the Water Quality Assessment[2] is a new and potentially troublesome permitting approach.

This change in the Division's permitting approach has the potential to result in drastic and unforeseen changes to the effluent limitations in discharge permits. Assimilative capacity is a major driver for effluent limitations, as the total design flow is used as the "Q_2"input in the mass balance equation. This change to the permitting approach coupled with the Water Quality Control Commission's determination in June of 2016 to establish a sunset date for use protected streams that are effluent dependent or dominated leaves many permittees in an uncertain and precarious regulatory position. This is particularly problematic because the planning timeline for a public utility is usually a minimum of twenty years, and regulatory certainty and predictability is essential for entities to anticipate and plan for upgrades and process changes. Permittees cannot be expected to wait until the draft permit to be informed about whether the Division will decide to reserve assimilative capacity. Without guidance as to what circumstances and in what amounts the Division plans to reserve assimilative capacity, the regulated community cannot appropriately and adequately plan, which will likely result in avoidable noncompliance and potentially unnecessary expenditure of ratepayer dollars.

2 The parameters include total residual chlorine, E. coli, nitrate/total inorganic nitrogen, chloride and sulfate, ammonia, temperature, metals and cyanide, uranium, gamma-BHC, other organics.

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

Additionally, the Division's approach also appears to be contrary to the final total maximum daily loads ("TMDL") for segment COSPUS14 for *E coli* and nitrate. Littleton/Englewood is also subject to the final dissolved oxygen and pH TMDLs for segment COSPMS04, which are commonly referred to as the Barr/Milton TMDLs. These Barr/Milton TMDLs are driving nutrient planning and treatment for eight existing permittees in this watershed. The wasteload and load allocations in the TMDLs for both segments have been approved by EPA pursuant to 40 C.F.R. §130.7(d), and do not include allocations for future new sources. As EPA recognizes in its *Helpful Practices for Addressing Point Sources and Implementing TMDLs in NPDES Permits*, a TMDL that has not accounted for "new and/or expanded permitted sources that arise after the TMDL" must be revised to reallocate the wasteload and load allocations. As a matter of predictability and fairness, given that this segment is not attaining the nitrate and *E coli* standards and no wasteload allocation was reserved in the TMDL for new sources, it is not appropriate for the assimilative capacity to be reserved for new dischargers through an individual permitting action. This permitting approach of post hoc allocations undermines and negates the TMDL process.

The Metro District is also concerned that the Division has over allocated assimilative capacity to these new sources in Littleton/Englewood's permit. Although the District does not support the approach of reserving assimilative capacity in general, in particular the Division's decision to reserve more assimilative capacity for the new sources than is permitted is contrary to the Division's historic approach of limiting the average daily effluent flow in the mass balance equation to the design capacity.

The Metro District raises these issues about Littleton/Englewood's permit because the District is concerned that the Division may use this approach—of reserving assimilative capacity—in drafting the renewal of the District's permit number CO0026638. Specifically, the District is concerned about reallocation of assimilative capacity for nutrients which would differ from the allocations in the Barr/Milton TMDLs. The District worked closely with the Division and other stakeholders in developing these TMDLs and believes the allocations are appropriate. Furthermore, the District has been relying upon the allocations in the TMDLs for its long term nutrients planning in anticipation of new effluent limitations. A change in the allocations at the time of permit renewal could potentially undermine years of planning and process changes. Just like the TMDLs on segment COSPUS14, the proper mechanism for making any changes to the allocations in the Barr/Milton TMDLs would be through the TMDL process, not the permitting process. Therefore, should the Division reserve assimilative capacity for dissolved oxygen or pH in the District's draft renewal permit for new sources, the District would provide comments explaining why it is opposed to such reservations.

The Metro District respectfully requests that the Division revise the final WQA associated with Littleton/Englewood's final permit without the reserve assimilative capacity for new sources. Should the Division want to explore the permitting approach of reserving assimilative capacity for new sources, the District respectfully requests that the Division initiate a stakeholder group to discuss the approach prior to implementing it in permits.

***Response 1**. See response to comment A.1 for the discussion on reserve capacity. The Division is not taking a position on Metro's interpretation of the justification to reopen a TMDL in the future in the administrative record for this permit.*

E. REGIONAL TRANSPORTATION DISTRICT (July 22, 2016 Public Notice, recieved 9/22/2016)

Comment 1. As noted in Section V. of the *Water Quality Assessment the South Platte River Littleton/Englewood Wastewater Treatment Plant Southwest Generation Colorado Arapahoe LLC, Arapahoe Facility and Concurrent Downstream Discharges to COSPUS14* prepared by the Colorado Department of Public Health and Environment (CDPHE), Water Quality Control Division (WQCD) dated July 22, 2016, RTD operates the Tunnel 16 wastewater treatment facility (WTF) which is a smaller facility that treats collected groundwater from a permanent foundation drain that is discharged to segment COSPUS14 of the South Platte River. LTE on behalf of RTD has recently requested permissible effluent limitations (PELs) and potential waste load allocations from the WQCD through PELs and potentially an individual permit for surface water discharge issued by the WQCD. The estimated flow from the Tunnel 16 WTF is 0.144 million gallons per day (MGD).

LTE, on behalf of RTD, prepared the following comment related to Permit No. CO0032999:

- RTD has not fully determined the next steps related to permit coverage for the Tunnel 16 WTF. RTD's options include remaining under the existing CDPS Remediation Activities Discharging to Surface Waters Certification No.: COG315157 or making application under an individual permit. Therefore, RTD requests that a reserve

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

capacity of 5 MGD, which potentially would include the Tunnel 16 WTF and other discharges that were included in the analysis for Permit CO0032999, remain available. RTD would like the option to be able to make application under an individual permit for discharge issued by the WQCD as it may present a cost savings over time in relation to the continued operation of the Tunnel 16 WTF. These cost savings could be utilized throughout the RTD system and be a benefit RTD uses within the Denver Metro Area.

Response 1. See response A.1. *The RTD Tunnel 16 WTF has been removed from the modeling of segment 14 as they submitted an individual application after the deadline date they were notified to submit an application to be considered in this Segment 14 model.*

F. FARMER'S RESERVOIR AND IRRIGATION COMPANY (July 22, 2016 Public Notice , received 9/22/2016)

The Littleton/Englewood (L/E) wastewater treatment facility has been assigned wasteload allocations for total phosphorus per an approved TMDL referenced below (copies provided). Page 4-3 of the pH TMDL reports the approved wasteload allocation strategies for both Barr Lake and Milton Reservoir as contributed by the L/E facility (Tables 4.1 and 4.2).

TOTAL MAXIMUM DAILY LOAD ASSESSMENT
BARR LAKE AND MILTON RESERVOIR
COSPMS04
pH
ADAMS COUNTY AND WELD COUNTY, COLORADO
May 2013

TOTAL MAXIMUM DAILY LOAD ASSESSMENT (Addendum)
BARR LAKE AND MILTON RESERVOIR
COSPMS04
Dissolved Oxygen
ADAMS COUNTY AND WELD COUNTY, COLORADO
May 2013

Permit No. CO0032999 – Draft Fact Sheet

Comment 1. The Fact Sheet at Section VI, Determination of Effluent Limitations, Part A, 4(c) Determination of Total Maximum Daily Loads, does not make any reference to the Barr Lake and Milton Reservoir TMDL. The TMDL should be referenced and discussed accordingly.

Response 1*. Discussion of the TMDL has been added to Part VI.A of the fact sheet.*

Permit No. CO0032999 – Draft Water Quality Analysis

Comment 2. Table A-1 should report total phosphorus as a constituent under the column referencing TMDLs. Additional reference to the TMDLs should be included in Section III, Water Quality Standards, TMDLs (beginning on pg. 9 of 38) and in Table A-5. Similarly, reference should be made to the TMDL in Section VII, Anti-degradation Evaluation, Nutrient Effluent Limitation Considerations (beginning on pg. 35 of 38). Specific text should be incorporated into the first two paragraphs on page 37 to note that appropriate future limits for total phosphorus will need to be determined in order to meet the established wasteload allocations per the TMDL. Further, L/E should be encouraged to continue its participation in stakeholder-driven efforts to determine how best to meet those allocations after Regulation 85 upgrades have been completed.

Response 2*. Table A-1 has been updated to show phosphorus as a parameter associated with a TMDL. Language has also been added in the TMDL section in Section III; however, limitations have not been added to table 5 as the level of total phosphorus reduction needed to implement the TMDL is the same as required by regulation 85. References to the TMDL have not been added in the antidegradation evaluation as parameters based on TMDLs are not subject to an antidegradtion evaluation.*

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

G. Roxborough Water & Sanitation District (9/22/2016)

Comment 1. We respectfully request that the Water Quality Control Division fully consider and address all comments submitted, including these comments from Roxborough Water & Sanitation District ("Roxborough") regarding the draft renewal Discharge Permit CO-0032999 for the Littleton Englewood Wastewater Treatment Plant ("L/E Draft Permit"). Roxborough is uniquely situated, as connector to the L/E Wastewater Treatment Plant to comment on the L/E Draft Permit. As noted in the Draft Fact Sheet accompanying the L/E Draft Permit, Roxborough has a lift station with peak pumpking capacity of 6.13 MGD. (the lift station summary also lists lift stations at Chatfield Green #1 @ 1.0 MGD and Chatfield Green #2 @ 1.50 MGD – if these are controlled by Roxborough we should include in total amount; plus it lists "World Headquarters" @ 3.0 MGD, Lockheed)

In 2004, Roxborough entered into an agreement for treatment of its wastewater at the L/E Treatment pLant, and then constructed an interceptor line to transmit the sewage from Roxborough's service area, including Lockheed Martin, to the L/E Treatment Plant. As noted above, the Fact Sheet summarily recognizeds Roxborough's interest.

Roxborough supports the comments from L/E and others, that the Division lacks any authority to reserve assimilative capacity through the permitting process. Determining load allocations or assimilative capacity is already reserved to the TMDL process, a process that includes all stakeholders (present and future) to determine their relative capacaties and treatment options to meet the TMDLs. Instead, the Division has undertaken a "mock-TMDL" on its own volition, only sharing their findings with L/E and other affected parties through the L/E Draft Permit. Accepting comments on a Draft Permit, does not substitute for, or replace, a fully vetted stakeholder process on a TMDL (and the attendant reviews and appeals available to all TMDL stakeholders).

Moreover, many of the potential future dischargers are temporary discharges of tributary groundwater during excavation and construction – some of the water may naturally reach the river and the dischargers are not long term discharges that would impact the assimilative capacity of the South Platte River in perpetuity. The Division failed to consider the term of potential future discharges, so minimal effect, if any, on near term operations of the L/E treatment Plant. Just a quick review indicates that the projected flows from the L/E treatment Plant for the next 2-3 years will not be at levels which would, in addition to the listed potential future discharges, cause near term exceedances of the assimilative capacity.

There is no reasonable potential for L/E discharges to cause an exceedance of water quality standards. So, the effluent limits imposed based upon assimilative capacity determinations should be deleted and re-set at the levels set forth in the existing permit.

Alternatively, the Draft Permit fails to accord Roxborough recognition for its flows. The Draft Permit allocated assimilative capacity to potential future downstream dischargers but did not allocate any assimilative capacity to the upstream connectors that have modified wastewater operations to consolidate their treatment at L/E Treatment Plant. If the Division purportedly had the authority to reserve assimilative capacity in connection with the L/E permit, then the Division acted arbitrarily and capriciously when it omitted to reserve assimilative capacity for the connectors.

Response 1. See Response to comment A.1.

The Commenter challenges the division's treatment of temporary dischargers in the WLA. It is the division's position that dischargers that have applied for individual permits do not have temporary discharges.

The commenter also requests reviewing L/E flows for the next 2-3 years. During permit renewal process, the division conducts routine review and reissues a permit every five years. If the commenter believes a permit should be modified during its term based on changed conditions, the permittee can request a modification in accordance with Regulation 61.8(8)(c). Lastly, once L/E accepts another dischargers flows to treat and discharge under L/E permit, Roxborogh must meet contract obligations in its permit with L/E, which are not relevant in this permit. If a lift station is involved to deliver Roxborough flows to L/E, then Roxborough may be listed in the fact sheet where list stations and capacities are included.

H. Littleton Englewood WWTF (July 13, 2017 public notice, received 8/14/2017)

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

Comment 1: There are multiple specific references to the McDonald Farms Enterprises Inc. (MFEI) facility that should be removed and/or broadened to include other facilities that are part of the WQA or those that relate to the specific reference. For example:

- Pg. 12, "While this data is upstream of the MFEI WWTF discharge …"
- Pg. 15, "As MFEI is considered a new discharge, there are no specific Waste Load Allocations (WLAs) …"
- Pg. 15, "To determine the low flows available upstream of the L/E WWTP to be used in the combined modeling, which includes MFEI WWTF…"
- Pg. 20, refers to "the nearest dischargers with an individual permit". Nearest to who? This statement seems to be centered on MFEI also.

Response 1: These sentences and others with similar references have been updated in the WQA (Attachment 1) to provide more clarity and scope.

Comment 2: Aluminum appears in Table A-3b, however, the Water Quality Control Commission has not adopted aluminum as an applicable standard for Upper South Platte Basin Segment 14 (COSPUS14), and therefore, it should not be applied in this WQA.

Aluminum is not subject to the same language in Regulation 31 as the narrative, radioactive and organic standards are. For those standards, Regulation 31.11 explicitly states that they apply to all waters of the state. Regulation 31.16, where the metals tables are located, states specifically that these standards "shall be considered and applied as appropriate by the Commission in establishing site-specific numeric standards, in accordance with section 31.7." Aluminum can also be contrasted with uranium, which is covered specifically in Regulation 38.5 as applying to all South Platte River basin waters.

L/E WWTP staff has previously confirmed with Water Quality Control Division Standards Unit staff that the aluminum standard contained in Regulation No. 31 is not currently applicable to Segment 14.

Aluminum was not included in the original draft WQA for the L/E WWTP facility; therefore, this is a new parameter, and the L/E WWTP permit would need to be re-noticed if it were to be included.

Response 2: Aluminum is included in the WQA because it is a pollutant of concern for facilities with a permit in the Segment 14 WQA, which has resulted in monitoring for aluminum. This was identified after the draft permit documents including the WQA for L/E WWTP were public noticed in July 2016. Regulation 31.11(1)(a)(iv) allows for discharges to surface water to be regulated for substances that are toxic to aquatic life.

> 31.11 BASIC STANDARDS APPLICABLE TO SURFACE WATERS OF THE STATE
> All surface waters of the state are subject to the following basic standards; however, discharge of substances regulated by permits which are within those permit limitations shall not be a basis for enforcement proceedings under these basic standards:
> (1) Except where authorized by permits, BMPs, 401 certifications, or plans of operation approved by the Division or other applicable agencies, state surface waters shall be free from substances attributable to human-caused point source or nonpoint source discharge in amounts, concentrations or combinations which:
> (a) for all surface waters except wetlands;
> (iv) are harmful to the beneficial uses or toxic to humans, animals, plants, or aquatic life; or

Additionally, Part III Water Quality Standards in the WQA provides additional explanation of Reg 31.11(1): 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**.

This narrative standard along with data provided a basis for qualitative RP and the inclusion of aluminum in the WQA as an additional standard being evaluated for industrial facilities. Note that L/E WWTP flows are incorporated into the WQBEL calculations for aluminum as there is the potential for unknown industrial contributors and the potential for new industrial dischargers to L/E WWTF. Aluminum will not be included in the permit for L/E WWTP at this time, but may be reopened if new industrial contributors begin discharging to L/E WWTF. The text on page 26 of the WQA has

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

been updated.

Comment 3: Pg. 8 – In the text regarding the hardness data, the WQA refers to L/E station UP (downstream at Evans). This station is actually named Downstream, not UP.

Response 3: The station name has been updated in Part III (page 12) of the WQA in response to this comment.

Comment 4: Pg. 13 and bottom of pg. 14 – The WQA refers to the TMDL for total inorganic nitrogen instead of the TMDL for nitrate. Although the TMDL assigns wasteload allocations for TIN, the TMDL is specifically for nitrate. The text should be corrected accordingly.

Response 4: The text has been updated in Part III of the WQA in response to this comment.

Comment 5: Pg 14. – The first sentence under the nitrate TMDL section indicates that a facility will begin discharge in 2005, after the 2004 TMDL. We are not certain which of the facilities this is referring to. The second sentence says that there is no allocation in the TMDL for this discharger. This description is not accurate for L/E WWTP, and the section should be rewritten to describe the TMDL status of all facilities that are included in the Master WQA.

Response 5: The text has been updated in the WQA to clarify which facilities are identified in the nitrate TMDL and have waste load allocations presented in the TMDL. L/E WWTP has waste load allocations presented in the TMDL, whereas the dischargers downstream of L/E (downstream dischargers) are not included in the TMDL and will therefore receive the water quality standard.

Comment 6: For temperature, the WQA states that background maximum weekly average temperature and daily maximum ambient temperatures are not available above the MFEI WWTF and the Denver Zoo Primate Panorama. This implies that the Division intends to model facilities individually for temperature. L/E WWTP agrees with this approach because there are significant environmental influences including solar radiation, air temperature, heat transfer, substrate, surface water and groundwater influences that may result in significantly different temperatures downstream. For example, in the month of December when the stream has exceeded the winter standards in the past, L/E WWTP has observed significant cooling a short distance downstream of our effluent discharge. Please confirm that the Division does not intend to model downstream facilities together with our facility for temperature.

Response 6: The Division does not intend to model downstream facilities together with L/E WWTF for temperature at this time due to the distance between the facilities that require temperature limitations.

Comment 7: Pg. 22 states: "For metals, chloride, sulfate, and organics detected in effluent discharge, all facilities will be given the same WQBELs." This sentence should clarify that facilities for which these parameters are not a pollutant of concern will not be given limits. The WQA is currently written such that if a pollutant is detected at one facility, all facilities will be permitted with that parameter.

Response 7: The sentence referenced above was changed to add the phrase "with these pollutants of concern in common" to be more clear. It now reads, "For metals, chloride, sulfate, and organics detected in effluent discharge, the WQBELs calculated below will apply to all facilities with pollutants of concern in common."

Comment 8: Pg. 22 – The sentence regarding Regulation 62 standards should clarify which permit and which WWTF are being referred to if not all of them. This appears to be written for just one of the 13 facilities.

Response 8: This sentence was edited to be clear that Regulation 62 parameters will apply to all facilities in this WQA.

Comment 9: The design flow discussion at the top of pg. 24 should clarify that the cumulative design flow depends on the parameter and who is modeled together; it is not always 52.8 MGD.

Response 9: The text has been updated to clarify that the combined design flow is not always 52.8 MGD, but rather depends on which facilities share pollutants of concern.

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
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Comment 10: The mass balance equation variable definitions on pg. 24 include two different Q2's. The second Q2 should be Q3.

Response 10: This has been updated in Part VI of the WQA.

Comment 11: Pg 25 -26, Total Recoverable Arsenic – This section discusses the 0.02-3 µg/L standard but not the current condition portion of the standard that applies to dischargers existing prior to June 1, 2013 (see Regulation No. 38.6(2)(c)). Please revise accordingly and make it clear that L/E WWTP is allocated "current conditions" in its permit.

Response 11: This is discussed in the reasonable potential section of the fact sheet. The WQA calculates limits based on the stream standards and additional standards that are applicable to the segment and the type of facility. The fact sheet describes which limit will be applied in the permit if temporary modifications apply. No change has been made to the WQA based on this comment.

Comment 12: Tables A-8a, A-8b, and A-8c require units.

Response 12: Column headers for the chlorine WQBELs tables have been added and updated in Part VI of the WQA.

Comment 13: In the notes column of the WQBEL tables (A-8d, A-8e, A-8f, A-8g), it would be helpful to add which facilities are modeled together for a particular parameter.

Response 13: The text on pages 24-26 identifies which facilities are being modeled together for certain parameters. Additionally, lindane and nonylphenol are asterisked with a note specifying that those parameters are modeled with L/E WWTF and downstream dischargers. No change was made to the WQA.

Comment 14: Temperature WQBELs – the 34 mgd tier is missing from the calculations for L/E. Additionally, L/E will want to use the ambient water quality definition for temperature where the 2nd highest ambient value may be used. We would like to discuss this with the Division.

Response 14: Temperature WQBELs for the 34 MGD tier has been added been added to the WQA. However, these WQBELs will not be added to the permit (CO0032999) at this time because, per regulation 61, the Division may only grant a WQBEL at a lower flow when the limitation of the design flow rate can be met. The need for a compliance schedule for temperature indicates that the limitation of the design flow rate cannot be met at this time. At the conclusion of the compliance schedule, the facility may submit a permit modification request to add a lower tier for temperature provided that the limitation of the design flow rate can be met. Per 31.53.I.A., the definition for existing quality of MWAT and maximum DM temperature has been revised to allow for one warming event with a 3-year average exceedance frequency. For implementation in permits, this means that the "EQ will be the maximum DM or WAT with 3 or less years of representative upstream data. For data records with 4-6 years, the second highest monthly DM or WAT may be selected for one month in either winter or summer and the remaining months shall be the max DM or WAT." Because the L/E has more than 4 years of data, they have the option to use the second highest DM or WAT for one month. L/E did not notify the division which months to apply the 2nd highest ambient value for the calculations of WQBELs. L/E may submit a modification request for the recalculation of temperature WQBELs with their selected months for which the 2nd highest ambient temperature will apply to.

Comment 15: The acute WQBEL table (Table A-8e) for the 50 MGD flow tier is missing calculations for nonylphenol and lindane.

Response 15: The acute WQBELs for L/E 50 MGD flow tier are located in Table A-8m. Note that the chronic WQBELs for 50 MGD flow tier for L/E have been removed from table A-8d as it is calculated in Table A-8l below with the rest of the organic parameters. Note that lindane (Gamma-BHC) and nonylphenol for the 34 MGD flow tier will remain in Tables A-8f and A-8g.

Comment 16: TIN WQBELs – L/E submitted comments on our original draft permit (CO0032999) regarding the TIN limitations. We do not believe that the WQBELs for TIN are necessary, and that the TMDL has already determined the values that are protective of the 10 mg/L nitrate standard at the point of intake. The TMDL was developed specifically to protect the downstream drinking water supply use at Thornton. The TMDL modeling approach is fully valid until the

point of intake modeling allowance contained in Regulation No. 31.16(4) sunsets on December 31, 2022. The TMDL developed limitations based on the footnote in Regulation 31 (footnote 4 to Table 2 in part 31.16) that allows for application at the point of intake. The WQBEL calculations do not take this information into account and are therefore more stringent. The addition of other dischargers would not have an effect on the TMDL allocations, which is to bring the stream back into compliance with the standard, as they are assigned the standard at end of pipe.

If the Division believes that flow conditions or other factors have changed that would impact the TMDL modeling results, one appropriate method would be to update the model associated with the TMDL. This would ensure that the site-specific conditions in the South Platte River would be included in these limits instead of ignoring these conditions and using a simple mass-balance equation.

L/E WWTP understands that the Reg 31 footnote will sunset at the time of the next permit renewal, and a different approach will be necessary at that point.

Response 16: Per responses to comments in the original WQA that went to public notice in July 2016 and correspondence with the facility, the division has updated the compliance schedule for TIN with a due date of June 30, 2022 to allow an update to the TIN modeling from the TMDL.

Comment 17: TIN WQBELS (Tables A-8j and 8k) – In addition to Comment 16, the other facilities are modeled at the 7.7 cfs (from the 2016 WQA) and not the current 4.3 cfs for the listed facilities in this WQA.

Response 17: The TIN WQBELs in Tables A-8j and A-8k have been updated using 4.3 cfs for the downstream dischargers. Note that there was no change to the WQBELs.

Comment 18: AMMTOX modeling – the site-specific decay coefficient has not been used in this permit (CO0032999) renewal. The K value should be 9.5, not the default 6.0, which has been used in previous renewals of the L/E permits (see Fact Sheet for 2009 permit). Altered values are given in the table below, including the same WQBELs for the downstream facilities at the 50 mgd tier, and then holding those facilities at the 50 mgd level for the 34 mgd tier.

Revised AMMTOX values at K=9.5				
Month	50 mgd		34 mgd	
	chronic	acute	chronic	Acute
Jan	6.2	11	7.2	13
Feb	6.4	12	7.4	13
Mar	5.8	11	6.8	13
Apr	5.5	13	6.4	15
May	5.4	15	6.1	18
Jun	4.5	19	5	23
Jul	3.6	24	4	28
Aug	3.4	25	3.7	27
Sep	3.6	21	4	26
Oct	4.7	18	5.5	21
Nov	5.2	16	6	17
Dec	6	14	7.2	16

Response 18: This report has been used since at least the 2001 renewal. The Division's rationale during the last permit renewal in 2009 was that the site-specific ammonia decay (9.5) was used because it was used in the determination of ammonia in previous permits. L/E will need to submit a more recent study for the decay rate to be incorporated into the AMMTOX model.

Comment 19: WET – The WQA should include the IWC calculation for the 34 mgd L/E discharge tier.

Response 19: The IWC for the L/E WWTP 34 MGD (Outfall 002A) has been calculated and is included on page 41 of the

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WQA.

Comment 20: AD NIL values

- As (TR and dis) – WQA says data from 2000, but summary table in 2001 fact sheet (shows data from 1998-2000) shows As all < 23 µg/L, not 1.1 µg/L
- Cd - WQA says data from 2000, but summary table in 2001 fact sheet (shows data from 1998-2000) shows Cd all < 0.5 µg/L, not 0.2 µg/L
- Pb - WQA says data from 2000, but summary table in 2001 fact sheet (shows data from 1998-2000) shows Pb all < 10 µg/L, not 2.4 µg/L
- Hg - WQA says data from 2000, but summary table in 2001 fact sheet (shows data from 1998-2000) shows Hg all < 0.2 µg/L, not 0.18 µg/L
- Ni - WQA says data from 2000, but summary table in 2001 fact sheet (shows data from 1998-2000) shows Ni all < 20 µg/L, not 11.6 µg/L
- Se - WQA says data from 2000, but summary table in 2001 fact sheet (shows data from 1998-2000) shows Se all < 10 µg/L, not 5.1 µg/L

Response 20: The division reassessed the data, and the NILs above were updated to the NILs provided in the comment above. Since the NILs above were all non-detects, ADBACs were calculated and are applied. Note that for the 34 MGD tier a mercury WQBEL had to be calculated and was included in the WQA. Tables A-11a, A-11b, A-14b, A-15b, A-16a and A-16b have been updated as a result of this comment.

Comment 21: Dissolved iron should be removed from Table 14a as antidegradation does not apply to this parameter.

Response 21: Dissolved iron has been removed from Table 14a because it is a water supply parameter and in accordance with Regulation 31.8(1)(b)(i) an antidegradation analysis is not required. The ADBAC has been removed from the permit table in Part I.A.2

Comment 22: In Table 14a, the ambient water quality for selenium should be 3.6 µg/L instead of 4.0 µg/L.

Response 22: Table 14a has been updated with the ambient water quality of 3.6 µg/l. Note that there was no change to the ADBAC.

Comment 23: AD calculations – the design flow from all facilities was used in the ADBAC calculations instead of the flow from only those facilities subject to AD (only L/E WWTP, MFEI and Primate Panorama). The MFEI and Zoo Primate flows total 2 cfs and that should be used in addition to the 77 cfs (50 mgd) and 53 cfs (34 mgd) L/E tiers. The 50 mgd table (A-14a) uses the full 4.3 cfs for the other facilities while the 34 mgd table (A-14b) uses 7.7 cfs for the other facilities.

Response 23: The AD calculations have been updated to only include the facilities that are required to complete the AD analysis. In the ADBAC calculation, the Q2 flow has been updated to represent only the facilities that have that parameter as a pollutant of concern for the AD analysis. For L/E 34 MGD tier, the flows for the downstream dischargers (MFEI and Zoo Primate) were also updated using 2 cfs. Tables 14a, 14b, 14c, 15a, 15b, 15c, 16a, 16b, and 16c of the WQA, the fact sheet and Part I.A.2 of the permit (CO0049005) have been updated to reflect the updated ADBAC calculations.

Comment 24: Uranium (Tables 11a, 11b, 15a, 15b, 16a, 16b) - For uranium, per Regulation No. 38.5(3)(c)(i), the WQBEL used in the AD analysis should be 30 µg/L, not something less than 30 µg/L. Note also that uranium was left out of the 34 mgd tier on Tables 14b, 15b. Additionally, with what we know regarding uranium concentrations in the South Platte River, it is unlikely that the ambient condition and baseline water quality for uranium is actually 0 µg/L as shown in Tables 7a and 12a.

Response 24: Tables 11a and 11b have been updated to include an additional note explaining that 30 ug/l will be implemented. According to Regulation 38.5(3)(c)(i), the first number in the range is a human health standard and the

second number in the range is the public water supply acceptable level specified in Safe Drinking Water Act. For total recoverable uranium, the standard is 16.8 – 30 ug/l. Since the WQBEL for total recoverable uranium using the human health standard is less than the level established in the Safe Drinking Water Act, 30 ug/l will be implemented. After the public notice period the division used dissolved uranium ambient data from the City of Denver Department of Environmental Health. Data were used from station S29 located just upstream from the L/E WWTF and were available from November 2006 to August 2017. The ambient water quality section of the WQA has been updated with this information. The 50th percentile of the dissolved uranium data was used in determining the total recoverable uranium WQBEL. Note that due to no earlier data being available, this ambient data will be used for the BWQ in the AD section of the WQA. Table A-8d, A-8f has been updated.

Note that uranium is not included in Tables 14b and 15b because there is no new or increased impact, therefore the AD evaluation for uranium is complete and the WQBEL of 30 ug/l is implemented. Uranium was included in table 14a and 15a because the AD evaluation had to proceed for the downstream dischargers (MFEI WWTF and Primate Panorama). Tables 15a, 16a, 16b, and 16c have been updated for total recoverable uranium to implement 30 ug/l. The fact sheet and permit (CO0049005) have been updated to include these changes.

The division's practice is in instances where no ambient data is available is to assume background levels of zero for purposes of calculations. If additional data becomes available for parameters with no ambient data, the new data will be used to update the ambient data section and assimilative capacity. A sentence summarizing this assumption has been in the ambient water quality section and in the BWQ determination section of the WQA.

Comment 25: L/E WWTP is a board member and active participant in the Barr Lake & Milton Reservoir Watershed Association, and is allocated a wasteload allocation for total phosphorus under the pH and dissolved oxygen TMDLs for Barr Lake and Milton Reservoir. We are concerned about how the TMDLs are/are not being implemented in the permits for the other facilities. Four of the five facilities whose permits were sent to public notice with this WQA, were given monitoring requirements based on a lack of available phosphorus data. These monitoring requirements vary between monthly and quarterly sampling frequencies. The MFEI facility was given a limit of 1000 µg/L with monitoring required two times per week. L/E WWTP is concerned that the TMDL did not provide for any wasteload allocations or safety factor for these new dischargers, and yet, they are being provided with a defacto wasteload allocation anyway. While it is true that some smaller industrial sources were likely included in the "background" load allocation portion of the TMDL at the time it was written, the Division's assertion that "industrial sources were determined not to be significant" is not stated anywhere in the TMDL. In fact, the Division stated in the TMDL response to comments that:

> "Although the model did not account for new discharges, because of the concentration-based approach used in this TMDL and because the TMDL is phased, the Division believes it is appropriate for <u>any new discharges</u> to be required to have effluent TP concentrations of 100 ug/L, end-of-pipe (equal to the in-lake target)." (TMDL, Appendix A, pg. 16, emphasis added)

Regulation 61.8(1)(b) states that the division shall not issue a permit:

> (iv) To a new source or a new discharger, if the discharge from its construction or operation will cause or contribute to the violation of water quality standards. The owner or operator of the new source or new discharger proposing to discharge into a water segment which does not meet applicable water quality standards or is not expected to meet those standards even after application of technology-based effluent limitations, and for which the Division has performed a total maximum daily load for the pollutant to be discharged, must demonstrate, before the close of the public comment period, that:
>
> (A) There are sufficient remaining load allocations to allow for the discharge; and
>
> (B) The existing dischargers into that segment are subject to compliance schedules designed to bring the segment into compliance with applicable water quality standards.

Although some facilities are (or will be) under a compliance schedule to meet their allocations under the TMDL, there will not be available load allocations for other, especially new, facilities that were not discharging at the

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

time the TMDL was written. Any additional phosphorus load will effectively add to the baseline conditions, making it difficult to assess the improvements that will occur from other facilities that are making load reductions.

As demonstration of this problem, MFEI was given a 1000 µg/L phosphorus limitation based on the potential to accept domestic wastewater. Based on the Fact Sheet for this facility, it is our understanding that it is a new type of discharge and possibly a new discharge location since the facility was discharging through the Meter Water Reclamation Facility in Segment 15, and is now going to discharge upstream in Segment 14. This adds a new pollutant source upstream of the Burlington Ditch diversion, which goes directly to Barr Lake. At 1000 µg/L, MFEI would be allowed to discharge 1381 kg/year (3,044 lb/year) to the South Platte River. For Barr Lake, this represents approximately 34% of the target external wasteload allocation of 4,023 kg/year and 24% of the total target load of 5,779 kg/year including external, background, and internal sources of phosphorus. This discharge has the potential to contribute a significant amount of phosphorus to Barr Lake and Milton Reservoir which would offset the gains in water quality that other facilities are investing in. Regardless of its classification as a domestic or industrial discharge, as a new facility (new direct discharger and an increased discharge) they should be allocated a 100 µg/L limit.

MFEI and any of the other facilities which would be considered by definition in Regulation No. 61 to be a new source or new discharge (began discharging after the TMDL was written) should be assigned a 100 µg/L limitation, and monthly sampling should be required for at least one year for all the facilities so that load impacts on the reservoirs can be evaluated. This determination should be made independent of whether facilities have previously been authorized to discharge under general permits as most general permits contain narrative requirements to meet applicable standards at end of pipe.

Response 25: Barr-Milton pH TMDL is a phased TMDL and the focus is on large domestic WWTFs as these are 90% of the total phosphorous load, as provided in Table 4.1 Barr Lake Allocation strategy. Additionally, these dischargers are listed in Table 1.2 and a map of the major industrial and municipal wastewater dischargers is provided on Figure 1.5. The focus of this TMDL is on major domestic WWTFs because these are 90% of the total phosphorous load, as provided in Table 4.1 Barr Lake Allocation strategy. As stated in Section 1.1 "…a phased approach for a TMDL is justified when the "available data only allow for 'estimates' of necessary load reductions or for 'non-traditional problems' where predictive tools may not be adequate to characterize the problem with a sufficient level of certainty." The intent of the phased approach is to assign phased numeric limitations to the dischargers that have been identified as the largest contributors of phosphorous. The data, modelling and findings clearly indicate that municipal WWTF are the main contributors of phosphorous resulting the major domestic WWTF receiving wasteload allocations and the major industrial facilities **not** receiving wasteload allocations (Table 1.2) Further, L/E is specifically identified (Section 3) as having "the greatest influence on Barr TP loading, which is more than an order of magnitude greater than Centennial in terms of TP load." And the summary of modelling determined that "discharges from the RWHTF and L/E are the largest contributors of phosphorus to the system, providing approximately 90% of the external load to Barr and 84% of the external load to Milton (Table 3.1). Other point sources contribute additional TP to the system, but the total quantity from these sources is relatively small when compared to the two largest dischargers." While the TMDL document does not include the exact wording that "industrial sources were determined not to be significant", the modelling clearly provides the data for that conclusion because of the two domestic facilities comprise 90% and 84% of the Phosphorus loading.

Section 4 describes the allocation scheme and is focused on POTWs: "Under this regime, the phosphorus effluent limitation at POTWs receiving wasteload allocations under the TMDL would be set at 100 ug/L end-of-pipe at any hydraulic capacity (rated or existing) for the identified facilities (Tables 4.1 and 4.2), and for any new dischargers, and 1000 ug/L end-of-pipe at any hydraulic capacity for the identified facilities, at the appropriate time during implementation. In effect, the approach to implementing the POTWs waste load allocations is volume-independent." The first stages of TP reductions expected in the TMDL were for L/E, MWRD, and Centennial to reduce to Regulation 85 limits of 1000 ug/L, then to 100 ug/L. To date, completion of the first stage, which is incorporation of effluent limits of 1000 ug/L into the permits for those three facilities, and subsequent attainment of such effluent limits, hasn't occurred. Centennial has a TP effluent limit of 1000 ug/L however, since L/E and RWHTF currently do not have the first phase of numeric TMDL limitations of 1000 ug/l implemented, the division determined that it is inconsistent with the intent of the phased TMDL approach to assign a stricter limitation (100 ug/l) to a facility and sector that is not

significant compared to the named facilities (L/E and RWHTF) and sector (Domestic WWTF) that have been identified as significant contributors.

In September 2017, the permittee submitted a total phosphorous result of 195 ug/l. This permittee anticipated that this sample represented the worst case scenario of industrial influent because it contained stormwater runon. The RP section of the fact sheet has been corrected to remove the reference to MFEI potentially accepting domestic waste.

The TMDL document shows that the existing waste load to Barr Lake was 63,351 kg/yr, and the total load was 70,376 per year. Thus, at 1000 ug/L MFEI represents approximately 2% of the existing load and at 195 ug/L, MFEI represents approximately 0.4 % of the existing load.

Macdonald Farms as a new industrial facility rated at 1 MGD with a TMDL limit of 1000 ug/l implemented upon permit issuance, whereas, L/E rated at 50 MGD with an average discharge of 2900 ug/l will only have report in the next renewal. L/E will not have to meet a limit of 1000 ug/l at least until 2021 if all compliance schedules proposed in permit CO0032999 are considered. The division believes this approach represents a proper implementation of the TMDL for new industrial sources in the Barr-Milton Watershed.

The other permits referenced in the comment (CO0049007, CO0049017, CO0049011 and CO0049012) are conversions from other permits (groundwater remediation - COG315000 and non contact cooling COG604000). Therefore they are not considered new permits subject to the 100 ug/l limitation. Two industrial permits (CO0049007, CO0049017) are converted groundwater discharge permits (COG315000). During a previous permitting action for a similar discharge in the same general area, the division obtained a phosphorous data point of < 50 ug/l (CO0049003). Because of the source water (alluvial groundwater), this monitoring result, and the proximity of the other two alluvial groundwater discharge permits (CO0049007, CO0049017) the division has not determined that phosphorous is a pollutant of concern for these groundwater remediation permit conversions. The RP section of the factsheets for CO0049007, CO0049017 has been update with this information.

Two other facilities are non-contact cooling water general permit certification conversions (CO0049011 and CO0049012). Division evaluation during the draft permit development indicates that phosphorous is likely not a pollutant of concern because of the source water being potable water. The RP section of the factsheets for CO0049011 and CO0049012 has been updated with this information. Because phosphorous is not confirmed as a POC, the division assigned quarterly monitoring to whether or not confirm phosphorous is a pollutant of concern for these permits.

Subsequent phases of the TMDL may include more stringent effluent limits for non-POTW sources, such as McDonald Farms.

Regulation 85

Upon further review of McDonald Farms monitoring results for TIN and Phosphorus, in response to this comment, the Division has concluded that Regulation 85 applies to McDonald Farms. Regulation 85.5(2)(b)(ii)requires that when the Division has credible information that a non-domestic wastewater treatment facility that begins discharging after May 31, 2013 is expected, without treatment for nutrients, to discharge total inorganic nitrogen or total phosphorus concentrations to surface waters in excess of the following levels, then the Division must include effluent limitations for TIN and Phosphorus in its permit.

Regulation 85.5(1)(b) Table

PARAMETER	PARAMETER LIMITATIONS	
	Annual Median[1]	95th Percentile[2]
(a) Total Phosphorus	0.7 mg/L	1.75 mg/L
(b) Total Inorganic Nitrogen as N[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.

Based on information submitted by McDonald Farms, they believe they could discharge TIN at 7.2 mg/l. The Division therefore has credible evidence justifying implementation of the effluent limits in Regulation 85.5(1)(b) in McDonald

4300 Cherry Creek Drive S., Denver, CO 80246-1530 P 303-692-2000 www.colorado.gov/cdphe/wqcd
John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

Farms permit. Effluent limits required by Regulation 85.5(1)(b) have been added to the permit (CO0049005). The RP section of the factsheet (CO0049005) has been updated with this information.

Comment 26: It is our understanding that McDonald Farms may serve as a regional facility to receive industrial waste. We expect that if that facility accepts wastes from other dischargers that are permitted in this Master WQA, that the Division will ensure that flows are not being double-counted, and will revise permit limits accordingly.

Response 26: McDonald Farms is a centralized waste treatment facility that will receive wastes from other dischargers to treat. The division will conduct routine review when the segment 14 permits are renewed and assess dischargers to the subject area of Segment 14. The division will draft renewal permits according to any updated flow information, classification standards and regulatory requirements.

Comment 27: The current L/E WWTP discharge permit contains three flow tiers, including 34 mgd, 42 mgd, and 50 mgd. The Division has maintained the 34 mgd flow tier and the 50 mgd flow tier in this WQA. Based on our recent flows, the 42 mgd flow tier may not be needed for some time, reporting to reduce the number of tiers. However, L/E WWTP would like the Division's assurance that it will modify the permit if requested in the future to include the 42 mgd flow tier or other intermediate flow tier, as appropriate. It is noted that a 42 mgd flow tier is specifically identified in the Segment 14 nitrate TMDL.

Response 27: Regulation 61.8(2)(f) states "Where the facility design flow and actual flow are significantly different, the division may implement a tiered approach to setting water-quality-based effluent limitation". Therefore, it is at the division's discretion to evaluate a permit at different tiers. L/E will be required to provide justification for any tier to be added via modification during the permit term and/or at the next renewal.

I. <u>Barr Lake and Milton Reservoir Watershed Association (July 13, 2017 public notice, received 8/14/12017)</u>

Comment 1: Phosphorus data were not provided with the public notice for any of the five facilities. When the Association commented previously on CO0049003 and CO0049006, there was at least one sample showing low levels (<50 µg/L) of TP. In the current WQA, "report only" requirements are being issued to four of the five facilities without any knowledge of what the loads to the watershed actually are or how they may impact the TMDL. McDonald Farms was given a limit, but again, phosphorus data were not provided in the public noticed permit documents to know the actual impact to the watershed.

Response 1: Please see response to comment H.25.

Comment 2: There are inconsistent monitoring requirements for phosphorus for those facilities with report only requirements. Some facilities have monthly reporting, while some have quarterly. Also, in some permits, the Fact Sheet does not match the Permit. Monthly sampling for total phosphorus should be required for at least 1 year so that load impacts on the BMW watershed can be assessed.

Response 2: Phosphorus monitoring requirements for permits CO0049007, CO0049011, CO0049012, and CO0049017 are based on the indication that phosphorous is unlikely to be a POC for these discharges. **See Response to comment H.25.**

Comment 3: The Segment 14 WQA is silent regarding the 6 permits that were previously issued. These include:
CO0000002 (Arapahoe Facility) 0.15 MGD, No Data in Reg. 85 Storet
CO0000008 (1601 Wewatta Office Building Garage) 0.0216 MGD, No Data in Reg. 85 Storet
CO0049002 (Globeville Landing) 0.144 MGD, No Data in Reg. 85 Storet
CO0048955 (Denver Water Reuse Hydrostatic Discharge) 0.72 MGD, No Data in Reg. 85 Storet
CO0048951 (Denver Zoo Primate Panorama) 0.35 MGD, No Data in Reg. 85 Storet
CO0048682 (Denver Zoo – Flamingo Pond) 0.022 MGD, No Data in Reg. 85 Storet

These facilities total 1.41 MGD. A search of TP data in EPA's Storet system did not reveal any effluent TP data for these facilities. If the Division has data from previous monitoring requirements, that data should be considered and limits should be issued as necessary to ensure that impairments to Barr Lake and Milton Reservoir are not exacerbated. The

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Association is particularly concerned about the two Denver Zoo permits since they may contain nutrients in higher amounts as a result of animal wastes.

For any current or future facility that qualifies as a new source as defined at Regulation No. 61.2(67) (as of the May 2013 date of the Barr-Milton TMDL adoption for dissolved oxygen and pH) or new discharger as defined at Regulation No. 61.2(65), the requirements in Regulation No. 61.8(1)(b) must be met; specifically, Reg. 61.8(1)(b) The Division shall not issue a permit under the following circumstances:

...

(iv) To a new source or a new discharger, if the discharge from its construction or operation will cause or contribute to the violation of water quality standards. The owner or operator of the new source or new discharger proposing to discharge into a water segment which does not meet applicable water quality standards or is not expected to meet those standards even after application of technology-based effluent limitations, and for which the Division has performed a total maximum daily load for the pollutant to be discharged, must demonstrate, before the close of the public comment period, that:

IX. There are sufficient remaining load allocations to allow for the discharge; and

X. The existing dischargers into that segment are subject to compliance schedules designed to bring the segment into compliance with applicable water quality standards.

It is unclear how there could be any remaining load allocations when the waterbodies are still considered to be impaired for dissolved oxygen and pH. The Division should evaluate each facility in the WQA on a case by case basis to determine if it meets the regulatory definition of a new source or new discharger, and if not, the facility should either provide data to show that it is discharging consistently below 100 µg/L or else 100 µg/L should be implemented as a limit. If new dischargers or new sources are allowed to discharge at concentrations higher than 100 µg/L, they will be adding loads to the "background" concentration in the TMDL, effectively changing the baseline, which could make it more difficult to assess future improvements from other upstream regulated facilities and to meet the in-lake water quality goals.

Response 3: The permits listed above were written under a previous framework that did not include modelling for the aggregate discharge of all individual permits as reflected in the current Segment 14 WQA. When the permits listed above are renewed, those permits will be updated to reflect the WQA and the TMDL will be implemented, including an evaluation to determine 'new' discharger status. Additionally, the TMDL clearly prioritizes major domestic WWTFs (or a discharger of similar characteristics) as the main contributor of nutrients. However, the zoo discharges permits from the flamingo pond and the primate panorama are expected to be more aligned with domestic wastewater characteristics and therefore have a similar phased implementation path as other domestic WWTFs. The Denver reuse hydrostatic permit is effluent from RWHTF. The division has made a previous determination for the reuse permit to follow the effluent limits and treatment technology upgrade schedule of RWHTF.

Comment 4: If the McDonald Farms is considered a new source or new discharger, its limit should be 100 µg/L, which is consistent with the TMDL for Barr Lake and Milton Reservoir. Allowing McDonald Farms to discharge up to 1,000 µg/L would represent a substantial new discharge potential to the Barr Lake watershed. If the facility were to discharge at the proposed permit concentration of 1 mg/L, it could discharge 3,044 lb/year (1381 kg/yr) to the South Platte River. For Barr Lake, this represents 34 percent of the target external wasteload allocation of 4,023 kg/year and 24 percent of the total target load of 5,779 kg/yr including external, background, and internal sources of phosphorus.

No current or expected phosphorus concentration data were provided for the McDonald Farms facility. It is therefore unclear how much increase in total phosphorus load can be expected relative to the load currently discharged to Metro Water Reclamation District. Based on the permit documents for the facility, the facility is intending to accept new waste streams.

Response 4: Please see response to comment H.25.

Comment 5: As with any new discharge, the Association expects that pollution controls will be designed and implemented to meet TP standards upon start-up. Compliance schedules would not be appropriate for TP limits.

Response 5: The division agrees that new sources are only provided compliance schedules in extremely limited cases in accordance with the Compliance Schedule Policy (CWP3) and Regulation 61.8. McDonald Farms, does not meet the provisions at 61.8(3)(n)(iii), and therefore is not eligible for a compliance schedule. Additionally, Regulation 61.8(1)(e) states "The division shall not issue a permit under the following circumstances:…(iii)When the imposition of conditions cannot ensure compliance with the applicable water quality requirement of all affected States. (iv) To a new source or a new discharger, if the discharge from its construction or operation will cause or contribute to the violation of water quality standards…" McDonald Farms will be required to meet the total phosphorus limitations upon the effective date of the permit.

Note that only McDonald farms permit is a new source consistent with the definition of 'new source' in Regulation 61.2(67). The other individual draft permits (CO0049007, CO0049011, CO0049012, CO0049017) are conversions from general permit certifications and are not considered new, and would be potentially eligible for compliance schedules.

Additional changes made after July 2017 public notice:

The WQBELs for TRC for L/E WWTF have been updated to include the flows for Arapahoe facility (CO0000002). Since these two facilities are in close proximity and have TRC as a common pollutant of concern, they should be modeled together for chlorine. Note that no change occurred to the permit limit.

The organization formal name was included on the first page of the permit (CO0049005).

Limit Set A and Limit Set B have been updated to Limit Set 001A and Limit Set 001B in the permit (CO0032999).

The following ICIS codes were missing the preceding zeros and have been updated in the permit (CO0049005):

- Acetochlor
- Diquat
- PCB's
- Tributyltin

The incorrect ICIS code for Dichloroethylene 1,2-trans has been updated with the correct ICIS code (34546). (CO0049005, CO0049007, CO0049017)
The incorrect ICIS code for Dichloroethylene 1,2-cis has been updated with the correct ICIS code (77093). (CO0049005, CO0049007, CO0049017)
The incorrect ICIS code for Tetrachloroethylene (PCE) has been updated with the correct ICIS code (34475). (CO0049005, CO0049007, CO0049017)
The incorrect ICIS code for Trichloroethane 1,1,1 has been updated with the correct ICIS code (34506). (CO0049005, CO0049007, CO0049017)
The incorrect ICIS code for Hexachlorocyclohexane, technical has been updated with the correct ICIS code (81288). (CO0049005)
The incorrect ICIS code for Plutonium 239 + Plutonium 240 has been updated with the correct ICIS code (51934). (CO0049005)

1,2-dibromoethane was listed twice in the permit (CO0049005, CO0049007, CO0049017) table. The error originates in Regulation 31 which lists 1,2-dibromoethane and ethylene dibromide which are synonymous. The division will leave ethylene dibromide with the water quality standard of 0.02-0.05 ug/l.

The public notice version of the permit (CO0049005) had mg/l for total phosphorus, but the units should be µg/l. The units for total phosphorus were updated.

The dates for the compliance schedule for TIN, selenium, and uranium were updated. Parts I.A.2 and I.B.2.a of the permit have been changed. (CO0049017)

The dates for the compliance schedule for copper were updated. Parts I.A.2 and I.B.2.a of the permit have been changed. (CO0000002)

The dates for the compliance schedule for Total Inorganic Nitrogen, Dissolved Iron, Potentially Dissolved Zinc, BTEX,

Vinyl Chloride, Benzo(a)pyrene, and Chlorethyl ether (BIS-2) were updated. Parts I.A.2 and I.B.2.a of the permit have been changed. (CO0000007)

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John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

Water Quality Assessment
the South Platte River
Littleton/Englewood Wastewater Treatment Plant
Southwest Generation Colorado Arapahoe LLC, Arapahoe Facility
And Concurrent Downstream Discharges to COSPUS14

Table of Contents

I. Water Quality Assessment Summary 2
II. Introduction 3
III. Water Quality Standards 5
Narrative Standards *5*
Standards for Organic Parameters and Radionuclides *5*
Salinity and Nutrients *6*
Temperature *7*
Segment Specific Numeric Standard *7*
Table Value Standards and Hardness Calculations *8*
Total Maximum Daily Loads and Regulation 93 - Colorado's Section 303(d) List of Impaired Waters and Monitoring and Evaluation List *10*
IV. Receiving Stream Information 11
Low Flow Analysis *11*
Mixing Zones *12*
Ambient Water Quality *13*
V. Facility Information and Pollutants Evaluated 15
Facility Information. *15*
Pollutants of Concern *17*
VI. Determination of Water Quality Based Effluent Limitations (WQBELs) 18
Technical Information *18*
Calculation of WQBELs *20*
Whole Effluent Toxicity (WET) Testing: *28*
VII. Antidegradation Evaluation 29
Introduction to the Antidegradation Process *30*
Significance Tests for Temporary Impacts and Dilution *30*
New or Increased Impact and Non Impact Limitations (NILs) *31*
Calculation of Loadings for New or Increased Impact Test *32*
Calculation of Non-Impact Limitations *32*
Determination of Baseline Water Quality (BWQ) *37*
Significant Concentration Threshold *38*
Determination of the Antidegradation Based Average Concentrations *38*
Concentration Significance Tests *40*
Antidegradation Based Effluent Limitations (ADBELs) *42*
Alternatives Analysis *45*
VIII. Technology Based Limitations 45
Federal Effluent Limitation Guidelines *45*
Regulations for Effluent Limitations *47*
Nutrient Effluent Limitation Considerations *47*
Supplemental Reg. 85 Nutrient Monitoring *49*
IX. References 49

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[5]	Permit Number	Design Flow (max 30-day ave, MGD)	Design Flow (max 30-day ave, CFS)
F1. Littleton/Englewood Wastewater Treatment Plant	CO0032999	50	77
F2. Arapahoe Facility[1]	CO0000002	0.15	0.23
F3. McDonald's Farm[1]	CO0049005	0.999999	1.5
F4. Z Block Project[1,2]	CO0049007	0.070	0.11
~~F5. Confluence Park[1]~~	~~PEL230037~~	~~0.864~~	~~1.3~~
~~F6. Tunnel 16[1]~~	~~PEL230038~~	~~0.144~~	~~0.22~~
F5~~7~~. Confluence Apartments[1]	CO0049003	0.06~~847~~	0.11~~07~~
F6~~8~~. 17th and York Apartments[1]	CO0049006	0.02592	0.04
F7~~9~~. 1601 Wewatta Office Building Garage[1,3]	CO0000008	0.0216	0.03
F8~~10~~. Globeville Landing Outfall Project[1,3]	CO0049002	0.144	0.22
F9~~11~~.Denver Water Reuse Hydostatic Discharge[1,3]	CO0048955	0.72	1.1
F10~~2~~. Denver Zoo – Primate Panorama Discharge[1,3]	CO0048951	0.35	0.54
F13~~1~~. Denver Zoo – Flamingo Pond[1,3]	CO0048682	0.022	0.03
~~F14. Artis HRA Hudsons Bay[1,3]~~	~~PEL230041~~	~~0.0144~~	~~0.02~~

Receiving Stream Information

Receiving Stream Name	Segment ID	Designation	Classification(s)
South Platte River	COSPUS14	Undesignated	Aquatic Life Warm 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)
South Platte River	16	20	24	F1: 0.31:1 F2: 104:1 F3: 16:1 F4: 218:1 ~~F5: 18:1~~ ~~F6: 109:1~~ F5~~7~~: 218~~343~~:1

				F~~8~~6: 600:1 F~~9~~7: 800:1 F~~8~~10: 109:1 F~~9~~11: 22:1 F10~~2~~: 44:1 F11~~3~~: 800:1 ~~F14: 1200:1~~

Regulatory Information					
T&E Species	**303(d) (Reg 93)**	**Monitor and Eval (Reg 93)**	**Existing TMDL**	**Temporary Modification(s)**	**Control Regulation**
No	Arsenic	None	Nitrate, *E. coli*	Copper BLM-based FMB Cu FMB(ac)=31.5 µg/l Cu FMB(ch)=20.8 µg/l downstream of Marcy Gulch. T=current condition, Dec-Feb and Cl=current condition Expiration date of 12/31/20. As(ch)=hybrid Expiration date of 12/31/21.	Regulation 85

Pollutants Evaluated
F1: Ammonia, *E. coli*, TRC, Nitrate, Nitrite, Metals, Temp, Nutrients, Gamma-BHC
F2: Ammonia, *E. coli*, TRC, Nitrate, Metals
F3: Ammonia, *E. coli*, TRC, Nitrate, Metals, Nutrients, Organics
F4: Ammonia, *E. coli*, Nitrate, Metals, Nutrients, Organics
~~F5: Ammonia, *E. coli*, Nitrate, Metals, Nutrients, Organics~~
~~F6: Ammonia, *E. coli*, Nitrate, Metals, Nutrients, Organics~~
F5~~7~~: Ammonia, *E. coli*, Nitrate, Metals, Nutrients, Organics
F6~~8~~: Ammonia, *E. coli*, Nitrate, Metals, Nutrients, Organics
F7~~9~~: Ammonia, *E. coli*, Nitrate, Metals, Nutrients, Organics
F8~~10~~: Ammonia, *E. coli*, TRC, Nitrate, Metals, Organics
F9~~11~~: Ammonia, *E. coli*, TRC, Nitrate, Metals, Nutrients, Organics
F10~~2~~: Ammonia, *E. coli*, TRC, Nitrate, Metals, Nutrients, Organics
F11~~3~~: Ammonia, *E. coli*, TRC, Nitrate, Metals, Nutrients, Organics
~~F14: Ammonia, *E. coli*, Nitrate, Metals, Nutrients, Organics~~

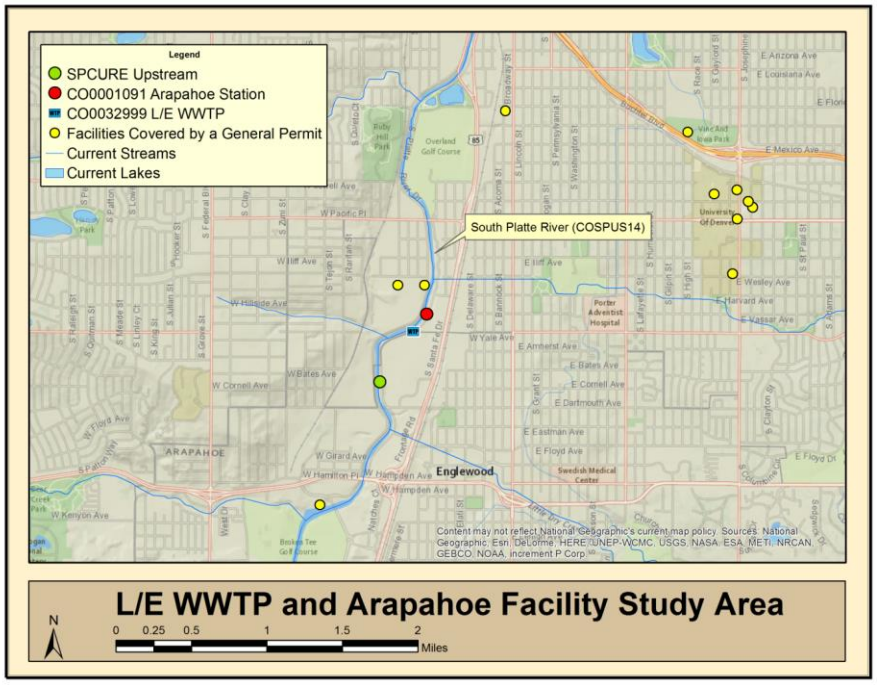
[1]The Division incorporated a total of 2.5 MGD discharge to cover this facility and other downstream; see details in the text
[2]The Z Block facility originally requested for a PEL (PEL200453) requesting 0.036 MGD of flow, but have requested 0.070 MGD of flow in their individual permit application.
[3]This facility is not currently up for renewal; however, the limits calculated in this WQA will be applied at the next renewal
Note: The general permits anticipated to apply for individual discharge permits are not included in this list and currently are permitted for a cumulative discharge volume of 2.1 MGD.

II. Introduction

The water quality assessment (WQA) of the South Platte River near the Littleton/Englewood Wastewater Treatment Plant (L/E WWTP) and Arapahoe Facility Wastewater Treatment Facility (Arapahoe Facility), located in Arapahoe County, is intended to determine the assimilative capacities available for pollutants found to be of concern and the wasteload allocations allotted to specific sources. 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. Note that the Arapahoe Facility discharges less than ¼ mile downstream of the L/E WWTP and that it is necessary to model the two facilities together for similar pollutants of concern. In addition, there are several other facilities (which currently hold individual permits or~~,~~ have applied for an individual permits~~, or hold a general permit and may apply for a individual permit~~) that discharge to the South Platte River or Cherry Creek in downtown Denver. In this WQA, the downstream facilities (including the Arapahoe facility) ~~will be modeled as 5 MGD~~represent a 2.5 MGD of flow. The facilities are being modeled together in order to prevent an overallocation assimilative capacity to the stream segment. ~~While these facilities have been allotted for more than 5 MGD flow, actual discharge conditions indicate that the facilities will not discharge at their allotted capacity; therefore, the division has determined that modeling an extra 5 MGD flow along with the 50 MGD flow from the L/E WWTP is appropriate and protective of the stream segment's water quality at this time.~~

FIGURE A-1



The L/E WWTP is the upper most discharger in this WQA to the South Platte River, which is stream segment COSPUS14. This means the South Platte Basin, Upper South Platte River Sub-basin, Stream Segment 14. This segment is composed of the "Mainstem of the South Platte River from the outlet of Chatfield Reservoir to the Buirlington Dtich diversion in Denver, Colorado." Stream segment COSPUS14 is classified for Aquatic Life Warm 1, Recreation Class E, Water Supply

and Agriculture. Figure A-1 does not show the downstream discharge points the Division is also considering in this WQA. However the known proposed discharge points will all reside in Cherry Creek, at the confluence of the South Platte River with Cherry Creek, or into the South Platte River downstream of Cherry Creek.

Information used in this assessment includes data gathered from the L/E WWTP, Arapahoe Facility, Colorado Division of Water Resources, the Division, and the U.S. Geological Survey (USGS). 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

*Radionuclide 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 the the South Platte River is classified for Aquatic Life Warm 1, with a water supply designation, the water + fish and aquatic life standards apply to this discharge.

Salinity and Nutrients

Salinity: 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.

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 Table A-3 have been assigned to stream segment COSPUS14 in accordance with the *Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin*.

Table A-3 In-stream Standards for Stream Segment COSPUS14
Physical and Biological
Dissolved Oxygen (DO) = ~~6 mg/l, minimum (7 mg/l, minimum during spawning)~~5.0 mg/l
pH = 6.5 - 9 su
E. coli chronic = 126 colonies/100 ml
Temperature Feb 14-Nov = 24.2° C MWAT and 29° C DM
Temperature Dec-Feb 13, until 12/31/20 = current conditions
Temperature Dec-Feb 13, beginning 1/1/21 = 12.1° C MWAT and ~~14.5~~24.6° 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 = 0.5 mg/l
Nitrate acute = 10 mg/l
Chloride chronic, ending 12/31/20 = current conditions
Chloride chronic, beginning 1/1/21 = 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-3 In-stream Standards for Stream Segment COSPUS14
Total Recoverable Cadmium acute = 5.0 µg/l
Dissolved Cadmium acute and 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 Copper BLM-based FMB ~~chronic~~ acute = 31.5 µg/l*
Dissolved Copper BLM-based FMB chronic~~acute~~ = 20.8 µg/l*
Dissolved Iron chronic = For WS, the greater of ambient water quality as of January 1, 2000, or 300 µg/l
Total Recoverable Iron chronic = 1000 µg/l
Total Recoverable Lead acute = 50 µg/l
Dissolved Lead acute and chronic = TVS
Dissolved Manganese chronic = 190 µg/l for WS
Dissolved Manganese acute and chronic = TVS
Total Recoverable Molybdenum chronic = 150 µg/l
Total Mercury chronic = 0.01 µg/l
Total Recoverable Nickel chronic = 100 µg/l
Dissolved Nickel acute and chronic = TVS
Dissolved Selenium acute and chronic = TVS
Dissolved Silver acute and chronic = TVS
Dissolved Zinc acute and chronic = TVS
Nonylphenol acute = 28 µg/l
Nonylphenol chronic = 6.6 µg/l

*TVS standards for copper apply above the confluence with Marcy Gulch. The BLM-based FMB modifier applies downstream of the confluence with Marcy Gulch.

Table A-3b Additional Standards Being Evaluated Based on Regulation 31
Gamma-BHC (Lindane) chronic = For AqLife 0.08 µg/l
Gamma-BHC (Lindane) acute = For AqLife 0.95 µg/l
Total Recoverable Uranium chronic = For WS, 16.8-30 µg/l

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. 38, December 31, 2015.

Note that for Gamma-BHC, the most stringent standard in Regulation 31 is 0.95 µg/l for the acute aquatic life based standard and 0.08 µg/l for the chronic aquatic life based standard.

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.

While there were sufficient hardness data for the South Platte River near the point of discharge of the L/E WWTP conduct a regression analysis based on the low flow, the hardness and low flow data resulted in a low R^2-value of 0.13. Therefore, the Division's alternative approach to calculating hardness was used, which involves computing a mean hardness.

The mean hardness was computed to be 286 mg/l based on sampling data from L/E WWTP station UP [Downstream (Evans)] located on the South Platte River immediately downstream from the L/E WWTP. Data from January 2010 to December June 2015 were used for the period of record. Note that only hardness values that were collected during days of low flow were included in the averaging for hardness. 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-4. Note that the TVS for copper was not calculated as the BLM-based FMB apply to this facility.

Table A-4
TVS-Based Metals Water Quality Standards for CO0032999
Based on the Table Value Standards Contained in the Colorado Department of Public Health and Environment Water Quality Control Commission *Regulation 38*

Parameter	***In-Stream Water Quality Standard***		***TVS Formula: Hardness (mg/l) as CaCO3 =***	**286**
Cadmium, Dissolved	Acute	6.8 µg/l	$[1.136672-0.041838\ln(\text{hardness})]e^{(0.9151(\ln(\text{hardness}))-3.1485)}$	
	Chronic	0.94 µg/l	$[1.101672-0.041838\ln(\text{hardness})]e^{(0.7998(\ln(\text{hardness}))-4.4451)}$	
Trivalent Chromium, Dissolved	Chronic	175 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	
Lead, Dissolved	Acute	198 µg/l	$[1.46203-0.145712\ln(\text{hardness})][e^{(1.273(\ln(\text{hardness}))-1.46)}]$	
	Chronic	7.7 µg/l	$[1.46203-0.145712\ln(\text{hardness})][e^{(1.273(\ln(\text{hardness}))-4.705)}]$	
Manganese, Dissolved	Acute	4237 µg/l	$e^{(0.3331(\ln(\text{hardness}))+6.4676)}$	
	Chronic	2341 µg/l	$e^{(0.3331(\ln(\text{hardness}))+5.8743)}$	
Nickel, Dissolved	Acute	1139 µg/l	$e^{(0.846(\ln(\text{hardness}))+2.253)}$	
	Chronic	127 µg/l	$e^{(0.846(\ln(\text{hardness}))+0.0554)}$	

Table A-4 TVS-Based Metals Water Quality Standards for CO0032999 Based on the Table Value Standards Contained in the Colorado Department of Public Health and Environment Water Quality Control Commission *Regulation 38*				
Parameter	***In-Stream Water Quality Standard***		***TVS Formula: Hardness (mg/l) as CaCO3 =***	**286**
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	12 µg/l	$½\ e^{(1.72(\ln(\text{hardness}))-6.52)}$	
	Chronic	2 µg/l	$e^{(1.72(\ln(\text{hardness}))-9.06)}$	
Zinc, Dissolved	Acute	416 µg/l	$0.978e^{(0.9094(\ln(\text{hardness}))+0.9095)}$	
	Chronic	315 µg/l	$0.986\ e^{(0.9094(\ln(\text{hardness}))+0.6235)}$	

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

This stream segment is on the 303(d) list of water quality impacted streams for arsenic.

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 arsenic have not yet been established and the allowable concentration calculated in the following sections may change upon further evaluation by the Division.

The Division's Restoration and Protection Unit have completed TMDLs for *E. coli* and total inorganic nitrogen; therefore, the requirements of these TMDLs apply for these parameters. For this permit, *COSPUS14 South Platte River, Segment 14 Escherichia coli (E. coli)* (approved in October 2007) states that the *E. coli* WLA for this facility is 126 cfu/100 ml. The wasteload allocations for total inorganic nitrogen are listed in *COSPUS14 South Platte River, Segment 14 Nitrate* (approved in June 2004) and are summarized in Table A-5.

Table A-5 TMDL Wasteload Allocations for Total Inorganic Nitrogen for the L/E WWTP												
Design Flow at 34 MGD												
Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Concentration (mg/l)	24.8	24.5	23.5	27.1	44.8	47.9	42.2	46.5	36.2	32.9	28.5	29.3
Load* (lbs/day)	7042	6956	6673	7013	12749	13629	11982	13203	10278	9398	8120	8320
Design Flow at 42 MGD												
Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Concentration (mg/l)	23.9	23.7	23.0	26.0	40.0	43.0	39.1	42.6	34.1	30.9	26.9	27.7
Load* (lbs/day)	8382	8314	8067	8664	14030	15082	13715	14941	11960	10838	9436	9716
Design Flow at 50 MGD**												

Table A-5 TMDL Wasteload Allocations for Total Inorganic Nitrogen for the L/E WWTP												
Month	**Jan**	**Feb**	**Mar**	**Apr**	**May**	**Jun**	**Jul**	**Aug**	**Sep**	**Oct**	**Nov**	**Dec**
Concentration (mg/l)	23.4	23.2	22.6	24.7	36.3	39.1	36.9	39.9	32.6	29.4	25.7	26.5
Load* (lbs/day)	9771	9687	9467	10313	15157	16325	15408	16660	13611	12275	10732	11065

*T.I.N. loadings listed as kg/day in the TMDL and were converted to lbs/day;** will be implemented in this permit

Note that the concentration values provided in the T.I.N. TMDL will be compared to the WQBELs protective of downstream water sources calculated in Section VI, with the most protective values will be considered in the permit.

TMDLs for pH and Dissolved Oxygen for segment COSPMS04 are also applicable to this facility into the Barr Lake and Milton Reservoir. These TMDLs indicate that reductions of total phosphorus will address both the pH and DO impairments in this segment as exceedances for pH and Dissolved Oxygen are related to excess nutrients. The level of total phosphorus reduction needed to implement the TMDL is the same as required by Regulation 85.

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 L/E WWTP, USGS gage station 06711565 (South Platte River at Englewood, CO) was used. This flow gage provides a representative measurement of upstream flow because it is located immediately upstream of the L/E WWTP. Daily flows from this gage were obtained and the annual 1E3 and 30E3 low flows were calculated 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, 2005 through September 30, 2014 were available from the gage station. 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 L/E WWTP and Arapahoe Facility were calculated and are presented in Table A-6a.

Table A-6a Low Flows for the South Platte River at the L/E WWTP and Arapahoe Facility													
Low Flow (cfs)	***Annual***	***Jan***	***Feb***	***Mar***	***Apr***	***May***	***Jun***	***Jul***	***Aug***	***Sep***	***Oct***	***Nov***	***Dec***
1E3 Acute	16	21	22	27	32	23	19	29	18	16	33	23	21

7E3 Chronic	20	22	24	30	32	29	23	26	20	20	33	23	22
30E3 Chronic	24	24	26	35	42	34	34	29	24	24	33	24	24

The ratio of the low flow of the South Platte River to the L/E WWTP design flow is 0.31:1.

In order to calculate WQBELs for total inorganic nitrogen, flows above PWS #101150 (City of Thornton) must be determined. To determine the low flows above PWS #101150, DWR gage station PLADENCO (South Platte River at Denver, CO) was used. Daily flows from this gage were obtained and the annual 1E3 was calculated using U.S. Environmental Protection Agency (EPA) DFLOW software. The output from DFLOW provides calculated acute low flows for each month. Flow data from October 1, 2005 through September 30, 2014 were available from the gage station. 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 flows upstream of PWS #101150 were calculated and are presented in Table A-6b. Note that after 12/31/2022 the Division will only be allowed to use the low flows available upstream of the L/E WWTP for calculating TIN limitations. This is because of the recent decision by the WQCC to remove Footnote 4 to the nitrate drinking water standard in WQCC Reg. 31.

Table A-6b
Low Flows available upstream of PWS #101150 (City of Thornton)

Low Flow (cfs)	*Annual*	*Jan*	*Feb*	*Mar*	*Apr*	*May*	*Jun*	*Jul*	*Aug*	*Sep*	*Oct*	*Nov*	*Dec*
1E3 Acute	57	70	80	98	99	78	77	74	57	57	85	78	75

Mixing Zones

Mixing zones are allowable areas where water quality standards can be exceeded during low flow conditions. Sizes of mixing zones may be limited when necessary to protect designated uses based on a number of factors. Factors that may reduce the size of the mixing zone are: 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 the facilities evaluated, 100% of the available assimilative capacity may be used as the facilities have not had to perform a mixing zone study, and the discharges are not to a T&E stream segment, and are not expected to have an 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 L/E WWTP, data for all parameters except selenium were gathered from L/E WWTP project SPCURE UP [Upstream (Dartmouth)] located approximately ½ mile upstream from the facility. Data were used for a period of record from January 2010 through December 2014. For selenium, assessment data for the development of the 303(d) listing were used. Data were used for a period of record from September 2008 to December 2013 were used. Note that the division compared the 85th percentile of selenium for the entirety of segment COSPUS14 as well as portion of the segment upstream of the L/E WWTP and the portion of the segment downstream of the L/E WWTP with the conclusion that the 85th percentile is the same for all cases. Data from these sources were used to reflect upstream water quality. While there is extensive water quality data for inorganic parameters, there is limited and/or no data for the vast majority of organic pollutants. Therefore data on organic parameters is currently limited to gamma-BHC, and assumptions have been made about nonylphenol in later technical analysis. These data are summarized in Table A-7a.

To conduct an assessment of the ambient temperature upstream of the L/E WWTP, data in the correct format were obtained from USGS gage 06711565 (South Platte River at Englewood, CO), which is located approximately ¼ mile upstream of the facility. Data were transformed to determine the maximum WAT and maximum DM, which are summarized in Table A-7b. Regulation 31.53.A allows the facility to use the second highest monthly DM or WAT for data records between 4-6 years for one month in either winter or summer and the remaining months shall be the max DM or WAT. Note that the USGS gage provided more than 6 years of data.

Table A-7a
Ambient Water Quality for the South Platte River

Parameter	*Number of Samples*	*15th Percentile*	*50th Percentile*	*85th Percentile*	*Mean*	*Max.*	*Water Quality Standard*	*Notes*
E. coli (#/100 ml)	120	82	195	422	187	4840	126	1, 3
TIN as N (mg/l)	118	0.11	1.4	2.2	1.4	4.6	10	
NH_3 as N, Tot (mg/l)	120	0	0	0.16	0.073	0.76	TVS	2

Table A-7a
Ambient Water Quality for the South Platte River

Parameter	*Number of Samples*	*15th Percentile*	*50th Percentile*	*85th Percentile*	*Mean*	*Max.*	*Water Quality Standard*	*Notes*
As, TR (µg/l)	44	0	0.88	1.1	0.65	1.7	0.02	2, 3
As, Dis (µg/l)	118	0.28	0.73	0.91	0.65	1.1	340	
Cd, TR (µg/l)	43	0	0	0	0.0049	0.21	5.0	2
Cd, Dis (µg/l)	120	0	0	0	0	0	0.78	2
Cr, TR (µg/l)	43	1.7	2.4	3.5	2.4	4.3	50	
Cr, Dis (µg/l)	120	0	2	5.3	2.7	23	NA	2
Cu, Dis (µg/l)	120	0	0	5	1	5.8	20.8	2
Fe, Dis (µg/l)	120	0	36	70	42	310	300	2
Fe, TR (µg/l)	43	355	470	1000	611	1410	1000	
Pb, TR (µg/l)	43	0	0.77	1.6	1	4.7	50	2
Pb, Dis (µg/l)	120	0	0	1	0.2	1	6	2
Mn, Dis (µg/l)	120	35	132	249	147	383	190	3
Mo, TR (µg/l)	43	2.5	3.3	4.4	3.5	6.7	150	
Ni, TR (µg/l)	43	2.2	2.7	3.2	2.7	3.9	100	
Ni, Dis (µg/l)	120	1.9	2.9	3.9	3	7.8	103	
Se, Dis (µg/l)	450	0	1.3	3.6	1.6	8	4.6	
Ag, Dis (µg/l)	118	0	0	0	0	0	1.3	2
Zn, Dis (µg/l)	120	0	16	34	18	54	252	2
Chloride (mg/l)	48	53	101	127	96	191	250	
Sulfate (mg/l)	48	75	137	183	130	229	250	

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.

Table A-7b
Ambient Temperature for the South Platte River

Month	*Number of Samples*	*Maximum WAT*	*2nd Highest WAT*	*Number of Samples*	*Maximum DM*	*2nd Highest DM*
January	277	5.3	4.8	277	8.6	8.4
February 1-February 13	117	7.2	6.7	117	10.0	9.1
February 14-February 28	138	6.7	5.6	138	12.1	10.2
March	271	12.8	11.7	278	17.5	16.6
April	241	16.8	13.1	263	21.5	19.4
May	212	18.2	16.6	255	22.9	21.4
June	193	22.5	20.4	247	27.9	27.6
July	234	24.2	23.4	261	28.6	27.6

Table A-7b Ambient Temperature for the South Platte River						
Month	*Number of Samples*	*Maximum WAT*	*2nd Highest WAT*	*Number of Samples*	*Maximum DM*	*2nd Highest DM*
August	232	23.2	22.6	270	27.3	26.5
September	202	22.3	22.3	252	26.0	25.8
October	232	18.6	17.5	266	20.4	19.8
November	240	11.2	11.1	264	14.0	12.8
December	269	6.7	5.6	276	9.0	8.9

V. Facility Information and Pollutants Evaluated

Facility Information

Allocations of assimilative capacity are being developed in this WQA for the purpose of developing WQBELs for permitactions. No portion of the assimilative capacity is being attributed to nonpoint sources and no load allocations are being made. The assimilative capacity is being allocated to point sources (process wastewater discharges) as wasteload allocations.In this case there are multiple discharges to the segment that require the division to distribute wasteload allocations among point sources.

The L/E WWTP (CO0032999) is located in the SE 1/2 of the NE 1/4, S33, T4S, R68W; 2900 South Platte River Drive in Englewood, CO; at 39.667983° latitude North and 104.999983° longitude West in Arapahoe County. The current design capacity of the facility is 50 MGD (77 cfs), as specified by the latest Site Approval number 4727 for this facility. Wastewater treatment is accomplished using a mechanical wastewater treatment process. The assessments of assimilative capacity are based upon the design flow as specified in the Site Approval as well as 34 MGD (53 cfs), a flow requested in the comments submitted during the public notice period.

The Arapahoe Facility (CO0000002) operated by Southwest Generation Colorado Arapahoe LLC, is located in the SE 1/4 of T4S, S28, R68W; 2601 S. Platte River Drive, Denver, CO 80223; at 39° 40' 12" latitude North, 104° 59' 56" longitude West in Denver County. The Arapahoe Facility discharges to the South Platte River just downstream of the L/E WWTP. This facility was modeled in conjunction with the L/E WWTP for pollutants of concern, the assessments of the assimilative capacity is based on a design flow of 0.15 MGD (0.23 cfs).

An assessment of Division records indicate that there are more than 100 facilities permitted to discharge process wastewater 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. The nearest dischargers with an individual permit and wasteload allocations are:

- Centennial Water and Sanitation District WWTF (CO0037966), which discharges Marcy Gulch, which then flows to the South Platte River. Due to the distance between the two facilities, it was not necessary to model this discharge in conjunction with the L/E WWTP at this time.

- Public Service Company of Colorado, Zuni Station (CO0001139), which discharges to the South Platte River approximately 5 miles downstream of the L/E WWTP. The design flow for this facility is 0.15 MGD.~~Due to the distance and dilution, it was not necessary to model this discharge in conjunction with the L/E WWTP. Additionally,~~ ~~t~~This facility has submitted a termination application on 12//28/2016 and was therefore not included in this analysis.

- 1601 Wewatta Office Building Garage (CO0000008) is located at 1601 Wewatta Street, Denver, CO 80202 in Denver County. The design capacity for this facility is 0.0216 MGD.

- The Primate Panorama Discharge (CO0048951) is located at 2900 East 23rd Avenue, Denver, CO 80205 in Denver County. The design capacity for this facility is 0.35 MGD.

- The Denver Zoo Flaming Pond (CO0048682) is located at 3200 East 23rd Avenue, Denver, CO 80205 in Denver County. The design capacity for this facility is 0.022 MGD.

- Denver Water Reuse Hydrostatic Discharge (CO0048955) is located at 5650 York Street, Commerce City, CO 80022 in Denver and Adams Counties. The design capacity for this facility is 0.72 MGD.

- The MFEI WWTF (~~PEL230032~~CO0049005) is located at 4647 National Western Drive, Denver, CO 80216 in Denver County. The current proposed design capacity of the facility is 0.999999 MGD (1.5 cfs).

- The Z Block Project (CO0049007~~PEL200453~~) is located at 1810-1850 Wazee Street, 1524-1540 19th Street, and 1835 Blake Street, which is between 18th, 19th, Wazee, and Blake Streets in Denver, CO. The design capacity of the proposed treatment system is 0.070 MGD (0.11 cfs).

- ~~The Confluence Park WWTF (PEL230037) is located at 2250 15th Street, Denver, CO 80202 in Denver County. The current proposed design capacity of the facility is 0.864 MGD (1.3 cfs).~~

- ~~The Tunnel 16 GTF (PEL230038) is located at I-25 and Colorado Blvd. in Denver County. The current proposed design capacity of the facility is 0.144 MGD (0.22 cfs).~~

- The Confluence Apartments WWTF (CO0049003) is located at 2166 15th St. Denver, CO 80202 in Denver County. The current proposed design capacity of the facility is 0.047 MGD (0.07 cfs).

- The 17th and York Apartments WWTF (CO0049006) is located at 1781 York St. Denver, CO in Denver County. The design capacity of the facility is 0.02592 MGD (0.04 cfs).

- ~~The Artis HRA Hudsons Bay (PEL230041) is located at 1600 Stout Street, Denver, CO 80202 in Denver County. The facility discharges to Cherry Creek immediately upstream of the confluence with the South Platte River and has a current proposed design capacity of 0.0144 MGD (0.02 cfs).~~

- The Globeville Landing Outfall Project (CO0049002) is located on Arkins Court and McFarland Drive (Globeville Landing Park) in Denver, CO 80216 in Denver County. Thedesign capacity of the facility is 0.144 MGD (0.22 cfs)

These facilities (except for the Zuni Station) were modeled together in order to prevent an overallocation of assimilative capacities for dischargers. The total flow from these dischargers is 52.5 MGD; therefore, modeling of similar parameters of concern (except ammonia) will be completed using 52.5 MGD. For these parameters, all facilities will be given the same WQBELs. Note that new facilities or facilities currently covered under a general permit that apply for an individual permit after these permits are issued will receive end-of-pipe limitations until assimilative capacities are recalculated at the next renewal.

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 both facilities unless otherwise specified:

- Total Residual Chlorine
- *E. coli* (for L/E WWTP and potentially others)
- Nitrate/Total Inorganic Nitrogen
- Chloride and Sulfate
- Ammonia
- Temperature (only for L/E WWTP)
- Metals
- ~~and~~ Cyanide (only for L/E WWTP)
- Uranium (for L/E WWTP and potentially others)
- Gamma-BHC (only for L/E WWTP)
- Other Organics

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 South Platte*, stream segment COSPUS14 is designated a water supply because of the City of Englewood water supply (103045) and other water supply intakes or alluvial wells in this segment. According to the Colorado Division of Water Resources, there are a few private wells located at least 3 miles downstream from the discharge. However, the Division has not yet found that these wells (at a

distance of a half mile from the S. Platte) or possible other unknown wells are hydrologically connected to the South Platte River. Therefore, these wells were not considered at this time. According to Division records, there is also a water supply for the City of Thornton (PWS #101150) located approximately 10 miles downstream of the L/E WWTP. The City of Thornton water supply intake must be considered; therefore, assimilative capacity has been determined using flows upstream of this water supply intake. Thus, the nitrate standard is further evaluated as part of this WQA at the point of intake. As mentioned in the low flow section of this WQA, the dilution allowed for TIN may change after 12/31/2022.

Except for Lindane and nonylhphenol, organic pollutants are not known to be pollutants of concern for the L/E WWTP or Arapahoe Facility. However, organics are known to be pollutants of concern for other discharges downstream. Because of the concern for protecting public water sources downstream from these discharge points all limits for organics for these discharges to COSPUS14 will be set to the most protective stream standard for COSPUS14. These organic pollutant standards are listed in WQCC Reg. 31 at 31.11.

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 the South Platte River near the L/E WWTP 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 L/E WWTP, Arapahoe Facility, and other dischargers needing permits are in close 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 parameters that were modeled together include total residual chlorine, ammonia, total inorganic nitrogen, metals, and nonylphenol. Note that the Division has ~~estimated~~ determined to model a total of 5 MGD of ~~possible~~ flow (including flows from the Arapahoe facility) discharged from ~~small industrial facilities~~downstream industrial dischargers for the next five years; therefore, Q_2 will be equal to 55 MGD, when calculating WQBELs at L/E WWTP's design capacity of 50 MGD as specified by site approval number 4727. ~~While only a portion of the 5 MGD may be discharging to this stream segment at this time, the Division has determined that it must reserve some assimilative capacity for future projects/facilities (some have already applied for a permit coverage) that may need a permit to discharge within the next five years.~~ These facilities will be assigned the same WQBELs as calculated for the L/E WWTP. Note that the total estimated flow will be re-evaluated during the next permit renewal. Note that this process also did not yield any significant WQBEL reduction for the L/E WWTP or Arapahoe Facility.

To determine the WQBELs for the L/E WWTP at 34 MGD, the following equation will be used. Note that the downstream facilities will be allocated the same assimilative capacity as if L/E WWTP was discharging at its 50 MGD design capacity as this is the most conservative case and is therefore most protective of the environment.

$$M_3 = \frac{M_4 Q_4 - M_1 Q_1 - M_2 Q_2}{Q_3}$$

Where,

Q_1 = Upstream low flow (1E3 or 30E3)

Q_2 = Allocated flow for downstream dischargers (5 MGD)
Q_2 = Requested lower tier flow from L/E WWTP (34 MGD)
Q_4 = Downstream flow ($Q_1 + Q_2 + Q_3$)
M_1 = In-stream background pollutant concentrations at the existing quality
M_3 = Calculated WQBEL for downstream dischargers based on the L/E WWTP design capacity of 50 MGD
M_3 = Calculated WQBEL for L/E WWTP at the requested lower tier flow of 34 MGD
M_4 = Water Quality Standard, or other maximum allowable pollutant concentration

Note that this equation was also used to determine the WQBEL Total Inorganic Nitrogen at both design flows while giving the downstream dischargers a WQBEL of 10 mg/l.

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-8a (50 MGD) and A-8b (34 MGD) for the chronic WQBELs ~~for all facilities~~ A-8c (50 MGD) and A-8d (34 MGD) ~~b~~ for the acute WQBELs ~~for all facilities~~. Calculations of WQBELs for the L/E WWTP were determined at a design flow of 50 MGD, as specified by site approval number 4727, and 34 MGD as requested in a comment during the public notice period. Calculations for other dischargers (including the Arapahoe Facility) were determined at a design flow of 5 MGD.

Where a WQBEL is calculated to be a negative number and interpreted to be zero, or 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 L/E WWTP. 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 evaluated in this WQA discharging *E. coli* within one mile of the L/E WWTP. Thus, WQBELs were evaluated separately. 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. Because the ambient water quality exceeds the *E. coli* standard and the TMDL for COSPUS14, the *E. coli* limits were set to 126 cfu/100 ml for all discharges at this time.

Temperature: For the L/E WWTP, temperature data in the proper form, were available and therefore the background Maximum Weekly Average Temperature and the Daily Maximum ambient temperatures have been calculated and presented in Table A-6. 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-8~~e~~e for chronic standards and in Table A-8~~d~~f for acute standards.

For the Arapahoe Facility, The 7E3 low flow is 20 cfs, resulting in a dilution ratio (7E3 low flow to effluent) of 87:1. As the discharge is from an Industrial Source where the available dilution is > 40:1, in accordance with the Division's Temperature Policy, no temperature limitations are required.

Nitrate / Total Inorganic Nitrogen (T.I.N.): An acute nitrate standard of 10 mg/l is assigned to this segment. Because nitrite and ammonia can also form nitrate, compliance with the nitrate standard is achieved through imposition of a Total Inorganic Nitrogen (T.I.N.) limit. T.I.N. effectively measures nitrate and its precursors including nitrite and ammonia. The WQBELs calculated for T.I.N. will be compared to those of the TMDL, and the more stringent limit will be applied. Table A-8g (50 MGD) and A-8h (34 MGD)~~e and A-8f~~ displays the WQBELs ~~and loads~~ calculated for total inorganic nitrogen at the PWS intake, which will be used to compare to the Total Inorganic Nitrogen TMDLs. Note that the downstream dischargers are given a WQBEL equal to the water quality standard (10 mg/l).

Table A-8a
Chronic WQBELs for L/E WWTP (50 MGD), Arapahoe Facility, and Other Dischargers

Parameter	Q_1 *(cfs)*	Q_2 *(cfs)*	Q_3 *(cfs)*	M_1	M_3	M_2	*Notes*
E. coli (#/100 ml)	24	77	101	187	126	***126***	1, 2
TRC (mg/l)	24	77	101	0	0.011	***0.014***	
As, TR (µg/l)	24	81	105	0.88	0.02	***0.02***	
Cd, Dis (µg/l)	24	81	105	0	0.94	***1.2***	
Cr+3, Dis (µg/l)	24	81	105	0	175	***227***	
Cr+6, Dis (µg/l)	24	81	105	0	11	***14***	
Cu, Dis (µg/l)	24	81	105	5	20.8	***25***	
Fe, Dis (µg/l)	24	81	105	70	300	***368***	
Fe, TR (µg/l)	24	81	105	470	1000	***1157***	
Pb, Dis (µg/l)	24	81	105	1	7.7	***9.7***	
Mn, Dis (µg/l)	24	81	105	249	190	***190***	1, 2, 3
Mo, TR (µg/l)	24	81	105	3.3	150	***193***	
Hg, Tot (µg/l)	24	81	105	0	0.01	***0.013***	
Ni, TR (µg/l)	24	81	105	2.7	100	***129***	
Ni, Dis (µg/l)	24	81	105	3.9	127	***163***	
Se, Dis (µg/l)	24	81	105	3.6	4.6	***4.9***	
Ag, Dis (µg/l)	24	81	105	0	2	***2.6***	
U, TR (µg/l)	24	81	105	0	16.8	***22***	
Zn, Dis (µg/l)	24	81	105	34	315	***398***	
Chloride (mg/l)	24	81	105	127	250	***286***	
Sulfate (mg/l)	24	81	105	183	250	***270***	
Nonylphenol (µg/l)	24	77	101	0	6.6	***8.7***	
Gamma-BHC (µg/l)	24	77	101	0	0.08	***0.10***	1

Note 1: The existing water quality for this parameter exceeds the water quality standard; see the text for further discussion.

Note 2: WQBEL only applies to L/E WWTP. Note that the Arapahoe Facility and other dischargers are still subject to the TMDL listed for the segment (for *E. coli*).

Note 3: The WQBEL for dissolved manganese based on the hardness equation for the protection of aquatic life is 2932 µg/l. This value will be used during the antidegradation review evaluation.

Table A-8b
Chronic WQBELs for L/E WWTP (34 MGD)

Parameter	Q_1 (cfs)	Q_3 (cfs)	Q_2 (cfs)	Q_4 (cfs)	M_1	M_2	M_4	M_3	Notes
E. coli (#/100 ml)	24	53	0	77	187	0	126	***126***	1
TRC (mg/l)	24	53	4	81	0	0.014	0.011	***0.016***	
As, TR (µg/l)	24	53	4	81	0.88	0.02	0.02	***0.02***	1
Cd, Dis (µg/l)	24	53	4	81	0	1.2	0.94	***1.3***	
Cr+3, Dis (µg/l)	24	53	4	81	0	227	175	***250***	
Cr+6, Dis (µg/l)	24	53	4	81	0	14	11	***16***	
Cu, Dis (µg/l)	24	53	4	81	5	25	20.8	***28***	
Fe, Dis (µg/l)	24	53	4	81	70	368	300	***399***	
Fe, TR (µg/l)	24	53	4	81	470	1157	1000	***1228***	
Pb, Dis (µg/l)	24	53	4	81	1	9.7	7.7	***11***	
Mn, Dis (µg/l)	24	53	4	81	249	190	190	***190***	1
Mo, TR (µg/l)	24	53	4	81	3.3	193	150	***213***	
Hg, Tot (µg/l)	24	53	4	81	0	0.013	0.01	***0.014***	
Ni, TR (µg/l)	24	53	4	81	2.7	129	100	***142***	
Ni, Dis (µg/l)	24	53	4	81	3.9	163	127	***180***	
Se, Dis (µg/l)	24	53	4	81	4	4.9	4.6	***4.8***	
Ag, Dis (µg/l)	24	53	4	81	0	2.6	2	***2.9***	
U, TR (µg/l)	24	53	4	81	0	22	16.8	***24***	
Zn, Dis (µg/l)	24	53	4	81	34	398	315	***436***	
Chloride (mg/l)	24	53	4	81	127	286	250	***303***	
Sulfate (mg/l)	24	53	4	81	183	270	250	***279***	
Nonylphenol (µg/l)	24	53	0	77	0	0	6.6	***9.6***	
Gamma-BHC (µg/l)	24	53	0	77	0	0	0.08	***0.12***	

Note 1: The existing water quality for this parameter exceeds the water quality standard; see the text for further discussion.

Table A-8c~~b~~
Acute WQBELs for L/E WWTP (50 MGD), Arapahoe Facility, and Other Dischargers

Parameter	Q_1 (cfs)	Q_2 (cfs)	Q_3 (cfs)	M_1	M_3	M_2	Notes
E. coli (#/100 ml)	Acute 2X chronic limit					***252***	1, 2
TRC (mg/l)	16	81	97	0	0.019	***0.023***	
As, Dis (µg/l)	16	81	97	0.91	340	***407***	
Cd, TR (µg/l)	16	81	97	0	5	***6.0***	
Cd, Dis (µg/l)	16	81	97	0	6.8	***8.1***	
Cr+3, TR (µg/l)	16	81	97	0	50	***60***	
Cr+6, Dis (µg/l)	16	81	97	0	16	***19***	
Cu, Dis (µg/l)	16	81	97	5	31.5	***37***	

Table A-8cb Acute WQBELs for L/E WWTP (50 MGD), Arapahoe Facility, and Other Dischargers							
Parameter	***Q_1 (cfs)***	***Q_2 (cfs)***	***Q_3 (cfs)***	***M_1***	***M_3***	***M_2***	***Notes***
CN, Free (µg/l)	16	77	93	0	5	***6.0***	3
Pb, TR (µg/l)	16	81	97	0.77	50	***60***	
Pb, Dis (µg/l)	16	81	97	1	198	***237***	
Mn, Dis (µg/l)	16	81	97	249	4237	***5025***	
Ni, Dis (µg/l)	16	81	97	3.9	1139	***1363***	
Se, Dis (µg/l)	16	81	97	3.6	18.4	***21***	
Ag, Dis (µg/l)	16	81	97	0	12	***14***	
Zn, Dis (µg/l)	16	81	97	34	416	***491***	
Nonylphenol (µg/l)	16	77	93	0	28	***34***	
Gamma-BHC (µg/l)	16	77	93	0	0.95	***1.1***	
Note 1: The acute WQBEL for *E. coli* is twice the chronic WQBEL.							
Note 2: WQBEL only applies to L/E WWTP. Note that the Arapahoe Facility and other dischargers are still subject to the TMDL listed for the segment (for *E. coli*).							
Note 3: Only applicable for L/E WWTP							

Table A-8d Acute WQBELs for L/E WWTP (34 MGD)									
Parameter	***Q_{up} (cfs)***	***Q_{LE} (cfs)***	***Q_{dsd} (cfs)***	***Q_{dn} (cfs)***	***M_{up}***	***M_{dsd}***	***M_{dn}***	***M_{LE}***	***Notes***
E. coli (#/100 ml)	Acute 2X chronic limit							***252***	1
TRC (mg/l)	16	53	4	73	0	0.023	0.019	***0.024***	
As, Dis (µg/l)	16	53	4	73	0.91	407	340	***437***	
Cd, TR (µg/l)	16	53	4	73	0	6.0	5	***6.4***	
Cd, Dis (µg/l)	16	53	4	73	0	8.1	6.8	***8.8***	
Cr+3, TR (µg/l)	16	53	4	73	0	60	50	***64***	
Cr+6, Dis (µg/l)	16	53	4	73	0	19	16	***21***	
Cu, Dis (µg/l)	16	53	4	73	5	37	31.5	***39***	
CN, Free (µg/l)	16	53	4	73	0	6.0	5	***6.4***	
Pb, TR (µg/l)	16	53	4	73	0.77	60	50	***64***	
Pb, Dis (µg/l)	16	53	4	73	1	237	198	***255***	
Mn, Dis (µg/l)	16	53	4	73	249	5025	4237	***5381***	
Ni, Dis (µg/l)	16	53	4	73	3.9	1363	1139	***1465***	
Se, Dis (µg/l)	16	53	4	73	4	21	18.4	***23***	
Ag, Dis (µg/l)	16	53	4	73	0	14	12	***15***	
Zn, Dis (µg/l)	16	53	4	73	34	491	416	***526***	
Nonylphenol (µg/l)	16	53	0	69	0	0	28	***36***	
Gamma-BHC (µg/l)	16	53	0	69	0	0	0.95	***1.2***	
Note 1: The acute WQBEL for *E. coli* is twice the chronic WQBEL.									

Table A-8~~e~~c Chronic Temperature WQBELs for L/E WWTP						
Parameter	***Q_1 (cfs)***	***Q_2 (cfs)***	***Q_3 (cfs)***	***M_1***	***M_3***	***M_2***
January (°C)*	22	77	99	5.3	12.1	***14.0***
February 1-February 14 (°C)*	24	77	101	7.2	12.1	***13.6***
February 15-February 28 (°C)	24	77	101	6.7	24.2	***29.7***
March (°C)	30	77	107	12.8	24.2	***28.6***
April (°C)	32	77	109	16.8	24.2	***27.3***
May (°C)	29	77	106	18.2	24.2	***26.5***
June (°C)	23	77	100	22.5	24.2	***24.7***
July (°C)	26	77	103	24.2	24.2	***24.2***
August (°C)	20	77	97	23.2	24.2	***24.5***
September (°C)	20	77	97	22.3	24.2	***24.7***
October (°C)	33	77	110	18.6	24.2	***26.6***
November (°C)	23	77	100	11.2	24.2	***28.1***
December (°C)*	22	77	99	6.7	12.1	***13.6***

*WQBELs applied for 12/1-2/13 become effective January 1, 2021.

Table A-8~~f~~d Acute Temperature WQBELs for L/E WWTP						
Parameter	***Q_1 (cfs)***	***Q_2 (cfs)***	***Q_3 (cfs)***	***M_1***	***M_3***	***M_2***
January (°C)*	21	77	98	8.5	24.6	***29.0***
February 1-February 14 (°C)*	22	77	99	10.0	24.6	***28.8***
February 15-February 28 (°C)	22	77	99	10.0	29	***34.4***
March (°C)	27	77	104	17.8	29	***32.9***
April (°C)	32	77	109	21.9	29	***32.0***
May (°C)	23	77	100	23.4	29	***30.7***
June (°C)	19	77	96	27.9	29	***29.3***
July (°C)	29	77	106	28.6	29	***29.1***
August (°C)	18	77	95	27.3	29	***29.4***
September (°C)	16	77	93	26.1	29	***29.6***
October (°C)	33	77	110	20.1	29	***32.8***
November (°C)	23	77	100	12.3	29	***34.0***
December (°C)*	21	77	98	9.0	24.6	***28.9***

*WQBELs applied for 12/1-2/13 become effective January 1, 2021.

~~Table A-8e~~ ~~T.I.N. WQBELs for L/E WWTP, Arapahoe Facility, and Other Dischargers~~						
~~***Parameter***~~	~~***Q_1 (cfs)***~~	~~***Q_2 (cfs)***~~	~~***Q_3 (cfs)***~~	~~***M_1***~~	~~***M_3***~~	~~***M_2***~~
~~January (mg/l)~~	~~70~~	~~85~~	~~155~~	~~3~~	~~10~~	~~16~~
~~February (mg/l)~~	~~80~~	~~85~~	~~165~~	~~2.4~~	~~10~~	~~17~~
~~March (mg/l)~~	~~98~~	~~85~~	~~183~~	~~2.1~~	~~10~~	~~19~~
~~April (mg/l)~~	~~99~~	~~85~~	~~184~~	~~1.5~~	~~10~~	~~20~~

~~Table A-8e~~ ~~T.I.N. WQBELs for L/E WWTP, Arapahoe Facility, and Other Dischargers~~						
~~*Parameter*~~	~~Q_1 (cfs)~~	~~Q_2 (cfs)~~	~~Q_3 (cfs)~~	~~M_1~~	~~M_3~~	~~M_2~~
~~May (mg/l)~~	~~78~~	~~85~~	~~163~~	~~1.2~~	~~10~~	~~*18*~~
~~June (mg/l)~~	~~77~~	~~85~~	~~162~~	~~0.8~~	~~10~~	~~*18*~~
~~July (mg/l)~~	~~74~~	~~85~~	~~159~~	~~1.1~~	~~10~~	~~*18*~~
~~August (mg/l)~~	~~57~~	~~85~~	~~142~~	~~1.3~~	~~10~~	~~*16*~~
~~September (mg/l)~~	~~57~~	~~85~~	~~142~~	~~1.9~~	~~10~~	~~*15*~~
~~October (mg/l)~~	~~85~~	~~85~~	~~170~~	~~1.7~~	~~10~~	~~*18*~~
~~November (mg/l)~~	~~78~~	~~85~~	~~163~~	~~2.2~~	~~10~~	~~*17*~~
~~December (mg/l)~~	~~75~~	~~85~~	~~160~~	~~2.9~~	~~10~~	~~*16*~~

Table A-8g TIN WQBELs for L/E WWTP (50 MGD)								
Parameter	Q_1 (cfs)	Q_3 (cfs)	Q_2 (cfs)	Q_4 (cfs)	M_1	M_2	M_4	M_3
January (mg/l)	70	77	7.7	154.7	3	10	10	*16.4*
February (mg/l)	80	77	7.7	164.7	2.4	10	10	*17.9*
March (mg/l)	98	77	7.7	182.7	2.1	10	10	*20.1*
April (mg/l)	99	77	7.7	183.7	1.5	10	10	*20.9*
May (mg/l)	78	77	7.7	162.7	1.2	10	10	*18.9*
June (mg/l)	77	77	7.7	161.7	0.8	10	10	*19.2*
July (mg/l)	74	77	7.7	158.7	1.1	10	10	*18.6*
August (mg/l)	57	77	7.7	141.7	1.3	10	10	*16.4*
September (mg/l)	57	77	7.7	141.7	1.9	10	10	*16.0*
October (mg/l)	85	77	7.7	169.7	1.7	10	10	*19.2*
November (mg/l)	78	77	7.7	162.7	2.2	10	10	*17.9*
December(mg/l)	75	77	7.7	159.7	2.9	10	10	*16.9*

Table A-8h TIN WQBELs for L/E WWTP (34 MGD)								
Parameter	Q_1 (cfs)	Q_3 (cfs)	Q_2 (cfs)	Q_4 (cfs)	M_1	M_2	M_4	M_3
January (mg/l)	70	53	7.7	130.7	3	10	10	*19.2*
February (mg/l)	80	53	7.7	140.7	2.4	10	10	*21.5*
March (mg/l)	98	53	7.7	158.7	2.1	10	10	*24.6*
April (mg/l)	99	53	7.7	159.7	1.5	10	10	*25.9*
May (mg/l)	78	53	7.7	138.7	1.2	10	10	*23.0*
June (mg/l)	77	53	7.7	137.7	0.8	10	10	*23.4*
July (mg/l)	74	53	7.7	134.7	1.1	10	10	*22.4*
August (mg/l)	57	53	7.7	117.7	1.3	10	10	*19.4*
September (mg/l)	57	53	7.7	117.7	1.9	10	10	*18.7*

October (mg/l)	85	53	7.7	145.7	1.7	10	10	***23.3***
November (mg/l)	78	53	7.7	138.7	2.2	10	10	***21.5***
December(mg/l)	75	53	7.7	135.7	2.9	10	10	***20.0***

Note that the values in Table A-8e are more stringent than the TMDLs previously developed, as shown in Table A-5; therefore, the WQBELs in Table A-8e will apply.

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.

Temperature and corresponding pH data sets reflecting downstream ambient receiving water conditions were available for the South Platte River from an SP Cure sampling location downstream of the facility. The data, reflecting a period of record from January 2009 through December 2013, were used to establish the setpoint and average headwater conditions in the AMMTOX model. Effluent pH and temperature data were available from the L/E WWTP and were used to establish the average facility contributions in the AMMTOX model.

~~Similar to other parameters, L/E WWTP was modeled at a design flow of 55 MGD to account for other dischargers (including Arapahoe Facility), which will need permits to discharge to this segment of the South Platte River.~~ In order to model the segment for L/E WWTP and the downstream dischargers, the flows for the Arapahoe Facility were added 0.1 miles downstream while the 5 MGD representing the flows for the other dischargers were added downstream of Cherry Creek (about 6.7 miles downstream). Note that due to the relative size of the Arapahoe Facility to L/E WWTP and their distance apart, the ammonia WQBELs for both facilities are the same. Simulations were run at both the 50 MGD and 34 MGD flows for L/E WWTP; however, the simulation at 34 MGD will be used as it is more representative to actual discharge of the facilities.

This approach resulted in chronic and acute WQBELs of greater than 10 mg/l for ammonia for downstream dischargers for all months (and for some months for acute WQBELs for Arapahoe Facility), which would be protected by the acute T.I.N. WQBEL of 10 mg/l.

Thus, the mean total ammonia concentration found in the South Platte River as summarized in Table A-7 was used as an applicable upstream ammonia concentration reflective of each month.

The AMMTOX 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 L/E WWTP at the design capacity of 50 MGD and the Arapahoe Facility are presented in Table A-9a and the results of the ammonia analyses for the L/E WWTP at the flow of 34 MGD are presented in Table A-9b.

Table A-9a
AMMTOX Results for the South Platte River for the L/E WWTP (50 MGD) and Arapahoe Facility

Month	*Total Ammonia Chronic (mg/l)*	*Total Ammonia Acute (mg/l)*
January	~~5.0~~5.2	~~8.8~~9.1
February	~~5.3~~5.4	~~9.5~~9.8
March	~~4.6~~4.8	~~8.9~~9.1
April	~~4.4~~4.6	~~9.4~~9.8
May	~~4.1~~4.3	~~10~~10
June	~~3.9~~4.0	~~11~~12
July	~~3.4~~3.5	~~13~~14
August	~~3.3~~3.4	~~13~~14
September	~~3.5~~3.6	~~12~~12
October	~~4.0~~4.2	~~12~~13
November	~~4.5~~4.6	~~11~~12
December	~~4.7~~4.9	~~10~~11

Table A-9b
AMMTOX Results for the South Platte River for the L/E WWTP (34 MGD)

Month	*Total Ammonia Chronic (mg/l)*	*Total Ammonia Acute (mg/l)*
January	6.1	10
February	6.3	10
March	5.6	10
April	5.3	9.4
May	4.9	12
June	4.6	14
July	4.0	17
August	3.7	17
September	4.0	14
October	4.9	14
November	5.4	13
December	5.8	12

Table A-9c
AMMTOX Results for the South Platte River Downstream Dischargers (w/ L/E modeled at 34 MGD)

Month	*Total Ammonia Chronic (mg/l)*	*Total Ammonia Acute (mg/l)*
January	21	19

Commented [TA1]: Represent actual flow (closer to 29-30 MGD)

Commented [TA2]: Here are the values for the downstream dischargers. All the WQBELs when modeling L/E at 34 MGD were more stringent (except February and April acute). This is due to the model adding much more flow into the model when modeled at 50 MGD. Note that I did not add flows from tributaries between L/E and the downstream dischargers (this includes Cherry Creek) with the reason being that the addition from L/E sufficiently represents the low flow at the downstream location. Adding more flow would only make the limits less stringent, when all these values would be protected by the T.I.N. limit of 10 mg/l anyway!

Table A-9c AMMTOX Results for the South Platte River Downstream Dischargers (w/ L/E modeled at 34 MGD)		
Month	*Total Ammonia Chronic (mg/l)*	*Total Ammonia Acute (mg/l)*
February	22	26
March	15	23
April	15	30
May	16	30
June	17	40
July	16	46
August	16	50
September	14	34
October	18	34
November	23	31
December	20	27

Table A-9d AMMTOX Results for the South Platte River Downstream Dischargers (w/ L/E modeled at 50 MGD)		
Month	*Total Ammonia Chronic (mg/l)*	*Total Ammonia Acute (mg/l)*
January	25	21
February	27	25
March	16	23
April	16	25
May	17	33
June	18	42
July	17	48
August	18	52
September	15	36
October	20	35
November	26	34
December	23	31

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, (%)
L/E WWTP, 001A	24	77	76
Arapahoe Facility, 001A	24	0.23	1

The IWC for L/E WWTP at 50 MGD is 76%, which represents a wastewater concentration of 76% effluent to 24% 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 the Arapahoe Facility is 1%, which represents a wastewater concentration of 1% effluent to 99% 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 South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin*, stream segment COSPUS14 is Undesignated. Thus, an antidegradation review is required for this segment if new or increased impacts are found to occur.

The Water Quality Control Commission has recently completed a preliminary final action for *The Basic Standards and Methodologies for Surface Water, Regulation 31* which will become effective January 1, 2017. The preliminary final action 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. This WQA has been developed in conformance with the preliminary final action, as any permitting action based on this WQA would take effect just prior to the effective date of this regulation.

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

The ratio of the chronic (30E3) low flow to the design flow for the L/E WWTP is 0.31:1, and is less than the 100:1 significance criteria and is not a temporary discharge. Therefore this facility is not exempt from an AD evaluation based on the dilution significance determination test, and the AD evaluation must continue.

While the Arapahoe Facility is not a temporary discharge, the ratio of the chronic (30E3) low flow to the design flow for the Arapahoe Facility is 104:1, and is greater than the 100:1 significance criteria. Therefore there is no determination of significant degradation, and this facility is exempted from the antidegradation evaluation based on the dilution significance test.

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 change 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 such data is available. If this data is unavailable, the Division may substitute more recent representative data, if appropriate, on a case by case basis. Note that if there is a change in design flow, the implicit limit/loading is subject to recalculation based on the new 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.

The L/E WWTP was in place as a discharger prior to September 30, 2000, and therefore the new or increased impacts test must be conducted. As the design flow of this facility has changed, the equations for the NIL calculations are shown below.

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

For total recoverable arsenic, dissolved arsenic (based on total recoverable arsenic data), dissolved cadmium, total recoverable trivalent chromium (based on total chromium data), dissolved trivalent chromium (based on total chromium data), dissolved hexavalent chromium

(based on total chromium data), dissolved copper, dissolved lead, dissolved manganese (based on aquatic life standard), dissolved nickel, dissolved selenium, dissolved silver, and dissolved zinc; 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, total recoverable iron, total recoverable molybdenum, total mercury, total recoverable uranium, chloride, and gamma-BHC, data prior to 2000 were not available. For total inorganic nitrogen, data from May 2001 to April 2003 were determined to be adequate and were used to determine the implicit limitations. For dissolved iron, total mercury, total recoverable molybdenum, and sulfate; data from 2004-2009 were determined to be adequate and were used to determine the implicit limitations. For total recoverable iron, total recoverable uranium, chloride, and gamma-BHC; data from 2009 to 2015 were determined to be adequate and were used to determine the implicit limitations.

For total recoverable lead, total recoverable nickel, and nonylphenol; 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

Table A-11 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 L/E WWTP as of September 30, 2000 was 32 MGD. The current design flow of the L/E WWTPY is 50 MGD (and 34 MGD for the lower tier flow). Note that from May 2001 to October 2009, the design flow of L/E WWTP was 36.3 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.

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

Tables A-10a (50 MGD) and A-10b (34 MGD) show the results of these calculations and the determination of a new or increased impact for the L/E WWTP.

Table A-10a
Determination of New or Increased Impacts for L/E WWTP (50 MGD)

Pollutant	*Sept 2000 Permit/Implicit Limit*	*Sept 2000 Permit/Implicit Load (lbs/day)*	*NIL*	*New WQBEL*	*New WQBEL Load (lbs/day)*	*New or Increased Impact*
E. coli (#/100 ml)	1067	284761	683	126	52542	No
TRC (mg/l)	0.003	0.8	0.0019	0.014	5.8	Yes
NH_3, Tot as N (mg/l), Jan	13.6	3630	8.7	5.2	2168	No
NH_3, Tot as N (mg/l), Feb	10.4	2776	6.7	5.4	2252	No
NH_3, Tot as N(mg/l) Mar	12.3	3283	7.9	4.8	2002	No
NH_3, Tot as N (mg/l) Apr	8.5	2268	5.4	4.6	1918	No
NH_3, Tot as N (mg/l) May	7.2	1922	4.6	4.3	1793	No
NH_3, Tot as N (mg/l) Jun	6.9	1841	4.4	4.0	1668	No
NH_3, Tot as N (mg/l) Jul	6	1601	3.8	3.5	1460	No
NH_3, Tot as N (mg/l) Aug	5.1	1361	3.3	3.4	1418	Yes
NH_3, Tot as N (mg/l) Sep	5.1	1361	3.3	3.6	1501	Yes
NH_3, Tot as N (mg/l) Oct	6.6	1761	4.2	4.2	1751	No
NH_3, Tot as N (mg/l) Nov	8.4	2242	5.4	4.6	1918	No
NH_3, Tot as N (mg/l) Dec	13.5	3603	8.6	4.9	2043	No
T.I.N. as N (mg/l), Jan	34	10414	25	16.4	6824	No
T.I.N. as N (mg/l), Feb	32	9627	23	17.9	7463	No
T.I.N. as N (mg/l) Mar	36	10838	26	20.1	8363	No
T.I.N. as N (mg/l) Apr	30	9203	22	20.9	8727	No
T.I.N. as N (mg/l) May	31	9264	22	18.9	7887	No
T.I.N. as N (mg/l) Jun	33	9869	24	19.2	8006	No
T.I.N. as N (mg/l) Jul	33	10081	24	18.6	7737	No
T.I.N. as N (mg/l) Aug	30	9052	22	16.4	6856	No
T.I.N. as N (mg/l) Sep	29	8749	21	16.0	6670	No
T.I.N. as N (mg/l) Oct	29	8780	21	19.2	7991	No
T.I.N. as N (mg/l) Nov	31	9324	22	17.9	7465	No
T.I.N. as N (mg/l) Dec	34	10354	25	16.9	7054	No
As, TR (µg/l)	1.1	0.29	0.7	0.02	0.0083	No
As, Dis (µg/l)	1.1	0.29	0.7	404	168	Yes
Cd, Dis (µg/l)	0.2	0.053	0.1	1.2	0.50	Yes
Cr+3, TR (µg/l)	20	5.3	13	59	25	Yes
Cr+3, Dis (µg/l)	20	5.3	13	224	93	Yes
Cr+6, Dis (µg/l)	20	5.3	13	14	5.8	Yes
Cu, Dis (µg/l)	13	3.5	8.3	25	10	Yes
CN, Free (µg/l)	30	8	19	5.9	2.5	No
Fe, TR (µg/l)	176	73	176	1150	480	Yes
Pb, TR (µg/l)	NA	NA	NA	59	25	Yes
Pb, Dis (µg/l)	2.4	0.64	1.5	9.6	4.0	Yes
Mo, TR (µg/l)	15	4	15	191	80	Yes
Mn, Dis (µg/l)	24	6.4	15	2932	1223	Yes
Hg, Tot (µg/l)	0.18	0.048	0.13	0.013	0.0054	No
Ni, TR (µg/l)	NA	NA	NA	127	53	Yes

Table A-10a
Determination of New or Increased Impacts for L/E WWTP (50 MGD)

Pollutant	*Sept 2000 Permit/Implicit Limit*	*Sept 2000 Permit/Implicit Load (lbs/day)*	*NIL*	*New WQBEL*	*New WQBEL Load (lbs/day)*	*New or Increased Impact*
Ni, Dis (µg/l)	11.6	3.1	7.4	162	68	Yes
Se, Dis (µg/l)	5.1	1.4	3.3	4.9	2.0	Yes
Ag, Dis (µg/l)	0.24	0.064	0.15	2.6	1.1	Yes
U, TR (µg/l)	32	13	32	22	9.1	No
Zn, Dis (µg/l)	31	8.3	20	394	164	Yes
Chloride (mg/l)	135	36029	135	285	118845	Yes
Nonylphenol (µg/l)	NA	NA	NA	8.7	3.6	Yes
Gamma-BHC (µg/l)	<2.5	0.67	<2.5	0.1	0.042	No
Note that loading for *E. coli* cannot be calculated; but, for comparison purposes, the approach is sufficient.						
Note that the analysis for dissolved manganese is based on the aquatic life water quality standard.						

50 MGD: As shown in Table A-10a, there are no new or increased impacts to the receiving stream based on the new WQBELS for *E. coli*, total ammonia (all months except August and September), T.I.N. (all months), total recoverable arsenic, free cyanide, total mercury, total recoverable uranium, and gamma-BHC; and for these parameters the AD evaluation is complete and the WQBELs are the final result of this WQA.

For total ammonia (August and September), total recoverable lead, total recoverable nickel, and nonylphenol; there are new or increased impacts and in accordance with regulation, the permittee has the option of choosing either the NILs or ADBACs. Because the ADBACs are generally more stringent than NILs, the Division assumes that the permittee will choose NILs rather than ADBACs, and therefore the Division will stop the AD evaluation at this point and assign the NILs to the permit. For those parameters where there is not a NIL (either implicit or explicit) the AD Guidance allows for the collection of data to determine an implicit limitation. Therefore, the permittee will be required to conduct "monitoring only" for those parameters. The permittee may request ADBAC limits. If the permittee does request ADBAC limits, the Division will proceed with the completion of this Antidegradation Analysis.

For total residual chlorine, dissolved arsenic, dissolved cadmium, total recoverable trivalent chromium, dissolved trivalent chromium, dissolved hexavalent chromium, dissolved copper, total recoverable iron, dissolved lead, dissolved manganese, total recoverable molybdenum, dissolved nickel, dissolved selenium, dissolved silver, ~~total recoverable uranium,~~ dissolved zinc, and chloride; 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.

Table A-10b
Determination of New or Increased Impacts for L/E WWTP (34 MGD)

Pollutant	*Sept 2000 Permit/Implicit Limit*	*Sept 2000 Permit/Implicit Load (lbs/day)*	*NIL*	*New WQBEL*	*New WQBEL Load (lbs/day)*	*New or Increased Impact*
E. coli (#/100 ml)	1067	284761	1004	126	35729	No
TRC (mg/l)	0.003	0.8	0.0028	0.016	5	Yes
NH_3, Tot as N (mg/l), Jan	13.6	3630	12.8	6.1	1730	No
NH_3, Tot as N (mg/l), Feb	10.4	2776	9.8	6.3	1786	No
NH_3, Tot as N\(mg/l) Mar	12.3	3283	11.6	5.6	1588	No
NH_3, Tot as N (mg/l) Apr	8.5	2268	8.0	5.3	1503	No
NH_3, Tot as N (mg/l) May	7.2	1922	6.8	4.9	1389	No
NH_3, Tot as N (mg/l) Jun	6.9	1841	6.5	4.6	1304	No
NH_3, Tot as N (mg/l) Jul	6	1601	5.6	4	1134	No
NH_3, Tot as N (mg/l) Aug	5.1	1361	4.8	3.7	1049	No
NH_3, Tot as N (mg/l) Sep	5.1	1361	4.8	4	1134	No
NH_3, Tot as N (mg/l) Oct	6.6	1761	6.2	4.9	1389	No
NH_3, Tot as N (mg/l) Nov	8.4	2242	7.9	5.4	1531	No
NH_3, Tot as N (mg/l) Dec	13.5	3603	12.7	5.8	1645	No
T.I.N. as N (mg/l), Jan	34	10414	37	19.2	5457	No
T.I.N. as N (mg/l), Feb	32	9627	34	21.5	6089	No
T.I.N. as N (mg/l) Mar	36	10838	38	24.6	6978	No
T.I.N. as N (mg/l) Apr	30	9203	32	25.9	7338	No
T.I.N. as N (mg/l) May	31	9264	33	23.0	6508	No
T.I.N. as N (mg/l) Jun	33	9869	35	23.4	6626	No
T.I.N. as N (mg/l) Jul	33	10081	36	22.4	6359	No
T.I.N. as N (mg/l) Aug	30	9052	32	19.4	5489	No
T.I.N. as N (mg/l) Sep	29	8749	31	18.7	5306	No
T.I.N. as N (mg/l) Oct	29	8780	31	23.3	6610	No
T.I.N. as N (mg/l) Nov	31	9324	33	21.5	6091	No
T.I.N. as N (mg/l) Dec	34	10354	37	20.0	5685	No
As, TR (µg/l)	1.1	0.29	1.0	0.02	0.0057	No
As, Dis (µg/l)	1.1	0.29	1.0	433	123	Yes
Cd, Dis (µg/l)	0.2	0.053	0.2	1.3	0.37	Yes
Cr+3, TR (µg/l)	20	5.3	19	64	18	Yes
Cr+3, Dis (µg/l)	20	5.3	19	247	70	Yes
Cr+6, Dis (µg/l)	20	5.3	19	16	4.5	No
Cu, Dis (µg/l)	13	3.5	12.2	27	7.7	Yes
CN, Free (µg/l)	30	8	28	6.4	1.8	No

Fe, TR (µg/l)	176	50	176	1218	345	Yes
Pb, TR (µg/l)	NA	NA	NA	64	18	Yes
Pb, Dis (µg/l)	2.4	0.64	2.3	10	2.8	Yes
Mn, Dis (µg/l)	24	6.4	22	190	54	Yes
Mo, TR (µg/l)	15	4	15	210	60	Yes
Hg, Tot (µg/l)	0.18	0.048	0.18	0.014	0.004	No
Ni, TR (µg/l)	NA	NA	NA	140	40	Yes
Ni, Dis (µg/l)	11.6	3.1	10.9	178	50	Yes
Se, Dis (µg/l)	5.1	1.4	4.8	4.9	1.4	Yes
Ag, Dis (µg/l)	0.24	0.064	0.23	2.8	0.8	Yes
U, TR (µg/l)	32	9.1	32	24	6.8	No
Zn, Dis (µg/l)	31	8.3	29	24	6.8	No
Chloride (mg/l)	135	36029	135	431	122214	Yes
Nonylphenol (µg/l)	NA	NA	NA	9.6	2.722	Yes
Gamma-BHC (µg/l)	<2.5	0.67	<2.5	0.12	0.034	No
Note that loading for E. coli cannot be calculated; but, for comparison purposes, the approach is sufficient.						

34 MGD: As shown in Table A-10b, there are no new or increased impacts to the receiving stream based on the new WQBELS for *E. coli*, T.I.N. (all months), total recoverable arsenic, dissolved hexavalent chromium, free cyanide, total mercury, total recoverable uranium, dissolve zinc, and gamma-BHC; and for these parameters the AD evaluation is complete and the WQBELs are the final result of this WQA.

For, total recoverable lead, total recoverable nickel, and nonylphenol; there are new or increased impacts and in accordance with regulation, the permittee has the option of choosing either the NILs or ADBACs. Because the ADBACs are generally more stringent than NILs, the Division assumes that the permittee will choose NILs rather than ADBACs, and therefore the Division will stop the AD evaluation at this point and assign the NILs to the permit. For those parameters where there is not a NIL (either implicit or explicit) the AD Guidance allows for the collection of data to determine an implicit limitation. Therefore, the permittee will be required to conduct "monitoring only" for those parameters. The permittee may request ADBAC limits. If the permittee does request ADBAC limits, the Division will proceed with the completion of this Antidegradation Analysis.

For total residual chlorine, dissolved arsenic, dissolved cadmium, total recoverable trivalent chromium, dissolved trivalent chromium, dissolved copper, total recoverable iron, dissolved lead, dissolved manganese, total recoverable molybdenum, dissolved nickel, dissolved selenium, dissolved silver, and chloride; 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.

The BWQ concentrations were correctly determined for all potential pollutants of concern except for total recoverable molybdenum as part of a previous WQA from September 2009. Note that the dissolved arsenic and dissolved trivalent chromium BWQs have been set to the BWQs determined for the total recoverable species from the aforementioned WQA. The BWQ for total recoverable molybdenum was determined as the median downstream data provided by the facility from a period of record of July 1999 to May 2000. These are summarized in Table A-11.

Table A-11
BWQ Concentrations Based on Previous Determinations

Pollutant	*BWQ*	*WQS*
TRC (mg/l)	0	0.011
As, Dis (µg/l)	0.36	340
Cd, Dis (µg/l)	0	0.94
Cr+3, TR (µg/l)	0	50
Cr+3, Dis (µg/l)	0	175
Cr+6, Dis (µg/l)	2.3	11
Cu, Dis (µg/l)	3.1	20.8
Fe, TR (µg/l)	554	1000
Pb, Dis (µg/l)	0.52	7.7
Mn, Dis (µg/l)	158	2341
Mo, TR (µg/l)	8	150
Ni, Dis (µg/l)	5.6	127
Se, Dis (µg/l)	3.3	4.6
Ag, Dis (µg/l)	0	2
~~U, TR (µg/l)~~	~~0~~	~~16.8~~

Table A-11 BWQ Concentrations Based on Previous Determinations		
Pollutant	***BWQ***	***WQS***
Zn, Dis (µg/l)	29	315
Chloride (mg/l)	114	250

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:

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

Where,

WQS = Chronic standard or, in the absence of a chronic standard, the acute standard
BWQ = Value from Table A-11

When the BWQ concentration is equal to zero, the following equation results:

$$SCT = 0.15 \times WQS$$

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 = Combined effluent flow of ~~C~~current design capacity of the facility and downstream dischargers
Q_3 = Downstream flow ($Q_1 + Q_2$)
M_1 = Current ambient water quality concentration (From Section III)
SCT = Significant concentration threshold

Note that the above equation will be used to determine ADBACs for the L/E WWTP at 50 MGD and the downstream dischargers. To determine the ADBAC for the L/E WWTP at 34 MGD, the following equation will be used. Note that the downstream facilities will be allocated the same

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assimilative capacity as if L/E WWTP was discharging at its 50 MGD design capacity as this is the most conservative case and is therefore most protective of the environment.

$$ADBAC = \frac{SCT \times Q_4 - M_1 Q_1 - M_2 Q_2}{Q_3}$$

Where,

Q_1 = Upstream low flow (1E3 or 30E3 based on either the chronic or acute standard)
Q_2 = Allocated flow for downstream dischargers (5 MGD)
Q_2 = Requested lower tier flow from L/E WWTP (34 MGD)
Q_4 = Downstream flow ($Q_1 + Q_2 + Q_3$)
M_1 = In-stream background pollutant concentrations at the existing quality
M_3 = Calculated ADBAC for downstream dischargers based on the L/E WWTP design capacity of 50 MGD
M_3 = Calculated WQBEL for L/E WWTP at the requested lower tier flow of 34 MGD
SCT = Significant concentration threshold

The ADBACs were calculated using the SCTs, and are set forth in Table A-12a (50 MGD) and A-12b (34 MGD). Note that Q_2 has been determined to be 55 MGD (85 cfs) to reserve assimilative capacity for future dischargers that exceed 100:1 dilution.

Table A-12a
SCTs and ADBACs for L/E WWTP at 50 MGD and downstream dischargers

Pollutant	*Q_1(cfs)*	*Q_2 (cfs)*	*Q_3 (cfs)*	*M_1*	*SCT*	*ADBAC*
TRC (mg/l)	24	85	109	0	0.0017	0.0022
As, Dis (µg/l)	16	85	101	0.91	51	60
Cd, Dis (µg/l)	24	85	109	0	0.14	0.18
Cr+3, TR (µg/l)	16	85	101	0	7.5	8.9
Cr+3, Dis (µg/l)	24	85	109	0	26	33
Cr+6, Dis (µg/l)	24	85	109	0	3.6	4.6
Cu, Dis (µg/l)	24	85	109	5	5.8	6
Fe, TR (µg/l)	24	85	109	470	621	664
Pb, Dis (µg/l)	24	85	109	1	1.6	1.8
Mn, Dis (µg/l)	24	85	109	249	485	552
Mo, TR (µg/l)	24	85	109	3.3	29	36
Ni, Dis (µg/l)	24	85	109	3.9	24	30
Se, Dis (µg/l)	24	85	109	4	3.5	3.5
Ag, Dis (µg/l)	24	85	109	0	0.3	0.38
~~U, TR (µg/l)~~	~~24~~	~~85~~	~~109~~	~~0~~	~~2.5~~	~~3.2~~
Zn, Dis (µg/l)	24	85	109	34	72	83
Chloride (mg/l)	24	85	109	127	134	136

Based on these calculations, the ambient water quality exceeds the SCT for ~~dissolved manganese and~~ dissolved selenium for the L/E WWTP at 50 MGD. Where an assimilative capacity is calculated

to be less than the standard, the Division standard procedure is to allocate the water quality standard, which in this case is the SCT, to prevent degradation of the receiving stream.

Table A-12b
SCTs and ADBACs for L/E WWTP at 34 MGD

Pollutant	*Q_1(cfs)*	*Q_2(cfs)*	*Q_3(cfs)*	*Q_4(cfs)*	*M_1*	*M_2*	*SCT*	*ADBAC*
TRC (mg/l)	24	7.7	53	84.7	0	0.0022	0.0017	0.0024
As, Dis (µg/l)	16	7.7	53	76.7	0.91	60	51	65
Cd, Dis (µg/l)	24	7.7	53	84.7	0	0.18	0.14	0.20
Cr+3, TR (µg/l)	16	7.7	53	76.7	0	8.9	7.5	10
Cr+3, Dis (µg/l)	24	7.7	53	84.7	0	33	26	37
Cu, Dis (µg/l)	24	7.7	53	84.7	5	6	5.8	6.1
Fe, TR (µg/l)	24	7.7	53	84.7	470	664	621	683
Pb, Dis (µg/l)	24	7.7	53	84.7	1	1.8	1.6	1.8
Mn, Dis (µg/l)	24	7.7	53	84.7	249	552	485	582
Mo, TR (µg/l)	24	7.7	53	84.7	3.3	36	29	40
Ni, Dis (µg/l)	24	7.7	53	84.7	3.9	30	24	32
Se, Dis (µg/l)	24	7.7	53	84.7	4	3.5	3.5	3.3
Ag, Dis (µg/l)	24	7.7	53	84.7	0	0.38	0.3	0.42
Chloride (mg/l)	24	7.7	53	84.7	127	136	134	137

Based on these calculations, the ambient water quality exceeds the SCT for dissolved selenium for the L/E WWTP at 34 MGD. Where an assimilative capacity is calculated to be less than the standard, the Division standard procedure is to allocate the water quality standard, which in this case is the SCT, to prevent degradation of the receiving stream.

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 to A-12c 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 Table A-13a for L/E WWTP at 50 MGD and A-13b for L/E WWTP at 34 MGD.

Table A-13a
Concentration Significance Test for L/E WWTP at 50 MGD

Pollutant	*New WQBEL*	*ADBAC*	*Concentration Test Result*
TRC (mg/l)	0.014	0.0022	Significant
As, Dis (µg/l)	404	60	Significant
Cd, Dis (µg/l)	1.2	0.18	Significant
Cr+3, TR (µg/l)	59	8.9	Significant

Table A-13a Concentration Significance Test for L/E WWTP at 50 MGD			
Pollutant	***New WQBEL***	***ADBAC***	***Concentration Test Result***
Cr+3, Dis (µg/l)	224	33	Significant
Cr+6, Dis (µg/l)	14	4.6	Significant
Cu, Dis (µg/l)	25	6	Significant
Fe, TR (µg/l)	1150	664	Significant
Pb, Dis (µg/l)	9.6	1.8	Significant
Mn, Dis (µg/l)*	190	552	Insignificant
Mo, TR (µg/l)	191	36	Significant
Ni, Dis (µg/l)	162	30	Significant
Se, Dis (µg/l)	4.8	3.4	Significant
Ag, Dis (µg/l)	2.6	0.38	Significant
~~U, TR (µg/l)~~	~~22~~	~~3.2~~	~~Significant~~
Zn, Dis (µg/l)	394	83	Significant
Chloride (mg/l)	285	136	Significant

*The ADBAC is compared to the WQBEL based on the water supply standard.

For dissolved manganese, 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 parameters except dissolved manganese, 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.

Table A-13b Concentration Significance Test for L/E WWTP at 34 MGD			
Pollutant	***New WQBEL***	***ADBAC***	***Concentration Test Result***
TRC (mg/l)	0.016	0.0024	Significant
As, Dis (µg/l)	433	65	Significant
Cd, Dis (µg/l)	1.3	0.2	Significant
Cr+3, TR (µg/l)	64	10	Significant
Cr+3, Dis (µg/l)	247	37	Significant
Cu, Dis (µg/l)	27	6.1	Significant
Fe, TR (µg/l)	1218	683	Significant
Pb, Dis (µg/l)	10	1.8	Significant
Mn, Dis (µg/l)	190	582	Insignificant
Mo, TR (µg/l)	210	40	Significant
Ni, Dis (µg/l)	178	32	Significant
Se, Dis (µg/l)	4.9	3.3	Significant
Ag, Dis (µg/l)	2.8	0.42	Significant
Chloride (mg/l)	431	137	Significant

For dissolved manganese, 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 parameters except dissolved manganese, 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 Table A-14a for L/E WWTP at 50 MGD and A-14b for L/E at 34 MGD; including any parameter that was previously exempted from further AD evaluation, with the final potential limitation identified (NIL, WQBEL or ADBAC).

Table A-14a
Final Selection of WQBELs, NILs, and ADBACs for L/E WWTP at 50 MGD

Pollutant	*NIL*	*New WQBEL*	*ADBAC*	*Chosen Limit*
E. coli (#/100 ml)	683	126*	NA	***TMDL***
TRC (mg/l)	0.0019	0.014	0.0022	***NIL***
NH3 as N, Tot (mg/l) Jan	8.7	5.0	NA	***WQBEL***
NH3 as N, Tot (mg/l) Feb	6.7	5.3	NA	***WQBEL***
NH3 as N, Tot (mg/l) Mar	7.9	4.6	NA	***WQBEL***
NH3 as N, Tot (mg/l) Apr	5.4	4.4	NA	***WQBEL***
NH3 as N, Tot (mg/l) May	4.6	4.1	NA	***WQBEL***
NH3 as N, Tot (mg/l) Jun	4.4	3.9	NA	***WQBEL***
NH3 as N, Tot (mg/l) Jul	3.8	3.4	NA	***WQBEL***
NH3 as N, Tot (mg/l) Aug	3.3	3.3	NA	***NIL***
NH3 as N, Tot (mg/l) Sep	3.3	3.5	NA	***NIL***
NH3 as N, Tot (mg/l) Oct	4.2	4.0	NA	***WQBEL***
NH3 as N, Tot (mg/l) Nov	5.4	4.5	NA	***WQBEL***
NH3 as N, Tot (mg/l) Dec	8.6	4.7	NA	***WQBEL***
As, TR (µg/l)	0.704	0.02**	NA	***WQBEL***

Table A-14a
Final Selection of WQBELs, NILs, and ADBACs for L/E WWTP at 50 MGD

Pollutant	*NIL*	*New WQBEL*	*ADBAC*	*Chosen Limit*
As, Dis (µg/l)	0.704	404	60	***ADBAC***
Cd, Dis (µg/l)	0.13	1.2	0.18	***ADBAC***
Cr+3, TR (µg/l)	13	59	8.9	***NIL***
Cr+3, Dis (µg/l)	13	224	33	***ADBAC***
Cr+6, Dis (µg/l)	13	14	4.6	***NIL***
Cu, Dis (µg/l)	8.3	25	6.0	***NIL***
CN, Free (µg/l)	19	5.9	NA	***WQBEL***
Fe, Dis (µg/l)	NA	365	NA	***WQBEL***
Fe, TR (µg/l)	176	1150	664	***ADBAC***
Pb, TR (µg/l)	NA	59	NA	***WQBEL***
Pb, Dis (µg/l)	1.5	9.6	1.8	***ADBAC***
Mn, Dis (µg/l)	NA	190	NA	***WQBEL***
Mo, TR (µg/l)	15	191	36	***ADBAC***
Hg, Tot (µg/l)	0.13	0.013	NA	***WQBEL***
Ni, TR (µg/l)	NA	127	NA	***WQBEL***
Ni, Dis (µg/l)	7.4	162	30	***ADBAC***
Se, Dis (µg/l)	3.3	4.8	3.5	***ADBAC***
Ag, Dis (µg/l)	0.15	2.6	0.38	***ADBAC***
U, TR (µg/l)	NA~~32~~	22	NA	***WQBEL***
Zn, Dis (µg/l)	20	394	83	***ADBAC***
Chloride (mg/l)	135	285	136	***ADBAC***
Sulfate (mg/l)	NA	269	NA	***WQBEL***
Nonylphenol (µg/l)	NA	8.7	NA	***WQBEL***
Gamma-BHC (µg/l)	<2.5	0.1	NA	***WQBEL***

*Based upon the TMDL and same limitation as the WQBEL; ** Temporary modification applies

For the following parameters, total residual chlorine, total ammonia (August and September), total recoverable trivalent chromium, dissolved hexavalent chromium, dissolved copper, and total recoverable uranium; the NILs have been established for this facility. The NILs were selected as they are less stringent than the WQBELs and 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, dissolved trivalent chromium, total recoverable iron, dissolved lead, total recoverable molybdenum, dissolved nickel, dissolved selenium, dissolved silver, dissolved zinc, and chloride; the ADBACs have been established for this facility. The ADBACs were selected as they are less stringent than the WQBELs and 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 ADBAC is preferred, the permit writer should be contacted.

Table A-14b
Final Selection of WQBELs, NILs, and ADBACs for L/E WWTP at 34 MGD

Pollutant	NIL	New WQBEL	ADBAC	Chosen Limit
E. coli (#/100 ml)	1004	126*	NA	WQBEL
TRC (mg/l)	0.0028	0.016	0.0024	NIL
NH3 as N, Tot (mg/l) Jan	12.8	6.1	NA	WQBEL
NH3 as N, Tot (mg/l) Feb	9.8	6.3	NA	WQBEL
NH3 as N, Tot (mg/l) Mar	11.6	5.6	NA	WQBEL
NH3 as N, Tot (mg/l) Apr	8.0	5.3	NA	WQBEL
NH3 as N, Tot (mg/l) May	6.8	4.9	NA	WQBEL
NH3 as N, Tot (mg/l) Jun	6.5	4.6	NA	WQBEL
NH3 as N, Tot (mg/l) Jul	5.6	4.0	NA	WQBEL
NH3 as N, Tot (mg/l) Aug	4.8	3.7	NA	WQBEL
NH3 as N, Tot (mg/l) Sep	4.8	4.0	NA	WQBEL
NH3 as N, Tot (mg/l) Oct	6.2	4.9	NA	WQBEL
NH3 as N, Tot (mg/l) Nov	7.9	5.4	NA	WQBEL
NH3 as N, Tot (mg/l) Dec	12.7	5.8	NA	WQBEL
As, TR (µg/l)	1.0	0.02**	NA	WQBEL
As, Dis (µg/l)	1.0	433	65	ADBAC
Cd, Dis (µg/l)	0.19	1.3	0.2	ADBAC
Cr+3, TR (µg/l)	19	64	10	NIL
Cr+3, Dis (µg/l)	19	247	37	ADBAC
Cr+6, Dis (µg/l)	19	16	NA	WQBEL
Cu, Dis (µg/l)	12.2	27	6.1	NIL
CN, Free (µg/l)	28	6.4	NA	WQBEL
Fe, Dis (µg/l)	NA	395	NA	WQBEL
Fe, TR (µg/l)	176	1218	683	ADBAC
Pb, TR (µg/l)	NA	64	NA	WQBEL
Pb, Dis (µg/l)	2.3	10	1.8	NIL
Mn, Dis (µg/l)	NA	190	NA	WQBEL
Mo, TR (µg/l)	15	210	40	ADBAC
Hg, Tot (µg/l)	0.18	0.014	NA	WQBEL
Ni, TR (µg/l)	NA	140	NA	WQBEL
Ni, Dis (µg/l)	10.9	178	32	ADBAC
Se, Dis (µg/l)	4.8	4.9	3.3	NIL
Ag, Dis (µg/l)	0.23	2.8	0.42	ADBAC
U, TR (µg/l)	NA	24	NA	WQBEL
Zn, Dis (µg/l)	29	24	NA	WQBEL
Chloride (mg/l)	135	431	137	ADBAC
Sulfate (mg/l)	NA	301	NA	WQBEL
Nonylphenol (µg/l)	NA	9.6	NA	WQBEL

Table A-14b Final Selection of WQBELs, NILs, and ADBACs for L/E WWTP at 34 MGD				
Pollutant	***NIL***	***New WQBEL***	***ADBAC***	***Chosen Limit***
Gamma-BHC (µg/l)	<2.5	0.12	NA	***WQBEL***

*Based upon the TMDL and same limitation as the WQBEL; ** Temporary modification applies

For the following parameters, total residual chlorine, total recoverable trivalent chromium, and dissolved copper; the NILs have been established for this facility. The NILs were selected as they are less stringent than the WQBELs and 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, dissolved trivalent chromium, total recoverable iron, dissolved lead, total recoverable molybdenum, dissolved nickel, dissolved selenium, dissolved silver, and chloride; the ADBACs have been established for this facility. The ADBACs were selected as they are less stringent than the WQBELs and 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 ADBAC 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.

On December 20, 2004, the Division received an AA for copper and silver. In this AA, the facility determined that the installation of Cu and Ag treatment would not be economically reasonable. Furthermore, the Division acknowledges the efforts and controls the L/E WWTP has made to minimize the copper loading to the WWTF since the AA has been applied to their permit. For these reasons, the AA will be re-applied for copper. Additional discussion of the necessity of degradation for copper and silver and application of the AA analysis is contained in the Fact Sheet for the L/E WWTP permit.

VIII. Technology Based Limitations

Federal Effluent Limitation Guidelines

L/E WWTP: 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.

Arapahoe Facility: Federal effluent limitations at 40 CFR Part 423, titled Steam Electric Power Generating Point Source Category, apply to the Arapahoe Facility. The Low Volume Waste and Cooling Tower Blowdown categories are the only two provisions that apply to this facility's discharge and those ELGs are listed in the table below and will typically apply, unless a more stringent limitation or an alternate limitation that would be protective of the limits shown in Table A-15a and A-15b is applied.

Table A-15a
Federal ELGs for Arapahoe Facility

Parameter	30 Day Average Concentration (mg/l)	Daily Maximum Concentration (mg/l)
LOW VOLUME WASTES		
TSS	100.0	30.0
Oil and grease	20.0	15.0
COOLING TOWER BLOWDOWN		
Free Available Chlorine*	0.2	0.5
126 Priority Pollutants except	No Detectable Amount	No Detectable Amount
Total Chromium	0.2	0.2
Total Zinc	1.0	1.0

*Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available or total residual at any one time.

Table A-15b
Technology-Based Effluent Limits Calculated from ELGs and Regulation 62

Effluent Category	Limitation Type	TSS (mg/l)		Oil and Grease (mg/l)		Total Chromium (mg/l)		Total Zinc (mg/l)		Free Available Chlorine (mg/l)	
		30-day Avg	Daily Max	30-day Avg	Daily Max	30-day Avg	Daily Max	30-Day Avg	Daily Max	30-Day Avg	Daily Max
Low Volume Wastes (0.0432 MGD)	Federal ELG	30	100	15	20						
	Regulation 62	Does not apply per Regulation 62.2(3)									
Cooling Tower Blowdown (0.1068 MGD)	Federal ELG					0.2	0.2	1.0	1.0	0.2	0.5
	Regulation 62	30	45*	NA**	10						
Flow Weighted Limitation (0.15 MGD)		30	61	4.3	13	0.142	0.142	0.712	0.712	0.14	0.36

*This is the 7-day average from Regulation 62. This is being applied as the daily maximum value, which would be a conservative assumption, using best professional judgment.
**Neither Regulation 62 nor the EPA guidance document referring to the Steam Electric Power Generation Point Source Category assign a 30-day limitation on oil and grease for cooling tower blowdown.

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-16 contains a summary of the applicable limitations for pollutants of concern at this facility.

Table A-16
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 PEL 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 5/31/2022) 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 capacity of the L/E WWTP is 50 MGD, the facility is 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 L/E WWTP.

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 L/E WWTP that are shown below in Table 3.

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

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

The South Platte 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 64 cfs. The ambient water quality data were gathered from L/E WWTP project SPCURE UP [Upstream (Dartmouth)] where the median TP level is 0.074 mg/l and TN = 1.4 mg/l.

Table 3
Total Nitrogen and Total Phosphorus Assimilative Capacities for the South Platte River at the L/E WWTP

Parameter	Q_1 (cfs)	Q_2 (cfs)	Q_3 (cfs)	M_1 (mg/l)	M_3 (mg/l)	M_2 (mg/l)
Total Phosphorus	**64**	**77**	**141**	**0.074**	**0.17**	**0.25***
Total Nitrogen	**64**	**77**	**141**	**1.4**	**2.01**	**2.5***

*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 South Platte River, that the proposed technology based limits will not be protective of the current interim numeric nutrient criteria at 31.17. Therefore, future decisions will need to be made about what the appropriate (potentially different site-specific standards) nutrient standards should be for the South Platte River and the effected portions downstream of the L/E WWTP. 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 L/E WWTP 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 wishes to encourage the L/E WWTP to start working on nutrient control with the other discharges along COSPUS14. These dischargers and others upstream and downstream of South Platte River have the potential to create future nutrient issues in the South Platte watersheds. The Division encourages these entities to all work together to create the most efficient and cost effective solutions for nutrient control in the South Platte River watershed.

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, 2013.

Classifications and Numeric Standards for South Platte River Basin, Laramie River Basin, Republican River Basin, Smoky Hill River Basin, Regulation No. 38, Colorado Department Public Health and Environment, Water Quality Control Commission, effective December 31, 2015.

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 September 30, 2012.

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 March 1, 2016.

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 South 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.

Other:
Total Maximum Daily Load Assessment Nitrate, South Platte River, Segment 14, Bowles Ave., to Burlington Ditch Diversion, Arapahoe and Denver Counties, Colorado, Colorado Department of Public Health and Environment, Water Quality Control Division, approved by the EPA in June 2004.

Total Maximum Daily Load Assessment Escherichia coli, South Platte River, Segment 14, Bowles Ave., to Burlington Ditch Diversion, Arapahoe and Denver Counties, Colorado, Colorado Department of Public Health and Environment, Water Quality Control Division, approved by the EPA in October 2007.

Littleton/Englewood Wastewater Treatment Plant Necessity of Degradation Determination, prepared by Brown and Caldwell for the Cities of Littleton and Englewood, December 2004.