

# Madison Metropolitan Sewerage District Mercury Pollutant Minimization Plan/Source Reduction Report 2020

## Section I: General Information

**Name of Permittee:** Madison Metropolitan Sewerage District – Nine Springs Wastewater Treatment Plant

**Permit Number:** WI-0024597-08

**This is:** Not the first permit issuance requiring implementation of a PMP/SRM

Dates of previous PMP/SRM Plans: 12/12/2006

**Permit Effective Date:** 5/1/2020

**Date of First PMP/SRM:** 12/12/2006

**This variance is for:** Mercury

## Section II: Summary of Pollutant Reduction Work Done in 2020

In the district’s pollutant minimization plan (PMP) submitted to WDNR in 2017, mercury identification and reduction tasks were organized by nine broad categories, with specific activities in those categories to be determined each year. Those categories, in the shaded left hand column of the tables below, are taken verbatim from the PMP. The middle column indicates the activities that the district planned for 2020. The Status/Updates column on the right indicates the status of each action as of this report, as well as any observations or planned follow-up actions.

### A. Mercury Source Identification Efforts

PMP Action	2020 Planned Actions	Comments/Status
<b>Mercury Source Identification Efforts</b>		
1. Explore possible operational influences on mercury levels, such as process chemicals.	Assess possible environmental contributions of mercury to the plant, such as effluent returned from storage lagoons, atmospheric deposition, and/or inflow/infiltration.	In late 2020, the District initiated conversations with United States Geological Survey (USGS) researchers in the <a href="#">Mercury Research Laboratory</a> of the Upper Midwest Water Science Center to understand how their research in isotopic fingerprinting of mercury

		species could help distinguish between different sources of mercury to the plant. For example, their research may be able to identify stormwater-associated mercury versus elemental mercury, helping the District better target source reduction efforts. A sampling project is expected to take place in 2021.
2. Conduct additional influent and/or collection system monitoring to identify variation in mercury levels based on time, location in the collection system, or other factors.	<p>The District plans the following sampling activities:</p> <ul style="list-style-type: none"> <li>• Opportunistic collection system sampling of legacy sediment.</li> <li>• Hauled waste sampling.</li> </ul>	Shortly after businesses shut down due to COVID-19, the District initiated special sampling for mercury in the collection system at regular User Charge monitoring sites. The rationale for the sampling was to examine whether the closure of dental clinics and other facilities would impact mercury levels. Overall, the small sample set did not clearly indicate impacts on mercury levels due to covid-19, but did demonstrate longer-term mercury reduction when compared to previous special sampling. A summary of this effort is in <a href="#">Attachment B</a> .
3. Review scientific literature and case studies from other POTWs to draw ideas from successful source identification/reduction activities elsewhere.	District staff plan to attend the 2020 NACWA Pretreatment Workshop, which will include opportunities for discussion of mercury minimization with other pretreatment professionals.	The in-person conference was canceled due to covid-19. District staff viewed the online version of the conference, which included updates on the EPA dental guidelines, but the format did not provide the opportunity for discussion anticipated in the in-person conference. The District remains a member of the National Association of Clean Water Agencies' pretreatment committee, which is a national forum for

		learning about other utilities' source reduction activities.
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**B. Actions Identified to Minimize Mercury Sources**

<b>PMP Action</b>	<b>2019 Planned Actions</b>	<b>Status/Updates</b>
4. Work with partners to extend the reach of mercury disposal messages to specific audiences, such as students.	We will continue to leverage existing networks and connections to share mercury minimization messages as appropriate.	Mercury outreach was not prioritized due to covid-19; however, the District worked in 2020 with partners at Madison Area Municipal Stormwater Partnership (MAMSWaP) and the Dane County Landfill to discuss options for future collaboration on household hazardous waste collection (see item 6 below).
5. Discuss mercury management in direct meetings with users in healthcare, school and industrial sectors to identify any remaining mercury sources and provide information about disposal/alternatives.	<ul style="list-style-type: none"> <li>The District plans to hold general pollution prevention/pre-treatment update meetings with entities in the healthcare and education sectors. Past conversations with these entities have indicated that they are adhering to mercury minimization protocols.</li> </ul>	No sector meetings took place this year due to covid-19.
6. Implement other outreach and/or regulatory approaches as may be informed by research and analysis.	The 2019 community values survey indicated that there are mercury-containing materials remaining in homes in our service area. Building off this data, the District is exploring a potential collaboration with Madison Area Municipal Stormwater Partnership (MAMSWaP) to promote proper disposal of household hazardous waste.	The District participated in several conversations throughout the year with MAMSWaP and the Dane County Landfill focused on potentials for household hazardous waste collection events. Covid-19 affected planning for this event, too, given distancing protocols for collecting waste and uncertainties about future public health policy. Ultimately, the group decided that there would not be much added value in hosting an event this year, but discussions laid groundwork

		for possible events in the future.
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**If any action was not implemented, please explain why.**

See comments in Status/Activities column for specific actions.

**C. Actions Taken to Maintain Source Reduction**

<b>PMP Action</b>	<b>Planned 2019 Action</b>	<b>Status/Updates</b>
7. Continue dental certification program, supplemented with direct site visits to dental clinics, to ensure compliance with amalgam separator and management requirements in the sewer use ordinance.	<ul style="list-style-type: none"> <li>• Hold amalgam education event for area dental clinicians.</li> <li>• Develop educational resources that clinics may use as reference for proper amalgam management.</li> <li>• Continue implementation of annual certification process.</li> </ul>	The District's work in the dental mercury minimization area reflected adaptations to the pandemic as well as the District's ongoing efforts to streamline the program by collecting information remotely. The major activities in the District's dental program this year were a switch to an all-online annual certification and development of recorded online webcasts as educational resources for dental clinics. Read more detail about our dental activities in "Summary of Dental Activities," below.
8. Evaluate need for local limits and/or general permits related to mercury.	Not planned for 2020.	No activity in this area, as planned.
9. Publicize options for residential and commercial disposal of mercury, particularly Dane County Clean Sweep.	The District will continue promoting proper mercury disposal at Dane County Clean Sweep as opportunities arise, such as tours, newsletters and social media posts.	During Pollution Prevention Week in September 2020, a District pollution prevention specialist recorded a <a href="#">video</a> for social media about identifying household hazardous waste and taking it to Clean Sweep. Although the video did not specifically mention mercury, it publicized Clean Sweep as a resource for disposing household hazardous waste.

**If any action is not ongoing, please explain why.**

See comments in Status/Activities column for specific actions.

## Summary of Dental Activities

Reducing dental mercury contributions to the sewer continues to be the top focus area of the District's mercury minimization program. In recent years, the District has been working on tools for its dental program designed to minimize the use of paper and the need for onsite inspections of dental clinics. These tools were developed as enhancements to the program to increase efficiency, but they became necessities due to covid-19. The tools developed in past years to streamline the program gave the District a mechanism to quickly adapt to the constraints of the pandemic and still carry out its annual dental certification to verify continued compliance with amalgam management requirements.

One of the core adjustments to the program was moving to an all-online certification. The District had piloted virtual clinic inspections with a subgroup of clinics in 2018 using the Survey123 application within the District's ESRI ArcGIS suite. Clinics had been generally able to use this tool, so the District then created an optional online version of the annual certification form in 2019 that clinics could choose to complete instead of the paper form. Several clinics chose to use the online form, but most still used the paper version. In 2020, due to the relative ease of sending a certification via email instead of paper and the inability to conduct in-person visits during the pandemic, the District offered only the online version of the certification. A demonstration version of the online form is found at this link:

<https://arcg.is/OTinPy>.

The revised form for 2020 collected more comprehensive information than the simple paper form. In addition to questions to confirm compliance with required BMPs tied to the District's Sewer Use Ordinance, the form also collected information about the clinics' uses of amalgam and disposal of other pollutants of concern like pharmaceuticals. The 2020 online form included a required step to upload photos of clinics' amalgam separators, fulfilling the same purpose as the virtual inspection form piloted earlier. Inspecting the fullness and maintenance of the amalgam separator had been the main purpose of in-person clinic inspections, so the ability to collect photos of separators uploaded into the form met the same need for the District without the need for clinic visits.

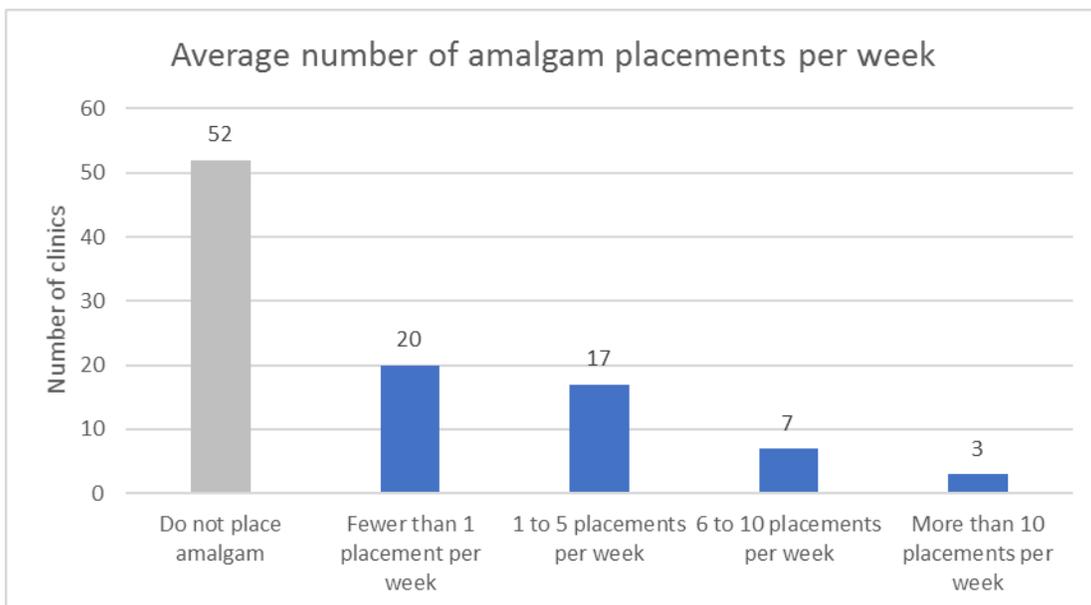
The online certification also has the advantage over paper forms in that it provides real-time feedback to the person completing the form based on their responses. For instance, if a clinic employee indicated that the clinic is not following one of the required BMPs, they received a message in the form that the practice needs correction. The District also developed report templates that allowed for PDF reports to be generated based on clinics' responses to the form, which the District has been emailing to clinics as a compliance summary and a record for their files of the annual certification. An example copy of this report is in [Attachment C](#).

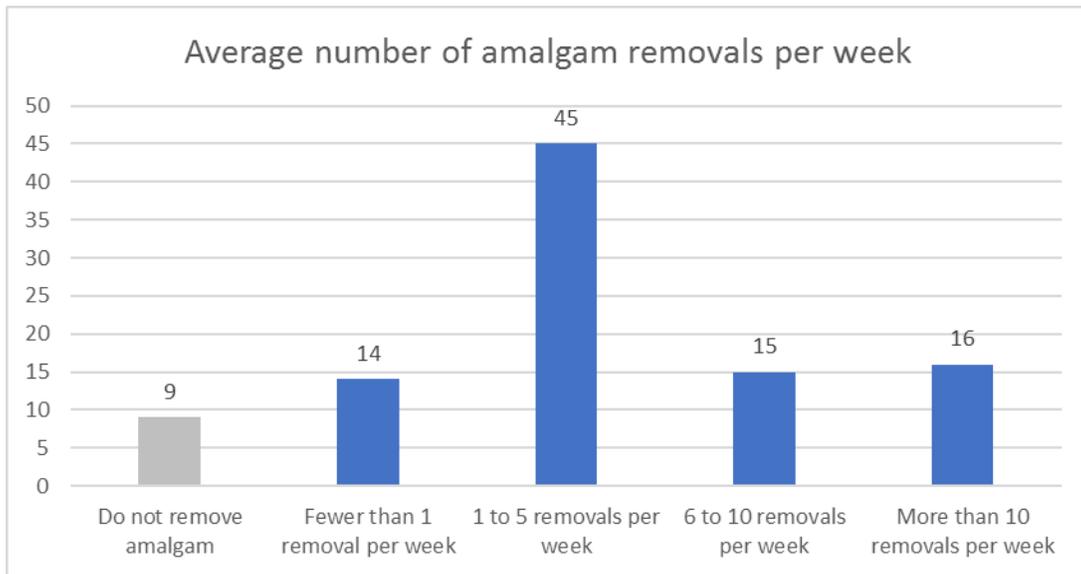
In addition to using the online certification form and the generated report to remind or educate clinics about mercury minimization practices, the District also developed online educational materials for dental clinics in 2020. The District had originally planned to host an in-person educational event for clinics, but the pandemic necessitated a different approach. In fall 2020, the District invited all known dental clinics in its service area to two online webinars covering the dental requirements of the District's mercury minimization program and instructions for completing the online form. There were not many

signups, so the District held the first webinar for a small group of dental clinic staff and canceled the second. To make the material accessible for all clinics on their own time, the District recorded the webinar and an instructional video for completing the online form and posted them to YouTube. These videos are available through links on the District's [dental pollution prevention](#) page.

**Summary of annual dental certification:**

- 101 out of 116 known active clinics in the service area completed certification reports (a few returned EPA one-time compliance forms instead of the online form, which the District counted as their annual certification). The 87% certification completion rate is a bit lower than the return rate in previous years, but the District was pleased that many clinics completed the online certification for the first time, with few issues reported.
- Using an ArcGIS-based tool allowed the District to easily analyze the data submitted by clinics within the ArcGIS database. With this capability, the District was able to take a more comprehensive look at the rate of amalgam use in our service area, which may help estimate the proportionate contribution of dental amalgam to total mercury in the sewer system compared to historical levels. Reported average rates of new amalgam placements and removal of existing amalgam fillings are in the charts below. Of the 99 clinics that returned online certifications,
  - 52 reported not placing new amalgam fillings, while 47 clinics still place new amalgam fillings.
  - 90 clinics reported removing existing fillings, compared to just 9 clinics that do not remove amalgam. While the frequency of procedures that generate amalgam waste varies by clinic, this data indicates that most clinics are still generating amalgam waste in some form and are subject to local and federal requirements for amalgam management.





- The returned certifications also provided insights into the rates of compliance with the amalgam best management practices required by the District’s Sewer Use Ordinance. Identifying the practices with a lower reported rate of compliance can help the District focus on those practices in clinic education in the future to improve rates of compliance and help ensure that mercury is being kept out of the sewer to the highest possible degree. For example, a sampling of reported rates of compliance with various amalgam BMPs is below:
  - 100% of clinics that place amalgam properly dispose of amalgam capsules as amalgam waste;
  - 97% of clinics that handle amalgam waste reported having an amalgam waste collection container in the clinic; and
  - 76% of clinics that handle amalgam waste reported using a neutral line cleaner, as opposed to a corrosive cleaner that could release mercury from amalgam to the sewer.

This information shows that while compliance is high for some practices, there is still room for improvement in implementation of certain amalgam management practices, so the District plans to continue to engage and educate dental clinics through the annual certification program.

Implementing the dental certification with the District’s GIS program is also a step toward enhanced data storage, collection and analysis in the future. The GIS database was a significant organizational improvement over the Excel spreadsheets that the District had used in the past, reducing the chance of transcription error or out-of-date records. Additionally, the spatial nature of the GIS program allows the District to map dental clinics in the service area and visualize potential “hotspots” of mercury discharges to the sewer system, potentially helping target future source reduction. Finally, storing data in the GIS program will allow the District to more easily compare data from year to year, potentially uncovering

trends in dental practice compliance that could be correlated to mercury levels in the sewer system or the effect of dental clinic education.

### **Section III: Summary of Progress and Barriers to PMP Effectiveness**

**Average Effluent Mercury Concentration in Previous Year (2019):** 1.2 ng/L

**Average Effluent Mercury Concentration This Year (2020):** 0.96 ng/L

These values are the averages of 12 effluent grab samples, one per month.

**Please attach a graph of variance pollutant concentration data over the last five years.**

See [Attachment B](#).

**Have you encountered any barriers that have limited pollutant minimization program/source reduction measure effectiveness? If so, what adjustments will you make to the program during the next year to help address these barriers?**

As it disrupted everything else, the COVID-19 pandemic disrupted the District's plans for mercury minimization activities in 2020. In-person meetings and engagement opportunities were avoided for safety reasons, and so the District took the opportunity to gather data and improve tools for the remote collection of information in the dental program.

Despite the limitations that the pandemic placed on activities, mercury levels at the plant remained consistent with previous years. In fact; it was a relatively low year overall for effluent mercury concentrations, with all 12 effluent samples coming in under the District's variance permit limit for mercury and only one of those samples exceeding the Great Lakes target of 1.3 ng/L. On the influent side, the District saw mean and median values consistent with the generally low values of recent years. There was a decent bit of variability to influent concentrations, consistent with previous years' data. We observed relatively low influent concentrations in the spring, which may or may not have been due to business closures in the early days of the pandemic. However, this observation aligns with a previous challenge in our mercury reduction program: determining whether mercury levels are due to specific conditions upstream, or merely random chance in the sample.

The pollution prevention team made a key connection in 2020 that may be able to enhance specific mercury source identification in the future. Having seen an intriguing poster presentation at a conference, a District pollution prevention specialist reached out to researchers at the [Mercury Research Laboratory](#) of the Upper Midwest Water Science Center to explore the potential connection between their research and the District's mercury source identification projects. The research team uses an innovative process to determine sources of mercury in a water sample based on mercury isotopes present. For example, this process allows them to distinguish between mercury from watershed sources (stormwater) and mercury from industrial sources. The team has not applied this process to wastewater

before, but believes that this process will be able to identify the ratios of mercury isotopes in District influent. This information may help the District identify specific sources of mercury to the plant and adjust source reduction efforts accordingly.

#### **Section IV: Planned Actions**

The District included nine general actions in its application for a mercury variance in its upcoming permit. These actions, listed on the left in the table below, are the core planned activities for the District’s next permit term, and future annual reports will summarize specific steps taken in each of these efforts.

In 2021, rather than indicate specific actions in each area, the District plans to take specific actions in a few areas early in the year, and base future activities on the results of those initial actions. Particularly, the District anticipates using the data from the special isotope sampling described below to inform future potential sampling and any specific source reduction activities informed by the sampling.

<b>PMP Action</b>	<b>2021 Planned Actions</b>
<b>Mercury Source Identification Efforts</b>	
1. Explore possible operational influences on mercury levels, such as process chemicals.	Depending on the outcome of the initial round of mercury fingerprinting discussed below, the District may apply this method to samples from other locations in the collection system or throughout the treatment plant to further understand the different types of mercury in wastewater and where they are removed in the treatment process.
2. Conduct additional influent and/or collection system monitoring to identify variation in mercury levels based on time, location in the collection system, or other factors.	The District has initiated work with USGS scientists in the Mercury Research Laboratory to explore the types of mercury coming to the plant, which the District hopes will help identify specific sources and more efficiently target source reduction efforts. The lab uses an innovative process that identifies the source of mercury through isotopic fingerprinting. Based on the results of the initial round of sampling, the District may pursue additional sampling to further pinpoint mercury sources based on their isotopic character.
3. Review scientific literature and case studies from other POTWs to draw ideas from successful source identification/reduction activities elsewhere.	To conduct as needed. A District pollution prevention specialist is scheduled to present at the Wisconsin Wastewater Operators’ Association’s Government Affairs virtual seminar in February 2021 to share our experience adapting our dental certification program for efficiency and to operate safely within covid-19.
<b>Actions to Minimize Mercury Sources</b>	

4. Work with partners to extend the reach of mercury disposal messages to specific audiences, such as students.	We will continue to leverage existing networks and connections to share mercury minimization messages as appropriate and as opportunities arise.
5. Discuss mercury management in direct meetings with users in healthcare, school and industrial sectors to identify any remaining mercury sources and provide information about disposal/alternatives.	The source identification project may determine which sector stakeholders we may want to approach for mercury reduction discussions this year. More generally, the District has a newly hired pretreatment coordinator who may want to hold introductory meetings with commercial and industrial entities, and the District pollution prevention team will work with the pretreatment coordinator to incorporate any relevant mercury reduction updates into these introductions.
6. Implement other outreach and/or regulatory approaches as may be informed by research and analysis.	To conduct as needed.
<b>Maintenance of Source Reduction</b>	
7. Continue dental certification program, supplemented with direct site visits to dental clinics, to ensure compliance with amalgam separator and management requirements in the sewer use ordinance.	The District plans to conduct the annual dental certification this year, using online data collection tools and automation when possible to streamline the process. The incorporation of dental data into the District's GIS database may provide new opportunities for analysis of dental data against mercury data, including geographic and temporal comparisons of data. The District will also continue to promote educational resources to dental clinics to help them maintain amalgam minimization measures.
8. Evaluate need for local limits and/or general permits related to mercury.	Not planned for 2021.
9. Publicize options for residential and commercial disposal of mercury, particularly Dane County Clean Sweep.	As an adaptation to the continuing covid-19 pandemic, the District plans to develop additional online outreach materials that can reach community members through our website and social media while in-person education is not advisable. We anticipate creating media related to various pollution prevention actions.

**Section V: Notes**

No additional notes.

**Section VI: Certification**

I certify that the information contained in this document and all attachments were gathered and prepared under my supervision and based on inquiry of people directly under my supervision and that, to the best of my knowledge, the information is true, accurate, and complete.

Authorized Representative Signature: 

Date of PMP Annual Report Submittal to WDNR: 1/20/2021

## Attachment A – Mercury Data and Graphs

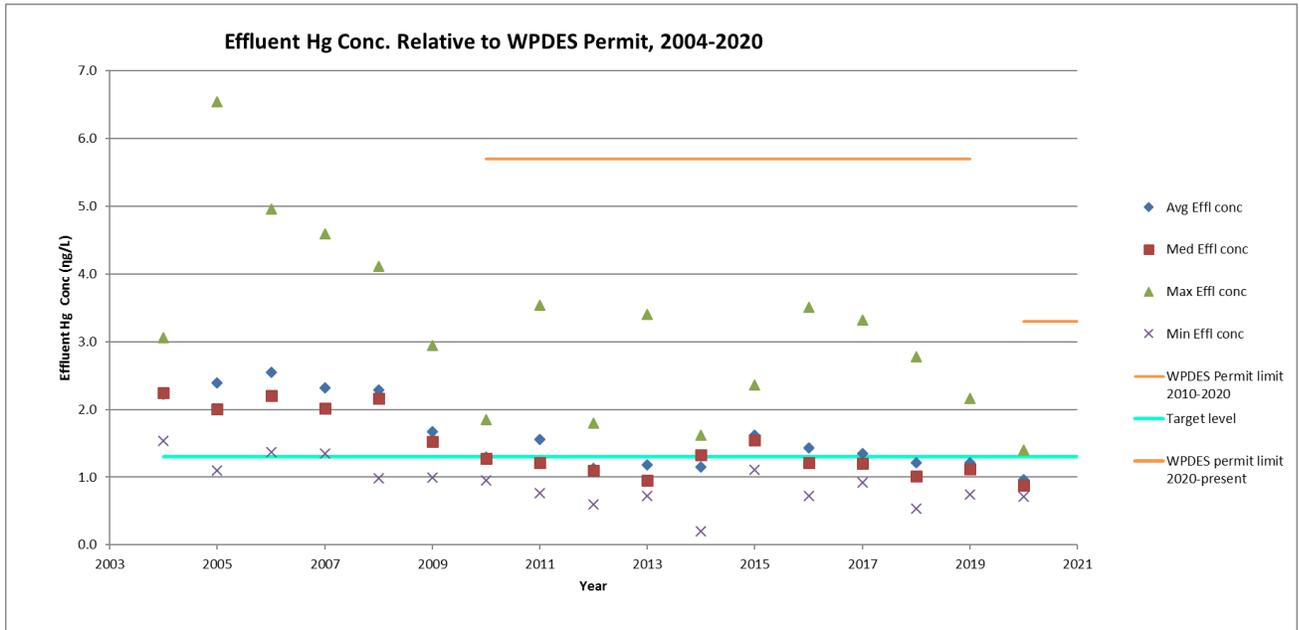
Sampled date	Influent Hg concentration (ppt)	Effluent Hg concentration (ppt)
1/7/2020	52	0.83
2/4/2020	31	0.75
3/10/2020	108	0.71
4/1/2020	26	0.93
5/5/2020	33	1.07
6/3/2020	49	1.40
7/7/2020	52	1.30
8/4/2020	36	0.85
9/1/2020	90	1.22
10/6/2020	238	0.91
11/3/2020	72	0.83
12/1/2020	48	0.75
Average	<b>70</b>	<b>0.96</b>

Month (monthly composite)	GBT biosolids Hg concentration (mg/kg, dry weight)
1/2020	0.4
2/2020	0.4
4/2020	0.3
4/2020	0.5
5/2020	0.3
6/2020	0.5
7/2020	0.5
8/2020	0.6
9/2020	0.5
10/2020	0.4
11/2020	0.5
12/2020	0.4
Average	<b>0.4</b>

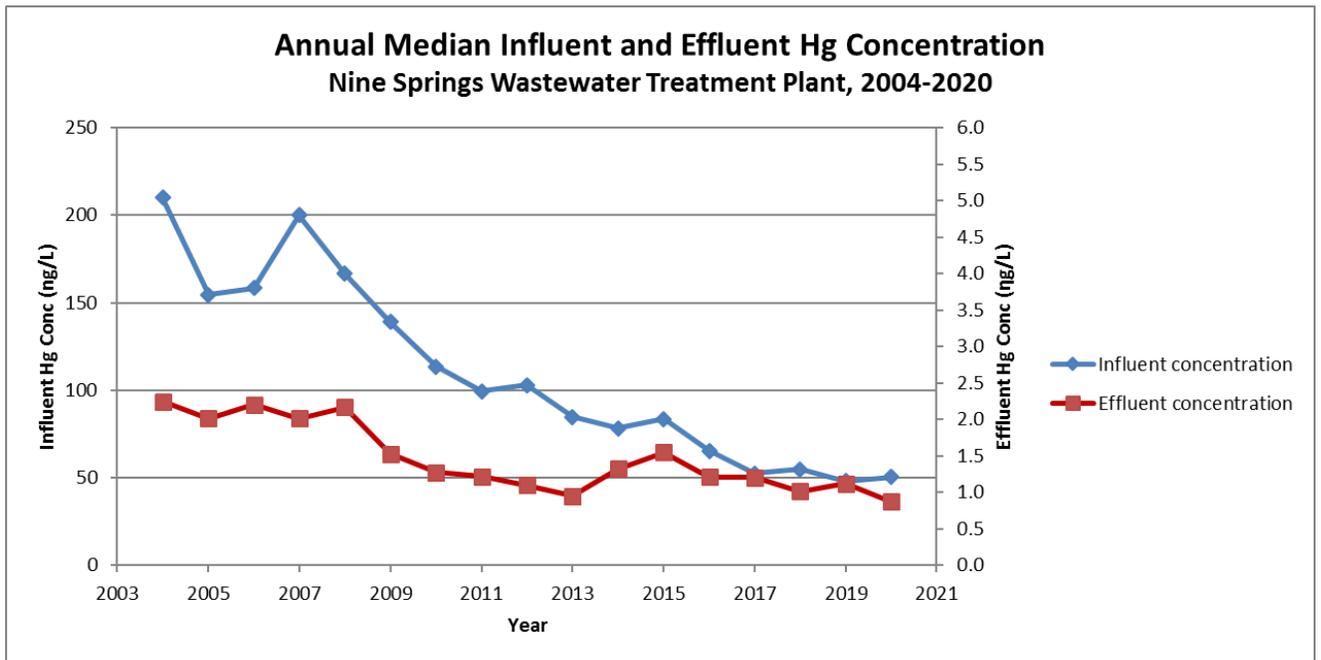
**Summary of year:** Mercury levels tracked consistently with the overall low values observed in recent years. Effluent values particularly were relatively low this year, as the District recorded the lowest annual average and median effluent mercury concentrations in the history of its PMP. While influent values were also low overall, there was variability in monthly concentrations, from a very low 26 ng/L to a relatively high 238 ng/L. This variation is consistent with previous years and is part of the basis for the District’s motivation to work with the USGS to enhance its mercury source identification activities, in the hopes of having a better idea of specific sources of mercury to the sewer and whether those sources are related to occasional spikes. Finally, mercury concentrations in the District’s biosolids were also low overall, indicating that despite occasional high influent values and a limited number of wastewater samples, mercury to the plant is being kept at low levels.

The District conducts influent mercury analysis in-house, using EPA method 254.7. The influent sample is a 24-hour composite. The effluent sample is a grab sample collected according to the “clean hands-dirty hands” protocol. This sample is sent out for low-level mercury analysis via EPA method 1631E at Pace Labs.

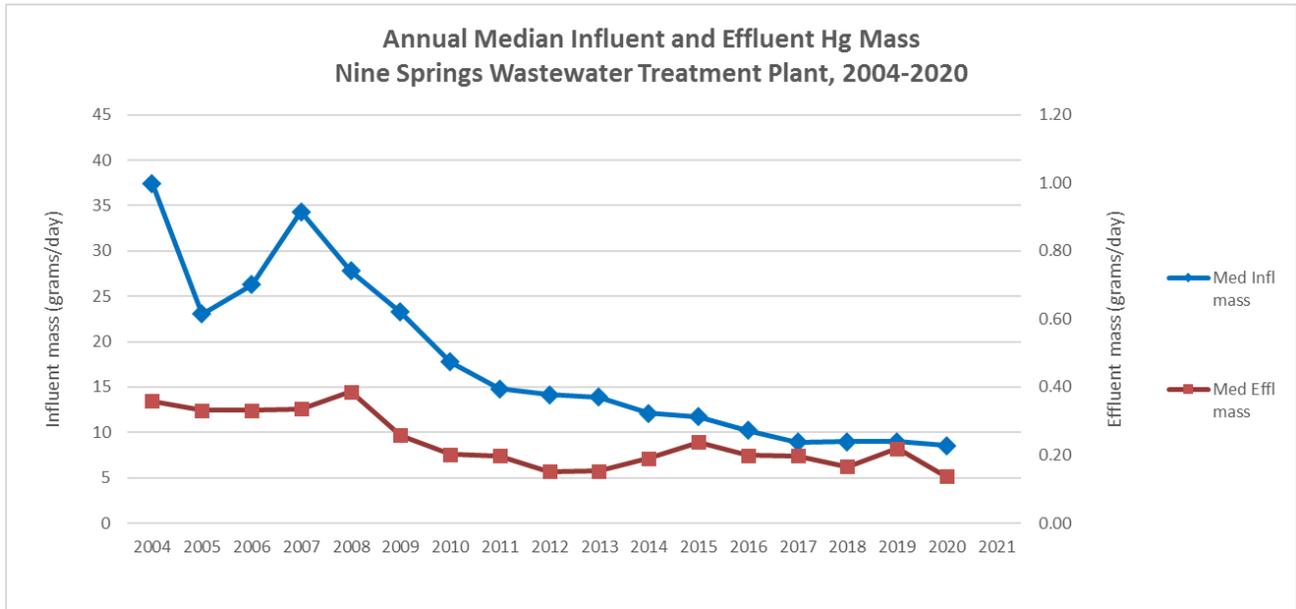
**Graph 1 – Annual Effluent Mercury Concentration, 2004-2020**



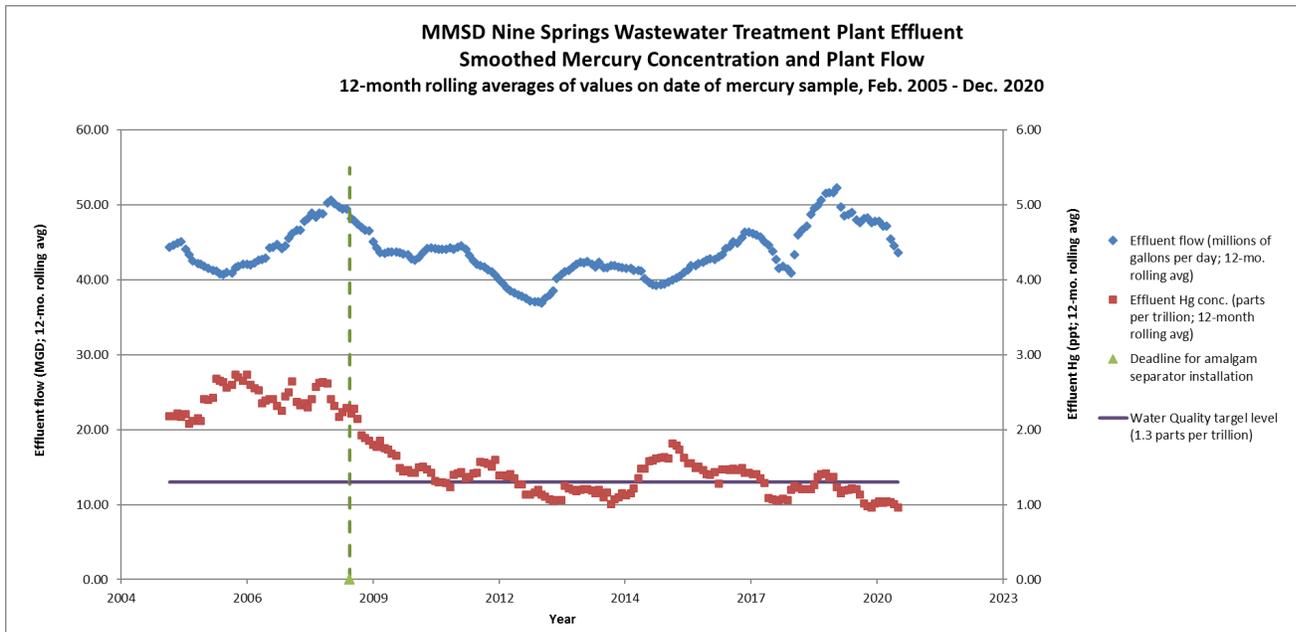
**Graph 2 – Annual Median Influent and Effluent Mercury Concentration**



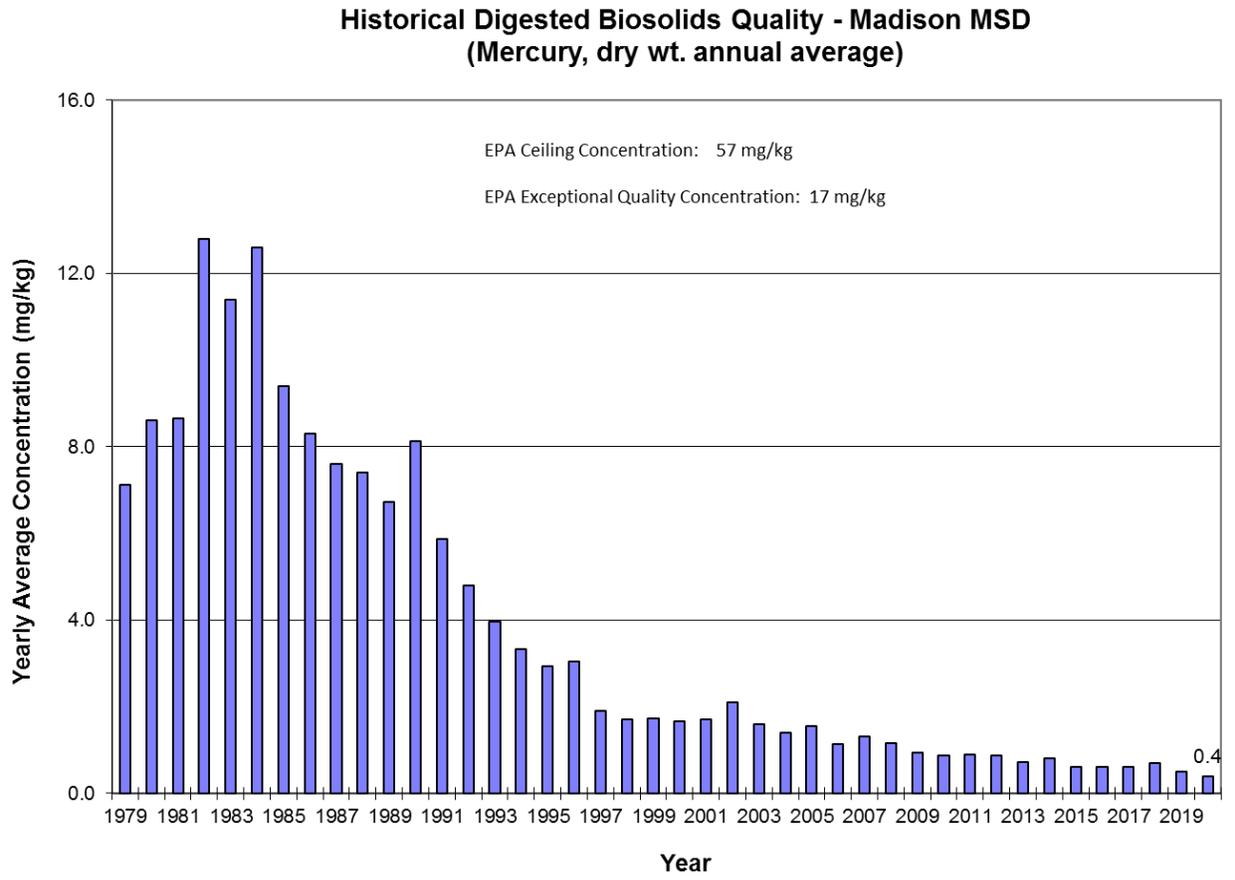
**Graph 3- Annual Median Influent and Effluent Mercury Mass**



**Graph 4 – Rolling Average Flow and Effluent Mercury Concentration**



Graph 5 – Gravity Belt Thickened Biosolids Mercury Levels



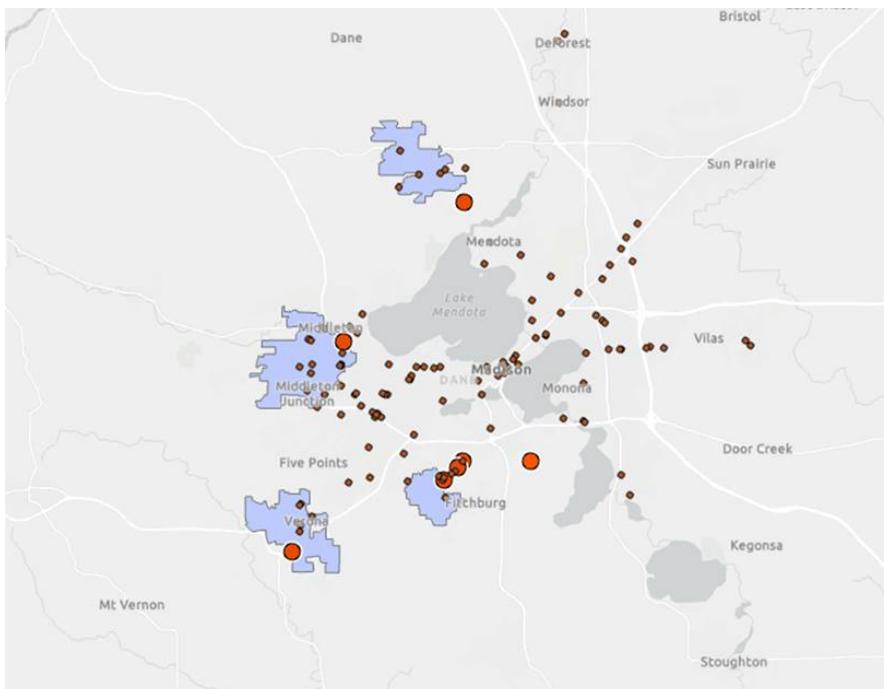
## Attachment B – Summary of Special Collection System Sampling for Mercury

Shortly after business shutdowns due to covid-19, the District determined that it could be an informative time to conduct special sampling for mercury in the collection system due to the unique conditions. In wake of reports that dental clinics were temporarily suspending operations or operating at diminished capacity, the District was interested in seeing whether there was a pronounced difference in mercury entering the sewer system due to covid-19.

For relative ease of obtaining samples, the District decided to run analyses for mercury concentration in samples that are routinely collected for the District's User Charge billing system. The sampling sites, as well as a brief description of why they were selected for mercury analysis, are listed below.

- PS-11: One of the five incoming lift stations to the treatment plant. Largest number of dental clinics in this area compared to the other four incoming lift station sewersheds.
- Q-096: Located in Waunakee. Has several upstream dental clinics that have been operating for several years.
- P-17: Lift station that is tributary to PS-11 in Verona. Has several upstream dental clinics.
- Q-112: Tributary to PS-11; small basin with just one dental clinic and a shopping center. We also had existing data for this User Charge location from a previous in-house sampling project several years ago.
- P-16: Tributary to PS-11; several upstream dental clinics
- Q-108: Tributary to PS-11; several upstream dental clinics
- Q-126: Tributary to PS-11; two upstream dental clinics
- Q-123: Tributary to PS-11; several upstream dental clinics

### Map of sampling points:



*Large circles = sampling points*

*Blue shaded areas = tributary sub-basins to sampling points*

*Small circles = dental clinic locations*

**Mercury analysis results:**

**MERCURY IN PPT**

REFERENCE DATE	DAY OF THE WEEK	PS-11	Q096	P17	Q112	P16	Q108	Q126	Q123
4/21/2020	T	64.6	47.3						
4/22/2020	W	46.3	20.0						
4/23/2020	TH	42.0	14.9						
4/24/2020	F	30.5	12.8						
4/25/2020	S	80.0	22.2						
4/26/2020	SUN	387							
4/27/2020	M	82.9	16.2						
5/26/2020	T			23.6	97.5				
5/27/2020	W			33.9					
7/14/2020	T		26.9						
7/15/2020	W		32.6			183			
7/16/2020	TH		22.5						
7/17/2020	F		23.3						
7/18/2020	S		85.1						
7/19/2020	SUN								
7/20/2020	M	75.2	82.6	44.4		91.4			
7/21/2020	T	71.1		186	52.6	106			
7/22/2020	W	64.4		29.7	53.7				
7/23/2020	TH	53.2		29.9	172				
7/24/2020	F	62.0			13.2				
7/25/2020	S	49.2			35.6				
7/26/2020	SUN	25.5							
7/27/2020	M	58.8			31.6				
8/25/2020	T	105					49.9	59.6	
8/26/2020	W	60.7					60.4	60.7	90.7
8/27/2020	TH	78.0					88.8	38.2	44.4
8/28/2020	F	56.6					45.6		63.4
8/29/2020	S	103					107	42.4	280
8/30/2020	SUN	151							
8/31/2020	M	65.1					60.9	69.5	64.0
9/1/2020	T	217		43.1		165			26.6
9/2/2020	W	96.0							
9/3/2020	TH	58.0		15.3		82.1			

9/4/2020	F	34.7		59.2		93.6			
9/8/2020	TH	26.6		131		52.2			
<b>AVE:</b>		83.1	33.9	59.6	65.2	110	68.8	54.1	94.9
<b>MIN:</b>		25.5	12.8	15.3	13.2	52.2	45.6	38.2	26.6
<b>MAX:</b>		387	85.1	186	172	183	107	69.5	280
<b># DATA PTS:</b>		27	12	10	7	7	6	5	6

**Observations:**

- Although this limited, opportunistic sampling did not demonstrate a clear difference in mercury concentrations during the period of covid-19, the new values for a User Charge location that had existing mercury data from a previous sampling effort indicated a dramatic drop in mercury concentration. The District had collected mercury samples from the User Charge site Q-112 in 2004 as preliminary source identification for the mercury PMP. The following table includes the mercury values from Q-112, a small sewer subbasin that contains a shopping center and one dental clinic, from special sampling conducted before and after the dental clinic installed an amalgam separator:

Refr Name	Refr Date	Parameter ID	Value	Units	Average concentration
<b>Before Separator Installation</b>					
UC Q112	25-Aug-04	Hg	21400	PPT	<b>34550</b>
UC Q112	26-Aug-04	Hg	12200	PPT	
UC Q112	27-Aug-04	Hg	22400	PPT	
UC Q112	28-Aug-04	Hg	82200	PPT	
<b>After Separator Installation</b>					
UC Q112	02-Dec-04	Hg	3940	PPT	<b>5727</b>
UC Q112	03-Dec-04	Hg	413	PPT	
UC Q112	04-Dec-04	Hg	17800	PPT	
UC Q112	06-Dec-04	Hg	8250	PPT	
UC Q112	07-Dec-04	Hg	2170	PPT	
UC Q112	08-Dec-04	Hg	1790	PPT	

Sixteen years later, the special analysis performed on the User Charge samples from the same site yielded an average concentration of **65.2 ppt**, orders of magnitude lower than the values recorded in 2004. This dramatic drop in mercury concentrations at this site reinforces the conclusion that dental amalgam source reduction measures have been an effective and integral part of the District's mercury minimization efforts.

- Overall, similar to the District's normal influent sampling, there was variability in mercury concentrations in the collection system influent samples from day to day. The average

mercury concentrations across the board were in the same general range as the District's typical total influent mercury concentrations.

- Interestingly, some of the highest values recorded were in samples taken during the weekend. This is notable because it is contrary to the expected mercury concentrations based on prior District special sampling and hypothesis about sources, which indicate that higher mercury values would be seen during the work week when dental clinics and commercial facilities are operating. There are several possible reasons for this observation:
  - Random variation in the mercury sample;
  - Lag time in mercury discharge from individual sources reaching the sampling points;  
or
  - Sources of mercury to those areas of the collection system from sources other than commercial entities, such as inflow/infiltration or residential sources.

This observation illustrates the ongoing challenge of pinpointing specific sources of mercury to the sewer system and reasons for spikes in concentration. This District hopes that its work with the USGS Mercury Research Lab can help take the guesswork out of mercury source identification and help target minimization efforts for remaining sources more effectively.

## [Attachment C – New Dental Report](#)

One of the advantages of building the online dental certification using an ArcGIS survey tool is the ability to work with submitted data in other ArcGIS features. Particularly, the District was able to develop a report template that served an administrative and educational function for the dental program. Once clinics had submitted their reports in Survey123, the District was able to generate reports using the template that included the information submitted by the clinics. These reports served the administrative function of generating a document of responses for the clinics' records, and the educational function of summarizing pollutant management practices that needed correction to bring them to clinics' attention. These practices are required, so the practice summaries were not solely informational, but also included information about why some practices are required so clinics have more context for their actions.

The District has been emailing these reports to clinics as a PDF attachment. In the future, the District plans to automate the sending of these summary reports as soon as the reports are submitted, both to streamline the program and to provide immediate documentation for clinics.

An example report generated from this template, using the [demo version of the certification form](#), follows on the next page.

## 2020 Amalgam Certification Report Summary for MMSD Test

This report was generated based on the answers you entered in the MMSD amalgam certification online form. Please review and take any actions identified in the Compliance Action Summary section. The remainder of the report contains your report responses for your records.

### Compliance Action Summary

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Please take the following actions promptly to be in full compliance with amalgam management requirements. When you have done so, contact Emily Jones at MMSD to verify they have been addressed by emailing [emilyj@madsewer.org](mailto:emilyj@madsewer.org).

#### Amalgam management action items:

- Chairside traps used in chairs where amalgam is placed or removed should be disposed of as amalgam waste. If you use reusable chairside traps, their contents should be placed in the amalgam waste container, not down the drain or in the trash.
- Change the line cleaner used in vacuum lines to a type with a pH between 6 and 8. Line cleaners with a pH out of this range can make your separator less effective at capturing mercury.
- Separators should be inspected at least once a week to make sure they are functioning properly and that their contents are below the fill line.

**Other actions:** If any recommendations appear below, these actions are not related to amalgam management requirements, but are still recommended to keep pollutants out of water:

- Medications should not be disposed of in the trash or down the drain. Dane County Clean Sweep can accept non-controlled medications from businesses.

Find resources and more information related to management of amalgam waste and other pollutants at [www.madsewer.org/Programs-Initiatives/Mercury/DentalPollutionPrevention](http://www.madsewer.org/Programs-Initiatives/Mercury/DentalPollutionPrevention)

## Responses to Online 2020 Amalgam Certification Form

### Clinic information:

Clinic name	MMSD Test
Clinic type	Dental
Address	1610 Moorland Road, Madison, WI 53713
Person completing form:	Jan Tompkins
Title:	Practice administrator
Email address for clinic:	jan@mmsdtestclinic.com
Phone number for clinic:	6082221201

### Amalgam best management practices

If “N/A” appears in the Compliance Status column, it means that the answer is not tied to any compliance requirements.

Practice	Response	Compliance Status
Use of amalgam in clinic	This clinic places new amalgam fillings, This clinic removes amalgam fillings, This clinic extracts teeth that contain amalgam fillings	N/A
Average number of amalgam fillings placed per week:	1 to 5 placements per week	N/A
Average number of amalgam fillings removed per week:	6 to 10 removals per week	N/A
Does this clinic have an amalgam collection container to store amalgam waste that does not go down the drain?	Yes	Compliant
Does this clinic use capsules to prepare new amalgam fillings?	Yes	Compliant
Are a variety of capsule sizes stocked at your clinic?	Yes	Compliant
Are used amalgam capsules disposed of in an amalgam waste collection container?	Yes	Compliant
Name of vacuum line cleaner used:	CitraBlast	N/A
pH of vacuum line cleaner:	Below 6 or above 8	Not compliant
Does this clinic use bleach or other cleaners that contain iodine, chlorine or peroxide in vacuum lines?	No	Compliant
Is scrap amalgam (amalgam pieces that have not come in contact with	Yes	Compliant

the patient) disposed of in an amalgam collection container?		
Is contact amalgam (amalgam pieces that have come into contact with the patient, like removed fillings) disposed of in an amalgam collection container?	Yes	Compliant
Does this clinic use chairside traps in chairs where amalgam is placed or removed?	Yes	Compliant
Are chairside traps that contain amalgam waste disposed of in the amalgam collection container?	No	Not compliant
Are extracted teeth that contain amalgam disposed of in the amalgam collection container?	Yes	Compliant
Optional comments to clarify answers:		

### Amalgam separator or other device information

Device information	Response	Compliance Status
Type of device	Amalgam separator	Compliant
Brand	Solmetex	N/A
Model	Hg5 NXT	N/A

### Separator information

Separator maintenance	Response	Compliance Status
How often is the separator checked for fullness and proper function?	At least once a month	Not compliant
Enter the approximate date that the collection canister was last replaced.	September 7, 2020	

Separator picture:



### Documentation of amalgam management

Documentation action	Response	Compliance Status
Records of amalgam separator inspection, repair, replacement, waste manifest, and amalgam separator's manufacturer operating manual are retained in either physical or electronic copy at this facility for a minimum of three years.	Yes	Compliant

### Other pollutants

Note that the following section is informational only, and your responses to these questions are not part of determining your clinic's compliance with local amalgam management requirements. However, the District is also working to keep additional pollutants beyond mercury out of the sewer system, including pharmaceuticals and silver compounds. If you indicated that any of these substances are disposed of down the drain, a recommendation for alternate disposal will appear below.

Pollutant Disposal	Response	Disposal recommendation
If silver fixer is used for X-rays, is any fixer disposed of down the drain?		No recommended change in disposal.

If medications are kept onsite, how are unused or expired medications disposed of?	Down the drain	Medications should not be disposed of in the trash or down the drain. Dane County Clean Sweep can accept non-controlled medications from businesses.
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