RESPONSE TO COMMENTS
Elk City, Idaho Water & Sewer Association
NPDES Permit # ID0022012
March 9, 2015

Background

On February 27th, 2014, the U.S. Environmental Protection Agency (EPA) announced a 30-day public notice of the issuance of the Elk City Water & Sewer Association (permittee) draft National Pollutant Discharge Elimination System (NPDES) Permit, No. ID0022012 for the Wastewater Treatment Facility (WWTF). The public comment period was extended by an additional 30 days, until April 28th, 2014 upon request by Idaho Rural Waters. This Response to Comments (RTC) document provides a summary of the significant comments received during the 60-day comment period and provides corresponding EPA responses. Comments were received from:

- Justin Hayes, Program Director of Idaho Conservation League (ICL)
- Alfred Wallace, Environmental Consultant (Consultant)

Summary of Final Permit Changes

As a result of comments received during the public comment period, the following changes were made to the final permit:

- The statistical low flows for the receiving water were recalculated taking into account additional data including water rights and more recent receiving water flow measurements. The water quality-based effluent limits (WQBELs) for ammonia and chlorine were recalculated using the revised statistical low flows.
- The WQBELs for ammonia were revised to include tiered limits based on the flow in the receiving water, Elk Creek. This approach was used due to concerns raised during the public comment period regarding the reliability of the flow data, the lack of available flow data, and the use of data collected during periods of low flow. The more stringent ammonia limits protect the receiving water during low flow conditions. The less stringent ammonia limits protect the receiving water during higher flow periods when there is sufficient dilution provided by the receiving water.
- The WQBELs for ammonia were adjusted based on a revised assumption of effluent variability.
- The final permit includes a compliance schedule to allow time for the permittee to come into compliance with the final ammonia and temperature WQBELs.

EPA Responses to Significant Comments

Use of Low Flow Data

1. **Comment (ICL):** "In reviewing the draft, I am concerned that the EPA is relying on old, out of date information to calculate the "Low Flow Conditions" in the receiving water. EPA is relying on a DEQ report from 1986. Elk Creek is created by the confluence of Big Elk Creek and Little Elk Creek. The city's discharge occurs downstream of, but very near to, that confluence. Two relevant water rights have been issued since 1986. Both are on the Big Elk Creek and they total 0.2 cfs. Big Elk Creek Water Rights*:* 82-7199. Issued in 1993 for 0.04 cfs Domestic Use. 82-7175. Issued in 1988 for 0.16 cfs for Domestic & Irrigation.

   Considering the Low Flow Conditions upon which this permit is based are between 1.13 and 1.62 cfs, I'd think 0.2 cfs of new consumptive use is a worthy/requisite consideration."

   EPA Response to Comment #1: In developing the draft permit limits, the EPA used the available stream flow data from the 1986 Water Quality Data Study by IDEQ (1986 Study). ICL is correct that two water rights for Big Elk Creek were issued upstream of the facility since the data were collected for the 1986 Study. The water rights were not considered when calculating low flows for the receiving water in the draft permit.

   EPA agrees that the water rights are relevant. The water rights are upstream of the discharge and therefore, could impact the low flows of the river. Therefore, the EPA recalculated the statistical low flow values used in the WQBEL calculation based on a revised data set, by subtracting the two water rights, totaling 0.2 cubic feet per second (cfs), from each stream flow measurement taken from the 1986 Study.

   EPA also agrees that in developing the low flow conditions in the draft permit, EPA relied on old data. Those were the data available during development of the draft permit conditions. More recent data have been collected since development of the draft permit. The permittee collected stream flow measurements in 2013 and 2014. In recalculating the low flows for the final permit limits, EPA included the more recent flow measurements as well.

   Table 1 below compares the low flow and dilution values used to develop the WQBELs for the draft permit and final permit. In Table 1, the low flow and dilution values for the final permit pertain to an Elk Creek flow less than 6 cfs (see EPA Response to Comment

#3). The actual stream flow measurements used to arrive at these calculations are provided in Appendix A.

Table 1

Low Flow	**Draft Permit**		**Final Permit (Elk Creek flow < 6 cfs)**	
	Flow (cfs)	Dilution	Flow (cfs)	Dilution
7Q10	1.5	3.0	1.1	2.5
1Q10	1.1	2.5	0.9	2.2
30B5	1.6	3.2	1.3	2.7

Changes to the Permit: The limits for ammonia and chlorine were recalculated using the revised low flows conditions. See Table 1 of the final permit document.

2. **Comment (Consultant):** "I take issue with the choice of low stream flows used to determine the water quality-based effluent limits. Data collected by the Association over the past seven years shows that in the best case, there is no discharge to the creek from early July through late November. In the worst case there is no discharge from 1 August through the first week in October. Therefore, I submit that low stream flow data acquired in August and September should not be employed to calculate the low flows used in water quality based effluent limitations. Nor should high stream temperature data from these two months be used. Records kept by the Association also show that no inadvertent or accidental discharges to the creek have ever occurred during the time frame of non-discharge.

   To expand on this point if, for example, adding storage and land treatment could reliably prevent discharge to a receiving stream for all but, say, the months of January and February, then the stream flows, temperature, pH and background contaminant levels ought to be based solely on conditions known to occur during these two months. To do otherwise works a substantial hardship on the community which has incorporated these measures to limit the period of discharge and produces no tangible water quality benefits. My reading of the Clean Water Acts and its amendments convinces me that Congress had no intention of creating such unjust situations."

EPA Response to Comment #2:

In developing WQBELs, EPA uses steady state models to calculate waste load allocations of the facility at critical conditions which are usually a combination of reasonable worst-case assumptions of receiving water flow, effluent pollutant concentrations, and receiving water concentrations (*See* Technical Support Document for Water Quality-Based Toxics Control, EPA March 1991). This process is discussed in Appendix C of the Fact Sheet.

Reasonable worst case assumptions include low flows in the receiving water. In fact, the State of Idaho's water quality standards (WQS) require water quality criteria be evaluated against the low flow conditions found in state regulation in the Idaho Administrative Procedures Act (IDAPA) at IDAPA 58.01.02.210.03(b).

The flow data for Elk Creek are limited. The 2002 permit required (beginning in 2002) year-round monitoring of the receiving water and that a monthly report be submitted to the EPA from June 1 through September 30, with the daily receiving water flow and effluent flow measurements. The permittee did not report this information for several years. The permittee did not begin collecting Elk Creek data until February 2013. In developing the low flow values in the draft permit, the EPA used the only data available, which were from the 1986 Study.

In response to this comment, EPA evaluated the request to omit Elk Creek flow and water quality data collected during the summer season from the calculations. In this evaluation, EPA calculated the low flow conditions and WQBELs using a revised data set which excluded all Elk Creek flow measurements and water quality data collected over the summer season from July to October. The revised data set from November to June included the more recent data collected by the permittee and adjusted flow measurements from the 1986 Study (See EPA Response to Comment #1).

The results of that analysis showed only minor changes in ammonia WQBELs applicable from November to June versus WQBELs that were applicable year-round. See Table 2 of this RTC document for a comparison of WQBELs for these two scenarios. Table 2 also compares these limits to those in the draft permit. Low flows in Elk Creek occur even during the November to June time frame, as evidenced by the individual flow measurements (see Appendix A). In addition, the results show that the difference in the water quality data for Elk Creek during the November to June time frame versus year-round is not significant.

If the EPA were to omit the summer data, it would also be necessary to prohibit discharge during that period. Because the omission of the summer data did not result in significantly different effluent limits and because the data are limited, EPA chose not to omit the summer data from the data set used to develop the WQBELs in the final permit. However, EPA recognizes the permittee's intent to discharge only during periods of higher flow. Therefore, the final permit was revised to include tiered flow-based limits for ammonia. This is the same approach as for the tiered temperature limits from the TMDL.

The less stringent limits apply when there is sufficient dilution available in the receiving water, i.e. the average monthly flow in Elk Creek is 6 cfs or greater. In order for the less stringent limits to apply, the facility must measure the flow in Elk Creek each day the facility discharges during the given month. If the permittee is unable to measure the Elk Creek flow when the facility is discharging for a given day, a flow of zero (0) cfs must be assumed for that day. If the average monthly flow is less than 6 cfs, the more stringent ammonia limits apply.

Changes to Permit: Tiered flow-based limits were added for ammonia. See Table 1 of the final permit.

3. **Comment (Consultant):** The following issue needs to be more carefully examined prior to the permit being adopted in final form. The existing lagoon system violates several of the limits in its present permit, and there is absolutely no chance that it could comply with the more restrictive limits given by the draft. I must assume that the EPA wishes the Association to follow either one of two options;

   a) Provide a significant upgrade to the existing system which would produce an effluent capable of consistently meeting the proposed limits. Although technologically feasible, my experience prompts me to state that this option is not economically feasible. Nor would the O&M requirements likely be within the "comfort zone" of operating personnel which the Association might be able to hire and retain, or

   b) Add storage and some form of land treatment such that discharge to Elk Creek can be avoided entirely, rather than just for the period July through October. With sufficient removal of excessive Inflow and Infiltration (I & I), this option may be both technologically and economically feasible. However, if development of this option cannot prevent discharge to the creek for the entire year, but only for most of it, the Association is still faced with BOD limits they cannot possibly comply with. EPA should

look for some way to help them retain the current technology-based BOD and TSS limits if this should prove to be the case. Of course, if year-round discharge can be avoided, no NPDES permit would be required and any remaining issues would be moot. One will be discussed, however, as it would be relevant if the first option was chosen and certainly might be significant for some other community similar to Elk City, currently involved in the permitting process."

EPA Response to Comment #3. The comment is raising several issues including:

i. A request to retain the existing (2002) permit limits in the final permit
ii. The permittee will be unable to meet the limits in the permit
iii. Feedback regarding options to achieve compliance with the effluent limits

i. Request to Retain Existing Limits

The EPA cannot retain the existing limits from the 2002 permit. The NPDES regulations require that when EPA reissues a permit, the permit writer include any applicable technology-based effluent limits (TBELs) and WQBELs. (*See* 40 CFR § 122.44(a)(1)). The process of developing permit limits is discussed in Part D of the Fact Sheet, *Basis for Effluent Limits*. EPA is required to include whichever is more stringent (TBELs or WQBELs) in the final permit.

The final permit includes TBELs for BOD_5 and TSS which are based on secondary treatment. These limits are more stringent than the BOD_5 and TSS limits in the 2002 permit, which were based on the treatment equivalent to secondary [TES] regulation found at 40 CFR § 133.105. As discussed in Appendix D of the Fact Sheet, the facility no longer qualifies for TES limits, therefore the secondary treatment limits apply and the facility is not eligible to retain the 2002 permit limits.

CWA section 301(b)(1)(C) requires that permits include any effluent limitations necessary to meet water quality standards. In developing the draft permit, EPA concluded that new WQBELs are required for temperature, chlorine and ammonia. EPA can include a compliance schedule to allow time for the permittee to come into compliance with new WQBELs. A compliance schedule has been added to the final permit, see discussion below.

ii. The permittee will be unable to meet the new limits in the permit

A review of the effluent data indicates that the WWTF cannot comply with the new effluent limits for several parameters, including BOD_5, ammonia, chlorine, and temperature. The section below addresses compliance with individual parameters.

iii. Options to Achieve Compliance with the New Permit Limits

Although the regulations do not allow EPA to retain limits from the 2002 permit, the federal regulations at 40 CFR 122.47 and the Idaho WQS, found at IDAPA 58.01.02.400.03, allow the permit writer to establish compliance schedules to give permittees additional time to achieve compliance with new WQBELs. The final permit includes compliance schedules for ammonia and temperature. *See* additional discussion on the compliance schedules in Appendix B. The EPA does not specify a specific treatment type for the permittee to come into compliance with the effluent limits.

BOD_5 - The final permit includes more stringent limits for BOD_5 (concentration, mass, and percent removal). The facility will be unable to comply with these limits upon the effective date of the permit. The facility also exceeded the less stringent BOD_5 limits in the 2002 permit. Because the BOD_5 limits are TBELs, as discussed above, EPA cannot provide a compliance schedule for these new limits.

TSS - The final permit includes more stringent limits for TSS (concentration, mass, and percent removal). A review of the data show that the facility will be able to meet these limits upon the effective date of the permit. Even if the facility were unable to comply with these TSS limits, EPA cannot provide the facility with a compliance schedule because the limits are TBELs.

Annual Average TSS – The final permit includes a new annual average TSS mass-based loading limit. This is a WQBEL, based on the WWTF's wasteload allocation (WLA) from the South Fork Clearwater River Total Maximum Daily Load (TMDL), October 2003. *See* page 14 of the Fact Sheet for more information. A review of effluent data show the permittee will be able to comply with the annual average mass-based loading limit for TSS on the effective date of the final permit.

Temperature - The permit includes new seasonal WQBELs for temperature. From May 1st to May 31st the maximum daily limit (MDL) is 23°C. From June 1st to September 30th, the MDL is dependent on Elk Creek flow and effluent flow and ranges from 10.4 °C to 23.0 °C (See Table 3 of the permit).

Although there are limited data to evaluate compliance, EPA concludes that the permittee cannot comply with the temperature WQBEL from June 1st to September 30th

immediately upon the effective date of the permit. This conclusion is based on a review of the monthly DMR data recorded by the facility in the last 5 years, along with the recent Elk Creek flows measured by the permittee. For example, discreet effluent temperature measurements have been as high as 26.7 °C.

Therefore, the final permit includes a compliance schedule for the temperature MDL applicable from June 1st to September 30th. The compliance schedule includes an interim MDL of 23 °C which, is approximately equal to the 95th percentile of the temperature effluent data from May 1st to Sept 30th in the last 5 years.

Chlorine - EPA recalculated the WQBELs for chlorine using the revised low flow conditions. The calculations and resulting limits are shown in Table 2. Although the limits changed, neither the draft nor final chlorine limits are quantifiable using EPA-approved analytical methods. The permittee will be in compliance with the chlorine concentration limits provided the average monthly and maximum daily effluent concentrations are lower than the minimum level for chlorine of 0.05 mg/L. In a review of the DMR data collected by the facility in the last 5 years, the permittee has been exceeding this minimum level for chlorine. The 95th percentile of the average monthly chlorine concentration was 1 mg/L. However, in a phone conversation with Mountain Waterworks on July 29th, the consultant believes the WWTF will be able to achieve a concentration below the minimum level for chlorine immediately upon the effective date of the permit, therefore, a compliance schedule is not necessary for total residual chlorine.

Ammonia - Comments received during the public comment period resulted in revised WQBELs for ammonia. The revisions included:

- Incorporating tiered flow-based limits
- Additional data used for calculating low flow conditions.
- Revised assumptions regarding effluent variability of the ammonia concentrations once the facility is treating to achieve the final limits
- Compliance schedule to meet the WQBELs

Tiered Flow-Based Limits – EPA has provided the basis for these limits in Response to Comment #2. The limits would allow the permittee the option to eventually meet the ammonia limits through land application, storage, and/or occasional discharge.

In developing the less stringent tiered limits, EPA calculated the minimum average monthly flow in Elk Creek that would be required to discharge a target ammonia

concentration of 20 mg/L. An average monthly effluent concentration of 20 mg/L is based on the WWTF's ability to treat the effluent after removing the excess Inflow and Infiltration (I/I) in the collection system and retrofitting or replacing the lagoons[1].

Effluent Variability - In recalculating the ammonia limits, EPA revised the assumed effluent variability, as measured by the coefficient of variation (CV). In the final permit, EPA used a CV of 0.6 to calculate ammonia WQBELs instead of a CV of 2.21 from the effluent data. As recognized in the TSD, once a permittee is operating to achieve the final limits, the variability of the parameter may change considerably (see to Section 5.5.2 of the TSD[2]). Therefore, the existing CV may not be representative of the CV once the final limits are in place. Further, the EPA determined that the reported effluent monitoring data for ammonia was unreliable. For example, ammonia reported during the months of February ranged from a maximum value of 100 mg/L in 2008 to 0 mg/L in 2011. The TSD recommends a default CV of 0.6 if the regulatory authority does not have more accurate information on the CV. Therefore, because EPA considered the CV based on the existing effluent data to be unreliable, and not representative of future effluent, EPA assumed a CV of 0.6 to calculate the ammonia WQBELs in the final permit.

Compliance Schedule - A review of the monthly DMR data collected by the permittee in the last 5 years indicates that the permittee will be unable to comply with the more stringent ammonia limits (i.e. limits when flow is less than 6 cfs) immediately upon the effective date of the permit. Therefore, EPA concluded that it is appropriate to provide a compliance schedule to the permittee to meet the more stringent WQBELs. See additional discussion regarding the compliance schedule in Appendix B. Although the WWTF can meet the less stringent ammonia limits immediately upon the effective date of the permit, the WWTF does not currently have the ability to provide storage and allow discharge only during periods of sufficient dilution.

See Table 2 for the calculation of the revised ammonia WQBELs.

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[1] Letter to EPA from Mountain Waterworks regarding Elk City NPDES Permit Compliance Schedule. Dated September 15, 2014.

[2] EPA. 1991. Technical Support Document for Water Quality-based Toxics Control. US Environmental Protection Agency, Office of Water, EPA/505/2-90-001.

Table 2. Final WQBELs for Chlorine and Total Ammonia with respect to Elk Creek Daily Flow

Reasonable Potential Analysis (RPA) and Water Quality Effluent Limit (WQBEL) Calculations

			Final Permit limits	
Facility name	Elk Creek WWTF			
Design Flow (MGD)	0.12	***Elk Creek Daily Flow:***	**> 6 cfs**	**< 6 cfs**

Dilution Factors	(IDAPA 58.01.02 03. b)	Annual	Annual	Annual
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)	**1Q10**	**9.1**	**2.2**	**2.2**
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)	**7Q10 or 4B3**	**9.1**	**2.5**	**2.5**
Ammonia	**30B3/30Q10** (seasonal)	**9.1**	**2.7**	**2.7**
Human Health - Non-Carcinogen	**30Q5**	**6.4**	**1.0**	**1.0**
Human Health - carcinogen	**Harmonic Mean Flow**	**6.4**	**1.0**	**1.0**

Receiving Water Data		Notes:	Annual Crit. Flows	Annual Crit. Flows
Hardness, as mg/L $CaCO_3$	*** Enter Hardness on WQ Criteria tab ***	5th % at critical flows		
Temperature, °C	Temperature, °C	95th percentile	16	16
pH, S.U.	pH, S.U.	95th percentile	7.75	7.75

Pollutants of Concern			AMMONIA, default: cold water, fish early life stages present	AMMONIA, default: cold water, fish early life stages present	CHLORINE (Total Residual)
Effluent Data	**Number of Samples in Data Set (n)**		45	45	45
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		1.92	1.92	0.46
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		100,000	100,000	1273
	Calculated 50th % Effluent Conc. (when n>10), Human Health Only				
Dilution Factors	Aquatic Life - Acute	1Q10	9.080	2.172	2.172
	Aquatic Life - Chronic	7Q10 or 4B3	-	-	2.522
	Ammonia	30B3 or 30Q10	9.080	2.683	2.683
	Human Health - Non-Carcinogen	30Q5	-	-	1.000
	Human Health - carcinogen	Harmonic Mean	-	-	1.000
Receiving Water Data	**90th Percentile Conc., µg/L - (C_u)**		157	157	0
	Geometric Mean, µg/L, Human Health Criteria Only				
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	8,851	8,851	19
	Aquatic Life Criteria, µg/L	Chronic	3,072	3,072	11
	Human Health Water and Organism, µg/L		--	--	--
	Human Health, Organism Only, µg/L		--	--	--
	Metals Criteria Translator, decimal (or default use Conversion Factor)	Acute	--	--	0.000
		Chronic	--	--	0.000
	Carcinogen (Y/N), Human Health Criteria Only		--	--	--

Aquatic Life Reasonable Potential Analysis

σ	$\sigma^2=\ln(CV^2+1)$		1.243	1.243	0.438
P_n	$=(1-\text{confidence level})^{1/n}$ where confidence level =	**99%**	0.903	0.903	0.903
Multiplier (TSD p. 57)	$=\exp(2.326\sigma-0.5\sigma^2)/\exp[\text{invnorm}(P_N)\sigma-0.5\sigma^2]$, prob. =	**99%**	3.6	3.6	1.6
Statistically projected critical discharge concentration (C_d)			359313.72	359313.72	1998.19
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	39711.03	165514.60	919.98
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	39711.03	134020.85	792.30
Reasonable Potential to exceed Aquatic Life Criteria			**YES**	**YES**	**YES**

Aquatic Life Effluent Limit Calculations

Number of Compliance Samples Expected per month (n)			30	4	4
n used to calculate AML (if chronic is limiting then use min=4 or for ammonia min=30)			30	4	4
LTA Coeff. Var. (CV), decimal (Use CV of data set or default = 0.6)			0.600	0.600	0.460
Permit Limit Coeff. Var. (CV), decimal (Use CV from data set or default = 0.6)			0.600	0.600	0.460
Acute WLA, ug/L	$C_d = (\text{Acute Criteria} \times MZ_a) - C_u \times (MZ_a-1)$	Acute	79,098.2	19,040.0	41.3
Chronic WLA, ug/L	$C_d = (\text{Chronic Criteria} \times MZ_c) - C_u \times (MZ_c-1)$	Chronic	26,622.9	7,977.1	27.7
Long Term Ave (LTA), ug/L	$WLAc \times \exp(0.5\sigma^2-2.326\sigma)$	Acute	25,397.1	6,113.4	16.4
(99th % occurrence prob.)	$WLAa \times \exp(0.5\sigma^2-2.326\sigma)$; ammonia n=30	Chronic	20,773.8	6,224.5	16.8
Limiting LTA, ug/L	used as basis for limits calculation		20,773.8	6,113.4	16.4
Applicable Metals Criteria Translator (metals limits as total recoverable)			--	--	--
Average Monthly Limit (AML), ug/L , where % occurrence prob =		**95%**	**24,714**	**9,490**	**23**
Maximum Daily Limit (MDL), ug/L , where % occurrence prob =		**99%**	**64,712**	**19,044**	**41**
Average Monthly Limit (AML), mg/L			**24.7**	**9.5**	**0.023**
Maximum Daily Limit (MDL), mg/L			**64.7**	**19.0**	**0.041**
Average Monthly Limit (AML), lb/day			**25**	**9**	**0.023**
Maximum Daily Limit (MDL), lb/day			**65**	**19**	**0.041**

References: Idaho Water Quality Standards http://adminrules.idaho.gov/rules/current/58/0102.pdf
Technical Support Document for Water Quality-based Toxics Control, US EPA, March 1991, EPA/505/2-90-001

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Table 3. Comparison of Total Ammonia Effluent Limits: Final Permit limits (Elk Creek < 6 cfs), verses Seasonal limits, versus Draft Permit limits.

Comparison of Reasonable Potential Analysis (RPA) and Water Quality Effluent Limit (WQBEL) Calculations

Facility Name	Elk City WWTF			Elk Creek Surface Water & WQ data not included for the following months			
Design Flow (MGD)	0.12		**Final Permit (year-round new 1986, 2013, 2014 data)**	**Excludes August, September Data**	**Excludes July, August, September Data**	**Excludes July, August, September, October Data**	**Draft Permit (1986 Data)**
Dilution Factors		(IDAPA 58.01.02 03. b)	Annual	Seasonal	Seasonal	Seasonal	Annual
Aquatic Life - Acute Criteria - Criterion Max. Concentration (CMC)		**1Q10**	**2.2**	**2.4**	**2.8**	**2.3**	**2.5**
Aquatic Life - Chronic Criteria - Criterion Continuous Concentration (CCC)		**7Q10 or 4B3**	**2.5**	**2.8**	**3.3**	**2.7**	**3.0**
Ammonia		**30B3/30Q10** (seasonal)	**2.7**	**3.0**	**3.5**	**2.8**	**3.2**
Human Health - Non-Carcinogen		**30Q5**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Human Health - carcinogen		**Harmonic Mean Flow**	**1.0**	**1.0**	**1.0**	**1.0**	**1.0**
Receiving Water Data		Notes:	**Annual**	**Seasonal**	**Seasonal**	**Seasonal**	**Annual**
Hardness, as mg/L $CaCO_3$	*** Enter Hardness on WQ Criteria tab ***	5th % at critical flows	Crit. Flows	Crit. Flows	Crit. Flows	Crit. Flows	Crit. Flows
Temperature, °C	Temperature, °C	95th percentile	16	15.78	15.16	15.2	15.7
pH, S.U.	pH, S.U.	95th percentile	7.75	7.77	7.78	7.76	7.7

Pollutants of Concern			**AMMONIA,** default: cold water, fish early life stages present	**AMMONIA,** default: cold water, fish early life stages present	**AMMONIA,** default: cold water, fish early life stages present	**AMMONIA,** default: cold water, fish early life stages present	**AMMONIA,** default: cold water, fish early life stages present
Effluent Data	**Number of Samples in Data Set (n)**		45	45	45	45	45
	Coefficient of Variation (CV) = Std. Dev./Mean (default CV = 0.6)		1.92	1.92	1.92	1.92	2.24
	Effluent Concentration, µg/L (Max. or 95th Percentile) - (C_e)		100,000	100,000	100,000	100,000	83340
	Calculated 50th % Effluent Conc. (when n>10), Human Health Only						
Dilution Factors	Aquatic Life - Acute	1Q10	2.172	2.374	2.751	2.279	2.530
	Aquatic Life - Chronic	7Q10 or 4B3	--	--	--	--	--
	Ammonia	30B3 or 30Q10	2.683	2.966	3.491	2.832	3.190
	Human Health - Non-Carcinogen	30Q5	--	--	--	--	--
	Human Health - carcinogen	Harmonic Mean	--	--	--	--	--
Receiving Water Data	**90th Percentile Conc., µg/L - (C_u)**		157	157	157	157	157
	Geometric Mean, µg/L, Human Health Criteria Only						
Applicable Water Quality Criteria	Aquatic Life Criteria, µg/L	Acute	8,851	8,547	8,398	8,698	9,644
	Aquatic Life Criteria, µg/L	Chronic	3,072	3,043	3,129	3,196	3,316
	Metals Criteria Translator, decimal (or default use Conversion Factor)	Acute	--	--	--	--	
		Chronic	--	--	--	--	

Aquatic Life Reasonable Potential Analysis

σ	$\sigma^2=\ln(CV^2+1)$		1.243	1.243	1.243	1.243	1.340
P_n	=(1-confidence level)$^{1/n}$ where confidence level =	**99%**	0.903	0.903	0.903	0.903	0.903
Multiplier (TSD p. 57)	$=\exp(2.326\sigma-0.5\sigma^2)/\exp[\text{invnorm}(P_N\sigma-0.5\sigma^2]$, prob. =	**99%**	3.6	3.6	3.6	3.6	4.0
Statistically projected critical discharge concentration (C_d)			359313.72	359313.72	359313.72	359313.72	330824.20
Predicted max. conc.(ug/L) at Edge-of-Mixing Zone		Acute	165543.35	151468.39	130726.19	157726.25	130855.50
(note: for metals, concentration as dissolved using conversion factor as translator)		Chronic	134002.61	121241.29	103026.52	127000.19	103814.43
Reasonable Potential to exceed Aquatic Life Criteria			**YES**	**YES**	**YES**	**YES**	**YES**

Aquatic Life Effluent Limit Calculations

Number of Compliance Samples Expected per month (n)			4	4	4	4	4
n used to calculate AML (if chronic is limiting then use min=4 or for ammonia min=30)			4	4	4	4	4
LTA Coeff. Var. (CV), decimal (Use CV of data set or default = 0.6)			0.600	0.600	0.600	0.600	2.240
Permit Limit Coeff. Var. (CV), decimal (Use CV from data set or default = 0.6)			0.600	0.600	0.600	0.600	2.240
Acute WLA, ug/L	$C_d = (\text{Acute Criteria} \times MZ_a) - C_u \times (MZ_a-1)$	Acute	19,036.7	20,072.4	22,826.9	19,625.2	24,159.3
Chronic WLA, ug/L	$C_d = (\text{Chronic Criteria} \times MZ_c) - C_{u\,x} \times (MZ_c-1)$	Chronic	7,978.2	8,716.2	10,532.7	8,763.0	10,234.1
Long Term Ave (LTA), ug/L	WLAc x $\exp(0.5\sigma^2-2.326\sigma)$	Acute	6,112.4	6,444.9	7,329.3	6,301.3	2,627.3
(99th % occurrence prob.)	WLAa x $\exp(0.5\sigma^2-2.326\sigma)$; ammonia n=30	Chronic	6,225.4	6,801.2	8,218.7	6,837.7	4,429.7
Limiting LTA, ug/L	used as basis for limits calculation		6,112.4	6,444.9	7,329.3	6,301.3	2,627.3
Applicable Metals Criteria Translator (metals limits as total recoverable)			--	--	--	--	
Average Monthly Limit (AML), ug/L , where % occurrence prob =		**95%**	**9,489**	**10,005**	**11,378**	**9,782**	**7710.0**
Maximum Daily Limit (MDL), ug/L , where % occurrence prob =		**99%**	**19,040**	**20,076**	**22,831**	**19,629**	**24170.5**
Average Monthly Limit (AML), mg/L			**9.5**	**10.0**	**11.4**	**9.8**	**7.7**
Maximum Daily Limit (MDL), mg/L			**19.0**	**20.1**	**22.8**	**19.6**	**24.2**
Average Monthly Limit (AML), lb/day			**9**	**10**	**11**	**10**	**8**
Maximum Daily Limit (MDL), lb/day			**19**	**20**	**23**	**20**	**24**

References: Idaho Water Quality Standards http://adminrules.idaho.gov/rules/current/58/0102.pdf
Technical Support Document for Water Quality-based Toxics Control, US EPA, March 1991, EPA/505/2-90-001

Filename: G:\Baker\Water and Watersheds\N P U\Haskell\Administrative Records\Administrative Record Elk City\[71. Comparison of NH4 limits over summer months.xlsm]RP a

APPENDIX A: Actual Stream Flow Measurements

The actual stream flow measurements used to determine low flows and dilution factors shown Table 1 of this Response to Comment document. Flow measurements taken from the 1986 IDEQ Water Quality Data Study were subtracted by 0.2 cfs. See EPA Response to Comment #1. All other flow measurements recently collected by the permittee were not modified.

Date of Measurement	**Elk Creek Actual Flow (cfs)**	**Elk Creek Adjusted Flow (cfs)**
05/07/1986	86	85.8
05/28/1986	46.2	46
06/18/1986	14.1	13.9
07/02/1986	7.8	7.6
07/23/1986	5.4	5.2
08/06/1986	3.4	3.2
08/28/1986	2.6	2.4
09/24/1986	5.7	5.5
08/29/2013	45.9	--
09/24/2013	18.5	--
10/21/2013	36.3	--
05/19/2014	355	--

APPENDIX B: Compliance Schedule

The NPDES regulations at 40 CFR § 122.47 allow permit writers to establish schedules of compliance to give permittees additional time to achieve compliance with the CWA and applicable regulations. Compliance schedules may only be allowed if the State's water quality standards or implementing regulations allow for compliance schedules.

Schedules developed under this provision must require compliance by the permittee as soon as possible, but may not extend the date for final compliance beyond compliance dates established by the CWA.

When the compliance schedule is longer than 1 year, federal regulations require that the schedule must set forth interim requirements and the dates for their achievement. The time between the interim dates must generally not exceed 1 year, and when the time necessary to complete any interim requirement is more than one year, the schedule must require reports on progress toward completion of these interim requirements.

EPA policy states that, in order to grant a compliance schedule, a permitting authority must make a reasonable finding that the permittee cannot comply with the effluent limit immediately upon the effective date of the final permit (see the US EPA NPDES Permit Writers' Manual at Section 9.1.3.). The Final Permit provides a compliance schedule to allow time for the Permittee to come into compliance with the new WQBELs for ammonia and temperature. See Response to Comment #3. A permit writer may not establish a compliance schedule in a permit for TBELs because the statutory deadlines for meeting technology standards (i.e., secondary treatment standards and effluent guidelines) have passed. Therefore, no compliance schedule is provided for BOD_5.

The State of Idaho has a compliance schedule authorizing provision which reads, "discharge permits for point sources may incorporate compliance schedules which allow a discharger to phase in, over time, compliance with water quality-based effluent limitations when new limitations are in the permit for the first time" (IDAPA 58.01.02.400.03). The State of Idaho has authorized compliance schedules for the new WQBELs for ammonia and temperature in the Elk City final permit in its final Clean Water Act Section 401 certification of this permit.

The Permittee is currently considering three options to come into compliance with the effluent limits[1]:

- Upgrade the existing lagoon and discharge to Elk Creek
- Upgrade the existing lagoon and land apply
- Relocate the lagoon system and discharge to Elk Creek or land apply

The permittee does not believe mechanical treatment is a viable option, but the facility is still in the initial planning process.

In addition to the regulations and policy discussed above, EPA also considered the following in developing the compliance schedule for the Elk City WWTF:

- The permittee is currently under a compliance agreement schedule (CAS)[3] with IDEQ related to the State seepage test requirements. As the result of the CAS, the permittee may need to decommission the existing lagoons and construct new lagoons. The permittee would need to acquire land for the new lagoons. In addition to the potential land acquisition for the new lagoons, the permittee would need to acquire land for land application. Therefore land acquisition is included as a compliance task.
- The permittee has identified excessive Inflow and Infiltration (I/I) in the collection system as a primary problem with the treatment plant efficiency. Therefore, an I/I reduction is addressed in the compliance schedule.

Interim Limits

The federal regulation 40 CFR 122.47 states that "…if a permit establishes a schedule of compliance which exceeds 1 year from the date of permit issuance, the schedule shall set forth interim requirements and the dates for their achievement." The federal regulation 40 CFR 122.44(l)(1) states that "…when a permit is renewed or reissued, interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit."

The final permit has interim effluent limits for both ammonia and temperature.

For Total Ammonia, the interim limits are equal to the less stringent tiered flow-based limits shall be used as interim limits for the duration of the compliance schedule. The DMR data collected by the facility in the last 5 years indicates that the permittee can meet these limits upon the effective date of the permit.

For Temperature, the 95th percentile value was determined from the DMR values of the last 5 years. The DMR data collected by the facility in the last 5 years indicates that the permittee can meet the Maximum Daily Limit (MDL) temperature limit upon the effective date of the permit.

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[3] Elk City Water & Sewer Association Compliance Agreement Schedule dated June 2nd 2014, Pursuant to Idaho Code §39-116A