



# Nonpoint Source Pollution: FY2024 Annual Report for Arizona

*Water Quality Division*  
*June 18, 2024*

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# 1 Introduction

## 1.1 Arizona Nonpoint Source Annual Report

The Arizona Nonpoint Source (NPS) Annual Report for state fiscal year 2024 (FY24) summarizes Arizona Department of Environmental Quality (ADEQ) NPS Program activities that occurred between July 1, 2023 and June 30, 2024. The state’s FY23/24 PPG Work Plan Output Report also documents FY24 NPS-funded activities and is a companion document to this report.

The majority of work performed by ADEQ’s NPS Program is funded by Clean Water Act Section 319(h) grant monies, awarded by the U.S. Environmental Protection Agency (EPA). Section 319(h) (11) requires states to report annually on progress in meeting the schedule of milestones contained in their Nonpoint Source Management Plans. It also requires, to the extent possible, nonpoint source pollutant loading reductions and improvements in water quality resulting from program implementation. For more information about Arizona’s NPS Program’s goals and structure for the FY20-24 reporting period, refer to the FY20-24 Five Year Plan.<sup>1</sup>

The FY20-24 NPS Five Year Plan has the following goals:

1. Identify and prioritize NPS threats and impairments
2. Plan and implement actions to prevent and reduce nonpoint source pollution discharges to protect and restore water quality
3. Evaluate state programs, rules, and authorities to protect and restore water quality for effectiveness and potential need for modification.

## 1.2 Executive Summary

To make this report as useful as possible as an evaluation tool for EPA and a planning tool for ADEQ, each milestone in the Five Year Plan Updates FY2024 Table was evaluated based on whether it was on track for the given year and whether it was on track for the overall five-year planning period. This allows staff to identify when additional resources may be needed to keep a milestone on track over a period of several years, and plan accordingly for the following fiscal year.

Milestone updates provide status information for the given reporting year. Milestones are identified as either “not applicable” (no activity for the reporting year), “ongoing” (activity took place in the reporting year and will be completed in a later year, or the task recurs each fiscal year), or “complete” (task is fully completed for the entire five-year planning horizon).

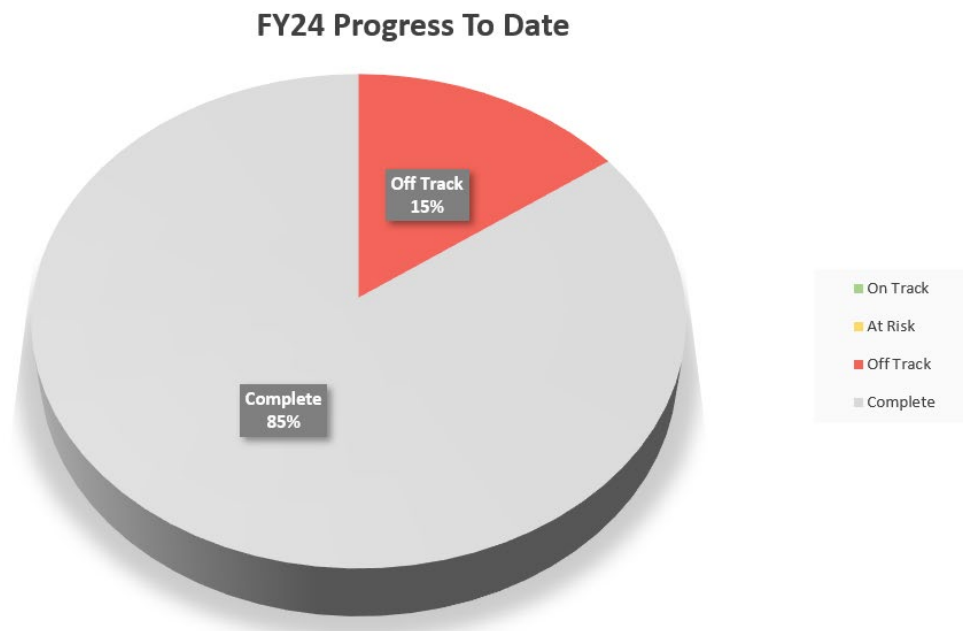
In addition, status updates are color-coded to denote whether they are on track relative to the overall five-year planning period. Milestones are identified as either:

<sup>1</sup> See <http://azdeq.gov/node/315>

- on track/ongoing ( ■ ),
- at risk of falling off track ( ■ )
- off track ( ■ )
- completed ( ■ )

The yellow, or “at risk” status update indicates that while the task may currently be on track (or is not yet due to have been initiated), ADEQ is aware of issues that could threaten the ability of the project to stay on track.

ADEQ was successful in staying on track with a majority of the milestones for FY24. ADEQ completed 85 percent of milestones and 15 percent of tasks are off track, as a result of shifting priorities and other work being conducted in the place of original commitments.



**Figure 1: ADEQ Progress**

## 1.3 FY24 Highlights

### 1.3.1 The Beloved Oak Creek Finally Sees Reductions in *E.coli*

Widely known for its scenic beauty, shady streamside, and cool waters, Oak Creek is highly valued and sought out by Arizonans, out-of-state, and international visitors alike. In 2019, Arizonans alone accounted for nearly 3.7 million visits to the creek (the 3rd most visited waterbody in the state), which has likely increased since. Because of its attractiveness to recreators, particularly swimmers and waders, Oak Creek has been impaired for *E. coli* since 2010.



*Escherichia coli* (*E. coli*) is a bacterium found in the intestines of humans and many warm-blooded animals. It is most prevalent in mammals (e.g., dogs, livestock, and wildlife). Most *E. coli* strains are harmless, but some can cause serious illness. Younger and older people, and those with weakened immune systems, are most vulnerable to infection. In addition to potentially causing illness on its own, high levels of *E. coli* increase the risk of exposure to other more serious waterborne diseases.

Many locals and visitors explore Oak Creek's beauty and wildlife, taking part in fishing, swimming, hiking, and camping. Popular sites include Slide Rock State Park, where visitors swim in the creek and slide down its smooth rock formations. Human and pet waste and litter also contaminate the creek. Although there are many types of *E. coli*, certain strains can cause human health concerns ranging from severe anemia and kidney failure to stomach cramps and diarrhea. For these reasons, engaging the public and alleviating sources of *E. coli* contamination in Oak Creek to protect and preserve the area for generations to come is critical and success depends on a collaborative effort.

The Watershed Improvement Unit has scientists and hydrogeologists who are embedded in priority watersheds to engage partners, ignite passion, and lead restoration efforts. Ron Tiller, a Senior Environmental Scientist, is a key driver of the improvements in Oak Creek. Supporting him is Liz Boettcher, an Environmental Scientist and several interns and contractors. For roughly five years, the team gathered over 10 partners, including volunteers with the Arizona Water Watch program, to come together and restore the watershed. As a guide, everyone used the Oak Creek Total Maximum Daily Load (TMDL) and the U.S. Forest Service's Watershed Restoration Action Plan.

The following projects have been implemented to reduce *E.coli*:

- Closed 27 unauthorized parking locations (Highway 89A) to improve safety and minimize social trails;
- Rehabilitated close to 400 unpermitted social trails
- Constructed a fence at Slide Rock State Park to manage visitation and reduce *E. coli*;
- Spread awareness of Leave No Trace behaviors through social media and signage
- Installed 37 pet waste stations along trails;

- Removed over 5,000 pounds of litter and over 300 diapers during clean-ups.

Collectively, it took over \$4 million of funding to execute these projects, and over \$1 million came from ADEQ via the Nonpoint Source Program. To date, there has been a 62 percent reduction of *E.coli* exceedances in Oak Creek and a 54 percent reduction in background *E.coli* concentrations during the recreation season. These improvements in water quality give Oak Creek the potential to be delisted as impaired under the Clean Water Act, a monumental achievement!

Many thanks to our integral partners:

AZ Department of Transportation  
AZ State Parks and Trails  
Arizona State University  
Conservation Legacy and Ancestral Lands Crew  
City of Sedona  
Leave No Trace  
Natural Channel Design  
Northern Arizona University  
Oak Creek Watershed Council  
Sedona Chamber of Commerce  
U.S. Forest Service and National Forest Foundation

## Five Year Plan Updates FY2024

<b>1.0 Goal: Identify and prioritize NPS threats and impairments</b>	
<b>1.1 OBJECTIVE:</b> Monitor surface and groundwater quality and analyze data to fulfill state and Clean Water Act requirements.	
<b>1.1.1 STRATEGY: Develop a comprehensive monitoring strategy that coordinates with NPS priorities</b>	
<b>Milestones:</b>	
1. Complete Comprehensive Monitoring Strategy Report (FY20)	Completed
Comments	
Completed and sent to EPA on 6/30/20	
<b>1.1.2 STRATEGY: Conduct ambient water quality monitoring to aid in assessment determinations</b>	
<b>Milestones:</b>	
1. Complete sampling per annual work plan (Annually)	Completed
Comments	
ADEQ reports that over 1,000 samples have been taken in FY24 throughout the state by internal staff, contractors and volunteers.	
2. Implement a focused sampling approach to combine data gap, source identification and effectiveness monitoring activities across the value stream (FY20)	Completed
Comments	
Completed.	
3. Close 20 data gaps annually to reduce the number of unassessed perennial waters from the previous 305(b) assessment report. (FY20-24)	Completed
Comments	
ADEQ continues to close data gaps using a dashboard programmed in R, a coding platform. Sampling is conducted by internal staff each year.	
<b>1.1.3 STRATEGY: Conduct Probabilistic Survey and evaluate trends since last probabilistic survey</b>	
<b>Milestones:</b>	
1. Complete probabilistic fish report (FY20)	Completed
Comments	
Completed November 2020. Report available at <a href="https://static.azdeq.gov/wqd/reports/fish.pdf">https://static.azdeq.gov/wqd/reports/fish.pdf</a> .	



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2. Select waterbody type for probabilistic study (FY21)	Completed
Comments	
Deferred to FY22 in the Performance Partnership Grant (PPG) workplan.	
3. Complete probabilistic survey on selected waterbody type (FY22)	Completed
Comments	
ADEQ completed the probabilistic study on mercury and PCBs in fish tissue and submitted it to EPA on 11/5/20. In FY22 and FY23, ADEQ worked with EPA to identify the next probabilistic study, which will be done in coordination with the National Rivers and Streams Survey (NRSA). ADEQ has already started gathering NRSA data in FY23 and will complete data gathering in FY24 and FY25.	
4. Conduct trend analysis on probabilistic survey data (FY23)	Completed
Comments	
The trend analysis was conducted with ongoing data collection efforts.	
<b>1.1.4 STRATEGY: Develop and implement in-field tools to increase the success of data collection efforts and identify potential sources and water quality improvements more efficiently.</b>	
<b>Milestones:</b>	
1. Continued development and deployment of at least 10 remote environmental monitoring (REM) telemetry to improve sample and data collection (Annually)	Completed
Comments	
REMs notify ADEQ of water flow in order to successfully obtain samples. REMs are a key component in the sampling strategy for mine remediation projects and Oak Creek projects. In FY24, a REM was installed near an adit opening at the Poland-Walker Tunnel abandoned mine site, which is discharging into the impaired Big Bug Creek. Additionally, ADEQ trained two more team members on how to build REMs in FY24.	
2. Perform dry soil metal characterization using X-ray Fluorescence (XRF) tool at 5 sites to aid in mine site prioritization (Annually)	Completed
Comments	
XRF analyses continue to be an additional method to characterize tailings and waste rock piles at abandoned mine sites. In FY24, soil XRF analysis was utilized at European Mine, an abandoned hardrock mine situated in a tributary to Cox Gulch in southern Arizona, which is impaired for cadmium, copper, and zinc.	
3. Expand use of field leach method to quantify potential runoff from 5 mine sites to aid in site prioritization (Annually)	Completed
Comments	
In addition to stream sampling and XRF, field leach method continues to be a method to characterize tailings and waste rock piles at abandoned mine sites.	
4. Use Unmanned Aerial Vehicles (drones) to aid in plan development and post- implementation effectiveness monitoring of both mine and grazing related projects (FY20-24)	Completed
Comments	
ADEQ continues to use drones to monitor remediation activities at former mine sites.	

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5. Develop partnership and deploy a lake monitoring buoy to collect data that may help predict conditions resulting in Harmful Algal Blooms (HABs) (FY21)	Completed
Comments	
ADEQ continues to participate in a monthly partnership meeting on HABs with EPA and the Arizona Department of Health Services. ADEQ procured a monitoring buoy in FY21. While although the buoy has not been deployed yet, ADEQ continues to evaluate the option of deploying it in partnership with the U.S. Forest Service at Bartlett Lake, which is heavily recreated. Before deployment, public safety risks need to be addressed. This commitment is considered completed since the buoy has been obtained.	
6. Reevaluate priorities for equipment needs on an annual basis, redeploy as necessary, and report in annual NPS report (Annually)	Completed
Comments	
ADEQ continues to evaluate equipment needs.	
<b>1.1.5 STRATEGY: Conduct source identification monitoring to identify and quantify pollutant sources contributing to impaired/not-attaining waters</b>	
<b>Milestones:</b>	
<p>1. Determine monitoring needs to identify and quantify suspect pollutant sources to high priority waters (Annually)</p> <p>Six waterbodies in FY20:</p> <ul style="list-style-type: none"> <li>• Lynx Creek</li> <li>• Davidson Canyon</li> <li>• 3R Canyon</li> <li>• Copper Creek</li> <li>• Babocomari River</li> <li>• Walnut Gulch</li> </ul> <p>Five waterbodies in FY21:</p> <ul style="list-style-type: none"> <li>• Lynx Creek</li> <li>• Copper Creek</li> <li>• Babocomari River</li> <li>• Davidson Canyon</li> <li>• Walnut Gulch</li> </ul> <p>Four waterbodies (Hassayampa; Cash Mine Creek; Big Bug Creek; Pinto Creek; Alum Gulch; Oak Creek) in FY22</p> <p>Four waterbodies (Hassayampa; Cash Mine Creek; Big Bug Creek; Pinto Creek; Alum Gulch; Oak Creek; 3R Canyon; Humboldt Canyon; Eugenie Stream) in FY23</p> <p>Three waterbodies (TBD) in FY24</p>	Completed
Comments	
In FY24, ADEQ completed its draft 305(b) Assessment of waterbodies. ADEQ conducted site specific monitoring at the following seven waterbodies in FY24 (exceeding the goal of three waterbodies): Hassayampa River, Cash Mine Creek, Big Bug Creek, Pinto Creek, Alum Gulch, 3R Canyon, and Oak Creek. Sampling continues at these waterbodies to assess contamination levels and help inform watershed improvement projects (i.e. McCleure Mine, Cash Mine, Gibson Mine, Exposed Reef Mine, Three R Mine, Oak Creek improvements, etc.).	

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2. Complete data collection according to annual FY sampling plan (FY20-24)	Completed
Comments	
Sampling for FY24 was completed according to plan. Results are submitted through the Water Quality Exchange database.	
3. Analyze data and update priority project rankings based upon results (Annually)	Completed
Comments	
ADEQ's hydrogeologists and scientists analyze sample data to determine load reductions and overall health of the waterbody. Results are submitted to EPA's Water Quality Exchange database. Prioritized waterbodies continue to be Hassayampa River and related tributaries (metals), Alum Gulch and related tributaries (metals), and Oak Creek (E.coli). ADEQ is seeing significant E.coli reductions all 4 impaired reaches of Oak Creek, contributed to its multi-year commitment and funding of watershed improvement projects. ADEQ is also seeing reductions in metal loads near several abandoned mine sites near the Hassayampa River. These results demonstrate that ADEQ's long-term commitment and strategic prioritization of waterbodies significantly increases the likelihood of waterbody load reductions.	
<b>1.1.6 STRATEGY: Conduct effectiveness monitoring in waters where water quality improvement/protection efforts have been implemented.</b>	
<b>Milestones:</b>	
1. Collect water quality data to determine if projects implemented were effective at improving water quality including NRCS NWQI projects as appropriate (Annually)	Completed
Comments	
ADEQ is collecting effectiveness samples at several remediated abandoned mine sites, including Storm Cloud Mine, McKinley Mill, Three R Mine, and Hillside Mine. ADEQ continues to collect samples in Oak Creek to determine the effectiveness of projects that reduce E.coli loadings.	
2. Determine effectiveness monitoring needs to quantify improvements to high priority waters: Five waterbodies (Alum Gulch, Boulder Creek, Mule Gulch, Pinto Creek, Copper Creek) (FY20) Seven waterbodies (Hassayampa River, Boulder Creek, 3R Canyon, Pinto Creek, French Gulch, Oak Creek, Big Bug Creek) (FY21) Six waterbodies (TBD) (FY22) Six waterbodies (TBD) (FY23) Three waterbodies (TBD) (FY24)	Completed
Comments	
ADEQ continues to conduct effectiveness monitoring on the following six waterbodies: Hassayampa River, 3R Canyon, Unnamed Trib to 3R Canyon, Boulder Creek, Harshaw Creek, and Oak Creek. ADEQ is measuring the effectiveness of past legacy mine remediation along the Hassayampa River (Storm Cloud Mine, McKinley Mill), 3R Canyon and Unnamed Trib (3R Mine), Boulder Creek (Hillside Mine), and Harshaw Creek (Lead Queen Mine). ADEQ continues to sample along Oak Creek to measure the effectiveness of several projects.	
8. Use effectiveness monitoring data to delist waters as applicable (FY22, 24)	Completed
Comments	
ADEQ is analyzing E.coli data collected at Oak Creek to determine if some reaches are eligible for Clean Water Act impairment delistings.	
9. Develop at least 1 NPS success story and submit to EPA via GRTS per waterbody below:	

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•Boulder Creek (FY20) (annually by July 1st)	Completed
Comments	
Boulder Creek (Hillside Mine remediation): <a href="https://www.epa.gov/system/files/documents/2022-02/az_boulder-creek_2020_508.pdf">https://www.epa.gov/system/files/documents/2022-02/az_boulder-creek_2020_508.pdf</a>	
ADEQ submitted an additional story for: Harshaw Creek (Lead Queen Mine Remediation): <a href="https://www.epa.gov/system/files/documents/2022-10/AZ_Harshaw%20Creek_2019_508.pdf">https://www.epa.gov/system/files/documents/2022-10/AZ_Harshaw%20Creek_2019_508.pdf</a>	
• Oak Creek (FY23)	Completed
Comments	
ADEQ submitted NPS Success Stories for other watersheds listed below. ADEQ will work on a story for Oak Creek upon completion of projects and water quality data analyses.	
Hassayampa River (McKinley Mill Remediation): <a href="https://www.epa.gov/system/files/documents/2024-02/az_hassayampa-river_2115_508.pdf">https://www.epa.gov/system/files/documents/2024-02/az_hassayampa-river_2115_508.pdf</a>	
Pinto Creek (Gibson Mine remediation): <a href="https://www.epa.gov/system/files/documents/2024-05/az_pinto-creek_2131_508.pdf">https://www.epa.gov/system/files/documents/2024-05/az_pinto-creek_2131_508.pdf</a>	
• Big Bug Creek (FY24)	Completed
Comments	
While a Success Story was not submitted for Big Bug Creek in particular, ADEQ did submit the following Success Stories in its place:	
Cienega Creek Erosion Control Restoration Project (under EPA review)	
Miller Creek Public Restrooms Project (under EPA review)	
Altar Valley Invasive Mesquite Removal Project (under EPA review)	
International Sonora, Mexico and San Pedro River Ranching Best Management Practices Projects (under EPA review)	
10. Collect Data for the evaluation of bioassessment tools for effectiveness monitoring at 20 sites on metals impaired streams (FY20-FY23)	Completed
Comments	
ADEQ collected bioassessment samples at Hassayampa River to compliment water quality data and determine the extent of metal contamination in the watershed and determine the effectiveness of ADEQ's remediation of four abandoned mine sites (Storm Cloud Mine, Cash Mine, McKinley Mill, McCleure Mine).	
11. Evaluate Index of Biological Integrity (IBI) and results of metals bioassessment study (FY24)	Completed
Comments	
Evaluation was conducted by the Standards, Monitoring, and Assessment Unit.	
12. Write a report summarizing the findings of the bioassessment study (FY24)	Completed
Comments	
Report is available upon request.	

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<b>1.1.7 STRATEGY: Work with external agencies and volunteer partners to collect data to fulfill monitoring goals.</b>	
<b>Milestones:</b>	
1. Train at least 10 volunteer groups to assist in fulfilling sampling plan goals (Annually)	Completed
Comments	
Volunteer groups have been trained to assist with data gaps and pollution source identification. Sustained training continues for groups such as: Slide Rock State Park, Tonto National Forest, Friends of the Forest, and AZ Game and Fish- San Pedro.	
2. Develop or update volunteer visual aids including Sample and Analysis Plan, video lessons, handbook, and reference guides (FY20)	Completed
Comments	
A new Sample and Analysis Plan template has been created for volunteers to use as a reference. Microvideo lessons on Dilutions for E. coli Samples ( <a href="https://www.youtube.com/watch?v=H2TiZhfv11c&amp;feature=youtu.be">https://www.youtube.com/watch?v=H2TiZhfv11c&amp;feature=youtu.be</a> ) and Trash Clean Up Process ( <a href="https://www.youtube.com/watch?v=BNFN2h_r0U&amp;feature=youtu.be">https://www.youtube.com/watch?v=BNFN2h_r0U&amp;feature=youtu.be</a> ) were completed. Additionally a new Arizona Water Watch Volunteer handbook is available for volunteers: <a href="https://static.azdeq.gov/wqd/azww/handbook.pdf">https://static.azdeq.gov/wqd/azww/handbook.pdf</a>	
3. Direct volunteer groups to focus on agency high priority water data needs (Annually)	Completed
Comments	
ADEQ has focused Arizona Water Watch volunteers on key reaches to better focus remediation efforts and understand project effectiveness. These waterbodies include the Santa Cruz River, Sonoita Creek, and Fossil Creek. Community Science data led to a proposed 2024 Clean Water Act Section 303(d) list removal of Sonoita Creek.	
<b>1.1.8 STRATEGY: Complete and submit the 305(b)/303(d) integrated report on a biannual schedule.</b>	
<b>Milestones:</b>	
1. Use a real-time assessment tool to guide data collection to minimize data gaps and determine the current status of monitored waters (Weekly)	Completed
Comments	
ADEQ continues to use its award-winning real-time assessment tool to track new impairments and provisional delistings. Metrics include Key Performance Indicators for individual reaches and individual pollutant parameters. ADEQ utilizes the weekly metrics to help inform decision-making.	
2. Enhance real-time assessment tool to an enterprise, ADEQ IT-supported tool (FY21)	Completed
Comments	
Assessment tool enhancements completed in April 2021.	
3. 2020 CWA 303(d) List and supporting 305(b) report (FY20)	Completed
Comments	
The 2020 cycle has been combined with the 2022 cycle.	
4. 2022 CWA 303(d) List and supporting 305(b) report (FY22)	Completed

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Comments	
The 2022 Assessment was submitted to EPA for approval on 4/5/2022. The approved Assessment available online here: <a href="http://azdeq.gov/node/7813">http://azdeq.gov/node/7813</a>	
5. 2024 CWA 303(d) List and supporting 305(b) report (FY24)	Completed
Comments	
ADEQ and EPA collaborated on the draft 2024 Assessment in FY23. ADEQ initiated the public comment period for the 2024 Assessment on 6/28/23. The 2024 Assessment was completed in FY24. <a href="https://azdeq.gov/notices/extended-comment-period-begins-draft-2024-clean-water-act-assessment">https://azdeq.gov/notices/extended-comment-period-begins-draft-2024-clean-water-act-assessment</a>	
<b>1.2 OBJECTIVE: Prioritize internal resources toward the protection of high priority waters</b>	
<b>1.2.1 STRATEGY: Protection of high priority waters including monitoring for antidegradation of outstanding Arizona Waters and identification of other high priority waters</b>	
<b>Milestones:</b>	
1. Update and complete antidegradation implementation procedures for water quality standards (FY23)	Off track
Comments	
EPA approved ADEQ's antidegradation implementation procedures in the 2008/2009 Triennial Review. An update has not occurred since then. This commitment will need to be adjusted due to ADEQ's current prioritization of cleaning up impaired waters. However, ADEQ's Surface Water Protection team (permits, compliance, enforcement) regularly conducts anti-degradation reviews and distinguishes requirements for MS4 and CGP/MSGP permits.	
2. Use GIS tools to identify high-quality waters for protection (FY23)	Off track
Comments	
Similar to the update above, this commitment will need to be adjusted due to the current prioritization of cleaning up impaired waters.	
3. Evaluate water quality of existing Outstanding Arizona Waters for antidegradation (FY24)	Off track
Comments	
ADEQ has identified the need for a comprehensive plan for Outstanding Arizona Waters, which can be prioritized in future years. The next Nonpoint Source Five Year Plan aims to include projects that will improve impaired waters and protect attaining waters.	
<i>Note: Outstanding Arizona Waters are listed in the Arizona Administrative Code R18-11-112</i>	
<b>2.0 Goal: Plan and implement actions to prevent and reduce nonpoint source pollution discharges to protect and restore water quality</b>	
<b>2.1 OBJECTIVE: Work with internal and external partners to develop and implement strategies for addressing impairments influenced by mining-related nonpoint sources</b>	
<b>2.1.1 STRATEGY: Develop prioritization methodology for metals impaired stream reaches and contributing mine sites</b>	
<b>Milestones:</b>	
1. Complete an inventory of potential sources on currently metal impaired waters (FY21)	Completed
Comments	
A surface-level inventory of potential sources has been identified using past TMDL and watershed plans. The potential sources are all legacy mining sites, distributed across currently prioritized waterbodies like Hassayampa River, Pinto Creek, and Humboldt Canyon/Alum Gulch. ADEQ will be developing an in-	

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depth inventory of sources when it reviews and catalogues its current TMDLs and watershed plans. Potential sources will be prioritized as future KOUI (Known, Ongoing, Unauthorized Impact) sites.	
2. Prioritize stream reaches and mine sites, using ADEQ's surface water improvement priorities strategy for FY20 (FY20)	Completed
Comments	
High priority sites (stream name) for FY20 included 3R mine (3R Canyon), Poland Walker Tunnel (Big Bug Creek), McKinley Mill and Storm Cloud Mine (Hassayampa River), Gibson Mine (Pinto Creek). These will continue to be priorities in FY21 as we begin to implement remedial projects	
3. Rank impaired stream reaches and mine sites for project implementation based on ADEQ's surface water improvement priorities strategy (FY21)	Completed
Comments	
Based on ADEQ's priorities strategy, mine/KOUI sites are of highest priority. The sites are located on jurisdictional waters, making them even higher priority. ADEQ is implementing remediation at 7 mining sites: Gibson Mine, McKinley Mine, Storm Cloud Mine, Cash Mine, McClellan Mine, Eugene Mine, and Poland-Walker Tunnel. In FY21, remediation was completed at the Storm Cloud Mine and 3R Mine.	
4. Update prioritization list (Annually)	Completed
Comments	
No change to prioritization list in FY23. Significant time and monetary investments in consistent watersheds is demonstrating water quality improvements towards potential delists.	
<i>Note: 3 See ADEQ's FY20-24 Nonpoint Source Pollution Five Year Plan, Executive Summary</i>	
<b>2.1.2 STRATEGY: Identify and pursue additional funding sources for mine remediation projects</b>	
<b>Milestones:</b>	
1. Develop standard work to establish partnerships with external entities to cooperatively implement projects (private landowners, land management agencies) (FY20)	Completed
Standard work has been developed and current partnerships include US Forest Service, BLM, private landowners, volunteer groups, State Land Department, private consultants, Arizona Mining Association, Freeport McMoRan, and EPA.	
2. Develop talking points to approach external entities for possible funding support (FY20)	Completed
Comments	
ADEQ has engaged several external entities for funding support in FY20, including: the USFS, which will result in a Participating Agreement allowing ADEQ to perform remedial work at the Poland Walker Tunnel and Eugene mine (both degrade Big Bug Creek). This agreement will be finalized in FY21 and transfer \$300,000 to ADEQ to perform the work; the Arizona Mining Association, who participated in a Kaizen event on abandoned mines in January 2020 and offered support and resources to remediate abandoned mines.	
3. Use priority ranking to pursue additional internal (non-319) and external funding sources for high priority projects (Annually)	Completed
Comments	
ADEQ evaluated EPA's Technical Assistance RFP in FY24, however, the proposed watershed projects did not meet the technical needs of the RFP. ADEQ continues to monitor other funding sources outside of the nonpoint source program.	

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4. Pursue the establishment of state funding source to address inactive mine sites (FY24)	Completed
Comments	
The establishment of a state funding source will need state legislature approval and likely a bill to establish the funding in state statute. ADEQ is evaluating the possibility of this, and will continue to remediate abandoned mines as part of the federal nonpoint source program it implements.	
<b>2.1.3 STRATEGY: Direct fund projects on high priority waters</b>	
<b>Milestones:</b>	
1. Develop and implement standard work to secure internal approval for direct funded 319 projects (FY20)	Completed
Comments	
ADEQ's Watershed Improvement Unit utilizes a standard work to develop project pitches given to the WQD Director to obtain approval on direct-funded 319 projects.	
2. Develop a process to determine when surface water discharges from abandoned mines are impacting unregulated private drinking water wells (FY20)	Off track
Comments	
In FY20, this project was determined to be beyond the authority and expertise of the Surface Water Quality Improvement team. Efforts are prioritized to remediate abandoned mine sites and their impacts to nearby streams and rivers. ADEQ will be contemplating drinking water impacts, along with other impacts, on public health and the environment by following national Good Samaritan legislation development and any other national abandoned mine land clean-up efforts.	
3. Establish a process for ensuring that all 319 direct-funded projects meet EPA's 9 key elements for watershed-based plans (FY21)	Completed
Comments	
All current 319-funded projects meet EPA's 9 key elements for watershed plans. Arizona is covered by multiple, broad-scoped 8-digit HUC watershed plans called "NEMO Plans" (online here: <a href="http://azdeq.gov/node/664">http://azdeq.gov/node/664</a> ). NEMO plans cover 8 of the 9 elements from EPA's Watershed Planning Handbook. The remaining element, load reduction data, is provided by a contract with the University of Arizona (Master Watershed Steward Contract). Load reductions pre- and post- projects are calculated by Professor Guertin and provided to ADEQ for implemented projects at mining sites and Oak Creek. All load reduction data is submitted to EPA's Grants and Reporting Tracking System (GRTS). Additional Watershed Improvement Plans (WIPs) for smaller HUCs also provide the necessary key elements for certain watersheds.	
4. Use prioritized sources to compete for internal funding sources (319, WQARF, PPG) (Annually)	Completed
Comments	
In FY24, ADEQ predominantly relied on CWA Section 319 funding to remediate abandoned mines along metals-impaired waterbodies.	
5. Continue to maximize internal match for 319 project funds to minimize grantee match requirements (Annually)	Completed
Comments	
In FY24, ADEQ continued to maximize internal match for 319-funded projects. ADEQ utilizes match from remaining sub-award grantees, the state-funded WQARF, personnel match, and Citizen Science/Arizona Water Watch volunteers.	



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### 2.1.4 STRATEGY: Implement projects at high priority mine sites that are impacting human health or contributing to impairments of perennial and intermittent waters

#### Milestones:

1. Implement projects at Lead Queen Mine, 3R Mine, Poland Mine, Storm Cloud Mine, and McKinley Mill (FY20)	Completed
Comments	
<p>Lead Queen Mine: The adit plug was installed in August 2019 and effectively ceased the discharge. Water quality has improved below the discharge point. ADEQ has submitted an NPS Success Story for this site to EPA. Publication is pending.</p> <p>3R Mine: Remediation was completed by ADEQ and Tetra Tech in May 2021. ADEQ partnered with US Forest Service to complete the remediation, the mine is located on USFS land. ADEQ is conducting effectiveness monitoring at this site.</p> <p>Poland Mine: Remediation on the waste rock pile on U.S. Forest Service property was completed in January 2022. ADEQ contracted with Tetra Tech to continue site characterization of the remaining waste rock pile and discharging tunnel on private property. ADEQ is engaging with Freeport McMoRan, ASU, and other entities to develop a possible remedial approach.</p> <p>Storm Cloud Mine: Remediation was completed in December 2020. ADEQ is conducting effectiveness monitoring. The adit continues to discharge under storm flow conditions, and ADEQ is exploring new technologies to address the adit with external contractors.</p> <p>McKinley Mill Mine: Remediation was completed in early 2022. ADEQ is conducting effectiveness monitoring at this site.</p>	
2. Implement projects at Gibson Mine, Cash Mine, Senator Mine, McCleur Mine, Zonia Mine (FY21)	Completed
Comments	
<p>Gibson Mine: ADEQ spent FY23 remediating the former Gibson Mine site with its contractors, Arcadis. Remediation will be completed in July 2023.</p> <p>Cash Mine: ADEQ contracted with Tetra Tech to conduct a site investigation, complete a cultural survey and biological evaluation, and design a remediation method in FY22. Remediation began in Fall FY22 and is continuing in Spring/Summer FY23. Remediation is expected to be completed by July 2023.</p> <p>Senator Mine: This site has been referred to the Surface Water Protection team for formal enforcement. The owners of the mine are under a consent order and ADEQ continues to work with them on addressing the contamination.</p> <p>McCleur Mine: ADEQ contracted with Tetra Tech to conduct a site investigation, complete a cultural survey and biological evaluation, and design a remediation method in FY22. Remediation began in Fall FY22 and was completed in FY23.</p> <p>Zonia Mine: This site has been identified as a future remediation site.</p>	
3. Implement high priority projects in the Harshaw Creek watershed (FY22)	Completed
Comments	
<p>ADEQ will include Harshaw Creek as a potential location for site identification for future remediation of abandoned mines. ADEQ is currently sampling in Harshaw Creek to assess the clean-up of the former Lead Queen Mine, which was remediated by U.S. Forest Service. ADEQ is continuing to complete remediation at its other prioritized waterbodies (Hassayampa, Santa Cruz watershed, and Oak Creek).</p>	
4. Implement high priority projects in the Lynx Creek watershed (FY23)	Completed
Comments	
<p>ADEQ has identified Lynx Creek as a potential watershed to conduct abandoned mine remediation, considering its proximity to the Hassayampa River, which has been a prioritized waterbody since 2019. In FY24, ADEQ conducted source identification efforts in Lynx Creek to determine how many abandoned mines could be contributing to the waterbody's impairments.</p>	

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5. Implement 2 high priority projects (FY24)	Completed
Comments	
In FY24, ADEQ completed source identification in Alum Gulch and Cox Gulch, as well as data collection at Jersey Seep near the Hassayampa River.	
<b>2.1.5 STRATEGY: Measure the effectiveness of mine remediation projects</b>	
<b>Milestones:</b>	
1. Conduct effectiveness monitoring (Annually)	Completed
Comments	
ADEQ continues to sample along the Hassayampa River to determine effectiveness at the completed Storm Cloud Mine remediation, as well as 3R Canyon near the 3R Mine remediation site. ADEQ is utilizing water quality sampling and XRF soil analysis at European Mine to inform remediation. ADEQ continues to sample along Oak Creek to measure the effectiveness of several projects.	
2. Calculate actual versus estimated load reductions for each project implemented (As necessary for projects implemented in 2.1.4)	Completed
Comments	
Through its contract with the University of Arizona, ADEQ receives load reduction calculations for projects and report them through EPA's Grants and Reporting Tracking System (GRTS). Load reductions were calculated for Oak Creek projects and remaining sub-award grantee projects in March 2024. Visit GRTS for more: <a href="https://www.epa.gov/nps/grants-reporting-and-tracking-system-grts">https://www.epa.gov/nps/grants-reporting-and-tracking-system-grts</a>	
3. Delist waters that are now meeting standards (FY22 and FY24)	Completed
Comments	
ADEQ acknowledges that delisting waters requires EPA's approval. The level of effort to meet this specific goal may exceed the timeframe of a Nonpoint Source Five Year Plan. Nonetheless, ADEQ regularly assesses its waters on a weekly basis using R code, which identifies "provisional" impairment delistings. In FY24, ADEQ's weekly assessment of waterbodies identified:	
<ul style="list-style-type: none"> <li>New parameter provisional delisting – Unnamed Tributary to Cox Gulch for cadmium</li> <li>New parameter provisional delisting – Unnamed Tributary to Eugenie Stream for selenium</li> <li>New parameter provisional delisting – Copper Creek for cadmium</li> <li>New parameter provisional delisting – Miller Creek for E.coli</li> </ul>	
4. Reevaluate implemented BMPs where expected load reductions are not realized (Annually)	Completed
Comments	
As mentioned in other milestones, ADEQ collected water quality samples to measure the effectiveness of projects. In FY24, ADEQ reevaluated the remediation of Three R Mine in southern Arizona (Santa Cruz County). Exceedances of copper are still being observed in the nearby tributary. ADEQ is exploring another round of remediation of the site with the U.S. Forest Service.	
<b>2.2 OBJECTIVE: Work with internal and external partners to develop and implement strategies for addressing impairments influenced by recreation-related nonpoint sources</b>	

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<b>2.2.1 STRATEGY: Develop prioritization methodology for E. coli impaired stream reaches and contributing land uses/sources</b>	
<b>Milestones:</b>	
Develop an inventory of potential sources on currently E.coli impaired waters (FY21)	Completed
Comments	
As part of a DNA source tracking study with Northern Arizona University initiated in spring 2021 in Oak Creek, ADEQ completed a regional E. coli DNA reference library of mammalian sources for Oak Creek in FY22. DNA has been extracted from common fecal E.coli sources in Oak Creek: human, dog, cattle, horse, sheep, deer, elk, raccoon, skunk, beaver, and otter. Since February 2021, staff have been collecting monthly water samples for DNA and E. coli MPN at 11 baseflow sites over the length of the creek. Six high use recreation sites are bracket sampled during holiday weekends during the summer recreation season to document the degree of human influences on water quality at these sites. Stormwater and snowmelt sampling is taking place on the mainstem of Oak Creek and its ephemeral tributaries when these types of events occur. Sampling in these ephemeral drainages is being undertaken to determine which of the subwatersheds are contributing the greatest amounts of mammalian E. coli and the relative contributions of these sources. Preliminary findings have identified E.coli exceedances during precipitation events and during high recreation times from people and dogs.	
Prioritize stream reaches and land uses, using ADEQ's surface water quality improvement priorities strategy (FY21)	Completed
Comments	
ADEQ has prioritized Oak Creek to focus watershed improvements. The creek is predominantly impacted by recreation, as well as other potential sources that will be identified through ADEQ's DNA source tracking study with Northern Arizona University.	
Rank impaired stream reaches and land uses for project implementation based on ADEQ's surface water quality improvement priorities strategy (FY21)	Completed
Comments	
Top polluting sub-watersheds in Oak Creek are near Pumphouse Wash, West Fork, and Slide Rock State Park.	
Update prioritization list (Annually)	Completed
Comments	
No changes in FY24.	
<i>Note: See ADEQ's FY20-24 Nonpoint Source Pollution Five Year Plan, Executive Summary</i>	
<b>2.2.2 STRATEGY: Develop a recreational outreach communications plan</b>	
<b>Milestones:</b>	
1. Create recreation/healthy beach habits website (FY20)	Completed
Comments	
A "Protect Our Waters" website has been created: <a href="http://www.azdeq.gov/ProtectOurWaters">http://www.azdeq.gov/ProtectOurWaters</a> . The website includes resources, actionable items for the public, and press release information.	
FY24 Update:	

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<p>The “Protect Our Waters” webpage has evolved into a more in-depth webpage on Leave No Trace principles for Oak Creek:  <a href="https://www.azdeq.gov/OakCreek">https://www.azdeq.gov/OakCreek</a></p> <p>The new webpage features graphics and messaging consistent with the Leave No Trace campaign implemented in Oak Creek. Main Leave No Trace principles highlighted are:</p> <p>Protect Our Watersheds          Have a Poop Plan          Stick to Trails          Trash Your Trash</p>	
2. Develop a social media outreach strategy for promoting safe and no/low impact recreation practices (FY20)	Completed
Comments	
<p>In FY20, ADEQ implemented a social media outreach strategy prior to Memorial Day and Fourth of July holidays for Oak Creek. Several Facebook posts received the highest reach out of ADEQ's social media presence. The paid campaigns delivered a total of 1,385,267 impressions and 3,765 clicks between 5/22 and 7/12. ADEQ is working on another phase of social media outreach to be conducted in summer 2022.</p>	
3. Test targeted social media outreach during high use recreation time in Oak Creek (Memorial Day weekend) (FY20)	Completed
Comments	
<p>A “POO-llution” video (<a href="http://www.azdeq.gov/ProtectOurWaters">http://www.azdeq.gov/ProtectOurWaters</a>) and a static image marketing campaign ran during spring break from 3/9/20 to 3/26/20. The same video ran for Memorial Day 2020. Mobile devices received more impressions than computers. Social media ad impressions were higher in Phoenix than when recreators were in Oak Creek Canyon. Heavy rain during spring break and recreational closures due to COVID most likely affected the outcomes and the strategy will continue in FY21.</p>	
4. Evaluate success and adjust social media communications plan based on Oak Creek pilot results (FY21)	Completed
Comments	
<p>ADEQ continued to communicate the importance of healthy beach habits and leave no trace principles to the general public through its social media accounts in FY21, especially before holiday weekends. ADEQ partnered with City of Sedona in FY21 to develop a second targeted outreach campaign which will now launch in summer 2022.</p>	
5. Implement targeted ads – continue to use based upon FY21 engagement results (FY22)	Completed
Comments	
<p>ADEQ partnered with Sedona Chamber of Commerce, City of Sedona, Oak Creek Watershed Council, and Leave No Trace to develop a second social media outreach campaign initiated in July 2022. Messaging focused on lessons learned from the 2020 campaign and encouraging pro-environmental behavior to alleviate trash, social trail usage/creation, and other forms of E.coli pollution during recreation. ADEQ is partnering with social scientists from Arizona State University to measure the effectiveness of the campaign utilizing survey techniques. Results will help inform future campaigns.</p>	
6. Implement targeted ads- explore use on other high-risk recreation sites (FY23)	Completed
Comments	

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<p>ADEQ continued its partnership with the Sedona Chamber of Commerce, City of Sedona, Oak Creek Watershed Council, and Leave No Trace in FY23 to continue the targeted social media campaign in Oak Creek. Students and lead researchers from Arizona State University also implemented social surveys to visitors to assess the influence of the campaign on their behavior and actions while visiting and recreating. ASU will have a final report of results in Fall 2023.</p>	
<p>FY24 Update:</p> <p>ASU delivered a final report with the results of the social surveys. Overall, the Leave No Trace messaging via social media posts and on-site posters reached roughly 60 percent of Oak Creek visitors. Visitors are also unaware or view the E.coli contamination as a risk they could face while recreating in Oak Creek. The social surveys also discovered that pet owners are more likely to bring bags for pet waste rather than parents bringing diapers for children. ASU had more success in response rates to the surveys in designated recreation sites within Oak Creek Canyon.</p>	
7. Implement targeted ads (FY24)	Completed
Comments	
<p>In FY24, ADEQ continued to work with watershed partners to do Leave No Trace messaging campaigns during holiday weekends and high recreation times in Oak Creek. The messages were geo-targeted to those visiting Oak Creek and nearby areas. Overall, the geo-targeted messaging on social media reached around 1.3 million people. The key messages that had the most interaction was Trash Your Trash and Stick to Trails. The message that had the highest click-through rate was Have a Poop Plan. There were 133 Instagram and Facebook posts with a total of 457,000 impressions and the posts were re-shared by partner organizations.</p>	
<p><b>2.2.3 STRATEGY: Partner with external entities to assist with healthy beach habits and public education</b></p>	
<p><b>Milestones:</b></p>	
1. Engage land managers on recreational management in high priority watersheds (FY20)	Completed
Comments	
<p>San Pedro: Staff from ADEQ’s Southern Regional Office attended all telephonic and in-person meetings hosted by the San Pedro and Hereford District NRCs, the Upper San Pedro Partnership, and the Sentinel Landscape Restoration Partnership during FY-20. ADEQ has taken this opportunity to share its monitoring data, solicit ideas for new projects, and register feedback from stakeholders in support of a sustainable basinwide strategy for addressing the E.coli impairment on the San Pedro as well as the provisionally listed impairment on the Babocomari. Details are summarized in these links:</p> <p><a href="https://youtu.be/d2oA1Wu8ZRY?t=1213">https://youtu.be/d2oA1Wu8ZRY?t=1213</a>  <a href="https://youtu.be/d2oA1Wu8ZRY?t=1735">https://youtu.be/d2oA1Wu8ZRY?t=1735</a> Oak Creek: Additionally, ADEQ is engaging Arizona State Parks and US Forest Service to implement projects in Oak Creek. ADEQ continues to have ongoing meetings with land managers to identify hot spot areas and coordinate project implementation. Such projects include the pet waste stations, social trail rehabilitation, trash clean-ups, education and outreach, and car pullout closures (26) alongside Highway 89A.</p>	
2. Collect pre and post-holiday E. coli samples during the high use recreational season (May-September) to quantify recreational impacts (FY20-21)	Completed
Comments	
<p>ADEQ continues to collect pre- and post- holiday E.coli samples at Oak Creek and report results through the Water Quality Exchange database.</p>	
3. Identify sustainable funding ideas/toolbox for external education programs (FY21)	Completed

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Comments	
ADEQ continues to utilize 319 funds to help with outreach and education in Oak Creek. Many current projects, like the pet waste stations, include an educational component that encourages the use of the pet waste stations and raises awareness of E.coli sources near the creek.	
4. Implement trash clean ups (Annually)	Completed
Comments	
ADEQ partners with Oak Creek Watershed Council to conduct trash clean-ups in Oak Creek. Oak Creek Watershed Council has removed over 1,240 pounds of trash from the upper Oak Creek Canyon area. Additional trash clean-ups are conducted by volunteers with the Arizona Water Watch at various other waterbodies.	
<b>2.2.4 STRATEGY: Implement projects to decrease E.coli loading in highly recreated waters (e.g. Oak Creek)</b>	
<b>Milestones:</b>	
1. Review and prioritize highly recreated E. coli impaired waters (FY20) (see also Strategy 2.2.1)	Completed
Comments	
ADEQ has prioritized Oak Creek watershed to implement projects that mitigation E.coli exceedances. So far in FY20, ADEQ has invested \$550,000 in the area through NPS grants through 5 projects.	
2. Analyze GIS system tools for high priority nonpoint source areas (FY20)	Completed
Comments	
ADEQ has identified areas within Oak Creek to target for projects, including Slide Rock State Park and Highway 89A.	
3. Implement 2 high priority projects (FY21)	Completed
Comments	
ADEQ completed more than two projects along Oak Creek in FY21 - rehabilitation of over 120 social trails along Highway 89A and Slide Rock State Park; closure of 27 unpermitted parking spots along Highway 89A that caused erosion and sediment/E.coli loading into the creek; installation of a safety barrier fence along Slide Rock State Park to minimize social trails and unpaid visitation; and numerous litter clean-up events with Oak Creek Watershed Council. Highlights can be seen in this video: <a href="https://www.youtube.com/watch?v=6uAlMCT_Jzk">https://www.youtube.com/watch?v=6uAlMCT_Jzk</a>	
4. Implement 2 high priority projects (FY22)	Completed
Comments	
ADEQ is continuing a social media campaign in Oak Creek to encourage pro-environmental behavior among visitors to reduce trash and E.coli sources. ADEQ is also engaging with NAU to conduct a collection and analysis of DNA sources of E.coli in Oak Creek to determine the major contributing sources. Oak Creek Watershed Council also continues to conduct trash clean-ups in Oak Creek.	
5. Implement 2 high priority projects (FY23)	Completed
Comments	
In FY23, ADEQ and its partners closed an additional over 100 social trails near Oak Creek. More trails will be closed in Fall 2023 and Spring 2024 as funded through the Department of Water Resources state grant. Other projects include the continued social media campaign, social surveys, and DNA study with NAU.	

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6. Implement 2 high priority projects (FY24)	Completed
Comments	
To date, ADEQ and partners have closed up to 400 social trails in Oak Creek Canyon. ADEQ continued the Leave No Trace messaging campaign and the E.coli DNA microbial source tracking study in FY24.	
7. Delist 5 impaired/not-attaining stream reaches (FY24)	Completed
Comments	
ADEQ acknowledges that delisting waters requires EPA's approval. The level of effort to meet this specific goal may exceed the timeframe of a Nonpoint Source Five Year Plan. ADEQ continues to evaluate all four reaches of Oak Creek to determine any delistings for E.coli. ADEQ conducted mathematical modeling in FY24 to evaluate the waterbody's impairment status should E.coli standards be revised.	
<b>2.2.5 STRATEGY: Measure the effectiveness of projects implemented on highly recreated waters</b>	
<b>Milestones:</b>	
1. Conduct effectiveness monitoring (Annually)	Completed
Comments	
ADEQ continues to sample along Oak Creek to measure the effectiveness of several completed projects. This sampling is done in conjunction with the DNA source tracking study. Data is submitted to the Water Quality Exchange database.	
2. Calculate actual versus estimated load reductions for each project implemented (As necessary for projects implemented in 2.2.4)	Completed
Comments	
Through its contract with the University of Arizona, ADEQ continues to receive load reduction calculations for projects and report them through GRTS. Load reductions were calculated for Oak Creek projects and remaining sub-award grantee projects in March 2024.	
3. Delist waters that are now meeting standards due to nonpoint source program activities (FY22 and FY24)	Completed
Comments	
ADEQ is analyzing E.coli data collected at Oak Creek to determine if some reaches are eligible for Clean Water Act impairment delistings.	
4. Reevaluate impaired waters where expected load reductions are not realized (Annually)	Completed
Comments	
ADEQ will re-evaluate once projects have been implemented and enough time has passed to thoroughly analyze their impacts in Oak Creek.	
<b>2.3 OBJECTIVE: Work with internal and external partners to develop and implement strategies for addressing impairments influenced by grazing-related nonpoint sources</b>	
<b>2.3.1 STRATEGY: Establish new and build upon existing relationships with land managers and owners to identify and plan implementation projects that will reduce pollutant loadings contributing to impairments related to grazing.</b>	
<b>Milestones:</b>	

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1. Develop a conceptual site model (CSM) following ADEQ’s mitigation process for KOUI sites (Known, Ongoing, Unauthorized Impact to human health or the environment) for NPS mitigation to identify opportunities where source mitigation practices dovetail with the interest of the ranching community for the satisfaction of mutual goals (FY20)	Completed
Comments	
ADEQ developed a Conceptual Site Model (CSM) for the Babocomari sub-watershed of the San Pedro River as part of the agency's KOUI process. A major source identified includes cattle waste. A total of 7 projects were identified (see section 1.1.5 for more) for the Babocomari. ADEQ staff attended multiple USDA NRCS meetings and connected with other outreach groups to engage stakeholders in the area, including local ranchers.	
2. Develop and document strategy for addressing E. coli impairments in the Babocomari River Watershed (FY20-21)	Completed
Comments	
After engaging local stakeholders for over a year along the San Pedro and Babocomari, ADEQ is now preparing a strategy that meets EPA's 9 elements of a watershed plan for the San Pedro/Babocomari watersheds. This strategy will help influence and develop a concrete path forward for implementing projects.	
3. Coordinate with the NRCS State Office to identify new NWQI Watersheds (FY20)	Completed
Comments	
NRCS State Office is working on identifying watersheds for the Bulletin 10 requirement. ADEQ and NRCS conducted a call on 7/29/20 to coordinate and identified the Babocomari as a priority watershed. In FY21, ADEQ continued its partnership with NRCS to share water quality data, TMDL, and watershed plans to assist NRCS develop an assessment for the Babocomari sub-watershed of the San Pedro. In August, the NRCS State Office submitted an assessment report to the National NRCS office for review and input.	
4. Develop and implement sample plans within new NWQI watersheds (FY22-24)	Completed
Comments	
NRCS State Office completed and submitted an assessment of the Babocomari watershed to its headquarters in Fall 2021. ADEQ is committed to working with NRCS to complete tasks under the NWQI. ADEQ conducted a field trip to the Babocomari watershed with NRCS in Spring 2023. A new NRCS team member joined in FY24, and ADEQ continues discussions on how to best contribute to the NWQI efforts.	
5. Determine next priority grazing impacted watershed to adapt Babocomari River strategy to (FY24)	Completed
Comments	
ADEQ maintains that more watershed improvement needs to be seen in the Babocomari subwatershed before the strategy can be adapted elsewhere.	
<b>2.3.2 STRATEGY: Determine BMPS effectiveness to ensure future implementation projects will reduce E. coli loads that are contributing to impairments of perennial and intermittent waters in grazed lands</b>	
<b>Milestones:</b>	
1. A minimum of four 319-funded rangeland improvement projects previously implemented will be evaluated on the effectiveness of respective BMPs (FY21)	Off track
Comments	
As discussed with EPA in meetings and through updates in the Performance Partnership Grant (PPG) Work Plan, although improvement projects have not been implemented, ADEQ continues to be engaged with the San Pedro watershed through other projects and initiatives. ADEQ continues to fund a previously awarded sub-grantee project on the Sonoran border of the river with Watershed Management Group, and is also a trustee in an AZ Game and	



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Fish-led project that is addressing grazing and other issues on two impaired segments of the San Pedro. ADEQ continues to engage NRCS on the NWQI and assessment on the Babocomari sub-watershed. ADEQ is keeping the San Pedro as an option in the FY20-24 NPS Five Year Plan (and future Five Year Plans) should the agency be able to contribute more resources and personnel.	
2. Effective BMPs will be cataloged and imported to GIS to generate a map of specific opportunities for projects (BMPs) that consider geographic and physical constraints (FY21)	Off track
Comments	
See update above.	
3. Implement 2 high priority projects based on developed strategy and landowner commitment (FY22)	Off track
Comments	
See update above.	
4. Implement 2 high priority projects (FY23)	Off track
Comments	
See update above.	
5. Implement 2 high priority projects (FY24)	Off track
Comments	
See update above.	
<b>2.3.3 STRATEGY: Measure the effectiveness of implemented projects to reduce E. coli from grazed lands</b>	
<b>Milestones:</b>	
1. Conduct effectiveness monitoring (Annually)	Off track
Comments	
See update above.	
2. Develop sediment vs E. coli rating curves using data collected from Walnut Gulch experimentation watershed (FY21)	Off track
Comments	
As communicated in PPG Work Plan updates and NPS Annual Reports, the Walnut Gulch watershed is not a priority watershed for ADEQ and was originally going to be used to help inform E.coli loading modeling. Instead of focusing on Walnut Gulch, 319 funds have been prioritized in Oak Creek, abandoned mines, and previously awarded sub-grantee watershed projects.	
3. Calculate actual versus estimated load reductions for each project implemented (As necessary for projects implemented in 2.1.3)	Off track
Comments	
Any E.coli load reductions for the San Pedro watershed will be coordinated through ADEQ's partnership with University of Arizona and NRCS for the Babocomari sub-watershed once projects are implemented.	
4. Delist waters that are now meeting standards (FY22 and FY24)	Off track

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Comments	
See update above.	
5. Reevaluate impaired waters where expected load reductions are not realized (Annually)	Off track
Comments	
Re-evaluation will occur once projects are implemented in San Pedro/Babocomari watersheds.	
<b>2.4 OBJECTIVE: Work with internal and external partners to develop and implement strategies for addressing impairments influenced by septic-related nonpoint sources</b>	
<b>2.4.1 STRATEGY: Identify high priority septic areas</b>	
<b>Milestones:</b>	
1. Develop and implement an outreach strategy to municipal and county officials in unsewered areas near E. coli impaired waters (FY21)	Off track
Comments	
As communicated in PPG Work Plan updates, ADEQ's efforts targeting septic-related nonpoint sources will commence after results have been analyzed from the DNA source tracking study in Oak Creek and septic tanks are identified as a major contributor of E.coli pollution. New target dates will be set in the new PPG Work Plan per EPA. Current 319 funds are being used in the DNA source tracking study and the next round of projects in Oak Creek, including phase 2 of the social trail rehabilitation project and the installation of pet waste stations along trails.	
2. Update ADEQ septic density map with input from local entities to prioritize areas for additional investigation (FY21)	Off track
Comments	
See update above.	
3. Develop a risk matrix for prioritizing individual onsite systems or communities (FY22)	Off track
Comments	
See update above.	
<b>2.4.2 STRATEGY: Determine potential funding options for addressing high priority septic areas</b>	
<b>Milestones:</b>	
3. Potential funding sources for septic upgrades identified (FY23)	Completed
Comments	
In FY22 and FY23, ADEQ helped EPA identify potential communities at which Infrastructure Bill funding could be utilized to improve wastewater treatment for residents currently on septic systems.	
<b>2.4.3 STRATEGY: Work with partners in high priority areas to identify and implement remedies for high priority septic system related issues</b>	
<b>Milestones:</b>	
1. Develop necessary handouts, website, and a video to help inform the public about proper septic maintenance (FY21)	Off track

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Comments	
See update above.	
2. Implement 2 high priority projects (FY23)	Off track
Comments	
See update above.	
3. Continue implementation of high priority projects (FY24)	Off track
Comments	
See update above.	
<b>2.5 OBJECTIVE: Identify alternative funding sources to support priority restoration projects.</b>	
<b>2.5.1 STRATEGY: Build effective relationships to identify or develop shared water quality restoration priorities, capitalize on existing programs and leverage funding</b>	
<b>Milestones:</b>	
1. ADEQ will meet with local, state and federal agencies, environmental organizations and other groups to build new effective relationships, identify or develop shared water quality improvement priorities, capitalize on existing programs and leverage funding (Annually)	Completed
Comments	
ADEQ continues its partnerships with US Forest Service, Arizona State Parks, external contractors, watershed groups, citizen scientists, private landowners, and NRCS to implement its watershed initiatives. ADEQ hosted its annual meeting with USFS virtually in 2023. ADEQ's partnership with USFS, AZ State Parks, Oak Creek Watershed Council, citizen scientists, AZ Department of Transportation, and local watershed groups led to the successful implementation of E.coli-reducing projects in Oak Creek. A majority of abandoned mines are situated on USFS and private lands, thereby allowing ADEQ to collaborate with federal personnel and private landowners to complete remediation. USFS, ADOT, and AZ State Parks have all contributed resources, including funding, in these projects.	
2. Identify other groups and/or agencies and organizations doing work in NPS priority watersheds and objectives for potential coordination and leveraging and track information (FY21)	Completed
Comments	
ADEQ continues to attend ACWA Watersheds Committee calls and local watershed group webinars to stay abreast of what local groups are doing in other watersheds. ADEQ further engaged USDA's NRCS to partner on the NWQI in FY21. Another new partner in FY21 includes Northern Arizona University, who is providing lab and analysis resources for the DNA source tracking study in Oak Creek. Additionally, ADEQ engaged with AZ Department of Water Resources to obtain a grant for Oak Creek projects.	
3. Develop a strategy to coordinate with other entities to develop possible collaboration and leveraging opportunities (FY22)	Completed
Comments	
See updates above.	

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4. Increase the number of NPS-related priority watershed projects which collaborate with other local, regional, state and federal entities, or foundations, to leverage funding for projects that will provide load reductions. (FY22-FY24)	Completed
Comments	
See updates above. Additionally, ADEQ has sub-awarded 319 funds to local groups such as Watershed Management Group, Natural Channel Design, AZ Game and Fish, and the Nature Conservancy for watershed projects.	
<b>2.5.2 STRATEGY: Secure or leverage funds from alternative (non-319) state, federal, and/or local sources to implement priority projects.</b>	
<b>Milestones:</b>	
1. Develop a strategy to coordinate resources with other local, regional, state and federal entities via ADEQ project technical leads (FY20-21).	Completed.
Comments	
ADEQ's project managers and hydrogeologists excel at identifying and engaging local, state, and federal partners on projects in Oak Creek and at abandoned mines. These partnerships often lead to additional funding and other leveraged resources like technical expertise or sampling assistance. See the update above on partners engaged in FY21.	
2. Identify alternative NPS-related local, regional, state and/or federal resources identified NPS Programs/Projects and update NPS "funding toolbox" (Annually)	Completed
Comments	
ADEQ has a funding toolbox, or list of identified funding avenues, for NPS projects. Additional opportunities leveraged in FY24 include state WQARF funding on mining sites, funding from the US Forest Service for mining and Oak Creek projects, and funding from AZ Department of Water Resources.	
3. Apply for or leverage at least \$500,000 of non 319 funds to implement high priority projects (Annually)	Completed
Comments	
ADEQ continues to search for external funding opportunities using EPA's Water Infrastructure and Resiliency Finance Center and other grant databases. ADEQ identifies grants and discerns if current or future projects will fit grant criteria and proceed with applying.	
<b>2.5.3 STRATEGY: Implement priority projects via alternative or split funding sources</b>	
<b>Milestones</b>	
<b>Milestones:</b>	
1. Implement ADOT pull out reduction project (ADOT/319 Funds) (FY20)	Completed
Comments	
ADEQ and AZ Department of Transportation completed the closure of 27 unpermitted parking spots along Highway 89A near Oak Creek in FY21.	
2. Implement 3R Mine remedial action using 319 and USFS funds (FY21)	Completed
Comments	
ADEQ and USFS, along with Tetra Tech, completed remediation of 3R Mine in May 2021.	
3. Complete site assessment (PPG) and remedial actions (319) at McKinley Mill and Storm Cloud Mine (FY21)	Completed
Comments	

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ADEQ completed remediation at the Storm Cloud Mine in December 2020. McKinley Mill remediation was completed in early 2022.	
4. Implement Poland Mine remedial project on private (319) and USFS (USFS) land (FY21)	Completed
Comments	
ADEQ completed remediation on the waste rock pile located on U.S. Forest Service land in spring 2022. The site also has a waste rock pile and discharging tunnel (Poland-Walker Tunnel) located on private property. In FY22, ADEQ contracted with Tetra Tech to devise a site characterization plan, conduct additional sampling, and measure flow rates from the tunnel to best inform what remediation method to use. The goal to complete remediation of the tunnel and waste rock pile on the private side in FY21 was determined to be too advantageous considering the extreme slope of the pile, proximity to a cabin community, and undetermined flow rate of the discharging tunnel. ADEQ has been collecting continuous tunnel discharge flow data with Tetra Tech and characterizing contaminant sources. In FY24, a bat-friendly grate was placed at the tunnel's entrance to protect public safety and installed monitoring equipment from vandalism.	
5. Assist project sponsors or ADEQ technical leads in obtaining funding for water quality reclamation and improvement projects from a wide range of sources including but limited to those stated in the NPS Funding Tool Kit (Annually)	Completed
Comments	
ADEQ continues to search for external funding opportunities using EPA's Water Infrastructure and Resiliency Finance Center and other grant databases. ADEQ identifies grants and discerns if current or future projects will fit grant criteria and proceed with applying. In FY22, ADEQ was awarded over \$238,000 by the AZ Department of Water Resources for continued social trail rehabilitation in Oak Creek.	
Actively administer, encourage and track volunteer opportunities at all priority project locations (Annually)	Completed
Comments	
Through its citizen science program, Arizona Water Watch, volunteers collected trash and water quality samples in FY24.	
<b>3.0 Goal: Evaluate state programs, rules, and authorities to protect and restore water quality for effectiveness and the potential need for modification</b>	
<b>3.1 OBJECTIVE:</b> Comply with or propose to modify state statutory requirement (ARS 49-203(A)(3)) to adopt, by rule, a nonpoint source management program to address discharges to navigable waters.	
<b>3.1.1 STRATEGY:</b> Engage in public outreach activities to gather input on the key benefits, features, and components for developing a rule-based NPS management program	
<b>Milestones:</b>	
1. Conduct stakeholder outreach and develop benefits, features, proofs document (FY24)	Completed
Comments	
In early FY24, ADEQ hiring a NPS Program Coordinator and evaluated the need and possibility of conducting a rulemaking to establish a state nonpoint source program. More research and benchmarking was needed before any stakeholder outreach could be conducted. ADEQ conducted background research on other state nonpoint source programs, identified key components of a program, and identified what would be needed to conduct a stakeholder outreach and potential rulemaking.	
2. Evaluate stakeholder input and decide on the need for rulemaking to implement the NPS Program (FY24)	Completed

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Comments	
ADEQ acknowledges a state statutory requirement to establish a state nonpoint source program through rule. ADEQ developed some options for what this rulemaking could look like, and the level of effort for stakeholder outreach.	
3.2 OBJECTIVE: Improve current water quality standards, assessment and listing rules to provide more effective protection for Waters of the U.S.	
<b>3.2.1 STRATEGY: Evaluate current water quality standards, assessment and listing rules to provide more effective protection for Waters of the U.S.</b>	
<b>Milestones:</b>	
1. Conduct a Triennial Review of surface water standards to update standards criteria per EPA updated criteria recommendations (FY22)	Completed
Comments	
ADEQ initiated a Triennial Review beginning in July 2022. The focus is revised Appendix A Human Health standards that were submitted in 2019 and subsequently rescinded. There is also limited Appendix B changes.	
2. Evaluate current or create new "implementation procedures" documents for unused narrative standards in WQS rules (FY24)	Completed
Comments	
This commitment is outside the scope of the nonpoint source program.	
3. Evaluate and/or revise the Impaired Waters Identification Rule (IWIR) to include new standards (nutrient criteria), and revised assessment and listing criteria (FY24)	Completed
Comments	
This commitment is outside the scope of the nonpoint source program.	
3.3 OBJECTIVE: Improve current water quality standards, assessment and listing rules to provide more effective protection for Waters of the U.S.	
<b>3.3.1 STRATEGY: Engage in stakeholder/customer/public outreach activities to gather input on actions necessary to close gaps resulting from the proposed WOTUS rule change</b>	
<b>Milestones:</b>	
1. Develop draft Waters of Arizona program outline (FY20)	Completed
Comments	
ADEQ completed rulemaking for a state Surface Water Protection Program in December 2022. SWPP became effective in March 2023.	
2. Finalize program outline with stakeholder input (FY21)	Completed
Comments	
ADEQ engaged stakeholders to develop a program outline and state rule(s) framework for the State Surface Water Protection Program authorized by HB2691.	
3. Develop program (FY22)	Completed

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Comments	
ADEQ completed the rulemaking to establish the state program. Rules were officially codified in the Arizona Administrative Code in Spring 2023. Updates are available at <a href="https://azdeq.gov/swpp">https://azdeq.gov/swpp</a> and <a href="https://azdeq.gov/node/8173">https://azdeq.gov/node/8173</a> .	
4. Implement program (FY23)	Completed
Comments	
ADEQ continues to implement the program. Team members are establishing standard operating procedures to determine flow regimes and respond to requests from stakeholders to list waterbodies in the state program.	
<b>3.3.2 STRATEGY: DETERMINE NPS PRIORITIES IF PROPOSED REVISED WOTUS RULE GOES INTO EFFECT IN ARIZONA</b>	
<b>Milestones:</b>	
1. Revise the 5-yr NPS Plan, as needed, within 6 months of determining the final rule impacts to Arizona (FY21)	Completed
Comments	
The current 5-yr NPS Plan doesn't need revisions to apply the State Surface Water Protection Program.	