

# MEETING SUMMARY

## **SMP Work Group Meeting**

July 25, 2023

9:00 AM – 12:00 PM

Location: Conference Room A, Bureau of Reclamation's Western Colorado Area Office and remote meeting via Microsoft Teams

**Attendees:** Jenny Ward (Reclamation), Mark Wernke (Reclamation), Frederick Busch (Reclamation), Josh Dunham (Reclamation), Cory Williams (USGS), Patrick Longley (USGS), Suzanne Paschke (USGS), Rachel Gidley (USGS), Kurt Broderdorp (FWS), Dave Kanzer (CRWCD), Raquel Flinker (CRWCD), Nora Flynn (CWCB), Kara Scheel (CWCB), Allen Distel (BPWCD), Paul Kehmeier (DCD)

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## **Introductions and Discussion of Agenda**

The agenda was accepted, and introductions were completed.

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## **Ongoing Reclamation Projects in the Lower Gunnison Basin**

The U.S. Geological Survey (USGS) requested the Bureau of Reclamation (Reclamation) present recent and upcoming projects within the Lower Gunnison basin which might affect selenium loading. This would help inform the USGS of any potential changes which could affect their monitoring efforts.

Jenny Ward presented maps and discussed the status of eight recent and upcoming Salinity Control Program projects: Eastside Laterals Phase 10, Gould Canal A & B, Grandview Middle and Lower, Crawford Clipper Jerdon/West/Hamilton, Needle Rock/Lone Rock, Pilot Rock, Waterdog/Shinn Park, and Turner/Lone Cabin.

Josh Dunham presented the East Canal Efficiency Improvements Project. This project would rearrange some of the flows in the Loutzenhizer Arroyo by piping some of the flow out of the West Branch and sending it to the East Canal. Currently, the arroyo flows into the Garnet Canal which eventually spills into the Gunnison River. Any arroyo flows which cannot be accepted by the Garnet Canal spills into the Uncompahgre River. After project installation, approximately half of the arroyo flows (flows associated with the West Branch) would be piped to the East Canal, which eventually spills into the Gunnison River approximately 4 river miles upstream from where the Garnet spills into the river. Water in the Garnet and East canals is delivered on an as-ordered basis. Essentially, this project would take water which would spill into the Uncompahgre River and see if it can be used elsewhere in the East Canal system. If the project progresses as scheduled, it would go to construction during the winter of 2024/2025.

The USGS monitors the Loutzenhizer for selenium. The West Branch is fairly high in selenium, and this project would reroute some of the load. The USGS monitoring site is on the

Loutzenhizer after the East and West branches merge together. The USGS needs to think about what this project might mean for their monitoring efforts, as it would also affect the Sunflower Drain monitoring sites. Cory Williams requested Reclamation schedule a separate meeting to discuss. Ken Leib will join the meeting, and the USGS will put together an interactive map to facilitate the discussion. The Colorado River Water Conservation District (CRWCD) will also attend the meeting. Results of this meeting will be reported back to the SMP Workgroup.

This project replaces the regulating reservoir project which had been previously proposed on this system. Raquel Flinker suggested that if more piping occurs in the area, there would be less water in the arroyo, so this project might not provide efficiencies long-term as opposed to a regulating reservoir. Josh indicated that the majority of the ditches upstream have already been piped and most of the water in the arroyo is coming from field runoff. The field runoff is likely due to the piping of ditches which have historically accepted return flows. Instead of flowing into open ditches, that water is now making its way into the arroyo. If irrigated fields in the area switch from flood irrigation to sprinklers, then we would likely see impacts to water availability in the arroyo.

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## **USGS Water Year 2022 Annual Summary Data Review**

Patrick Longley shared a PowerPoint presentation providing updates on the USGS Water Year 2022 Annual Report.

The equations for selenium concentration predictions aren't working as well as the equations for total dissolved solids (TDS). Most predictions are falling on the edge of the 95<sup>th</sup> percentile confidence interval, resulting in overpredictions. Because the USGS is seeing different rates of change between selenium load and salinity load, the USGS believes something is happening geochemically to make the two behave different. For example, when irrigation improvements occur in the Montrose arroyo area, there is a greater selenium reduction in proportion to salt. USGS policy requires removing the National Real-Time Water Quality (NRTQW) webpages associated with these equations due to the overpredictions. If the SMP Workgroup wishes to get the real-time predictions back, the USGS will need to update the analysis and do a publication.

Patrick indicated the USGS is likely overestimating the 85<sup>th</sup> percentile and suggested it could be better to shift the model with more than two years of data, possibly using the entire length of record. There are some nuances, as using the entire length of record could result in method sensitivity. The USGS has configured the model using smaller amounts of time because it helps identify if there is a change in the salinity/selenium relationship; if that shifts, it adds noise to the model. One workaround would be to take more samples per year (the USGS is currently taking eight (8) samples per year). The SMP Workgroup needs to determine how to move forward with this model. Whatever is decided upon would need to be published in a report.

It was questioned whether the USGS could use nutrients (nitrate and nitrite) to correlate with selenium, as the two correlate well. The nutrients are known to be sourced from the shale, as opposed to fertilizers. It was mentioned that there is not a significant correlation between turbidity and selenium. Dave Kanzer asked if total selenium varies with turbidity better than

dissolved selenium. Cory Williams said the USGS could look at their existing data to see if it correlates differently.

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### **Updated Science Plan**

Rachel Gidley shared a PowerPoint presenting the Updated Science Plan. The plan is currently undergoing peer reviews. The plan does a good job of highlighting current understanding of selenium in the system and identifying data gaps. The plan identifies several data gaps related to geologic sources, groundwater, surface water and sediment, and biota.

The USGS offered to send the SMP Workgroup a link to and present the recent publication of *Source Contributions to Suspended Sediment and Particulate Selenium Export from the Loutzenhizer Arroyo and Sunflower Drain Watersheds in Colorado*. This presentation will be included on the next SMP Workgroup meeting agenda.

Potential studies involving biota were discussed. It was thought that the 2021 model study could be refined with additional data. That study looked at concentrations of selenium through the food web, and it was conducted during a period of heavy drought. Additional data could be collected under current conditions to see if the values are still relevant. Green algae particulates were one of the best selenium correlators to fish tissue concentrations, so it could potentially be used as a surrogate. Another study could include looking at potential surrogates.

There are several complicating factors related to understanding or potentially modeling selenium concentrations in biota. For example, selenium can be shed through eggs, selenium's interaction with mercury isn't understood, and fish don't stay in the same spot and could potentially have traveled a hundred miles. The USGS does understand that selenium enters the food web mainly from particulates (organics, sediments – anything with a surface area that is reactive). Selenium precipitates out of the water column onto the particulates, critters eat the particulates, and selenium bioaccumulates up the food chain. What is not understood is the process by which selenium transfers from the water column into the biota.

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### **Next Generation Water Observing System (NGWOS) update**

Suzanne Paschke gave an update on NGWOS. Summer fieldwork and studies are in process, including a soil moisture project in the Roaring Fork valley. Efforts are on track for completion. The website is currently being updated so information can be accessible. They are working on planning for FY24, and they anticipate receiving full funding for next year. This will allow continued monitoring of existing NGWOS sites.

The NGWOS stakeholder meeting is being planned for late September. The date is flexible, and the general consensus of the SMP Workgroup was September 28 would work well.

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### **Species Conservation Trust Fund (SCTF) update**

The SMP had \$50,000 in funding from FY 2022. In FY 2023, the legislature approved an additional \$50,000. In total, the Colorado Water Conservation Board (CWCB) has \$100,000 set aside for the SMP. Cory and Karah Scheel have been exchanging emails on potential scopes of work related to the continuation of the 20 well network, including 12 months of monitoring every six (6) weeks and redeveloping some of the wells. Continuation of the 20 well network would utilize \$50,000, and those funds should be available for CWCB to distribute soon.

The SMP Science Team had discussed utilizing the remaining funds to publish the existing fish tissue data. This idea has since been retracted due to (1) unforeseen additional costs, and (2) the realization that Travis Schmidt already has obligations to publish the data through a different funding source. Cory indicated he could reach out to Travis and get Travis to present the timeframe for this publication to the SMP Workgroup. This will be included in the next SMP Workgroup meeting agenda.

CWCB usually prioritizes projects for SCTF funding in December of each year. The process of awarding funding generally starts in March and ends at the end of June. The SMP Science Team will meet and discuss priorities for which to request additional funding. Cory will refine various scopes which could benefit from funding and present them to the SMP Science Team for discussion. Jenny will send out a Doodle Poll to the SMP Science Team to schedule a meeting for early October in an effort to have a funding request prepared for CWCB by December.

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### **Discussion on Funding and Field Effort Priorities**

Potential biota-related studies were brainstormed.

It was questioned if a study could be done on algae, potentially looking at chemistry numbers or abundance. There would need to be discussions on what the scope of an algae monitoring program would consist of, such as would it be researched for use as a surrogate, for prediction, or for tracking as part of the State selenium standard? Natalie Day with the USGS has been working with Theresa Presser as a selenium expert. From their standpoint, selenium in biota needs to be researched in combination with mercury in order to understand the biota component. Mercury could potentially be researched as another mechanism to remove selenium from the system as well as a mechanism to reduce toxicity. It was questioned what efforts would be required to begin to understand the mercury/selenium relationship in biota. Different approaches could be taken to begin to understand the relationship, including the bioaccumulation of mercury within the target fish as a constituent of concern, how it interacts with selenium, and the expanded characterization of selenium and mercury within the food web.

A data gap involving best management practices (BMP) was identified. There is an understanding of BMPs which reduce dissolved selenium within a system, but the issue isn't dissolved selenium in the water; the issue is the dissolved selenium entering the food chain. Are there BMPs which could reduce selenium levels in the fish? There is an understanding of the possible mechanisms for selenium entering the food web, but there is not an understanding of which of the mechanisms is dominant. It was questioned if selenium could enter the water but have something occur which prevents it from entering the food chain?

Kurk Broderdorp likes the idea of recreating a fish tissue study so we can look for changes since the original data was gathered. He indicated it would be a good checkpoint, but ultimately it would be good if we could determine the dominate mechanism of how selenium gets into the food chain in a manner which allows us to mitigate that particular issue.

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## **Other Topics**

Jenny plans to begin drafting the 2022 Annual SMP Report in September. In keeping with how the report has been prepared over the past few years, Jenny will coordinate comments on the report via email. Cory said the 2022 USGS Annual Summary Data Review will be finalized in the next couple of weeks and will be ready to submit to the U.S. Fish and Wildlife Service (FWS) along with the 2022 Annual SMP Report.

Jedd Sondergard took a different position within the U.S Bureau of Land Management (BLM). It was questioned if he is still the BLM contact for the SMP Workgroup and Science Team. It was also questioned if the SMP Science Team contact list is current, and if the NRCS has a contact that could commit to attending SMP Workgroup and Science Team meetings. Jenny committed to reaching out to Jedd and the SMP Science Team to verify contacts, and Raquel committed to reaching out to the NRCS regarding an NRCS contact.

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## **Schedule for next SMP Meeting**

Jenny will send out a Doodle Poll to schedule the next SMP Workgroup meeting in November or December after the SMP Science Team meets.

## **ACTION ITEMS**

- Jenny will send out a Doodle Poll to the USGS and CRWCD to schedule a meeting to discuss the East Canal Efficiency Improvements Project and associated impacts for USGS monitoring. The USGS will put together an interactive map to facilitate this discussion.
- The USGS will look at existing data to see if total selenium varies with turbidity better than dissolved selenium.
- Cory will send the SMP Workgroup a link to *Source Contributions to Suspended Sediment and Particulate Selenium Export from the Loutzenhizer Arroyo and Sunflower Drain Watersheds in Colorado*.
- Cory will get in touch with Travis Schmidt and request he present a fish tissue data publication timeframe to the SMP Workgroup at the next SMP Workgroup meeting.
- Cory will develop potential costs and scopes of work for various studies which could be funded by SCTF funding to facilitate discussions in the upcoming SMP Science Team meeting.
- The SMP Science Team will meet in early October to discuss priorities for SCTF funding. Jenny will send out a Doodle Poll to the Science Team in early September to schedule this meeting.

- Jenny will email Jedd Sondergard to see if he is still the BLM contact for the SMP Workgroup and Science Team.
- Jenny will email the SMP Science Team and verify that all contacts are current.
- Raquel will reach out to the NRCS and determine if they have identified a contact who could attend SMP Workgroup and Science Team meetings.
- Once the SMP Science Team meets, Jenny will send out a Doodle Poll to the SMP Workgroup to schedule the next SMP Workgroup meeting in November or December.