Detailed Technical Local Limits Revaluation Report for the Columbia Wastewater Treatment Plant

Submitted to

Submitted by

Geosyntec consultants

engineers | scientists | innovators

2009 E. McCarty, Suite 1
Jefferson City, MO 65101

June 28, 2022

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SECTION 1

BACKGROUND

The Missouri Department of Natural Resources (MDNR) renewed the Columbia (City) Wastewater Treatment Plant (CWWTP) National Pollutant Discharge Elimination System (NPDES) permit (Permit, MO-0097837) on July 1, 2020. Special Condition 17. (b) of the renewed Permit requires the City of Columbia (City) submit a technical evaluation of the need to revise the City's industrial discharge local limits under 40 CFR 403.5(c)(1). Appendix A summarizes the results of the local limits update. The City last revised local limits in 2011 (Appendix B) Following the submission of the local limits technical evaluation in October 2020 (Appendix C), MDNR directed the City to conduct a detailed technical local limits reevaluation in accordance with US EPA guidance documents. The results of the local limits evaluation are provided in this report.

This report provides the information requested in Part II of MDNR form MO 780-2954 (04-22), entitled Technical Evaluation of Local Limits (40 CFR 122.44(j)(2)(II) and Detailed Technical Reevaluation of Local Limits 40 CFR 403.5(c)(1) (Appendix D). Information requested in Part I of this from was previously provided in the local limits review submitted in October 2020 (Appendix C). The format of this report is intended to enable a streamlined revision during future local limits reevaluations by the City.

This report recommends local limits reductions for nine pollutants of concern (POC's) (silver, arsenic, chromium, copper, nickel, lead, zinc, molybdenum and selenium) and a limit increase for three POC's (cadmium, cyanide and mercury). These revisions were primarily attributed to the following factors:

- A decrease in CWWTP actual flow rate
- A reduction in sludge volume production
- A lowering of water quality standards (selenium)
- Removal of CWWTP final effluent limits (silver, cadmium, cyanide, chromium, copper, lead and mercury)
- Increase in assumed hardness concentration
- Reduction in CWWTP removal efficiency (lead)
- Addition of a 10% safety factor

1.1 Wastewater Treatment Plant Overview

The City Wastewater Treatment Plant (WWTP) has a design average flow of 25.2 million gallons per day (MGD) to serve a design population equivalent of 178,700. The National Pollutant Discharge Elimination System (NPDES) permit number is MO-0097837. The WWTP utilizes activated sludge basins and anaerobic digesters. Biosolids are land applied, landfilled, or hauled to a permitted biosolids disposal facility.

1.2 Method of Deriving Maximum Allowable Headworks Loadings and Local Limits

The Maximum Allowable Headworks Loadings (MAHLs) and Local Limit calculations consider four primary concerns, when applicable, regarding a pollutant's impact on the WWTP, its discharge to the receiving water, and biosolids disposal. The primary concerns are:

1) protection of receiving water quality,
2) compliance with NPDES permit discharge limits,
3) protection of biological treatment processes, and
4) protection of biosolids quality.

The maximum treatment plant loading acceptable for each of the four primary concerns is calculated separately and the lowest loading value is considered the MAHL from which the local limits are derived. Therefore, each pollutant will have one of the four potential impacts as its limiting factor.

The EPA Region 7, Missouri specific, spreadsheet model provided by MDNR (version LLxls_R7_v6_1) was used to calculate Maximum Allowable Industrial Loadings and Uniform Concentration Based Local Limits. A copy of the calculation worksheets is included in Appendix E.

1.3 Flow from Industrial Users

Calculated Local Limit concentrations are directly proportional to the volume of industrial wastewater discharged to the City's collection and treatment system. The industrial wastewater flow rate used for Local Limits calculations was 853,000 gallons per day (gpd) and represents flow from ten current and proposed industrial users (Appendix F) and reflect the City's 2021 Annual Pretreatment Report (Appendix G).

1.4 Pollutants of Concern (POC's)

Fifteen POC's specified by EPA were evaluated for Local Limits (EPA 2004). These included silver, arsenic, cadmium, cyanide, chromium, copper, mercury, nickel, lead, zinc, molybdenum, selenium, five-day biochemical oxygen demand (BOD_5), total suspended solids (TSS), and ammonia. To identify additional pollutants of concern, the 2020 operating permit was reviewed

for parameters with permit limits and sludge reports for 2015-2019 were compared to EPA Sludge Metals Standards (Appendix B). No additional POC's were added following this review.

Monthly influent and effluent data for the plant from January 2018 to September 2021 (Appendix H) was used for local limits calculations. Effluent samples were taken from Permitted Feature IP1, after mechanical treatment and prior to the permitted wetland treatment system. For results below the Method Detection Level (MDL), ½ the MDL was used for calculations.

1.5 Domestic Source Concentrations

The City conducted extensive domestic background sampling at two pump stations for the 2011 local limits report (Appendix C). Due to limited changes in the domestic catchment areas of both pump stations, the City conducted a resampling event in 2021 at the Cascades pump station during dry weather to determine if pollutant concentrations had changed meaningfully since the 2011 local limits derivation. Results from the 24-hr composite sampling event conducted on July 27, 2021 (Appendix I) indicated domestic contributions were equal to or less than the samples collected for the 2011 local limits report. As a result, the larger 2011 domestic background dataset was used for the updated local limits calculations. Where the average domestic influent concentrations exceeded average influent concentrations for the plant, the average influent concentration was used as the domestic background level in local limits calculations.

1.6 Biosolids Data

Sludge quality and quantity information were taken from the 2018-2021 annual sludge reports (Appendix J). Site use acreage and years were provided by the City.

1.7 Water Quality Standards

The Local Limits spreadsheet model was updated with Missouri Water Quality Standards for the protection of aquatic life where appropriate (10 CSR 20-7.031). Chronic values were used for all parameters except for silver, which has no chronic criteria. Per MDNR's Reasonable Potential Analysis Spreadsheet, 2020, Level III Ecoregion (Interior River Valley and Hills) 50th percentile hardness (208 mg/L) was used to calculate criteria for hardness-dependent parameters.

1.8 Removal Efficiencies

Influent and effluent samples from January 2018 through December 2020 were used to calculate removal efficiencies where influent and effluent concentrations were above detection. For parameters without sufficient sampling above detection, removal efficiencies from the 2011 local limits report or EPA defaults for activated sludge treatment (EPA 2004) were used (whichever value was lowest) (Appendix K).

1.9 Total Treatment Plant Flow

The estimated total daily flow treated at the City wastewater treatment plant (17.3 MGD) was calculated using daily flows from 2019-2021 (Appendix L).

1.10 Safety Factors

A safety factor of 10% was applied to all parameters.

1.11 Conventional Pollutants

BOD_5, TSS, and ammonia data from 2019-2021 were considered representative of plant operating conditions and used to compare actual loading rates to CWWTP design capacity (Appendix L). The population (126,254) was taken from the 2020 United States Census. Plant design criteria were taken from the 2018 Columbia Wastewater and Stormwater Integrated Management Plan[1].

[1] Columbia Wastewater and Stormwater Integrated Management Plant, Final Report, Attachment G, May 2018.

SECTION 2

MAXIMUM ALLOWABLE INDUSTRIAL LOADINGS AND LOCAL LIMITS

Maximum Allowable Industrial Loadings were calculated for fifteen pollutants (Table 1). As described in Section 1, the calculations take into consideration the four primary concerns of 1) receiving water quality protection (Water Quality Standards), 2) NPDES permit discharge limits compliance, 3) biological treatment process protection (Secondary Inhibition) and 4) protection of biosolids quality (either 503 Ceiling and Ceiling Benchmark). The Maximum Allowable Industrial Loading can then be used to develop Local Limits (mass or concentration based) as needed for the industrial dischargers (EPA 2004). See Appendix A for additional details on each metal pollutant updated local limit.

Table 1: Maximum Allowable Industrial Loadings and Calculated Uniform Concentration Based Local Limits

Pollutant of Concern	Current Daily Maximum Uniform Concentration-Based Local Limit (mg/L)		2022 Calculations			
		Current Headworks Loading (lbs/day)	Maximum Allowable Industrial Load (lbs/day)	Calculated Daily Maximum Uniform Concentration-Based Local Limit (mg/L)	Local Limit % Change	Limiting Factor
Arsenic	0.393	0.216	1.497	0.210	-47%	503 Ceiling
Cadmium	0.025	0.032	0.527	0.074	196%	Water Quality
Chromium	7.280	0.385	41.796	5.875	-19%	Ceiling Benchmark
Copper	3.497	6.086	21.364	3.003	-14%	Water Quality
Cyanide	0.199	0.320	1.733	0.244	23%	Water Quality
Lead	0.633	0.289	2.817	0.396	-37%	Water Quality
Mercury	0.018	0.015	0.300	0.042	133%	Water Quality
Molybdenum	0.376	0.410	1.154	0.162	-57%	503 Ceiling
Nickel	2.293	1.443	8.447	1.187	-48%	503 Ceiling
Selenium	0.476	0.229	0.693	0.097	-80%	Water Quality
Silver	0.984	0.180	6.166	0.867	-12%	Water Quality
Zinc	21.485	2.446	75.573	10.623	-51%	503 Ceiling
BOD_5	--	39,822	27,497	3,865	--	Protection of Plant and Water Quality
TSS	--	42,130	31,179	4,383	--	Protection of Plant and Water Quality
Ammonia	--	3,318	2,360	332	--	Protection of Plant and Water Quality

Notes: All metals values are for total recoverable metals

Current plant loadings and calculated Maximum Allowable Industrial Loadings were evaluated to assess if additional Local Limits should be considered.

The Maximum Allowable Industrial Loadings and uniform concentration-based local limits will be adopted in the City ordinance. Local limits will be allocated to industrial users in industrial user permits. The permit limits will allocate mass loadings on a daily maximum basis for each applicable parameter. The allowable industrial load may be converted to a concentration-based limit for each industrial user for ease of permitting. To evaluate the need for future local limits updates, the City will evaluate headworks loading annually by comparing regularly collected influent data with the Maximum Allowable Headworks Loading.

Appendix A. Local Limits Summary Slides

Ag – Silver

Geosyntec consultants

2011 Local Limit, as mg/L			2022 Local Limit, as mg/L			% Change
Ag	0.984	NPDES #:	Ag	0.867	Water Quality	-12%

Change attributed to:

- Removal of permit limit for Ag (Water Quality Standard now limiting)
- Reduction in plant flow
- Addition of 10% safety factor

As – Arsenic

Geosyntec consultants

2011 Local Limit, as mg/L			2022 Local Limit, as mg/L			% Change
As	0.383	Digstn Inhib:	As	0.210	503 Ceiling	-47%

Change attributed to:

- Reduction in plant flow
- Sludge changes (reduced flows of more highly concentrated sludge)
- Addition of 10% safety factor

Cd – Cadmium

Geosyntec consultants

2011 Local Limit, as mg/L			2022 Local Limit, as mg/L			% Change
Cd	0.025	NPDES #:	Cd	0.074	Water Quality	196%

Change attributed to:

- Removal of permit limit for Cd (Water Quality Standard now limiting)
- Increase in hardness to 208 mg/L
- Reduction in plant flow
- Addition of 10% safety factor

CN – Cyanide

Geosyntec consultants

2011 Local Limit, as mg/L			2022 Local Limit, as mg/L			% Change
CN	0.199	NPDES #:	CN	0.244	Water Quality	23%

Change attributed to:

- Removal of permit limit for CN (Water Quality Standard now limiting)
- Reduction in plant flow
- Addition of 10% safety factor

Cr – Chromium

Geosyntec consultants

2011 Local Limit, as mg/L			2022 Local Limit, as mg/L			% Change
Cr	7.280	NPDES #:	Cr	5.875	Ceiling Bnchmrk	-19%

Change attributed to:

- Removal of permit limit for Cr (Sludge Ceiling Benchmark now limiting)
- Increase in plant removal efficiency (59% to 64%)
- Reduction in plant flow
- Addition of 10% safety factor

Cu – Copper

Geosyntec consultants

2011 Local Limit, as mg/L			2022 Local Limit, as mg/L			% Change
Cu	3.497	Digstn Inhib:	Cu	3.003	Water Quality	-14%

Change attributed to:

- Removal of permit limit for Cu (Water Quality Standard now limiting)
- Increase in hardness to 208 mg/L
- Decrease in plant removal efficiency (94% to 92%)
- Reduction in plant flow
- Addition of 10% safety factor

Hg – Mercury

Geosyntec consultants

2011 Local Limit, as mg/L			2022 Local Limit, as mg/L			% Change
Hg	0.018	NPDES #:	Hg	0.042	Water Quality	133%

Change attributed to:

- Removal of permit limit for Hg (Water Quality Standard now limiting)
- Reduction in plant flow
- Addition of 10% safety factor

Mo – Molybdenum

Geosyntec consultants

2011 Local Limit, as mg/L			2022 Local Limit, as mg/L			% Change
Mo	0.376	SLDG Dispsl:	Mo	0.162	503 Ceiling	-57%

Change attributed to:

- Reduction in plant flow
- Sludge changes (reduced flows of more highly concentrated sludge)
- Addition of 10% safety factor

Ni – Nickel

Geosyntec consultants

2011 Local Limit, as mg/L			2022 Local Limit, as mg/L			% Change
Ni	2.293	SLDG Dispsl:	Ni	1.187	503 Ceiling	-48%

Change attributed to:

- Reduction in plant flow
- Sludge changes (reduced flows of more highly concentrated sludge)
- Addition of 10% safety factor

Pb – Lead

Geosyntec consultants

2011 Local Limit, as mg/L			2022 Local Limit, as mg/L			% Change
Pb	0.633	NPDES #:	Pb	0.396	Water Quality	-37%

Change attributed to:

- Removal of permit limit for Pb (Water Quality Standard now limiting)
- Increase in hardness to 208 mg/L
- Reduction in Removal Efficiency (70% to 65%)
- Reduction in plant flow
- Addition of 10% safety factor

Se – Selenium

Geosyntec consultants

2011 Local Limit, as mg/L			2022 Local Limit, as mg/L			% Change
Se	0.476	Water Quality	Se	0.097	Water Quality	-80%

Change attributed to:

- Selenium WQS has decreased since 2011 (0.019 mg/L to 0.005 mg/L)
- Reduction in plant flow
- Addition of 10% safety factor

Zn – Zinc

Geosyntec consultants

2011 Local Limit, as mg/L			2022 Local Limit, as mg/L			% Change
Zn	21.485	SLDG Dispsl:	Zn	10.623	503 Ceiling	-51%

Change attributed to:

- Error in 2011 Spreadsheet did not calculate Water Quality-based Limits
- Increase in hardness to 208 mg/L
- Reduction in plant flow
- Sludge changes (reduced flows of more highly concentrated sludge)
- Addition of 10% safety factor

Appendix B. 2011 Columbia Local Limits Report

Columbia Regional WWTP
MO0097837, Boone County

STATE OF MISSOURI
Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director
DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

SEP 29 2011

Columbia Regional WWTP
PO Box 6015
Columbia, MO 65205

Subject: Public Notice for Proposed State Operating Permit for Columbia Regional WWTP

Dear Permittee:

The enclosed public notice pertains to your proposed State Operating Permit.

Federal regulations required issuance of this public notice to inform interested persons of the agency's intent to issue an operating permit to discharge, and allows a 30-day period for comment.This public notice package should be posted on a bulletin board at your place of business. If response to the public notice indicates significant interest, a public hearing or adjudicatory hearing may be held. Based on comments received, or the results of a hearing, the proposed permit will be modified and issued or possibly denied.

Any questions you may have should be sent to the address indicated on the enclosed public notice.

Sincerely,

WATER PROTECTION PROGRAM

Refaat Mefrakis

Refaat Mefrakis, P.E., Chief
NPDES Permits and Engineering Section

RM

Enclosure

Columbia Regional WWTP
MO0097837, Boone County

STATE OF MISSOURI
Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director
DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

SEP 29 2011

Postmaster
United States Post Office
Columbia, MO 65203

Subject: Public Notice for Proposed State Operating Permit for Columbia Regional WWTP

Enclosed is a public notice regarding a proposed State Operating Permit. It is required that this notice be posted in the post office and "public places of the municipality nearest the proposed discharge" in accordance with 10 CSR 20-6.020(1)(E)1. We will appreciate your assistance in posting this notice on a public bulletin board in your office until the expiration date for public comment stated therein. Please sign and return the enclosed card to this agency.

Sincerely,

WATER PROTECTION PROGRAM

Refaat Mefrakis

Refaat Mefrakis, P.E., Chief
NPDES Permits and Engineering Section

RM

Enclosure

Columbia Regional WWTP
MO0097837, Boone County

STATE OF MISSOURI Jeremiah W. (Jay) Nixon, Governor • Sara Parker Pauley, Director

DEPARTMENT OF NATURAL RESOURCES

www.dnr.mo.gov

SEP 29 2011

Sheela Amin
701 E. Broadway
P.O. Box 6015
Columbia, MO 65205

Subject: Public Notice for Proposed State Operating Permit for Columbia Regional WWTP

Enclosed is a public notice regarding a proposed State Operating Permit. It is required that this notice be posted in the "public places of the municipality nearest the proposed discharge" in accordance with 10 CSR 20-6.020(1)(E)1. We will appreciate your assistance in posting this notice on a public bulletin board in your office until the expiration date for public comment stated therein.

In order that we may be assured of fulfilling all legal requirements, we ask that the enclosed card be signed and returned within seven (7) days.

Thank you for your cooperation in this matter.

Sincerely,

WATER PROTECTION PROGRAM

Refaat Mefrakis

Refaat Mefrakis, P.E., Chief
NPDES Permits and Engineering Section

RM

Enclosure

Missouri Department of Natural Resources

PUBLIC NOTICE

DRAFT MISSOURI STATE OPERATING PERMIT

DATE: September 30, 2011

In accordance with the state Clean Water Law, Chapter 644, RSMo, Clean Water Commission regulation 10 CSR 20-6.010, and the federal Clean Water Act, the applicants listed herein have applied for authorization to either discharge to waters of the state or to operate a no-discharge wastewater treatment facility. The proposed permits for these operations are consistent with applicable water quality standards, effluent standards and/or treatment requirements or suitable timetables to meet these requirements (see 10 CSR 20-7.015 and 7.031). All permits will be issued for a period of five years, unless noted otherwise in the Public Notice for that discharge.

On the basis of preliminary staff review and the application of applicable standards and regulations, the Missouri Department of Natural Resources (MDNR), as administrative agent for the Missouri Clean Water Commission, proposes to issue a permit(s) subject to certain effluent limitations, schedules, and special conditions. The proposed determinations are tentative pending public comment.

Persons wishing to comment on the proposed permit conditions are invited to submit them in writing to the Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102, ATTN: NPDES Permits and Engineering Section / Permit Comments. **Please include the permit number in all comment letters.**

Comments should be confined to the issues relating to the proposed action and permit(s) and the effect on water quality. The MDNR may not consider as relevant comments or objections to a permit based on issues outside the authority of the Clean Water Commission, (see Curdt v. Mo. Clean Water Commission, 586 S.W.2d 58 Mo. App. 1979).

All comments must be received or postmarked by 5:00 pm on October 30, 2011. MDNR will consider all written comments, including emails, faxes and letters, in the formulation of all final determinations regarding the applications. E-mail comments will be accepted at the following address: publicnoticenpdes@dnr.mo.gov. If response to this notice indicates significant public interest, a public meeting or hearing may be held after due notice for the purpose of receiving public comment on the proposed permit or determination. Public hearings and/or issuance of the permit will be conducted or processed according to 10 CSR 20-6.020.

Copies of all draft permits and other information including copies of applicable regulations are available for inspection and copying at DNR's website, http://www.dnr.mo.gov/env/wpp/permits/permit-pn.htm, or at the Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102, between the hours of 8:00 a.m. and 5:00 p.m., Monday through Friday.

September 30, 2011

NOTICE OF INTENT TO APPROVE SUBSTANTIAL PRETREATMENT PROGRAM MODIFICATION CITY OF COLUMBIA MO-0097837

The City of Columbia, Missouri, has an approved pretreatment program meeting the requirements of 10 CSR 20-6.100. The City's authority to implement the program is contained in Chapter 22 of the Code of Ordinances of the City of Columbia.

The Director of the Water Protection Program may initiate a program modification to reflect changing conditions at the Publicly Owned Treatment Works (POTW) in accordance with 10 CSR 20-6.100(16)(A). The operating permit for the Columbia Regional Wastewater Treatment Plant required that the permittee submit revisions to the pretreatment local limitations to allow compliance with the Final Effluent Limits contained in Table A of the operating permit MO-0097837. The proposed changes include less stringent limits for several pollutants, more restrictive limits for several others, and the addition of limitations for selenium and molybdenum as summarized in the submittal. Pursuant to 10 CSR 20-6.100(16)(C)1.B., modifications that result in less stringent local limits are a substantial program modification that will require public notice and approval.

The Department of Natural Resources, as Approval Authority, has reviewed the proposed revised limitations and intends to grant its approval as required by 10 CSR 20-6.100.

Interested parties may review the proposed revisions at the Department of Natural Resources, 1101 Riverside Drive, Jefferson City, Missouri, 65010 or online at http://www.dnr.mo.gov/env/wpp/permits/permit-pn.htm or at City Hall, 701 East Broadway, Columbia, MO 65201.

CITY OF COLUMBIA, MISSOURI

PUBLIC WORKS DEPARTMENT
Sewer Utility Division

August 01, 2011

Mr. Walter Fett
Pretreatment Coordinator
Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, MO 65102-0176

Dear Mr. Fett:

Enclosed is the City of Columbia's evaluation of Local Limits and recommended changes as required in Part G of Permit MO-0097837.

If you have any questions, please call me at (573) 445-9427.

DEPARTMENT OF PUBLIC WORKS

David A. Sorrell, P.E.
Sewer Utility Manager

Enclosure

cc: MODNR, Northeast Regional Office
Steve Huebotter, Operations Superintendent
Craig Cuvellier, Laboratory Supervisor

P.O. Box 6015 • Columbia, Missouri 65205-6015
(573) 445-9427 • FAX (573) 446-8112 • www.GoColumbiaMo.com

COLUMBIA REGIONAL WASTEWATER TREATMENT PLANT
MO-0097837

Development of Local Limits - 2011

This report presents the City of Columbia's (City) evaluation of existing local limits to determine if modifications to these controls are needed to maintain compliance with regulatory requirements applicable to the Columbia Regional Wastewater Treatment Plant (CRWWTP), to protect worker health and safety and to safeguard the CRWWTP and collection system infrastructure. The evaluation process was performed using the Excel spreadsheet provided by USEPA Region 7 and based on the maximum allowable head works loading (MAHL) method described in the July 2004 United States Environmental Protection Agency (USEPA) *Local Limits Development Guidance* (EPA 833-R-04-002A).

The CRWWTP has been operational since 1983 and operates under permit MO-0097837 issued by the Missouri Department of Natural Resources (MoDNR). The plant is a complete mixed activated sludge facility consisting of two treatment trains of primary basins, aeration basins and final basins followed by a constructed wetland system. The CRWWTP is designed to treat BOD with a design flow of 20.4 MGD, had an average influent flow for 2010 of 18.2 MGD of which 0.924 MGD was received from regulated industries and produced approximately 3,100 dry tons of sludge. In March of 2010 construction began on an upgrade to the CRWWTP. This upgrade will consist of an additional two treatment trains consisting of a primary basin, aeration basin and a final basin. The two additional treatment trains will treat for BOD and ammonia using the nitrification/denitrification process. The upgrade will increase the design flow to 25 MGD and is scheduled for completion in the first quarter of 2013. The original treatment trains will be downgraded to 2.2 MGD each to allow for nitrification to occur. The NPDES operating permit for the CRWWTP was also renewed in 2010. The permit establishes Final Effluent Limits that are significantly lower than current limits. These limits go into effect in October 2012. This evaluation of the local limits shall allow for the compliance with the new lower effluent limits.

The following Pollutants of Concern (POCs) were selected for consideration in the Local Limits evaluation:

Existing POCs

Arsenic	Cadmium	Chromium	Copper
Lead	Mercury	Nickel	Silver
Zinc	Cyanide (total)	Phenols	

New POCs

Ammonia	BOD_5	Molybdenum	Selenium
Total Suspended Solids (TSS)			

Ammonia was excluded from further consideration of a local limit because it is largely derived from residential/domestic sources. Only one industry had values above the detection limit. This Significant Industrial User (SIU) contributed an average of 9 lbs/day over the last three year SIU permit period. The CRWWTP will continue to monitor for ammonia from this SIU.

BOD_5 and TSS were not considered for Local Limit development as the strength of these pollutants in the plant influent are monitored under the NPDES permit. CRWWTP also has a surcharge program in place to help manage inputs of these pollutants.

Phenols will not be evaluated and will be dropped from the Local Limit list. The MoDNR permit contains no limitations for phenols and no concentrations above detection limit have been found in the CRWWTP influent or any of the SIU discharges.

The remaining POCs will be evaluated for Local Limit development.

Monitoring for the POCs was conducted during the calendar year 2010 except for the following:

> Cadmium: previous data were reported at a detection level on a order of magnitude higher that the new permit limit therefore the data used for this evaluation were collected from between December 2010 and June 2011 and analyzed to meet the lower permit limit.
>
> Domestic Levels: samples were collected from the Thornbrook pump and Cascade pump stations, seven 24 hour composite samples were collected from each pump station between June 7 and June 16, 2011.

Influent and Effluent samples were collected in conjunction with routine compliance monitoring and were collected monthly.

Additional data were used from permitted SIUs discharge monitoring reports, biosolids monitoring and the 2010 Annual Biosolids Report.

Data that were below the detection limit were replaced with a value of one-half the detection limit. Plant removal efficiencies were calculated using the Mean Removal Efficiency method in accordance with the USEPA Guidance Manual. Literature removal values were used for cadmium, cyanide and nickel. Influent and effluent analytical values for these parameters were below detection limit.

The receiving stream for the CRWWTP is Eagle Bluffs Conservation Area located in the Missouri River bottoms near the town of McBaine. Permit MO-0097837 fact sheet defines the 7Q10 flow for the receiving stream as 0 CFS (0 MGD).

The headwork's actual loading range from 2 to 58 percent of the calculated MAHLs with only Copper and Molybdenum above 50 percent. For this evaluation no safety factors were used.

The CRWWTP like most utilities enforces the Uniform Concentration Limit (Daily Maximum). The following table shows the existing Local Limits and the proposed new Local Limits developed under this evaluation.

POC	Old mg/L	New mg/L
Silver (Ag)	0.14	0.984
Arsenic (As)	0.31	0.393
Cadmium (Cd)	0.19	0.025
Cyanide (CN)	0.85	0.199
Chromium (Cr)	3.73	7.280
Copper (Cu)	2.87	3.497
Mercury (Hg)	0.05	0.018
Molybdenum (Mo)		0.376
Nickel (Ni)	2.34	2.293
Lead (Pb)	0.82	0.633
Selenium (Se)		0.476
Zinc (Zn)	7.33	21.485

Modifications to the existing sewer use ordinance will be required to implement the new local limits. An example of the council bill that will enact these changes is included.

CALCULATIONS

Using Spreadsheet from USEPA Region VII

CITY: **Columbia, Missouri - MO-0097837** 07/12/11

LOCAL LIMITS CALCULATOR

Plant Data:

Non SIU Flow, MGD:	**17.2758**	SLDG To Disposal,MGD:	**0.037227**
TOTAL Flow, MGD:	**18.2**	SLDG Disposal %Solids:	**5.9557**
7Q10, MGD:	**0**	SITE Use, Years:	**25**
Flow To Digsr: MGD:	**0.09858**	SITE Size, Acres:	**1300**

	NPDES Limit	Removal Efficiencies Primary	Removal Efficiencies Plant	Domestic Level	WQS	Safety Factor	Avg. Infl. Cncntrn	AS Inhibition	Digestion Inhibition
Ag	0.0142	20%	72%	0.00025	NA	0%	**0.0044**	0.25	13
As	0.0164	NA	43%	0.00080	NA	0%	**0.0039**	0.1	1.6
Cd*	0.0005	15%	67%	0.00025	NA	0%	**0.0002**	1	20
CN	0.004	27%	69%	0.00293	NA	0%	**0.0025**	0.1	4
Cr	0.1564	27%	59%	0.00886	NA	0%	**0.0072**	1	100
Cu*	0.0147	22%	94%	0.05629	NA	0%	**0.1335**	1	40
Hg	0.0004	10%	59%	0.00010	NA	0%	**0.0002**	0.1	NA
Ni*	NA	14%	42%	0.00569	0.16	0%	**0.0100**	1	10
Pb*	0.0101	57%	70%	0.00148	NA	0%	**0.0102**	0.1	340
Zn*	NA	27%	75%	0.12900	0.11	0%	**0.2649**	1	400
Mo	NA		44%	0.00155	NA	0%	**0.0113**	NA	NA
Se	NA		26%	0.00149	0.019	0%	**0.0036**	NA	NA

*HARDNESS DEPENDENT

SUMMARY OF MASS LOADINGS

	Domestic/commcl Sources		Maximum Allowable Industrial Load (MAIL)			Maximum Allowable Headwrks Load (MAHL)	Headworks ACTUAL Avg.Load	Current Loading as % of
	lbs.	% of limit	lbs.	% of MAHL	lbs. Reserve	lbs	lbs	MAHL
Ag	0.036	0%	7.581	100%		7.617	0.671	9%
As	0.115	4%	2.949	96%		3.064	0.592	19%
Cd	0.036	16%	0.194	84%		0.230	0.033	14%
CN	0.422	22%	1.537	78%		1.959	0.379	19%
Cr	1.277	2%	56.112	98%		57.390	1.095	2%
Cu	8.110	23%	26.954	77%		35.063	20.265	58%
Hg	0.014	10%	0.135	90%		0.149	0.037	25%
Ni	0.819	4%	17.672	96%		18.491	1.518	8%
Pb	0.213	4%	4.879	96%		5.092	1.543	30%
Zn	18.586	10%	165.61	90%		184.195	40.210	22%
Mo	0.223	7%	2.898	93%		3.121	1.720	55%
Se	0.223	6%	3.668	94%		3.891	0.548	14%

TOXIC POLLUTANTS SUMMARY

	UNIFORM CONCENTRATION LIMIT If APPLIED mg/l	LIMITING CRITERIA
Ag	0.984	NPDES #:
As	0.383	Digstn Inhib:
Cd	0.025	NPDES #:
CN	0.199	NPDES #:
Cr	7.280	NPDES #:
Cu	3.497	Digstn Inhib:
Hg	0.018	NPDES #:
Ni	2.293	SLDG Dispsl:
Pb	0.633	NPDES #:
Zn	21.485	SLDG Dispsl:
Mo	0.376	SLDG Dispsl:
Se	0.476	Water Quality

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SILVER

		source
Domestic Backgrnd:	0.0003	
Instream Backgrnd:	0	
Plant Removal Eff.:	72%	
Primary Rmvl Eff.:	20%	*literature*
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	0.25	*literature*
SLDG Digstn Inhib.:	13	*literature*
NPDES Limit, mg/l:	0.0142	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	NA	*Regulation*
Disp Limit, mg/kg:	NA	*calculated*
SLDG Qual mg/kg:	NA	*Regulation*
Grwth/Safety factor:	0%	

Non SIU Flow, MGD:	*17.276*	*SLDG To Disp,MGD:*	*0.04*
TTL Flow, MGD:	*18.2*	*SLDG Disp %Solids:*	*5.96*
7Q10, MGD:	*0*	*SITE Use, Yrs:*	*25*
Flow To Digsr: MGD:	*0.0986*	*SITE Size, Acres:*	*1300*

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l		
Water Quality	NA	
Digstn Inhib:	1.9292	
SLDG Dispsl:	NA	
Secndry Inhib.:	6.1492	
NPDES #:	0.9835	*Limiting*
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	NA	
Digstn Inhib:	14.87	
SLDG Dispsl:	NA	
Secndry Inhib.:	47.398	
NPDES #:	7.5809	*Limiting*

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ARSENIC

		source
Domestic Backgrnd:	0.0008	
Instream Backgrnd:	0	
Plant Removal Eff.:	43%	
Primary Rmvl Eff.:	NA	*literature*
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	0.1	*literature*
SLDG Digstn Inhib.:	1.6	*literature*
NPDES Limit, mg/l:	0.0164	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	36.58	*Regulation*
Disp Limit, mg/kg:	281.7	*calculated*
SLDG Qual mg/kg:	75	*Regulation*
Grwth/Safety factor:	0%	

Non SIU Flow, MGD:	*17.276*	*SLDG To Disp,MGD:*	*0.04*
TTL Flow, MGD:	*18.2*	*SLDG Disp %Solids:*	*5.96*
7Q10, MGD:	*0*	*SITE Use, Yrs:*	*25*
Flow To Digsr: MGD:	*0.0986*	*SITE Size, Acres:*	*1300*

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l		
Water Quality	NA	
Digstn Inhib:	0.3826	*Limiting*
SLDG Dispsl:	0.4042	
Secndry Inhib.:	1.9543	
NPDES #:	0.551	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	NA	
Digstn Inhib:	2.9494	*Limiting*
SLDG Dispsl:	3.1156	
Secndry Inhib.:	15.064	
NPDES #:	4.2468	

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CADMIUM

		source
Domestic Backgrnd:	0.0003	
Instream Backgrnd:	0	
Plant Removal Eff.:	67%	*literature*
Primary Rmvl Eff.:	15%	*literature*
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	1	*literature*
SLDG Digstn Inhib.:	20	*literature*
NPDES Limit, mg/l:	0.0005	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	34.79	*Regulation*
Disp Limit, mg/kg:	267.9	*calculated*
SLDG Qual mg/kg:	85	*Regulation*
Grwth/Safety factor:	0%	

Non SIU Flow, MGD:	*17.276*	*SLDG To Disp,MGD:*	*0.04*
TTL Flow, MGD:	*18.2*	*SLDG Disp %Solids:*	*5.96*
7Q10, MGD:	*0*	*SITE Use, Yrs:*	*25*
Flow To Digsr: MGD:	*0.0986*	*SITE Size, Acres:*	*1300*

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l		
Water Quality	NA	
Digstn Inhib:	3.1793	
SLDG Dispsl:	0.2997	
Secndry Inhib.:	23.163	
NPDES #:	0.0252	*Limiting*

ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	NA	
Digstn Inhib:	24.506	
SLDG Dispsl:	2.3099	
Secndry Inhib.:	178.54	
NPDES #:	0.194	*Limiting*

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CYANIDE

		source
Domestic Backgrnd:	0.0029	
Instream Backgrnd:	0	
Plant Removal Eff.:	69%	*literature*
Primary Rmvl Eff.:	27%	*literature*
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	0.1	*literature*
SLDG Digstn Inhib.:	4	*literature*
NPDES Limit, mg/l:	0.004	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	NA	*Regulation*
Disp Limit, mg/kg:	NA	*calculated*
SLDG Qual mg/kg:	NA	*Regulation*
Grwth/Safety factor:	0%	

Non SIU Flow, MGD:	*17.276*	*SLDG To Disp,MGD:*	*0.04*
TTL Flow, MGD:	*18.2*	*SLDG Disp %Solids:*	*5.96*
7Q10, MGD:	*0*	*SITE Use, Yrs:*	*25*
Flow To Digsr: MGD:	*0.0986*	*SITE Size, Acres:*	*1300*

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l		
Water Quality	NA	
Digstn Inhib:	0.5636	
SLDG Dispsl:	NA	
Secndry Inhib.:	2.6428	
NPDES #:	0.1994	*Limiting*

ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	NA	
Digstn Inhib:	4.3443	
SLDG Dispsl:	NA	
Secndry Inhib.:	20.371	
NPDES #:	1.5366	*Limiting*

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CHROMIUM

		source
Domestic Backgrnd:	0.0089	
Instream Backgrnd:	0	
Plant Removal Eff.:	59%	
Primary Rmvl Eff.:	27%	*literature*
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	1	*literature*
SLDG Digstn Inhib.:	100	
NPDES Limit, mg/l:	0.1564	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	2676	*Regulation*
Disp Limit, mg/kg:	20605	*calculated*
SLDG Qual mg/kg:	3000	*Regulation*
Grwth/Safety factor:	0%	

Non SIU Flow, MGD:	*17.276*	*SLDG To Disp,MGD:*	*0.04*
TTL Flow, MGD:	*18.2*	*SLDG Disp %Solids:*	*5.96*
7Q10, MGD:	*0*	*SITE Use, Yrs:*	*25*
Flow To Digsr: MGD:	*0.0986*	*SITE Size, Acres:*	*1300*

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l		
Water Quality	NA	
Digstn Inhib:	18.026	
SLDG Dispsl:	12.108	
Secndry Inhib.:	26.81	
NPDES #:	7.2798	*Limiting*
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	NA	
Digstn Inhib:	138.94	
SLDG Dispsl:	93.332	
Secndry Inhib.:	206.65	
NPDES #:	56.112	*Limiting*

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COPPER

		source
Domestic Backgrnd:	0.0563	
Instream Backgrnd:	0	
Plant Removal Eff.:	94%	
Primary Rmvl Eff.:	22%	*literature*
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	1	*literature*
SLDG Digstn Inhib.:	40	*literature*
NPDES Limit, mg/l:	0.0147	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	1338	*Regulation*
Disp Limit, mg/kg:	10302	*calculated*
SLDG Qual mg/kg:	4300	*Regulation*
Grwth/Safety factor:	0%	

Non SIU Flow, MGD:	*17.276*	*SLDG To Disp,MGD:*	*0.04*
TTL Flow, MGD:	*18.2*	*SLDG Disp %Solids:*	*5.96*
7Q10, MGD:	*0*	*SITE Use, Yrs:*	*25*
Flow To Digsr: MGD:	*0.0986*	*SITE Size, Acres:*	*1300*

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l		
Water Quality	NA	
Digstn Inhib:	3.4968	*Limiting*
SLDG Dispsl:	9.946	
Secndry Inhib.:	24.194	
NPDES #:	3.6117	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	NA	
Digstn Inhib:	26.954	*Limiting*
SLDG Dispsl:	76.664	
Secndry Inhib.:	186.49	
NPDES #:	27.839	

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MERCURY

		source
Domestic Backgrnd:	0.0001	
Instream Backgrnd:	0	
Plant Removal Eff.:	59%	
Primary Rmvl Eff.:	10%	*literature*
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	0.1	*literature*
SLDG Digstn Inhib.:	NA	*literature*
NPDES Limit, mg/l:	0.0004	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	15.17	*Regulation*
Disp Limit, mg/kg:	116.8	*calculated*
SLDG Qual mg/kg:	57	*Regulation*
Grwth/Safety factor:	0%	

Non SIU Flow, MGD:	*17.276*	*SLDG To Disp,MGD:*	*0.04*
TTL Flow, MGD:	*18.2*	*SLDG Disp %Solids:*	*5.96*
7Q10, MGD:	*0*	*SITE Use, Yrs:*	*25*
Flow To Digsr: MGD:	*0.0986*	*SITE Size, Acres:*	*1300*

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l		
Water Quality	NA	
Digstn Inhib:	NA	
SLDG Dispsl:	0.2284	
Secndry Inhib.:	2.1862	
NPDES #:	0.0175	*Limiting*
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	NA	
Digstn Inhib:	NA	
SLDG Dispsl:	1.7607	
Secndry Inhib.:	16.851	
NPDES #:	0.135	*Limiting*

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NICKEL

		source
Domestic Backgrnd:	0.0057	
Instream Backgrnd:	0	
Plant Removal Eff.:	42%	*literature*
Primary Rmvl Eff.:	14%	*literature*
WQS:	0.16	*Goldbook*
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	1	*literature*
SLDG Digstn Inhib.:	10	*literature*
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	375	*Regulation*
Disp Limit, mg/kg:	2887.4	*calculated*
SLDG Qual mg/kg:	420	*Regulation*
Grwth/Safety factor:	0%	

Non SIU Flow, MGD:	*17.276*	*SLDG To Disp,MGD:*	*0.04*
TTL Flow, MGD:	*18.2*	*SLDG Disp %Solids:*	*5.96*
7Q10, MGD:	*0*	*SITE Use, Yrs:*	*25*
Flow To Digsr: MGD:	*0.0986*	*SITE Size, Acres:*	*1300*

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l		
Water Quality	NA	
Digstn Inhib:	2.4334	
SLDG Dispsl:	2.2927	*Limiting*
Secndry Inhib.:	22.792	
NPDES #:	NA	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	NA	
Digstn Inhib:	18.756	
SLDG Dispsl:	17.672	*Limiting*
Secndry Inhib.:	175.68	
NPDES #:	NA	

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LEAD

		source
Domestic Backgrnd:	0.0015	
Instream Backgrnd:	0	
Plant Removal Eff.:	70%	
Primary Rmvl Eff.:	57%	*literature*
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	0.1	*literature*
SLDG Digstn Inhib.:	340	*literature*
NPDES Limit, mg/l:	0.0101	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	268	*Regulation*
Disp Limit, mg/kg:	2063.5	*calculated*
SLDG Qual mg/kg:	840	*Regulation*
Grwth/Safety factor:	0%	

Non SIU Flow, MGD:	*17.276*	*SLDG To Disp,MGD:*	*0.04*
TTL Flow, MGD:	*18.2*	*SLDG Disp %Solids:*	*5.96*
7Q10, MGD:	*0*	*SITE Use, Yrs:*	*25*
Flow To Digsr: MGD:	*0.0986*	*SITE Size, Acres:*	*1300*

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l		
Water Quality	NA	
Digstn Inhib:	51.86	
SLDG Dispsl:	2.8555	
Secndry Inhib.:	4.5519	
NPDES #:	0.633	*Limiting*

ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	NA	
Digstn Inhib:	399.74	
SLDG Dispsl:	22.01	
Secndry Inhib.:	35.086	
NPDES #:	4.879	*Limiting*

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ZINC

		source
Domestic Backgrnd:	0.129	
Instream Backgrnd:	0	
Plant Removal Eff.:	75%	
Primary Rmvl Eff.:	27%	*literature*
WQS:	0.11	*Goldbook*
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	1	*literature*
SLDG Digstn Inhib.:	400	*literature*
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	2498	*Regulation*
Disp Limit, mg/kg:	19234	*calculated*
SLDG Qual mg/kg:	7500	*Regulation*
Grwth/Safety factor:	0%	

Non SIU Flow, MGD:	*17.276*	*SLDG To Disp,MGD:*	*0.04*
TTL Flow, MGD:	*18.2*	*SLDG Disp %Solids:*	*5.96*
7Q10, MGD:	*0*	*SITE Use, Yrs:*	*25*
Flow To Digsr: MGD:	*0.0986*	*SITE Size, Acres:*	*1300*

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l		
Water Quality	NA	
Digstn Inhib:	54.256	
SLDG Dispsl:	21.485	*Limiting*
Secndry Inhib.:	24.564	
NPDES #:	NA	

ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	NA	
Digstn Inhib:	418.21	
SLDG Dispsl:	165.61	*Limiting*
Secndry Inhib.:	189.34	
NPDES #:	NA	

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Molybdenum

		source
Domestic Backgrnd:	0.0015	
Instream Backgrnd:	0	
Plant Removal Eff.:	44%	
Primary Rmvl Eff.:	0%	
WQS:	NA	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	NA	
SLDG Digstn Inhib.:	NA	
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	NA	*Regulation*
Disp Limit, mg/kg:	NA	*Regulation*
SLDG Qual mg/kg:	75	*Regulation*
Grwth/Safety factor:	0%	

Non SIU Flow, MGD:	*17.276*	*SLDG To Disp,MGD:*	*0.04*
TTL Flow, MGD:	*18.2*	*SLDG Disp %Solids:*	*5.96*
7Q10, MGD:	*0*	*SITE Use, Yrs:*	*25*
Flow To Digsr: MGD:	*0.0986*	*SITE Size, Acres:*	*1300*

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l		
Water Quality	NA	
Digstn Inhib:	NA	
SLDG Dispsl:	0.376	*Limiting*
Secndry Inhib.:	NA	
NPDES #:	NA	

ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	NA	
Digstn Inhib:	NA	
SLDG Dispsl:	2.898	*Limiting*
Secndry Inhib.:	NA	
NPDES #:	NA	

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Selenium

		source
Domestic Backgrnd:	0.0015	
Instream Backgrnd:	0	
Plant Removal Eff.:	26%	
Primary Rmvl Eff.:	0%	
WQS:	0.019	
Ratio: Dslvd/Tot:	1	
Inhibition 2nd Trtmt:	NA	
SLDG Digstn Inhib.:	NA	
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	89.2	*Regulation*
Disp Limit, mg/kg:	686.8	*calculated*
SLDG Qual mg/kg:	100	*Regulation*
Grwth/Safety factor:	0%	

Non SIU Flow, MGD:	*17.276*	*SLDG To Disp,MGD:*	*0.04*
TTL Flow, MGD:	*18.2*	*SLDG Disp %Solids:*	*5.96*
7Q10, MGD:	*0*	*SITE Use, Yrs:*	*25*
Flow To Digsr: MGD:	*0.0986*	*SITE Size, Acres:*	*1300*

LOCAL LIMITS

UNIFORM CONCENTRATION, mg/l		
Water Quality	0.4759	*Limiting*
Digstn Inhib:	NA	
SLDG Dispsl:	0.9042	
Secndry Inhib.:	NA	
NPDES #:	NA	

ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	3.6684	*Limiting*
Digstn Inhib:	NA	
SLDG Dispsl:	6.9693	
Secndry Inhib.:	NA	
NPDES #:	NA	

DATA SUMMARY

CRWWTP Flows

Summary for the Calendar Year 2010

MONTHLY TOTALS	Influent MG	I&I #1 MG	I&I #2 MG	CRWWTP Effluent MG	WLPS Effluent MG	RAS #1 MG	WAS #1 Gallons	RAS #2 MG	WAS #2 Gallons	TPS Gallons	TWAS Gallons	Primary Sludge Gallons	Secondary Digester Gallons
Jan-2010	498.896	25.928	30.939	552.656	508.684	164.97	5,580,200	163.73	5,580,800	2,150,600	720,900	14,488,700	3,014,100
Feb-2010	488.947	30.219	31.585	547.568	514.008	136.40	4,791,100	136.41	4,792,300	2,133,100	750,000	13,071,400	3,109,100
Mar-2010	578.271	20.763	21.574	614.800	586.339	135.43	5,977,200	134.49	5,976,100	2,331,700	825,500	14,258,600	3,436,700
Apr-2010	554.444	40.239	41.048	655.027	586.867	161.75	5,511,100	161.31	5,511,100	2,683,667	1,031,833	14,839,067	3,821,100
May-2010	605.358	34.098	33.912	692.715	679.035	167.46	5,580,000	167.29	5,580,000	2,073,000	914,400	14,102,000	3,169,300
Jun-2010	597.336	7.442	7.114	605.682	581.979	161.94	5,485,500	161.94	5,485,500	2,238,800	849,000	17,675,100	3,245,000
Jul-2010	624.594	45.918	45.718	733.815	746.140	167.25	5,580,000	167.25	5,580,000	2,343,800	696,900	17,758,600	3,419,300
Aug-2010	549.268	21.157	21.976	564.944	551.062	155.87	5,672,025	157.11	5,672,025	2,082,600	664,000	15,882,234	3,111,000
Sep-2010	503.984	21.611	21.498	554.235	523.111	137.78	5,343,700	138.36	5,347,300	1,996,900	733,200	13,609,200	3,080,200
Oct-2010	400.500	0.003	4.491	400.485	375.024	140.84	5,804,400	141.11	5,838,400	2,542,500	691,000	12,091,400	3,945,200
Nov-2010	310.986	28.718	30.862	370.660	347.377	133.30	5,900,200	134.33	5,908,800	2,148,600	473,600	16,945,100	3,358,600
Dec-2010	350.974	2.056	6.961	369.636	347.752	141.23	5,676,600	142.06	5,686,300	2,329,900	576,900	14,616,600	3,554,100
Total	6,063.558	278.152	297.678	6,662.223	6,347.378	1,804.21	66,902,025	1,805.40	66,958,625	27,055,167	8,927,233	179,338,001	40,263,700
Average	505.297	23.179	24.807	555.185	528.948	150.35	5,575,169	150.45	5,579,885	2,254,597	743,936	14,944,833	3,355,308
Minimum	310.986	0.003	4.491	369.636	347.377	133.30	4,791,100	134.33	4,792,300	1,996,900	473,600	12,091,400	3,014,100
Maximum	624.594	45.918	45.718	733.815	746.140	167.46	5,977,200	167.29	5,976,100	2,683,667	1,031,833	17,758,600	3,945,200

DAILY AVERAGE	MGD	MGD	MGD	MGD	MGD	MGD	GPD	MGD	GPD	GPD	GPD	GPD	GPD
Jan-2010	16.093	0.836	0.998	17.828	16.409	5.32	180,006	5.28	180,026	69,374	23,255	467,377	97,229
Feb-2010	17.462	1.079	1.128	19.556	18.357	4.87	171,111	4.87	171,154	76,182	26,786	466,836	111,039
Mar-2010	18.654	0.670	0.696	19.832	18.914	4.37	192,813	4.34	192,777	75,216	26,629	459,955	110,861
Apr-2010	18.481	1.341	1.368	21.834	19.562	5.39	183,703	5.38	183,703	89,456	34,394	494,636	127,370
May-2010	19.528	1.100	1.094	22.346	21.904	5.40	180,000	5.40	180,000	66,871	29,497	454,903	102,235
Jun-2010	19.911	0.248	0.237	20.189	19.399	5.40	182,850	5.40	182,850	74,627	28,300	589,170	108,167
Jul-2010	20.148	1.481	1.475	23.671	24.069	5.40	180,000	5.40	180,000	75,606	22,481	572,858	110,300
Aug-2010	17.718	0.682	0.709	18.224	17.776	5.03	182,969	5.07	182,969	67,181	21,419	512,330	100,355
Sep-2010	16.799	0.720	0.717	18.475	17.437	4.59	178,123	4.61	178,243	66,563	24,440	453,640	102,673
Oct-2010	12.919	0.000	0.145	12.919	12.098	4.54	187,239	4.55	188,335	82,016	22,290	390,045	127,265
Nov-2010	10.366	0.957	1.029	12.355	11.579	4.44	196,673	4.48	196,960	71,620	15,787	564,837	111,953
Dec-2010	11.322	0.066	0.225	11.924	11.218	4.56	183,116	4.58	183,429	75,158	18,610	471,503	114,648
Average	16.617	0.765	0.818	18.263	17.394	4.94	183,217	4.95	183,371	74,156	24,491	491,508	110,341
Minimum	10.366	0.000	0.145	11.924	11.218	4.37	171,111	4.34	171,154	66,563	15,787	390,045	97,229
Maximum	20.148	1.481	1.475	23.671	24.069	5.40	196,673	5.40	196,960	89,456	34,394	589,170	127,370

		As ug/L	Cd ug/L	Cr ug/L	Cu ug/L	Pb ug/L	Mo ug/L	Ni ug/L	Se ug/L	Ag ug/L	Zn ug/L	Hg ug/L	CN ug/L
CRWWTP Wetland Effluent Outfall #001													
26-Jan-10		4.34 <	2.50 <	2.50 <	10.0 <	2.50	3.32 <	20.0 <	2.50 <	2.50	28.7 <	0.20	
28-Jan-10		5.53 <	2.50 <	2.50	10.5 <	2.50	6.85 <	20.0 <	2.50 <	2.50	40.7 <	0.20	
25-Feb-10		3.76 <	2.50	4.53 <	10.0 <	2.50	5.94 <	20.0 <	2.50 <	2.50	45.8 <	0.20	
17-Mar-10	<	2.50 <	2.50 <	2.50 <	10.0 <	2.50	4.67 <	20.0 <	2.50 <	2.50 <	20.0 <	0.20 <	5.00
14-Apr-10	<	2.50 <	2.50	5.05	11.3 <	2.50	7.83 <	20.0 <	2.50 <	2.50	88.5 <	0.20	
14-Apr-10	<	2.50 <	2.50	8.23	17.0	4.32	8.96 <	20.0	3.55 <	2.50	301		
21-Apr-10	<	2.50 <	2.50	7.48 <	10.0	2.91	7.59 <	20.0 <	2.50 <	2.50	292		
05-May-10	<	2.50 <	2.50 <	2.50 <	10.0 <	2.50	7.45 <	20.0 <	2.50 <	2.50	25.6 <	0.20	
02-Jun-10		4.64	5.87 <	2.50	13.4	7.12	6.09 <	20.0	4.52 <	2.50 <	20.0 <	0.20 <	5.00
27-Jul-10	<	2.50	4.16 <	2.50 <	10.0	7.63	5.96 <	20.0	2.67 <	2.50	20.8 <	0.20	
10-Aug-10	<	2.50	2.62 <	2.50	11.3	8.86	9.58 <	20.0	5.94 <	2.50	27.4 <	0.20	
15-Sep-10	<	2.50 <	2.50 <	2.50 <	10.0 <	2.50	6.55 <	20.0	5.11 <	2.50 <	20.0 <	0.20 <	5.00
19-Oct-10	<	2.50 <	2.50 <	2.50 <	10.0 <	2.50	4.56 <	20.0	7.19 <	2.50 <	20.0 <	0.20	
23-Nov-10	<	2.50 <	2.50 <	2.50 <	10.0 <	2.50	3.01 <	20.0 <	2.50 <	2.50 <	20.0 <	0.20 <	5.00
21-Dec-10		2.60 <	2.50	7.00	15.8	3.83	6.12 <	20.0 <	2.50 <	2.50	61.4 <	0.20 <	5.00
CRWWTP Influent													
26-Jan-10		7.35 <	2.50	3.96	61.7	4.58	14.3 <	20.0	4.53 <	2.50	115 <	0.20	
25-Feb-10		5.16 <	2.50	4.77	66.5	4.51	6.53 <	20.0 <	2.50	2.54	148.1	0.40	
17-Mar-10	<	2.50 <	2.50	6.40	79.4	7.22	5.8 <	20.0 <	2.50 <	2.50	187 <	0.20 <	5.00
14-Apr-10	<	2.50 <	2.50	13.97	250.9	12.26	12.2 <	20.0	6.74	5.60	515.3	0.50	
14-Apr-10	<	2.50	3.33	14.24	246.0	12.42	12.1 <	20.0	3.00	5.33	644.9	0.50	
05-May-10		18.83	2.98	8.66	111.6	12.04	12.5 <	20.0 <	2.50	2.96	376 <	0.20	5.00
02-Jun-10		4.62	30.04	5.85	119.2	21.43	12.4 <	20.0 <	5.00	3.08	189 <	0.20 <	5.00
27-Jul-10	<	2.50	17.44	4.99	75.6	19.2	15.4 <	20.0	7.87 <	2.50	147	0.30	
10-Aug-10	<	2.50	3.70	5.74	140.5	12.6	19.9 <	20.0	4.72	2.68	206	0.50	
15-Sep-10	<	2.50 <	2.50	4.22	97.4	9.46	11.6 <	20.0	4.91	3.15	123 <	0.20 <	5.00
19-Oct-10	<	2.50 <	2.50	6.64	131	6.39	10.6 <	20.0	5.70	3.38	373	0.40	
23-Nov-10		3.19 <	2.50	7.61	123.7	5.16	9.14 <	20.0 <	2.50	11.82	224.2	0.30	
21-Dec-10		2.77 <	2.50	6.78	232.0	4.89	5.10 <	20.0 <	2.50	13.14	195.4 <	0.20	

		Cd ug/L
CRWWTP Wetland Effluent Outfall #001		
23-Nov-10	<	0.10
21-Dec-10		0.14
27-Jan-11	<	0.20
23-Feb-11	<	0.50
16-Mar-11	<	0.50
26-Apr-11	<	0.50
18-May-11	<	0.50
15-Jun-11	<	0.50
CRWWTP Influent		
21-Dec-10		0.18
27-Jan-11	<	0.2
23-Feb-11	<	0.5
16-Mar-11	<	0.5
26-Apr-11	<	0.5
18-May-11	<	0.5
15-Jun-11	<	0.50

			As mg/L	Cd mg/L	Cr mg/L	Cu mg/L	Pb mg/L	Mo mg/L	Ni mg/L	Se mg/L	Ag mg/L	Zn mg/L	Hg mg/L	NH_3-N mg/L	TCN mg/L
Thornbrook pump station															
7-Jun-11	8.15	21	0.00063 <	0.0005	0.0075	0.052	0.00082	0.0021	0.0043	0.0011 <	0.0005	0.13 <	0.0002	36 <	0.005
8-Jun-11	8.23	20.8	0.0011 <	0.0005	0.017	0.081	0.0029	0.00089	0.0096	0.0021 <	0.0005	0.19 <	0.0002	48 <	0.005
9-Jun-11	8.23	20.9	0.00056 <	0.0005	0.0099	0.05	0.0011	0.0014	0.0034	0.0011 <	0.0005	0.12 <	0.0002	38 <	0.005
10-Jun-11	8.43	20.8	0.00075 <	0.0005	0.0082	0.053	0.0011	0.0023	0.0043	0.0014 <	0.0005	0.12 <	0.0002	50 <	0.005
14-Jun-11	8.36	19.3	0.00076 <	0.0005	0.0077	0.036	0.0014	0.0024	0.0044	0.0013 <	0.0005	0.1 <	0.0002	44 <	0.005
15-Jun-11	8.16	20.3	0.00074 <	0.0005	0.0086	0.041	0.0012	0.0021	0.0043	0.0014 <	0.0005	0.096 <	0.0002	44 <	0.005
16-Jun-11	8.28	20	0.00063 <	0.0005	0.0077	0.045	0.00079	0.0022	0.0037	0.0014 <	0.0005	0.11 <	0.0002	45 <	0.005
Cascades pump station															
7-Jun-11	8.17	21.3	0.00063 <	0.0005	0.0077	0.065	0.0014	0.00085	0.0062	0.0015 <	0.0005	0.15 <	0.0002	50 <	0.005
8-Jun-11	8.23	20.5	0.00061 <	0.0005	0.01	0.052	0.001	0.0017	0.0039	0.0014 <	0.0005	0.14 <	0.0002	46 <	0.005
9-Jun-11	7.63	19.9	0.00064 <	0.0005	0.0089	0.067	0.0015	0.00082	0.0066	0.0015 <	0.0005	0.14 <	0.0002	53 <	0.005
10-Jun-11	8.07	20.8	0.00067 <	0.0005	0.0077	0.067	0.0013	0.0012	0.007	0.0018 <	0.0005	0.15 <	0.0002	49	0.005
14-Jun-11	8.17	18.4	0.0021 <	0.0005	0.0085	0.055	0.0037	0.0012	0.008	0.0016 <	0.0005	0.12 <	0.0002	52 <	0.005
15-Jun-11	8.15	20.2	0.00068 <	0.0005	0.0079	0.059	0.0013	0.0013	0.0074	0.0016 <	0.0005	0.12 <	0.0002	50 <	0.005
16-Jun-11	8.13	20	0.00067 <	0.0005	0.0068	0.065	0.0012	0.0012	0.0065	0.0017 <	0.0005	0.12 <	0.0002	49	0.006

CRWWTP BIOSOLIDS

All values are expressed on dry weight basis.

DATE: 12-Jul-11

ID	% TS	As *	Cd *	Cr *	Cu *	Pb *	Mn *	Hg *	Mo *	Ni *	Se *	Ag *	Zn *	CN
		mg/K	mg/K	mg/K	mg/K	mg/K	mg/K	mg/K	mg/K	mg/K	mg/K	mg/K	mg/K	mg/K
0410A	4.7	12.5	3.17	43.2	628	38.1	516	1.8	20.1	41.7	6.67	20.9	1,261	5.1
0410B	5.5	8.3	2.59	39.9	564	33.3	487	1.5	17.2	34.2	3.98	19.3	1,124	4.9
0510A	5.8	9.4	2.48	40.0	527	32.5	485	2.1	16.0	33.8	4.54	19.1	1,081	4.2
0510B	5.3	9.6	2.46	41.2	555	34.2	493	1.9	16.5	34.9	3.26	19.5	1,119	4.2
0610A	4.7	11.4	2.53	41.2	524	32.6	481	2.3	16.7	38.7 <	1.07	18.2	1,085	
0710A	4.7	11.8	2.66	42.4	575	36.2	502	1.8	17.3	35.5 <	1.05	19.7	1,192	2.2
0810A	5.5	11.1	2.48	41.6	567	33.8	504	1.4	16.8	35.0	4.60	18.6	1,141	2.8
0810B	7.0	7.7	1.96	37.6	498	31.2	471	1.5	13.3	29.3	2.34	15.2	931	2.9
0910A	6.6	8.0	2.09	40.6	540	33.1	566	1.6	15.5	34.0	4.20	15.6	1,035	2.8
0910B	7.0	7.2	2.05	36.7	514	32.3	514	1.4	14.6	29.9	1.71	16.9	957	2
1010A	7.1	8.4	1.85	35.9	487	31.3	480	2.1	14.5	29.9	3.52	14.9	943	3.8
1010B	7.0	7.6	1.84	37.5	481	29.8	469	2.4	13.7	30.1	2.78	14.6	929	3.7
1110A	6.4	7.9	1.90	35.9	501	28.7	449	1.7	13.8	27.5	1.02	15.7	963	3.9
1110B	6.0	8.1	2.09	40.8	531	31.6	492	1.8	15.3	33.0 <	0.83	15.7	1,056	3.2

EXAMPLE OF COUNCIL ACTION

Introduced by _____

First Reading _____ Second Reading _____

Ordinance No. _____ Council Bill No. _____

AN ORDINANCE

amending Chapter 22 of the City Code as it relates to Specific Pollutant Limitations, Local Limits.

BE IT ORDAINED BY THE COUNCIL OF THE CITY OF COLUMBIA, MISSOURI, AS FOLLOWS:

SECTION 1. Chapter 22 of the Code of Ordinances of the City of Columbia, Missouri, is hereby amended as follows:

Material to be deleted in ~~strikeout~~; material to be added underlined.

Section 22-215.05 Specific pollutant limitations.

(a) *Categorical pretreatment standards:* Any industrial user having process waste streams which are subject to any federal categorical pretreatment standards either currently in effect or promulgated or modified after the effective date of this ordinance shall comply with the requirements of such standards. All categorical pretreatment standards established pursuant to 40 CFR Chapter One, Subchapter N, are hereby incorporated by reference and are fully enforceable under this Ordinance the same as if fully set out herein. Limitations established in such standards shall apply to the treated effluents from the processes regulated by the standard, unless otherwise specified by the standard. When the limits in a categorical pretreatment standard are production based, the Director may convert the limits to equivalent mass or concentration for purposes of calculating effluent limitations applicable to individual users. Where regulated process effluents cannot be sampled prior to mixing with other wastestreams, alternative limits for the mixed effluent may be established by the Director using the combined wastestream formula subject to the provisions of 40 CFR 403.6(e). All users subject to categorical pretreatment standards are also obligated under federal law to comply with the City of Columbia's discharge limitations specified in Sections 22-215 and 22-215.05 of this ordinance. When a pollutant in a user's discharge is subject to both a limit from a categorical pretreatment standard and a City of Columbia limit at the same sampling point, the most strict limit shall apply.

(b) *Local limits:* No user shall discharge or cause to be discharged wastewater to the POTW containing concentrations in excess of the limits listed for the substances below:

POLLUTANT	DAILY MAXIMUM (mg/l)
Total Arsenic (As)	~~0.31~~ 0.383
Total Cadmium (Cd)	~~0.19~~ 0.025
Total Chromium (Cr)	~~3.73~~ 7.280
Total Copper (Cu)	~~2.87~~ 3.497
Total Lead (Pb)	~~0.82~~ 0.633
Total Mercury (Hg)	~~0.05~~ 0.018
Total Nickel (Ni)	~~2.34~~ 2.293
Total Silver (Ag)	~~0.14~~ 0.984
Total Zinc (Zn)	~~7.33~~ 21.485
Total Cyanide (CN)	~~0.85~~ 0.199
~~Phenols~~	~~0.50~~
Total Molybdenum (Mo)	0.376
Total Selenium (Se)	0.476

SECTION 2. This ordinance shall be in full force and effect from and after its passage.

PASSED this _____ day of _____, 2011.

ATTEST:

_____
City Clerk

_____
Mayor and Presiding Officer

APPROVED AS TO FORM:

_____
City Counselor

CITY OF COLUMBIA, MISSOURI

PUBLIC WORKS DEPARTMENT
Sewer Utility Division

September 14, 2011

Mr. Walter Fett
Pretreatment Coordinator
Department of Natural Resources
Water Protection Program
P.O. Box 176
Jefferson City, MO 65102-0176

Dear Mr. Fett:

The following is respectfully submitted in response to your inquiry about the omission of Hexavalent Chromium in the Local Limit evaluation conveyed during a telephone conversation with Craig Cuvellier on September 06, 2011.

Hexavalent Chromiun (CrVI) has not been included in the recently submitted Local Limits evaluation for the following reasons:

- Hexavalent Chromium(CrVI) was added to the city's NPDES permit issued on September 24, 2010. The city immediately initiated monitoring for Hexavalent Chromium in Outfall #001 and plant influent. Eight data points for Outfall #001 and 3 for the plant influent have been accumulated. The collection of grab samples for the influent stream has been limited due to construction activities. Concentrations of Hexavalent Chromium for both Outfall #001 and the plant influent are below the detection limit of 5 µg/L (the monthly average permitted limit for Outfall #001 is 7.3 µg/L). The concentration being below detection limit makes it very difficult to evaluate a meaningful local limit concentration.
- The city currently has no permitted industries using CrVI compounds in any manufacturing processes.
- As stated in the Local Limit report the Columbia Regional Wastewater Treatment Plant (CRWWTP) is undergoing a process upgrade and is currently under construction with completion estimated for the first quarter of 2013. Once the improvements are complete, the local limits, including the limit for Hexavalent Chromium, will have to reevaluated.

I trust this provides sufficient information to address the reasons for not including Hexavalent Chromium in the Local Limit evaluation. Should you have any questions please contact Craig Cuvellier or myself at 573-445-9427.

Sincerely,
DEPARTMENT OF PUBLIC WORKS

David A. Sorrell, P.E.
Sewer Utility Manager

c: Craig Cuvellier, Laboratory Supervisor
MDNR, Northeast Regional Office

Appendix C. Industrial Pretreatment Local Limits Review for the Columbia Wastewater Treatment Plant (October 2020)

Industrial Pretreatment Local Limits Review for the Columbia Wastewater Treatment Plant

Submitted to

Submitted by

Geosyntec consultants

engineers | scientists | innovators

2009 E. McCarty, Suite 1
Jefferson City, MO 65101

October 28, 2020

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SECTION 1

BACKGROUND

The Missouri Department of Natural Resources (MDNR) renewed the Columbia Wastewater Treatment Plant (WWTP) National Pollutant Discharge Elimination System (NPDES) permit (Permit, MO-0097837) on July 1, 2020. Special Condition 17. (b) of the renewed Permit requires the City of Columbia (City) submit a technical evaluation of the need to revise the City's industrial discharge local limits under 40 CFR 403.5(c)(1). MDNR guidance (Appendix A) states that this requirement can be met by submitting a "local limits review" that provides specified information on several aspects of the City's industrial pretreatment program and wastewater treatment plant performance. This report provides the specified information in a local limits review and is submitted to meet Special Condition 17. (b) of the renewed Permit. A summary of findings and recommendations is also included in this report. After reviewing the findings in this report, MDNR may require the City to revise the local limits with a detailed technical local limits reevaluation in accordance with US EPA guidance documents.

SECTION 2

RESPONSES TO NPDES PERMIT LOCAL LIMITS EVALUATION ITEMS

MDNR guidance (Appendix A) delineates eight items of information to be submitted to satisfy the requirements of the local limits review report. Section 2 provides information for each of these items.

2.1 Item 1

Item 1 requests a listing of all existing local limits as maximum allowable industrial loads (MAILs), including concentration and maximum allowable headworks loading (MAHL) values, the loading distribution method among industrial users, and the limiting factor by which each local limit was established be provided (these values may be found in a previously submitted U.S. Environmental Agency (EPA) Region 7 spreadsheet). Table 1 is taken from EPA Region 7 spreadsheet used to derive the 2012 Local Limits Revision.

Table 1. "Summary of Mass Loadings" Table from Most Recent Local Limits Revisions

SUMMARY OF MASS LOADINGS

	Domestic/commcl Sources		Maximum Allowable Industrial Load (MAIL)			Maximum Allowable Headwrks Load (MAHL)	Headworks ACTUAL Avg.Load	Current Loading as % of
	lbs.	% of limit	lbs.	% of MAHL	lbs. Reserve	lbs	lbs	MAHL
Ag	0.036	0%	7.581	100%		7.617	0.671	9%
As	0.115	4%	2.949	96%		3.064	0.592	19%
Cd	0.036	16%	0.194	84%		0.230	0.033	14%
CN	0.422	22%	1.537	78%		1.959	0.379	19%
Cr	1.277	2%	56.112	98%		57.390	1.095	2%
Cu	8.110	23%	26.954	77%		35.063	20.265	58%
Hg	0.014	10%	0.135	90%		0.149	0.037	25%
Ni	0.819	4%	17.672	96%		18.491	1.518	8%
Pb	0.213	4%	4.879	96%		5.092	1.543	30%
Zn	18.586	10%	165.61	90%		184.195	40.210	22%
Mo	0.223	7%	2.898	93%		3.121	1.720	55%
Se	0.223	6%	3.668	94%		3.891	0.548	14%

TOXIC POLLUTANTS SUMMARY

UNIFORM CONCENTRATION LIMIT If APPLIED mg/l

Ag	0.984	Ag	NPDES #:
As	0.383	As	Digstn Inhib:
Cd	0.025	Cd	NPDES #:
CN	0.199	CN	NPDES #:
Cr	7.280	Cr	NPDES #:
Cu	3.497	Cu	Digstn Inhib:
Hg	0.018	Hg	NPDES #:
Ni	2.293	Ni	SLDG Dispsl:
Pb	0.633	Pb	NPDES #:
Zn	21.485	Zn	SLDG Dispsl:
Mo	0.376	Mo	SLDG Dispsl:
Se	0.476	Se	Water Quality

LIMITING CRITERIA

2.2 Item 2

Item 2 requests the dates that the existing local limits were developed and also, adopted in ordinance. The City developed the current local limits for WWTP in August 2011. The limits were adopted into ordinance on March 19, 2012.

2.3 Item 3

Item 3 in the guidance document states a detailed description of any changes in regulations, environmental protection criteria, plant design or process and industrial users since the last review be provided (in general the last five years). The following list provides the requested information.

A) Federal or State regulations that could affect local limitations: There were no known Federal for State regulation changes since the previous limits were developed that resulted in the need to revise the City's local limits.

B) Environmental protection criteria:

1. Sludge quality for chosen disposal: There were no known changes in sludge quality requirements since the previous limits were developed that would result in the need to revise local limits.
2. Limitations in air pollution control permit (as applicable): There is not an applicable air pollution control permit for the WWTP.
3. NPDES limitations, including whole effluent toxicity testing: MDNR removed metals effluent limits in the recently renewed WWTP NPDES discharge permit. The previous permit contained metals limits for arsenic, copper, zinc, nickel, cadmium, mercury, lead, trivalent chromium, hexavalent chromium and silver. MDNR determined that none of these metals indicated a reasonable potential to exceed water quality criteria and therefore, removed them from the Permit. The Permit included a new effluent limit for ammonia. The new ammonia limit (12.1 mg/L) should be readily achieved with the addition of nitrification processes to the WWTP in 2014.
4. State water quality standards: In April 2018, Missouri adopted a new chronic cadmium water quality criterion. However, the WWTP does not have reasonable potential to exceed this criterion.

C) Plant design such as increases treatment capacity or other modifications, such as outfall relocation: The City completed an upgrade of the WWTP in 2014. The upgrade consisted of increasing the WWTP design average flow from 18.2 MGD to 25.2 MGD. The upgrade included the addition of two additional primary and secondary activated sludge treatment trains to provide the additional treatment plant capacity and partial nitrification to meet acute ammonia criteria. Sludge dewatering was also added during the expansion.

D) Plant process or operational criteria that change removal efficiencies, or process inhibition: As noted above, the City added two additional activated sludge treatment trains with primary clarification during the most recent WWTP expansion completed in 2014. Sludge dewatering was also added. The City has not confirmed the extent to which these changes would change removal efficiencies. The added treatment trains were identical to the systems in place during the 2011 removal efficiency evaluation conducted for the current local limits.

The addition of sludge dewatering may alter metals removal through the return of filtrate to the plant headworks; however, the relative magnitude of returning filtrate metals to the headworks has not been determined. The City anticipates that additional assessment of the need for revising removal efficiencies may be included in a future local limits reevaluation.

The plant upgrade was not expected to change process inhibition assumptions. The upgrade added the same biological treatment technology that existed for the most recent local limits assessment, conducted in 2011.

E) Significant changes in the nature of industrial contributions which may require the detailed technical reevaluation of local limits through the completion of a headworks analysis were reviewed. The significant industrial user (SIU) flow rates listed in Part 2 of the City's 2019 Annual Pretreatment Report (Appendix B) were used to compare SIU flow rate changes since the local limits were revised in 2012. The total SIU flow in 2019 was 1.132 MGD which represents a 20.1% increase compared to the 2012 Local Limits Revision SIU flow value of 0.942 MGD. MDNR considers SIU flow rate changes above 20% to be significant. Therefore, the WWTP's flow rate change is slightly above MDNR's metric of significance.

2.4 Item 4

Item 4 of MDNR's guidance requests the City provide results of influent sampling and analysis of industrial pollutants from no later than one year prior to submittal of the reevaluation. The priority pollutant list (40 CFR Part 423, Appendix A) is used as guide to select the pollutants but professional judgement can also be used in some cases.

Influent and effluent priority pollutant organics analysis as described at 40 CFR Part 423 Priority Pollutant List of organic compounds were analyzed in the WWTP samples collected in March 2020 (Appendix C). All measurements were below method detection limits which indicated the absence of problematic toxic organic discharges to the WWTP. Influent metals loading data are provided in Item 5.

2.5 Item 5

Item 5 of the MDNR guidance specifies a comparison of the current headworks loading be provided. The headworks loading is to be developed over a 12-month period that includes influent sampling of pollutants of concern (POCs) at least once per quarter with the MAHL. The WWTP

influent mass loading measurements for metals POC's over the past year were all less than the existing MAHL's (Table 2) and less than US EPA's evaluation recommendations for POC's for which local limits should be developed:

- average influent loading of a toxic pollutant exceeds 60 percent of the MAHL and
- maximum daily influent loading of a toxic pollutant exceeds 80 percent of the MAHL any time in the 12-month period preceding the analysis.[1]

Table 2. Comparison of Maximum Allowable Headworks Loadings to 1-Year Maximum and Average Monthly Influent Loadings*

Parameter	MAHL (lbs/day)	Actual Influent Loading - 1-Year Maximum* (lbs/day)	Actual - Maximum % of MAHL	Actual Influent Loading - 1-Year Average* (lbs/day)	Actual - Average % of MAHL
Ag	7.617	0.45	5.9%	0.19	2.5%
As	3.064	0.45	14.7%	0.19	6.2%
Cd	0.23	0.07	29.0%	0.03	11.7%
CN	1.959	0.76	38.7%	0.37	18.8%
Cr	57.39	1.48	2.6%	0.50	0.9%
Cu	35.063	11.34	32.3%	4.83	13.8%
Hg	0.149	0.11	72.5%	0.02	14.6%
Ni	18.491	3.60	19.5%	1.52	8.2%
Pb	5.092	1.80	35%	0.43	8.4%
Zn	184.195	3.60	2%	1.52	0.8%
Mo	3.121	1.52	49%	0.52	16.6%
Se	3.891	0.45	12%	0.21	5.4%
* Based on monthly measurements - September 2019 through August and September 2020					

2.6 Item 6

MDNR's guidance requests a description and summary data of the delegated POTW's compliance history over the previous five years, with respect to compliance with effluent limitations, sludge quality, plant inhibition or upset, and worker health and safety. The following information is provided to support the findings related to Item 6:

1) Effluent limitations: The WWTP has consistently met metals effluent limits. As previously noted, MDNR removed metals effluent limits in the recently renewed WWTP NPDES discharge Permit. The previous Permit contained metals limits for arsenic, copper, zinc, nickel, cadmium, mercury, lead, trivalent chromium, hexavalent chromium and silver. MDNR determined that none of these metals indicated a reasonable potential to exceed water quality criteria and therefore, removed metals effluent limits from the Permit.

[1] U.S. EPA *Local Limits Development Guidance*, EPA 833-R-04-002A, July 2004, Section 6.1.1

The annual pretreatment reports over the last five years indicated NPDES permit mercury limit exceedances in 2017 and 2018. These mercury exceedances are not considered indicative of recurring, problematic mercury loadings. MDNR evaluated the WWTP effluent mercury concentrations during the recent NPDES permit renewal and determined there was no reasonable potential to exceed mercury standards and removed mercury effluents from the WWTP Permit. Furthermore, the WWTP influent and sludge mercury concentrations have been historically below levels of concern. Average influent mercury loadings over the last year were 14.6 percent of the MAHL (Table 2). Sludge mercury levels have been below 10 percent of the EPA low level concentration over the last five years. Therefore, the mercury data does not indicate problematic, recurring mercury discharges into the City's wastewater system.

There were periodic TSS effluent limit violations over the last five years due to excessive waterfowl in the WWTP constructed treatment wetlands. These violations were not related to industrial discharges.

2) Sludge quality: Sludge metals concentration measurements over the last five years indicated all metals measurements were well below EPA's ceiling concentrations and only molybdenum exceeded 50% of the EPA's low metal concentration limits (Appendix D).

3) Plant inhibition or upset, and worker health and safety: There were no known plant inhibition, upset or worker health and safety issues related to industrial discharges in the previous five years.

2.7 Item 7

Item 7 requests the City provide a detailed description for each SIU including the following: A) products, B) pollutants, C) compliance issues, and D) flow. If more than one SIU discharges to the WWTP, this information is requested for each SIU.

The SIU information is summarized in Table 3. Most of this information was taken from the City's 2019 Annual Pretreatment Report. The accuracy of the list of regulated industrial discharges was further confirmed through the City's recent industrial waste survey conducted in August of 2020.

2.8 Item 8

Item 8 in the MDNR guidance requests a listing of all parameters for which limits are established in the POTW's renewed NPDES permit be provided. As stated in Item 3 and Item 6 Information, MDNR removed all metals effluent limits in the WWTP July 2020 Permit renewal. The current Permit effluent limits parameters are *E. coli*, ammonia, BOD_5, TSS, Oil and grease and pH.

Table 3. Columbia SIU's, SIU Products, Pollutants, Compliance Issues and Flows

Industry	Products	Pollutants	Compliance Issues[1]	Industrial Processes	Flows[2] (gpd)	Categorical Pretreatment Standard
3M Columbia Plant	Circuit boards	Ag, Cd, Cr, Cu, Ni, Pb, Zn, CN, TTO, pH	Nickel violation	Metal stamping, electroplating, molding, assembly, laminating, reagent spotting, coating, high temp rinse, machine lathing	Process– 450,000 Non-Process – 1,000	433 – metal finishing
Gates Corporation	Tires	No discharge facility	-----	No discharge facility	Process – 0 Non-Process – 3,000	428 – Rubber manufacturing
Kraft-Heinz Food Group, Inc.	Hot dogs	Oil and grease, pH	pH violations	Cleaning and sanitizing process lines	Process – 420,000 Non-Process - 20,000	Non-categorical industry
Aurora Organic Dairy	Dairy products	pH, BOD, TSS, Oil and grease	-----	Food processing and production	Process – 146,000 Non-Process – 24,000	405-Dairy
Beyond Meat	Plant food-based products	pH, BOD, TSS, Oil and grease, TKN, COD	Oil and grease and pH violations	Food processing and production	Process – 74,000 Non-Process – 0	Non-categorical industry
Watlow Missouri, Inc.	Industrial electric products	Ag, Cd, Cr, Cu, Ni, Pb, Zn, CN, TTO, pH	-----	Chemical etching, manufacture of silicone rubber and flexible heaters.	Process – 1,000 Non-Process – 21,000	433 – metal finishing
City of Columbia Sanitary Landfill	Municipal landfill	pH, BOD, TSS, Oil and grease, TKN, COD	-----	Sanitary landfill discharging pretreated, non-hazardous landfill leachate to City sewer	Process – 21,000 Non-Process – 209,000	445-Landfill

[1] Compliance issues provided in 2019 Annual Pretreatment Report
[2] Flow estimations provided in 2019 Annual Pretreatment Report

SECTION 3

ADDITIONAL INFORMATION

Sludge Production Rate:

The WWTP annual sludge production rate used for the 2012 Local Limits Revision (3,556 dry tons per year) was appreciably greater than actual sludge production rates in recent years (averaged 1,990 dry tons per year, 2015 through 2019). The difference is attributed to the elevated processing of stored sludge in 2011 that coincided with the WWTP expansion. If MAHL's were recalculated using the more recent, lower sludge production rates in the allowable headworks loading calculations, they would decrease for parameters that are limited by sludge disposal.

To better understand the potential impacts of reduced sludge production rates on WWTP, draft MAHL's were calculated using lower sludge production rates and 20% higher SIU flows noted in Item 3. The draft MAHL's were also based on removing metals NPDES effluent limits to better reflect the current Permit. The hardness assumption was also adjusted to reflect default regional hardness concentrations.

The draft MAHL's were compared to the same influent loading rates provided in Table 2. The comparison (Table 4) indicated that only molybdenum exceeded EPA's criteria for needing a local limit. This was based on a maximum loading rate of a 92% of the MAHL which exceeded EPA's recommended criteria of 80% exceedance to require a local limit. The average molybdenum loading over the last year was 31.5% of the draft MAHL, which was appreciably lower than EPA's recommended criteria of 60% exceedance to require a local limit.

Table 4. Comparison of Recalculated Draft 2020 Maximum Allowable Headworks Loadings to 1-Year Maximum and Average Monthly Influent Loadings*

Parameter	Recalculated MAHL (lbs/day)	Actual Influent Loading - 1-Year Maximum* (lbs/day)	Actual - Maximum % of MAHL	Actual Influent Loading - 1-Year Average* (lbs/day)	Actual - Average % of MAHL
Ag	14.25	0.45	3.2%	0.19	1.3%
As	1.84	0.45	24.5%	0.19	10.3%
Cd	1.40	0.07	4.8%	0.03	1.9%
CN	4.77	0.76	15.9%	0.37	7.7%
Cr	40.36	1.48	3.7%	0.50	1.2%
Cu	38.24	11.34	29.7%	4.83	12.6%
Hg	1.05	0.11	10.3%	0.02	2.1%
Ni	11.03	3.60	32.7%	1.52	13.7%
Pb	15.19	1.80	11.9%	0.43	2.8%
Zn	104.7	3.60	3.4%	1.52	1.4%
Mo	1.65	1.52	92.3%	0.52	31.5%
Se	1.45	0.45	31.1%	0.21	14.4%
* Based on monthly measurements - September 2019 through August and September 2020					

SECTION 4

SUMMARY OF FINDINGS AND RECOMMENDATIONS

The City of Columbia Local Limits Review findings are summarized as follows.

- WWTP metals concentrations in both effluent and sludge were within regulatory compliance levels. MDNR's removal of metals effluent limitations in the Permit affirms the absence of problematic discharge metals concentrations.
- Sludge metals concentrations were well below EPA's ceiling concentrations and only molybdenum exceeded 50% of the EPA's low metal concentration limits.
- Influent and effluent analysis indicated an absence of detectable organic priority pollutant concentrations.
- SIU's are generally in compliance with permit conditions with only infrequent effluent limit exceedances.
- WWTP influent loadings were consistently below MAHL's established in 2012. All assessed metals loading rates were below EPA's suggested criteria for needing local limits.
- The estimated SIU flow rate based on the 2019 Annual Pretreatment Report is 20% greater than the SIU flow rate assumed for the 2012 Local Limits Revision.
- Sludge production rates in recent years were appreciably less than the sludge production assumed for the 2012 Local Limits Revision. Reducing the assumed lower sludge production rates would decrease future local limits for those paramters restricted by sludge disposal (nickel, zinc and molybdenum).
- The removal of Permit metals effluent limits would appreciably increase MAHL calculations for metals restricted by Permit effluent limits (silver, cadmium, cyanide, chromium, mercury and lead).
- Except for molybdenum, WWTP influent loadings were consistently well below draft MAHL's calculated using the latest lower sludge production and higher 2019 SIU flow values. The maximum 1-year molybdenum loading exceeded EPA's recommended criteria for needing a local limit.

Recommendations based on the Local Limits Review are as follows:

- Revise the local limit for molybdenum with updated sludge volume assumptions to better protect sludge quality.
- Evaluate removing local limits for parameters that were below EPA's criteria for local limit development. These include arsenic, silver, cadmium, chromium, copper, cyanide, lead, nickel, selenium and zinc.

- Evaluate the need for local limits for TSS, BOD and ammonia in accordance with EPA guidance.

Appendix D. Part II of MDNR Form Technical Evaluation of Local Limits (40 CFR 122.44(j)(2)(II)) and Detailed Technical Reevaluation of Local Limits (40 CFR 403.5(c)(1))

PART II. DETAILED TECHNICAL REEVALUATION OF LOCAL LIMIT REPORT FORM PER 40 CFR 403.5(c)(1)

All POTWs with approved programs must continue to develop local limits as necessary per 40 CFR 403.5(c) (1)[1]. This Part II formaddresses the detailed technical reevaluation of local limits for one POTW and its permit. For more than one plant and permit, please provide a separate Part II and I (if needed) form. Components of Part I are used for reporting of the Part II Detailed Reevaluation. This form must summarize the results of the detailed reevaluation.

Because POTW site-specific conditions change, Section 2.0 of this form provides some factors to consider that may indicate the need for a more detailed technical re-evaluation of local limits. If any of those factors indicate a need for the detailed technical re-evaluation, then the POTW should complete Part II of this Form.

Reference Document: 2004 EPA Local Limits Development Guidance.

[1] Note: Missouri state regulations at 10 CSR 20-6.100 incorporate the federal 40 CFR 403 pretreatment regulations by reference; therefore, only the federal regulations will be cited in this form.

1.0 BASIC INFORMATION

1.1 POTW NAME/CONTROL AUTHORITY:	City of Columbia

1.2 NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) MISSOURI STATE OPERATING PERMIT

PERMIT NO.	EXPIRATION DATE	WWTP NAME
MO-0097837	6/30/2025	Columbia Wastewater Treatment Plant

1.3 LOCAL LIMIT REEVALUATION REPORT WITH CONTROL AUTHORITY LETTER

1.3.1 Due Date for Detailed Technical Reevaluation:	N/A
1.3.2 Entity Performing Local Limit Analysis:	Geosyntec
1.3.3 Region VII Spreadsheet Version:	LLxls_R7_v6_1

2.0 BACKGROUND LEADING TO THE NEED TO REVISE LOCAL LIMITS

Change in Water Quality Criteria, Change in Sludge Quality Criteria, Plant Conditions Changes (Increased Design Capacity, Other Design Modifications), Significant Decrease in Biosolids Production, Removal of NPDES Permit Limit, Change in Water Quality Standard.

3.0 REQUIRED DETAILED TECHNICAL REEVALUATION REPORTING COMPONENTS

☐	3.1.	Part I Form, if completed prior to Part II.
☑	3.2	Previous Detailed Technical Local Limit Evaluation – Data and Summary Pages or Other Summary Sheets
☑	3.3	General: Wastewater Treatment Facilities and Operations (optional). Attach current effective permit, if not provided.
☑	3.4.	Pollutants of Concern (POCs) list and how developed. POCs not included or added per Part I. Section 5.0 – Pollutant of Concern. Tables included.
☑	3.5.	Discussion: Input, Assumptions and Methods Use in the Region 7 Spreadsheet for 1) conventional, 2) conservative, 3) non-conservative pollutants
☑	3.5.1	Table of Plant Removal Efficiencies
☑	3.5.2	Table of Domestic Sampling Summary
☑	3.5.3	Table of Influent Sampling and Effluent Sampling
☑	3.6.	Results: Part I. Section 9.0 - Reevaluation Comparison of Current Head works Loading to ***Revised*** MAHLs for 1) conventional, 2) conservative, 3) non-conservative pollutants.
☑	3.6.1	Table of Existing MAILs, calculated or proposed MAILs for 1) conventional, 2) conservative, 3) non-conservative pollutants.
☑	3.6.2	Provide written rationale for selected local limits for each POC
☑	3.7.	Summary of local limits for adoption and table showing methodology for allocation of ***Revised*** MAILs in permits. *With limit durations*
☑	3.7.1	Recommendations for on-going local limits evaluations.
☑	3.8.	Appendices Summarizing General Information
☑	3.8.1	Most recent Industrial Waste Survey Summary Table.
☑	3.8.2	Region VII Spreadsheet Data Input, Output, Sludge Printouts (for MAHL comparison and current conditions) as Adobe pdf. Excel Spreadsheet may be requested by approval authority.
☐	3.8.3	Raw Analytical Data (Contract Laboratory Reports) – *Will be provided upon request*

4.0 CERTIFICATION BY AN OFFICAL REPRESENTATIVE OF THE MUNICIPALITY PER 40 CFR 403.9(b)(1)	
"I certify under penalty of law that this document and all attachments were prepared under direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations"	
Authorized Representative Signature: Erin Keys	Date: July 1, 2022
Duly Authorized Representative Name: Erin Keys	Duly Authorized Representative Title: Engineering & Operations Manager
Email Contact of Duly Authorized Representative: Erin.Keys@como.gov	

Appendix E. EPA Region 7 Missouri Local Limits Spreadsheet

LOCAL LIMITS CALCULATOR

05/04/22

City: Columbia
State: MO
Plant Data:

Non SIU Flow, MGD:	16.447	Sludge To Disposal,MGD:	0.0053
TOTAL Flow, MGD:	17.300	Sludge Disposal %Solids:	23.0
7Q10, MGD:	0.00	Site Use, Years:	50
Stream Hardness, mg/l	208	Site Size, Acres:	4000
Flow To Digsr: MGD:	0.121	Sludge Quality Level:	Ceiling

Peek

EDU Interior River Valley and Hills 50th Prcntl
2018-2021 Plant Data
When 2011 value < 2020 influent, set equal to 2021 influent. 2011 DL used for Hg and Ag (not 1/2 DL)
See Appendix K

Add Pollutant | Adjust Domestic | < | #

	NPDES Limit	Removal Efficiencies Primary	Removal Efficiencies Plant	Domestic Level	MO WQS	Reserve Factor	Avg. Infl mg/L	AS Inhibition	Digestion Inhibition
Ag	NA	20%	72%	0.00025	0.0134	10%	**0.001**	0.25	13
As	NA	NA	43%	0.0008	0.1500	10%	**0.001**	0.1	1.6
Cd*	NA	15%	67%	0.00025	0.0014	10%	**0.0002**	1	20
CN	NA	27%	69%	0.0029	0.0050	10%	**0.002**	0.1	4
Cr*	NA	27%	64%	0.009	0.1570	10%	**0.003**	1	100
Cu*	NA	22%	92%	0.056	0.0174	10%	**0.042**	1	40
Hg	NA	10%	68%	0.0001	0.00077	10%	**0.0001**	0.1	NA
Mo	NA	NA	51%	0.002	NA	10%	**0.003**	NA	NA
Ni*	NA	14%	42%	0.006	0.0969	10%	**0.010**	1.0	10
Pb*	NA	57%	65%	0.001	0.0081	10%	**0.0020**	0.1	340
Se	NA	NA	26%	0.001	0.0050	10%	**0.002**	NA	NA
Zn*	NA	27%	75%	0.129	0.2215	10%	**0.017**	1	400

*HARDNESS DEPENDENT

SIUs and Plant Flows

Add SIU

SIU	1000 gal/day Avg. Process Flow	Avg. Total Flow
3M Company	126	
Watlow	1	
Kraft	411	
Beyond Meat	13	
Sanitary Landfill	3	
Aurora	174	
Power Plant	92	
Quaker	33	
Gate	0	
Good Day Farms	--	
10	853.000	0.000

Conventional Pollutants/Nutrients

	DW Design Daily avg lbs/day	DW Design Peak lbs/day	Domestic Sources lbs/day	Expansion Factory	Avg. Infl mg/L
BOD	**54,400**	**NA**	21,463	10%	**276**
TSS	**62,700**	**NA**	25,251	10%	**292**
NH3	**5,400**	**NA**	2,500	10%	**23**

Domestic Sources Estimator

Pop: 126254 persons

	lbs/cap/day	lbs/day
BOD	0.17	**21,463**
TSS	0.2	**25,251**
NH3	0.0198	**2,500**

SUMMARY OF MASS LOADINGS FOR COLUMBIA , MO

	Domestic/commcl Sources		LOCAL LIMIT Maximum Allowable Industrial Load (MAIL)			Maximum Allowable Headwrks Load (MAHL)	Headworks ACTUAL Avg.Load	Current Loading	
	lbs.	% of limit	lbs.	% of MAHL	lbs. Reserve	lbs	lbs	as % of MAHL	Limiting Criteria
Ag	0.034	0%	6.166	90%	0.685	6.89	0.180	3%	Water Quality
As	0.110	6%	1.497	84%	0.166	1.77	0.216	12%	503 Ceiling
Cd	0.034	6%	0.527	85%	0.059	0.62	0.032	5%	Water Quality
CN	0.402	17%	1.733	74%	0.193	2.33	0.320	14%	Water Quality
Cr	1.215	3%	41.796	88%	4.6439973	47.66	0.385	1%	Ceiling Bnchmrk
Cu	7.721	25%	21.364	68%	2.374	31.46	6.086	19%	Water Quality
Hg	0.014	4%	0.300	86%	0.033	0.35	0.015	4%	Water Quality
Mo	0.213	14%	1.154	77%	0.128	1.50	0.410	27%	503 Ceiling
Ni	0.780	8%	8.447	83%	0.939	10.17	1.443	14%	503 Ceiling
Pb	0.203	6%	2.817	85%	0.313	3.33	0.289	9%	Water Quality
Se	0.204	21%	0.693	71%	0.077	0.97	0.229	23%	Water Quality
Zn	17.695	17%	75.573	74%	8.397	101.66	2.446	2%	503 Ceiling

TOXIC POLLUTANTS SUMMARY

UNIFORM CONCENTRATION LIMIT

	If APPLIED mg/l
Ag	0.867
As	0.210
Cd	0.074
CN	0.244
Cr	5.875
Cu	3.003
Hg	0.042
Mo	0.162
Ni	1.187
Pb	0.396
Se	0.097
Zn	10.623

	MIDDLE TIER THRESHOLD lb/day
Ag	0.0007
As	0.0002
Cd	0.0001
CN	0.0002
Cr	0.0048
Cu	0.0031
Hg	0.0000
Mo	0.0001
Ni	0.0010
Pb	0.0003
Se	0.0001
Zn	0.0102

Conventional Pollutants/Nutrients - Long Term Average Limits

Based on Design Daily Average Criteria

	Domestic/commcl Sources		LOCAL LIMIT Maximum Allowable Industrial Load (MAIL)			Maximum Allowable Headwrks Load (MAHL)	Headworks ACTUAL Avg.Load	Current Loading
	lbs.	% of limit	lbs.	% of MAHL	lbs. Reserve	Avg,lbs	lbs	as % of MAHL
BOD	21463	39%	27497	51%	5440	54400	39822	73%
TSS	25251	40%	31179	50%	6270	62700	42130	67%
NH3	2500	46%	2360	44%	540	5400	3318	61%

Conventional Pollutants/Nutrients - Daily Maximum Limits

Based on Peak Design Criteria

	Domestic/commcl Sources		LOCAL LIMIT Maximum Allowable Industrial Load (MAIL)			Maximum Allowable Headwrks Load (MAHL)	Headworks ACTUAL Avg.Load	Current Loading
	lbs.	% of limit	lbs.	% of MAHL	lbs. Reserve	Peak,lbs	lbs	as % of MAHL
BOD	21463	NA	NA	NA	0	NA	39822	NA
TSS	25251	NA	NA	NA	0	NA	42130	NA
NH3	2500	NA	NA	NA	0	NA	3318	NA

Conventional Pollutants/Nutrients Uniform Concentration Limits

Flow for SIUs Receiving Limits, mgd: 0.853

	Daily Max mg/l	Mo. Avg. mg/l
BOD	NA	3865
TSS	NA	4383
NH3	NA	332

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SILVER

Non SIU Flow, MGD:	*16.447*
TTL Flow, MGD:	*17.30*
7Q10, MGD:	*0.00*
Flow To Digsr: MGD:	*0.12*
SLDG To Disp,MGD:	*0.01*
SLDG Disp %Solids:	*23.00*
SITE Use, Yrs:	*50.00*
SITE Size, Acres:	*4000.00*

		source
Domestic Background:	0.00025	
Instream Background:	0	
Plant Removal Efficiency:	72%	
Primary Rmvl Efficiency:	20%	*literature*
WQS:	0.01336209	
Ratio: Dissolved/Tot:	1	
Inhibition 2nd Treatment:	0.25	*literature*
Sludge Digestion Inhib.:	13	*literature*
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	NA	*Regulation*
Disp Limit, mg/kg:	NA	*calculated*
Sludge Quality, mg/kg:	NA	*503 Ceiling*
MAIL Reserve Factor	10%	

SILVER UNIFORM CONCENTRATION, mg/l		
Water Quality	0.867	*Limiting*
Digstn Inhib	2.297	
503 Ceiling	NA	
Secndry Inhib	5.700	
NPDES #:	NA	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	6.166	*Limiting*
Digstn Inhib	16.338	
503 Ceiling	NA	
Secndry Inhib	40.548	
NPDES #	NA	

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ARSENIC

Non SIU Flow, MGD:	*16.447*
TTL Flow, MGD:	*17.30*
7Q10, MGD:	*0*
Flow To Digsr: MGD:	*0.120781*
SLDG To Disp,MGD:	0.0053
SLDG Disp %Solids:	23
SITE Use, Yrs:	50
SITE Size, Acres:	4000

		source
Domestic Background:	0.0008	
Instream Background:	0	
Plant Removal Efficiency:	43%	
Primary Rmvl Efficiency:	NA	*literature*
WQS:	0.15	
Ratio: Dissolved/Tot:	1	
Inhibition 2nd Treatment:	0.1	*literature*
Sludge Digestion Inhib.:	1.6	*literature*
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	36.58	*Regulation*
Disp Limit, mg/kg:	788.1	*calculated*
Sludge Quality, mg/kg:	75	*503 Ceiling*
MAIL Reserve Factor	10%	

ARSENIC UNIFORM CONCENTRATION, mg/l		
Water Quality	4.790	
Digstn Inhib	0.460	
503 Ceiling	0.210	*Limiting*
Secndry Inhib	1.811	
NPDES #:	NA	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	34.073	
Digstn Inhib	3.275	
503 Ceiling	1.497	*Limiting*
Secndry Inhib	12.887	
NPDES #	NA	

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CADMIUM

Non SIU Flow, MGD:	*16.447*
TTL Flow, MGD:	*17.30*
7Q10, MGD:	*0*
Flow To Digsr: MGD:	*0.120781*
SLDG To Disp,MGD:	*0.0053*
SLDG Disp %Solids:	*23*
SITE Use, Yrs:	*50*
SITE Size, Acres:	*4000*

		source
Domestic Background:	0.00025	
Instream Background:	0	
Plant Removal Efficiency:	67%	*literature*
Primary Rmvl Efficiency:	15%	*literature*
WQS:	0.0014173	
Ratio: Dissolved/Tot:	1	
Inhibition 2nd Treatment:	1	*literature*
Sludge Digestion Inhib.:	20	*literature*
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	34.79	*Regulation*
Disp Limit, mg/kg:	749.6	*calculated*
Sludge Quality, mg/kg:	85	*503 Ceiling*
MAIL Reserve Factor	10%	

CADMIUM UNIFORM CONCENTRATION, mg/l		
Water Quality	0.074	*Limiting*
Digstn Inhib	3.800	
503 Ceiling	0.159	
Secndry Inhib	21.470	
NPDES #:	NA	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	0.527	*Limiting*
Digstn Inhib	27.031	
503 Ceiling	1.130	
Secndry Inhib	152.738	
NPDES #	NA	

Columbia 05/04/22

CHROMIUM

Non SIU Flow, MGD:	*16.447*
TTL Flow, MGD:	*17.30*
7Q10, MGD:	*0*
Flow To Digsr: MGD:	*0.120781*
SLDG To Disp,MGD:	*0.0053*
SLDG Disp %Solids:	*23*
SITE Use, Yrs:	*50*
SITE Size, Acres:	*4000*

		source
Domestic Background:	0.00886	
Instream Background:	0	
Plant Removal Efficiency:	64%	
Primary Rmvl Efficiency:	27%	*literature*
WQS:	0.15699967	
Ratio: Dissolved/Tot:	1	
Inhibition 2nd Treatment:	1	*literature*
Sludge Digestion Inhib.:	100	
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	2676	*Regulation*
Disp Limit, mg/kg:	57656	*calculated*
Sludge Quality, mg/kg:	3000	*Ceiling Bnchmrk*
MAIL Reserve Factor	10%	

CHROMIUM UNIFORM CONCENTRATION, mg/l		
Water Quality	7.807	
Digstn Inhib	19.758	
Ceiling Bnchmrk	5.875	*Limiting*
Secndry Inhib	24.851	
NPDES #:	NA	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	55.537	
Digstn Inhib	140.560	
Ceiling Bnchmrk	41.796	*Limiting*
Secndry Inhib	176.788	
NPDES #	NA	

Columbia 05/04/22

COPPER

Non SIU Flow, MGD:	*16.447*
TTL Flow, MGD:	*17.30*
7Q10, MGD:	*0*
Flow To Digsr: MGD:	*0.120781*
SLDG To Disp,MGD:	*0.0053*
SLDG Disp %Solids:	*23*
SITE Use, Yrs:	*50*
SITE Size, Acres:	*4000*

		source
Domestic Background:	0.05629	
Instream Background:	0	
Plant Removal Efficiency:	92%	
Primary Rmvl Efficiency:	22%	*literature*
WQS:	0.01744279	
Ratio: Dissolved/Tot:	1	
Inhibition 2nd Treatment:	1	*literature*
Sludge Digestion Inhib.:	40	*literature*
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	1338	*Regulation*
Disp Limit, mg/kg:	28827.9	*calculated*
Sludge Quality, mg/kg:	4300	*503 Ceiling*
MAIL Reserve Factor	10%	

COPPER UNIFORM CONCENTRATION, mg/l		
Water Quality	3.003	*Limiting*
Digstn Inhib	4.564	
503 Ceiling	5.035	
Secndry Inhib	22.425	
NPDES #:	NA	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	21.364	*Limiting*
Digstn Inhib	32.468	
503 Ceiling	35.816	
Secndry Inhib	159.530	
NPDES #	NA	

Columbia 05/04/22

CYANIDE

Non SIU Flow, MGD:	*16.447*
TTL Flow, MGD:	*17.30*
7Q10, MGD:	*0*
Flow To Digsr: MGD:	*0.120781*
SLDG To Disp,MGD:	*0.0053*
SLDG Disp %Solids:	*23*
SITE Use, Yrs:	*50*
SITE Size, Acres:	*4000*

		source
Domestic Background:	0.00293	
Instream Background:	0	
Plant Removal Efficiency:	69%	*literature*
Primary Rmvl Efficiency:	27%	*literature*
WQS:	0.005	
Ratio: Dissolved/Tot:	1	
Inhibition 2nd Treatment:	0.1	*literature*
Sludge Digestion Inhib.:	4	*literature*
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	NA	*Regulation*
Disp Limit, mg/kg:	NA	
Sludge Quality, mg/kg:	NA	*503 Ceiling*
MAIL Reserve Factor	10%	

CYANIDE UNIFORM CONCENTRATION, mg/l		
Water Quality	0.244	*Limiting*
Digstn Inhib	0.688	
503 Ceiling	NA	
Secndry Inhib	2.450	
NPDES #:	NA	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	1.733	*Limiting*
Digstn Inhib	4.894	
503 Ceiling	NA	
Secndry Inhib	17.426	
NPDES #	NA	

Columbia 05/04/22

MERCURY

Non SIU Flow, MGD:	*16.447*
TTL Flow, MGD:	*17.30*
7Q10, MGD:	*0*
Flow To Digsr: MGD:	*0.120781*
SLDG To Disp,MGD:	*0.0053*
SLDG Disp %Solids:	*23*
SITE Use, Yrs:	*50*
SITE Size, Acres:	*4000*

		source
Domestic Background:	0.0001	
Instream Background:	0	
Plant Removal Efficiency:	68%	
Primary Rmvl Efficiency:	10%	*literature*
WQS:	0.00077	
Ratio: Dissolved/Tot:	1	
Inhibition 2nd Treatment:	0.1	*literature*
Sludge Digestion Inhib.:	NA	*literature*
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	15.17	*Regulation*
Disp Limit, mg/kg:	326.8	*calculated*
Sludge Quality, mg/kg:	57	*503 Ceiling*
MAIL Reserve Factor	10%	

MERCURY UNIFORM CONCENTRATION, mg/l		
Water Quality	0.042	*Limiting*
Digstn Inhib	NA	
503 Ceiling	0.106	
Secndry Inhib	2.026	
NPDES #:	NA	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	0.300	*Limiting*
Digstn Inhib	NA	
503 Ceiling	0.755	
Secndry Inhib	14.416	
NPDES #	NA	

Columbia 05/04/22

MOLYBDENUM

Non SIU Flow, MGD:	*16.447*
TTL Flow, MGD:	*17.30*
7Q10, MGD:	*0*
Flow To Digsr: MGD:	*0.120781*
SLDG To Disp,MGD:	*0.0053*
SLDG Disp %Solids:	*23*
SITE Use, Yrs:	*50*
SITE Size, Acres:	*4000*

		source
Domestic Background:	0.00155	
Instream Background:	0	
Plant Removal Efficiency:	51%	
Primary Rmvl Efficiency:	NA	
WQS:	NA	
Ratio: Dissolved/Tot:	1	
Inhibition 2nd Treatment:	NA	
Sludge Digestion Inhib.:	NA	
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	NA	*Regulation*
Disp Limit, mg/kg:	NA	*Regulation*
Sludge Quality, mg/kg:	75	*503 Ceiling*
MAIL Reserve Factor	10%	

MOLYBDENUM UNIFORM CONCENTRATION, mg/l		
Water Quality	NA	
Digstn Inhib	NA	
503 Ceiling	0.162	*Limiting*
Secndry Inhib	NA	
NPDES #:	NA	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	NA	
Digstn Inhib	NA	
503 Ceiling	1.154	*Limiting*
Secndry Inhib	NA	
NPDES #	NA	

Columbia 05/04/22

NICKEL

Non SIU Flow, MGD:	*16.447*
TTL Flow, MGD:	*17.30*
7Q10, MGD:	*0*
Flow To Digsr: MGD:	*0.120781*
SLDG To Disp,MGD:	*0.0053*
SLDG Disp %Solids:	*23*
SITE Use, Yrs:	*50*
SITE Size, Acres:	*4000*

		source
Domestic Background:	0.00569	
Instream Background:	0	
Plant Removal Efficiency:	42%	*literature*
Primary Rmvl Efficiency:	14%	*literature*
WQS:	0.09692691	
Ratio: Dissolved/Tot:	1	
Inhibition 2nd Treatment:	1	*literature*
Sludge Digestion Inhib.:	10	*literature*
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	375	*Regulation*
Disp Limit, mg/kg:	8079.6	*calculated*
Sludge Quality, mg/kg:	420	*503 Ceiling*
MAIL Reserve Factor	10%	

NICKEL UNIFORM CONCENTRATION, mg/l		
Water Quality	2.952	
Digstn Inhib	2.935	
503 Ceiling	1.187	*Limiting*
Secndry Inhib	21.126	
NPDES #:	NA	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	20.998	
Digstn Inhib	20.883	
503 Ceiling	8.447	*Limiting*
Secndry Inhib	150.290	
NPDES #	NA	

Columbia 05/04/22

LEAD

Non SIU Flow, MGD:	*16.447*
TTL Flow, MGD:	*17.30*
7Q10, MGD:	*0*
Flow To Digsr: MGD:	*0.120781*
SLDG To Disp,MGD:	*0.0053*
SLDG Disp %Solids:	*23*
SITE Use, Yrs:	*50*
SITE Size, Acres:	*4000*

		source
Domestic Background:	0.00148	
Instream Background:	0	
Plant Removal Efficiency:	65%	
Primary Rmvl Efficiency:	57%	*literature*
WQS:	0.00808402	
Ratio: Dissolved/Tot:	1	
Inhibition 2nd Treatment:	0.1	*literature*
Sludge Digestion Inhib.:	340	*literature*
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	268	*Regulation*
Disp Limit, mg/kg:	5774.2	*calculated*
Sludge Quality, mg/kg:	840	*503 Ceiling*
MAIL Reserve Factor	10%	

LEAD UNIFORM CONCENTRATION, mg/l		
Water Quality	0.396	*Limiting*
Digstn Inhib	66.633	
503 Ceiling	1.636	
Secndry Inhib	4.219	
NPDES #:	NA	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	2.817	*Limiting*
Digstn Inhib	474.030	
503 Ceiling	11.642	
Secndry Inhib	30.016	
NPDES #	NA	

Columbia 05/04/22

SELENIUM

Non SIU Flow, MGD:	*16.447*
TTL Flow, MGD:	*17.30*
7Q10, MGD:	*0*
Flow To Digsr: MGD:	*0.120781*
SLDG To Disp,MGD:	*0.0053*
SLDG Disp %Solids:	*23*
SITE Use, Yrs:	*50*
SITE Size, Acres:	*4000*

		source
Domestic Background:	0.00149	
Instream Background:	0	
Plant Removal Efficiency:	26%	
Primary Rmvl Efficiency:	NA	
WQS:	0.005	
Ratio: Dissolved/Tot:	1	
Inhibition 2nd Treatment:	NA	
Sludge Digestion Inhib.:	NA	
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	89.2	*Regulation*
Disp Limit, mg/kg:	1921.9	*calculated*
Sludge Quality, mg/kg:	100	*503 Ceiling*
MAIL Reserve Factor	10%	

SELENIUM UNIFORM CONCENTRATION, mg/l		
Water Quality	0.097	*Limiting*
Digstn Inhib	NA	
503 Ceiling	0.469	
Secndry Inhib	NA	
NPDES #:	NA	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	0.693	*Limiting*
Digstn Inhib	NA	
503 Ceiling	3.335	
Secndry Inhib	NA	
NPDES #	NA	

Columbia 05/04/22

ZINC

Non SIU Flow, MGD:	*16.447*
TTL Flow, MGD:	*17.30*
7Q10, MGD:	*0*
Flow To Digsr: MGD:	*0.120781*
SLDG To Disp,MGD:	*0.0053*
SLDG Disp %Solids:	*23*
SITE Use, Yrs:	*50*
SITE Size, Acres:	*4000*

		source
Domestic Background:	0.129	
Instream Background:	0	
Plant Removal Efficiency:	75%	
Primary Rmvl Efficiency:	27%	*literature*
WQS:	0.22149328	
Ratio: Dissolved/Tot:	1	
Inhibition 2nd Treatment:	1	*literature*
Sludge Digestion Inhib.:	400	*literature*
NPDES Limit, mg/l:	NA	
SLUDGE DISPOSAL		
Lbs/Acre/Life, limit:	2498	*Regulation*
Disp Limit, mg/kg:	53820.6	*calculated*
Sludge Quality, mg/kg:	7500	*503 Ceiling*
MAIL Reserve Factor	10%	

ZINC UNIFORM CONCENTRATION, mg/l		
Water Quality	13.933	
Digstn Inhib	65.727	
503 Ceiling	10.623	*Limiting*
Secndry Inhib	22.766	
NPDES #:	NA	
ALLOWABLE lbs/day, TOTAL from ALL SIUs (MAIL)		
Water Quality	99.122	
Digstn Inhib	467.585	
503 Ceiling	75.573	*Limiting*
Secndry Inhib	161.957	
NPDES #	NA	

Appendix F. Industrial Users Summary Table

Appendix F. Industrial Users Summary Table

Industry	Products	Compliance Issues[1]	Industrial Processes	Flows[2] (gpd)	Categorical Pretreatment Standard
3M Columbia Plant	Circuit boards	-----	Metal stamping, electroplating, molding, assembly, laminating, reagent spotting, coating, high temp rinse, machine lathing	Process– 126,000	433 – metal finishing
Gates Corporation	Tires	-----	No discharge facility	Process – 0	428 – rubber manufacturing
Kraft-Heinz Food Group, Inc.	Hot dogs	pH violations, O&G violation	Cleaning and sanitizing process lines	Process – 411,000	Non-categorical industry
Aurora Organic Dairy	Dairy products	-----	Food processing and production	Process – 174,000	405-dairy
Beyond Meat	Plant food-based products	pH violations	Food processing and production	Process – 13,000	Non-categorical industry
Watlow Missouri, Inc.	Industrial electric products	Failure to report, failure to sample	Chemical etching, manufacture of silicone rubber and flexible heaters.	Process – 1,000	433 – metal finishing
City of Columbia Sanitary Landfill	Municipal landfill	-----	Sanitary landfill discharging pretreated, non-hazardous landfill leachate to City sewer	Process – 3,000	445- landfill
Quaker	Rice Cakes	pH violations, O&G violations		Process – 33, 000	406- grain mils
Good Day Farms	Marijuana Plant Grow House	Failure to report, failure to sample	Sanitary landfill discharging pretreated, non-hazardous landfill leachate to City sewer	Process – 0	Non-categorical industry
City of Columbia Power Plant (future permitee)	Power Plant	-----	Natural Gas Electricity Generation	Process – 92, 200	423- steam electric power generating

[1] Compliance issues provided in 2021 Annual Pretreatment Report
[2] Flow estimations provided in 2021 Annual Pretreatment Report

Appendix G. 2021 Annual Pretreatment Report

City of Columbia
MO - 0097837
PRETREATMENT IMPLEMENTATION ANNUAL REPORT
CALENDAR YEAR 2021

The Environmental Protection Agency's (EPA) pretreatment regulations require approved Publicly-Owned Treatment Works (POTW) pretreatment programs to file an annual report [see 40 CFR 403.12(i)] to the Missouri Department of Natural Resources (Department) to document program status and activities performed during the previous calendar year. Missouri requests information during the previous calendar year from January 1 to December 31. Using the attached table (Part II) please provide a list of all Significant Industrial Users and the other requested information for those facilities regulated by your Pretreatment Program. If any facility was in Significant Noncompliance (SNC) during a six-month reporting period be sure to indicate whether this was for a violation of discharge standards, reporting, or both. If you keep these data in a spreadsheet or database, a printout can be substituted for the table. {***MOCWIS #***} is used for data entry into the Missouri Clean Water Information System (MOCWIS). Please do not delete.
NOTE: Annual report can be used to fulfill requirement under 40 CFR 403.8(f)(6). The pretreatment coordinator may request additional information under this requirement and request a POTW program modification under 40 CFR 403.18 as needed.

NEW: Request for names of Dental Offices in #9 below.

Part I: With respect to the industries regulated under the City's Pretreatment Program, please answer the following questions. Use additional paper if necessary.

1. List by name, those SIUs that did not have a valid control mechanism (indicate: expired or unissued) {***MOCWIS #3***} as of December 31, 2021. Of these industries, indicate those that have been without a control mechanism for greater than 180 days. If your approved Pretreatment program does not require you to issue permits, please indicate.

All SIU's had valid control mechanisms as of December 31, 2021.

2. List by name those SIUs not sampled by the POTW at least once during calendar year 2021 {***MOCWIS #6***}.

Good day Farm was not sampled during 2021.
Gates Corporation has a zero discharge permit.

3. List by name those SIUs on a compliance schedule {***MOCWIS #8***} as of December 31, 2021, for achieving compliance with discharge standards. Provide the date of projected final compliance. Indicate those facilities currently in violation of any compliance schedule milestones by 90 days or greater.

None

4. List by name those industries for which civil {***MOCWIS #2***} or criminal judicial actions {***MOCWIS #4***} were initiated in the past year. Indicate the amount of any proposed penalties and the amount of penalties collected.

None

5. List by name those industries for which -
1) written notices of violation (NOV's) {***MOCWIS #12***}, or
2) Administrative orders (AO's) or the equivalent {***MOCWIS #1***}, were issued in response to noncompliance events that occurred in the past calendar year.

For each industry indicate the total number of each enforcement action type and the amount of penalties collected {***MOCWIS #14***}, if any.

Kraft-Heinz: 8 pH verbal notice of violation & 1 O&G verbal notice of violation
Beyond Meat: 3 pH verbal notice of violation
Quaker Oats: 11 pH verbal notice of violation, 8 O&G verbal notice of violation

No penalties were collected

6. List by name those industries who were in Significant Noncompliance (SNC) at any time during the calendar year and public noticed in the largest local newspaper {***MOCWIS #9***}. Provide the date of publication. If publication has not yet occurred, please provide the expected date of publication.

Watlow, Failure to notify, failure to collect samples during third quarter. Publication date October 2022.
Good Day Farm, Failure to report, failure to collect samples. Publication date October 2022.

7. Did the POTW have any numerical NPDES violations in 2021? If so, describe.

Outfall #001 – Main outfall – POTW
TSS violation for February & March due to excessive waterfowl use of the City's constructed wetland treatment system.
TSS violation for June, July, & August was due to flooding.
TSS violation in September due to maintenance on the berm at the wetland.

Were any NPDES violations attributed to interference or pass through?

No.

8. List by name any industry that caused (*see 40 CFR 403.3(k) for the definition of Interference and 40 CFR 403.3(p) for the definition of Pass Through*) in the reporting calendar year from January 1 to December 31 {***MOCWIS #15***}:

(a) **interference** within the POTW
(b) **pass through** of pollutants at the wastewater treatment plan
(c) health problems to POTW workers
(d) water quality violations (violation of city's NPDES permit).

For each industry, provide details including information on enforcement actions taken by the city to resolve the violations.

None

9. List by name the dental offices for which you are regulating under the *40 CFR 441, Dental Office Point Source Category*. List applicable dental offices that remove and replace dental amalgams per 40 CFR 441.10. Indicate those dental offices for which you have received and reviewed a One-Time Compliance Report (OTCR) (Please use separate sheets if needed). Please retain a list and all OTCRs for Department inspection.

Dental Offices of Columbia, MO that we have received and reviewed their One-time Compliance Report:

Accent Dental Ctr
Advanced Orthodontics
Affordable Dentures
Richard S Bohon DDS
Colin B Boswell DDS
Central Missouri Orthodontics
Centrl Missouri Endodonics
H. Elaine Cheong DDS
Columbia Dental Care
Columbia Dentistry For Child
Columbia Healthy Smiles
Columbia Implants-Prdntsts
Columbia Oral & Maxillofacial
Columbia Oral-Maxillofacial
Coyle & Johnson Oral Surgery
Dental Specialty Ctr LLC
Dentistry By Design
Robert H Dye DDS
Thomas Alan Elliott DDS
Bryan G Foote DDS
CoMo Pediatric Dentistry LLC
CoMo Pediatric Dentistry LLC
H Fred Christman DDS LLC
Hamilton Mathis & Hamilton
Harry S Truman VA Hospital
Hatley Enterprises LLC
Keen Dental Care
Mooney Family Dentistry
Mchargue Nick DDS
Mid Missouri Dental Ctr
Miller Dental Assoc Inc
Michael Lee Minten Sr DDS
Arthur J Misischia Dmd
Ogden G Michael DDS
Walter R Pfitzinger DDS
Plaza Dental Group LLC
Sally Powell DDS
Pro Dental
Bruce E Ringdahl DDS
Robinson & Ries Orthodontics

Summit Dental
Shelley Lyle PC
Bear Creek Family Dental
Sterling Dental Care
Feorgetown Dental Associatets
Vanderveen Dental Ctr
Benjamin H Walter Jr DDS
Warren A Lawson DDS
Wayne R Hawks DDS
Whitsitt & Scott
All American Dental
Kent F Willet & Chase Patton DDS
Larry S Williams DDS
Stamos Endodontics
Minten Dental
Plaza Dental Group LLC
32 Dental Urgent Care

I certify, under penalty of law, that the information in this report was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluation the information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment.

Signature	Title	Date
Erin Keyr	Engr & Ops Mgr	3/16/22

Duly Authorized--40 CFR 403.12(m). If this report is not signed by a principal executive officer or ranking elected official, then it must be signed by a duly authorized employee.

City of Columbia Significant Industrial User List and Summary of Compliance Activities										City of Columbia 4900 W. Gillespie Bridge Rd, Columbia, Missouri				
Industry Name and address	Reduced Reporting or NSCIU	Local Limits	Categorical Stnd	Regulated Process	T M T	Type	Regulated Flow	Total Flow	C W F	Compliance Status for Six Month Period Ending:				2021 Last Inspection
										JUN" 20	DEC 20	JUN" 21	DEC 21	
3M Company 5400 Route B Columbia, MO 65202		Y	433	Cu, Au Plating	Y	Precip	126K	126K	Y	C	C	C	C	11/2/21
Gates Corporation 3015 LeMone Industrial Blvd Columbia, MO 65201			428	Rubber Production, Treated Cord	N	Zero Discharge	0K	0K	N	C	C	C	C	11/9/21
Watlow-Columbia 2101 Pennsylvania Drive Columbia, MO 65202		Y	433	Chemical Etching	Y	Precip	1K	1K	N	C	SNC,S	C	SNC,S	11/3/21
Kraft-Heinz 4600 Waco Road Columbia, MO 65202			NA	Hotdogs	Y	Grav Sep	411K	411K	N	C	SNC,S	C	C	11/16/21
Beyond Meat 2400 Maguire Blvd Columbia, MO 65201			NA	Plant based meat production	Y	Grease Trap	13K	13K	N	C	SNC,S	C	C	11/8/21

City of Columbia Significant Industrial User List and Summary of Compliance Activities										City of Columbia 4900 W. Gillespie Bridge Rd, Columbia, Missouri				
Industry Name and address	Reduced Reporting or NSCIU	Local Limits	Categorical Stnd	Regulated Process	T M T	Type	Regulated Flow	Total Flow	C W F	Compliance Status for Six Month Period Ending:				2021 Last Inspection
										JUN" 20	DEC 20	JUN" 21	DEC 21	
City of Columbia Sanitary Landfill 5700 Peabody Road Columbia, MO 65205		Y	445	Landfill	N	———	3K	3K	N	C	C	C	C	11/10/21
Aurora Organic Dairy 4525 Waco Road Columbia, MO 65202			405	Organic Milk	Y	Dissolved Air Floatation	174K	174K	N	C	C	C	C	11/1/21
Quaker Oats, Columbia 4501 N. Paris Road Columbia, MO 65202			406	Rice Cakes	Y	Grease Trap	33K	33K	N	Not Permitted	Under Compliance Schedule	I	I	11/30/21
Good Day Farm 5301 Paris Road Columbia, MO 65202			NA	Marijuana Plant Grow House	Y	Grease Trap	No flow has been reported		N	Not Permitted	Not Permitted	Not Permitted	SNC, R	1/13/22

Blank table 12/28/2021 TJB

I certify under penalty of law that the information in this report was prepared under my direction and supervision in accordance with the system designed to ensure that qualified personnel properly gather and evaluate the information. I am aware that there are significant penalties for false certification including the possibility of fine and imprisonment.

Signature	Title	Date
Erin Klepp	Engr & Ops Mgr	3/16/22

Duly Authorized--40 CFR 403.12(m). If this report is not signed by a principal executive officer or ranking elected official, then it must be signed by a duly authorized employee. This report is required to be submitted as specified in the Missouri.

Appendix H. 2018-2021 Plant Influent and Effluent Data Table

Appendix H.1 Plant Influent Data

Sample Date	As ug/L	Cd ug/L	Cr ug/L	Cu ug/L	Pb ug/L	Mo ug/L	Ni ug/L	Se ug/L	Ag ug/L	Zn ug/L	Hg ug/L	CN ug/L
08-Jan-18	3	< 1	< 3	< 10	< 3	3	< 20	< 3	< 3	< 20	0	< 4
12-Feb-18	< 3	< 1	4	78	< 3	4	< 20	< 3	< 3	67	< 0	< 4
05-Mar-18	< 3	< 1	4	79	< 3	4	< 20	< 3	< 3	54	< 0	< 4
10-Apr-18	< 3	< 0	3	72	< 3	3	< 20	< 3	< 3	< 20	< 0	< 4
14-May-18	< 3	< 1	6	83	3	5	< 20	< 3	< 3	< 20	0	< 4
04-Jun-18	< 3	< 1	3	55	< 3	3	< 20	< 3	< 3	< 20	< 0	< 4
09-Jul-18	< 3	< 1	< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0	< 4
13-Aug-18	3	< 1	< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0	< 4
10-Sep-18	3	< 1	< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0	< 4
08-Oct-18	4	< 1	7	98	4	6	< 20	< 3	< 3	135	0	< 4
05-Nov-18	< 3		< 3	48	< 3	4	< 20	< 3	< 3	31		< 4
06-Nov-18		< 1									< 0	
12-Dec-18	< 3	< 1	3	50	< 3	< 3	< 20	< 3	< 3	45	0	< 4
07-Jan-19	< 3	< 1	< 3	46	< 3	3	< 20	< 3	< 3	< 20	< 0	< 4
04-Feb-19	< 3	< 1	< 3	31	< 3	< 3	< 20	< 3	< 3	< 20	< 0	< 4
04-Mar-19	< 3	< 1	< 3	42	< 3	< 3	< 20	< 3	< 3	< 20	< 0	< 4
02-Apr-19	< 3	< 0	3	41	< 3	< 3	< 20	< 3	< 3	< 20	0	< 4
06-May-19	< 3	< 1	3	41	< 3	3	< 20	4	< 3	< 20	< 0	5
24-Jun-19	< 3	< 1	< 3	35	< 3	< 3	< 20	< 3	< 3	< 20	< 0	< 4
09-Jul-19	< 3	< 1	3	60	3	3	< 20	< 3	< 3	< 20	< 0	4
05-Aug-19	< 3	< 1	3	69	< 3	3	< 20	< 3	< 3	< 20	< 0	< 4
03-Sep-19	< 3	0	3	50	< 3	3	< 20	< 3	< 3	< 20	0	< 4
07-Oct-19	< 3	0	3	58	< 3	5	< 20	3	< 3	< 20	0	7
13-Nov-19	< 3	< 1	< 3	< 10	< 3	5	< 20	< 3	< 3	< 20	0	< 5
09-Dec-19	< 3	0	< 3	< 10	< 3	3	< 20	< 3	< 3	< 20	0	< 5
06-Jan-20	< 3	0	< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	0	< 5
03-Feb-20	< 3	0	4	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0	< 4
09-Mar-20	< 3	< 0	< 3	11	< 3	< 3	< 20	< 3	< 3	< 20	0	< 4
06-Apr-20	< 3	< 0	3	41	4	4	< 20	< 3	< 3	< 20	0	< 4
05-May-20	< 3	< 0	8	38	5	4	< 20	< 3	< 3	< 20	0	< 4
10-Jun-20	< 3	< 0	4	24	5	4	< 20	< 3	< 3	< 20	0	< 4
13-Jul-20	< 3	< 0	3	65	3	3	< 20	< 3	< 3	< 20	< 0	< 4
03-Aug-20	< 3	< 0	3	72	3	4	< 20	< 3	< 3	< 20	0	< 4
08-Sep-20	< 3	< 0	3	53	4	5	< 20	< 3	< 3	< 20	< 0	< 4
06-Oct-20	< 3	< 0	5	60	4	< 3	< 20	3	< 3	< 20	< 0	< 4
02-Nov-20	< 3	< 0	3	80	3	4	< 20	3	< 3	< 20	< 0	< 4
08-Dec-20	< 3	< 0	3	61	3	3	< 20	3	< 3	< 20	< 0	< 4
04-Jan-21	< 3	< 0	< 3	35	< 3	3	< 20	4	< 3	< 20	< 0	< 4
03-Feb-21	< 3	< 0	3	64	4	4	< 20	2	< 3	22	0	< 4
17-Mar-21	< 3	< 0	< 3	29	3	< 3	< 20	< 3	< 3	< 20	< 0	< 4
06-Apr-21	< 3	< 0	< 3	34	< 3	2	< 20	3	< 3	< 20	0	< 4
04-May-21	< 3	< 0	< 3	39	< 3	< 3	< 20	< 3	< 3	< 20	< 0	5
08-Jun-21	< 3	0	< 3	28	< 3	< 3	< 20	< 3	< 3	< 20	< 0	< 4
13-Jul-21	< 3	1	< 3	15	< 3	< 3	< 20	< 3	< 3	< 20	< 0	< 4
11-Aug-21	3	1	< 3	24	< 3	< 3	< 20	< 3	< 3	28	0	< 4
08-Sep-21	< 3	< 0	6	89	4	< 3	< 20	< 3	< 3	28	< 0	< 4

Appendix H.2 Plant Effluent Data

Sample Date	Al ug/L	As ug/L	Cd ug/L	Cr ug/L	Cu ug/L	Pb ug/L	Mo ug/L	Ni ug/L	Se ug/L	Ag ug/L	Zn ug/L	Hg ug/L
08-Jan-18	####	< 3		7	123	2	8	< 20	4	4	69	< 0
12-Feb-18	153	< 3		< 3	13	< 3	< 3	< 20	< 3	< 3	< 20	< 0
05-Mar-18	393	< 3		< 3	33	< 3	< 3	< 20	< 3	< 3	< 20	< 0
10-Apr-18	552	< 3		< 3	47	< 3	< 3	< 20	< 3	< 3	< 20	< 0
14-May-18	< 100	3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
04-Jun-18	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
09-Jul-18	731	< 3		8	80	< 3	4	< 20	3	< 3	35	< 0
13-Aug-18	759	4		4	84	< 3	4	< 20	< 3	< 3	40	< 0
10-Sep-18	666	< 3		3	58	< 3	3	< 20	< 3	< 3	< 20	< 0
08-Oct-18	149	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
06-Nov-18	< 100	3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
12-Dec-18	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
07-Jan-19	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
04-Feb-19	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
04-Mar-19	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
02-Apr-19	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
06-May-19	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
24-Jun-19	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
09-Jul-19	< 100	< 3		< 3	< 10	< 3	2	< 20	< 3	< 3	< 20	< 0
05-Aug-19	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
03-Sep-19	< 100	< 3		< 3	< 10	< 3	4	< 20	< 3	< 3	< 20	< 0
07-Oct-19	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
13-Nov-19	385	< 3		< 3	57	3	9	< 20	< 3	< 3	< 20	< 0
09-Dec-19	462	< 3		< 3	52	< 3	8	< 20	< 3	< 3	< 20	< 0
06-Jan-20	428	< 3		< 3	37	3	< 3	< 20	3	< 3	< 20	< 0
03-Feb-20	719	< 3		< 3	31	< 3	3	< 20	3	< 3	< 20	< 0
09-Mar-20	####	< 3		7	111	5	3	< 20	3	< 3	147	< 0
06-Apr-20	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
05-May-20	475	< 3		< 3	19	< 3	< 3	< 20	< 3	< 3	< 20	< 0
10-Jun-20	378	< 3		< 3	< 10	< 3	4	< 20	< 3	< 3	< 20	< 0
13-Jul-20	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
03-Aug-20	< 100	< 3		< 3	< 10	< 3	3	< 20	< 3	< 3	< 20	0
08-Sep-20	< 100	< 3		< 3	10	< 3	5	< 20	< 3	< 3	< 20	< 0
06-Oct-20	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
02-Nov-20	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
08-Dec-20	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
04-Jan-21	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
03-Feb-21	101	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
17-Mar-21	120	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
06-Apr-21	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
04-May-21	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
08-Jun-21	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
13-Jul-21	< 100	4		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
11-Aug-21	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0
08-Sep-21	< 100	< 3		< 3	< 10	< 3	< 3	< 20	< 3	< 3	< 20	< 0

Appendix I. Domestic Source Concentrations Summary Tables

2011 Domestic Background Samples

			As mg/L	Cd mg/L	Cr mg/L	Cu mg/L	Pb mg/L	Mo mg/L	Ni mg/L	Se mg/L	Ag mg/L	Zn mg/L	Hg mg/L	NH_3-N mg/L	TCN mg/L
Thornbrook pump station															
7-Jun-11	8.15	21	0.00063 <	0.0005	0.0075	0.052	0.00082	0.0021	0.0043	0.0011 <	0.0005	0.13 <	0.0002	36 <	0.005
8-Jun-11	8.23	20.8	0.0011 <	0.0005	0.017	0.081	0.0029	0.00089	0.0096	0.0021 <	0.0005	0.19 <	0.0002	48 <	0.005
9-Jun-11	8.23	20.9	0.00056 <	0.0005	0.0099	0.05	0.0011	0.0014	0.0034	0.0011 <	0.0005	0.12 <	0.0002	38 <	0.005
10-Jun-11	8.43	20.8	0.00075 <	0.0005	0.0082	0.053	0.0011	0.0023	0.0043	0.0014 <	0.0005	0.12 <	0.0002	50 <	0.005
14-Jun-11	8.36	19.3	0.00076 <	0.0005	0.0077	0.036	0.0014	0.0024	0.0044	0.0013 <	0.0005	0.1 <	0.0002	44 <	0.005
15-Jun-11	8.16	20.3	0.00074 <	0.0005	0.0086	0.041	0.0012	0.0021	0.0043	0.0014 <	0.0005	0.096 <	0.0002	44 <	0.005
16-Jun-11	8.28	20	0.00063 <	0.0005	0.0077	0.045	0.00079	0.0022	0.0037	0.0014 <	0.0005	0.11 <	0.0002	45 <	0.005
Cascades pump station															
7-Jun-11	8.17	21.3	0.00063 <	0.0005	0.0077	0.065	0.0014	0.00085	0.0062	0.0015 <	0.0005	0.15 <	0.0002	50 <	0.005
8-Jun-11	8.23	20.5	0.00061 <	0.0005	0.01	0.052	0.001	0.0017	0.0039	0.0014 <	0.0005	0.14 <	0.0002	46 <	0.005
9-Jun-11	7.63	19.9	0.00064 <	0.0005	0.0089	0.067	0.0015	0.00082	0.0066	0.0015 <	0.0005	0.14 <	0.0002	53 <	0.005
10-Jun-11	8.07	20.8	0.00067 <	0.0005	0.0077	0.067	0.0013	0.0012	0.007	0.0018 <	0.0005	0.15 <	0.0002	49	0.005
14-Jun-11	8.17	18.4	0.0021 <	0.0005	0.0085	0.055	0.0037	0.0012	0.008	0.0016 <	0.0005	0.12 <	0.0002	52 <	0.005
15-Jun-11	8.15	20.2	0.00068 <	0.0005	0.0079	0.059	0.0013	0.0013	0.0074	0.0016 <	0.0005	0.12 <	0.0002	50 <	0.005
16-Jun-11	8.13	20	0.00067 <	0.0005	0.0068	0.065	0.0012	0.0012	0.0065	0.0017 <	0.0005	0.12 <	0.0002	49	0.006

Cascade Pump Station Discharge Metals Comparison

2011 Data Summary and July 27, 2021 Sample

Parameter:		**As**	**Cd**	**Cr**	**Cu**	**Pb**	**Mo**	**Ni**	**Se**	**Ag**	**Zn**	**Hg**
Unit:		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
2011 Data Summary (7 measurements)	Min	0.00061	0.0005	0.0068	0.052	0.001	0.00082	0.0039	0.0014	0.0005	0.12	0.0002
	Average	0.00086	0.0005	0.0082	0.061	0.0016	0.0011	0.0065	0.0015	0.0005	0.1342	0.0002
	Max	0.0021	0.0005	0.01	0.067	0.0037	0.0017	0.008	0.0018	0.0005	0.15	0.0002
	Standard Dev.	0.0005	2.17E-19	0.0009	0.006	0.0008	0.0003	0.0012	0.0001	2.17E-19	0.0129	5.42E-20
2021 Sample	7/27/2021	< 0.00133	< 0.000104	< 0.00220	0.0329	0.000575 J	< 0.00106	0.00222 J	< 0.00174	< 0.00164	0.103	< 0.00005

J: Estimated value; value between the Method Detection Limit and Method Reporting Limit

Appendix J. 2018-2021 Sludge Summary Table

Appendix J. Sludge Summary Data

Year	Dry Tons	Flow (MGD)	Average % Solids
2018	1847	0.0055	22%
2019	2004	0.0055	24.05%
2020	1636.7	0.0046	23.20%
2021	1,873.10	0.0055	22.50%
Average 2018-2021	**1840.2**	**0.0053**	**23.0%**

Appendix K. Plant Removal Efficiencies Summary Table

Appendix K. Plant Removal Efficiencies

Parameter	2011 Plant Removal Efficiency (Calculated)	EPA Default Plant Removal Efficiency	2018-2020 MRE Influent-Mechanical Removal Efficiency	Approach
Ag	**72%**	75%	--	2011 Data
As	**43%**	45%	--	2011 Data
Cd	--	**67%**	--	EPA Default
CN	--	**69%**	--	EPA Default
Cr	59%	82%	**64%**	2018-2020 MRE
Cu	94%	86%	**92%**	2018-2020 MRE
Hg	59%	60%	**68%**	2018-2020 MRE
Mo	44%	50%	**51%**	2018-2020 MRE
Ni	**--**	**42%**	--	EPA Default
Pb	70%	61%	**65%**	2018-2020 MRE
Se	**26%**	50%	--	2011 Data
Zn	**75%**	79%	--	2011 Data

BOLD values used in draft Local Limits calulations

Appendix L. 2019-2021 Influent Flow and Conventional Pollutants Summary Table

Appendix L Conventional Pollutants 2019-2021

Year	Plant Flow	BOD_5	TSS	NH_3-N
	MGD	mg/L	mg/L	mg/L
	2019-2021 Avg = 17.3	Design Influent: 260	Design Influent: 300	Design Influent: 26
		2019-2021 Avg = 276	2019-2021 Avg = 292	2019-2021 Avg = 23
2019	17.4	266	272	22
2020	17.3	275	291	22
2021	17.3	286	314	27