



Meeting Minutes – March 17, 2020

NOTE: This meeting was done via a zoom conference call and was not an official board meeting with any board action taken. The original meeting agenda was modified to just cover one topic (EPA/CDPHE update related to Captain Jack).

Attendees

1. Joy Jenkins
2. Jeannine M
3. Joe Ryan
4. Roger Loving
5. Barbara Luneau
6. Chuck Opperman
7. Lauren Duncan
8. Sean Cronin
9. Gabe Tuerk
10. Ken Lenarcic
11. Laura Dixon
12. Sue Schaufler
13. Audrey Butler
14. Jessie Olson
15. Deb Hummel
16. Yana Sorokin

Mary

- Reviewed Record of Decision where remedy was separated into Surface Remedy and Subsurface Remedy
- Reviewed Cost Comparisons from 2008. Active treatment was not selected because its not sustainable at Captain Jake due to concentration of containments and relatively low flows.
- Reviewed remedial action objectives (see slides).
 - Reduce in-stream metals concentrations
 - Ensuring drinking water
 - Support aquatic life

- Described in-situ treatment remedy, which is a novel approach (see slides).
 - Plug big 5 tunnel to flood the mine to minimize contact with oxygen and neutralize impounded mine-pool
 - Monitor mine pool extent and WQ
 - Monitor surrounding surface and sub surface WQ
 - Reduce treatment cost
- Described status:
 - Phase 1, which is surface remedy, is complete.
 - Phase 2, which is in-tunnel treatment, just started recently. We are currently in this phase. This portion of the remedy is required adaptive management, and basically adjusting based on what is learned.
 - Phase 3 is in the future. This is Ex-Situ Bioreactor. First they need to see how phase 2 improves water quality before decisions about phase 3 are made.
- Described In-Tunnel Treatment Design Concepts, see slide.
- Described Remedy Implementation steps, see slide.
 - Described that this is the simplest approach, which is what they chose to start phase 2. Constructed a flow-through bulkhead, recirculating mine pool through limestone bed, and monitoring.
- Described ideal scenario for phase 2 results (see slides), with the hope that this new approach/technology can be used at other sites.
- What actually happened was that in May 2018 they closed the bulkhead and water elevation increased rapidly (no static elevation as originally anticipated).
 - When they opened the valve they expected that the water quality would be near neutral based on the surface water that they had sampled. However, they found that water was highly acidic. This was due to more acidic water at the based on the water column, demonstrating that surface water sampling was not representative of the conditions in the mine workings.

Joy

- Described emergency response (see slide).
 - Goal is get water quality back to pre-remedy implementation conditions. But challenge is that they are not sure what those conditions are downstream of the site. They relied on a CPW 2015 fish survey near SW14, aka the beaver pond area. This indicated low numbers of fish and they inferred that low populations were due to water quality issues. They also had anecdotal information that fish populations were good at Lick skillet Road. Used these two points as performance standards.
- Described changes in metal concentrations during drawdown (see slide) and post drawdown (see slide).
- Described seasonality difference in water quality from 2014 – 2016, before the in-tunnel treatment system was implemented.

- More data is available during the high flow period and less data is available in the low flow period. Showed water quality ranges, see slide.
- Described results of aquatic toxicity assessment, see slide.
 - Copper and zinc are posing issues for the most sensitive organisms. Generally conditions are acceptable for brook and brown trout but not for rainbow trout.
 - Focused on monitoring data for Zn because it is a conservative metal.
- Described Next Steps: Optimize and modify in-tunnel treatment system. Learning from the first trial. Likely will need to add other organic amendments. Also changing sampling techniques due to unrepresentative sampling. Keeping temporary treatment system at the site as emergency backup to protect water quality in case of another issue.
- Timeline: Currently working with selected contractor (MineWater) with plan to adjust treatments by early summer. Plan to monitor for two years after implementation (2022-2023). Will determine if external bioreactor is needed in late 2023. Not moving on external bioreactor now is because design will depend on how well in-tunnel treatment will work. They hope to get better source control so that the external system could be more of a polishing step and would require less design.

Q&A:

Gabe: In terms of pre-treatment conditions. is the goal then to restore conditions suitable for fish (by aquatic life standards?) at Lick Skillet and below and accept that impairment exists potentially all the way from the adit to the Lick Skillet site (assuming then that it is a binary answer and that fish and BM are known to be impaired above the site/observations near lick skillet)?also would like to see where SW-11 is on the map

Joy: Showed map. SW-11 is below where the big five adit enters into Left Hand Creek

Gabe: So there's over 3 miles of road down from that to the area around lickskillet. Is the expectation that impairment will exist all the way down even if wildly successful?

Monica: SW-11 is downstream of another tributary though.

Joy: Explained that they are looking at SW-11 in the winter due to practicalities of access for sampling and because it meets record of decision requirements of sampling downstream of the site. Confirmed that there is indeed a minor tributary.

Jessie: Is allowing fish to die the current trigger and is it possible to have a trigger before they die?

Joy: Explained that with the hazard quotient does not necessarily mean that if the value equal one then it's a lethal impact. For example, rainbow trout can acclimate. The hazard quotient will help indicate that changes are coming.

Gabe: Anecdotal measurements said that people observed good fish around Lickskillet but upstream there are known impairments. Is the expectation that we should expect fish kill above Lickskillet.

Joy: Going forward we do not expect to see a fish kill in the creek between the site and Lickskillet Road area. However, we also do not expect to fully meet the table value standards in that stretch of creek while we are working on the in-tunnel treatment system. Species that are sensitive to metals, like rainbow trout, may not be able to reproduce in this segment and are unlikely attain significant populations in this part of the creek in the near term while the agencies are working on the remedy.

When the emergency treatment system was shut down, our best predictions were that it would not kill fish downstream, but we had uncertainty in modeling the resulting conditions compared to past conditions, due to lack of past water chemistry and flow data during the winter time. The agencies wanted to be prepared for a worst case scenario. And the agencies used the past observations of fish populations to determine the area to target to ensure protectiveness to fish.

Jessie: How are the goals between the record decision and the TMDL different?

Mary: TMDLs are under the clean water act and are stricter, but record of decision is under separate law which offer more flexibility. At superfund site they are required to look at relevant and applicable standards as they become available. Record of decision accepts that it may be possible that there are too many preexisting conditions to attain standards in the TMDL.

Joe: How are the funding levels for future remediation at the Captain Jack?

Joy: Right now there is sufficient funding for the work needed for the calendar year, particularly as a demonstration site. Unknowns are related to if a treatment system ends up being needed.

Roger: Requested copies of the map and thanked them for the information.

Joy: Offered to stay in contact and keep us updated.

Gabe: Asked about how introducing organic amendments will impact water levels.

Mary: Explained that lesson learned is how quickly the water level can rise and are therefore considering only partial closures in the future.

Joy: Added that amendments will not impact the water level.

Deb: Asked for clarification about monitoring during the upcoming projects.

Joy: Added that they are at the end of the initial 3-month of monitoring after the emergency shutdown. Then have another sampling event planned in April, which will be repeated four times in the year. They have flexibility to increase sampling in 2020.

