



# Memorandum

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<b>Subject</b>	<b>Task 2 - Local Limits Evaluation and Recommendations – Revised to Address EPD Review Comments dated June 14, 2022</b>	<b>Project Name</b>	TO90 - Local Limits Review and Surcharge Rate Development
<b>Attention</b>	Lorenzo Freeman, Project Manager	<b>Project No.</b>	EEXI5590
<b>From</b>	Rosa Lee-Eng, P.E.		
<b>Date</b>	August 8, 2022		
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## **Introduction**

The purpose of this Technical Memorandum (TM) is to summarize the data sources, assumptions, and calculations for the subject project and the resulting local limit recommendations for the City of Atlanta Water Reclamation Centers.

## **Executive Summary**

The City of Atlanta's Department of Watershed Management (DWM) performed its last Local Limits Evaluation (LLE) in 2011, for the four Water Reclamation Centers (WRCs) they operate. The four WRCs covered under DWMs Industrial Pretreatment Program (IPP) are Utoy Creek, South River, Intrenchment Creek, and RM Clayton. This local limit assessment was performed pursuant to the conditions outlined in 40 CFR 403.5(c)(1). Revisions to the assessment were prepared in response to the EPD's review comments received on December 3, 2020, July 14, 2021, November 8, 2021, and June 14, 2022.

The conclusions of this technically based local limits assessment are as follows:

- 1) The existing local limits are appropriate to protect the RM Clayton WRC from interference or pass through and achieve the sludge disposal objectives.
- 2) The Utoy Creek WRC may not be able to achieve the Class A exceptional quality (EQ) biosolids metals limits with the current limits for cadmium and lead. Rather than establishing stricter limits for these metals at this time, routine sludge sampling for total metals is recommended. If metal concentrations are detected at or above the Class A EQ biosolids metals limits for land application, then revisions to the local limits for such metals should be evaluated further. (The results of the sludge cake samples collected for this assessment were below the land application standards for these two metals.) A sludge sampling plan is provided as an attachment to this TM.
- 3) The South River WRC may not be able to achieve the Class A EQ biosolids metals limits for cadmium and selenium. Rather than revising the local limits at this time, the sludge sampling approach noted for Utoy Creek WRC should also be conducted at South River. In addition, the existing local limits may not prevent digester inhibition from arsenic, copper, cyanide, nickel, and silver. Since the digesters and primary clarifiers were out-of-service for capital improvements



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during the time frame of this assessment, no sludge samples were collected to confirm the current metals concentrations. It is recommended that the current local limits be retained at this time until the digesters are returned to service and routine metals sampling be conducted to verify the actual metals concentration in the digester sludge. A sludge sampling plan is provided as an attachment to this TM.

- 4) The local limit for formaldehyde was assessed for fume toxicity. The current local limit is 0.07 mg/l. The fume toxicity analysis resulted in a limit of 3 mg/l. This recommended limit is for IU discharges below 105°F.
- 5) The local limit for beryllium is recommended for revision to 0.6 mg/l, or 0.05 lb/day if the discharge is less than 10,000 gallons per day.
- 6) Local limits should not be implemented for the conventional pollutants (other than the existing limit for phosphorous) and the surcharge rates for these pollutants will be assessed as part of Task 3.

The local limit calculations were performed using a MS Excel spreadsheet tool designed by US EPA Region 3 that was adapted for Georgia Environmental Protection Division's (EPDs) Water Quality Standards. The MS Excel spreadsheet is submitted as supporting documentation with this TM.



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Table 1 provides a summary of the local limit assessment results for each WRC along with the current local limits, revised December 2020, July 2021, and June 14, 2022, in response to EPD review comments. For each WRC, the local limits to achieve Class A EQ biosolids are presented; and for RM Clayton, the local limits for incineration of sludge are presented. The values in red font with red highlights are calculated limits with lower concentrations than their respective current local limit.

**Table 1 - Summary of Existing Local Limits and Technical Local Limit Assessment Results for Each WRC**

Pollutant of Concern	Current Local		RM Clayton WRC Local Limit Calculation				Utoy Creek WRC Local Limit Calculation			South River WRC Local Limit Calculation		
	Daily Max (mg/L)	Daily Max (lb/day) if less than 10,000 gpd	Most Stringent (mg/l)	Land App (mg/l)	Incineration (mg/l)	Basis of Most Stringent Limitation	Most Stringent (mg/l)	Land App (mg/l)	Basis of Most Stringent Limitation	Most Stringent (mg/l)	Land App (mg/l)	Basis of Most Stringent Limitation
Arsenic	0.195	0.016	0.6	0.6	31	Sludge	0.24	0.24	Sludge	0.16	0.18	Inhibition
Cadmium	0.335	0.028	0.35	0.35	29	Sludge	0.2	0.2	Sludge	0.14	0.14	Sludge
Chromium	2.25	0.187	16	--	160	Inhibition	21	--	Inhibition	4.3	--	Inhibition
Copper	3.104	0.259	8.8	9.2	--	Inhibition	3.5	4.7	Inhibition	1.6	3.2	Inhibition
Cyanide	0.894	0.075	3.3	--	--	Inhibition	3.5	--	Inhibition	0.5	--	Inhibition
Lead	0.653	0.055	1.9	1.9	18	Sludge	0.46	0.46	Sludge	1	1	Sludge
Mercury	0.002	0.0002	0.0025	0.21	0.92	Water Quality	0.029	0.099	Water Quality	0.0091	0.068	Water Quality
Molybdenum			0.55	0.55	--	Sludge	0.27	0.27	Sludge	0.36	0.36	Sludge
Nickel	1.79	0.149	6.5	7.6	6100	Inhibition	4.3	5.9	Inhibition	1.3	2.4	Inhibition
Selenium	1.31	0.109	1.9	1.9	--	Sludge	1.8	1.8	Sludge	0.46	0.46	Sludge
Silver	1.47	0.123	3.8	--	--	Inhibition	1.7	--	Inhibition	0.97	--	Inhibition
Zinc	4.473	0.373	18	18	--	Sludge	6	6	Sludge	6.1	6.1	Sludge
Beryllium	0.0005	0.0004	0.6	--	0.6	Sludge	--	--	-	--	--	-
Antimony			540	--	--	Water Quality	3100	--	Water Quality	770	--	Water Quality
Chloroform (trichloromethane)	0.42		62	--	--	Inhibition	11	--	Inhibition	37	--	Inhibition
Toluene	1.35		7000	--	--	Inhibition	9200	--	Inhibition	3500	--	Inhibition
Ethylbenzene	1.59		8000	--	--	Inhibition	11000	--	Inhibition	3500	--	Inhibition
Formaldehyde	0.07		3.0	--	--	Worker Safety	3.0	--	Worker Safety	3.0	--	Worker Safety



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## Project Background and Scope

The City of Atlanta's (COA) Publicly Owned Treatment Works (POTWs) receive industrial process and non-process wastewaters, which can contain a variety of conventional, non-conventional, and toxic pollutants. There are four POTWs owned and operated by DWM: RM Clayton; Utoy Creek; South River; and Intrenchment Creek Water Reclamation Centers (WRCs). The Intrenchment Creek WRC does not have an NPDES permit and its effluent is discharged into South River WRC's biological treatment system. There are plans to convert the Intrenchment Creek WRC to a pumping station in the near future. The other three WRCs discharge their effluent into the Chattahoochee River.

In accordance with the COA's NPDES permit, EPD, and EPA requirements, DWM controls and monitors the discharges from its industrial users (IUs) by implementation of its Industrial Pretreatment Program (IPP). To protect POTW specific operations and receiving streams, local limits are developed based on site-specific conditions. EPA regulations require that POTWs with approved programs "provide a written technical evaluation of the need to revise local limits under 40 CFR 403.5(c)(1), following permit issuance or reissuance" [40 CFR 122.44(j)(2)(ii)].

The COA's current local limits were derived from the last local limits evaluation (LLE), performed in 2003<sup>1</sup>, and are enforced through the COA's Ordinance. Since then, DWM has conducted regular reviews of the influent loadings into its POTWs to confirm the suitability of its local limits in protecting its POTW operations and receiving streams.

The DWM is currently implementing uniform local limits, which are applicable to all the IUs in the watersheds. In the 2003 LLE, concentration-based limits were calculated for each pollutant of concern (POC) across each of the POTWs and the most stringent was selected as the local limit for the COA.

The scope of work addressed by this project is the re-evaluation of the COA's technically-based numerical local limits. For this re-evaluation, POTW performance, changes to POTW flows and pollutant loadings, and compliance with the current NPDES permit requirements were reviewed. The local limits were evaluated for each WRC for the following biosolids management scenarios:

- RM Clayton WRC
  - Class A, EQ biosolids beneficial reuse
  - Incineration of biosolids in the existing thermal processing units (TPUs)
  - Landfill disposal of biosolids
- Utoy Creek WRC
  - Class A, EQ biosolids beneficial reuse
  - Landfill disposal of biosolids
- South River WRC
  - Class A, EQ biosolids beneficial reuse

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<sup>1</sup> The 2009 and 2011 local limits evaluations were not technically based evaluations.



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- Landfill disposal of biosolids

Concentration-based limits were calculated for the three POTWs for each scenario above, but not for Intrenchment Creek WRC since it will be decommissioned in the near future and wastewater from its basin will be treated at the South River WRC. The Intrenchment Creek WRC flow was incorporated into the South River WRC analysis.

### Project Approach

The general methodology for the development and revision of technically-based local limits is detailed in EPA's Local Limits Development Guidance Manual, July 2004 (Guidance Manual). This guidance document is the primary resource for the current local limits assessment.

First, various types of data are required to calculate the criteria-based allowable headworks loadings (AHLs) for the identified pollutants of concern. An AHL is the estimated pollutant loading that can be received at the POTW's headworks that will not cause the POTW from violating a specific criterion. Then the current and future non-industrial and industrial contributions will be considered to determine the maximum allowable industrial loadings (MAILs), the portion available for allocation to COA's industrial users.

The data, resources, and calculations for this LLE have been summarized in and performed with a spreadsheet tool designed by EPA Region 3 (mid-Atlantic). EPA Region 4, which includes Georgia, lacks such a tool. The spreadsheet tool consists of two worksheets: "Monitoring Data" and "Limits Calculation." The first worksheet is used for entering analytical data for calculating concentration statistics and removal efficiencies. Data from the 2018 Sampling Campaign were entered into this worksheet utilizing the analysis results and the estimated "J" values (numerical results less than the contract laboratory's reporting limits, but greater than the method detection limits). Calculations for local limits are achieved in the "Limits Calculation" worksheet.

"Monitoring Data" and "Limits Calculation" worksheets were prepared for each of the three POTWs. This TM includes the worksheets and tables in the spreadsheet tool as an attachment. The worksheets for each POTW were combined into a single workbook, and additional worksheet were created to present the local limit results for each WRC on the various sludge disposal scenarios.

### Pollutants of Concern

A pollutant of concern (POC) is any pollutant that might be reasonably expected to be discharged to a POTW in sufficient amounts to cause a violation of NPDES permit limits or water quality criteria, cause interference with POTW operations, contaminate sludge, cause problems in its collection system, or jeopardize its workers.

In the Guidance Manual, EPA presents 15 pollutants that it considers to be potential POCs and recommends that each POTW, at a minimum, screen for the presence of the 15 pollutants. These pollutants are arsenic, cadmium, chromium, copper, cyanide, lead, mercury, molybdenum, nickel, selenium, silver, zinc, 5-day Biochemical Oxygen Demand (BOD<sub>5</sub>), Total Suspended Solids (TSS), and ammonia-nitrogen (ammonia) for POTWs that accept non-domestic sources of ammonia. These 15 POCs were evaluated for technically-based local limits.

The following resources were reviewed to identify other POCs, along with the justification for dismissing pollutants from further consideration or including them for further analysis:



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NPDES Permit. POTWs are required to prohibit discharges from IUs in amounts that result in or cause a violation of any requirement of their permits.

- The three sets of NPDES permit limits have numerical effluent limits (concentration and/or mass load) for ammonia, Carbonaceous BOD<sub>5</sub> (CBOD<sub>5</sub>), Chemical Oxygen Demand (COD), TSS, and Total Phosphorus (as P). The NPDES permits do not have specific limits for pollutants outside of these “conventional” pollutants. Reporting is required for Orthophosphate (as P), Organic Nitrogen, Nitrate-Nitrite (as N), Total Kjeldahl Nitrogen (TKN), and mercury.
- The NPDES permit contains whole effluent toxicity (WET) testing requirements. No POCs have been identified from the WET tests of the last three years.
- Because of the NPDES permit requirements and WRC design loading conditions, COD, phosphorus, and TKN are additional conventional POCs identified for local limit evaluations.
- The NPDES limit for CBOD<sub>5</sub> loading was selected by EPD to eliminate the contribution of the nitrogenous biochemical oxygen demand as the wastewater treatment process may impact the BOD<sub>5</sub> results (and treatment plant removal efficiency calculation) due to nitrification within the activated sludge process. Basing the permit limitations on CBOD<sub>5</sub> eliminates the impact of nitrification on the WRC discharge limitations and compliance determinations; however, BOD<sub>5</sub> provides a better representation of the strength of the wastewater. Furthermore, BOD<sub>5</sub> is one of the 15 EPA potential POCs. For these reasons, BOD<sub>5</sub> was evaluated as a POC and not CBOD<sub>5</sub>.

Water Quality Criteria. Rule 391-3-6-.03 of the Rules and Regulations of the State of Georgia establishes criteria for pollutants that apply to all waters in the State. A POTW does not have to develop a local limit for every pollutant for which there is a water quality standard (WQS) or criterion. However, EPA recommends that any pollutant that has a reasonable potential to be discharged in amounts that could exceed its WQS should be considered a POC and evaluated accordingly. The following were reviewed for additional POCs:

- Priority pollutant scans of POTW influent, effluent, and sludge from 2015, 2016, and 2017 were reviewed to identify pollutants that could be potentially discharged from the POTWs into the receiving streams. Only four POCs were detected in the WRC influent during this period: Antimony, Chloroform, Toluene, and Ethylbenzene. These four POCs will be assessed further.
- To support this LLE, a sampling campaign was conducted by DWM over a continuous 14-day period (August 6 – August 19, 2018). The sampling was conducted by DWM and the laboratory analysis was conducted by a certified laboratory contracted by DWM. Samples were analyzed for organic priority pollutants, national POCs, and plant specific POCs. No additional POCs with a WQS were detected during this sampling campaign.
- DWM’s annual IPP summary reports for 2015 and 2016 were reviewed to determine which regulated pollutants were being discharged by the IUs into the POTWs. No additional POCs with a WQS were identified.

Prohibition on Treatment Plant Interference. All three POTWs have activated sludge with biological nutrient removal (BNR) and anaerobic digestion. Discharges from IUs have the potential to inhibit a POTW’s biological treatment processes and result in reduced treatment efficiency, increased costs, and violations of NPDES permit limits for the conventional pollutants. POTWs need to establish local limits to protect against receiving industrial wastewaters that interfere or disrupt POTW operations. EPA recommends that a POTW consider pollutants that have previously interfered with or may potentially interfere with the POTW’s operation to be considered POCs. The following resources were reviewed.

- IPP summary reports for 2015 and 2016 have no mention of reported plant upsets or pass-through incidents at the POTWs that can be attributed to a specific pollutant from IU discharges. No additional POCs were identified.



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- Between 2015-2017, RM Clayton WRC had 36 NPDES permit limit exceedances on TSS, ammonia, phosphorus, and fecal coliform. In the same time period, South River WRC had one phosphorus and two fecal coliform exceedances. It has not been determined that these permit exceedances were related to biological process inhibitions by POCs, thus no additional POCs were identified.

Sludge Quality Standards. POTWs must prohibit IU discharges in amounts that cause a violation of applicable sludge disposal regulations, or that restrict the POTW's chosen sludge disposal or use option. EPA recommends that a POTW develop local limits to protect its sludge handling method. Three sludge handling methods were evaluated in this local limits evaluation: incineration, Class A EQ biosolids beneficial reuse, and landfill disposal.

- Beryllium was identified as an additional POC based upon sludge incineration emission standards.
- Molybdenum was identified as an additional POC based upon land application standards.

### Collection System Concerns:

- Developing a limit of this type is usually completed only if an industry has the capability to discharge a specific pollutant. The screening level in the guidance document is not called a limit because there are several factors which are considered in the calculation of a final limit for either toxicity or flammability to make it defensible. These include expected ambient temperature and dilution during and after discharge. These are required because the methodology in the guidance is based on a closed system using a constant concentration at standard temperature and pressure. These controlled conditions do not exist in a collection system. Once these factors have been considered the resultant limit becomes a technically based local limit but will usually only apply to specific industry(s).
- No POCs were identified based upon collection system concerns.

The POC Screening Summary (see Attachment A) presents the pollutants screened to be POCs for this LLE and the criteria used. Any pollutant considered a POC at one POTW will be considered a POC for all three POTWs.

In summary, local limit calculations were performed for a pollutant that:

- Is one of the 15 pollutants listed in the EPA guidance manual;
- Has a numeric limit or monitor and report requirement in a POTW's NPDES permit;
- Has a numeric WQS through Georgia's Rule 391-3-6-.03 and has been detected in the WRC influent; or
- Has a numeric sludge quality standard for one of the sludge handling methods being considered by DWM.

### Pollutants Removal Efficiencies

The influent, effluent, and primary effluent POC concentrations from the 2018 Sampling Campaign were used to calculate each POC's removal efficiency across its POTW and across primary treatment. Results less than the contract laboratory's reporting limits, but greater than the method detection limits (estimated "J" values) were also used to determine removal efficiencies.

Removal efficiency across POTW:



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- Only mean removal efficiencies that were calculated from 10 or more influent results above the contract laboratory's method detection limits were used as site-specific removal efficiencies. Because of many results below the contract laboratory's method detection limits, removal efficiencies could not be calculated for every POC analyzed during the sampling campaign.
- Appendix R, page R-2, of the Guidance Manual provides pollutant removal efficiencies across activated sludge and secondary clarification. The median values were used to represent removal efficiencies across the POTWs, when removal efficiencies could not be calculated from the results of the 2018 Sampling Campaign.
- A 40% removal efficiency (across the POTW) was used for each non-conservative pollutant with a lack of influent sampling results above its method detection limit and without a removal efficiency published in the Guidance Manual. Since they are non-conservative, it is assumed that these pollutants undergo some degree of removal within the biological processes of the POTW.  
  
From the available removal efficiencies published in the Guidance Manual for non-conservative pollutants, 40% is at lower end of the published ranges.
- A removal efficiency of 100% was used for molybdenum since a site-specific removal efficiency could not be calculated and there is not a published value in the Guidance Manual. This POC only has a land application standard and this removal efficiency is conservative for calculating corresponding headworks loadings.
- A removal efficiency of 10% was used for conservative pollutants when a site-specific removal efficiency could not be calculated from the results of the sampling campaign and there is not a published value in the Guidance Manual.
- Removal of waste activated sludge from the secondary clarifiers at the South River WRC was limited during the period of the sampling campaign and therefore the sludge blanket was very high. The state of the plant during the sampling campaign was not representative of normal operating conditions. Therefore, effluent and sludge samples were not collected at the South River WRC. For non-conventional POCs, removal efficiencies published in the Guidance Manual were used in the POTW's local limits calculations. For conventional POCs, removal efficiencies were calculated using the influent and effluent data from 2015-2020 discharge monitoring reports.
- The pollutant removal efficiencies across the POTW ( $R_{POTW}$ ) used in the local limits calculations are summarized in Table 3 for each POTW's "Limits Calculation" worksheet.

### Removal efficiency across primary treatment:

- Mean removal efficiencies calculated from 10 or more of influent results above the contract laboratory's method detection limits were used as site-specific removal efficiencies. Because of results below the contract laboratory's method detection limits, removal efficiencies could not be calculated for every POC analyzed during the sampling campaign.
- Appendix R, page R-1, of the Guidance Manual provides the median values of pollutant removal efficiencies across primary treatment. These median values were used to represent removal efficiencies across primary treatment, when mean removal efficiencies could not be calculated from the results of the sampling campaign.
- Mean removal efficiencies calculated with less than 10 influent results were used as site-specific removal efficiencies when there is no published value in the Guidance Manual.
- For an organic pollutant without a published value in the Guidance Manual, a removal efficiency of zero (across primary treatment) was assumed.



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- The primary clarifiers at the South River WRC were operating in a flow-through configuration with no capabilities for sludge settling or sludge removal during the time of this evaluation. Therefore, pollutant removal efficiencies across primary treatment are not applied prior to activated sludge treatment for this WRC.
- The pollutant removal efficiencies across primary treatment ( $R_{PRIM}$ ) used in the local limits calculations are summarized in Tables 8 and 10 of each POTW's "Limits Calculation" worksheet.

## Permitted IUs

In addition to local limits, the POTWs are also protected by Categorical Pretreatment Standards developed by EPA to limit pollutant discharges into POTWs and these apply to specific process wastewaters of particular industrial categories. These are national, technology-based standards that apply regardless of whether or not the POTW has an approved IPP or whether or not the IU has been issued a permit. Such industries are called Categorical Industrial Users (CIUs). The standards applicable to industrial discharges from CIUs to a POTW collection system are designated in the Effluent Guidelines & Limitations [Parts 405-471] by the terms "Pretreatment Standards for Existing Sources" (or "PSES") and "Pretreatment Standards for New Sources" (or "PSNS"). A POTW may impose a local limit on an IU that is more stringent than an applicable categorical standard to protect the POTW. If a local limit is less stringent than an applicable categorical standard, however, the industry to which the local limit applies still must meet the applicable categorical standard.

From DWM's 2017 IU list, there are currently 33 IUs permitted by DWM. DWM has identified 8 of the IUs as CIUs. The CIU status for IUs located outside of COA's limits was not provided.

## IU Flows

Using information provided by DWM, an updated list of the permitted IUs that discharge to the POTWs, their POTW destination, regulated discharge flow, applicable 40 CFR Part, and POCs discharged, was developed.

To calculate the regulated daily flow discharged into the POTW by each IU, each IU's annual flow was used as follows:

- RM Clayton – 2018 annual IU flow used as this included the flows from Dekalb County (the 2015, 2016, and 2017 IU summaries did not include Dekalb County)
- Utoy Creek - 2016, 2017, and 2018 regulated discharge was averaged
- South River – 2015, 2016, 2017 and 2018 regulated discharge was averaged.

**Table 2: Industrial User Flow Summary**

2020 Local Limits Assessment		
WRC	Jurisdiction	Average Daily Industrial Flow (MDG - Annual Avg.)
RM Clayton	City of Atlanta	379,334
	Dekalb County	1,382,737
	<b>Total</b>	<b>1,762,071</b>
Utoy Creek	City of Atlanta	127,418
	Fulton County	240,918
	<b>Total</b>	<b>368,335</b>
South River	City of Atlanta	1,210,809
	<b>Total</b>	<b>1,210,809</b>

The industries located outside of the COA's political jurisdiction included Dekalb and Fulton County users. The industries located in Fulton County all discharge to the Utoy Creek WRC and the annual 2016, 2017,



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and 2018 regulated discharge was used for this LLE. The industries located in Dekalb County all discharge to the RM Clayton WRC and the 2018 annual regulated flow was used for this LLE. IU regulated flow used in the local limit calculations are summarized in Table 2.

### POTW Flows and Loads

EPA recommends using the actual, average plant flows to calculate AHLs instead of the design flows. Process data provided by DWM were used to calculate each plant's average effluent flow, sludge flow to digesters, and sludge flow to disposal. The information collected to calculate each flow stream is described below and on the "POTW Flows" worksheet of the spreadsheet tool.

The average of each POTW's daily effluent flow was used to calculate water quality and inhibition based AHLs. The South River WRC effluent flow includes flow from Intrenchment Creek WRC.

Sludge flow to digesters is the sum of the primary sludge and thickened waste activated sludge (TWAS) flows to the anaerobic digesters. Sludge flow to digesters is needed to calculate anaerobic digestion inhibition-based AHLs for conservative pollutants (e.g., inorganics).

- For RM Clayton WRC, instead of the TWAS flow to the digester, the sludge wasting rate was provided in gallons per minute (gpm). The TWAS flow to the digesters was estimated by assuming waste activate sludge (WAS) of 1% solids and TWAS of 3% solids by centrifuge thickening.
- At the South River WRC, WAS is currently processed by a trailer mounted belt filter press. It is assumed that this a temporary setup and that the POTW will resume to wasting to centrifuge thickeners prior to anaerobic digestion. Since actual, average sludge flow to digestion is currently not available, the sludge flow to the digesters is estimated using the ratio of 0.8 lb of dry solids/1000 gallon of wastewater and assuming 3% solids after centrifuge thickening.

Each POTW's daily sludge flow to disposal was calculated using the total sludge generated in 2015, 2016, and 2017 recorded in each of the Biosolids Reports. Each year's total sludge volume was divided by the number of days in the year to obtain the daily sludge volume (in dry tons) going to disposal.

Plant flows [( $Q_{POTW}$ ), ( $Q_{DIG}$ ), and ( $Q_{SLDG}$ )] used in the local limits calculations are summarized in Table 2 of each POTW's "Limits Calculation" worksheet.

### Non-Industrial Flows and Loads

For every POC, the loading available to IUs depends on the amount contributed by domestic, commercial, and other uncontrolled sources, which are not regulated or controlled though the IPP. The purpose of the 2018 Sampling Campaign was to also characterize this domestic/commercial background (non-industrial) wastewater for each POTW. The non-industrial samples were intended to be collected from a location in each collection system without industrial flow contributions; however, in some cases the non-industrial samples exhibited higher concentrations than the influent sample. In these cases, the influent sample was used to represent the non-industrial wastewater concentration.

To calculate the non-industrial loadings (lb/day) of the POCs to the POTW, the non-industrial (i.e., domestic/ commercial/ uncontrolled flows) flow to the POTW is required. The non-industrial flow is easiest calculated as the difference between the POTW flow and the IU flow.

Non-industrial flows ( $Q_{DOM}$ ) and POC concentrations ( $C_{DOM}$ ) used in the local limits calculations are presented in Table 18 of each POTW's "Limits Calculation" worksheet.



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### Calculations of AHLs

The calculations for AHLs on the “Limits Calculation” worksheet for each POTW are described below.

#### AHLs for Non-Conventional POCs

##### Calculations based on Water Quality Standards

General numeric criteria have been established to protect both aquatic life and human health, and are for pollutants such as metals, pesticides, and organic compounds. Georgia's water quality criteria are promulgated in Rule 391-3-6-.03. This regulation requires that instream concentrations of specific parameters not exceed: the acute criteria at 1Q10 or higher stream flow conditions; the chronic criteria at 7Q10 or higher stream flow conditions, and the human health criteria at the annual average stream flow. The numerical criteria imposed in this regulation are used as the basis for calculating AHLs for POCs with the potential for causing instream toxicity. The following key points are needed when calculating the AHL based on Georgia's water quality criteria.

There are six metals (cadmium, chromium III, copper, lead, nickel, and zinc) whose instream criteria depend on the total hardness of the receiving water body. The equations provided in Section 5 of Rule 391-3-6-.03 must be used with the respective receiving stream hardness to develop the site-specific aquatic life criteria for these six metals.

- The site-specific in-stream criterion for this LLE have been calculated using the average hardness value as measured at the West CSO NPDES permit # GA003888644. This is located at approximately 33.82318N -84.45039E, a location upstream of the RM Clayton WRC outfall. The average hardness is 45 mg/l as CaCO<sub>3</sub>; this is also the harness used in the Wasteload Allocation (WLA) for the NPDES permit. The hardness data is presented in worksheet titled “River Hardness Data.”
- The Georgia EPD has approved a revised water quality standard for cadmium and this revised hardness- dependent standard was used for this LLE.

Some of the numeric instream criteria for metals in the State's regulation are given in the dissolved form, including the results of the equations for the six metals whose aquatic life criteria are a function of the hardness in the receiving stream. However, local limits for metals are expressed in total recoverable form, since that is how metal results are reported by laboratories and how they are interpreted by IUs.

Site-specific instream criteria in terms of total recoverable metal must first be derived before calculating the WQS-based AHLs. The coefficients, metals translators equations, and receiving stream TSS used to convert dissolved WQS to total recoverable equivalents (Dissolved Metals ÷ Translator = Total Metals) are summarized in Section 5 of Rule 391-3-6-.03.

- The POCs that need to be converted are arsenic, cadmium, chromium III, copper, lead, nickel, and zinc. The water quality criteria for the rest of the pollutants in Section 5 of Rule 391-3-6-.03 are already in the total recoverable form. A WQS is not available for total chromium; past EPD guidance has been to use the WQS for chromium III.
- To convert dissolved metal concentrations to total recoverable forms, the instream TSS concentration is required. Publicly available data compiled in GOMAS at the Atlanta River Water Intake (Monitoring Location ID: RV\_12\_3891) indicates an average TSS concentration of 13.6 mg/L; this was utilized for the upstream TSS concentration.

Summaries of the data sources, assumptions, and resulting hardness-dependent instream criteria for the WQS-based AHLs are provided in the tables of the “Metals Instream Criteria” worksheet that was



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added to the spreadsheet tool. The conversions from dissolved instream criteria to instream criteria in total recoverable form are shown in the Table 6 of the worksheet.

The “Summary Instream Criteria” worksheet is a summary of all the instream criteria used in this LLE. This worksheet also converts the instream criteria to effluent criteria for each POTW, using the permitted effluent flow. When results from a POTW’s effluent priority pollutant scan is received, the data can be compared to effluent criteria on this worksheet. If, at the permitted flow, a pollutant’s concentration is greater than the effluent criterion on this worksheet, then the pollutant may have exceeded its instream criterion.

The parameters used and resulting AHLs based on instream criteria ( $C_{CRIT}$ ) are shown in Tables 4, 5, and 6 of each POTW’s “Limits Calculation” worksheet. The water quality standard for chromium was calculated using chromium VI, to provide a conservative limit for total chromium.

The receiving stream flow ( $Q_{STR}$ ) must be consistent with the criteria: the lowest seven-day stream flow in a ten-year historical database (7Q10) for chronic criteria protection; the lowest one-day stream flow in a ten-year period (1Q10) for acute criteria protection; and the annual average stream flow for human health criteria protection. Corresponding stream flows for the Chattahoochee River were obtained from the aforementioned WLA Form.

EPD’s past guidance has been to assume background pollutant concentrations of zero in the receiving streams ( $C_{STR}$ ) for determining WQS-based AHLs. Zero background pollutant concentrations were assumed for this LLE.

Table 7 of each POTW’s “Limits Calculation” worksheet identifies the most stringent (lowest) as the AHL for water quality criteria.

### **Calculations based on Inhibition Criteria**

The three POTWs use the activated sludge process for the oxidation of organic carbon, nitrification, denitrification, and phosphorus removal needed to meet their effluent limits. The three plants also use anaerobic digestion for sludge stabilization prior to dewatering. Therefore, the activated sludge, nitrification, and sludge digestion processes must be protected from inhibition by the POCs. In other words, POC concentrations to each biological process must not exceed activated sludge, nitrification, and digestion inhibition threshold levels.

Appendix G of the Guidance Manual provides ranges of reported pollutant inhibition threshold levels to activated sludge, nitrification, and anaerobic digestion processes. When using published data for determining inhibition-based AHLs, EPD guidance has been to use the lowest value of the reported ranges.

Similar to the 2003 LLE, available activated sludge, nitrification, and anaerobic digestion inhibition data from the Guidance Manual are used to calculate AHLs to prevent inhibition/ inference of corresponding biological processes at the POTWs, as described below.

At the three POTWs, nitrification is a process that occurs alongside the activated sludge process; it is not a separate tertiary process after secondary treatment. For this reason, removal efficiencies across primary treatment are used in Table 10 of each POTW’s “Limits Calculation” worksheet to calculate nitrification inhibition-based AHLs.

The drawback of using the minimum inhibition values published in the Guidance Manual is that they may indicate inhibition at much lower concentrations than in the actual biological environments.



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For the 2003 LLE, DWM performed laboratory bench scale treatability analyses to determine site-specific nitrification inhibition thresholds for copper and zinc. The site-specific inhibition values used in the last LLE for copper and zinc were 1 and 7 mg/l, respectively.

However, the RM Clayton WRC and the South River WRC had NPDES permit exceedances in 2015, 2016, and 2017. Although the ammonia permit limit exceedances have not been attributed to any of the POCs, other resources were reviewed to reconsider the nitrification inhibition thresholds for copper and zinc.

- The source document for the published ranges (Third reference listed for Appendix G of the Guidance Manual) states that the reported values were from full-scale treatment plants and from pilot plants.
- EPA's Guidance Manual for Preventing Interference at POTWs, September 1987, acknowledges the wide range values are a result of apparently contradictory data and that it would be reasonable to expect the lower end of a range to correspond to threshold levels inhibiting an unacclimated system while the upper end of the range would correspond to threshold levels inhibiting an acclimated system.
- Since 2006, the North Carolina Department of Environmental Quality has recommended using the upper limits of the nitrification inhibition ranges for copper and zinc (0.48 and 0.5 mg/l, respectively) when using published data.
- Since the three POTWs are acclimated systems, the nitrification inhibition-based AHLs for this LLE are calculated using the maximum value of the published ranges for copper and zinc (0.48 and 0.5 mg/l, respectively).
- Since nitrification is the more sensitive process of a biological nutrient removal system, the activated sludge inhibition level for zinc should be higher than the nitrification inhibition level. The published range is 0.3 - 5 mg/l. North Carolina recommends the use of 1.0 mg/l as the activated sludge inhibition level for zinc. For this LLE, 1.0 mg/l is used as the activated sludge inhibition level for zinc.

To calculate anaerobic digestion inhibition-based AHLs for non-conservative pollutants (those that can be lost through biodegradation or volatilization) such as cyanide and the organic priority pollutants, the POC level in the digester influent and the POC's average loading into the POTW are needed.

- POTW influent results from the 2018 Sampling Campaign were used to determine the average influent concentration for each POC. For a POC concentration that was reported to be less than its reporting limit, half the contract laboratory's reporting limit is used to characterize a POC's influent concentration.
- The average POTW influent concentrations for cyanide, ammonia, chloroform, and toluene was calculated using laboratory results and their method detection limits.
- Sampling results of primary sludge and thickened waste activated sludge from the 2018 Sampling Campaign were used to determine the average influent digester concentration of each POC. The method detection limit was used when the result was below the method detection limit; however, if the sample had an elevated method detection limit due to sample interference, then this sample was excluded from the data set.
- Since sludge samples were not collected at the South River WRC during the sampling campaign, data from the 2015, 2016, and 2017 Biosolids Reports were used to determine the average influent digester concentration of each POC.
- No sludge sample data was available for ammonia, so the plant influent concentration was used as a conservative proxy for the sludge ammonia concentration.



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- Laboratory results were provided on a dry weight basis. Each result was converted to wet weight (mg/l) using the percent total moisture of the sample:

$$\text{Dry Weight, mg/kg} \times [(100 - \% \text{ total moisture}) / 100] = \text{Wet Weight, mg/l}$$

- Results were averaged to determine the influent digester concentration of each POC. POTW influent POC concentrations ( $C_{INF}$ ) and sludge digester POC concentrations ( $C_{DIG}$ ) are summarized in Table 12 of each POTW's "Limits Calculation" worksheet.

The parameters used and resulting AHLs based on published inhibition criteria ( $C_{CRIT}$ ) are shown in Tables 8, 10, 11, and 12 of each POTW's "Limits Calculation" worksheet. Table 13 of each POTW's "Limits Calculation" worksheet identifies the most stringent (lowest) as the AHL for inhibition criteria.

### Calculations based on Sludge Disposal Criteria

Three sludge disposal scenarios were evaluated as part of the current LLE: landfill, incineration, and Class A EQ biosolids beneficial reuse. The Class A EQ biosolids metals limits are promulgated in the Federal Biosolids Use and Disposal regulations (40 CFR Part 503) and Georgia's Rule 391-3-6-.17. These regulations establish limits for nine metals on sludge that is land applied. The Federal standards for Class A EQ biosolids have a limit for molybdenum. This POC was not evaluated during the 2018 Sampling Campaign or the annual IPP priority pollutant evaluations conducted at the WRCs.

The parameters and resulting AHLs based on sludge criteria for land application ( $C_{SLCRIT}$ ) are shown in Table 14 each POTW's "Limits Calculation" worksheet.

Although land application sludge criteria are more stringent than the sludge criteria on sludge feed to the incinerator, criteria for sludge incineration were evaluated to provide this sludge disposal option at RM Clayton WRC. Federal sludge standards for incineration limit chromium and beryllium levels, whereas the sludge criteria for land application does not.

Table 15 of the "Limits Calculation" worksheet for RM Clayton WRC shows the resulting AHLs based on sludge criteria for sludge incineration ( $C_{SLCRIT}$ ). The incinerator pollutant control efficiencies (CE) were obtained from the 2001 and 2003 test reports and dispersion factor (DF) was obtained from the 2003 LLE report. The worksheet titled "RMC Incinerator CE" provides the calculations for the CEs (these values were truncated to remove the decimal portion) In 2017, RM Clayton WRC incinerated 90% of its sludge. The daily sludge feed rate to incineration ( $Q_{INC}$ ) was set to 100% of the sludge produced to provide a conservative evaluation for incineration.

Table 16 of each POTW's "Limits Calculation" worksheet identifies the most stringent (lowest) as the AHL for sludge disposal criteria.

### AHLs for Conventional POCs

POTWs are designed to treat a specified amount (influent design criteria) of conventional pollutants to meet given set of effluent limits. Table 3 presents each plant's influent design criteria, current influent loading, and degree to which the POTWs are loaded.



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**Table 3: Summary of POTW Influent Criteria and Current Loading**

POTW	Flow (MGD)	BOD <sub>5</sub> (lb/day)	COD (lb/day)	TSS (lb/day)	Ammonia (lb/day)	TKN (lb/day)	Phosphorus (lb/day)
<b>RM Clayton WRC</b>							
Design Criteria <sup>1</sup>	100	NA (125,780)	482,857	226,000	NA (11,918)	23,520	5,087
Current Average Loading	77	70,779	262,625	183,870	13,908	27,110 <sup>3</sup>	4,431
% Loaded	77	NA	54	81	NA	115	87
<b>Utoy Creek WRC</b>							
Design Criteria <sup>1,2</sup>	40	47,700	136,286	55,000	4,440	9,540	1,360
Current Average Loading	21	7,685	43,268	35,814	2,413	5,475 <sup>3</sup>	663
% Loaded	53	NA	32	65	54	57	49
<b>South River WRC, after decommissioning of Intrenchment Creek WRC</b>							
Design Criteria <sup>1</sup>	48	NA (37,180)	137,086	57,600	NA (4,001)	7,352	1,230
Average Loading	27	31,580	113,910	62,298	6,328	11,355 <sup>3</sup>	1,379
% Loaded	56	NA	83	108	NA	154	112

<sup>1</sup>Maximum month design criteria highlighted in red are from the 2003 LLE report.

<sup>2</sup>Utoy Creek WRC's influent design criteria documented in a published article by Brown and Caldwell, March 2007.

<sup>3</sup>Current loadings to the other plants are calculated from process data provided by DWM, except where noted (e.g., influent TKN not available and the values presented are estimates).

The POTW's influent design criterion for each conventional POC is used as its design-based AHL. The design loadings are entered into Table 17 of each POTW's "Limits Calculation" worksheet. The 2003 LLE report did not have influent design criteria for BOD<sub>5</sub> and ammonia. For the RM Clayton WRC, the influent design loads for these two POCs were estimated using the TKN to ammonia ratio of 1.97 and the COD to BOD<sub>5</sub> ratio of 3.84 that was evident from the 2018 Sampling Campaign. For the South River WRC, the TKN to ammonia and the COD to BOD<sub>5</sub> ratios are 1.84 to 3.69 respectively. The source of the influent design criteria for the Utoy Creek WRC is a published article by Brown and Caldwell, dated March 2007. The Brown and Caldwell article did not provide an influent design criterion for COD, so the design loading for COD was taken from the 2003 LLE report.

#### Calculation of Maximum Allowable Industrial Loadings for the POCs

Table 17 of each POTW's "Limits Calculation" worksheet tallies the AHLs based on water quality, inhibition, sludge, and design criteria and, in the last column, the selection of the most stringent AHL for each POC as the Maximum Allowable Headworks Loading (MAHL). Table 18 of the worksheet uses the



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MAHL to determine the Maximum Allowable Industrial Loading (MAIL) for each POC, which are converted to concentration limits using the POTW's IU flow. If at the influent of the POTW, the industrial loading for a POC is consistently below its MAIL, compliance with all criteria applicable to that POC is likely.

To determine each POC's MAIL, its MAHL is first adjusted by applying a safety factor and a growth factor. Then the POC's non-industrial loading to the POTW is subtracted from its adjusted MAHL for its resulting MAIL:

- The safety factor is used to address "uncertainties" inherent in the local limit development process, such as slug loadings and quality of data. A safety factor of 10 percent is taken across the non-conventional POCs.
- A safety factor is inherent with a POTW's "monthly average" influent design criteria. Therefore, a safety factor is not used with conventional POCs.
- A 10% growth factor was applied for all POCs, reserving loadings for future commercial; development, expansions of existing IUs, or new IUs.

Negative values for the MAIL (and concentration limits) in Table 18 indicate that there is no available load for allocation to IUs because the sum of the non-industrial load and the reserves for safety and growth factors is greater than the MAHL. For non-conventional POCs, like the organic priority pollutants, negative MAIL values are mostly the result of assuming a non-industrial level of half the reporting limit for non-detected POCs. The limiting criterion for each POC is also identified in Table 18 of each POTW's "Limits Calculation" worksheet.

Table 20 of each POTW's "Limits Calculation" worksheet provides a comparison between the calculated MAHLs to the current POTW's influent loadings. This table is linked with its "Monitoring Data" worksheet so that the influent loadings are calculated from the results of the 2018 Sampling Campaign. Pollutant loading as a percent of the MAHL is indicated and pollutants which are currently loaded as greater than 60 percent are flagged.

## Review of Results

### Conventional Pollutants

DWM has been managing the influent loadings of conventional POCs by using surcharges as an incentive for the IUs to minimize the discharge of these pollutants. Except for phosphorus, the COA does not have local limits for conventional POCs. The local limit for phosphorus is 10 mg/l, with exceptions given to food processing industries, which are granted a local limit 25 mg/l. As shown in Table 4, several of the conventional POC loadings at the WRCs are beyond the design capacities for these facilities.

The current average influent loading to the RM Clayton WRC is near or above its design criteria for TKN/ammonia and more than 80% for phosphorus and TSS. The design criteria for this evaluation is based upon the 2003 LLE and feedback from DWM that no revised process capacity criteria has been developed for the RM Clayton WRC. Process improvements should be considered to expand the WRCs treatment capacity of ammonia and phosphorous. A new headworks facility was recently commissioned at RM Clayton that may improve the treatment capability for TSS, thus the design criteria used for this POC may not be indicative of the actual treatment capacity following the headworks improvements. However, based upon feedback from RMC Operations, the headworks improvements do not appear to have increased the grit handling capacity.

After the Intrenchment Creek WRC is decommissioned, and its influent is diverted to the South River WRC, the influent load to the South River WRC will be above its design criteria for BOD<sub>5</sub>, COD, TSS, TKN/ammonia, and phosphorous. Increasing the treatment capacity at South River for handling



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conventional pollutants should be considered in junction with the Intrenchment Creek WRC decommissioning.

At Utoy Creek WRC, the current average loading is within its design loading, with all POCs below 60%, except for TSS and phosphorus.

The local limits calculated for the POCs that exceed the WRCs design criteria have negative concentration limits. Local limits should not be implemented for the conventional pollutants (other than the existing limit for phosphorous) and the surcharge rates for these pollutants will be assessed as part of Task 3.

## Non-Conventional Pollutants

The review of the non-conventional pollutants is presented for each WRC and for each sludge disposal option considered.

Table 4 presents the local limits calculated for the RM Clayton WRC for Class A EQ biosolids beneficial reuse, Incineration, and the limit based upon lowest concentration required to protect the entire WRC from either plant upset conditions, sludge disposal options, or State WQS. The current local limits are also summarized in Table 4.

**Table 4: RM Clayton Calculated Local Limits Summary**

Pollutant of Concern	Current Local		RM Clayton WRC Local Limit Calculation			
	Daily Max (mg/L)	Daily Max (lb/day) if less than 10,000 gpd	Most Stringent (mg/l)	Land App (mg/l)	Incineration (mg/l)	Basis of Most Stringent Limitation
Arsenic	0.195	0.016	0.6	0.6	31	Sludge
Cadmium	0.335	0.028	0.35	0.35	29	Sludge
Chromium	2.25	0.187	16	--	160	Inhibition
Copper	3.104	0.259	8.8	9.2	--	Inhibition
Cyanide	0.894	0.075	3.3	--	--	Inhibition
Lead	0.653	0.055	1.9	1.9	18	Sludge
Mercury	0.002	0.0002	0.0025	0.21	0.92	Water Quality
Molybdenum			0.55	0.55	--	Sludge
Nickel	1.79	0.149	6.5	7.6	6100	Inhibition
Selenium	1.31	0.109	1.9	1.9	--	Sludge
Silver	1.47	0.123	3.8	--	--	Inhibition
Zinc	4.473	0.373	18	18	--	Sludge
Beryllium	0.0005	0.0004	0.6	--	0.6	Sludge
Antimony			540	--	--	Water Quality
Chloroform (trichloromethane)	0.42		62	--	--	Inhibition
Toluene	1.35		7000	--	--	Inhibition
Ethylbenzene	1.59		8000	--	--	Inhibition
Formaldehyde	0.07		3.0	--	--	Worker Safety



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Table 4 depicts the calculated local limits for the RM Clayton WRC that are less than the existing local limits with a red highlight and red font. The calculated limits for molybdenum and antimony are below the existing local limits as these POCs currently do not have existing local limits. The calculated limit for antimony is derived from the State WQS, and this limit is 540 mg/l. The maximum detected level of antimony during the 2018 Sampling Campaign in the RM Clayton WRC influent was 0.0046 mg/l. Also, none of the annual IPP priority pollutant scans during the study period detected antimony. As such, a local limit is not recommended for antimony at this time.

The calculated limit for molybdenum relates to the land application standards for Class A EQ biosolids. DWM has not monitored for molybdenum during the priority pollutant scans and it is unknown if any molybdenum is in the WRC influent. It is recommended to add molybdenum sampling to the priority pollutant scans and also to sample the biosolids directly to determine if any molybdenum is present. The Class A EQ biosolids limit for molybdenum is 75 mg/kg. If the biosolids sampling indicates molybdenum concentrations within this range, then a local limit should be established for molybdenum. A sludge sampling plan is included as Attachment B.

All the other calculated local limits for the POCs at RMC are above the current local limit concentrations; as such, no adjustment to the existing local limits is needed to protect the RM Clayton WRC at this time.

Table 5 presents the local limits calculated for the Utoy Creek WRC for Class A EQ biosolids beneficial reuse and the limit based upon the lowest concentration required to protect the entire WRC from either plant upset conditions, sludge disposal options, or State WQS. The current local limits are also provided in Table 5.



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**Table 5: Utoy Creek WRC Calculated Local Limit Summary**

Pollutant of Concern	Current Local		Utoy Creek WRC Local Limit Calculation		
	Daily Max (mg/L)	Daily Max (lb/day) if less than 10,000 gpd	Most Stringent (mg/l)	Land App (mg/l)	Basis of Most Stringent Limitation
Arsenic	0.195	0.016	0.24	0.24	Sludge
Cadmium	0.335	0.028	0.2	0.2	Sludge
Chromium	2.25	0.187	21	--	Inhibition
Copper	3.104	0.259	3.5	4.7	Inhibition
Cyanide	0.894	0.075	3.5	--	Inhibition
Lead	0.653	0.055	0.46	0.46	Sludge
Mercury	0.002	0.0002	0.029	0.099	Water Quality
Molybdenum			0.27	0.27	Sludge
Nickel	1.79	0.149	4.3	5.9	Inhibition
Selenium	1.31	0.109	1.8	1.8	Sludge
Silver	1.47	0.123	1.7	--	Inhibition
Zinc	4.473	0.373	6	6	Sludge
Beryllium	0.0005	0.0004	--	--	-
Antimony			3100	--	Water Quality
Chloroform (trichloromethane)	0.42		11	--	Inhibition
Toluene	1.35		9200	--	Inhibition
Ethylbenzene	1.59		11000	--	Inhibition
Formaldehyde	0.07		3.0	--	Worker Safety

Table 5 depicts the calculated local limits for the Utoy Creek WRC that are less than the existing local limits with a red highlight and red font. Four POCs have calculated local limits less than the existing local limits: cadmium, lead, molybdenum, and antimony. The stringent local limits for cadmium, lead, and molybdenum are to achieve Class A EQ biosolids beneficial reuse. It is recommended that the sludge at Utoy Creek WRC be sampled for total metals to more directly determine if the concentration of these POCs exceed the concentration limits for EQ biosolids. The Class A EQ biosolids monthly average concentration metals limits are summarized in Table 6 for reference. Revision of the existing local limits should be considered if the total metals concentrations in the sludge exceed the Class A EQ biosolids metals concentration limits. A sludge sampling plan is included as Attachment B.



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**Table 6: Class A EQ Biosolids Metals Limits**

Pollutant	Land Application Standard (mg/kg)
Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Molybdenum <sup>a</sup>	75
Nickel	420
Selenium	100
Zinc	2800

The calculated limit for antimony is derived from the State WQS, and this limit is 3100 mg/l. The maximum detected level of antimony during the 2018 Sampling Campaign in the Utoy Creek WRC influent was 0.0092 mg/l. Also, none of the annual IPP priority pollutant scans during the study period detected antimony. As such, a local limit is not recommended for antimony at this time.

Notes: a – this is the ceiling concentration limit.

Table 7 presents the local limits calculated for the South River WRC for Class A EQ biosolids beneficial reuse and the limit based upon the lowest concentration required to protect the entire WRC from either plant upset conditions, sludge disposal options, or State WQS. The current local limits are also provided in Table 7.

Table 7 depicts the calculated local limits for the South River WRC that are less than the existing local limits with a red highlight and red font. Nine POCs have calculated local limits less than the existing local limits: arsenic, cadmium, copper, cyanide, molybdenum, nickel, selenium, silver, and antimony. The stringent limits for cadmium, molybdenum, and selenium are to achieve Class A EQ biosolids. It is recommended that the sludge at South River be sampled for total metals to more directly determine if the concentration of these POCs exceed the concentration limits for EQ biosolids. Arsenic should be included during this assessment since the calculated local limit to achieve Class A EQ biosolids is below the current local limit. The Class A EQ biosolids metals limits are summarized in Table 6 for reference. Revision of the existing local limits should be considered if the total metals concentrations in the sludge exceed the Class A EQ biosolids metals limits. A sludge sampling plan is included as Attachment B.

The five of the POCs with stringent limits (arsenic, copper, cyanide, nickel, and silver) are to reduce the risk of anaerobic digester inhibition. The calculation for digester inhibition utilizes the digester feed rate in order to back calculate the allowable loading for each POC. For a higher digester feed rate more sludge is available to dilute the pollutant, and likewise, a higher loading and POC concentration at the influent is acceptable. The South River WRC digester feed rate of 60 gpm was estimated based upon the WRC effluent flow, and this feed rate is 32% less than the 88 gpm utilized during the 2003 LLE. At the time of this assessment, the South River WRC was rehabilitating its anaerobic digesters. Following the improvements, the actual digester feed was reported as 60.88 gpm; thus the estimated rate is representative of actual operating conditions and the potential for digester inhibition should be assessed in more detail.



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**Table 7: South River WRC Local Limits Calculation Summary**

Pollutant of Concern	Current Local		South River WRC Local Limit Calculation		
	Daily Max (mg/L)	Daily Max (lb/day) if less than 10,000 gpd	Most Stringent (mg/l)	Land App (mg/l)	Basis of Most Stringent Limitation
Arsenic	0.195	0.016	0.16	0.18	Inhibition
Cadmium	0.335	0.028	0.14	0.14	Sludge
Chromium	2.25	0.187	4.3	--	Inhibition
Copper	3.104	0.259	1.6	3.2	Inhibition
Cyanide	0.894	0.075	0.5	--	Inhibition
Lead	0.653	0.055	1	1	Sludge
Mercury	0.002	0.0002	0.0091	0.068	Water Quality
Molybdenum			0.36	0.36	Sludge
Nickel	1.79	0.149	1.3	2.4	Inhibition
Selenium	1.31	0.109	0.46	0.46	Sludge
Silver	1.47	0.123	0.97	--	Inhibition
Zinc	4.473	0.373	6.1	6.1	Sludge
Beryllium	0.0005	0.0004	--	--	-
Antimony			770	--	Water Quality
Chloroform (trichloromethane)	0.42		37	--	Inhibition
Toluene	1.35		3500	--	Inhibition
Ethylbenzene	1.59		3500	--	Inhibition
Formaldehyde	0.07		3.0	--	Worker Safety

The local limits analysis used the most conservative inhibition concentrations for metals with a listed range of concentrations, and likewise the resulting limits may be overly conservative. Using the upper concentration range, three of the metals no longer are identified as presenting a potential digester inhibition risk (cyanide, nickel, and silver). In addition, cyanide was flagged as a risk yet no cyanide was detected in the digester feed samples (the samples had elevated reporting limits, presumably due to matrix interference, and likewise using ½ the reporting limit resulted in a digester feed concentration of 0.5 mg/l). In light of this follow-up analysis, the potential for digester inhibition is being evaluated by South River operations. If inhibition is identified, DWM will review the need for stricter local limits for these metals.

Lastly, the calculated limit for antimony is derived from the State WQS, and this limit is 770 mg/l. The maximum detected level of antimony during the 2018 Sampling Campaign in the South River WRC influent was 0.005 mg/l. Also, none of the annual IPP priority pollutant scans during the study period detected antimony. As such, a local limit is not recommended for antimony at this time.



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### **Evaluation of Formaldehyde Fume Toxicity Limit**

The current local limit for formaldehyde was established based upon fume toxicity and this limit is currently 0.07mg/l. Fume toxicity limits are established to protect workers from exposure to the accumulation of toxic gases, vapors, and fumes within the sewer system. The EPA 2004 guidance document provides a method for establishing screening levels for pollutants with the potential for fume toxicity. This method was utilized for the formaldehyde fume toxicity limit review and included an additional level of protection for workers that considered the potential for elevated IU discharge temperatures.

The revised formaldehyde limit was calculated using the National Institute for Occupational Safety and Health's (NIOSH) Recommended Short Term Exposure Limit of 0.1ppm vapor (in mg/m<sup>3</sup>). The NIOSH limit is the most stringent limit in comparison to the OSHA and the American Conference of Governmental Industrial Hygienist limits. The Henry's Law Constant was adjusted for a formaldehyde / water solution temperature of 106F. The resulting IU discharge screen level was 3 mg/l and this is recommended as the revised local limit. This limit should be conditional with the requirement that industrial discharge temperatures should not exceed 105°F. The fume toxicity calculations for formaldehyde are included in the MS Excel spreadsheet.



**Attachment A: POC Screening Criteria Summary**

Pollutant	Pollutant is an EPA POC?	Pollutant has a numeric NPDES permit limit?	WRC has a design loading condition	Pollutant must be monitored per NPDES permit?	Pollutant has a State Water Quality Criteria?	Pollutant has been detected in POTW effluent?	Pollutant has been detected in POTW influent?	Pollutant has been detected in POTW sludge?	Pollutant has a literature inhibition threshold level?	Pollutant is subject to "clean sludge" limits?	Pollutant detected in IU's discharge?	Pollutant is tracked with an IU's permit?	Pollutant is limited in sludge to incinerator?	Pollutant is a fume toxicity concern?	Pollutant has a current local limit?	Calculate local limit?
Arsenic	Yes				Yes				Yes	Yes	Yes	Yes	Yes		Yes	Yes
Cadmium	Yes				Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Chromium	Yes				Yes		Yes	Yes	Yes		Yes	Yes	Yes		Yes	Yes
Copper	Yes				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes
Cyanide	Yes				Yes		Yes		Yes		Yes	Yes			Yes	Yes
Lead	Yes				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Mercury	Yes			Yes	Yes			Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Molybdenum	Yes					NA	NA	NA		Yes	NA					Yes
Nickel	Yes				Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes		Yes	Yes
Selenium	Yes				Yes					Yes	Yes	Yes			Yes	Yes
Silver	Yes								Yes		Yes	Yes			Yes	Yes
Zinc	Yes				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes			Yes	Yes
Ammonia Nitrogen	Yes	Yes				Yes			Yes							Yes
5-day Biochemical Oxygen Demand	Yes	Yes														Yes
Total Suspended Solids	Yes	Yes	Yes								Yes	Yes				Yes
Beryllium											Yes	Yes	Yes		Yes	Yes



Pollutant	Pollutant is an EPA POC?	Pollutant has a numeric NPDES permit limit?	WRC has a design loading condition	Pollutant must be monitored per NPDES permit?	Pollutant has a State Water Quality Criteria?	Pollutant has been detected in POTW effluent?	Pollutant has been detected in POTW influent?	Pollutant has been detected in POTW sludge?	Pollutant has a literature inhibition threshold level?	Pollutant is subject to "clean sludge" limits?	Pollutant detected in IU's discharge?	Pollutant is tracked with an IU's permit?	Pollutant is limited in sludge to incinerator?	Pollutant is a fume toxicity concern?	Pollutant has a current local limit?	Calculate local limit?
Antimony					Yes		Yes				Yes	Yes				Yes
Total Phosphorus, as P		Yes	Yes		Yes	Yes					Yes	Yes			Yes	Yes
Orthophosphate, as P				Yes		Yes										
Total Kjeldahl Nitrogen			Yes	Yes		Yes					Yes	Yes				Yes
Nitrate-Nitrite, as N				Yes		Yes										
Organic Nitrogen				Yes		Yes										
Chemical Oxygen Demand		Yes	Yes			Yes					Yes	Yes				Yes
Chloroform (trichloromethane)					Yes		Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
Toluene					Yes		Yes	Yes	Yes		Yes	Yes		Yes	Yes	Yes
2,4-D					Yes											Yes
Methoxychlor					Yes											Yes
TP Silvex					Yes											Yes
Lindane [Hexachlorocyclohexane (g-BHC-Gamma)]					Yes											Yes
Chlordane					Yes			Yes								Yes
Dieldrin					Yes			Yes								Yes
4,4'-DDT					Yes											Yes



Pollutant	Pollutant is an EPA POC?	Pollutant has a numeric NPDES permit limit?	WRC has a design loading condition	Pollutant must be monitored per NPDES permit?	Pollutant has a State Water Quality Criteria?	Pollutant has been detected in POTW effluent?	Pollutant has been detected in POTW influent?	Pollutant has been detected in POTW sludge?	Pollutant has a literature inhibition threshold level?	Pollutant is subject to "clean sludge" limits?	Pollutant detected in IU's discharge?	Pollutant is tracked with an IU's permit?	Pollutant is limited in sludge to incinerator?	Pollutant is a fume toxicity concern?	Pollutant has a current local limit?	Calculate local limit?
a-Endosulfan					Yes											Yes
b-Endosulfan					Yes											Yes
Endrin					Yes											Yes
Heptachlor					Yes											Yes
Heptachlor Epoxide					Yes											Yes
Pentachlorophenol					Yes				Yes		Yes	Yes				Yes
PCBs					Yes							Yes				Yes
Phenol					Yes			Yes	Yes		Yes	Yes				Yes
Toxaphene					Yes											Yes
Acenaphthene					Yes						Yes	Yes				Yes
Acenaphthylene											Yes	Yes				
Acrolein					Yes			Yes						Yes		Yes
Acrylonitrile					Yes				Yes					Yes		Yes
Aldrin					Yes											Yes
Anthracene					Yes				Yes							Yes
Benzidine					Yes											Yes
Benzo(a)Anthracene					Yes						Yes	Yes				Yes



Pollutant	Pollutant is an EPA POC?	Pollutant has a numeric NPDES permit limit?	WRC has a design loading condition	Pollutant must be monitored per NPDES permit?	Pollutant has a State Water Quality Criteria?	Pollutant has been detected in POTW effluent?	Pollutant has been detected in POTW influent?	Pollutant has been detected in POTW sludge?	Pollutant has a literature inhibition threshold level?	Pollutant is subject to "clean sludge" limits?	Pollutant detected in IU's discharge?	Pollutant is tracked with an IU's permit?	Pollutant is limited in sludge to incinerator?	Pollutant is a fume toxicity concern?	Pollutant has a current local limit?	Calculate local limit?
Benzo(a)Pyrene					Yes						Yes	Yes				Yes
Benzo(b)Fluoranthene (3,4-Benzofluoranthene)					Yes			Yes			Yes	Yes				Yes
Benzene					Yes				Yes		Yes	Yes		Yes	Yes	Yes
benzo (ghi) Perylene																
benzo(k)fluoranthene (11,12-benzofluoranthene)					Yes											Yes
Alpha-BHC					Yes											Yes
Beta-BHC					Yes											Yes
Bis(2-chloroethyl) ether					Yes											Yes
Bis(2-chloroisopropyl) ether					Yes											Yes
Bis(2-ethylhexyl) phthalate					Yes			Yes				Yes				Yes
Bromoform (tribromomethane)					Yes									Yes		Yes
Butyl benzyl phthalate					Yes											Yes
Carbon Tetrachloride (tetrachloromethane)					Yes				Yes			Yes		Yes	Yes	Yes
Chlorobenzene					Yes				Yes			Yes		Yes	Yes	Yes
Chlorodibromomethane					Yes											Yes
Chloroethane (Ethyl chloride)												Yes		Yes		



Pollutant	Pollutant is an EPA POC?	Pollutant has a numeric NPDES permit limit?	WRC has a design loading condition	Pollutant must be monitored per NPDES permit?	Pollutant has a State Water Quality Criteria?	Pollutant has been detected in POTW effluent?	Pollutant has been detected in POTW influent?	Pollutant has been detected in POTW sludge?	Pollutant has a literature inhibition threshold level?	Pollutant is subject to "clean sludge" limits?	Pollutant detected in IU's discharge?	Pollutant is tracked with an IU's permit?	Pollutant is limited in sludge to incinerator?	Pollutant is a fume toxicity concern?	Pollutant has a current local limit?	Calculate local limit?
2-chloroethyl vinyl ether (mixed)																
2-chloronaphthalene					Yes											Yes
2-Chlorophenol					Yes				Yes			Yes				Yes
Chrysene					Yes						Yes	Yes				Yes
1,2,5,6-dibenzanthracene (dibenzo(a,h) anthracene)					Yes						Yes	Yes				Yes
Dichlorobromomethane					Yes											Yes
1,2-Dichloroethane (Ethylene dichloride)					Yes							Yes		Yes	Yes	Yes
1,1-Dichloroethane					Yes							Yes		Yes	Yes	Yes
1,1-Dichloroethene					Yes							Yes		Yes		Yes
1,2 Trans-Dichloroethene					Yes							Yes		Yes		Yes
1,2-Dichloropropane					Yes							Yes		Yes	Yes	Yes
1,3-Dichloropropane					Yes							Yes			Yes	Yes
1,2-dichloropropene					Yes											Yes
2,4-dichlorophenol					Yes				Yes							Yes
1,2-Dichlorobenzene					Yes				Yes			Yes			Yes	Yes
1,3-Dichlorobenzene					Yes			Yes	Yes							Yes



Pollutant	Pollutant is an EPA POC?	Pollutant has a numeric NPDES permit limit?	WRC has a design loading condition	Pollutant must be monitored per NPDES permit?	Pollutant has a State Water Quality Criteria?	Pollutant has been detected in POTW effluent?	Pollutant has been detected in POTW influent?	Pollutant has been detected in POTW sludge?	Pollutant has a literature inhibition threshold level?	Pollutant is subject to "clean sludge" limits?	Pollutant detected in IU's discharge?	Pollutant is tracked with an IU's permit?	Pollutant is limited in sludge to incinerator?	Pollutant is a fume toxicity concern?	Pollutant has a current local limit?	Calculate local limit?
1,4-Dichlorobenzene					Yes			Yes	Yes			Yes			Yes	Yes
3,3-dichlorobenzidine					Yes											Yes
4,4-DDD (p,p-TDE)					Yes											Yes
4,4-DDE (p,p-DDX)					Yes											Yes
Diethyl Phthalate					Yes											Yes
Dimethyl Phthalate					Yes											Yes
2,4-Dimethylphenol					Yes				Yes		Yes	Yes				Yes
2,4-Dinitrophenol					Yes				Yes			Yes				Yes
Di-n-butyl phthalate					Yes			Yes								Yes
2,4-dinitrotoluene					Yes				Yes							Yes
1,2-diphenylhydrazine					Yes				Yes							Yes
Endrin aldehyde					Yes											Yes
Endosulfan sulfate					Yes											Yes
Ethylbenzene					Yes		Yes	Yes	Yes			Yes		Yes	Yes	Yes
Fluoranthene					Yes			Yes			Yes	Yes				Yes
Fluorene					Yes											Yes
Hexachlorobenzene					Yes				Yes							Yes



Pollutant	Pollutant is an EPA POC?	Pollutant has a numeric NPDES permit limit?	WRC has a design loading condition	Pollutant must be monitored per NPDES permit?	Pollutant has a State Water Quality Criteria?	Pollutant has been detected in POTW effluent?	Pollutant has been detected in POTW influent?	Pollutant has been detected in POTW sludge?	Pollutant has a literature inhibition threshold level?	Pollutant is subject to "clean sludge" limits?	Pollutant detected in IU's discharge?	Pollutant is tracked with an IU's permit?	Pollutant is limited in sludge to incinerator?	Pollutant is a fume toxicity concern?	Pollutant has a current local limit?	Calculate local limit?
Hexachloro-1, 3-butadiene					Yes							Yes		Yes	Yes	Yes
Hexachlorocyclopentadiene					Yes											Yes
Hexachloroethane					Yes							Yes			Yes	Yes
Indeno(1,2,3-cd)Pyrene (2,3-Phenylene-pyrene)					Yes						Yes	Yes				Yes
Isophorone					Yes											Yes
Methyl Bromide (bromomethane)					Yes									Yes	Yes	Yes
Methyl Chloride (Chloromethane)									Yes		Yes	Yes		Yes	Yes	Yes
Methylene Chloride (Dichloromethane)					Yes						Yes	Yes		Yes	Yes	Yes
2-methyl-4,6-dinitrophenol, 4,6-dinitro-o-cresol					Yes											Yes
Nitrobenzene					Yes				Yes							Yes
N-nitrosodimethylamine					Yes											Yes
N-nitrosodi-n-propylamin					Yes											Yes
N-nitrosodiphenylamine					Yes											Yes
Phenanthrene									Yes		Yes	Yes				Yes
Pyrene					Yes			Yes								Yes



Pollutant	Pollutant is an EPA POC?	Pollutant has a numeric NPDES permit limit?	WRC has a design loading condition	Pollutant must be monitored per NPDES permit?	Pollutant has a State Water Quality Criteria?	Pollutant has been detected in POTW effluent?	Pollutant has been detected in POTW influent?	Pollutant has been detected in POTW sludge?	Pollutant has a literature inhibition threshold level?	Pollutant is subject to "clean sludge" limits?	Pollutant detected in IU's discharge?	Pollutant is tracked with an IU's permit?	Pollutant is limited in sludge to incinerator?	Pollutant is a fume toxicity concern?	Pollutant has a current local limit?	Calculate local limit?
1,1,2,2-Tetrachloroethane					Yes									Yes		Yes
Tetrachloroethene					Yes			Yes	Yes					Yes		Yes
Thallium					Yes						Yes	Yes				Yes
1,1,2-Trichloroethane					Yes									Yes		Yes
1,1,1-Trichloroethane												Yes		Yes	Yes	
Trichloroethene					Yes				Yes		Yes	Yes		Yes		Yes
2,4,6-Trichlorophenol					Yes				Yes			Yes				Yes
1,2,4-Trichlorobenzene					Yes							Yes			Yes	Yes
Vinyl Chloride					Yes							Yes		Yes	Yes	Yes
Napthalene									Yes		Yes	Yes				Yes
1,2-Diphenylhydrazine																
2-Butanone												Yes				
Acetone												Yes				
Bromoethane												Yes				
Carbazole											Yes	Yes				
Carbon disulfide												Yes				
Cobalt											Yes	Yes				



Pollutant	Pollutant is an EPA POC?	Pollutant has a numeric NPDES permit limit?	WRC has a design loading condition	Pollutant must be monitored per NPDES permit?	Pollutant has a State Water Quality Criteria?	Pollutant has been detected in POTW effluent?	Pollutant has been detected in POTW influent?	Pollutant has been detected in POTW sludge?	Pollutant has a literature inhibition threshold level?	Pollutant is subject to "clean sludge" limits?	Pollutant detected in IU's discharge?	Pollutant is tracked with an IU's permit?	Pollutant is limited in sludge to incinerator?	Pollutant is a fume toxicity concern?	Pollutant has a current local limit?	Calculate local limit?
Formaldehyde											Yes	Yes			Yes	
n-Decane												Yes				
n-Octadecane												Yes				
o-Cresol (2-methylphenol)												Yes				
p-Chloro-m-cresol												Yes				
p-Cresol (4-methylphenol)											Yes	Yes				
Tetrachlorophenols											Yes	Yes				
Tin												Yes				
Titanium												Yes				
Trichlorofluoromethane												Yes				
Trichlorophenols												Yes				
Vanadium												Yes				
Xylene												Yes				



## Memorandum

Task 2 - Local Limits Evaluation and Recommendations –  
Revised to Address EPD Review Comments dated June 14, 2022

### Attachment B Sludge Sampling Plan



## Memorandum

Task 2 - Local Limits Evaluation and Recommendations –  
Revised to Address EPD Review Comments dated June 14, 2022

### WRCs Sludge Sampling Plan To Evaluate EQ Biosolids Metals Concentrations

#### Introduction

The purpose of this sampling plan is to outline the procedures for sludge sampling at the water reclamation centers (WRCs) to confirm the presence and concentration of the Part 503 Metals in the biosolids. This evaluation will be used to further determine if the current local limits are adequate to provide for beneficial reuse of the biosolids as an exceptional quality (EQ) product. The local limits evaluation recommended that the sludge at the WRCs be sampled for total metals to more directly determine if the concentration of the regulated metals exceed the concentration limits for EQ biosolids. The Class A EQ biosolids metals limits are summarized in Table 1 below. If the metals concentrations are below these limits, the biosolids can be land applied.

**Table 1: Class A EQ Biosolids Concentration Limits**

Pollutant	Land Application Standard – Pollutant Concentration Limit (mg/kg)
Arsenic	41
Cadmium	39
Copper	1500
Lead	300
Mercury	17
Molybdenum	75 <sup>(1)</sup>
Nickel	420
Selenium	100
Zinc	2800

Note: (1) The molybdenum concentration is the ceiling concentration limit



## Memorandum

Task 2 - Local Limits Evaluation and Recommendations –  
Revised to Address EPD Review Comments dated June 14, 2022

### Analytical Methods and Sampling Procedures

A composited sludge sample should be collected for analysis. The composite can be comprised of grab samples of the dewatered cake collected at routine intervals throughout the day (100ml of cake every 2 hours over a 12-hour period for example). The following approach can be utilized for collecting the cake sample:

- 1) Extend shovel or collection device beneath drop chute. If a shovel is used, it must not be galvanized, or zinc coated. If a grab sample extension stick is used, a plastic container may be used at the end of the stick for collection of the sample.
- 2) Transfer approximately 100 mL of dewatered solids sample into the composite container provided, breaking up sample as needed to fill the volume (but don't pack it down).
- 3) Replace cap and return composite sample bottle to cooler until next sampling time.

The composite sample should be stored in a cooler at 4 degrees Celsius during sample collection and delivery to the laboratory. A 1-liter volume of sample should be collected. Table 2 below provides the analytical methods for the Part 503 Metals. Sampling should be conducted monthly at each of the WRCs (South River, Utoy Creek, and RM Clayton).

**Table 2 - Analytical Methods for Part 503 Metals Analysis**

Parameter	Analytical Method	Method Detection Limit	Matrix
Mercury	EPA 245.1	10 mg/kg or less	Solid
Arsenic, Cadmium, Copper, Lead, Molybdenum, Nickel, Selenium, Zinc	EPA 200.8	20 mg/kg or less	Solid
Total Solids	SM 2450-G	0.1% weight	Solid



## Memorandum

Task 2 - Local Limits Evaluation and Recommendations –  
Revised to Address EPD Review Comments dated June 14, 2022

### **Analysis of Results and Evaluation of Local Limits Revision**

The results for each WRC sampling event should be compared to the pollutant concentration limits listed in Table 1 above. If the concentrations are measured consistently below the Table 1 limits, no adjustment to the local limits for these metals is required. Monthly sampling should be continued to ensure that the biosolids meet the EQ standards.

If sample results at any WRC approach or exceed the pollutant concentration limit listed in Table 1, DWM should evaluate the intent for beneficial reuse of the biosolids. If beneficial reuse is desired, the local limit for any metal with a concentration above the pollutant limit in Table 1 may require revision to reduce the metal loading upon the WRC. A review of the metal waste producing industries can also be performed to help confirm these industries are complying with their industrial waste permits.



Andre Dickens

**CITY OF ATLANTA**

Mikita K. Browning

MAYOR

DEPARTMENT OF WATERSHED MANAGEMENT  
72 Marietta Street, N.W.  
ATLANTA, GEORGIA 30303

COMMISSIONER

## REQUEST FOR TASK ORDER PROPOSALS

To: RPF-S-1200311 A - F Contract Managers  
From: Ms. Rhonda Crenshaw, Program Manager, OES  
CC: Mr. Todd S. Hill, Deputy Commissioner, OWP  
Mr. Quinton Fletcher, Deputy Commissioner, OWTR  
Mr. Patrick Woodall, Director, OWP  
Ms. Uche Chioke, Program Manager, OES

DocuSigned by:  
*Rhonda Crenshaw*  
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Date: March 30, 2022

Re: **Request for Proposal for South River WRC Illicit Discharge Detection**

Consultants are invited to submit proposals to work with the Department of Watershed Management to implement a dedicated monitoring plan at key locations to identify the source of various illicit discharges seen at the South River Water Reclamation Center (WRC).

### Background:

The City of Atlanta Department of Watershed Management (DWM) South River Water Reclamation Center (WRC) has experienced numerous periods of diesel/petroleum-like odors and high ammonia levels entering the plant. This has caused NPDES permit violations (Dissolved Oxygen; Ammonia, Potential Hydrogen, Chemical Oxygen Demand and TP) within the WRC. While the immediate impacts are Dissolved Oxygen, Potential Hydrogen, Aluminum, Chemical Oxygen Demand, and TP, the long-term effects impact other permit limits. Though there had been some recent history of fuel (and other illicit) discharges likely coming from the direction of the Hartsfield-Jackson Airport, the sporadic nature of the issues, staff attrition, and competing priorities caused dedicated monitoring for these discharges to be unfeasible at the time. With the more recent discharge odors and violations caused by the higher ammonia levels, DWM would like to implement a dedicated monitoring plan at key locations to identify the source of these illicit discharges.

**Scope of Work:**

Major tasks of the scope of services requested by DWM include:

1. Deploy, maintain, service, and sample up to 7 discreet samplers at key monitoring locations.
  - a. Deploy and maintain Teledyne ISCO type samplers configured with 24 discreet sample bottles – up to 7 locations; Repair and replace sampler parts/batteries as needed to ensure 95% uptime or greater.
    - i. Process samples initially after deployment for up to **two weeks** to establish a baseline for each location. Baseline should include both dry days and wet days
  - b. Each Discreet Sampler site **daily** activities:
    - i. Visual site inspection
    - ii. Pull/replace/store/label sample bottles for up to 5 days
    - iii. Repair/replace hose as needed
    - iv. Clean strainer
    - v. Test system/validate functionality & check and record voltage – replace battery as needed
  - c. Each Discreet Sampler site **weekly** activities:
    - i. Submit weekly report on site work
      1. Weekly reports should also be sent to Industrial Pre-Treatment Program Manager for record keeping and review.
    - ii. Rotate 5 days samples
2. Contractor/A&E will provide daily, weekly, and monthly servicing and sample collection at discreet sampler sites.
3. Contractor/A&E will perform all work necessary to maintain up to 7 discreet samplers.
4. Test and maintain early warning station at Flint River 1st stage.
  - a. Maintain Early Warning Illicit Discharge Detection (IDD) at Flint River 1<sup>st</sup> stage
    - i. Ammonia, Conductivity, and pH sensors
    - ii. SDI12 or Modbus Output
    - iii. System will be capable of server-side email alert
  - b. **Daily** instrumentation requirements:
    - i. Clean EWI probes and filter (used to screen debris)
    - ii. Check voltage
    - iii. Validate readings
    - iv. Repair/Replace parts as needed
  - c. **Weekly** – Calibrate instrumentation
  - d. **Monthly** – Test Alert/Alarm notifications
5. Collect, store, and label all samples for up to 5 days.

6. Provide sample delivery to lab(s) for processing identified parameters as requested.
7. Check, test, calibrate, and service instrumentation daily, weekly, and as needed to ensure data integrity, representative data, and functionality.
8. Review all parts and supply inventory monthly to ensure 95% or greater uptime. Monthly inventory review shall be provided to DWM.
9. Perform repairs and routine maintenance ensuring 95% uptime or greater when parts/supplies are on hand.
10. Contractor/A&E will provide monthly data and work summary reports informing DWM of all findings.

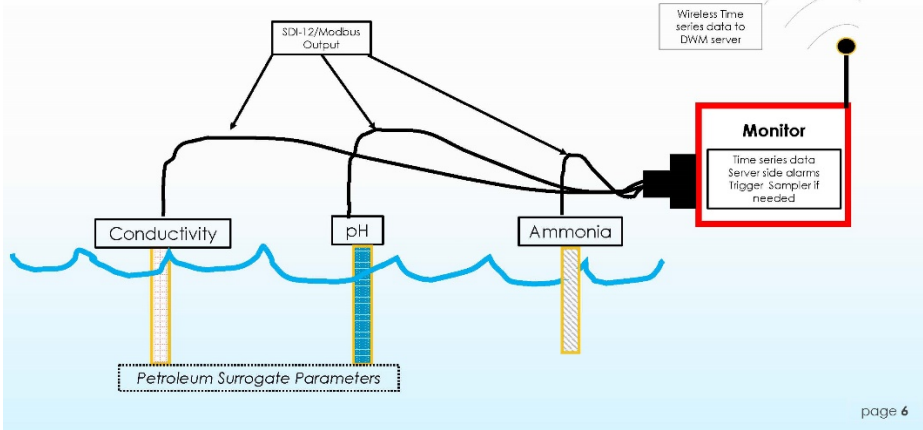
**Instrumentation Specifications:**

1. Sensors must be Modbus or SDI-12.
2. Monitor must be Signature Series from Teledyne w/ Sampler cable, 5 Modbus or SDI-12 inputs, 4G modem, External 12VDC power source with alligator clip cables.
  - o Flint River Pump Station 1<sup>st</sup> stage monitor is a Teledyne ISCO 2015Gi with SDI-12/Modbus capability (Already Purchased).
3. Include Instrument enclosure NEMA 4X.
4. Discreet samplers must be capable of at least 24 discreet sample collection.
5. 12 VDC battery 150 Amp hour
6. 50 Watt Solar

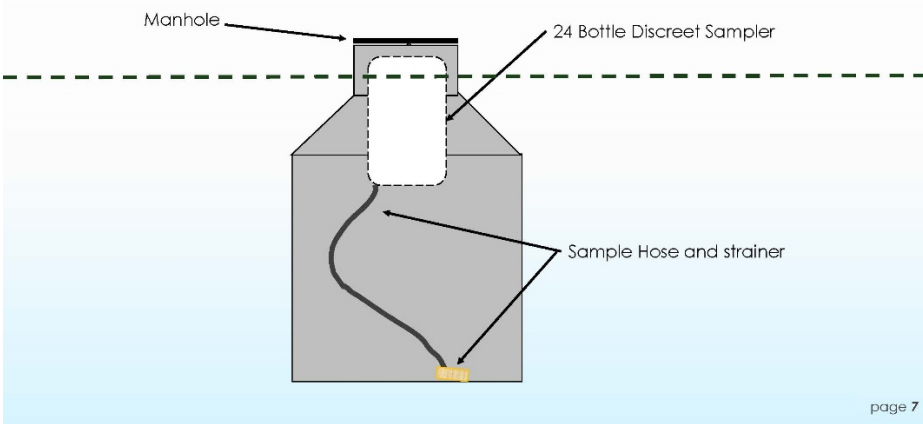
**Performance Indicators and Requirements:**

1. Contractor/A&E Firm must obtain and maintain Security Identification Display Area (SIDA) access for entry onto airport property.
2. Contractor/A&E must obtain and maintain vehicle access to SIDA areas where samplers are deployed.
3. Must attend initial vendor training on instrumentation – provided by vendor.
4. Must maintain/store properly labeled samples for up to 5 days.
5. In the event of a slug or hit, contractor/A&E to deliver stored samples to outside lab (chosen by DWM) for processing.
  - a. All date/time/location labels are responsibility of contractor/A&E
6. 95% uptime required on all equipment when parts are available and accessible.
7. 8-hour turnaround on repair or replacement is required.
8. Provide at least 24-hour notification on repair/replacement parts needed.

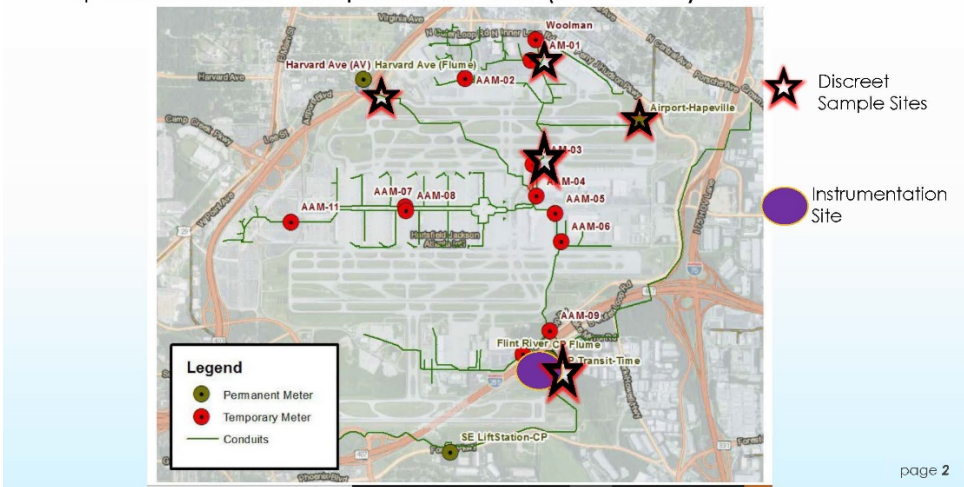
### Proposed Instrumentation Site Configuration



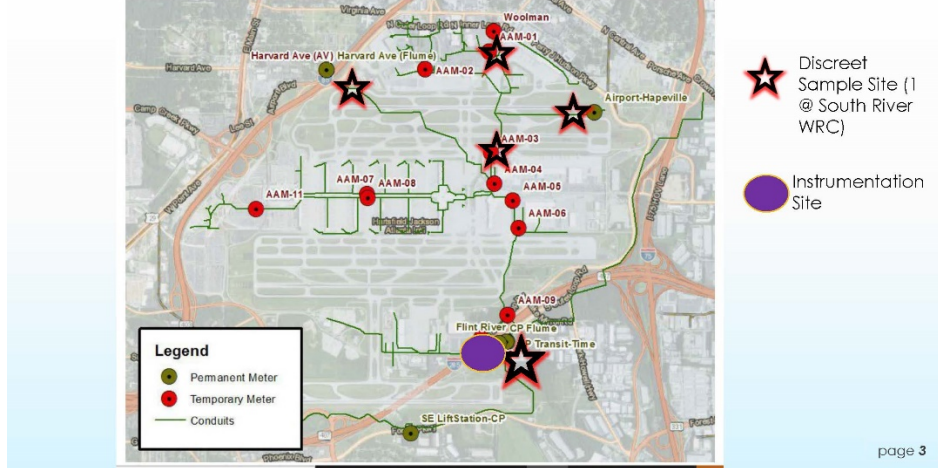
### Proposed Automated Sampling Site Configuration



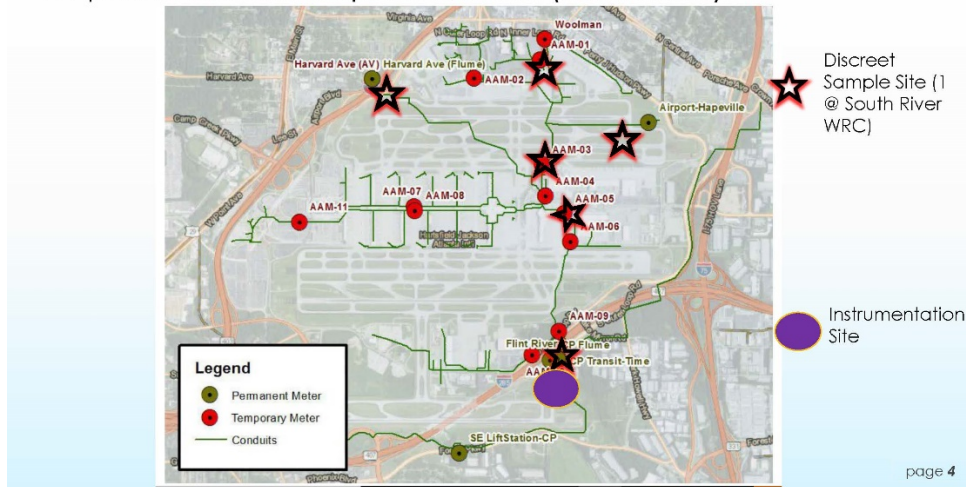
### Proposed Locations option 1; 6 sites (Minimum)



## Proposed Locations option 2; 7 sites (Moderate)



## Proposed Locations option 3; 8 sites (Substantial)

**Materials to Be Provided by DWM:**

1. DWM will purchase all equipment and spare parts (probes, samplers, sample bottles, batteries, etc.) for the project duration.
2. Deploy early warning station at Flint River 1st stage.
3. Purchase and have on hand spare parts and solutions to ensure 95% uptime for the project duration.

**Project Management and Coordination:**

1. The Consultant will prepare a Project Management Plan identifying project scope, schedule, work elements, and budget for all work elements. The Project Management Plan shall be submitted to the City within 10 days of the issuance of the Notice to Proceed.
2. The Consultant shall meet with the City with members of the CITY Project Team to identify critical Project issues, establish performance objectives, set priorities, identify boundaries, and establish critical success factors about the Project. Introductions to DWM and

Consultant staff, Consultant to present Project Management Plan including the project team, organization chart, communication plan, City to review requirements for designs, reports, invoicing, and requests for information

3. The Consultant will conduct monthly progress meetings, with the City to review the project scope, schedule (4-week work ahead) and budget and any issues which may affect completion of the project.
  - a) It is anticipated that most of the meetings will be held via Microsoft Teams
  - b) The Consultant will submit by first of each month including: work completed in past month; work planned for following month; highlight accomplishments and challenges; update schedule of design and construction tasks.
4. The Consultant will prepare and submit monthly invoices in accordance with City standards using e-Builder.
5. The Consultant will prepare and submit monthly progress reports that include a description of work completed by task, project decision log, project action item log, upcoming work, project issues, budget and schedule status, percent complete, cost to complete, potential scope or budget changes, and other important project information.
6. Close coordination and input from various DWM stakeholders will be necessary. Stakeholders include, but are not limited to:
  - a) Office of Water Treatment and Reclamation (OWTR), and
  - b) Office or Watershed Protection (OWP)
7. Consultant will be required to use DWM's Project Management Information System, e-Builder, for report and design submittals, invoicing, minutes, and Task Order correspondence. DWM will provide e-Builder training to Consultant staff at no cost to Consultant.

## **Project Proposal**

The Task Order proposal should comprise of following major components:

1. **Project Approach & Detailed Scope Description:**

Provide a comprehensive project approach and detailed description of each of the ten (10) components of the scope of work.

2. **Staff Qualifications:**

Provide an organizational chart and resumes of all key staff members. Field staff should have all necessary licenses.

3. **Consultant's Experience:**

Provide up to three reference projects along with client references. It is preferable that project manager and other key staff have working experience on the referenced projects.

4. **Schedule:**

Consultant will be responsible for project controls and scheduling using P6 (or other) scheduling software to track projects and key activities; including but, limited to showing all major scope deliverables with major milestones and major critical activities. Please refer to the Master Services Agreement to obtain additional information regarding the scheduling requirements.

**5. Cost Proposal:**

The cost proposal for this Task Order shall include a cost break-down by task, staff names and labor hours for each labor category:

- a. Project management including monthly Microsoft Teams progress updates and invoicing,
- b. The Consultant's proposal will include a project Work Breakdown Structure with a matrix outlining the budget and level of effort for each task,
- c. Planning and scope execution efforts including all deliverables and field activities to be broken down for Tasks 1 through 10,
- d. Any additional scope item not covered elsewhere, and
- e. Miscellaneous Other Direct Costs

**6. Subcontractor Billing (Not to Exceed) to include the following when applicable:**

- a. Production of computerized labor report/time sheets
- b. Travel expense reports to include accompanying airfare and hotel receipts
- c. Hotel and per diem rates should be billed according to the U.S. General Services Administration rates for the Atlanta, Georgia area
- d. Usage of 2022-2023 IRS standard mileage rates
- e. 5. Usage of Compact Cars

**7. Instructions to Proposers:**

Please submit four (4) copies of your proposal with original signatures to the City of Atlanta at the address below or transmit an electronic copy via email to Rhonda Crenshaw at [rhondacrenshaw@atlantaga.gov](mailto:rhondacrenshaw@atlantaga.gov) by Close of Business on **April 13, 2022.**

City of Atlanta- Department of Watershed Management

Attention: Rhonda Crenshaw, MPA, ABD  
Program Manager  
72 Marietta Street, 5<sup>th</sup> Floor, Atlanta, GA 30303

Please submit any questions in writing to Rhonda Crenshaw **on or prior to April 06, 2022.**