

# Basin Environmental Improvement Project Commission

## Summary Meeting Minutes

May 15<sup>th</sup>, 2024, 1:00 PM – 3:30 PM  
Noah's Loft at Silver Mountain Resort  
610 Bunker Ave., Kellogg, ID 83837

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*These minutes are summary notes of the reports and presentations and are intended to capture key topics and issues, conclusions, and next steps and not every detail of discussion or individual quotes.*

### **Attendees included the following:**

Sharon Bosley (BEIPC Executive Director)

### **Commissioners and Alternates present:**

Jess Byrne (IDEQ), Michael McCurdy (IDEQ), Leslie Duncan (Kootenai County), Kira Lynch (EPA), Scott Fields (CDA Tribe), Dave Dose (Shoshone County), Karl Rains (Washington State), Phil Lampert (Benewah County)

### **Staff present:**

Gail Yost (BEIPC, Assistant to E.D., Note taker), Tamara Langton (EPA), Sandra Treccani (Washington State), Rebecca Stevens (CDA Tribe), Jerry Boyd (CCC), Andy Helkey (IDEQ), Jeri DeLange (Kootenai County)

### **Call to Order**

Leslie Duncan welcomed everyone to the BEIPC meeting and called it to order at 1:08 pm. The Commissioners then introduced themselves.

### **Review and Approve Draft March 6, 2024, Meeting Minutes** – Sharon Bosley (Action Item)

There were no corrections to the draft March 6<sup>th</sup> meeting minutes that were provided to each Commissioner prior to today's meeting. A motion was made by Jess Byrne to approve the minutes as provided. Dave Dose seconded the motion, all Commissioners approved the meeting notes. **M/S/C**

### **Reductions in groundwater loading of trace metals and phosphorus to the South Fork Coeur d'Alene River following remediation to the Bunker Hill Superfund Site** - USGS Erin Murray

Erin presented and shared information from a study the USGS conducted in 2022 that looked at groundwater loading to the South Fork CDA River (SFCDA). This study compared their observations before and after the Groundwater Collection System (GCS) and Central Treatment Plant (CTP) installation and upgrades that occurred from 2017 to 2022. The GCS is a soil bentonite cut off wall about 30 feet deep that blocks groundwater flow to the river as continued contamination was documented. Nine groundwater extraction wells were installed as well as upgrades to the CTP and Sludge area. Once the groundwater is pumped and transported back to the CTP, it is treated and discharged back into the SFCDA. In 2017, Lauren Zinsser led a seepage study to look at trace metals and nutrient loads from groundwater seepage, then repeated this study in 2022 to look at differences after the remediation was completed.

A seepage study measures the amount of water at two points and subtracts the upstream from the downstream to get the specific portion coming into the river. They can also measure concentrations like zinc, cadmium, and phosphorus, and get the total mass of those coming from groundwater. They must also factor in inputs and outputs, like tributaries coming in or anything exiting out. In both studies, the same four monitoring locations were used – labeled SFCDR 1, SFCDR 2, SFCDR 3, and SFCDR 4, and

located in three distinct reaches – Upstream, Middle, and Downstream. In the farthest downstream reach, between SFCDR 3 and 4, we have two tributaries coming in – Government Gulch and Bunker Creek. In the middle reach, there are three seeps which are groundwater that have become surface water and can be measured as discrete inputs to the system. In 2017, the middle reach was also the biggest groundwater loader to the SFCDA. The upstream reach is where the CTP discharges the treated effluent back into the river. This is a new input for the 2022 study as the effluent was previously discharged to Bunker Creek but rerouted after the CTP improvements. This particular data was obtained from IDEQ and was a daily average of all the constituents we were interested in. USGS went out over the course of two days and measured flow and then the concentrations of zinc, cadmium, and phosphorus as they were the three contaminants of concern – and from that calculated the loads. We can use all these values to plug into our equation to get the groundwater specific input to the river in each of these sub-reaches (as Erin explained through several slides of streamflow results).

USGS compared the data from 2017 and 2022 with the following results on the contaminants of concern:

- Zinc showed an 86% reduction level in the Middle reach with both the Upstream and Downstream reaches not measuring much difference.
- Cadmium showed the same story with the Middle reach showing an 81% reduction, and no measurable difference in the Upstream and Downstream reaches.
- Phosphorus showed the same pattern in the Middle reach with an 88% reduction and no measurable difference in the Upstream and Downstream reaches.

There have been a number of seepage studies in this reach dating back as early as 1999 by both USGS and CH2M Hill. In this history and their comparison to 2017, they have measured the lowest groundwater accruals for all three of these contaminants of concern. Field observations that support this data – in 2022, there was a lot less algae in the stream which correlates with the reduced phosphorus loading. Also in 2022, the left riverbank near the seeps were noticeably drier than in 2017 which supports the bentonite wall is cutting off groundwater to this area. All of this is considered a success story with lower trace metals and nutrient loads reaching the CDA River and eventually CDA Lake. Erin acknowledged the work from their Upper Columbia field office, Lauren Zinsser, and funding from EPA. A final report is available on-line.

### **30-year Trends in Concentrations, Loads, and Sources of Trace Metals and Nutrients in the Spokane River Watershed, Northern Idaho, Water Years 1990–2018** - USGS Lauren Zinsser

Lauren's presentation today will expand on Erin's results and talk about the entire CDA River Basin, looking at the last 30 years and if remediation has made a difference in water quality trends. We are all aware of the historic mining practices and how metals waste entered the SFCDA River, dispersed through to the lateral lakes, through the floodplains into CDA Lake and all the way to the Spokane River. EPA and others have been working extensively over the last decades to clean up these metals and to make a difference in water quality and public health. Work so far has primarily focused on the Upper Basin i.e. Nine Mile Creek, Bunker Hill Smelter, and CIA area. A lot less work has been done on the main stem of the CDA River. After these decades of remedial work, has water quality improved? Other questions Lauren was asked about – have concentrations and loads gone down, are they still going down, and have the major load sources changed?

Today, she will focus on dissolved zinc and total lead results. The approach in this study used weighted regressions on time, discharge, and season (WRTDS). This is a flexible regression approach that relates to the concentration of a constituent in the water to these variables. This allows you to take samples over the course of the year and extrapolate what the concentration in the river was for every single day

and enables you to understand what the average concentrations are, total loads and total mass. She was able to do this in a couple different ways – one through a process called flow normalization, which is a statistical procedure that allows you to estimate what the concentration and load would be in the river if the hydrological conditions had been completely average for a year. This is important when looking at trends over low water years versus high water years, you can project in an average flow year and detect trends over time and remove some of the hydrologic variability. In addition, Lauren also used WRTDS with Kalman filtering which is a similar approach to get the best possible estimate of the actual loads and concentrations in a given year. These will give you the best annual estimates. She also wanted to understand what statistical confidence we have that this trend is real or not. To do that, she used a bootstrapping procedure in intervals to understand what that statistical likelihood would be.

Lauren was able to use USGS water quality and discharge data from the past 30 or so years. She will focus on 3 key sites today from analyses she performed on 12 sites and nine constituents – the SFCDA River near Pinehurst, the CDA River near Harrison, and the Spokane River right below the CDA Lake outlet. Data 30 years ago looked a lot different – she paused and thanked the incredible number of people who went out year after year in all conditions to collect these samples and through their excellence, we have this impressive data set. This also represents a tremendous investment by people who have funded this data collection over time.

Question #1 – have concentrations and loads gone down?

Data results shown from 1990 to 2018 indicate there is a dramatic downward trend in dissolved zinc concentration and loads, and as we move downstream, we still see strong downward trends in concentrations and loads all the way to the Spokane River. In total, dissolved zinc concentrations and loads decreased 35-65% over the period of record. The total lead concentrations and loads also decreased at Pinehurst and Spokane River locations, but at Harrison the graph is flatter which could indicate a little increase. Overall total lead concentrations and loads have decreased between 25-75% over the period of record except for loads at Harrison.

Question #2 – are concentrations and loads still going down?

In the first part of the period of record, there is a sharp decrease in concentrations and loads. Then that decrease flattens out over time. Lauren looked at the change in loads per year and the slope of that line going down. She looked at two different time periods – from 1999 through 2009, and 2009 through 2018. She compared Pinehurst and Harrison only as the data from the Spokane River location is shorter. For total dissolved zinc, that slope is strongly negative at both sites during both periods of time but is more negative during the first decade – we were decreasing dissolved zinc from about 4% down to 2 ½% per year. For total lead, there were similar strong negative trends in both time periods for Pinehurst, but at Harrison there was an increase from 1999-2009 and a flat trend from 2009-2018.

- How statistically confident are we in these trends? Lauren looked at the models many times over using a bootstrapping technique, which means you take a random subset of data and reconstruct the model to see what answer you get. She did those 100 times basically for every site and every constituent. Her analysis showed that for dissolved zinc at all the sites, they had high statistical confidence that indeed there are downward trends over the period of record and the most recent decade. For total lead concentrations, there is a high statistical confidence that the trends are down. For lead load, there is strong statistical confidence for both periods in Pinehurst and Spokane are down, but at Harrison the lead load has gone up over the past 30 years.

Question #3 – have the major load sources changed?

We know from previous work that most of the zinc is coming from the SFCDA River from sources like groundwater at the CIA. We also know the majority of particulate lead is coming from the main stem of the CDA River from all the sediment that has been transported downstream from mining and deposited throughout the Basin. So, have these sources changed over time and are we seeing a change as a result of remediation? Lauren explained in her graphs from the period 2003 to 2018 for all three sites showing that the SFCDA River does remain the main source of dissolved zinc, but there is not as much zinc being added to the river. Also, the amount of zinc that is going into the lake is also exiting the lake in most years. Lead is a different story – you can barely make out that there is some total lead coming from the SFCDA River, the majority is still coming from the CDA River through the main stem, lateral lakes, wetlands, and floodplains. During high flow, pictures show the lead laden sediment plume coming into CDA Lake and much less sediment that is leaving the lake on the other side, so CDA Lake is still trapping much of the lead. The sources haven't changed, which makes sense that we are seeing these upward or flat trends at Harrison as most of the lead is still in the system. Only limited remedial activities have occurred in the mainstem CDA River to date so lead loads have not decreased. Future remedial activities should decrease the lead loads. There is more information in her report which is available online on the USGS website.

Craig Cooper asked for clarification on Lauren's slide on the zinc graph showing more going towards the Spokane River than going into CDA Lake and she clarified with the yellow colors being hard to see that was not happening.

Jerry Boyd wanted clarification on what Lauren calls the mainstem of the CDA River has been referred to as the Lower Basin, is this language going to change. Lauren answered that the USGS has strict rules around how they identify certain things, and we have to call them according to their proper board of Geographic Names, so she referred to it as the CDA River in her report. Jerry suggested to note that at least for our purpose in the future.

Jess Byrne asked why the data only went up to 2018 and if there was a reason she couldn't use more current data. Lauren replied that she hadn't completed that analysis yet. The data collection is ongoing and next year she is slated to update these trends and look at the data through water year 2024. She is excited to see what the last six years have done. Jess asked if the USGS has the funding to continue to do this analysis and she answered they do.

#### **Government Gulch 2024 updates** –Tyler Chatriand EPA

Tyler's update today will cover EPA's efforts to update and re-baseline our understanding of the conceptual site model within the broader operable unit to the groundwater system. Erin and Lauren provided us with good presentations and a lot of data has been collected that suggests water quality in the SFCDA River has been improving. A lot of that is attributable to remedial actions that have been implemented throughout the Upper Basin, including Operable Unit 2 (OU-2). The seepage study conducted in 2022 points strongly to the GCS that was installed in the CIA area and has had major impacts on the SFCDA, which has been recognized as the single largest contaminant load or source to the SFCDA. As we continue to implement remedies and evaluate their effectiveness, we are also updating the conceptual site model – how contamination is moving through the system. From there, we can look forward to planning additional remedies and/or optimizing existing remedies. Regarding groundwater sources within OU-2 and the selected remedies that are identified in our Record of Decision (ROD), it is easy to look to the next one as Government Gulch.

Tyler talked about the effectiveness monitoring for the GCS. The USGS study is a strong line of evidence to gauge the performance of the GCS, but there is a lot more data collection and analysis going into this effort. Depending on location, we are monitoring up to twelve times a year with water quality monitoring. In addition, IDEQ and their contractor Alta are collecting groundwater data from an expansive well network – up to 75 wells twice a year during base flow and high flow. There is operational and monitoring data from the GCS itself, and the CTP that IDEQ and Ferguson who are continuously obtaining influent/effluent chemistry, groundwater levels, and flow rates. EPA’s contractor Jacobs has developed a calibrated groundwater flow model that helps evaluate hydraulic capture and identify how much groundwater might be escaping so we can go back and optimize, and what those residual loadings might be to surface water. Jacobs will hopefully have details on what this effort looks like sometime later this summer.

Tyler quickly revisited the USGS study, showing the map of the three sections, the seeps and the two confluences of Government Gulch and Bunker Creek. We know that post GCS construction, there was a significant drop in the loadings through the Middle section of the SFCDA River, but probably didn’t do a lot to address loading in the Downstream section. We are now going to start taking a closer look at Government Gulch. Some of the key major actions that have already taken place include:

- OU-2 Phase Remedy Implementation Approach – early 1990’s EPA and IDEQ developed a 2-phased approach to implementing remedies identified in the 1992 ROD.
  - Phase 1 – Human Health focus – addressed capping and isolating contaminated soils.
    - Soil removals – about 400,000 cu.yd.
    - 6-inch barrier clean soil cap
    - Government Creek reconstruction – rock wall lined channel and vegetated riparian floodplain.
    - Demolition of industrial facilities – phosphoric acid and fertilizer plants and zinc plant.
    - Substantially completed in 2001
  - Phase 2 – Surface water and groundwater focus – implemented more intensive type remedies to address surface water and groundwater quality.
- 2007 Phase 1 RA Assessment
  - Showed significant reduction in the mass of contaminated material due to removal of contaminated soils in Government Gulch.
  - Improvements in surface water and groundwater
  - Increasing zinc and cadmium concentrations near the mouth of the gulch.
  - Surface water/groundwater interactions poorly understood.

Around the same time in 2007, EPA initiated a focused Feasibility Study (FS) with the goal of identifying a final remedy for surface water and groundwater in the Upper Basin including OU-2. The selected remedy for Government Gulch consisted of a number of actions:

- Line Government Creek from Galena Ridge Pond to I-90 culvert which is about 2 miles long.
- Install a groundwater cutoff wall and extraction wells across the upper gulch.
- Divert clean groundwater into the newly lined Government Gulch channel.
- Extraction wells across the mouth of Government Gulch and convey to CTP for treatment.

There will be more data collection efforts and analysis to figure out if there is a cost-effective remedy for Government Gulch. Our initial investigation will re-baseline the conceptual site model for water and metals movement within the gulch and help get a better understanding of the nature of the surface water and groundwater interaction. Data analysis will focus on whether a Government Gulch Remedial Action (RA) is a cost-effective approach to further reduce metals loading to the SFCDA River. If a RA is deemed cost-effective, future data collection would focus on data support for a pre-design effort that would meet EPA objectives. We are going to install a few wells and conduct monitoring and aquifer testing later this summer.

Jess Byrne wanted to know if they would be utilizing Federal Superfund dollars or settlement dollars for this remedy, as the State of Idaho provides match dollars for one and not the other. Ed Moreen answered to the extent that if there are settlement dollars available, they would use those first. If they are not available, they would need to get creative to fund the actions with the latter requiring a state match. The CDA Trust dollars cannot be used in the Box so that is off limits for this action.

Rebecca asked where the cut-off wall would be placed – up above where the infrastructure is still in place? And her next question is surface water quality data available to see what kind of aquatic life criteria is going on there? Tyler thought the cut-off wall would be all the way to that upstream end of the gulch, he wasn't sure as that is part of their data collection efforts to refine where they understand clean water and contaminated water to be. He asked Jacobs for their thoughts – Steve Demus answered that the most recent data set was from 2014-2015, so they need to collect more data to start assessing that. An assumption would put the wall upstream of the pond and below the shooting range, but there's a lot of variables they need to look at. Tyler also told Rebecca that surface water data was available through the BEMP monitoring data.

Jerry Boyd asked what the contaminants of concern were – is it primarily zinc? Because the zinc plant was located up there so he's assuming the cut-off wall would be above where the zinc plant was. Tyler said the contaminants are the same as the rest of the Bunker Hill Superfund Site, but primarily dissolved zinc and cadmium here.

#### **Spokane River beach sampling results** –Brendan Dowling- Ecology

Brendan is a Toxicologist for Washington State Department of Ecology and manager for the Spokane River sites and will share the data they have been collecting over the last few years and more recent data from the last 18 months or so. The Spokane River sites were included in the 2002 ROD for protection of human health upstream of Upriver Dam and environmental protection between Upriver Dam and the Washington/Idaho border. Certain beaches that were heavily used by recreational users and fish spawning habitat areas were identified for remedy selection. Brendan shared a map showing the beaches that have been cleaned up – Starr Road was cleaned up by EPA in 2007, the others by Ecology over the years moving from upstream to downstream to eliminate the potential for recontamination. These beach sites were completed by 2012 followed by post remediation sampling beginning in 2013 and in 2018, with a periodic review in 2022. A gravel cap was used at each beach with thickness and gravel size varying depending on the recreational use at each site. The Harvard site was identified as a rainbow trout spawning habitat so both a removal and backfill was completed to maintain elevation. Vegetation and improved recreational access were done at several of the other beach locations.

The post-remediation Monitoring Sampling and Analysis Plan was developed in 2013. As he mentioned, monitoring events were conducted in 2013 and 2018, and sediment sampling at Upriver Dam in 2020.



Concentrations post-remediation is generally lower than pre-remediation, but the trend of contaminants is increasing over time with the upstream sites having higher concentrations than the downstream sites. Concentrations at Upriver Dam are similar to concentrations observed near the State line. Their periodic review conclusions they observed are:

- Sediment deposition on top of the gravel caps at all the beach sites with differences at upstream versus downstream.
- Each site showed signs of recreational use.
- Some erosion observed at the Island Complex site:
  - Result of annual high-flow events
  - Less than 50% of planted vegetation surviving
- Remedy remains mostly intact, providing a barrier to eliminate direct exposure to pathways to contaminated sediments. All the remedies are still there protecting human health.
- Continued monitoring is needed to evaluate redeposition of contaminants.

The ROD had identified certain cleanup levels that were used at the beach remediation sites. Whenever a periodic review is done, like in 2022, we always look at updating our plan as new sciences, mandates and ARARs are established. In this last review, the cleanup levels were adjusted to match state requirements for arsenic, cadmium, lead, and zinc. Sampling goals included:

- Collect and compare lab and XRF beach samples (As, Pb, Cd, Zn)
- Collect surface water and suspended sediment (As, Pb, Cd, Zn)
- Measure the volume of settling sediment
- Compare results between low, medium, and high flow regimes

Brendan showed a slide explaining their sampling timeframe for low, medium, and high flow sampling events and what samples were collected between September 2022 to September 2023. Results for three different sites – Island Complex which is the most upstream site; Starr Road which is located across the river; and Harvard Road further downstream. Sediment samples are grabbed off the top of the cap making sure not to include any clean gravel. There were minor decreases for both arsenic and cadmium but lead and zinc showed higher amounts on top of the cap in 2022 versus 2023. All of them except arsenic are above the cleanup levels now. They also used a device called a sediment trap and unfortunately the data was lost for the medium and high flow events, but the low flow data indicates we are still seeing a lot of heavy metals coming down the system to each of our beach sites – again, more at the upstream beaches. Dissolved surface water samples do not show much for arsenic or cadmium, both still below cleanup values. In March 2023, a higher flow event showed the biggest movement of contaminants down the river in the water column, this was true for both lead and zinc. What we are seeing is a seasonal trend in dissolved metals similar to previous studies and continued transport of fine-grained sediments with heavy metals from upstream sources. They hope to go out for additional sediment trap data for that information that was lost, to evaluate transport trends related to flow regimes.

Jess Byrne asked if there were any plans for additional remedial work on the beaches or would it do any good with the redeposition? Brendan stated they are always concerned about redeposition on the Sites, and when Ecology did the prior remediation they were aware that recontamination might occur in the future, however it was important to address the contamination at the time to limit exposure to heavy metals to recreational users and biota. We want to make sure we provide that recreation as we see

heavy use at these sites, and now that the concentrations are starting back up above summer cleanup levels, we are starting to get concerned and want to address this. It is dependent on funding availability for us as we use Clean Site Initiative funding which is legislative dependent.

**CCC Updates** – Jerry Boyd

Jerry updated on the CCC – we had a meeting on April 3<sup>rd</sup> at the CDA Library that was fairly well attended with presentations on CDA Lake Management and Lower Basin Updates. We will hold another meeting on June 5<sup>th</sup> in Kellogg at PHD from 5-7pm. We are always open for questions that the public needs answers to or for information that needs to be transmitted to the Basin Commission.

**Public Comments & Discussion**

*Individual speakers will be allowed three minutes to address the board on each agenda or non-agenda item.*

Rog Hardy, a former TLG member from Benewah County under Jack Buell, wanted to speak. He watched the evolution of the thought process for the entire Basin Commission with Sen. Crapo, Sen. Craig and Gov. Kempthorne. He got very involved with the land issues and had a career in energy resources, thus being retained by Jack for the TLG. Since his late wife passed, he has gone back into international energy resources, geothermal oil and gas, and now enhanced rock weathering for carbon reduction. He thanked Tamara for keeping him on the email list so that he would know about this meeting. He sees a few familiar faces if anyone would like to visit and get caught up.

**Executive Session under Idaho Code 74-206 (1) a to Discuss Performance of Executive Director.**

A motion was made by Phil Lampert to move into Executive Session, seconded by Scott Fields. A roll call was taken across the Commissioners, all approved **M/S/C**

Executive Session ended at 2:55 pm and the meeting was adjourned.