TECHNICALLY BASED LOCAL LIMIT STUDY
MCKINLEYVILLE COMMUNITY SERVICES DISTRICT

Prepared for:

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ACRONYMS AND DEFINITIONS

ADRE	Average Daily Removal Efficiency.
AHL	Allowable Headworks Loading. The estimated maximum loading of a pollutant that can be received at a POTW's headworks that should not cause a POTW to violate a particular treatment plant or environmental criterion. AHLs are developed to prevent interference or pass through.
FSE	Food Service Establishment
FES	Freshwater Environmental Services
IU	Industrial Users. Non-domestic source of pollutants into a POTW regulated under Section 307(b), (c) or (d) of the Clean Water Act.
LCS	Laboratory Control Spike
LCSD	Laboratory Control Spike Duplicate
MAHL	Maximum Allowable Headworks Loading. The estimated maximum loading of a pollutant that can be received at a POTW's headworks without causing pass through or interference. The most protective (lowest) of the AHLs (see definition) estimated for a pollutant.
MAIL	Maximum Allowable Industrial Loading. The estimated maximum loading of a pollutant that can be received at a POTW's headworks from all permitted industrial users and other controlled sources without causing pass through or interference. The MAIL is usually calculated by applying a safety factor to the MAHL and discounting for uncontrolled sources, hauled waste and growth allowance.
MGD	Million Gallons Per Day
MS	Matrix Spike
MSD	Matrix Spike Duplicate
NPDES	National Pollution Discharge Elimination System
POC	Pollutant of Concern. Any pollutant that might reasonably be expected to be discharged to the POTW in sufficient amounts to pass through or interfere with the works, contaminate its sludge, cause problems in its collection system, or jeopardize its workers.
POTW	Publicly Owned Treatment Works
SIU	Significant Industrial User

SUO	Sewer Use Ordinance
WWMF	Wastewater Management Facility
WAS	Waste Activated Sludge

LIST OF APPENDICES

1.0 INTRODUCTION

Federal water quality regulations require local governments to prevent the introduction of certain pollutants into their Publicly Owned Treatment Works (POTW), in order to prevent interference with wastewater treatment processes and pass through of pollutants, and provide for the use and disposal of municipal biosolids (sludge). This is accomplished through development and implementation of specific effluent limits (local limits) for industrial users. These limits are developed to reflect the specific needs and capabilities at individual POTWs and protect the waterbody to which the POTW discharges.

Freshwater Environmental Services (FES) assisted McKinleyville Community Services District (MCSD), (the District) to develop a Local Limits Update Workplan for McKinleyville Community Services District Wastewater Management Facility (WWMF), dated September 12, 2019.

The California Regional Water Quality Control Board North Coast Region reviewed approved implementation of the workplan in an email dated December 12, 2019. Sampling was generally performed per the workplan updated in 2019.

The workplan, sampling, and study were prepared and conducted following the general principals contained in EPA's 2004 Local Limits Development Guidance (EPA, 2004).

This Study contains the following elements:

- The Wastewater Management Facility (WWMF) and collection system is described in Section 2.0;
- The existing local limits and development approach is presented in Section 3.0;
- The pollutants of concern are presented in Section 4.0;
- The sampling and analysis are described in Section 5.0;
- Removal efficiencies are calculated in Section 7.0;
- Maximum allowable headworks loading (MAHL) is calculated in Section 7.0;
- Allocation of MAHL to Industrial Users is presented in Section 8.0; and
- The references cited in this report are listed in Section 9.0.

2.0 WASTEWATER MANAGEMENT FACILITY DESCRIPTION

2.1 Facility, Location and Ownership

MCSD owns and operates the Wastewater Management Facility (WWMF) located at 675 Hiller Road in McKinleyville, Humboldt County, California. Discharges from the WWMF are regulated by National Pollution Discharge Elimination System (NPDES) permit number **CA0024490.**

2.2 Facility Description

During the period from October 1 through May 14, discharges of secondary treated wastewater to the Mad River may occur only when the flow of the Mad River, as measured at USGS Gauge No. 11-4810.00 in the Mad River at the Highway 299 overpass, is greater than 200 cubic feet per second.

During dry weather, reclaimed effluent is primarily applied to pasture lands for production of fodder crops at two ranches (Fischer and Pialorsi Ranch, both owned by the District). A portion is discharged to percolation ponds or recycled for dry-weather maintenance of the Hiller storm water treatment wetland, the adjacent forested area, or irrigation of agricultural lands.

2.3 Collection System Description

The MCSD collection system has some unique characteristics that affect the local limits approach. The collection system is dominated by domestic/commercial users. There are currently three Significant Industrial Users (SIU), Six-Rivers Brewery, Steve's Septic, and Auto Spa Carwash. Commercial dischargers include Food Service Establishments (FSEs) that generate Fats, Oils and Greases (FOG). Beyond FSEs, commercial users are limited in number and potential impact. Non-FOG commercial users with the potential to impact the system are limited.

3.0 EXISTING LOCAL LIMITS AND DEVELOPMENT APPROACH

The MCSD's existing local limits are shown in the Table below. The existing MCSD local limits were developed based on the report titled: *McKinleyville Community Services District Technical Basis for Wastewater Limits* dated January 10, 2012 and are shown in the table below. Due to significant changes in treatment technology related to the WWMF upgrade, MCSD has reevaluated the existing local limits to determine if they are still protective of the POTW or need to be modified.

EXISTING LOCAL LIMITS[1]

Pollutant	Daily Maximum Limit (mg/L)
Conventional	
BOD	354
Oil and Grease (petroleum and vegetable)	100
Metals	
Copper	0.13
Lead	0.0055
Molybdenum	0.0047
Nickel	0.0052
Zinc	0.135
Volatile / Semi-Volatile Organic Compounds	
bis(2-ethylhexyl)phthalate	0.0235

1 - MCSD Resolution 2012-13, Rule 24.09.01.

MCSD used the Maximum Allowable Headworks Loading (MAHL) calculation methodology generally described in EPA's 2004 *Local Limits Development Guidance* to establish its revised local limits. The MAHL methodology includes four basic steps:

- Determine the Pollutants of Concern (POC);
- Collect and analyze data;
- Calculate MAHLs for each POC; and
- Designate and implement the local limits.

MCSD used a spreadsheet-based model developed by Region 5 U.S. Environmental Protection Agency's (USEPA) to facilitate calculation of AHLs (Allowable Headworks Loading), MAHLs, and the proposed local limits are consistent with the methodology contained in EPA's 2004 *Local Limits Development Guidance.*

After completing the MAHL methodology, local limits were adjusted to address collection system concerns and practical considerations.

4.0 POLLUTANTS OF CONCERN

A Pollutant of Concern (POC) is any pollutant that may be discharged to the POTW in sufficient amounts to pass through treatment processes, interfere with treatment processes, jeopardize worker health and safety, or cause operational problems. POCs may also include pollutants in the applicable NPDES permit or biosolids quality regulations. In order to determine the POCs to be evaluated, MCSD considered the following:

- MCSD NPDES permit requirements;
- Biosolids quality regulations;
- Treatment process inhibition;
- Water Quality Criteria (Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California, 2005);
- Known Industrial Users;
- Sampling and violation history at the WWMF;
- California hazardous waste criteria;
- Current local limits; and
- EPA guidance documents.

Based on an evaluation of all compounds detected in influent samples since 2011, all compounds detected in effluent samples since the treatment system was optimized in (November 2017), a list of potential POCs with driving factors for further consideration was developed and resulted in a list of final POCs shown in the table below:

Potential Pollutant of Concern	Potential Pollutant of Concern	Reason For Inclusion
Conventional		
Biochemical Oxygen Demand (BOD)	X	EPA 15 POCs, NPDES limit
Total Suspended Solid (TSS)	X	EPA 15 POCs, NPDES limit
Nitrate	X	NPDES limit and detections in effluent
Metals and Cyanide		
Arsenic	X	EPA 15 POCs
Cadmium	X	EPA 15 POCs
Total Chromium	X	EPA 15 POCs
Copper	X	EPA 15 POCs
Cyanide	X	EPA 15 POCs
Lead	X	EPA 15 POCs
Molybdenum	X	EPA 15 POCs
Mercury	X	EPA 15 POCs
Nickel	X	EPA 15 POCs
Selenium	X	EPA 15 POCs
Silver	X	EPA 15 POCs
Zinc	X	EPA 15 POCs
Volatile / Semi-Volatile Organic Compounds		
Bis(2-ethylhexyl)phthalate	X	Existing local limit, detected in effluent
carbon tetrachloride	X	NPDES limit

Ammonia nitrogen enters the WWMF and is converted into various forms of nitrogen through chemical processes which include formation of nitrate. Since nitrate formation is a function of, and byproduct of treatment, it is not appropriate to calculate local limits for nitrate based on allowable headworks loading. Nitrate will not be further discussed in this local limits analysis.

5.0 SAMPLING AND MONITORING

All sampling was conducted under normal operating conditions during dry weather over the period from July 14, 2020 to July 22, 2020. Influent samples were collected from July 14, 2020 to July 20, 2020. Effluent samples were collected from July 16, 2020 to July 22, 2020.

Sampling followed the flow of the treatment process based on the hydraulic residence time (i.e., effluent sampling was conducted after influent sampling and lagged by the hydraulic residence time of approximately 48 hours). Specific sampling for local limits development was determined following an extensive review of existing data and potential non-domestic sources. The District also provided actual flow data regarding total POTW commercial/domestic wastewater flow, industrial wastewater flow, and flow of waste activated sludge (WAS). The District used this data to calculate the load of each POC coming into the POTW. Wastewater samples were 24-hour, time-composited samples. Time composite samples consisted of hourly subsamples collected over a 24-hour period. Sulfide and oil and grease samples were grab composite samples. Individual grab samples that were collected for the grab composite samples were handled, preserved, and composited in accordance with the guidance on pages 4-9 of the USEPA Guidance document. Aliquots were collected in separate containers, preserved appropriately, and composited manually at the laboratory to create a single sample for analysis.

MCSD collected wastewater samples for seven consecutive days to characterize the changes in loading. WAS was sampled for 2 days, one weekday and one weekend day.

The local limits sampling locations include:

Treatment Plant Sampling:

- Headworks Influent (1 location)
- Final Effluent (1 location)
- Biosolids (WAS)

Collection System Sampling:

- Domestic/commercial Collection System, Manhole 1-20 samples are labeled “North Collection System” and samples from the Fischer Lift Station are labeled “South Collection System”.)
- Industrial data was based on existing data from the three Significant Industrial Users (SIUs).

5.1 Treatment Plant Sampling

Influent samples and effluent samples were collected over 7 consecutive days separated by 48 hours (calculated hydraulic residence time) and analyzed for the POCs. Influent sampling was collected at the headworks prior to mixing with other wastewater streams. Effluent samples were collected from the end of the Chlorine Contact Chamber at Effluent discharge point EFF-001.

WAS was sampled just prior to discharge into the Biosolids Basin over a two-day period within the week of influent/effluent sampling. The WAS samples were manually composited over eight hours using equal hourly aliquots. WAS aliquots were collected into one container which were stored in the wastewater laboratory refrigerator. The eight-hour WAS composite samples were homogenized and divided into the appropriate laboratory bottles at the end of each day and stored in the lab refrigerator overnight.

Sampling documentation did not note any infrequent, yet routine, activities occur during the sampling period. Examples of infrequent, yet routine, activities include receipt of hauled waste, tank cleaning, or other maintenance activities that might affect wastewater characteristics.

5.2 Collection System Sampling

Samples from two locations within the collection system (Manhole 1-20 and Fischer Lift Station) were collected for seven consecutive days and analyzed for the POCs. Manhole 1-20 samples are labeled “North Collection System” and samples from the Fischer Lift Station are labeled “South Collection System”. The samples were from locations of domestic/commercial discharge. The sampling within the collection system was performed within the same seven-day period of influent sampling at the treatment plant.

5.3 Sample Handling

Wastewater samples were collected in laboratory provided containers labeled and immediately placed in an ice-cooled chest for delivery to an analytical laboratory certified by the California Department of Health Services for the required analyses. All sample handling included chain-of-custody documentation.

5.4 Analytical Methods and Results

All wastewater samples were analyzed utilizing the methods indicated in the table below:

Analyte	Method	MDL (µg/L)	RL (µg/L)	Holding Time	Container/ preservation
Arsenic	EPA 200.8 Rev 5.4	1.5	5	90 days	500 mL HDPE with HNO_3
Cadmium		0.17	5		
Chromium		0.21	5		
Copper		0.72	5		
Lead		0.082	5		
Molybdenum		0.063	5		
Nickel		1.1	5		
Selenium		4	10		
Silver		0.73	5		
Zinc		1.1	10		
Mercury	EPA 245.1	0.26	1	28 days	
Carbon tetrachloride	EPA 624	0.44	1	7 days	40 mL VOA (3) with HCL
bis(2-ethylhexyl)phthalate	EPA 606	1.5	4	7 days	1 L amber glass
Cyanide	SM 4500-CN E	0.007 mg/L	0.02 mg/L	14 days	1 L HDPE with NaOH
BOD	SM 5210B	2 mg/L	2 mg/L	48 hrs	1/2 gallon HDPE
TSS	SM 2540D	0.6 mg/L	1 mg/L	7 days	

All biosolid samples (WAS) were analyzed utilizing the methods indicated in the table below:

Analyte	Method	MDL (mg/kg)	RL (mg/kg)	Holding Time	Container/ preservation
Arsenic	EPA 6020	0.83	2	90 days	4 oz glass
Cadmium		0.012	1		
Chromium		1.3	2		
Copper		0.13	1		
Lead		0.38	1		
Molybdenum		0.2	1		
Nickel		0.14	1		
Selenium		0.98	2		
Silver		0.27	1		
Zinc		0.15	1		
Mercury	EPA 245.1	0.0088	0.1	28 days	
Cyanide	EPA 9014	0.021	0.5	14 days	4 oz glass

The laboratory results for each POC are included in Appendix A.

5.5 Quality Assurance/Quality Control

Following receipt of the laboratory analytical report all laboratory QC batches were checked to ensure that the correct number of samples were analyzed, the holding times were not exceeded, surrogate recoveries were within stated control limits, and that Laboratory Method Blanks, Matrix Spikes (MSs), Matrix Spike Duplicates (MSDs), Laboratory Control Samples (LCSs) and Laboratory Control Sample Duplicates (LCSDs) were all tested and within the laboratory-provided acceptable limits.

The only QA/QC issue identified was some of the surrogate recoveries for Pyrene-d10 for EPA Method 606 were below the lower acceptance limit. The surrogate recoveries for the quality control samples (laboratory control spikes and laboratory control spike duplicates) were within acceptance limits. This indicates the low recovery may be due to matrix effects from the sample.

6.0 FLOW DATA

To calculate MAHLs and Maximum Allowable Industrial Loading (MAILs), data about the flow of various wastestreams is required to allow mass quantities to be computed. Required flow data are described in the following sections.

6.1 Total POTW Flow

The actual average daily influent flow over the sampling period (July 14, 2020 to July 22, 2020) (0.858 Million gallons per day (MGD) was used as Total POTW flow (Q_{potw}) for loading calculations as shown below:

$$Q_{potw} = 0.858 \text{ MGD}$$

6.2 WAS Flow to Disposal

The maximum average daily flow of all volume of WAS from digester to holding pond for the past 12 months (Jan 2019 – Dec 2019) (0.043 MGD) was used as (Q_{sldg}) for loading calculations. Percent solids were estimated at 1%.

$$Q_{sldg} = 0.043 \text{ MGD}$$

6.3 Flows from Controlled Sources

MCSD has three significant industrial users (SIUs) that discharged wastewater estimated at an average of 0.019 MGD in 2019.

6.4 Flows from Uncontrolled Sources

Flows from uncontrolled sources used in loading calculations was estimated by subtracting the 2019 SIU flow from the influent flow resulting in 0.839 MGD domestic/commercial.

7.0 CALCULATING THE MAXIMUM ALLOWABLE HEADWORKS LOADING

The Maximum Allowable Headworks Loading (MAHL) is the estimated maximum loading of a pollutant that can be received by a POTW without inhibiting treatment processes or exceeding any applicable environmental criteria. MCSD followed the steps below to determine the MAHL for each POC:

1. Determine the removal efficiencies for each POC;
2. Calculate the Allowable Headworks Loading (AHL) for each POC, for all applicable environmental criteria, based on influent flow rates and POC removal efficiencies; and
3. Designate the MAHL as the strictest AHL.

The District used a spreadsheet-based model developed by the U.S. Environmental Protection Agency's (USEPA) Region 5 to facilitate calculation of AHLs, MAHLs, and the proposed local limits (Appendix B).

7.1 Calculating Removal Efficiencies

The District calculated POTW removal efficiency utilizing the formula for Average Daily Removal Efficiency (ADRE).

Equation 5.1: Removal Efficiency Calculated Using Average Daily Removal Efficiency

$$R_{potw} = \frac{\Sigma(I_n - E_{potw,n})/I_n}{N}$$

$$R_{prim} = \frac{\Sigma(I_n - E_{prim,n})/I_n}{N}$$

$$R_{sec} = \frac{\Sigma(I_n - E_{sec,n})/I_n}{N}$$

Where:

R_{potw} =	Plant removal efficiency from headworks to plant effluent, as decimal
R_{prim} =	Removal efficiency from headworks to primary treatment effluent, as decimal
R_{sec} =	Removal efficiency from headworks to secondary treatment effluent, as decimal
I_n=	POTW influent pollutant concentration at headworks , mg/L
$E_{potw,\ n}$ =	POTW effluent pollutant concentration
$E_{prim,\ n}$ =	Primary treatment effluent pollutant concentration, mg/L
$E_{sec,n}$ =	Secondary treatment effluent pollutant concentration, mg/L
n =	Paired observations, numbered 1 to N

ADREs were not calculated for the POCs listed below for the following reasons:

Pollutant of Concern	Comments from Data Set
Priority Pollutants Metals, sulfur compounds & Cyanide	
Arsenic	All influent and effluent samples were ND, no removal efficiencies were calculated.
Cadmium	All influent and effluent samples were ND or J-flagged as estimates, no removal efficiencies were calculated.
Lead	All influent and effluent samples were J-flagged as estimates no removal efficiencies were calculated.
Mercury	All influent and effluent samples were ND, no removal efficiencies were calculated.
Molybdenum	All influent and effluent samples were J-flagged as estimates no removal efficiencies were calculated.
Nickel	All influent and effluent samples were J-flagged as estimates no removal efficiencies were calculated.
Selenium	All influent and effluent samples were ND, no removal efficiencies were calculated.
Silver	All influent and effluent samples were ND or J-flagged as estimates, no removal efficiencies were calculated.
Organic Compounds	
Carbon tetrachloride	All influent and effluent samples were ND, no removal efficiencies were calculated.

ADREs for the remaining POCs are listed below:

Pollutant of Concern	Removal Efficiency	Method
Conventional		
Biochemical Oxygen Demand	98.81	ADRE
Non-Filterable Residue (TSS)	99.55	ADRE
Priority Pollutants Metals		
Copper	93.63	ADRE
Zinc	72.27	ADRE
Organic Compounds		
bis(2-ethylhexyl phthalate)	80.18[1]	ADRE

1-All effluent results were ND. 1/2 minimum detection limit was used to calculate removal efficiency.

7.2 Calculating Allowable Headworks Loading

Allowable Headworks Loading (AHL) is the estimated maximum loading of a pollutant that can be received at a POTW's headworks that should not cause a POTW to violate a particular treatment plant or environmental criterion. AHLs are developed to prevent interference or pass through.

After collecting and evaluating the necessary data, MCSD calculated AHLs for each POC based on its treatment efficiency and on environmental criteria for pass through and interference. AHLs were calculated for each applicable criterion including:

- Effluent based criteria (NPDES ORDER NO. R1-2018-0032);
- Most stringent water quality criteria (from NPDES Reasonable Potential Analysis RPA);
- Sludge based criteria (40 CFR Part 503);
- Published inhibition factors for activated sludge; and
- Published inhibition factors for nitrification.

The following formulas were used to calculate AHLs:

Allowable Headworks Loading (AHL)
Based on NPDES Permit Limits

$AHL_{npdes} = (8.34)(C_{npdes})(Q_{potw}) / (1 - (R_{potw} / 100))$

AHL_{npdes} = AHL based on NPDES permit limit, lb/day
C_{npdes} = NPDES permit limit, mg/L
Q_{potw} = POTW average flow rate, MGD
R_{potw} = Plant removal efficiency from headworks to effluent, as percent.
8.34 = Conversion factor

AHL Based on Water Quality Criteria

$AHL_{wq} = 8.349(C_{wq}(Q_{str}+Q_{potw})-(C_{str}*Qsrt)) / (1 - (R_{potw} / 100))$

AHL_{wq} = AHL based on water quality criteria, lb/day
C_{str} = Receiving stream background concentration, mg/L (assumed to be zero since WQOs are specific discharge limits and not based on maximum cumulative loading)
C_{wq} = State water quality criteria, mg/L
Q_{str} = Receiving stream (upstream) flow rate, MGD (assumed to be 30 times the Qpotw since the previous NPDES permit had a 30:1 zone of initial dilution)
Q_{potw} = POTW average flow rate, MGD
R_{potw} = Plant removal efficiency from headworks to effluent, as percent.
8.34 = Conversion factor

AHLs Based on Sludge Land Application and Surface Disposal Criteria (for conservative pollutants)

$AHL_{sldg} = (8.349)(C_{sldgstd})(PS/100)(Q_{sldg})(G_{sldg}) / R_{potw}$

AHL_{sldg} = AHL based on sludge, lb/day
$C_{sldgstd}$ = Sludge standard, mg/kg dry sludge
PS =Percent solids of sludge to disposal, as percent
Q_{sldg} = Total sludge flow rate to disposal, MGD
R_{potw} = Plant removal efficiency from headworks to effluent, as percent.
G_{sldg} = Specific Gravity of sludge, kg/L
8.34 = Conversion factor

AHLs for the POCs under review are indicated below:

Pollutant of Concern	Allowable Headworks Loading lb/day	Criteria
BOD	18,040	NPDES Monthly Limit
BOD	4,569	Kennedy/Jenks Consultants 2030 Loading Capacity (Max Monthly lbs/day)
TSS	429,343	NPDES Monthly Limit
TSS	5,664	Kennedy/Jenks Consultants 2030 Loading Capacity (Max Monthly lbs/day)
Copper	5.62	Most Stringent Water Quality Objective (from NPDES RPA)
Copper	112.33	Activated Sludge Inhibition Level
Copper	5.62	Nitirfication Inhibition Level
Copper	5.61	USEPA 503 Sludge Regulations
Zinc	1.60	Most Stringent Water Quality Objective (from NPDES RPA)
Zinc	7.74	Activated Sludge Inhibition Level
Zinc	2.06	Nitirfication Inhibition Level
Zinc	13.57	USEPA 503 Sludge Regulations
bis(2-Ethylhexyl) phthalate	0.065	NPDES Monthly Limit
bis(2-Ethylhexyl) phthalate	0.065	Most Stringent Water Quality Objective (from NPDES RPA)

7.3 Designation of Maximum Allowable Headworks Loading

MAHL is the estimated maximum loading of a pollutant that can be received at a POTW's headworks without causing pass through or interference. MAHLs are the most protective (lowest) of the AHLs (see definition) estimated for a pollutant. The table below lists the MAHLs for the POCs and criteria:

Pollutant of Concern	Maximum Allowable Headworks Loading lb/day	Criteria
BOD	4,569	Kennedy/Jenks Consultants 2030 Loading Capacity (Max Monthly lbs/day)
TSS	5,664	Kennedy/Jenks Consultants 2030 Loading Capacity (Max Monthly lbs/day)
Copper	5.61	USEPA 503 Sludge Regulations
Zinc	1.60	Most Stringent Water Quality Objective (from NPDES RPA)
bis(2-Ethylhexyl) phthalate	0.065	NPDES Monthly Limit

7.4 Calculation of Maximum Allowable Industrial Loading

Maximum Allowable Industrial Loading (MAIL) is the estimated maximum loading of a pollutant that can be received at a POTW's headworks from all industrial users and other controlled sources without causing pass through or interference. The MAIL was calculated by applying a 10% safety/growth factor to the MAHL and discounting for uncontrolled sources.

The formula for calculating MAIL is included below:

Maximum Allowable Industrial Loading

$MAIL = MAHL(1 - (SF / 100)) - L_{unc}$

MAIL = Maximum allowable industrial loading, lb/day
MAHL = Maximum allowable headworks loading, lb/day
SF = Safety factor, percent
L_{unc} = Loading from uncontrolled sources (domestic)

The table below contains the calculated MAILs for the POCs:

Pollutant of Concern	Maximum Allowable Headworks Loading lb/day	Criteria	Maximum Allowable Industrial Loading lb/day
BOD	4,569	Kennedy/Jenks Consultants 2030 Loading Capacity (Max Monthly lbs/day)	1,936
TSS	5,664	Kennedy/Jenks Consultants 2030 Loading Capacity (Max Monthly lbs/day)	4,132
Copper	5.61	USEPA 503 Sludge Regulations	4.14
Zinc	1.60	Most Stringent Water Quality Objective (from NPDES RPA)	0.117
bis(2-Ethylhexyl) phthalate	0.065	NPDES Monthly Limit	0.028

8.0 DESIGNATING AND IMPLEMENTING LOCAL LIMITS

EPA recommends that local limits are needed when average influent loading of a toxic pollutant exceeds 60 percent of the MAHL.

8.1 Actual Loadings vs. MAHL

The formula below is used for calculating the percentage of MAHL being received at the POTW:

Actual Loading vs. MAHL Calculation

$L_{\%} = (L_{INFL}/MAHL)\ 100$

$L_{\%}$ = Percentage of the MAHL

L_{INFL} = Current average influent Loading, lb/day

MAHL = Calculated MAHL lb/dy

The above equation has been used to calculate current loading as a percent of MAHL as shown in the table below:

Pollutant of Concern (POC)	Maximium Allowable Headworks Loading (lbs/day) (MAHL)	Average Influent Concentration mg/l	POTW Flow (MGD) (Qpotw)	Average Influent (lbs/day)	Loading as a Percent of of MAHL
BOD	4569	473	0.858	3384.656	74%
TSS	5664	294	0.858	2103.782	37%
Copper	5.61	0.13	0.858	0.930	17%
Zinc	1.60	0.189	0.858	1.352	85%
bis(2-Ethylhexyl) phthalate	0.06	0.00431	0.858	0.031	47%

Yellow highlighted rows indicate pollutants with current loading greater than 60% of the MAHL.

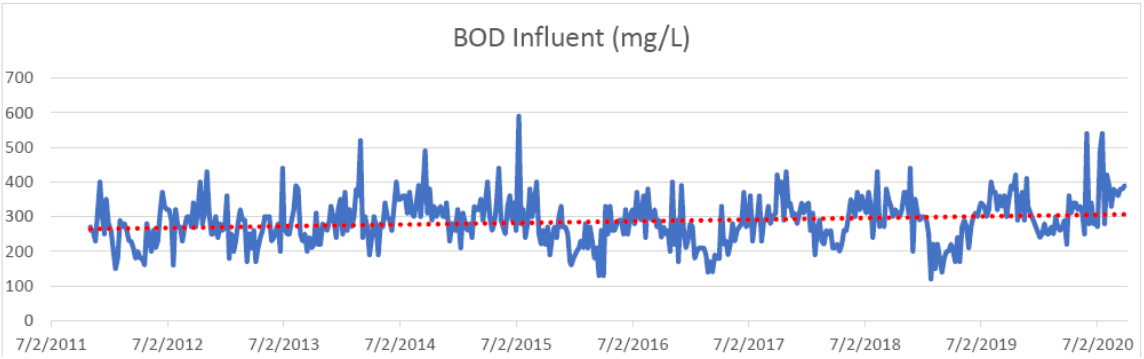
The BOD sampling results that indicate a BOD loading at 74% of the MAHL is based on a 1-week sampling event, however it does not represent a larger window of testing results. The average BOD loading over the last 9 months averaged 2,426 lbs./day which would put the District loading as a percent of MAHL at 53% vs 74%.

EPA recommends that local limits are needed when the average influent loading of a toxic pollutant exceeds 60 percent of the MAHL (EPA, 2004).

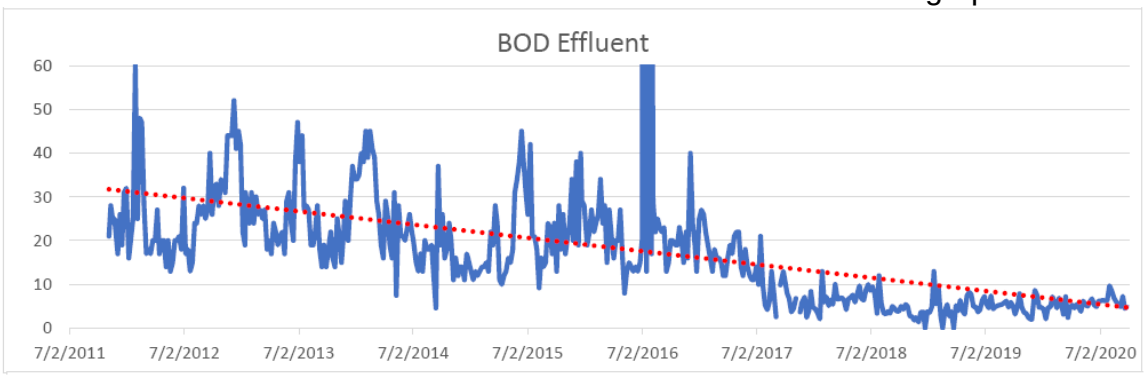
The average actual loading of two pollutants exceed 60% of the MAHL, including BOD and zinc.

8.2 Biological Oxygen Demand

Historic BOD influent concentrations and trends are shown in the graph below:

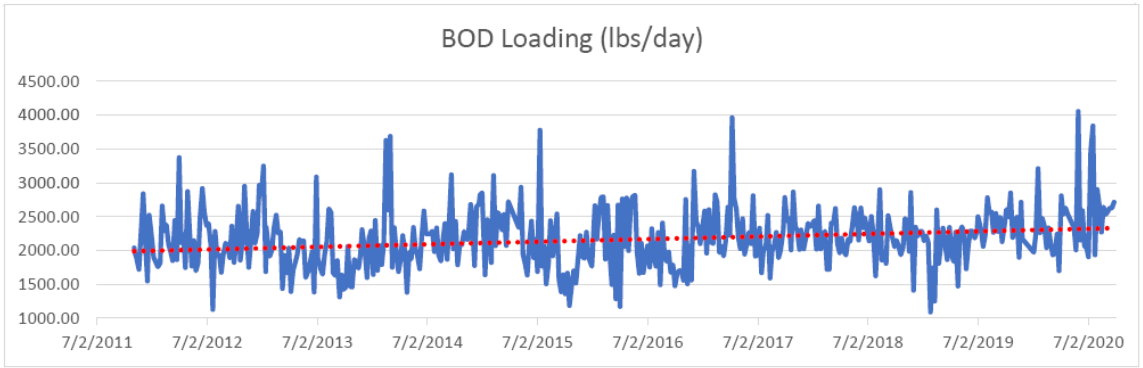


Historic BOD effluent concentrations and trends are shown in the graph below:



The effect of the new WWMF (constructed in late 2017) is shown by the overall reduction of BOD concentrations and variability.

Historic BOD loading and trends are shown in the graph below:



Based on the data above, BOD loading has slightly increased in the past 9 years. Kennedy/Jenks Consultants designed the current WWMF to accommodate the 2030 projected BOD loading. The 2030 maximum monthly BOD loading was projected to be **4,569 pounds/day** which is used for this analysis as a

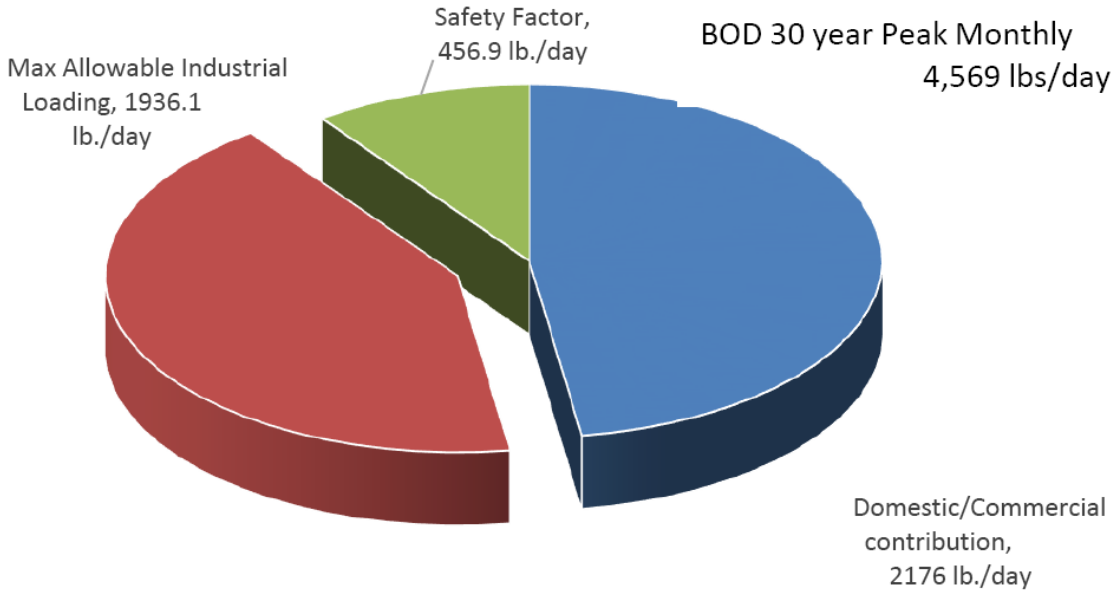
conservative MAHL. Domestic/commercial BOD loading was calculated during the local limits study as shown below:

Current Loading from Local Limits Data

Average Inf Conc mg/l	473
Flow MGD	0.858
Lbs/day BOD	3384.7

Based on the BOD loading calculated from the local limits study, the 2030 BOD loading projections provided by Kennedy/Jenks Consultants, and a 10% growth and safety factor, the MAIL for BOD 1,936 lbs./day as shown in the chart and graph below:

BOD	MAHL		%MAHL
30 year Max Monthty ppd (KJC)	4569	lbs/day	100%
Domestic/Commercial contribution	2176	lbs/day	48%
Max Allowable Industrial Loading	1936.1	lbs/day	42%
Safety Factor	456.9	lbs/day	10%



8.3 Proposed Local Limits

The District has decided to allocate MAILs uniformly among all IUs and place uniform concentration limits in the local SUO/resolution for zinc. The District has decided to change from a concentration based local limit for BOD to a mass allocation limit with a MAIL established at 1,936 lbs/day. Changes to existing local limits and new local limits are proposed below:

> *In EPA's view, a POTW should not use current loading as a percent of MAHL in deciding whether to continue to control a particular pollutant by a local limit because the enforcement of the local limit may be the reason that the pollutant loading has been reduced or is no longer causing problems. If the local limit were removed, industrial users (IUs) may discontinue their use of wastewater pretreatment and POTW loadings may increase above the threshold in the criteria (EPA, 2004).*

There are only three SIUs with discharge permits being monitored. There are no IUs implementing pretreatment for the pollutants being proposed for local limit elimination and an increase in loading of are not likely nor anticipated. The proposed changes to existing local limits are listed in the table below:

Pollutant	Current Daily Maximum Limit [1] (mg/L)	Proposed Daily Maximum Limit (mg/L)
Conventional		
BOD	354	MAIL of 1,936 lbs/day (to be allocated as mass limits through Individual Industrial User Permits)
Oil and Grease (petroleum and vegetable)	100	100
Metals		
Copper	0.13	Eliminate
Lead	0.0055	Eliminate
Molybdenum	0.0047	Eliminate
Nickel	0.0052	Eliminate
Zinc	0.135	0.741
Volatile / Semi-Volatile Organic Compounds		
bis(2-ethylhexyl)phthalate	0.0235	Eliminate

1 - MCSD Resolution 2012-13, Rule 24.09.01.

9.0 REFERENCES

Freshwater Environmental Services, 2012, Crescent City Technical Basis for Wastewater Limits: January

United States Environmental Protection Agency, 2004, *Local Limits Development Guide*: July.

APPENDIX A

LABORATORY RESULTS

Biochemical Oxygen Demand	South Collection System (Composite)	7/14/2020	620	mg/L		2	2
Biochemical Oxygen Demand	South Collection System (Composite)	7/15/2020	370	mg/L		2	2
Biochemical Oxygen Demand	South Collection System (Composite)	7/16/2020	280	mg/L		2	2
Biochemical Oxygen Demand	South Collection System (Composite)	7/17/2020	220	mg/L		2	2
Biochemical Oxygen Demand	South Collection System (Composite)	7/18/2020	170	mg/L		2	2
Biochemical Oxygen Demand	South Collection System (Composite)	7/19/2020	260	mg/L		2	2
Biochemical Oxygen Demand	South Collection System (Composite)	7/20/2020	260	mg/L		2	2
Cadmium	Eff-001 (Composite)	7/16/2020	0.17	µg/L	ND	5	0.17
Cadmium	Eff-001 (Composite)	7/17/2020	0.17	µg/L	ND	5	0.17
Cadmium	Eff-001 (Composite)	7/18/2020	0.17	µg/L	ND	5	0.17
Cadmium	Eff-001 (Composite)	7/19/2020	0.17	µg/L	ND	5	0.17
Cadmium	Eff-001 (Composite)	7/20/2020	0.17	µg/L	ND	5	0.17
Cadmium	Eff-001 (Composite)	7/21/2020	0.17	µg/L	ND	5	0.17
Cadmium	Eff-001 (Composite)	7/22/2020	0.17	µg/L	ND	5	0.17
Cadmium	Inf-001 (Composite)	7/18/2020	0.5	µg/L	J	5	0.17
Cadmium	Inf-001 (Composite)	7/14/2020	0.2	µg/L	J	5	0.17
Cadmium	Inf-001 (Composite)	7/15/2020	0.17	µg/L	ND	5	0.17
Cadmium	Inf-001 (Composite)	7/16/2020	0.17	µg/L	ND	5	0.17
Cadmium	Inf-001 (Composite)	7/17/2020	0.17	µg/L	ND	5	0.17
Cadmium	Inf-001 (Composite)	7/19/2020	0.17	µg/L	ND	5	0.17
Cadmium	Inf-001 (Composite)	7/20/2020	0.17	µg/L	ND	5	0.17
Cadmium	North Collection System (Composite)	7/14/2020	0.17	µg/L	ND	5	0.17
Cadmium	North Collection System (Composite)	7/15/2020	0.4	µg/L	J	5	0.17
Cadmium	North Collection System (Composite)	7/16/2020	0.17	µg/L	ND	5	0.17
Cadmium	North Collection System (Composite)	7/17/2020	0.17	µg/L	ND	5	0.17
Cadmium	North Collection System (Composite)	7/18/2020	0.17	µg/L	ND	5	0.17
Cadmium	North Collection System (Composite)	7/19/2020	0.3	µg/L	J	5	0.17
Cadmium	North Collection System (Composite)	7/20/2020	0.17	µg/L	ND	5	0.17
Cadmium	RAS/WAS	7/17/2020	5	µg/L	J	5	0.17
Cadmium	RAS/WAS (Composite)	7/16/2020	4	µg/L	J	5	0.17
Cadmium	South Collection System (Composite)	7/14/2020	0.17	µg/L	ND	5	0.17
Cadmium	South Collection System (Composite)	7/15/2020	0.17	µg/L	ND	5	0.17
Cadmium	South Collection System (Composite)	7/16/2020	0.17	µg/L	ND	5	0.17
Cadmium	South Collection System (Composite)	7/17/2020	0.17	µg/L	ND	5	0.17
Cadmium	South Collection System (Composite)	7/18/2020	0.17	µg/L	ND	5	0.17
Cadmium	South Collection System (Composite)	7/19/2020	0.17	µg/L	ND	5	0.17
Cadmium	South Collection System (Composite)	7/20/2020	0.17	µg/L	ND	5	0.17
Carbon tetrachloride	Eff-001 (Composite)	7/15/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	Eff-001 (Composite)	7/16/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	Eff-001 (Composite)	7/17/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	Eff-001 (Composite)	7/18/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	Eff-001 (Composite)	7/19/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	Eff-001 (Composite)	7/20/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	Eff-001 (Composite)	7/21/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	Inf-001 (Composite)	7/13/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	Inf-001 (Composite)	7/14/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	Inf-001 (Composite)	7/15/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	Inf-001 (Composite)	7/16/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	Inf-001 (Composite)	7/17/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	Inf-001 (Composite)	7/18/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	Inf-001 (Composite)	7/19/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	North Collection System	7/13/2020	0.44	µg/L	ND	1	0.44

Carbon tetrachloride	North Collection System (Composite)	7/14/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	North Collection System (Composite)	7/15/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	North Collection System (Composite)	7/17/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	North Collection System (Composite)	7/18/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	North Collection System (Composite)	7/19/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	North Collections System (Composite)	7/16/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	South Collection System	7/13/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	South Collection System (Composite)	7/14/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	South Collection System (Composite)	7/15/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	South Collection System (Composite)	7/16/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	South Collection System (Composite)	7/17/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	South Collection System (Composite)	7/18/2020	0.44	µg/L	ND	1	0.44
Carbon tetrachloride	South Collection System (Composite)	7/19/2020	0.44	µg/L	ND	1	0.44
Chromium	Eff-001 (Composite)	7/16/2020	1	µg/L	J	5	0.21
Chromium	Eff-001 (Composite)	7/17/2020	0.7	µg/L	J	5	0.21
Chromium	Eff-001 (Composite)	7/18/2020	1	µg/L	J	5	0.21
Chromium	Eff-001 (Composite)	7/19/2020	1	µg/L	J	5	0.21
Chromium	Eff-001 (Composite)	7/20/2020	1	µg/L	J	5	0.21
Chromium	Eff-001 (Composite)	7/21/2020	0.8	µg/L	J	5	0.21
Chromium	Eff-001 (Composite)	7/22/2020	1	µg/L	J	5	0.21
Chromium	Inf-001 (Composite)	7/18/2020	4	µg/L	J	5	0.21
Chromium	Inf-001 (Composite)	7/14/2020	3	µg/L	J	5	0.21
Chromium	Inf-001 (Composite)	7/15/2020	2	µg/L	J	5	0.21
Chromium	Inf-001 (Composite)	7/16/2020	3	µg/L	J	5	0.21
Chromium	Inf-001 (Composite)	7/17/2020	3	µg/L	J	5	0.21
Chromium	Inf-001 (Composite)	7/19/2020	3	µg/L	J	5	0.21
Chromium	Inf-001 (Composite)	7/20/2020	3	µg/L	J	5	0.21
Chromium	North Collection System (Composite)	7/14/2020	2	µg/L	J	5	0.21
Chromium	North Collection System (Composite)	7/15/2020	4	µg/L	J	5	0.21
Chromium	North Collection System (Composite)	7/16/2020	2	µg/L	J	5	0.21
Chromium	North Collection System (Composite)	7/17/2020	2	µg/L	J	5	0.21
Chromium	North Collection System (Composite)	7/18/2020	2	µg/L	J	5	0.21
Chromium	North Collection System (Composite)	7/19/2020	3	µg/L	J	5	0.21
Chromium	North Collection System (Composite)	7/20/2020	3	µg/L	J	5	0.21
Chromium	RAS/WAS	7/17/2020	48	µg/L		5	0.21
Chromium	RAS/WAS (Composite)	7/16/2020	44	µg/L		5	0.21
Chromium	South Collection System (Composite)	7/14/2020	2	µg/L	J	5	0.21
Chromium	South Collection System (Composite)	7/15/2020	2	µg/L	J	5	0.21
Chromium	South Collection System (Composite)	7/16/2020	3	µg/L	J	5	0.21
Chromium	South Collection System (Composite)	7/17/2020	2	µg/L	J	5	0.21
Chromium	South Collection System (Composite)	7/18/2020	2	µg/L	J	5	0.21
Chromium	South Collection System (Composite)	7/19/2020	2	µg/L	J	5	0.21
Chromium	South Collection System (Composite)	7/20/2020	2	µg/L	J	5	0.21
Copper	Eff-001 (Composite)	7/16/2020	8.0	µg/L		5	0.72
Copper	Eff-001 (Composite)	7/17/2020	8.6	µg/L		5	0.72
Copper	Eff-001 (Composite)	7/18/2020	8.5	µg/L		5	0.72
Copper	Eff-001 (Composite)	7/19/2020	8.3	µg/L		5	0.72
Copper	Eff-001 (Composite)	7/20/2020	8.3	µg/L		5	0.72
Copper	Eff-001 (Composite)	7/21/2020	8.1	µg/L		5	0.72
Copper	Eff-001 (Composite)	7/22/2020	7.8	µg/L		5	0.72
Copper	Inf-001 (Composite)	7/18/2020	150	µg/L		5	0.72
Copper	Inf-001 (Composite)	7/14/2020	120	µg/L		5	0.72

Copper	Inf-001 (Composite)	7/15/2020	130	µg/L		5	0.72
Copper	Inf-001 (Composite)	7/16/2020	130	µg/L		5	0.72
Copper	Inf-001 (Composite)	7/17/2020	130	µg/L		5	0.72
Copper	Inf-001 (Composite)	7/19/2020	120	µg/L		5	0.72
Copper	Inf-001 (Composite)	7/20/2020	130	µg/L		5	0.72
Copper	North Collection System (Composite)	7/14/2020	100	µg/L		5	0.72
Copper	North Collection System (Composite)	7/15/2020	160	µg/L		5	0.72
Copper	North Collection System (Composite)	7/16/2020	120	µg/L		5	0.72
Copper	North Collection System (Composite)	7/17/2020	94	µg/L		5	0.72
Copper	North Collection System (Composite)	7/18/2020	95	µg/L		5	0.72
Copper	North Collection System (Composite)	7/19/2020	150	µg/L		5	0.72
Copper	North Collection System (Composite)	7/20/2020	120	µg/L		5	0.72
Copper	RAS/WAS	7/17/2020	3400	µg/L		5	0.72
Copper	RAS/WAS (Composite)	7/16/2020	3000	µg/L		5	0.72
Copper	South Collection System (Composite)	7/14/2020	93	µg/L		5	0.72
Copper	South Collection System (Composite)	7/15/2020	110	µg/L		5	0.72
Copper	South Collection System (Composite)	7/16/2020	99	µg/L		5	0.72
Copper	South Collection System (Composite)	7/17/2020	88	µg/L		5	0.72
Copper	South Collection System (Composite)	7/18/2020	80	µg/L		5	0.72
Copper	South Collection System (Composite)	7/19/2020	110	µg/L		5	0.72
Copper	South Collection System (Composite)	7/20/2020	100	µg/L		5	0.72
Diethylhexyl phthalate	Eff-001 (Composite)	7/16/2020	1.5	µg/L	ND	4	1.5
Diethylhexyl phthalate	Eff-001 (Composite)	7/17/2020	1.5	µg/L	ND	4	1.5
Diethylhexyl phthalate	Eff-001 (Composite)	7/18/2020	1.5	µg/L	ND	4	1.5
Diethylhexyl phthalate	Eff-001 (Composite)	7/19/2020	1.5	µg/L	ND	4	1.5
Diethylhexyl phthalate	Eff-001 (Composite)	7/20/2020	1.5	µg/L	ND	4	1.5
Diethylhexyl phthalate	Eff-001 (Composite)	7/21/2020	1.5	µg/L	ND	4	1.5
Diethylhexyl phthalate	Eff-001 (Composite)	7/22/2020	1.5	µg/L	ND	4	1.5
Diethylhexyl phthalate	Inf-001 (Composite)	7/18/2020	5.7	µg/L		4	1.5
Diethylhexyl phthalate	Inf-001 (Composite)	7/14/2020	4.9	µg/L		4	1.5
Diethylhexyl phthalate	Inf-001 (Composite)	7/15/2020	4.5	µg/L		4	1.5
Diethylhexyl phthalate	Inf-001 (Composite)	7/16/2020	4.2	µg/L		4	1.5
Diethylhexyl phthalate	Inf-001 (Composite)	7/17/2020	2	µg/L	J	4	1.5
Diethylhexyl phthalate	Inf-001 (Composite)	7/19/2020	4.2	µg/L		4	1.5
Diethylhexyl phthalate	Inf-001 (Composite)	7/20/2020	4.7	µg/L		4	1.5
Diethylhexyl phthalate	North Collection System (Composite)	7/14/2020	5.9	µg/L		4	1.5
Diethylhexyl phthalate	North Collection System (Composite)	7/15/2020	4.1	µg/L		4	1.5
Diethylhexyl phthalate	North Collection System (Composite)	7/16/2020	3	µg/L	J	4	1.5
Diethylhexyl phthalate	North Collection System (Composite)	7/17/2020	2	µg/L	J	4	1.5
Diethylhexyl phthalate	North Collection System (Composite)	7/18/2020	5.6	µg/L		4	1.5
Diethylhexyl phthalate	North Collection System (Composite)	7/19/2020	4.4	µg/L		4	1.5
Diethylhexyl phthalate	North Collection System (Composite)	7/20/2020	1.5	µg/L	ND	4	1.5
Diethylhexyl phthalate	South Collection System (Composite)	7/14/2020	16	µg/L		4	1.5
Diethylhexyl phthalate	South Collection System (Composite)	7/15/2020	12	µg/L		4	1.5
Diethylhexyl phthalate	South Collection System (Composite)	7/16/2020	11	µg/L		4	1.5
Diethylhexyl phthalate	South Collection System (Composite)	7/17/2020	2	µg/L	J	4	1.5
Diethylhexyl phthalate	South Collection System (Composite)	7/18/2020	6.0	µg/L		4	1.5
Diethylhexyl phthalate	South Collection System (Composite)	7/19/2020	5.2	µg/L		4	1.5
Diethylhexyl phthalate	South Collection System (Composite)	7/20/2020	1.5	µg/L	ND	4	1.5
Lead	Eff-001 (Composite)	7/16/2020	0.2	µg/L	J	5	0.08
Lead	Eff-001 (Composite)	7/17/2020	0.3	µg/L	J	5	0.08
Lead	Eff-001 (Composite)	7/18/2020	0.3	µg/L	J	5	0.08

Lead	Eff-001 (Composite)	7/19/2020	0.2	µg/L	J	5	0.08
Lead	Eff-001 (Composite)	7/20/2020	0.2	µg/L	J	5	0.08
Lead	Eff-001 (Composite)	7/21/2020	0.082	µg/L	ND	5	0.08
Lead	Eff-001 (Composite)	7/22/2020	0.082	µg/L	ND	5	0.08
Lead	Inf-001 (Composite)	7/18/2020	3	µg/L	J	5	0.08
Lead	Inf-001 (Composite)	7/14/2020	2	µg/L	J	5	0.08
Lead	Inf-001 (Composite)	7/15/2020	2	µg/L	J	5	0.08
Lead	Inf-001 (Composite)	7/16/2020	2	µg/L	J	5	0.08
Lead	Inf-001 (Composite)	7/17/2020	2	µg/L	J	5	0.08
Lead	Inf-001 (Composite)	7/19/2020	1	µg/L	J	5	0.08
Lead	Inf-001 (Composite)	7/20/2020	2	µg/L	J	5	0.08
Lead	North Collection System (Composite)	7/14/2020	1	µg/L	J	5	0.08
Lead	North Collection System (Composite)	7/15/2020	2	µg/L	J	5	0.08
Lead	North Collection System (Composite)	7/16/2020	0.9	µg/L	J	5	0.08
Lead	North Collection System (Composite)	7/17/2020	2	µg/L	J	5	0.08
Lead	North Collection System (Composite)	7/18/2020	1	µg/L	J	5	0.08
Lead	North Collection System (Composite)	7/19/2020	2	µg/L	J	5	0.08
Lead	North Collection System (Composite)	7/20/2020	1	µg/L	J	5	0.08
Lead	RAS/WAS	7/17/2020	41	µg/L		5	0.08
Lead	RAS/WAS (Composite)	7/16/2020	34	µg/L		5	0.08
Lead	South Collection System (Composite)	7/14/2020	1	µg/L	J	5	0.08
Lead	South Collection System (Composite)	7/15/2020	2	µg/L	J	5	0.08
Lead	South Collection System (Composite)	7/16/2020	1	µg/L	J	5	0.08
Lead	South Collection System (Composite)	7/17/2020	1	µg/L	J	5	0.08
Lead	South Collection System (Composite)	7/18/2020	1	µg/L	J	5	0.08
Lead	South Collection System (Composite)	7/19/2020	1	µg/L	J	5	0.08
Lead	South Collection System (Composite)	7/20/2020	1	µg/L	J	5	0.08
Mercury	Eff-001 (Composite)	7/16/2020	0.26	µg/L	ND	1	0.26
Mercury	Eff-001 (Composite)	7/17/2020	0.26	µg/L	ND	1	0.26
Mercury	Eff-001 (Composite)	7/18/2020	0.26	µg/L	ND	1	0.26
Mercury	Eff-001 (Composite)	7/19/2020	0.26	µg/L	ND	1	0.26
Mercury	Eff-001 (Composite)	7/20/2020	0.26	µg/L	ND	1	0.26
Mercury	Eff-001 (Composite)	7/21/2020	0.26	µg/L	ND	1	0.26
Mercury	Eff-001 (Composite)	7/22/2020	0.26	µg/L	ND	1	0.26
Mercury	Inf-001 (Composite)	7/18/2020	0.26	µg/L	ND	1	0.26
Mercury	Inf-001 (Composite)	7/14/2020	0.26	µg/L	ND	1	0.26
Mercury	Inf-001 (Composite)	7/15/2020	0.26	µg/L	ND	1	0.26
Mercury	Inf-001 (Composite)	7/16/2020	0.26	µg/L	ND	1	0.26
Mercury	Inf-001 (Composite)	7/17/2020	0.26	µg/L	ND	1	0.26
Mercury	Inf-001 (Composite)	7/19/2020	0.26	µg/L	ND	1	0.26
Mercury	Inf-001 (Composite)	7/20/2020	0.26	µg/L	ND	1	0.26
Mercury	North Collection System (Composite)	7/14/2020	0.26	µg/L	ND	1	0.26
Mercury	North Collection System (Composite)	7/15/2020	0.26	µg/L	ND	1	0.26
Mercury	North Collection System (Composite)	7/16/2020	0.26	µg/L	ND	1	0.26
Mercury	North Collection System (Composite)	7/17/2020	0.26	µg/L	ND	1	0.26
Mercury	North Collection System (Composite)	7/18/2020	0.26	µg/L	ND	1	0.26
Mercury	North Collection System (Composite)	7/19/2020	0.26	µg/L	ND	1	0.26
Mercury	North Collection System (Composite)	7/20/2020	0.26	µg/L	ND	1	0.26
Mercury	RAS/WAS	7/17/2020	1.2	µg/L		1	0.26
Mercury	RAS/WAS (Composite)	7/16/2020	0.26	µg/L	ND	1	0.26
Mercury	South Collection System (Composite)	7/14/2020	0.26	µg/L	ND	1	0.26
Mercury	South Collection System (Composite)	7/15/2020	0.26	µg/L	ND	1	0.26

Mercury	South Collection System (Composite)	7/16/2020	0.26	µg/L	ND	1	0.26
Mercury	South Collection System (Composite)	7/17/2020	0.26	µg/L	ND	1	0.26
Mercury	South Collection System (Composite)	7/18/2020	0.26	µg/L	ND	1	0.26
Mercury	South Collection System (Composite)	7/19/2020	0.26	µg/L	ND	1	0.26
Mercury	South Collection System (Composite)	7/20/2020	0.26	µg/L	ND	1	0.26
Molybdenum	Eff-001 (Composite)	7/16/2020	0.5	µg/L	J	5	0.06
Molybdenum	Eff-001 (Composite)	7/17/2020	0.7	µg/L	J	5	0.06
Molybdenum	Eff-001 (Composite)	7/18/2020	0.7	µg/L	J	5	0.06
Molybdenum	Eff-001 (Composite)	7/19/2020	0.5	µg/L	J	5	0.06
Molybdenum	Eff-001 (Composite)	7/20/2020	0.5	µg/L	J	5	0.06
Molybdenum	Eff-001 (Composite)	7/21/2020	0.4	µg/L	J	5	0.06
Molybdenum	Eff-001 (Composite)	7/22/2020	0.5	µg/L	J	5	0.06
Molybdenum	Inf-001 (Composite)	7/18/2020	2	µg/L	J	5	0.06
Molybdenum	Inf-001 (Composite)	7/14/2020	2	µg/L	J	5	0.06
Molybdenum	Inf-001 (Composite)	7/15/2020	2	µg/L	J	5	0.06
Molybdenum	Inf-001 (Composite)	7/16/2020	1	µg/L	J	5	0.06
Molybdenum	Inf-001 (Composite)	7/17/2020	1	µg/L	J	5	0.06
Molybdenum	Inf-001 (Composite)	7/19/2020	1	µg/L	J	5	0.06
Molybdenum	Inf-001 (Composite)	7/20/2020	1	µg/L	J	5	0.06
Molybdenum	North Collection System (Composite)	7/14/2020	2	µg/L	J	5	0.06
Molybdenum	North Collection System (Composite)	7/15/2020	3	µg/L	J	5	0.06
Molybdenum	North Collection System (Composite)	7/16/2020	1	µg/L	J	5	0.06
Molybdenum	North Collection System (Composite)	7/17/2020	1	µg/L	J	5	0.06
Molybdenum	North Collection System (Composite)	7/18/2020	1	µg/L	J	5	0.06
Molybdenum	North Collection System (Composite)	7/19/2020	2	µg/L	J	5	0.06
Molybdenum	North Collection System (Composite)	7/20/2020	1	µg/L	J	5	0.06
Molybdenum	RAS/WAS	7/17/2020	24	µg/L		5	0.06
Molybdenum	RAS/WAS (Composite)	7/16/2020	22	µg/L		5	0.06
Molybdenum	South Collection System (Composite)	7/14/2020	1	µg/L	J	5	0.06
Molybdenum	South Collection System (Composite)	7/15/2020	1	µg/L	J	5	0.06
Molybdenum	South Collection System (Composite)	7/16/2020	0.9	µg/L	J	5	0.06
Molybdenum	South Collection System (Composite)	7/17/2020	1	µg/L	J	5	0.06
Molybdenum	South Collection System (Composite)	7/18/2020	0.9	µg/L	J	5	0.06
Molybdenum	South Collection System (Composite)	7/19/2020	1	µg/L	J	5	0.06
Molybdenum	South Collection System (Composite)	7/20/2020	1	µg/L	J	5	0.06
Nickel	Eff-001 (Composite)	7/16/2020	2	µg/L	J	5	1.1
Nickel	Eff-001 (Composite)	7/17/2020	2	µg/L	J	5	1.1
Nickel	Eff-001 (Composite)	7/18/2020	2	µg/L	J	5	1.1
Nickel	Eff-001 (Composite)	7/19/2020	2	µg/L	J	5	1.1
Nickel	Eff-001 (Composite)	7/20/2020	2	µg/L	J	5	1.1
Nickel	Eff-001 (Composite)	7/21/2020	2	µg/L	J	5	1.1
Nickel	Eff-001 (Composite)	7/22/2020	2	µg/L	J	5	1.1
Nickel	Inf-001 (Composite)	7/18/2020	5.5	µg/L		5	1.1
Nickel	Inf-001 (Composite)	7/14/2020	5	µg/L	J	5	1.1
Nickel	Inf-001 (Composite)	7/15/2020	5	µg/L	J	5	1.1
Nickel	Inf-001 (Composite)	7/16/2020	5	µg/L	J	5	1.1
Nickel	Inf-001 (Composite)	7/17/2020	5	µg/L	J	5	1.1
Nickel	Inf-001 (Composite)	7/19/2020	4	µg/L	J	5	1.1
Nickel	Inf-001 (Composite)	7/20/2020	4	µg/L	J	5	1.1
Nickel	North Collection System (Composite)	7/14/2020	3	µg/L	J	5	1.1
Nickel	North Collection System (Composite)	7/15/2020	6.5	µg/L		5	1.1
Nickel	North Collection System (Composite)	7/16/2020	4	µg/L	J	5	1.1

Nickel	North Collection System (Composite)	7/17/2020	6.5	µg/L		5	1.1
Nickel	North Collection System (Composite)	7/18/2020	4	µg/L	J	5	1.1
Nickel	North Collection System (Composite)	7/19/2020	6.7	µg/L		5	1.1
Nickel	North Collection System (Composite)	7/20/2020	4	µg/L	J	5	1.1
Nickel	RAS/WAS	7/17/2020	58	µg/L		5	1.1
Nickel	RAS/WAS (Composite)	7/16/2020	50	µg/L		5	1.1
Nickel	South Collection System (Composite)	7/14/2020	3	µg/L	J	5	1.1
Nickel	South Collection System (Composite)	7/15/2020	4	µg/L	J	5	1.1
Nickel	South Collection System (Composite)	7/16/2020	4	µg/L	J	5	1.1
Nickel	South Collection System (Composite)	7/17/2020	3	µg/L	J	5	1.1
Nickel	South Collection System (Composite)	7/18/2020	3	µg/L	J	5	1.1
Nickel	South Collection System (Composite)	7/19/2020	3	µg/L	J	5	1.1
Nickel	South Collection System (Composite)	7/20/2020	4	µg/L	J	5	1.1
Non-Filterable Residue(TSS)	Eff-001 (Composite)	7/16/2020	1.4	mg/L		1	0.6
Non-Filterable Residue(TSS)	Eff-001 (Composite)	7/17/2020	1.4	mg/L		1	0.6
Non-Filterable Residue(TSS)	Eff-001 (Composite)	7/18/2020	0.8	mg/L	J	1	0.6
Non-Filterable Residue(TSS)	Eff-001 (Composite)	7/19/2020	1.8	mg/L		1	0.6
Non-Filterable Residue(TSS)	Eff-001 (Composite)	7/20/2020	1.4	mg/L		1	0.6
Non-Filterable Residue(TSS)	Eff-001 (Composite)	7/21/2020	1	mg/L		1	0.6
Non-Filterable Residue(TSS)	Eff-001 (Composite)	7/22/2020	1.4	mg/L		1	0.6
Non-Filterable Residue(TSS)	Inf-001 (Composite)	7/18/2020	280	mg/L		1	0.6
Non-Filterable Residue(TSS)	Inf-001 (Composite)	7/14/2020	320	mg/L		1	0.6
Non-Filterable Residue(TSS)	Inf-001 (Composite)	7/15/2020	310	mg/L		1	0.6
Non-Filterable Residue(TSS)	Inf-001 (Composite)	7/16/2020	310	mg/L		1	0.6
Non-Filterable Residue(TSS)	Inf-001 (Composite)	7/17/2020	310	mg/L		1	0.6
Non-Filterable Residue(TSS)	Inf-001 (Composite)	7/19/2020	290	mg/L		1	0.6
Non-Filterable Residue(TSS)	Inf-001 (Composite)	7/20/2020	240	mg/L		1	0.6
Non-Filterable Residue(TSS)	North Collection System (Composite)	7/14/2020	98	mg/L		1	0.6
Non-Filterable Residue(TSS)	North Collection System (Composite)	7/15/2020	470	mg/L		1	0.6
Non-Filterable Residue(TSS)	North Collection System (Composite)	7/16/2020	180	mg/L		1	0.6
Non-Filterable Residue(TSS)	North Collection System (Composite)	7/17/2020	80	mg/L		1	0.6
Non-Filterable Residue(TSS)	North Collection System (Composite)	7/18/2020	73	mg/L		1	0.6
Non-Filterable Residue(TSS)	North Collection System (Composite)	7/19/2020	500	mg/L		1	0.6
Non-Filterable Residue(TSS)	North Collection System (Composite)	7/20/2020	210	mg/L		1	0.6
Non-Filterable Residue(TSS)	North Collection System (Composite)	7/20/2020	210	mg/L		1	0.6
Non-Filterable Residue(TSS)	South Collection System (Composite)	7/14/2020	160	mg/L		1	0.6
Non-Filterable Residue(TSS)	South Collection System (Composite)	7/15/2020	220	mg/L		1	0.6
Non-Filterable Residue(TSS)	South Collection System (Composite)	7/16/2020	140	mg/L		1	0.6
Non-Filterable Residue(TSS)	South Collection System (Composite)	7/17/2020	70	mg/L		1	0.6
Non-Filterable Residue(TSS)	South Collection System (Composite)	7/17/2020	70	mg/L		1	0.6
Non-Filterable Residue(TSS)	South Collection System (Composite)	7/18/2020	54	mg/L		1	0.6
Non-Filterable Residue(TSS)	South Collection System (Composite)	7/19/2020	210	mg/L		1	0.6
Non-Filterable Residue(TSS)	South Collection System (Composite)	7/20/2020	180	mg/L		1	0.6
Selenium	Eff-001 (Composite)	7/16/2020	4	µg/L	ND	10	4
Selenium	Eff-001 (Composite)	7/17/2020	4	µg/L	ND	10	4
Selenium	Eff-001 (Composite)	7/18/2020	4	µg/L	ND	10	4
Selenium	Eff-001 (Composite)	7/19/2020	4	µg/L	ND	10	4
Selenium	Eff-001 (Composite)	7/20/2020	4	µg/L	ND	10	4
Selenium	Eff-001 (Composite)	7/21/2020	4	µg/L	ND	10	4
Selenium	Eff-001 (Composite)	7/22/2020	4	µg/L	ND	10	4
Selenium	Inf-001 (Composite)	7/18/2020	4	µg/L	ND	10	4
Selenium	Inf-001 (Composite)	7/14/2020	4	µg/L	ND	10	4

Selenium	Inf-001 (Composite)	7/15/2020	4	µg/L	ND	10	4
Selenium	Inf-001 (Composite)	7/16/2020	4	µg/L	ND	10	4
Selenium	Inf-001 (Composite)	7/17/2020	4	µg/L	ND	10	4
Selenium	Inf-001 (Composite)	7/19/2020	4	µg/L	ND	10	4
Selenium	Inf-001 (Composite)	7/20/2020	4	µg/L	ND	10	4
Selenium	North Collection System (Composite)	7/14/2020	4	µg/L	ND	10	4
Selenium	North Collection System (Composite)	7/15/2020	4	µg/L	ND	10	4
Selenium	North Collection System (Composite)	7/16/2020	4	µg/L	ND	10	4
Selenium	North Collection System (Composite)	7/17/2020	4	µg/L	ND	10	4
Selenium	North Collection System (Composite)	7/18/2020	4	µg/L	ND	10	4
Selenium	North Collection System (Composite)	7/19/2020	4	µg/L	ND	10	4
Selenium	North Collection System (Composite)	7/20/2020	4	µg/L	ND	10	4
Selenium	RAS/WAS	7/17/2020	23	µg/L		10	4
Selenium	RAS/WAS (Composite)	7/16/2020	19	µg/L		10	4
Selenium	South Collection System (Composite)	7/14/2020	4	µg/L	ND	10	4
Selenium	South Collection System (Composite)	7/15/2020	4	µg/L	ND	10	4
Selenium	South Collection System (Composite)	7/16/2020	4	µg/L	ND	10	4
Selenium	South Collection System (Composite)	7/17/2020	4	µg/L	ND	10	4
Selenium	South Collection System (Composite)	7/18/2020	4	µg/L	ND	10	4
Selenium	South Collection System (Composite)	7/19/2020	4	µg/L	ND	10	4
Selenium	South Collection System (Composite)	7/20/2020	4	µg/L	ND	10	4
Silver	Eff-001 (Composite)	7/16/2020	0.35	µg/L	ND	10	0.35
Silver	Eff-001 (Composite)	7/17/2020	0.35	µg/L	ND	10	0.35
Silver	Eff-001 (Composite)	7/18/2020	0.35	µg/L	ND	10	0.35
Silver	Eff-001 (Composite)	7/19/2020	0.4	µg/L	J	10	0.35
Silver	Eff-001 (Composite)	7/20/2020	0.35	µg/L	ND	10	0.35
Silver	Eff-001 (Composite)	7/21/2020	0.35	µg/L	ND	10	0.35
Silver	Eff-001 (Composite)	7/22/2020	0.35	µg/L	ND	10	0.35
Silver	Inf-001 (Composite)	7/18/2020	0.6	µg/L	J	10	0.35
Silver	Inf-001 (Composite)	7/14/2020	0.35	µg/L	ND	10	0.35
Silver	Inf-001 (Composite)	7/15/2020	0.35	µg/L	ND	10	0.35
Silver	Inf-001 (Composite)	7/16/2020	0.35	µg/L	ND	10	0.35
Silver	Inf-001 (Composite)	7/17/2020	0.5	µg/L	J	10	0.35
Silver	Inf-001 (Composite)	7/19/2020	0.4	µg/L	J	10	0.35
Silver	Inf-001 (Composite)	7/20/2020	0.35	µg/L	ND	10	0.35
Silver	North Collection System (Composite)	7/14/2020	0.35	µg/L	ND	10	0.35
Silver	North Collection System (Composite)	7/15/2020	0.7	µg/L	J	10	0.35
Silver	North Collection System (Composite)	7/16/2020	0.35	µg/L	ND	10	0.35
Silver	North Collection System (Composite)	7/17/2020	0.35	µg/L	ND	10	0.35
Silver	North Collection System (Composite)	7/18/2020	0.35	µg/L	ND	10	0.35
Silver	North Collection System (Composite)	7/19/2020	0.4	µg/L	J	10	0.35
Silver	North Collection System (Composite)	7/20/2020	0.35	µg/L	ND	10	0.35
Silver	RAS/WAS	7/17/2020	9	µg/L	J	10	0.35
Silver	RAS/WAS (Composite)	7/16/2020	8	µg/L	J	10	0.35
Silver	South Collection System (Composite)	7/14/2020	0.35	µg/L	ND	10	0.35
Silver	South Collection System (Composite)	7/15/2020	0.35	µg/L	ND	10	0.35
Silver	South Collection System (Composite)	7/16/2020	0.35	µg/L	ND	10	0.35
Silver	South Collection System (Composite)	7/17/2020	0.35	µg/L	ND	10	0.35
Silver	South Collection System (Composite)	7/18/2020	0.35	µg/L	ND	10	0.35
Silver	South Collection System (Composite)	7/19/2020	0.4	µg/L	J	10	0.35
Silver	South Collection System (Composite)	7/20/2020	0.35	µg/L	ND	10	0.35
Zinc	Eff-001 (Composite)	7/16/2020	48	µg/L		10	1.1

Zinc	Eff-001 (Composite)	7/17/2020	55	µg/L		10	1.1
Zinc	Eff-001 (Composite)	7/18/2020	53	µg/L		10	1.1
Zinc	Eff-001 (Composite)	7/19/2020	49	µg/L		10	1.1
Zinc	Eff-001 (Composite)	7/20/2020	50	µg/L		10	1.1
Zinc	Eff-001 (Composite)	7/21/2020	52	µg/L		10	1.1
Zinc	Eff-001 (Composite)	7/22/2020	54	µg/L		10	1.1
Zinc	Inf-001 (Composite)	7/18/2020	240	µg/L		10	1.1
Zinc	Inf-001 (Composite)	7/14/2020	190	µg/L		10	1.1
Zinc	Inf-001 (Composite)	7/15/2020	190	µg/L		10	1.1
Zinc	Inf-001 (Composite)	7/16/2020	170	µg/L		10	1.1
Zinc	Inf-001 (Composite)	7/17/2020	170	µg/L		10	1.1
Zinc	Inf-001 (Composite)	7/19/2020	170	µg/L		10	1.1
Zinc	Inf-001 (Composite)	7/20/2020	190	µg/L		10	1.1
Zinc	North Collection System (Composite)	7/14/2020	120	µg/L		10	1.1
Zinc	North Collection System (Composite)	7/15/2020	410	µg/L		10	1.1
Zinc	North Collection System (Composite)	7/16/2020	130	µg/L		10	1.1
Zinc	North Collection System (Composite)	7/17/2020	120	µg/L		10	1.1
Zinc	North Collection System (Composite)	7/18/2020	100	µg/L		10	1.1
Zinc	North Collection System (Composite)	7/19/2020	390	µg/L		10	1.1
Zinc	North Collection System (Composite)	7/20/2020	160	µg/L		10	1.1
Zinc	RAS/WAS	7/17/2020	2700	µg/L		10	1.1
Zinc	RAS/WAS (Composite)	7/16/2020	2500	µg/L		10	1.1
Zinc	South Collection System (Composite)	7/14/2020	110	µg/L		10	1.1
Zinc	South Collection System (Composite)	7/15/2020	150	µg/L		10	1.1
Zinc	South Collection System (Composite)	7/16/2020	100	µg/L		10	1.1
Zinc	South Collection System (Composite)	7/17/2020	100	µg/L		10	1.1
Zinc	South Collection System (Composite)	7/18/2020	82	µg/L		10	1.1
Zinc	South Collection System (Composite)	7/19/2020	130	µg/L		10	1.1
Zinc	South Collection System (Composite)	7/20/2020	130	µg/L		10	1.1

ANALYTE	SAMPLENAME	SAMPDATE	RESULT	UNITS	QUAL	RL	MDL
Arsenic	Eff-001 (Composite)	7/16/2020	1.5	µg/L	ND	5	1.5
Arsenic	Eff-001 (Composite)	7/17/2020	1.5	µg/L	ND	5	1.5
Arsenic	Eff-001 (Composite)	7/18/2020	1.5	µg/L	ND	5	1.5
Arsenic	Eff-001 (Composite)	7/19/2020	1.5	µg/L	ND	5	1.5
Arsenic	Eff-001 (Composite)	7/20/2020	1.5	µg/L	ND	5	1.5
Arsenic	Eff-001 (Composite)	7/21/2020	1.5	µg/L	ND	5	1.5
Arsenic	Eff-001 (Composite)	7/22/2020	1.5	µg/L	ND	5	1.5
Arsenic	Inf-001 (Composite)	7/18/2020	1.5	µg/L	ND	5	1.5
Arsenic	Inf-001 (Composite)	7/14/2020	1.5	µg/L	ND	5	1.5
Arsenic	Inf-001 (Composite)	7/15/2020	1.5	µg/L	ND	5	1.5
Arsenic	Inf-001 (Composite)	7/16/2020	1.5	µg/L	ND	5	1.5
Arsenic	Inf-001 (Composite)	7/17/2020	1.5	µg/L	ND	5	1.5
Arsenic	Inf-001 (Composite)	7/19/2020	1.5	µg/L	ND	5	1.5
Arsenic	Inf-001 (Composite)	7/20/2020	1.5	µg/L	ND	5	1.5
Arsenic	North Collection System (Composite)	7/14/2020	1.5	µg/L	ND	5	1.5
Arsenic	North Collection System (Composite)	7/15/2020	1.5	µg/L	ND	5	1.5
Arsenic	North Collection System (Composite)	7/16/2020	1.5	µg/L	ND	5	1.5
Arsenic	North Collection System (Composite)	7/17/2020	2	µg/L	J	5	1.5
Arsenic	North Collection System (Composite)	7/18/2020	2	µg/L	J	5	1.5
Arsenic	North Collection System (Composite)	7/19/2020	1.5	µg/L	ND	5	1.5
Arsenic	North Collection System (Composite)	7/20/2020	1.5	µg/L	ND	5	1.5
Arsenic	RAS/WAS	7/17/2020	12	µg/L		5	1.5
Arsenic	RAS/WAS (Composite)	7/16/2020	11	µg/L		5	1.5
Arsenic	South Collection System (Composite)	7/14/2020	1.5	µg/L	ND	5	1.5
Arsenic	South Collection System (Composite)	7/15/2020	1.5	µg/L	ND	5	1.5
Arsenic	South Collection System (Composite)	7/16/2020	2	µg/L	J	5	1.5
Arsenic	South Collection System (Composite)	7/17/2020	1.5	µg/L	ND	5	1.5
Arsenic	South Collection System (Composite)	7/18/2020	1.5	µg/L	ND	5	1.5
Arsenic	South Collection System (Composite)	7/19/2020	1.5	µg/L	ND	5	1.5
Arsenic	South Collection System (Composite)	7/20/2020	1.5	µg/L	ND	5	1.5
Biochemical Oxygen Demand	Eff-001 (Composite)	7/16/2020	7.3	mg/L		2	2
Biochemical Oxygen Demand	Eff-001 (Composite)	7/17/2020	6.2	mg/L		2	2
Biochemical Oxygen Demand	Eff-001 (Composite)	7/18/2020	5.0	mg/L		2	2
Biochemical Oxygen Demand	Eff-001 (Composite)	7/19/2020	5.8	mg/L		2	2
Biochemical Oxygen Demand	Eff-001 (Composite)	7/20/2020	4.8	mg/L		2	2
Biochemical Oxygen Demand	Eff-001 (Composite)	7/21/2020	5.1	mg/L		2	2
Biochemical Oxygen Demand	Eff-001 (Composite)	7/22/2020	4.2	mg/L		2	2
Biochemical Oxygen Demand	Inf-001 (Composite)	7/14/2020	480	mg/L		2	2
Biochemical Oxygen Demand	Inf-001 (Composite)	7/15/2020	520	mg/L		2	2
Biochemical Oxygen Demand	Inf-001 (Composite)	7/16/2020	640	mg/L		2	2
Biochemical Oxygen Demand	Inf-001 (Composite)	7/17/2020	540	mg/L		2	2
Biochemical Oxygen Demand	Inf-001 (Composite)	7/18/2020	370	mg/L		2	2
Biochemical Oxygen Demand	Inf-001 (Composite)	7/19/2020	440	mg/L		2	2
Biochemical Oxygen Demand	Inf-001 (Composite)	7/20/2020	320	mg/L		2	2
Biochemical Oxygen Demand	North Collection System (Composite)	7/14/2020	360	mg/L		2	2
Biochemical Oxygen Demand	North Collection System (Composite)	7/15/2020	1200	mg/L		2	2
Biochemical Oxygen Demand	North Collection System (Composite)	7/16/2020	300	mg/L		2	2
Biochemical Oxygen Demand	North Collection System (Composite)	7/17/2020	270	mg/L		2	2
Biochemical Oxygen Demand	North Collection System (Composite)	7/18/2020	210	mg/L		2	2
Biochemical Oxygen Demand	North Collection System (Composite)	7/19/2020	840	mg/L		2	2
Biochemical Oxygen Demand	North Collection System (Composite)	7/20/2020	390	mg/L		2	2

APPENDIX B

REGION 5 EPA SPREADSHEET MODEL

Local Limits Determination Based on NPDES Monthly Average Effluent Limits

	ENVIRONMENTAL CRITERIA AND PROCESS DATA BASE						MAXIMUM LOADING		INDUSTRIAL			
Pollutant	IU Pollut. Flow (MGD) (Qind)	POTW Flow (MGD) (Qpotw)	Removal Efficiency (%) (Rpotw)	NPDES Monthly Ave Limit (mg/l) (Ccrit)	Domestic and Commercial Conc. (mg/l) (Cdom)	Domestic and Commercial Flow (MGD) (Qdom)	Allowable Headworks (lbs/day) (Lhw)	Domestic/ Commercial (lbs/day) (Ldom)	Allowable Loading (lbs/day) (Lind)	Local Limit (mg/l) (Cind)	Safety Factor (%) (SF)	Safety Factor Pounds (SFP)
BOD	0.019	0.858	98.810	30	311.00	0.839	18040	2176	14060	88726	10	1804
TSS	0.019	0.858	99.950	30	138.00	0.839	429343	966	385443	2432433	10	42934

(Qind) Industrial User total plant discharge flow in Million Gallons per Day (MGD) that contains a particular pollutant.
(Qpotw) POTW's average influent flow in MGD over the 7 day sampling period
(Rpotw) Removal efficiency across POTW as percent.
(Ccrit) NPDES daily maximum permit limit for a particular pollutant in mg/l.
(Qdom) Domestic/commercial background flow in MGD.
(Cdom) Domestic/commercial background concentration for a particular pollutant in mg/l. (Average of "South Collection System")
(Lhw) Maximum allowable headworks pollutant loading to the POTW in pounds per day (lbs/day).
(Ldom) Domestic/commercial background loading to the POTW for a particular pollutant in pounds per day (lbs/day).
(Lind) Maximum allowable industrial loading to the POTW in pounds per day.
(Cind) Industrial allowable local limit for a given pollutant in mg/l.
(SF) Safety factor as a percent.
8.34 Unit conversion factor

$$Lhw = \frac{8.34 * Ccrit * Qpotw}{1 - Rpotw}$$

Local Limits Determination Based on Kennedy/Jenks Consultants 2030 Maximum Monthly Headworks Loading Capacity

	ENVIRONMENTAL CRITERIA AND PROCESS DATA BASE						MAXIMUM LOADING		INDUSTRIAL			
					Domestic and Commercial							
Pollutant	IU Pollut. Flow (MGD) (Qind)	POTW Flow (MGD) (Qpotw)	Removal Efficiency (%) (Rpotw)	NPDES Daily Limit (mg/l) (Ccrit)	Conc. (mg/l) (Cdom)	Flow (MGD) (Qdom)	Allowable Headworks (lbs/day) (Lhw)	Domestic/ Commercial (lbs/day) (Ldom)	Allowable Loading (lbs/day) (Lind)	Local Limit (mg/l) (Cind)	Safety Factor (%) (SF)	Safety Factor pounds (SFP)
BOD	0.019	0.858	98.810	30	311.00	0.839	4569	2176	1936	12217	10	457
TSS	0.019	0.858	99.950	30	138.00	0.839	5664	966	4132	26076	10	566

(Qind) Industrial User total plant discharge flow in Million Gallons per Day (MGD) that contains a particular pollutant.
(Qpotw) POTW's average influent flow in MGD over the 7 day sampling period
(Rpotw) Removal efficiency across POTW as percent.
(Ccrit) NPDES daily maximum permit limit for a particular pollutant in mg/l.
(Qdom) Domestic/commercial background flow in MGD.
(Cdom) Domestic/commercial background concentration for a particular pollutant in mg/l.
(Lhw) Maximum allowable headworks pollutant loading to the POTW in pounds per day (lbs/day) Kennedy/Jenks Consultants 2030 Maximum Monthly Loading Capacity.
(Ldom) Domestic/commercial background loading to the POTW for a particular pollutant in pounds per day (lbs/day).
(Lind) Maximum allowable industrial loading to the POTW in pounds per day.
(Cind) Industrial allowable local limit for a given pollutant in mg/l.
(SF) Safety factor as a percent.
8.34 Unit conversion factor

$$Lhw = \frac{8.34 * Ccrit * Qpotw}{1 - Rpotw}$$

Local Limits Determination Based on USEPA 503 Sludge Regulations

ENVIRONMENTAL CRITERIA AND PROCESS DATA BASE — MAXIMUM LOADING — INDUSTRIAL

Pollutant	IU Pollut. Flow (MGD) (Qind)	POTW Flow (MGD) (Qpotw)	Sludge Flow (MGD) (Qsldg)	Percent Solids (%) (PS)	Removal Efficiency (%) (Rpotw)	503 Sludge Criteria (mg/kg) (Cslcrit)	Domestic and Conc. (mg/l) (Cdom)	Commercial Flow (MGD) (Qdom)	Allowable Headworks (lbs/day) (Lhw)	Domestic/ Commercia (lbs/day) (Ldom)	Allowat Loading (lbs/da (Lind)	Local Limit (mg/l) (Cind)	Safety Factor (%) (SF)	Safety Factor Pounds (SFP)
Copper	0.019	0.858	0.042	1	93.63	1500	0.13	0.839	5.612	0.910	4.141	26.132	10.000	0.561
Zinc	0.019	0.858	0.042	1	72.27	2800	0.189	0.839	13.571	1.322	10.892	68.734	10.000	1.357

(Qind) Industrial User total plant discharge flow in Million Gallons per Day (MGD) that contains a particular pollutant.
(Qpotw) POTW's average influent flow in MGD over the 7 day sampling period
(Qsldg) Sludge flow to disposal in MGD.
(PS) Percent solids of sludge to disposal.
(Rpotw) Removal efficiency across POTW as a percent.
(Cslcrit) 503 sludge criteria in mg/kg dry sludge.
(Qdom) Domestic/commercial background flow in MGD.
(Cdom) Domestic/commercial background concentration for a particular pollutant in mg/l.
(Lhw) Maximum allowable headworks pollutant loading to the POTW in pounds per day (lbs/day).
(Ldom) Domestic/commercial background loading to the POTW for a particular pollutant in pounds per day (lbs/day).
(Lind) Maximum allowable industrial loading to the POTW in pounds per day.
(Cind) Industrial allowable local limit for a given pollutant in mg/l.
(SF) Safety factor as a percent.
8.34 Unit conversion factor

$$Lhw = \frac{8.34 * Cslcrit * (PS/100) * Qsldg}{1 - Rpotw}$$

Local Limits Determination Based on NPDES Most Stringent Criteria

	ENVIRONMENTAL CRITERIA AND PROCESS DATA BASE						MAXIMUM LOADING		INDUSTRIAL			
Pollutant	IU Pollut. Flow (MGD) (Qind)	POTW Flow (MGD) (Qpotw)	Removal Efficiency (%) (Rpotw)	NPDES Most Stringent Water Quality Criteria (mg/l) (Ccrit)	Domestic and Commercia Conc. (mg/l) (Cdom)	Flow (MGD) (Qdom)	Allowable Headworks (lbs/day) (Lhw)	Domestic/ Commercial (lbs/day) (Ldom)	Allowable Loading (lbs/day) (Lind)	Local Limit (mg/l) (Cind)	Safety Factor (%) (SF)	Safety Factor Pounds (SFP)
Copper	0.019	0.858	93.63	0.147	0.13	0.839	16.513	0.910	13.952	88.049	10	1.651
Zinc	0.019	0.858	72.27	0.062	0.189	0.839	1.600	1.322	0.117	0.741	10	0.160

(Qind) Industrial User total plant discharge flow in Million Gallons per Day (MGD) that contains a particular pollutant.
(Qpotw) POTW's average influent flow in MGD over the 7 day sampling period
(Rpotw) Removal efficiency across POTW as percent.
(Ccrit) NPDES daily maximum permit limit for a particular pollutant in mg/l.
(Qdom) Domestic/commercial background flow in MGD.
(Cdom) Domestic/commercial background concentration for a particular pollutant in mg/l.
(Lhw) Maximum allowable headworks pollutant loading to the POTW in pounds per day (lbs/day).
(Ldom) Domestic/commercial background loading to the POTW for a particular pollutant in pounds per day (lbs/day).
(Lind) Maximum allowable industrial loading to the POTW in pounds per day.
(Cind) Industrial allowable local limit for a given pollutant in mg/l.
(SF) Safety factor as a percent.
8.34 Unit conversion factor

$$Lhw = \frac{8.34 * Ccrit * Qpotw}{1 - Rpotw}$$

Local Limits Determination Based on Activated Sludge Inhibition Level

ENVIRONMENTAL CRITERIA AND PROCESS DATA BASE — MAXIMUM LOADING — INDUSTRIAL

Pollutant	IU Pollut. Flow (MGD) (Qind)	POTW Flow (MGD) (Qpotw)	Removal Efficiency (%) (Rprim)	Activated Sludge Inhibition Level (mg/l) (Ccrit)	Domestic Conc. (mg/l) (Cdom)	and Commercial Flow (MGD) (Qdom)	Allowable Headworks (lbs/day) (Lhw)	Domestic/ Commercial (lbs/day) (Ldom)	Allowable Loading (lbs/day) (Lind)	Local Limit (mg/l) (Cind)	Safety Factor (%) (SF)	Safety Factor Pounds (SFP)
Copper	0.019	0.858	93.630	1.000	0.130	0.839	112.335	0.910	100.192	632.283	10.000	11.233
Zinc	0.019	0.858	72.270	0.300	0.189	0.839	7.741	1.322	5.645	35.623	10.000	0.774

(Qind) Industrial User total plant discharge flow in Million Gallons per Day (MGD) that contains a particular pollutant.
(Qpotw) POTW's average influent flow in MGD over the 7 day sampling period
(Rprim) Removal efficiency across across primary treatment as percent.
(Ccrit) Activated sludge threshold inhibition level, mg/l.
(Qdom) Domestic/commercial background flow in MGD.
(Cdom) Domestic/commercial background concentration for a particular pollutant in mg/l.
(Lhw) Maximum allowable headworks pollutant loading to the POTW in pounds per day (lbs/day).
(Ldom) Domestic/commercial background loading to the POTW for a particular pollutant in pounds per day (lbs/day).
(Lind) Maximum allowable industrial loading to the POTW in pounds per day.
(Cind) Industrial allowable local limit for a given pollutant in mg/l.
(SF) Safety factor as a percent.
8.34 Unit conversion factor

$$Lhw = \frac{8.34 * Ccrit * Qpotw}{1 - Rprim}$$

Local Limits Determination Based on Nitrification Inhibition Level

ENVIRONMENTAL CRITERIA AND PROCESS DATA BASE — MAXIMUM LOADING — INDUSTRIAL

Pollutant	IU Pollut. Flow (MGD) (Qind)	POTW Flow (MGD) (Qpotw)	Removal Efficiency (%) (Rsec)	Nitrification Inhibition Level (mg/l) (Ccrit)	Domestic ar Conc. (mg/l) (Cdom)	Commercial Flow (MGD) (Qdom)	Allowable Headworks (lbs/day) (Lhw)	Domestic/ Commercial (lbs/day) (Ldom)	Allowable Loading (lbs/day) (Lind)	Local Limit (mg/l) (Cind)	Safety Factor (%) (SF)	Safety Factor Pounds (SFP)
Copper	0.019	0.858	93.63	0.05	0.13	0.839	5.617	0.910	4.145	26.161	10	0.562
Zinc	0.019	0.858	72.27	0.08	0.189	0.839	2.064	1.322	0.535	3.379	10	0.206

(Qind) Industrial User total plant discharge flow in Million Gallons per Day (MGD) that contains a particular pollutant.
(Qpotw) POTW's average influent flow in MGD over the 7 day sampling period
(Rsec) Removal efficiency across primary treatment and secodary treatment as percent.
(Ccrit) Nitrification threshold inhibition level, mg/l.
(Qdom) Domestic/commercial background flow in MGD.
(Cdom) Domestic/commercial background concentration for a particular pollutant in mg/l.
(Lhw) Maximum allowable headworks pollutant loading to the POTW in pounds per day (lbs/day).
(Ldom) Domestic/commercial background loading to the POTW for a particular pollutant in pounds per day (lbs/day).
(Lind) Maximum allowable industrial loading to the POTW in pounds per day.
(Cind) Industrial allowable local limit for a given pollutant in mg/l.
(SF) Safety factor as a percent.
8.34 Unit conversion factor

$$Lhw = \frac{8.34 * Ccrit * Qpotw}{1 - Rsec}$$

Local Limits Determination Based on NPDES Average Monthly Effluent Limits

	ENVIRONMENTAL CRITERIA AND PROCESS DATA BASE						MAXIMUM LOADING		INDUSTRIAL			
Pollutant	IU Pollut. Flow (MGD) (Qind)	POTW Flow (MGD) (Qpotw)	Removal Efficiency (%) (Rpotw)	NPDES Average Monthly Limit (mg/l) (Ccrit)	Domestic and Conc. (mg/l) (Cdom)	Commercial Flow (MGD) (Qdom)	Allowable Headworks (lbs/day) (Lhw)	Domestic/ Commercia (lbs/day) (Ldom)	Allowable Loading (lbs/day) (Lind)	Local Limit (mg/l) (Cind)	Safety Factor (%) (SF)	Safety Factor Pounds (SFP)
bis(2-Ethylhexyl) phthalate	0.019	0.858	80.180	0.002	0.00431	0.839	0.065	0.030	0.028	0.17878	10.000	0.0065

(Qind) Industrial User total plant discharge flow in Million Gallons per Day (MGD) that contains a particular pollutant.
(Qpotw) POTW's average influent flow in MGD over the 7 day sampling period
(Rpotw) Removal efficiency across POTW as percent.
(Ccrit) NPDES daily maximum permit limit for a particular pollutant in mg/l.
(Qdom) Domestic/commercial background flow in MGD.
(Cdom) Domestic/commercial background concentration for a particular pollutant in mg/l.
(Lhw) Maximum allowable headworks pollutant loading to the POTW in pounds per day (lbs/day).
(Ldom) Domestic/commercial background loading to the POTW for a particular pollutant in pounds per day (lbs/day).
(Lind) Maximum allowable industrial loading to the POTW in pounds per day.
(Cind) Industrial allowable local limit for a given pollutant in mg/l.
(SF) Safety factor as a percent.
8.34 Unit conversion factor

$$Lhw = \frac{8.34 * Ccrit * Qpotw}{1 - Rpotw}$$

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Local Limits Determination Based on NPDES Most Stringent Criteria

	ENVIRONMENTAL CRITERIA AND PROCESS DATA BASE						MAXIMUM LOADING		INDUSTRIAL			
Pollutant	IU Pollut. Flow (MGD) (Qind)	POTW Flow (MGD) (Qpotw)	Removal Efficiency (%) (Rpotw)	NPDES Most Stringent Water Quality Criteria (mg/l) (Ccrit)	Domestic and Conc. (mg/l) (Cdom)	Commercial Flow (MGD) (Qdom)	Allowable Headworks (lbs/day) (Lhw)	Domestic/ Commercia (lbs/day) (Ldom)	Allowable Loading (lbs/day) (Lind)	Local Limit (mg/l) (Cind)	Safety Factor (%) (SF)	Safety Factor Pounds (SFP)
bis(2-Ethylhexyl) phthalate	0.019	0.858	80.180	0.002	0.00431	0.839	0.065	0.030	0.028	0.17878	10.000	0.0065

(Qind) Industrial User total plant discharge flow in Million Gallons per Day (MGD) that contains a particular pollutant.
(Qpotw) POTW's average influent flow in MGD.
(Rpotw) Removal efficiency across POTW as percent.
(Ccrit) NPDES monthly maximum permit limit for a particular pollutant in mg/l.
(Qdom) Domestic/commercial background flow in MGD.
(Cdom) Domestic/commercial background concentration for a particular pollutant in mg/l.
(Lhw) Maximum allowable headworks pollutant loading to the POTW in pounds per day (lbs/day).
(Ldom) Domestic/commercial background loading to the POTW for a particular pollutant in pounds per day (lbs/day).
(Lind) Maximum allowable industrial loading to the POTW in pounds per day.
(Cind) Industrial allowable local limit for a given pollutant in mg/l.
(SF) Safety factor as a percent.
8.34 Unit conversion factor

$$Lhw = \frac{8.34 * Ccrit * Qpotw}{1 - Rpotw}$$