Clean Water
State Revolving Fund

CLEAN WATER STATE REVOLVING FUND (CWSRF) EMERGING CONTAMINANTS

Water Industry Professionals and Utility Staff Webinar

January 18, 2023

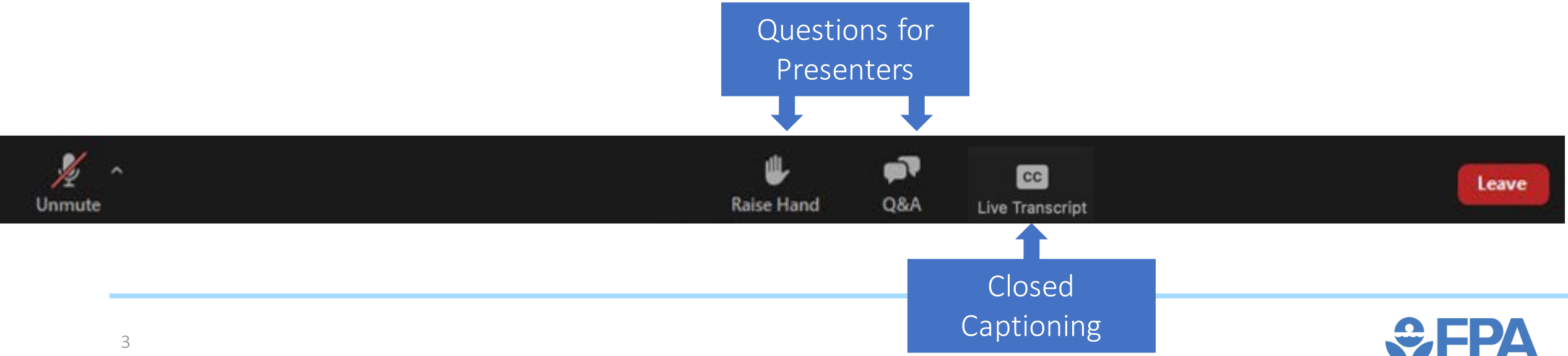
EPA

Housekeeping

- All attendees are muted to minimize background noise
- This training will be recorded; the recording will be available after the training at: https://www.epa.gov/dwsrf/bipartisan-infrastructure-law-srf-memorandum
- If you are having **technical difficulties**, please submit a question through the Q&A box or email Sydney.Merrill@erg.com.

Housekeeping

- To ask a question, please type your question in the Q&A box OR raise your hand and we will call on you. We will have a dedicated time for Q&A at the end.
- You can turn on/off live closed captioning at the bottom of your screen.



Speakers

- Kelly Tucker, US EPA, CWSRF
- Smiti Nepal, US EPA, Sustainable Communities Infrastructure Branch
- Heather Strathearn, US EPA, Sustainable Communities Infrastructure Branch
- Case Studies
  - Lindsey Jones, Water Infrastructure Finance Authority of Arizona
  - Satya Chennupati, Iowa Department of Natural Resources
  - Beth Malcolm, New Hampshire Department of Environmental Services
  - Lori Johnson, Oklahoma Water Resources Board

Agenda

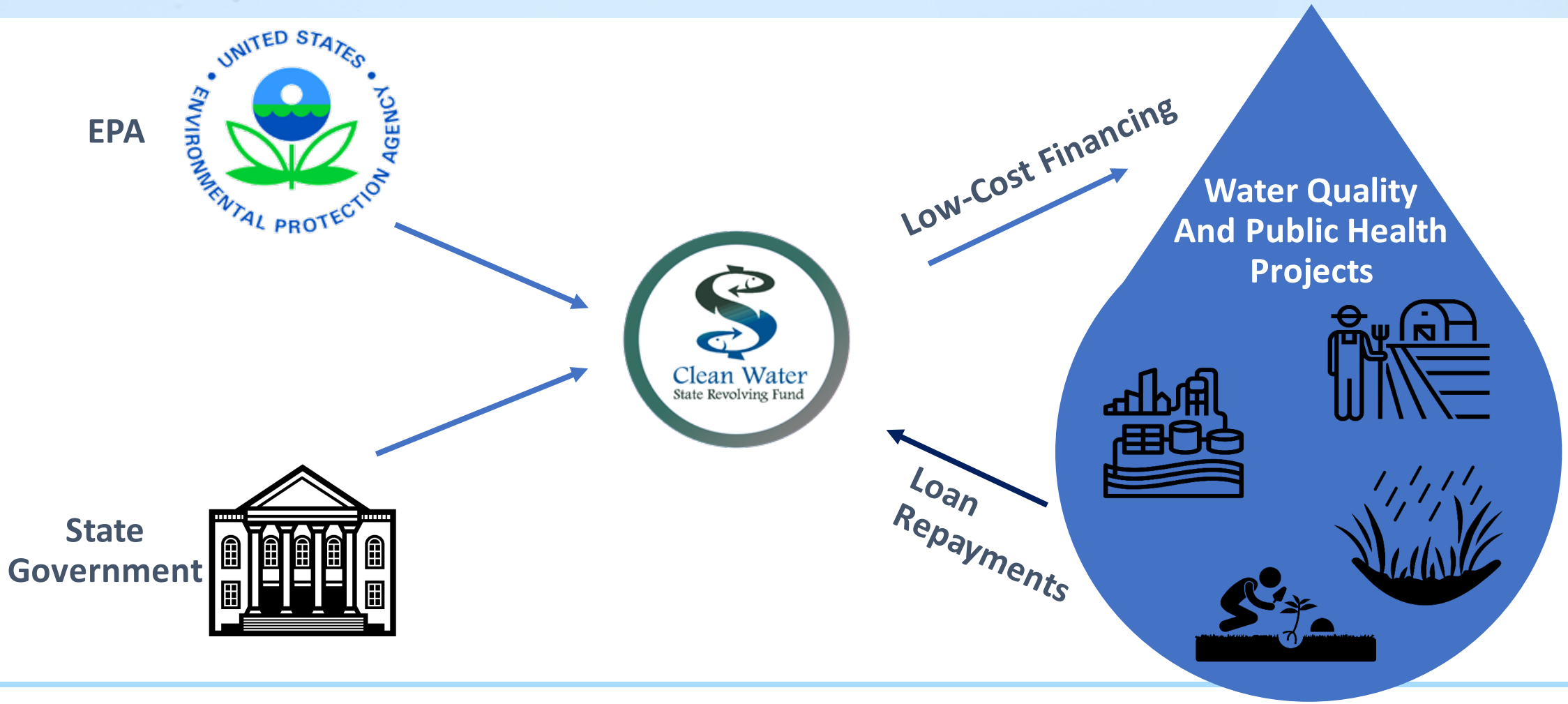
- Introductions
- Overview of the Clean Water State Revolving Fund (CWSRF)
- CWSRF emerging contaminants fund overview and eligibilities
- Emerging contaminant project ideas and examples
- Other CWSRF emerging contaminants eligible fund uses
- Case studies
- Q&A

Polling Question 1

What is your professional affiliation?

a) State staff
b) EPA staff
c) Utility staff
d) Professional or trade organization representative
e) Consultant
f) Other

Clean Water State Revolving Fund: Overview



Clean Water State Revolving Fund: Overview

Terms: Up to 30 years
or useful life of the project, whichever is less

Below-market rates: 1.2% average interest rate in 2020 (compared to market rate 2.7%)

Additional subsidy: May also include additional subsidies (e.g., loan forgiveness and grants)

Repayment: Starts one year after project completion

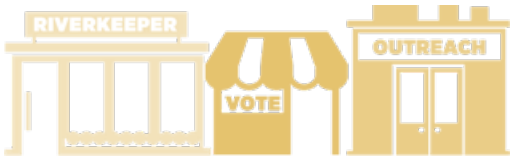
Clean Water State Revolving Fund: State Role

- States design SRF programs to reflect the needs of their states and authorizations given to them by Congress.
- They accept applications, score and rank projects, and select projects for funding.
  - It's important to get to know the SRF program in your state to understand their application process and eligibility requirements.

Who is Eligible to Use the CWSRF?

Eligible entities are dependent on the project type, but may include:

- Municipalities, intermunicipal, interstate, or state agencies.
- Nonprofit entities*
- Private, for-profit entities*
- Watershed groups*
- Community groups*
- Homeowner's associations*
- Individuals*



*Some states do not fund private systems/private entities.

What Projects are Eligible for CWSRF Assistance?

- 603(c)(1) Construction of publicly owned treatment works (POTW)
- 603(c)(2) Implementation of a nonpoint source management program
- 603(c)(3) Implementation of a national estuary program CCMP
- 603(c)(4) Decentralized systems
- 603(c)(5) Stormwater management
- 603(c)(6) Projects that reduce the demand for POTW capacity through water conservation, efficiency, and reuse
- 603(c)(7) Watershed pilot projects
- 603(c)(8) Projects that reduce the energy consumption needs for POTWs
- 603(c)(9) Reuse of wastewater, stormwater, or subsurface drainage water
- 603(c)(10) Security measures at POTWs
- 603(c)(11) Technical assistance to small and medium POTWs
- 603(3)(12) Assistance to a qualified nonprofit entity to provide assistance to an eligible individual for the repair or replacement of household decentralized treatment systems

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CWSRF Project Categories

- Wastewater Treatment Plant Repair and Upgrade
- Decentralized Wastewater Treatment
- Groundwater Protection
- Surface Water Protection
- Green Infrastructure
- Contaminated Sites Clean Up & Conversion
- Planning/Assessments and Monitoring
- Land Conservation
- Habitat Restoration
- Stormwater
- Water Conservation & Reuse
- And more!

A full listing of CWSRF eligibilities including examples of eligible projects can be found in the "Overview of Clean Water State Revolving Fund Eligibilities," which can be downloaded from our website at: https://www.epa.gov/cwsrf/overview-clean-water-state-revolving-fund-eligibilities

Bipartisan Infrastructure Law Overview

- Signed by President Biden on November 15, 2021.
- Historic investment in key programs and initiatives implemented by the U.S. Environmental Protection Agency to build safer, healthier, cleaner communities.
- Includes $50 billion to the EPA to strengthen the nation's drinking water and wastewater systems – the single largest investment in water that the federal government has ever made.
- Approximately $43.4B of this funding through the existing CWSRFs and DWSRFs.

Bipartisan Infrastructure Law Key Priorities

- Increase investment in disadvantaged communities
- Make rapid progress on lead service line replacement
- Address PFAS and emerging contaminants
- Resilience, climate, One Water innovation
- Support American workers and renew the water workforce
- Cultivate domestic manufacturing

CWSRF Emerging Contaminants Fund Overview

- New appropriation under the Bipartisan Infrastructure Law (BIL), enacted on November 15, 2021
- Appropriates $1 billion over the next five years to address emerging contaminants
  - FY2022: $100 M
  - FY2023 to FY2026: $225 M each year
- Funding issued to states as CWSRF Emerging Contaminants Capitalization Grant based on the current CWSRF distribution percentages
- All funds are to be awarded to funding applicants as 100% forgivable loans or grants

CWSRF Emerging Contaminants Funding Eligibilities

- For a project or activity to be eligible under this appropriation, it must:
  - Be otherwise eligible under section 603(c) of the CWA
  - Address identified emerging contaminants
- Potential projects include:
  - Construction of POTWs
  - Stormwater management
  - Nonpoint source pollution control

CWSRF Emerging Contaminants Funding Eligibilities

- Can only fund portion of the project specific to emerging contaminants
- Only capital costs are eligible
- Can include planning and design (including monitoring) that is integral to the development of an eligible capital project
- Ineligible activities:
  - Operation and maintenance
  - Water quality monitoring activities (including monitoring associated with NPDES permit or pretreatment requirements) at POTWs

What is a CWSRF Emerging Contaminant?

- Substance or microorganism, including manufactured or naturally occurring physical, chemical, biological, radiological, or nuclear material, which is known or anticipated in the environment, which may pose newly identified or re-emerging risks to human health, aquatic life, or the environment
- Can include many different types of natural or manufactured chemicals and substances – such as those in some compounds of personal care products, pharmaceuticals, industrial chemicals, pesticides, and microplastics

What is a CWSRF Emerging Contaminant?

- Examples: PFAS, antimicrobial resistant bacteria, 6PPD-quinone (from tires), microplastics
- Contaminants with water quality criteria recommendation published by EPA under CWA section 304(a), except for PFAS, are not considered emerging contaminants
  - Includes nutrients (e.g., ammonia, nitrogen, and phosphorus), certain organics, and certain metals.
- Definition only for the purpose of CWSRF financing
  - Separate definition for DWSRF emerging contaminants
  - See Appendix B of EPA's March 2022 memo for more detail, https://www.epa.gov/system/files/documents/2022-03/combined_srf-implementation-memo_final_03.2022.pdf

CWSRF Emerging Contaminant Project Ideas and Examples

- Challenges to identify emerging contaminant projects
  - Need for monitoring data to identify presence and quantity of emerging contaminants in wastewater/stormwater
  - Based on monitoring data results, options may include SRF-eligible capital projects and non-SRF eligible projects (e.g., pretreatment of industrial sources)

CWSRF Emerging Contaminant Project Ideas and Examples

- Monitoring as part of project planning and design, e.g., wastewater characterization for POTWs
- Other eligible project types and fund uses (discussed in next few slides)
  - Look beyond POTW construction and PFAS
  - Stormwater, landfills, and contaminated sites can also be significant sources of emerging contaminants

Other CWSRF Emerging Contaminant Eligible Fund Uses: Planning and Design

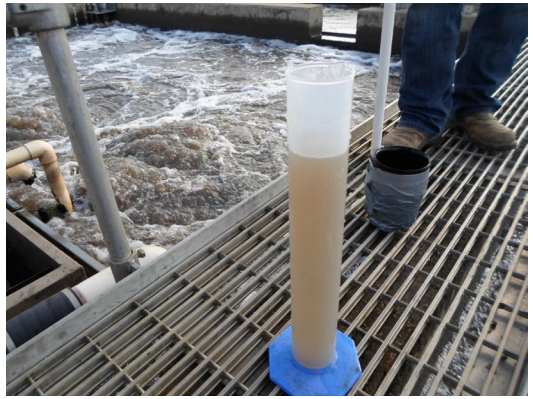
- Planning and design for capital projects, as well as broader water quality planning are eligible, provided there is a reasonable expectation that the planning will result in a capital project
- Funding can be used for preconstruction activities to help prepare planning, preliminary engineering, and alternatives analysis documents

Other CWSRF Emerging Contaminant Eligible Fund Uses: Monitoring

- Monitoring for the specific purpose of project development (planning, design, and construction) over a reasonable timeframe is eligible
  - Monitoring may lead to outcomes other than capital projects to address emerging contaminants
- Funding may also be used for certain project types to assess effectiveness after construction (except for construction of POTWs and decentralized wastewater treatment systems)

Other CWSRF Emerging Contaminant Eligible Fund Uses: Monitoring

- Eligible monitoring activities include:
  - Purchase of monitoring (e.g., auto samplers) or laboratory analysis equipment
  - Monitoring to characterize stormwater or wastewater to inform an engineering report and the identification and selection of the appropriate treatment technology/project alternatives
  - Monitoring of wastewater influent/effluent/sludge to determine the fate of emerging contaminants, to inform the identification and selection of the appropriate treatment technology
  - Cedar Rapids (Iowa) case study



CWSRF Emerging Contaminant Project Ideas and Examples

Projects at Wastewater Treatment Facilities:

- Look for projects to treat wastewater to remove emerging contaminants from discharge or biosolids
- Consider funding demonstration projects to evaluate specific technologies before full scale implementation

Capital Pretreatment Projects:

- Consider projects that reduce energy consumption needs at the POTW (funding must be provided to public entities)

Water reclamation and reuse:

- Consider where advanced treatment (e.g., reverse osmosis, granulated activated carbon, or ion exchange) can be added to remove PFAS or other emerging contaminants to facilitate reuse
- Tucson (Arizona) Case Study

CWSRF Emerging Contaminant Project Ideas and Examples

Landfills:

- Consider projects that will reduce emerging contaminant runoff from landfills

- Project examples:
  - Landfill closure (e.g., capping)
  - Landfill runoff and leachate collection and treatment that will reduce PFAS runoff
  - Modification/expansion of existing or construction of new publicly owned landfills (local and regional) primarily designed and permitted (per state and federal regulations) to accept POTW biosolids with PFAS
- Town of Conway (New Hampshire) landfill case study

CWSRF Emerging Contaminant Project Ideas and Examples

Contaminated sites:

- Can include Brownfields, Superfund sites, and sites of current or former aboveground or underground storage tanks
- Consider projects that address PFAS through capping, in-situ treatment, or removal of contaminated material as part the implementation of a state nonpoint source management plan

Surface Water Protection and Restoration:

- Look for projects that address emerging contaminants in waterbodies
- Can include equipment for the physical or chemical removal of HABs or projects that skim surface water to remove microplastics along with other plastic pollutants

CWSRF Emerging Contaminant Project Ideas and Examples

Nonpoint Source:

- Eligible nonpoint source projects may be publicly or privately owned provided they are capital projects that support the implementation of a current EPA approved state nonpoint source (NPS) management program or nine-element watershed-based plan established under Section 319 of the Clean Water Act
- Central Oklahoma Master Conservation District case study

Regulated Stormwater Discharges:

- Where emerging contaminants have been identified in stormwater based on previous monitoring efforts, look for projects that can trap and/or treat stormwater contaminants prior to reaching waterbodies; or ways to prevent stormwater contamination (e.g., covering contaminant storage areas)

Select Emerging Contaminants Treatment Technology Overview

- EPA has compiled preliminary research on treatment technologies for PFAS, microplastics, and pharmaceuticals and personal care products (PPCPs)
- More information is needed
  - EPA will continue to compile and make technology research available
  - If you are aware of additional research, please share it with EPA
- Reference information for the following slides is available at:
  - https://www.epa.gov/system/files/documents/2023-01/wastewater-treatment-technology-resources.pdf
- Additional treatment technology information is available at:
  - https://ordspub.epa.gov/ords/wfc/f?p=259:1
- *EPA does not endorse any non-government websites, companies, technologies, internet applications or any policies or information expressed by third parties.*

EPA PFAS Research

- EPA researchers are working on a wide range of activities to help understand PFAS and reduce risks to the public, e.g.,
  - Methods to Detect and Quantify PFAS
  - Treatment and management of PFAS in Drinking Water, Wastewater, Biosolids, Leachate, Groundwater, and Soil
- Research briefs on electrochemical oxidation, mechanochemical degradation, pyrolysis and gasification, supercritical water oxidation
- Information on research projects in these areas
  - Fate and treatment of PFAS in land applied biosolids and thermal treatment in biosolids
  - Separation and electrochemical treatment of PFAS in centrate/filtrate
  - Electron beam breakdown of PFAS in different matrices including wastewater and biosolids

Selective Electrocatalytic Destruction of PFAS using a Reactive Electrochemical Membrane System

- Funding: National Alliance for Water Innovation (NAWI)
- Timing: September 2022 – September 2025
- Principal Investigator: Brian P. Chaplin, University of Illinois Chicago
- Technology: titanium-based, nanoparticle electrocatalyst for simultaneous adsorption and destruction of PFAS in wastewater
  - Reductive defluorination reactions occur on the reactive electrochemical membrane cathode
  - Oxidation of water to oxygen gas occurs on the mesh anode

Microplastics: General

- Microplastics (MPs): Plastics ranging in size from 5 mm to 1 nm
- Nanoplastics (NPs): Plastic particles smaller than 1 nm in size
- Varying densities, shape, charge, and chemical properties affect removal rates/treatment efficacy
- MPs/NPs have large surface area that promotes microbial growth and accumulation of other contaminants/toxicants
  - Pharmaceuticals can adhere to MPs/NPs and persist rather than degrade
- Sampling and analytical methods are still being established to determine concentrations of MPs and NPs

Microplastics: Conventional Treatment for MPs at POTWs

- Primary treatment (screening and primary clarification): 40 to 90% removal
- Secondary treatment (activated sludge, aeration): 75 to 90% removal
  - Could be recycling MPs in returned sludge
- Tertiary treatment: 90 to 99% removal
- Chlorine shown to degrade polystyrene plastics into smaller particles
- Need to consider disposal of sludge, liquid waste streams, and biosolids that have high concentrations of MPs

Microplastics: Pilot and Full-Scale Treatment Information

Technology	Performance	Considerations
Reverse Osmosis *Pilot and Full-Scale*	-	• Requires pretreatment to prevent membrane fouling and properly remove MPs
Coagulation followed by Ultrafiltration (Iron-based and polyacrylamide coagulants) *Pilot Scale*	Can achieve greater than 90% removal of MPs	• Does NOT show significant removal of NPs due to larger pore size
Membrane Bioreactors *Pilot Scale*	Can achieve up to 99.9% removal of MPs	• Less prone to clogging and fouling than other membrane processes • Also effective in treating antibiotics, pesticides, pharmaceuticals, and personal care products
Sand Filtration *Pilot and Full-Scale*	50 to 99% removal dependent on the MPs size and pretreatment processes	• More effective removal with coagulation and flocculation pretreatment; backwash will have MPs • Bio-growth on filter improves removal
Dissolved Air Flotation *Pilot and Full-Scale*	Over 90% removal of less dense, floating MPs	• Can install after primary treatment or as part of secondary or tertiary treatment

PPCPs: General

- Pharmaceuticals, including both over-the-counter and prescription medication, are often not completely metabolized in the body and are discharged into municipal wastewater systems
  - Also enter wastewater through industrial discharges, hospitals/care facilities, animal waste
- Personal care products (soaps, cosmetics, fragrances, etc.) are discharged into municipal wastewater through regular household activities such as bathing and laundry
- PPCPs are water soluble, intended to be biologically active at low concentrations, bio-accumulate, and have polar tendencies
- Analytical methods are not well established for all the numerous compounds
- Difficult to test for contaminants in solids

PPCPs: Conventional Treatment for PPCPs at POTWs

- A few compounds have shown high removal efficiencies in conventional treatment, but most have not
- Primary treatment (screening and primary clarification):
  - PPCPs sorb to solids
- Secondary treatment (activated sludge, aeration):
  - Some compounds do degrade with secondary treatment
  - Which compounds degrade in secondary treatment and by how much is not readily known; need more information
- Need to consider disposal of sludge, liquid waste streams, and biosolids that contain PPCPs or byproducts of degraded PPCPs

PPCPs: Pilot and Full-Scale Treatment Information

Technology	Performance	Considerations
Membrane Bioreactors *Pilot Scale*	Both biodegradation and adsorption at the membrane surface	• Limited removal of hydrophilic and biologically persistent compounds • Also removes other ECs, including MPs
Constructed Wetlands *Pilot and Full-Scale*	Removal efficiency of PPCPs is highly variable (40-90%)	• Plants and soil microbes convert to less toxic compounds; sorption occurs in the soil • Need to harvest plant material every few years
Reverse Osmosis (RO) and other membrane processes *Pilot and Full-Scale*	RO has up to 99% removal of PPCPs; lower removal rates with larger pore-sized membranes	• PPCPs concentrated in reject waste stream that requires handling/disposal • Also removes other ECs
Granular Activated Carbon (GAC) Powder Activated Carbon (PAC) *Pilot and Full-Scale*	GAC and PAC showed greater than 90% removal of PPCPs	• GAC requires regeneration or disposal of spent media • Considerations for disposal of waste stream from PAC • Also removes other ECs
UV, Ozonation (O_3), and Hydrogen Peroxide *Pilot Scale*	PPCPs are oxidized, degraded, or removed; can remove or degrade up to 90% of some PPCPs	• Potential to create harmful by-products • UV or ozonation alone is not effective for removal or degradation of all PPCPs, typically use UV and O_3 or combine with hydrogen peroxide to be effective

POLLING QUESTIONS FOR UTILITY STAFF

Polling Question 2: For Utility Staff

Are you needing assistance with identifying projects for CWSRF emerging contaminants funding?

a) Yes, we could use help
b) Not sure yet
c) No, we don't need help

Polling Question 3: For Utility Staff

Do you need funding to support monitoring activities to assess the presence of emerging contaminants?

a) Yes
b) Not sure yet
c) No

Polling Question 4: For Utility Staff

What types of projects are you considering for CWSRF emerging contaminants funding? (Select all that apply)

a) POTW
b) Stormwater
c) Landfill
d) Contaminated sites
e) Surface water protection
f) Other

Polling Question 5: For Utility Staff

What emerging contaminant(s) of concern will your project(s) address? (Select all that apply)

a) PFAS
b) Antimicrobial resistant bacteria/pathogens
c) PPCP
d) Microplastics/nanomaterials
e) HABs
f) Other

Emerging Contaminant Project Case Studies

- **Lindsey Jones,** Water Infrastructure Finance Authority of Arizona, will present on the Tucson Reclamation Facility project
- **Satya Chennupati,** Iowa Department of Natural Resources, will present on the City of Cedar Rapids Water Pollution Control Facility project
- **Beth Malcolm,** New Hampshire Department of Environmental Services, will present on the Town of Conway landfill leachate treatment project
- **Lori Johnson,** Oklahoma Water Resources Board, will present on Central Oklahoma Mater Conservancy District Lake Thunderbird (stormwater) project

WATER INFRASTRUCTURE
FINANCE AUTHORITY OF ARIZONA

Opportunities for CWSRF Emerging Contaminant Fund

City of Tucson, AZ – Case Study

January 2023

Lindsey Jones

Water Infrastructure Finance Authority

Senior Program Administrator

ljones@azwifa.gov

Tucson's Reclaimed Water System

- Tucson Water receives treated effluent, which is either stored in Sweetwater Underground Storage and Recovery Facility or delivered to customers and recharge facilities following disinfection
- Tucson Water delivers 14,000 to 20,000 acre-feet (13 to 18 MGD) of Class A reclaimed water to over 1,000 sites/customers across the Tucson Water service area every year for irrigation and non-potable uses
  - The sites include private customers, common areas, right-of-way irrigations, public and private golf courses, parks, and numerous public and private schools
- 8 to 9 MGD of reclaimed water is delivered and stored at one in-channel riparian recharge project and two aquifer storage recharge project

PFAS Lawsuit

TOP STORY

Tucson, Marana sue 3M, 4 other companies over water contaminants

Joe Ferguson Nov 8, 2018 Updated Jan 10, 2020

"The city of Tucson and the town of Marana are suing five companies to pay for the removal of toxic and possibly cancer-causing chemicals found in some area water wells. The lawsuit asks for unspecified damages against 3M and other companies that manufactured, marketed and sold a firefighting foam that contained chemical compounds commonly known as PFCs, PFAs and PFOAs.

Davis-Monthan Air Force Base, like other bases around the country, used these compounds in firefighting foam for more than four decades — from 1971 until last year."

Proposed Project

- Provide treatment for PFAS and 1,4-dioxane to reduce/eliminate the possibility of contaminating currently unaffected portions of the aquifer
  - Treatment would be applied to extracted groundwater and treated effluent
  - Treatment will include ultraviolet light - hydrogen peroxide advanced oxidation (UV/AOP) process for removal of 1,4-dioxane and granular activated carbon (GAC) for treatment of PFAS
- The proposed treatment facility would leave provisions for further advanced water treatment systems allowing for direct potable reuse

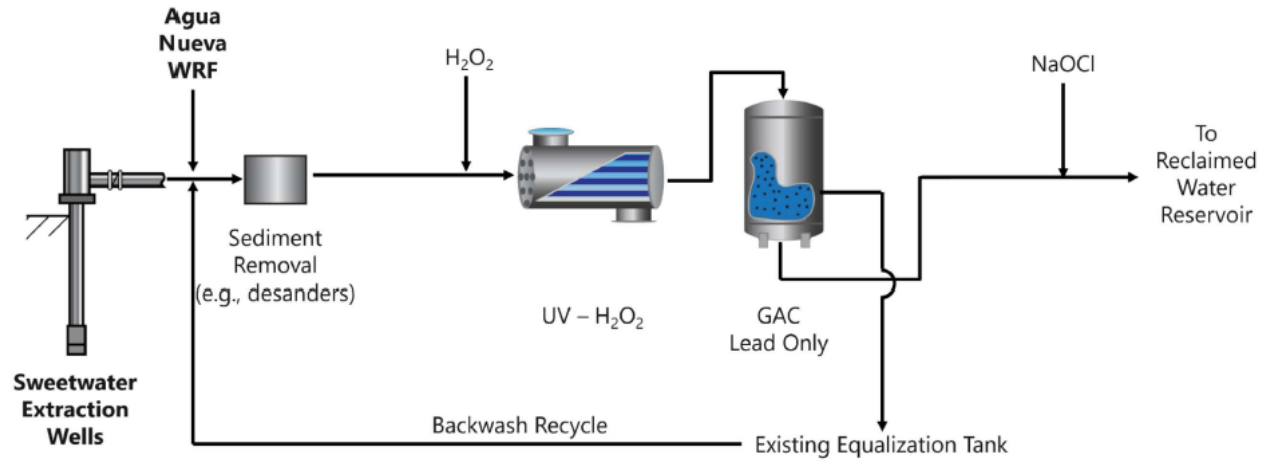


Figure B.2 UV AOP and GAC Pressure Contactor Process Flow Diagram

Iowa Department of Natural Resources

Leading Iowans in caring for our natural resources

Overview of Bipartisan Infrastructure Law CWSRF Emerging Contaminants Supplemental Appropriation
January 18, 2023

Monitoring Case Study: City of Cedar Rapids Water Pollution Control Facility PFAS Study

Satya Chennupati, P.E.
Wastewater Engineering Section Supervisor/CWSRF Program Manager
Iowa Department of Natural Resources

City of Cedar Rapids WPCF Background

- Population Served: >180,000 (including surrounding communities of Marion, Hiawatha, Robins, Palo and parts of Linn County)
- Design Average Wet Weather Flow: 56 million gallons/day
- Design Peak Month BOD5 Loading: 406,000 pounds/day
- Treats residential, commercial and industrial wastes
- Industrial waste contributors:
  - grain processing
  - food processing
  - cardboard recycling
  - metal finishing
  - pharmaceutical, etc.

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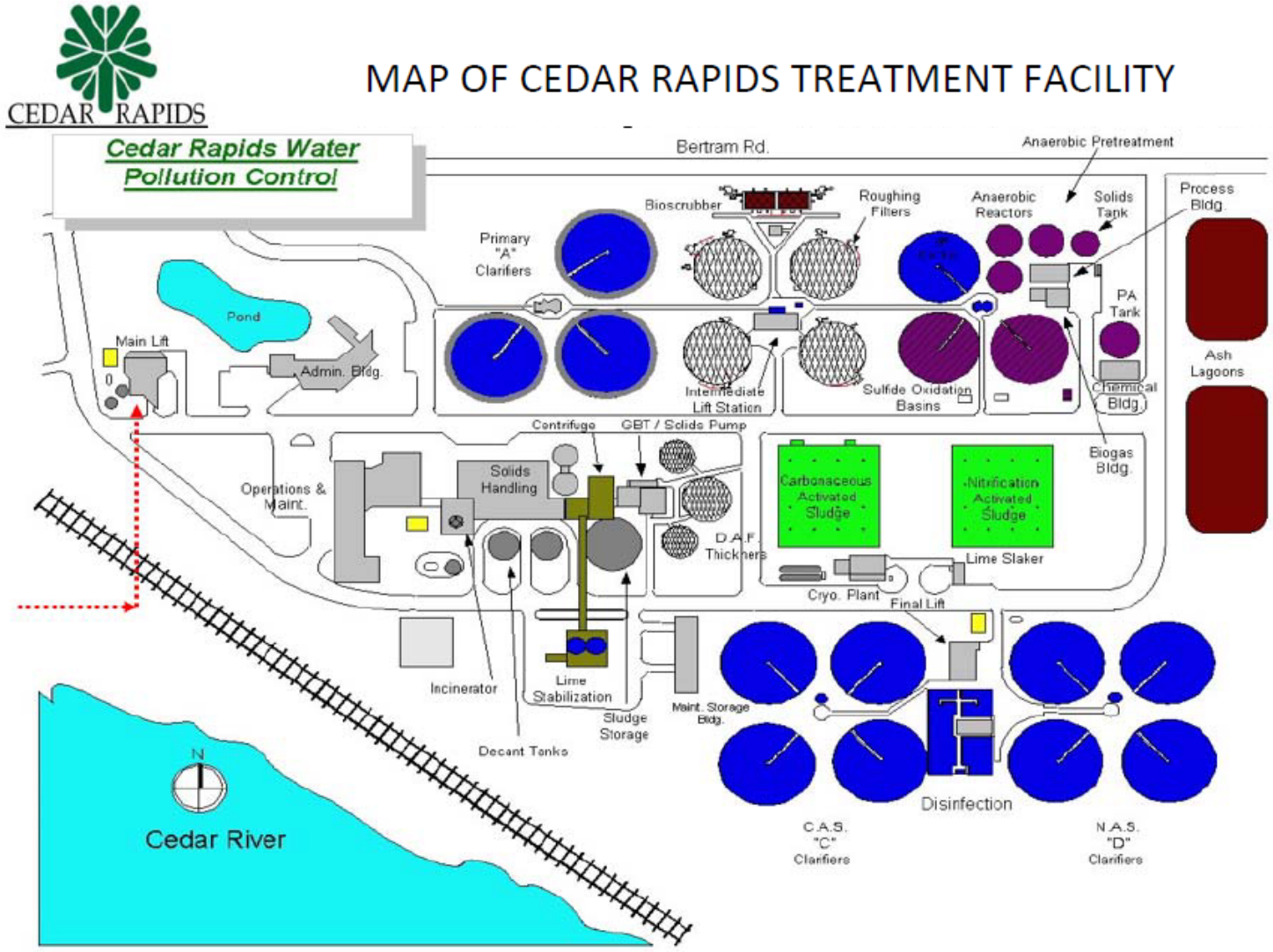
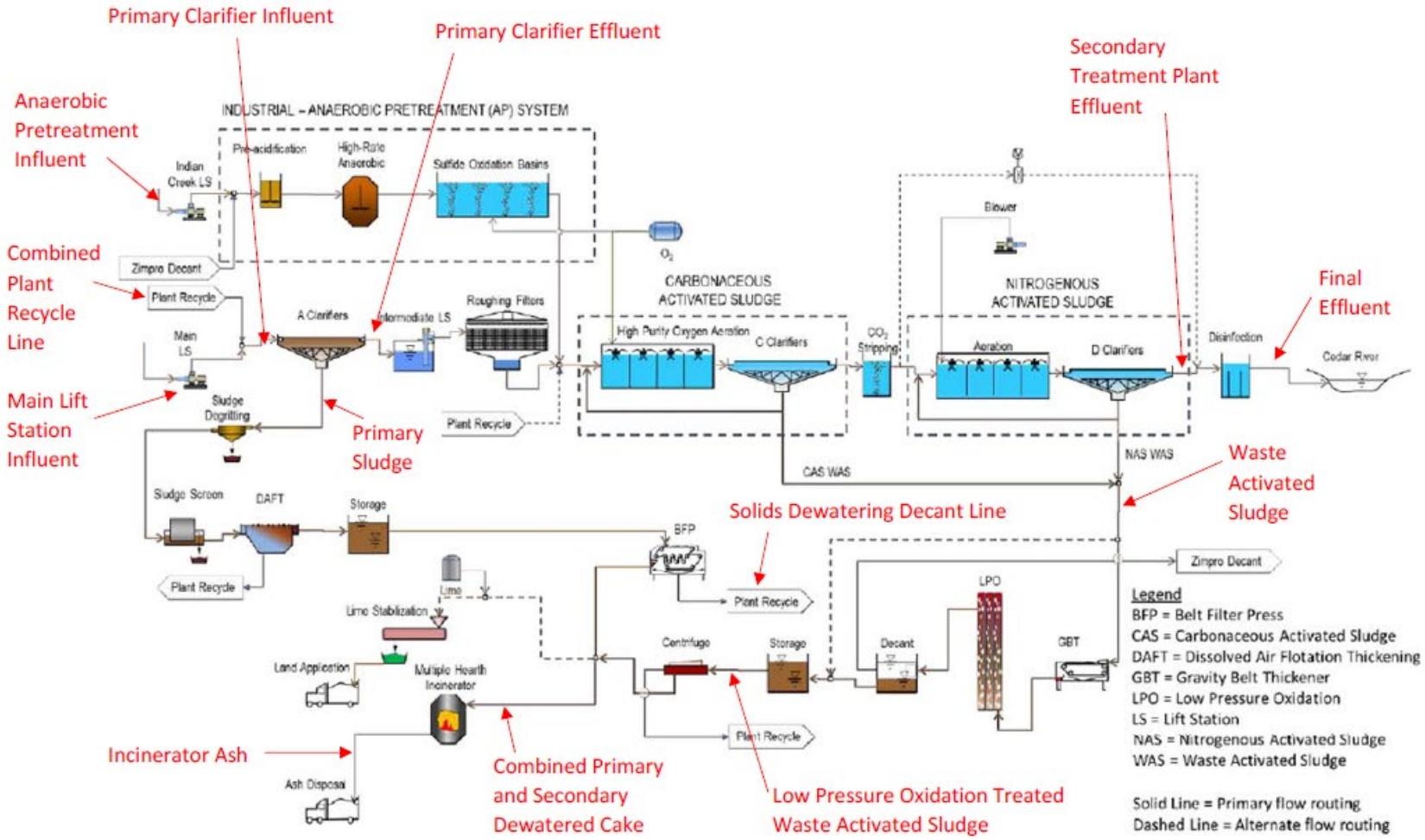
City of Cedar Rapids WPCF Background

- Physical, chemical and biological treatment processes
- Multiple hearth incinerator treats solids from the primary and secondary treatment processes
- City is currently involved in an EPA research project studying the fate of PFAS in solids after incineration, specifically the effectiveness of the multiple hearth incinerator at degrading and destroying PFAS compounds
- City recognizes that PFAS may need to be treated in the liquid and solid streams. To proceed with planning, the City need to better assess the presence and fate of PFAS at the WPCF as well as treatment options.

Cedar Rapids WPCF Facility Overview



City of Cedar Rapids WPCF Process Flow Schematic



Existing Process Flow Schematic

Courtesy of HDR

City of Cedar Rapids WPCF PFAS Source and Treatability Study

- Task 1: Baseline Sampling and Analysis
- Task 2: Evaluation of Alternative Treatment Technologies: commercially available treatment technologies for treatment of PFAS in liquid and solid streams based on monitoring results
- Task 3: Bench and/or Pilot Scale Testing: most viable treatment options onsite at the WPCF
- Task 4: Final Recommendations: final engineering report based on findings from pilot scale testing including recommended treatment loading, sizing criteria, projected site plan and an estimated budget

Task 1: Liquids Sampling & Analysis - Locations

- Main lift station influent
- Anaerobic pretreatment influent
- Primary clarifier influent & Primary clarifier effluent
- Secondary treatment plant effluent
- Final effluent
- Solids dewatering decant line
- Combined plant recycle line

Task 1: Solids Sampling & Analysis - Locations

- Primary sludge
- Waste activated sludge
- Low pressure oxidation treated waste activated sludge
- Combined primary and secondary dewatered cake
- Incinerator ash*

* Sampling stack emissions from the multiple hearth incinerator is not included

CWSRF Project and Funding Eligibility

- City has requested CWSRF Emerging Contaminants funds to support this project
- CWSRF Eligible? Yes, capital project at POTW (Section 212) [603(C)(1) of CWA]
- Emerging Contaminants present? Yes, detected PFAS in biosolids
- Capital project identified? Yes, monitoring and pilot projects most likely will result in a capital project

City of Cedar Rapids CWSRF Application Process Steps

- City submitted the CWSRF Intended Use Plan (IUP) application: December 1, 2022
- IUP Application processing by Iowa DNR – scoring, project priority list, publish IUP, public hearing, EPA review, Environmental Protection Commission approval of IUP
- DNR notifies City of project eligibility for CWSRF EC funding
- DNR applies for the CWSRF EC Supplemental Grant to EPA
- EPA awards CWSRF EC Supplemental Grant to Iowa DNR
- DNR notifies City of funding availability
- Cedar Rapids proceeds with the EC Study project

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AND THE IOWA DEPARTMENT OF NATURAL RESOURCES

City of Cedar Rapids EC Study Project Timeline

- **Task 1**: Engineering Procurement, Sampling and Analysis, Results Summary Report 9 - 11 months
- **Task 2**: Evaluation of Treatment Technologies/Recommendations Report: 3 - 4 months
- **Task 3**: Bench and/or Pilot Testing, Results Report : 13.5 months
- **Task 4**: Final Recommendations & Report: 2.5 months

Acknowledgements & Contact Information

- Acknowledgements: Thanks to the following Cedar Rapids utility managers

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AND THE IOWA DEPARTMENT OF NATURAL RESOURCES

- Presentation Contact:

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  Wastewater Engineering Section Supervisor/CWSRF Program Manager

  Iowa Department of Natural Resources

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North Conway Water Precinct

Conway Landfill / Precinct WWTF PFAS Reduction

Beth L. Malcolm

NH Department Of Environmental Services

CWSRF Emerging Contaminants Supplemental Appropriation– 01/18/2023

Photographs courtesy of North Conway Water Precinct

- 2022 CWSRF Project Proposal

  Project Priority List/Intended Use Plan

- Project Overview

- Future Plans - Emerging Contaminants Appropriations

2022 CWSRF Project Proposal

Project Priority List/Intended Use Plan

- GOAL: At this time, NH CWSRF intends to utilize these funds for Section 603 (c) eligibilities
  - Municipal PFAS source identification and elimination/reduction projects
  - Treatment of landfill leachate from municipally owned landfills that discharge to a municipal wastewater treatment plant
- NHDES requested pre-applications due June 1, 2022
- Electronic pre-application included a section for Emerging Contaminants proposals

2022 CWSRF Project Proposal

Project Priority List/Intended Use Plan

Pre-application information:

- **PFAS Source Identification and Elimination/Reduction**
  - Number of residential, commercial, and industrial users, with a brief description of the project and goals.
- **Treatment of Landfill Leachate**
  - Landfill name, location, active/closed status
  - Average volume of landfill leachate generated (gal/day)
  - Details about any existing pretreatment
  - Sewering and disposal with a brief description of the project and goals

Project Overview - Current State:

- Town of Conway accepts North Conway Water Precinct (NCWP) WWTF sludge
- In exchange, NCWP accepts Town landfill leachate
- An estimated $1M/year in combined sludge/leachate disposal costs is avoided

Photograph courtesy of North Conway Water Precinct

Project Overview - Complication:

- NCWP's WWTF is a groundwater discharge facility subject to AGQS standards for emerging contaminants such as PFAS
- At least one of the WWTF monitoring wells currently exceeds regulatory limits
- Preliminary testing indicates that the majority of PFAS loading at the WWTF from Town landfill leachate

Photograph courtesy of North Conway Water Precinct

Project Overview - Project Goal:

- Investigate feasibility of PFAS treatment options for the landfill leachate stream
- Pilot test and select a recommended alternative, and
- Prepare project to for full design, voter approval, and construction

Photograph courtesy of North Conway Water Precinct

Future NH CWSRF Plans – Emerging Contaminants Appropriations

- Developing EC program goals, reviewing guidance
- Promote Awareness of Funding:

  Fall/Winter 2022 Outreach to communities

  with landfills discharging leachate to WWTF
- Spring 2023 CWSRF pre-applications for EC grants
- Assess project success and lessons learned
- Develop and Repeat


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Oklahoma CWSRF Emerging Contaminant Case Study for Monitoring

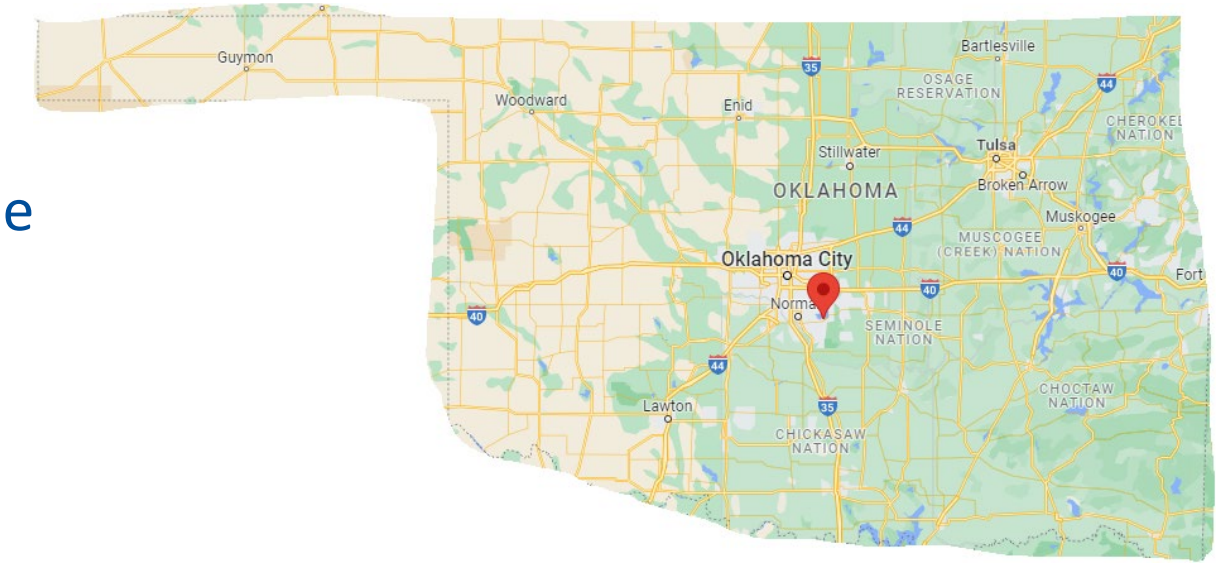
Presented by:

Lori Johnson, Assistant Chief

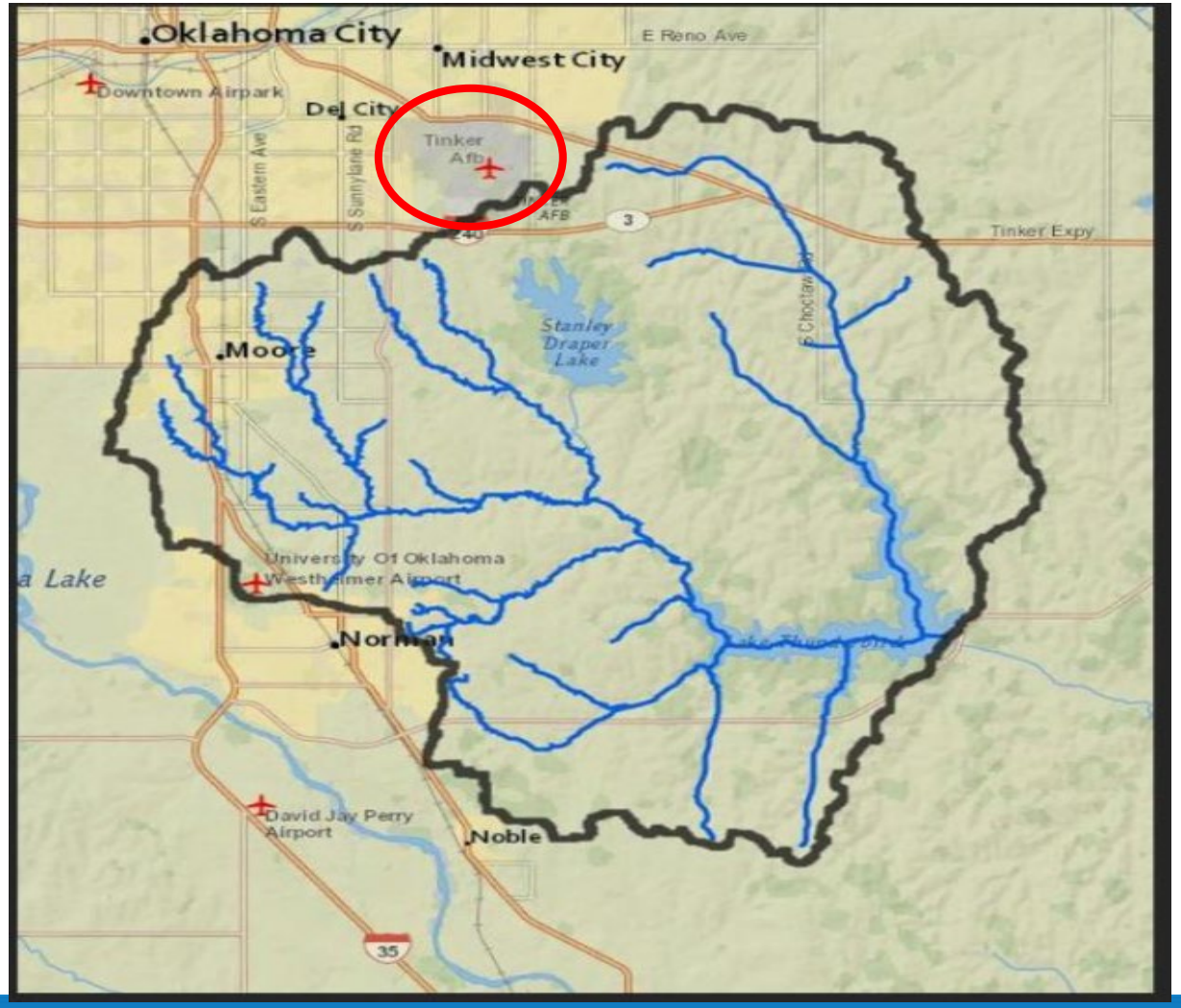
January 18, 2023

Lake Thunderbird Background

- City of Norman, Midwest City, Del City water supply
  - Central Oklahoma Master Conservancy District (COMCD) manages water resource development and control
- No Discharge
- Nearby Airforce Base
- Indirect Potable Reuse studies



Lake Thunderbird Watershed



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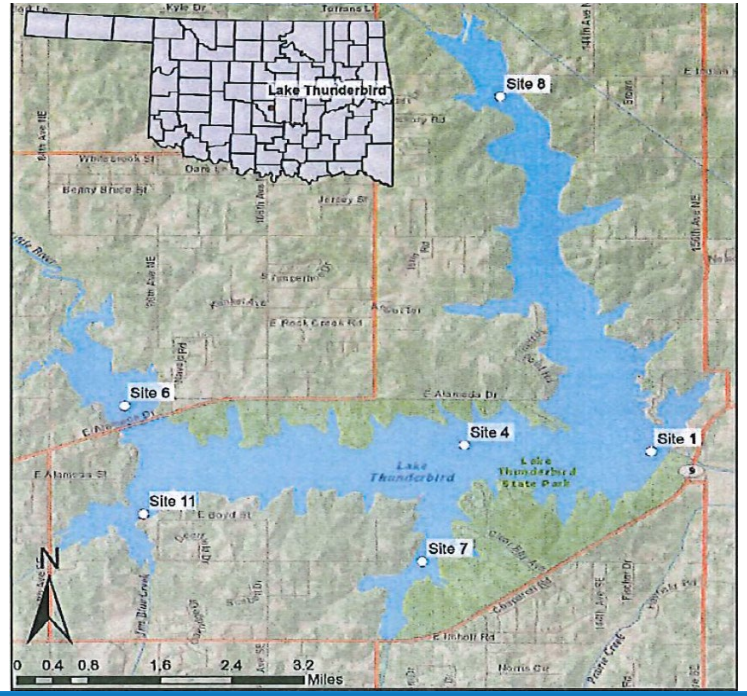
Previous Studies

- CEC Study on Lake Thunderbird was completed in 2017 by Oklahoma Geological Survey at University of OK
  - Provide data/research for the purpose of gaining consumer confidence and municipal partner support regarding water reuse issues
  - 110 CEC analyzed
  - 40 CECs were detected
    - pesticides, industrial compounds, PPCPs, hormones, etc.
    - Pesticides and artificial sweetener (acesulfame-K) were detected in all 4 seasons

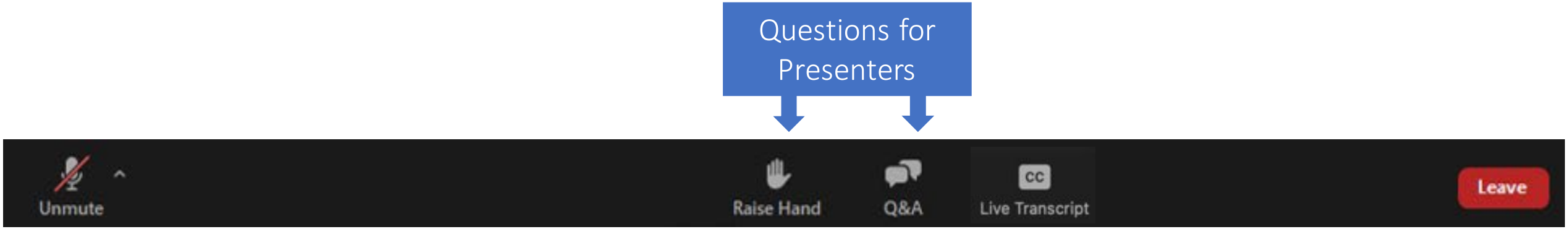


Next Steps-CWSRF CEC Study

- Report in 2017 indicated future studies to examine seasonal differences in detections and concentrations of CEC and conduct a GIS based study of potential sources within the watershed

Q&A

- Submit questions in the Q&A box or raise your hand to be called on



Resources

- Webinar recording and CWSRF emerging contaminants FAQs:
  - https://www.epa.gov/dwsrf/bipartisan-infrastructure-law-srf-memorandum
- Case studies:
  - https://www.epa.gov/cwsrf/clean-water-state-revolving-fund-emerging-contaminants
- For list of research references:
  - https://www.epa.gov/system/files/documents/2023-01/wastewater-treatment-technology-resources.pdf
- For information on wastewater treatment technologies:
  - https://ordspub.epa.gov/ords/wfc/f?p=259:1
- Upcoming DWSRF BIL Emerging Contaminants webinar: Jan 31, 2023, 2:00-3:30 PM EST
  - https://register.gotowebinar.com/register/7163106477046345559

Contact Information

- For additional questions contact:
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Thank you for attending today's webinar