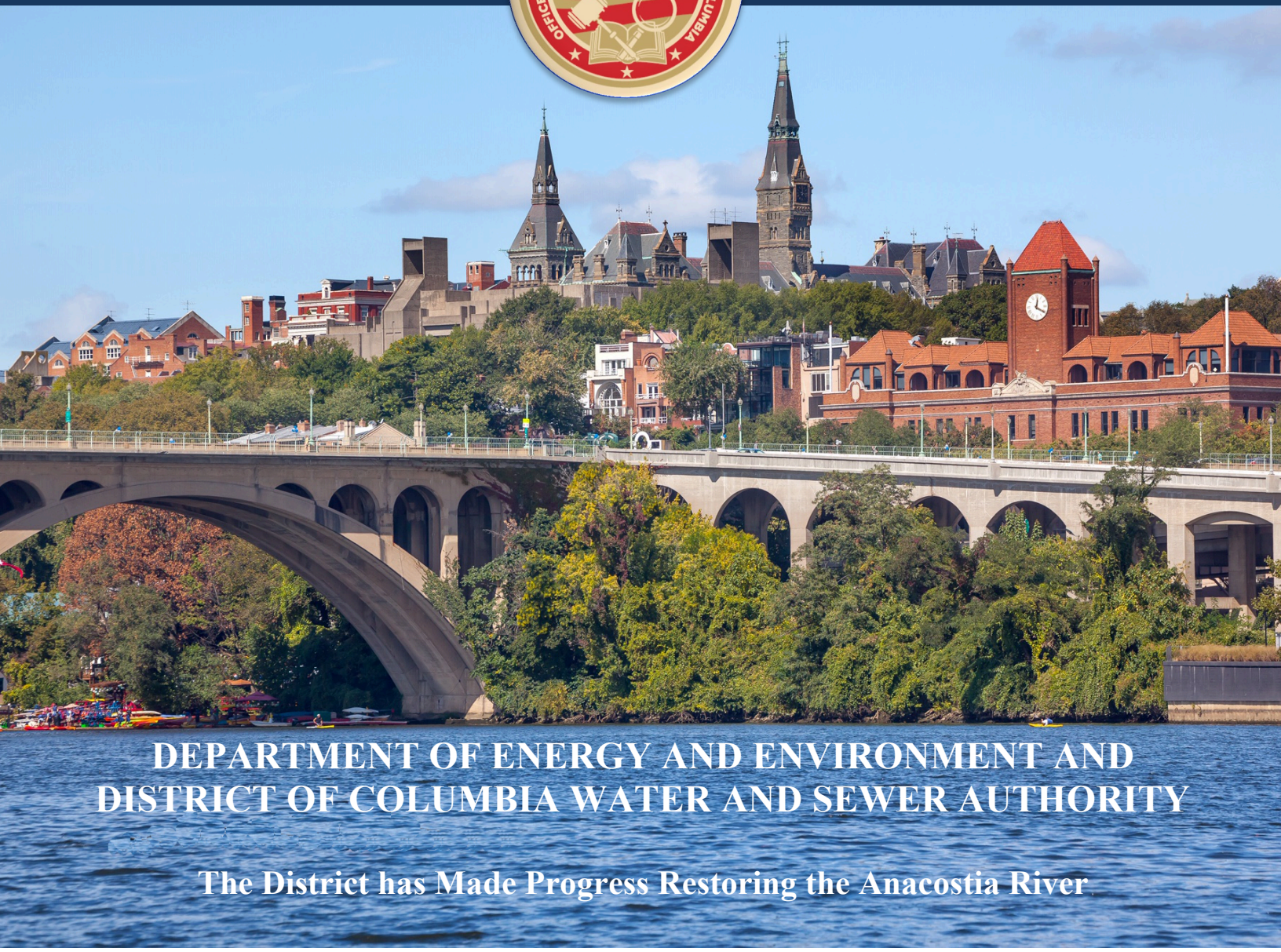
District of Columbia
Office of the Inspector General

OIG Project No. 19-1-24MA

September 2020



DEPARTMENT OF ENERGY AND ENVIRONMENT AND DISTRICT OF COLUMBIA WATER AND SEWER AUTHORITY

The District has Made Progress Restoring the Anacostia River

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Our mission is to independently audit, inspect, and investigate matters pertaining to the District of Columbia government in order to:

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- promote economy, efficiency, effectiveness, and accountability;
- inform stakeholders about issues relating to District programs and operations; and
- recommend and track the implementation of corrective actions.

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The District has Made Progress Restoring the Anacostia River

EXECUTIVE SUMMARY

WHY WE DID THIS AUDIT

The Office of the Inspector General (OIG) performed this audit because pollution in the Anacostia River puts public health at risk and degrades a valuable District resource. The District established a goal to restore the Anacostia River to a fishable and swimmable state through a series of activities, as described in the *Anacostia 2032: Plan for a Fishable and Swimmable Anacostia River* (2008 Plan).[1] According to the 2008 Plan, the Anacostia River is one of the District's most valuable resources and challenging projects. The Anacostia's riverbanks include large parcels slated for economic development and some of the largest urban green spaces in the nation.

OBJECTIVE

Our audit objective was to assess the District's progress toward achieving the established goal to make the Anacostia River fishable and swimmable by 2032.

WHAT WE FOUND

The District is making progress with its goal to restore the Anacostia River to a fishable and swimmable state by preventing, reducing, and remediating pollution. For example, the District constructed Anacostia River tunnels to capture sewage overflow that occurs during substantial rain, and is developing a remediation plan to reduce toxins in the river sediment. Moreover, the District has been planting trees, removing trash, installing green roofs, and retrofitting impervious surfaces to reduce other stormwater pollution. These steps represent progress in improving the overall health of the Anacostia River. However, it is unlikely the District will -achieve the goal of a fully-fishable and swimmable Anacostia River by 2032, as outlined in the 2008 Plan.

To achieve its goal of making the Anacostia River fishable, the District must develop a plan to remove or mitigate legacy toxins[2] in the river sediment, implement this plan, and track progress over an estimated 20-year period.[3] The Department of Energy and Environment (DOEE) expects to have this plan completed by

[1] DISTRICT DEP'T OF THE ENVIRONMENT [currently known as the Department of Energy and Environment], *Anacostia 2032: Plan for a Fishable and Swimmable Anacostia River* (May 2008), available at https://doee.dc.gov/sites/default/files/dc/sites/ddoe/publication /attachments/Anacostia2032.pdf (last visited Apr. 1, 2019).

[2] According to the 2008 Plan, legacy toxins are "toxic substances that accumulated in the environment over time and continue to be present in high quantities, despite their current disuse."

[3] DISTRICT DEP'T OF ENERGY AND THE ENVIRONMENT, FEASIBILITY STUDY REPORT ANACOSTIA RIVER SEDIMENT PROJECT WASHINGTON, DC 85 (Revised Draft report prepared by Tetra Tech Mar. 15, 2019).

September 2020, which may push the goal of a fishable Anacostia River out to 2040.

Furthermore, District regulations[4] require water bodies to be free of discharges of untreated sewage to support primary contact recreation, including swimming. The District designed the Anacostia River tunnels to capture 98 percent of sewage overflow, which will improve overall water quality and reduce sewage in the Anacostia River. However, there will likely be periods, after storms, when the Anacostia River will not be safe to swim.

Finally, DOEE did not centrally track and manage the implementation of the 2008 Plan. In the 2008 Plan, DOEE committed to implementing an environmental management system, which will allow management to assess changes in the schedules, budget, and requirements to maintain control over restoration of the Anacostia River. An environmental management system is essential to managing complex projects, efficiently using resources, and adjusting the plan when needed. An environmental management system may also allow DOEE to produce an annual report on the progress of the implementation of the 2008 Plan's activities, budget, and timetable towards achieving the goal of a fully fishable and swimmable Anacostia River.

EXECUTIVE SUMMARY

WHAT WE RECOMMEND

The OIG commends the District's coordinated efforts to restore the Anacostia River to a fishable and swimmable state. The OIG makes eight recommendations to DOEE to help improve its project management practices as the District strives to meet its goal by 2032.

MANAGEMENT RESPONSES

DDOE agreed to seven of the eight recommendations.

[4] Title 21 DCMR § 1104.3.

GOVERNMENT OF THE DISTRICT OF COLUMBIA
Office of the Inspector General

Inspector General

OIG

September 18, 2020

Tommy Wells
Director
Department of Energy and Environment
1200 First Street, N.E.
Washington, D.C. 20002

David L. Gadis
CEO and General Manager
DC Water and Sewer Authority
1385 Canal Street, S.E.
Washington, D.C. 20003

Dear Director Wells and CEO Gadis:

Enclosed is our final report, *Department of Energy and Environment and DC Water and Sewer Authority, The District has Made Progress Restoring the Anacostia River* (OIG Project No. 19-1-24MA). We conducted this audit in accordance with generally accepted government auditing standards (GAGAS). Our audit objective was to assess the District's progress toward achieving the established goal to make the Anacostia River fishable and swimmable by 2032. The audit was included in our *Fiscal Year 2019 Audit and Inspection Plan*.

We provided DOEE with our draft report on July 8, 2020, and received its response on August 31, 2020, which is included in its entirety as Appendix F to this report. We appreciate that DOEE officials began addressing some of our recommendations immediately upon notification during the audit.

Our draft report included five findings and eight recommendations we made to DOEE for actions deemed necessary to correct the identified deficiencies. DOEE disagreed with one of the eight recommendations related to these findings. During the audit, we received DOEE's views on our findings and conclusions in writing. We incorporated DOEE's views in our draft report if supported by sufficient and appropriate evidence. Based on DOEE's August 31, 2020, response, we re-examined our facts and conclusions and determined that the report is fairly presented.

DOEE concurred with Recommendations 1-4 and 6-8. DOEE's actions taken and/or planned are responsive and meet the intent of the recommendations. Therefore, we consider these recommendations resolved but open pending evidence of stated actions. Although DOEE did not agree with Recommendation 5, DOEE's actions taken and/or planned are responsive and meet the intent of the recommendation. Therefore, we consider this recommendation resolved but

open pending evidence that implementing this recommendation would reduce flexibility and increase costs.

We appreciate the cooperation and courtesies extended to our staff during this audit. If you have any questions concerning this report, please contact me or Fekede Gindaba, Acting Assistant Inspector General for Audits, at (202) 727-2540.

Sincerely,

Daniel W. Lucas
Inspector General

DWL/caw

Enclosure

cc: See Distribution List

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BACKGROUND

The purpose of the Department of Energy and Environment (DOEE) is to improve the quality of life for the residents and natural inhabitants of the nation's capital by protecting and restoring the environment. DOEE is responsible for enforcing environmental regulations, monitoring and assessing environmental risks, developing environmental policies, issuing permits, and providing residents and local businesses with funding.[5]

As part of District's commitment to transforming the District into a model of sustainability and environmental protection, the District established a goal to restore the Anacostia River to a fishable and swimmable state by 2032. To realize this goal, the District created and published a plan in May 2008, *Anacostia 2032: Plan for a Fishable and Swimmable Anacostia River* (2008 Plan).[6] The Anacostia River watershed is approximately 176 square miles, with 83 percent situated in Maryland (see Appendix D).

According to DOEE,

> Restoration efforts on the Anacostia River have been ongoing for [25][7] years through groups like Anacostia Watershed Restoration Committee, Anacostia Watershed Toxic Alliance, and other business and environmental groups. However, the Anacostia River is not swimmable and fishing is highly regulated and limited. Past studies of the river revealed that a good portion of the river has unacceptably high levels of metals, pathogens, bacteria, pesticides, herbicides, polychlorinated biphenyls (PCBs) and other chemicals in the sediments. Waterborne bacteria found in the river can cause human illnesses and low levels of dissolved oxygen, which harms fish and aquatic life and impairs sections of the river.[8]

In its 2008 Plan, DOEE recommended five stages to gauge the progress of restoring the Anacostia River to a fishable and swimmable state:

- create a visually presentable river (6 years);
- make the river boatable (10 years);
- restore the river's ability to support stable fish and wildlife populations (12 years);
- produce a swimmable river (15 years); and
- re-establish a river that supports fish that are safe to eat (25 years).

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[5] DOEE website, https://doee.dc.gov/page/about-doee (last visited May 27, 2020).
[6] During the course of our audit, DOEE deleted the 2008 Plan from its website. The document is currently available at http://ddotfiles.com/awi/documents/Anacostia2032.pdf (last visited Mar. 18, 2020).
[7] DOEE made this statement on July 18, 2014. The total number of years related to restoration efforts has been amended to coincide with the issuance date of this report.
[8] DOEE website, https://doee.dc.gov/publication/related-anacostia-river-cleanup-information (last visited Mar. 24, 2020).

The 2008 Plan identifies three primary actions to restore the Anacostia River to a fishable and swimmable state by 2032. These primary actions are controlling combined sewer overflow discharges, identifying and remediating legacy toxins found in the sediment, and reducing other stormwater pollution.

FINDINGS

THE DISTRICT HAS MADE PROGRESS TOWARD RESTORING THE ANACOSTIA RIVER, BUT WILL UNLIKELY MEET ITS GOAL AS PLANNED

While the District will not likely meet its goal of restoring the Anacostia River to a completely fishable and swimmable state by 2032, the District has made progress with Anacostia River cleanup efforts. Since 2008, the District has taken three primary actions that have contributed to improving the Anacostia River: 1) constructing tunnels to control combined sewer overflow discharges; 2) developing a sediment remediation plan; and 3) environmental improvements such as planting trees, removing trash, installing green roofs, and retrofitting impervious surfaces[9] to reduce other stormwater pollution.

The District Did Not Design Its Tunnels to Ensure the Anacostia River Will be Free of Discharges of Untreated Sewage

District regulations state that for a water body to support primary contact recreation,[10] the "waters shall be free of discharges of untreated sewage … that would constitute a hazard …" for swimmers.[11] The District may not meet this requirement all of the time because it designed the Anacostia River tunnels to capture only 98 percent of combined sewer overflow discharges and the District does not have an alternative plan to address the remaining 2 percent.

Like many older cities in the United States, part of the sewer system in the District has combined sewers, which carry sewage and stormwater runoff. When the mixture of sewage and stormwater exceeds the capacity of a combined sewer system, the excess volume is discharged. In the District, part of the excess is discharged into the Anacostia River.[12]

Part of the 2008 Plan describes a long-term control plan to reduce the amount of untreated storm and sewage water flowing into the Anacostia River by building storage tunnels.[13] The District has been developing four tunnels, totaling 12.5 miles long, for a cost of $1.94 billion, since 2005. Three of the four tunnels are in operation; the final Northeast Boundary Tunnel should be completed by 2023.[14] Between March 20, 2018, and June 11, 2019, the three operating tunnels captured 5.7 billion gallons of combined discharges, a 90 percent capture rate, resulting in 10 percent of combined sewer overflow discharged into the Anacostia River. The tunnels hold

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[9] As stated in the 2008 Plan, "impervious surfaces" are areas such as rooftops and pavement. These surfaces cannot infiltrate rainfall. Scientists and government officials in the 1980s "realized that reducing sediment from stream banks requires reducing the rate at which stormwater flows off of impervious surfaces." *See* GEORGE S. HAWKINS, ANACOSTIA 2032: PLAN FOR A FISHABLE AND SWIMMABLE ANACOSTIA RIVER 18, 44 (May 2008).
[10] Title 21 DCMR § 1101.1.
[11] Title 21 DCMR § 1104.3.
[12] The excess flows are also discharged into the Potomac River and Rock Creek.
[13] The selection of a long term control plan was based on regulatory requirements, an evaluation of alternatives, public input and consultation, and a detailed affordability analysis to assess the financial impact of costs on the community.
[14] The names of the tunnels are the First Street, Blue Plains, Anacostia River, and Northeast Boundary (under construction) Tunnels. The long term control plan also includes the Potomac River Tunnel (planned) and other stormwater management practices.

these captured discharges until the wastewater treatment plant can process the stored mixture of sewage and stormwater runoff. The District expects the tunnel system, when fully built, to capture 98 percent of the combined sewer overflow discharges.[15]

The District has made progress towards a swimmable Anacostia River by reducing the combined sewer overflows through the use of tunnels. Despite the progress made, the District does not allow swimming in any section of the Anacostia River unlike other jurisdictions.[16] For example, the city of Portland, Oregon constructed tunnels to capture 94 percent of the combined sewer overflow discharges to the Willamette River. The city currently advises the public as follows:

> Be advised, combined sewer overflows (CSOs) are rare, thanks to the Big Pipe Project [tunnels], but may still occur during periods of exceptionally heavy rain. In the unlikely event of an overflow, Environmental Services will issue a CSO advisory to the news media, place signs along the river, and post the advisory information at the top of this page and on the home page. During CSOs, the public is advised to avoid contact with the river for 48 hours due to increased bacteria.

We recommend that the DOEE Director:

1. Develop an alternative plan to address combined sewer overflows not captured by the Anacostia River tunnels, so that untreated sewage does not constitute a hazard for swimmers.

2. Develop procedures to track suitability for contact recreation and advise the public when and where the Anacostia River is safe to swim.

DOEE Has Not Developed a Plan to Identify and Address Legacy Toxins in the Sediment

While the District is on track to select a plan to address legacy toxins such as PCBs by September 2020, DOEE estimates that it would take another 20 years after implementation to assess improvement in fish populations. According to DOEE officials, they must address legacy toxin sediments that are an on-going source of contaminants before the Anacostia River can be fully fishable, and it is unlikely the river will be fully fishable by 2032.

According to the 2008 Plan, the District Department of the Environment (DDOE)[17] intended to develop a plan to address legacy toxins by June 2013, to ensure the Anacostia River would be fully fishable by 2032. On January 29, 2014, DDOE released a work plan entitled *Remedial Investigation Work Plan, Anacostia River Sediment Project, Washington, DC*, the first step in

[15] Once the Anacostia River Tunnel System is completed, the predicted number of combined sewer overflow events in a given year with average rainfall will be two overflows consisting of 54 million gallons of combined sewage per year.
[16] See EPA's Charles River Initiative, https://www.epa.gov/charlesriver/charles-river-initiative (last visited June 24, 2020); and Oregon's Willamette River, https://www.portlandoregon.gov/bes/57781(last visited June 24, 2020).
[17] DDOE was the predecessor agency name of DOEE. The name change was effective October 8, 2016.

transforming "the Anacostia River into a fishable and swimmable river by 2032."[18] DOEE was also required to choose a plan for remediating the contaminated sediment found in the Anacostia River and publishes its decision by June 30, 2018.[19] However, the D.C. Council granted an extension for completion of the record of decision to December 31, 2019. The need for an extension was due to the complexity of the project, and to allow time for public engagement. On December 23, 2019, the Mayor approved emergency legislation amending the Anacostia River Toxics Remediation Act of 2014 to extend the completion and publication deadline to September 30, 2020.[20]

Although remediation of contaminated sediment has not occurred, the Anacostia River has progressed toward a more fishable state since 2008. In 2014, the U.S. Fish & Wildlife Service issued a report, which found that contaminant concentrations in fish tissues had decreased, and since 2016, DOEE has advised limited fish consumption[21] (see Appendix E).

However, contaminated sediment will continue to create health risks until fully remediated. For example, according to the National Oceanic and Atmospheric Administration:[22]

> One of the most notable chemical pollutants in the river is … PCBs … which have immune, reproductive, endocrine, and neurological effects, and may cause cancer and affect children's cognitive development. This and other chemicals build up in the river bottom, where they make their way up the food chain and become stored in the tissues of fish, posing a health threat if people consume them.[23]

Additionally, PCBs hinder growth and development in humans and animals by disrupting thyroid hormone levels.[24]

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[18] DOEE website, https://doee.dc.gov/release/district-releases-work-plan-clean-anacostia-river (last visited Mar. 18, 2020).
[19] *See* the Fiscal Year 2015 Budget Support Act of 2014, title VI, subtit. J, sec. 6092 (Anacostia River Toxics Remediation Act of 2014) (requiring DOEE to adopt and publish a record of decision regarding remediation), D.C. Law 20-155, effective from Feb. 26, 2015 (codified as amended at D.C. Code § 8-104.31 (Lexis current through Apr. 10, 2020)). A record of decision is a public document that explains the remediation plan.
[20] Anacostia River Toxics Remediation Emergency Amendment Act of 2019, A23-182, effective Dec. 23, 2019, expired Mar. 22, 2020. The Mayor also approved the Anacostia River Toxics Remediation Temporary Amendment Act of 2019, A23-190, L23-58, which became effective from March 10, 2020 and will expire on October 21, 2020.
[21] In 2003, the District warned the general public against eating the Anacostia River's fish.
[22] *See* the National Oceanic and Atmospheric Administration website, https://response.restoration.noaa.gov/about/media/study-reveals-dc-community-near-anacostia-river-are-eating-and-sharing-contaminated-fish (last visited Nov. 19, 2019).
[23] *Id.*
[24] DEPT. OF ECOLOGY, STATE OF WASHINGTON, *Green- Duwamish River Watershed: PCB Congener Study*: Phase 1 (April 2016), Sec. 6.0, page 53, https://ecology.wa.gov/Spills-Cleanup/Contamination-cleanup/Cleanup-sites/Toxic-cleanup-sites/Lower-Duwamish-Waterway/Studies-reports (last visited Sep. 10, 2019).

We recommend that the DOEE Director:

3. Develop a plan to identify and address legacy toxins in the Anacostia River sediment by established deadline.

4. Adopt a management strategy to implement the remediation plan that addresses the riverbed sediment pollutants.

DOEE's Established Performance Goals for Planting Trees, Installing Green Roofs, and Retrofitting Impervious Surfaces Are Not Sufficient to Meet the 2032 Goal

The District has been planting trees, installing green roofs, and retrofitting impervious surfaces (the activities), as part of the efforts to restore the Anacostia River to a fishable and swimmable state. However, the District has not established performance criteria for these activities to measure if the 2032 goal is attainable.

According to the 2008 Plan, the District identified five stages that will allow the city to measure its progress and guide the Anacostia River restoration efforts.[25] The goal of the third stage is to restore the river's ability to support stable fish and wildlife populations. One of the primary actions required to meet this goal is to "create upland habitat for wildlife and reduce stormwater flows by planting trees and native vegetation in parks, along roadways, on school grounds and all other public lands."[26] For example, the 2008 Plan requires planting a minimum of 4,150 trees per year,[27] but the plan is silent on the total number of trees needed to restore the Anacostia River by 2032. Similarly, the District did not establish the number of green roofs and retrofitted impervious surfaces needed to meet the 2032 goal. According to DOEE, based on current performance goals, the District will not achieve sufficient pollutant reductions to restore the Anacostia River until 2154.

We recommend that the DOEE Director:

5. Establish specific performance goals for planting trees, installing green roofs, and retrofitting impervious surfaces needed to restore the Anacostia River to a fishable and swimmable state by 2032.

DOEE Did Not Track, Periodically Review, and Update Implementation of the 2008 Plan

According to DOEE officials, DOEE did not track, periodically review, and update the implementation of the 2008 Plan[28] because the District did not formally adopt the plan.

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[25] The five stages of restoration are: create a visually presentable river; make the river boatable; restore the river's ability to support stable fish and wildlife populations; produce a swimmable river; and re-establish a river that supports fish that are safe to eat.
[26] District DEP'T OF THE ENVIRONMENT, *supra* note 1, page 1.
[27] The District met this requirement.
[28] According to the 2008 Plan, "[a]ny plan is only useful if it is implemented. Furthermore, in order to make [the 2008 Plan] a living document, [DOEE] must track its implementation and periodically review and update the tasks accomplished and outstanding, add new items as they arise, and provide new assignments to agencies while reassessing to whom old tasks were assigned."

However, the Director at the time signed and published the 2008 Plan on the agency's website, where it was publicly available until recently.[29] In 2016, DOEE developed a draft plan update,[30] but the draft did not include critical activities from the 2008 Plan, like controlling combined sewer overflow and remediating legacy toxins. DOEE published another update in 2018,[31] which summarized all water quality management planning and programs, but did not include the cost of implementing the plan or establish how DOEE expects to finish implementing the plan.

Without formally adopting the 2008 Plan or finalizing an alternative plan to include details such as program cost information, metrics, and timelines, DOEE cannot assure whether the goal to restore the Anacostia River to a fishable and swimmable state by 2032 is realistic.

We recommend that the DOEE Director:

6. Develop a plan or adopt the 2008 Plan to serve as a guide to achieve the goal of a fishable and swimmable Anacostia River by 2032 or a revised estimated milestone date.

DOEE Has Not Implemented an Environmental Management System

DOEE did not have a centralized method to track and report Anacostia River restoration efforts as required by D.C. Code § 8-152.01(g), which states:

> Within one year of the effective date of this section[[32]], the Director shall institute an Environmental Management System to inventory, track, and report on pollution prevention and stormwater management activities, and to hold the Stormwater Agencies accountable for progress toward meeting the performance standards and obligations required to meet the stormwater management plan of the Stormwater Permit.

D.C. Code § 8–151.01(5) defines an "environmental management system" as "an interagency data system to inventory, track, and report on progress towards performance standards and activities. [An environmental management system] includes an adaptive management approach that incorporates planning, implementing, monitoring, evaluating, and adjusting the interagency data system." The agency committed to set up an environmental management system in the 2008 Plan, and D.C. Code § 8-152.01(g) mandated that the director institute the system by 2010.

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[29] During the course of our audit, DOEE removed the 2008 Plan from its official website. The document is currently available at http://ddotfiles.com/awi/documents/Anacostia2032.pdf (last visited Mar.18, 2020).
[30] DEP'T OF ENERGY AND ENVIRONMENT, *Consolidated Total Maximum Daily Load (TMDL) Implementation Plan Report*, https://dcstormwaterplan.org/documents-and-deliverables (last visited on Mar. 25, 2020).
[31] DEP'T OF ENERGY AND ENVIRONMENT, *Continuing Planning Process for Water Quality Management 2018*, https://doee.dc.gov/publication/2018-continuing-planning-process-water-quality-management (last visited on Jan. 22, 2020).
[32] The Comprehensive Stormwater Management Enhancement Amendment Act of 2008, D.C. Law 17-0371 became effective from March 25, 2009.

According to DOEE officials, while DOEE does not have centralized tracking for initiatives, each division within DOEE plans and tracks projects on an individual basis. Although each division may have its assigned actions, achieving broad agency-wide goals requires a framework that allows management to assess changes in schedules, budget, and requirements to maintain control over restoration of the Anacostia River.
We recommend that the DOEE Director:

7. Develop and implement an environmental management system to adaptively manage progress and track Anacostia River restoration program achievements.

8. Collectively report all activities to restore the Anacostia River to a fishable and swimmable state, at least annually.

CONCLUSION

The District has made progress toward the goal of a fishable and swimmable Anacostia River by decreasing the amount of sewage that flows into the river, establishing the nature and extent of sediment contamination to select a remediation plan, and reducing stormwater runoff. DOEE did not establish or maintain a clear path to achieving these goals by 2032. Currently, fishing advisories limit the consumption of fish from the river, and swimming is not allowed. Further, evidence indicates that the health of the fish population is improving and bacteria levels are falling, which demonstrates overall improvement. DOEE can improve its oversight and management of the restoration project by adopting an environmental management system and reporting to the D.C. Council and the public annually on progress made toward achieving its goal.

AGENCY RESPONSE AND OFFICE OF THE INSPECTOR GENERAL COMMENTS

We provided DOEE with our draft report on July 8, 2020, and received its response on August 31, 2020, which is included in its entirety as Appendix F to this report. We appreciate that DOEE officials began addressing some of our recommendations immediately upon notification during the audit.

Our draft report included five findings and eight recommendations we made to DOEE for actions deemed necessary to correct the identified deficiencies. DOEE disagreed with one of the eight recommendations related to these findings. During the audit, we received DOEE's views on our findings and conclusions in writing. We incorporated DOEE's views in our draft report if supported by sufficient and appropriate evidence. Based on DOEE's August 31, 2020 response, we re-examined our facts and conclusions and determined that the report is fairly presented.

DOEE concurred with Recommendations 1-4, and 6-8. DOEE's actions taken and/or planned are responsive and meet the intent of the recommendations. Therefore, we consider these recommendations resolved but open pending evidence of stated actions. Although DOEE did not agree with Recommendation 5, DOEE's actions taken and/or planned are responsive and meet

the intent of the recommendation. Therefore, we consider this recommendation resolved but open pending evidence that implementing this recommendation will reduce flexibility and increase costs.

APPENDIX A. OBJECTIVE, SCOPE, AND METHODOLOGY

OBJECTIVE, SCOPE, AND METHODOLOGY

We conducted our audit in accordance with generally accepted government auditing standards (GAGAS). Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Our audit objective was to assess the District's progress toward achieving the established goal to make the Anacostia River fishable and swimmable by 2032. We conducted our audit work from March 2019 to January 2020. The audit was included in our *Fiscal Year 2019 Audit and Inspection Plan*.

To accomplish our objective, we reviewed and assessed compliance with applicable federal and District laws, rules, and regulations governing the District's water pollution and control activities impacting the Anacostia River. We interviewed DOEE and DC Water officials involved in programs that impact the water quality of the Anacostia River. We also reviewed planning documents, program documentation, contracts, performance data, financials, feasibility studies, remedial investigations, reports to EPA, EPA documentation, and other related documentation to evaluate project performance progress. We performed physical inspections of the Anacostia River, the Northeast Boundary Tunnel, one RiverSmart home, and various types of stormwater reduction practices throughout the District.

We assessed the validity and reliability of computer-processed data and performed limited existence and completeness tests to verify the accuracy of the data. We validated automated combined sewer overflow data collected for the Clean Rivers Project. We also traced fish tissue and sediment sample collections to their support documentation used for the Anacostia River Sediment Project. We obtained read-only access to DOEE's Stormwater database to select samples. We received data extracts from the Stormwater database as of July 15, 2019. We performed existence, and data reliability tests on the data to ensure the computer-processed data were accurate, complete, and sufficiently reliable for our testing. While there are inherent limitations in the accuracy and completeness of historical and manually-keyed records, we determined the data were sufficiently reliable to achieve the purpose of our audit objective.

We selected the three highest priority initiatives[33] impacting the river for our audit scope because DOEE did not have a centralized method to track the implementation of the 2008 Plan's activities. Therefore, we could not assess the extent of progress made on all initiatives identified in the 2008 Plan and plan modifications collectively. As such, we evaluated how the District is controlling combined sewer overflow discharges, identifying and remediating legacy toxins found in the sediment, and controlling and reducing other stormwater pollution not connected to the combined sewer. The 2008 Plan identified these as actions needed to achieve a fishable and

[33] Identified the three highest priority initiatives out of the 97 initiatives or strategies listed in the 2008 Plan based on the highest cost, the longest time needed for completion, and which projects DOEE deemed necessary to achieve a clean Anacostia River.

APPENDIX A. OBJECTIVE, SCOPE, AND METHODOLOGY

swimmable river by 2032. We assessed DOEE's and DC Water's performance and management oversight of the three projects discussed below.

For controlling combined sewer overflow discharges, we assessed DC Water's budget and planning for the Clean Rivers Project. To assess DC Water's performance tracking and reporting of the tunnels in operation, we selected a sample of combined sewer overflow data for the First Quarter in 2019 to evaluate the volume of combined sewer overflow being discharged and captured by the Anacostia River Tunnel System.

For the legacy toxins remediation, we assessed DOEE's management oversight of the Anacostia River Sediment Project. Since work has not yet begun, we reported on the delays of the final record of decision.

For controlling and reducing other stormwater pollution not connected to the combined sewer (i.e., the municipal separate storm sewer system (MS4)), we assessed DOEE's performance tracking and reporting regarding the trash removal and four stormwater retention practices, including 1) tree plantings, 2) green roof installations, 3) normalized retrofit projects, and 4) normalized retrofit projects in the public right-of-way. We verified these performance metrics, as shown in the District's 2017 MS4 Annual Report.

APPENDIX B. ACRONYMS AND ABBREVIATIONS

D.C.	District of Columbia
DCMR	District of Columbia Municipal Regulations
DC Water	District of Columbia Water and Sewer Authority
DDOE	District Department of the Environment
DOEE	Department of Energy and Environment
EPA	U.S. Environmental Protection Agency
GAGAS	Generally Accepted Government Auditing Standards
MS4	Municipal Separate Storm Sewer System
OIG	Office of the Inspector General
PCBs	polychlorinated biphenyls

APPENDIX C. RECOMMENDATIONS

We recommend that the DOEE Director**:**

1. Develop an alternative plan to address combined sewer overflows not captured by the Anacostia River tunnels, so that untreated sewage does not constitute a hazard for swimmers.

2. Develop procedures to track suitability for contact recreation and advise the public when and where the Anacostia River is safe to swim.

3. Develop a plan to identify and address legacy toxins in the Anacostia River sediment by established deadline.

4. Adopt a management strategy to implement the remediation plan that addresses the riverbed sediment pollutants.

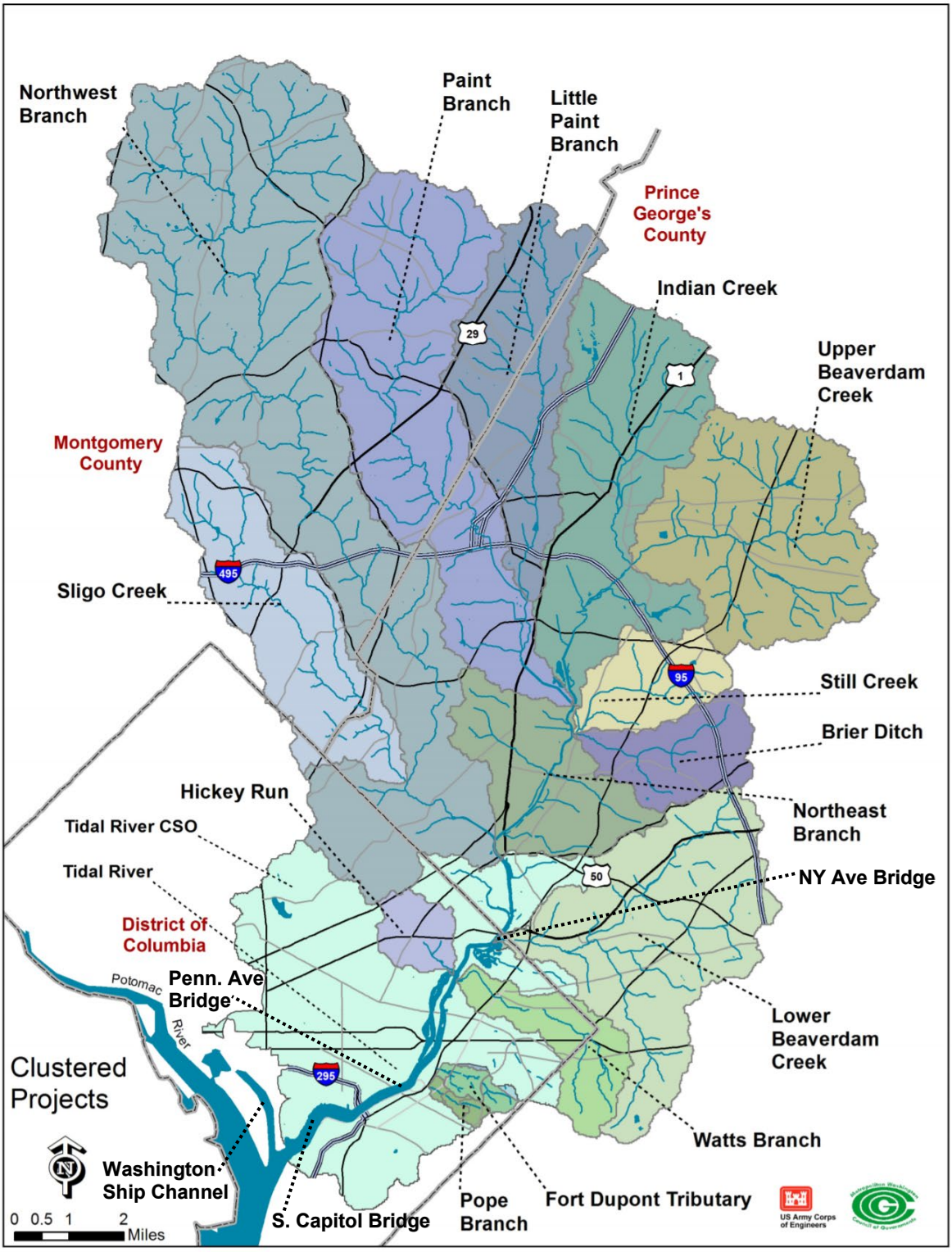
5. Establish specific performance goals for planting trees, installing green roofs, and retrofitting impervious surfaces needed to restore the Anacostia River to a fishable and swimmable state by 2032.

6. Develop a plan or adopt the 2008 Plan to serve as a guide to achieve the goal of a fishable and swimmable Anacostia River by 2032 or a revised estimated milestone date.

7. Develop and implement an environmental management system to adaptively manage progress and track Anacostia River restoration achievements.

8. Collectively report all activities to restore the Anacostia River to a fishable and swimmable state, at least annually.

APPENDIX D. ANACOSTIA RIVER AND WATERSHED MAP



Source: U.S. Army Corps of Engineers' Website https://www.nab.usace.army.mil/portals/63/docs/Environmental/Anacostia/Anacostia2.pdf (last visited on Dec. 2, 2019).

APPENDIX E. THE DISTRICT'S CURRENT FISH CONSUMPTION ADVISORY

Fish Consumption Advisory Information

2016 District of Columbia Fish Consumption Advisory

DO NOT EAT:
Do not eat eel, carp, or striped bass (rockfish, striper) caught in District waters because they are the most contaminated by chemicals like polychlorinated biphenyls (PCBs).

American eel

Carp

Striped bass (rockfish, striper)

RECOMMENDED CONSUMPTION LIMITS

If you do eat fish caught in District waterways, please use the recommended limits below:

FISH SPECIES	RECOMMENDED CONSUMPTION LIMIT - One serving = eight (8) ounces uncooked fish*
Sunfish	No more than **four** servings per month for adults
Blue catfish	No more than **three** servings per month for adults
Northern snakehead	No more than **three** servings per month for adults
White perch	No more than **three** servings per month for adults
Largemouth bass	No more than **two** servings per month for adults
Brown bullhead	No more than **one** serving per month for adults
Channel catfish	No more than **one** serving per month for adults

*If species are mixed, once the lowest limit is met, eat no more DC caught fish for the month. Limit consumption of all other fish not listed.

Source: DEP'T OF ENERGY AND ENVIRONMENT, Fish Consumption Advisory, https://doee.dc.gov/service/fishdc (last visited on Dec. 4, 2019).

APPENDIX F. DOEE'S RESPONSE TO THE DRAFT REPORT

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Daniel W. Lucas
Inspector General
D.C. Office of the Inspector General
717 14th Street NW
Washington, D.C. 20005

Dear Inspector General Lucas:

Thank you for the opportunity for the Department of Energy and Environment (DOEE) to review and comment on the Office of the Inspector General (OIG) draft report, *Department of Energy and Environment and DC Water and Sewer Authority, The District has Made Progress Restoring the Anacostia River (OIG Project No. 19-1-24MA)*. I appreciate the recognition that the District is making progress with its goal to restore the Anacostia River to a fishable and swimmable state by preventing, reducing, and remediating pollution. DOEE is proud of its work to restore the Anacostia River Watershed. Such restoration is not only an environmental goal for the District, it's a key component of our equity agenda.

As you will see in the attached specific responses to your recommendations, we agree with your general focus on sound management, transparency, and effective programming to achieve the goal of a fishable and swimmable Anacostia. Many of the recommended actions are well underway, in one form or another, and we will undertake some further actions responsive to your report. In a few instances, we contextualize how our course of action achieves the same ends as the process you suggest, sometimes more efficiently. I am eager to see the Anacostia River restored to both a fishable and swimmable state for all District residents and visitors. I appreciate OIG's assistance in helping us achieve that goal for everyone.

Sincerely,

DocuSigned by:

Tommy Wells
Director, DOEE
E2F0D2383FC451...

Cc:
Kevin Donahue
Lucinda Babers
John Falcicchio
Betsy Cavendish

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GOVERNMENT OF THE DISTRICT OF COLUMBIA
Department of Energy and Environment

DOEE Response to *Department of Energy and Environment and DC Water and Sewer Authority, The District has Made Progress Restoring the Anacostia River* (OIG Project No. 19-1-24MA) by
The Office of the Inspector General

<u>Recommendation No. 1</u> - Develop an alternative plan to address combined sewer overflows not captured by the Anacostia River tunnels, so that untreated sewage does not constitute a hazard for swimmers.

We agree that addressing combined sewer overflows is a priority and as a result are implementing one of the most robust such plans in the country.

The only plan that would eliminate combined sewer overflows (CSOs) under all weather conditions is complete sewer separation, which was determined by DC Water to be unaffordable[1] ($7.5 Billion in year 2020 dollars), impracticable, and to result in worse water quality than the Clean Rivers Project[2].

When completed, the Clean Rivers Project will reduce CSO discharges by 96 percent on a system-wide basis during the average rainfall year, which is one of the highest levels of CSO control achieved in the United States. This equates to a 98 percent reduction in overflows for the Anacostia River, a 93 percent reduction for the Potomac River, and a 90 percent reduction for Rock Creek. The District government and the federal Environmental Protection Agency (EPA) have determined the degree of control provided by the Long Term Control Plan (LTCP) is consistent with meeting the water quality standards. Further, any remaining CSOs after implementation typically occur during extreme events where other conditions such as lightning, wind, and strong currents limit recreational use of the river.

[1] DC Water conducted an affordability analysis which determined that the water and sewer rates to fund the current $2.7 Billion project will exceed 2.5% of annual adjusted gross income for 40% of residents by 2030. A $7.5 Billion project to separate sewers would be significantly more burdensome and unaffordable for an even larger portion of District residents.

[2] Combined sewer overflows occur in areas of the District that are served by a single sewer system that conveys both stormwater runoff and raw sewage in one pipe. During large storm events these pipes reach their capacity, and the mixture of stormwater runoff and sewage overflows into the District's streams and rivers. Complete sewer separation would require the construction of new sewer systems in 1/3 of the District that would utilize two pipes; one pipe to convey stormwater runoff and one pipe to convey sewage. If feasible, this solution would eliminate combined sewer overflows but would allow stormwater runoff (which is known to carry various pollutants in urban environments) to discharge directly into the District's water without any treatment.

DEPARTMENT OF ENERGY & ENVIRONMENT 1200 First Street NE, 5th Floor, Washington, DC 20002 | (202) 535-2600 | doee.dc.gov

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In addition to a very high degree of control, the LTCP includes CSO warning lights that are installed along the Anacostia and Potomac Rivers to advise river users to avoid contact during the limited periods when overflows occur beyond the capacity of the tunnel system.

To finance these improvements, the Clean Rivers Impervious Area Charge (CRIAC) rates on property owners' sewer bills have increased significantly over the past 10 years. The total cost of these improvements to significantly reduce the discharge of raw sewage and stormwater runoff to the Anacostia and Potomac Rivers and Rock Creek is $2.7 billion. However, the CRIAC has had a disproportionate impact on low income residents. Typical residential sewer bills have increased by 200 percent since the LTCP Consent Decree was signed in 2005 and are projected to increase further. Rates are expected to exceed 2.5 percent of adjusted annual household income of 40 percent of District households by 2030.

The cost of achieving 100 percent capture of combined sewer overflows attainment would further burden District residents already struggling to pay high water bills, without providing significant additional benefit. In addition, various other pollutant loads in the sewer shed must be addressed in order for the rivers to fully achieve water quality standards.

Recommendation No. 2 - Develop procedures to track suitability for contact recreation and advise the public when and where the Anacostia River is safe to swim.

We agree and have developed such procedures, consisting of a swimming ban, with an exceptions process; weekly sampling and analysis of water; deployment of a citizen science program; and posting of data and installation of warning lights indicating when sewage overflows make it unsafe to swim.

The District has had a regulatory ban on swimming in District waters since 1971. This ban will remain in place until local waters are found to be consistently within the water quality threshold for bacteria, pH, and turbidity. However, DOEE is optimistic that the ban can be removed in the coming years once the Clean Rivers Project, which will reduce combine sewage overflows in the Anacostia by 98%, is completed, and with additional pollutant reductions that will be made from the municipal separated storm sewer system (MS4) within the District and upstream in Maryland.

Further, DOEE regulations allow for exceptions to the swimming prohibition in the Anacostia and Potomac Rivers for special swimming events, such as triathlons or other competitions that involve primary contact recreation. If granted, exceptions authorize qualifying swimming events for limited amounts of time when monitoring data demonstrates that the water quality does not pose a threat to human health. DOEE can deny permission for the special event if data indicate water quality standards are not being attained; an emergency health hazard caused by a hazardous pollutant or condition has occurred; or if there may be a health risk from a known pollution source, such as a CSO.

Despite the regulatory ban and exception process, DOEE recognizes that residents and visitors do recreate in District waters and therefore the agency collects weekly samples that are analyzed

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at a federal laboratory to track levels of bacteria, pH, and turbidity. In addition, DOEE has implemented a citizen science water quality monitoring program to provide more frequent and accessible data that the public can use to make informed decisions about coming into contact with local waters. This information is accessible through the agency's website[3] as well as through our non-profit partners[4] and via mobile applications[5].

As stated above, warning lights are utilized along District waters to notify the public when CSOs have occurred and it is not safe for contact recreation.

Recommendation No. 3 - Develop a plan to identify and address legacy toxins in the Anacostia River sediment by established deadline.

We agree and are implementing a plan to address legacy toxins.

The District is required under District law to issue a Record of Decision for the Anacostia River Sediment Project by September 30, 2020, which will identify and begin the process of remediating legacy toxins.

To meet this timeline, DOEE issued a draft feasibility study report in March 2019. The draft feasibility study included potential remedial plans, timelines, and costs associated with each plan. The feasibility study report was released to the federal and state agencies, stakeholders, and responsible parties for review and comment. Based on the feedback, DOEE decided to hold four separate meetings to solicit support from affected parties for the adoption of an adaptive management approach based on a series of interim remediation actions. DOEE then published a Proposed Plan on December 27, 2019 that identified early action remedial areas with the highest levels of contamination to reduce ecological and human health risks, and solicited public comment on this plan. DOEE has evaluated public comments on the Proposed Plan and other supporting documents and intends to publish an Interim Record of Decision by September 30, 2020. Performance monitoring will determine the progress of the interim remediation actions before a Final ROD is published based on the data collected.

Recommendation No. 4 - Adopt a management strategy to implement the remediation plan that addresses the riverbed sediment pollutants.

We agree. A management strategy is a key part of our remediation plan to address riverbed sediment pollutants.

To date, extensive investigation efforts have been completed by the District to establish the nature and extent of sediment contamination and establish the most appropriate and effective remedial action approach for the Anacostia River and its tributaries.

[3] https://doee.dc.gov/service/anacostia-and-potomac-river-monitoring-program
[4] https://www.anacostiariverkeeper.org/water-quality-results-portal
[5] https://www.waterreporter.org/; https://www.theswimguide.org/get-the-app/

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The District is required under District law to issue an Interim Record of Decision (ROD) for the Anacostia River Sediment Project by September 30, 2020. The Interim ROD will include a remediation plan and management strategy based on phased remediation of Early Action Areas that include the highest levels of contamination and performance monitoring to assess the effectiveness of those actions in reducing contaminant levels and ecological and human health risks.

Recommendation No. 5 - Establish specific performance goals for planting trees, installing green roofs, and retrofitting impervious surfaces needed to restore the Anacostia River to a fishable and swimmable state by 2032.

We respectfully disagree regarding the establishment of specific performance goals for these programs, however worthwhile they are.

The intent of the Anacostia 2032 Plan was never to rely solely on tree planting, green roof installations, and impervious surface retrofits to restore the Anacostia River to a fishable and swimmable state. Rather, these laudable practices are part of a broader approach including other measures, such as improvements to the District's Combined Sewer System, remediation of contaminated sediments, and coordination with other jurisdictions to address upstream sources of pollution. Each of these measures have varying levels of environmental improvement relative to their implementation costs. DOEE believes that avoiding practice-specific performance goals maintains the flexibility necessary to pursue water quality goals in the most cost-effective manner. Further, the current level of implementation for tree plantings, green roof installation, and impervious surface retrofits are appropriate, as EPA has deemed the implementation standard to be the "Maximum Extent Practicable" to address pollution from the District's Municipal Separate Storm Sewer System as detailed in the District's National Pollution Discharge Elimination System (NPDES) Permit.

Recommendation No. 6 - Develop a plan or adopt the 2008 Plan to serve as a guide to achieve the goal of a fishable and swimmable Anacostia River by 2032 or a revised estimated milestone date.

We agree with the recommendation to establish a revised estimated milestone date if necessary.

For context, DOEE was tasked with developing and drafting the 2008 plan on a very short schedule. Consequently, DOEE leveraged pre-existing information on restoration efforts that were already underway in drafting the Plan, and it primarily served to organize information on multiple disparate efforts--each with unique drivers, timelines, and resources--into a single document. DOEE did not find this to be a useful or valuable framework for organizing efforts to restore the Anacostia River, and therefore did not advocate adopting or building upon that plan during the two subsequent Mayoral administrations.

We embrace the goal of a fishable and swimmable Anacostia; however, the goal for a fishable and swimmable Anacostia River by 2032 was an aspirational target. As DOEE moves forward

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with the Anacostia River Sediment Project, the data we collect will help inform us about the success of the District's efforts toward this goal and whether a revised milestone date is needed. Further, achievement of the goal is complicated by the fact that approximately 83% of the Anacostia watershed is within Maryland and many of the pollutant sources are outside of the District's control, and many fish in the Anacostia migrate to and from waters beyond the District's boundaries. Achieving the goal will therefore depend in large part on the level of cooperation we receive from other jurisdictions and the vigor of their independent efforts, as well as commitment to change on the part of the numerous private, non-point sources or pollution that contribute to the Anacostia's problems.

Recommendation No. 7 - Develop and implement an environmental management system to adaptively manage progress and track Anacostia River restoration program achievements.

We agree that tracking progress and adaptively managing are important, but disagree that an Environmental Management System (EMS) is the best approach for doing so.

DOEE has researched and investigated environmental management systems and the potential for applying an EMS approach to Anacostia River restoration efforts. This investigation has led DOEE to conclude that an EMS is more suited to discrete processes or facilities than large-scale restoration efforts. For example, an EMS may be an appropriate tool to improve energy efficiency at a factory or to reduce the environmental impact of a company's supply chain. However, an EMS to coordinate the individual components of the Anacostia restoration – ranging from Combined Sewer improvements, to stormwater management, and contaminated sediment remediation – would be vastly more complex. That complexity means that developing such an EMS would require a substantial commitment of time and resources. DOEE strongly believes these resources are better committed to implementation and restoration, and not developing a new accounting framework to track that effort.

DOEE has addressed the most critical components of an EMS through regular, detailed reporting on the conditions of the District's waters and implementation of activities to improve their condition. This routine tracking and reporting provides opportunities for ongoing and adaptive management. Examples of this reporting include:

- District of Columbia Water Quality Assessments (completed every two years)
- MS4 Annual Reports and StoryMaps (completed annually)
- Clean Rivers Project progress reports
- Anacostia River Sediment Project deliverables

Recommendation No. 8 – Collectively report all activities to restore the Anacostia River to a fishable and swimmable state, at least annually.

We agree with the recommendation.

As noted above, DOEE regularly produces a number of reports related to the condition of the Anacostia River and the District's restoration efforts. However, DOEE acknowledges that it

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currently lacks a centralized approach for maintaining and presenting those reports to the public. DOEE agrees with the recommendation to collectively report on Anacostia Restoration-focused efforts through an on-line "portal" which will organize and present relevant documents related to water quality, stormwater management, and sediment remediation.