Meeting Minutes
March 10, 2026

Hosted in-person at the Fremont County Annex Building in St. Anthony, ID and hybrid via Zoom

Attendance

- **37** in-person
- **35** via Zoom

Introductions and Community Building

Aaron Dalling, Henry's Fork Watershed Council co-facilitator on behalf of Fremont-Madison Irrigation District, welcomed everyone to the hybrid meeting. The group went through introductions and then called for a moment of silence before opening for announcements and community building.

Announcements

- **Brandon Hoffner** recognized the increased attendance to Henry's Fork Watershed Council meetings and congratulated Aaron Dalling and Christina Morrisett for their hard work.
- **Brandon Hoffner** shared that the Idaho Chapter of the American Fisheries Society conference was held in Idaho Falls last week and that two award winners are in the room: Brett High was recognized for his work on native fish and Rob Van Kirk received the Lifetime Achievement Award.

Consolidated Farmers Canal Company Inverted Water Siphon Project
Matt Peterson and Russ Luthy, Consolidated Farmers Canal Company

Matt Peterson introduced himself and his deep local roots. His family homesteaded east of Ashton, where his great-grandfather built a school and store. His father, born there, served in World War II and later settled in St. Anthony, eventually finding and buying a big red barn in Salem that he loved and spent the rest of his life turning into a farm. Matt explained that he has been serving as Secretary of the Consolidated Farmers Canal Company for about three years, following Russ, who held the role before him.

Russ Luthy introduced himself as born and raised outside of Rexburg in a ranching and farming family that had come to the area in the 1880s. He settled in Hibbard, Idaho, at the tail end of the Consolidated Farmers Canal, where he farmed and ran cattle with his father-in-law. He serves as the water master, managing water deliveries from the Consolidated Farmers Canal and often ends up being the one people complained to when there was no water.

Matt explained that the purpose of their presentation was to describe a canal infrastructure project made possible by a grant that Daniel Wilcox (Henry's Fork Foundation) helped them secure. As a

small canal company with a limited budget funded mainly by annual assessments on water users, they needed outside funding. The Henrys Fork Foundation partnered on the project. Matt described how their canal, the last to divert from the Henrys Fork, took water about two miles downstream from the meeting location, with water rights up to 403 CFS and a service area extending to the north of the South Fork of the Teton River. To reach that area, the canal passed under the North Fork of the Teton River about seven miles downstream. Matt emphasized the importance of the Henrys Fork and water for sustaining agriculture and life, and framed the project as an effort to better manage these resources. He noted that the structure they were replacing dated back to around the 1960s.

Russ described the "undershot" project as a pipeline (reverse siphon) running under the North Fork of the Teton River. Before that pipe was installed, water crossed the river in an old wooden flume that washed out every spring during high water, forcing farmers to retrieve and rebuild it each year. By the 1960s, they had grown tired of this recurring problem and installed the undershot pipe instead.

They explained that the old river crossing used two five-foot diameter pipes with concrete structures on each bank. Over time, these pipes repeatedly clogged with trash—everything from general garbage to items that fully blocked the pipe—requiring them to drain the canal, crawl inside under the river, and clean it out almost every spring. The concrete around the old structure was also failing, so it could no longer reliably contain water.

To fix this, they secured engineering support, funding help from Daniel Wilcox and the Henrys Fork Foundation, and ultimately installed a single 96-inch (8-foot) galvanized, aluminum-coated pipe that can carry significantly more flow (roughly 312 CFS vs. 170 CFS before) and is large enough that you could theoretically drive a pickup through it. When they removed the old pipes, they discovered one was nearly half full of compacted mud, which had been restricting downstream capacity and forcing them to maintain higher upstream pressure. That discovery reinforced how much efficiency they could gain by upgrading and cleaning the system, allowing them to move water through the canal and serve users across Fremont and Madison counties with less volume and pressure.

They installed the new pipe in October, taking advantage of low river flows and good fall weather, then poured new concrete structures on both ends. The upgrade was critical because a failure would have sent all their canal water into the river, threatening long term delivery to shareholders. The project was expensive for a small canal company: about $66,000 for the pipe and $50,000 for concrete already paid, with remaining costs tied to future automation and measurement equipment that would let Russ control the headgate by phone and use lasers to manage flows and emergency spill capacity at the Teton River.

They described how automation on nearby structures (like the St. Anthony headgate) had already transformed efficiency—Russ could adjust gates remotely, even from out of state. They also explained the long history and local stewardship behind the canal: Matt's father and others had led the company for decades, and farmers had worried about replacing this structure for years. Funding came from grants (including Madison Soil and Water Conservation), company savings, and financing from Ag West, while a hoped for federal grant fell through with political changes.

They recounted that planning work began in 2024, construction at the crossing started October 6, 2025, and went smoothly thanks to a long, warm fall. Looking ahead to 2026, they planned to finish installing automation. A recent merger with the Island Ward Canal Company and added automation at its Teton River headgate would allow them to manage storage water much more efficiently—pulling it from the Henrys Fork and delivering it all the way to Hibbert with less loss than routing it through the crosscut and down the Teton River. They closed by emphasizing shareholder support, community involvement, and the importance of reliable water in the sandy, gravelly "Salem dirt," where nothing grows without irrigation.

Q&A: Consolidated Farmers Canal Company Inverted Water Siphon Project

- Noting the two original supply pipes, **Glade Mason** asked if the new single-pipe design would now flush itself clean or if they would still have to deal with sediment and debris buildup?
    - **Russ Luthy** explained that on the upstream side of the new pipe they built a large concrete vault—about 12 feet by 12 feet and 4 feet deep—with a concrete apron. Water from the canal dropped into this vault, slowed down, and then had to rise again to enter the undershot pipe. The design was intended to make sediment settle in the vault instead of inside the pipe, so it could be periodically cleaned out with an excavator.
- **Brian Murdock** asked for clarification about the aging infrastructure grant, noting that they'd heard it referenced as a "request from the water board" and had seen it discussed in prior meetings. They wanted to know whether the Water Resource Board had actually granted the funding yet, or if the project was still just in the request/pending stage.
    - **Matt Peterson** explained that the Water Resource Board has awarded them the grant and agreed to fund 33% of the project. The canal company initially budgeted about $300,000, but now expects the final cost to be closer to $200,000–$220,000. Because the grant is reimbursable, they pay costs up front, submit receipts, and then receive one-third back based on actual spending. The board also asks them to document in-kind contributions, and they noted that the time and effort contributed by everyone involved is substantial and can't really be captured by a simple check amount.
    - **Russ Luthy** described how it took about a year of groundwork before construction could even start—getting engineering and construction bids, choosing materials and contractors, deciding what work they could do themselves, and coordinating closely with Daniel Wilcox on the grant details. They emphasized that this planning and coordination time was substantial and hard to put a dollar value on.
    - **Matt Peterson** added that when the pipe finally arrived, president Winston Larson, though in poor health, urged his son Kelton—a trucking company owner and major shareholder—to help. Kelton brought trucks, loaders, equipment, and lights, and crews worked late into a cold night, staying up until about 2:30 a.m. to set and bury the pipe. His daughter helped run equipment the next day. They highlighted this story to show the heavy in-kind contributions and community effort, including Aaron Dalling's role, that made the project possible.
- **Daniel Wilcox** asked what project or structure is next.

- **Matt Peterson** said the next priority project is replacing the first turnout structure on the canal, about three miles downstream from the head, which now needs replacement. Several headgates with crumbling concrete also need work, but they emphasized that this undershot project was the big one; once it's fully paid for, they'll turn their attention to those other needed repairs.

Infrastructure Upgrades
Aaron Dalling, Fremont-Madison Irrigation District

Aaron explained that Fremont Madison Irrigation District overlaps geographically with the canal companies and serves as the contract holder with the federal government for storage water in Island Park and Grassy Lake reservoirs, delivering that water to about 40 canal companies, including Consolidated Farmers. They then said they would quickly run through several district projects at a higher level than the detailed presentation just given, and invited questions as they went.

- **Question: Keith Esplin** asked, since lower canals (Consolidated Farmers and Island Ward) have combined, how much less water does FMID runs by the Crosscut Canal?
- **Answer: Aaron Dalling** described a long-standing, difficult situation on the North Fork of the Teton: the Crosscut Canal didn't really have enough capacity to reliably deliver Island Ward's roughly 4,000 acre-feet of storage water from Island Park, so Island Ward often had to rely on whatever incidental flow happened to be in the river, which sometimes ran nearly dry. Re-wetting the North Fork channel to move storage water caused losses that reduced natural flow in the main Teton, upsetting other canals that depend on that natural flow. The new arrangements and infrastructure changes helped resolve this internal controversy by creating a more workable way to deliver storage water without those conflicts.

Aaron explained that, starting around 2020, Fremont Madison Irrigation District began systematically pursuing federal and state infrastructure funds (including recent federal infrastructure/IRA-era programs). Working with all canal companies in the district, they surveyed needs and built a roughly $40 million project list, the largest item being the North Fremont Canal "Phase 5" (already installed but not detailed here).

Using early help and a grant application nudge from the Henrys Fork Foundation, FMID began an automation program: first automating the crosscut headgate and the Teton River splitter, then expanding to about 28 automated structures, with a goal of 40+ once 14 checks on the St. Anthony Canal are done. Aaron gave examples of headgates and check structures that were upgraded from failing boards and leaking concrete (e.g., Rexburg Canal split, Marysville structure, Chester Canal, Silkey Canal) to automated gates that can maintain set flows and reduce shortages.

Aaron also described more complex projects on the Fall River Canal system, where they removed inefficient canal loops, upsized and automated key gates (overshot gates that hold a set water level), and upgraded a major check structure feeding the East Branch of the Fall River Canal (and thus the East Teton).

Previously, managing these points required backhoes to rip out boards during high flows, and the Crosscut flows swung wildly (from near zero to ~400 CFS in 2023), making operations chaotic. Automation now lets them set target water levels/flows while gates adjust automatically, significantly improving control and reliability.

- **Question: Brandon Hoffner** asked if updates in the system have allowed for smoothing Crosscut operation.
- **Answer: Aaron Dalling** said yes, and would give more details in a future slide.

Aaron illustrated how hard it had been to manage the East Teton/East Branch of Fall River, a ~15-mile reach that starts on Fall River, becomes the East Teton, siphons under the Teton River, and ends near Moody Creek. Because the channel gets small at the bottom, flows had to be "nearly perfect": too much caused field flooding, too little caused shortages. When Crosscut flows fluctuated, pressure on the add-water gate changed constantly, so they were always either over- or under-delivering.

Last year FMID installed their first automated gates there—one overshot and one knife gate—so they could set a water surface elevation and let the gates adjust automatically to hold it constant, stabilizing pressure on the East Teton gate (though they learned the knife gate doesn't pass trash or enough flow and plan to convert it to another overshot).

To show the broader benefit of automation, Aaron walked through charts from the Rexburg Irrigation Canal and the Crosscut: when upstream canals turned up and drove South Fork flows all the way to zero, automated gates opened enough to keep deliveries into Rexburg's canal at the target rate, then closed back down as more water became available. Similar behavior on the Crosscut allowed it to push up to 600 CFS to the Teton even while South Fork flow at that point went to zero—something they said would be impossible to manage manually.

Aaron summarized that roughly 28 structures had been automated over six years (funded by a mix of WaterSMART and Idaho Water Resource Board grants plus shareholder contributions), and then turned to the St. Anthony Canal project. That effort aims to boost water delivery to the Egin Lakes recharge site, where capacity has been limited by delivery constraints and 25 difficult-to-operate check structures. After reviewing those checks, they decided to abandon 11 no-longer-needed structures and automate 14 (retrofit 9, fully replace 5).

In parallel, they are testing a recharge well on the Egin Bench (4,000–5,000 gpm capacity) and working with the Idaho Water Resource Board on a water-quality study using six monitoring wells to ensure recharge won't harm domestic supplies. Automation on St. Anthony checks—using overshot gates that hold a set canal level—will let watermasters maintain up to 600 CFS in the canal and respond quickly when recharge water becomes available, simply by turning up the river headgate and letting the automated checks adjust themselves instead of manually pulling boards at high flows.

- **Question: Glade Mason** asked if the automated canal gates are affected by debris that inhibit their function.
- **Answer: Aaron Dalling** explained that said they only had about a year of experience with the new automated gates, and so far debris hadn't caused significant problems except at the bottom-opening knife gate, where trash tended to pile up in front of the structure without stopping it from working. Aaron didn't expect major debris issues overall, noting that

watermasters are already used to clearing trash from in front of checks and would likely manage these gates in a similar way.

Aaron showed an example of a new St. Anthony Canal structure being retrofitted with automated overshot gates and a control panel. Each automated site will also have radar flow measurement, giving watermasters real-time flow data at each structure to support better decisions.

Shifting from automation to aging infrastructure, Aaron described work with the southeast Idaho Canal Company (about 15,000 irrigated acres) using the state's aging-infrastructure program. After the legislature boosted the cost share from 33% to 50% (with $30M added), the company evaluated its entire system and targeted 12 check structures and 45 headgates for replacement—swapping out failing slide gates and board structures (sometimes propped up with sticks or tree branches) for properly engineered screw gates and new checks. Several of these upgrades were completed over the current, unusually dry winter.

Aaron also highlighted work with Madison and Henrys Fork Groundwater Districts to meet a new settlement requirement that starting in 2026, groundwater diversions must be reported monthly. Over the last year, interns installed telemetry on all flow meters, enabling producers and managers to see pumping in near real time, rather than discovering at year's end that someone exceeded their diversion limit.

Looking ahead, Aaron outlined upcoming projects, including replacement of the crude North Fork of the Teton diversion dam that currently sends all water into the Teton Island Feeder Canal. That structure is scheduled to be replaced this fall with an engineered dam featuring automated overshot gates designed to sit flat on the riverbed to minimize impacts to river users when not in use.

- **Question:** In jest, **Brian Murdock** asked if we could have built a much bigger version of the Teton diversion dam on the river.
- **Answer: Aaron Dalling** laughed and said the new engineered diversion structure on the North Fork of the Teton should provide some fish benefit, mainly by reducing how long the North Fork stays dry. In the past, even after Teton River priorities rose to match the Henrys Fork, boards at the existing dam often weren't pulled for weeks or months—either because it was difficult work or in case priorities split again—so the North Fork stayed dewatered longer than necessary. With the new structure and better operations, they expect the North Fork to be dry for shorter periods, even if it still won't have continuous flow.
- **Question: Russ Luthy** asked if FMID could measure streamflow at the new dam structure.
- **Answer: Aaron Dalling** explained that while the new structure could absolutely measure and manage flow at that location, those measurements would not be accepted for official Teton River water accounting. For the flow data to count in the formal accounting system, it would need to come through USGS (a federal agency), so their local measurements alone wouldn't be sufficient to change how the river is officially accounted.
- **Answer: Amanda Fowler** added that it would be good for FMID to know, but that WD1 wouldn't necessarily use that information.

Aaron showed several aging diversion structures slated for upgrade. The Woodmansee–Johnson Canal diversion on Moody Creek currently only uses loose boards in frames where hardware is missing, and will be replaced with automated overshot gates this fall. FMID also plans to replace the first diversion on the crosscut canal for Fall River branches, an original structure from around 1938–1939, which is in poor condition. The Egin diversion was noted as another site that "could use work," holding back a lot of head, and they reiterated ongoing efforts to automate Grassy Lake releases, which are logistically difficult due to long, rough winter access (22 miles of alternating snow and mud).

- **Keith Esplin** remarked that many canals had still been relying on century-old infrastructure and praised the progress made on upgrades, congratulating everyone involved in the recent projects.

Farm Succession Program
Lydia Hanson, Teton Regional Land Trust

Lydia Hanson introduced herself as the staff attorney and conservation project manager at Teton Regional Land Trust (TRLT), a nonprofit working with private landowners to conserve working farms and ranches, wildlife habitat, and open space in eastern Idaho and part of Teton County, Wyoming. TRLT is 36 years old, was the first accredited land trust in Idaho (accredited in 2008, now in its third re-accreditation), and works across six counties (Teton, Madison, Jefferson, Bonneville, Fremont, Clark) plus nearby areas.

TRLT's "bread and butter" is conservation easements—private agreements where landowners give up certain development rights to permanently protect agricultural and conservation values while retaining ownership. They've helped protect over 42,000 acres, including 26,000 acres in 135 conservation easements and four fee-title properties (236 acres), such as an outdoor classroom in Teton Valley. TRLT often works near public lands and along key rivers (Teton, Henry's Fork, South Fork) and partners with BLM, Idaho Fish & Game, The Nature Conservancy, and others.

TRLT is new to farm/ranch succession planning, partnering with American Farmland Trust under a 4-year NRCS-funded grant (~$25,000/year plus match) to help more farms and ranches transition to the next generation of producers and reduce development pressure on ag land.

Lydia presented succession planning as:

- A multifaceted, iterative, long-term process involving the business, land, and family members' financial security.
- Often needing multiple professionals (attorneys, financial and tax advisors, lenders, mediators, insurance agents, realtors, appraisers, healthcare planners).
- Emotionally challenging, because it touches death, legacy, money, and complex family dynamics.

TRLT does not act as legal counsel in this role; instead, they serve as a navigator/thought partner, helping families clarify goals, identify needed conversations, and connect with appropriate professionals and resources.

This fits TRLT's mission to conserve working lands, and they are well-positioned because they already work with many ag operators, new landowners, and land seekers. Through American Farmland Trust's navigator program and a 4-year grant (now in year 3), they've received education and support on succession planning, and she has been meeting with individual families to help them identify key conversations and when to bring in an attorney.

TRLT has created online resource lists (general info on succession planning, business structures, etc.) and given educational presentations (e.g., soil health and succession with Daniel Wilcox). Recognizing that no single group can cover everything, they've built a statewide partnership network (TRLT, Sagebrush Steppe Land Trust, University of Idaho Extension, Idaho Department of Ag's Farm and Ranch Center, etc.) to share information, coordinate services, and refer families to vetted professionals (attorneys, accountants, etc.).

Lydia shared that a first workshop series had low attendance, revealing that timing was off. She has since surveyed 60 producers and learned:

- Best timing is January–February.
- Preferred format is three weeknight sessions (e.g., three Tuesdays/Thursdays).
- Producers will travel up to 50 miles and know they need succession planning, but don't know where to start.
- Priority topics: fair vs. equitable treatment of children, information sharing, family dynamics and shared vision/values/goals, and evaluating the business and assets for transition.

Going forward, TRLT plans to try another workshop at better timing and, in the meantime, offer smaller working groups for more specific questions, speak at local events to raise awareness, and strengthen relationships and referral pathways so people can actually access the resources that exist.

Q&A: Farm Succession Program

- **Josh Thomas** asked whether, given the loss of agricultural land, Teton Regional Land Trust has ever helped counties update their development codes or formal county planning documents to better protect farmland and reduce harmful development.
    - Lydia shared that TRLT recently spoke with a county planning executive about this issue but are cautious about getting too involved in policy, since it can be used in many ways. They do participate in Agricultural Protection Area (APA) commissions and have informally provided some input on drafting an APA in Teton County, but overall TRLT has not been heavily involved in writing or updating county development codes. Lydia emphasized that zoning and land-use decisions rest with planning and zoning departments, and noted that deeper involvement is something TRLT might consider in the future.

Teton River Canyon Yellowstone Cutthroat Trout Conservation Project: Badger Creek Rotenone Treatment

Nathan Tillotson, Idaho Department of Fish and Game

Nathan Tillotson introduced himself as a regional fisheries biologist based in Idaho Falls, where he works on waters like Island Park Reservoir and especially the Teton River drainage. For this presentation, Nathan divided the Teton River into three sections:

- Valley – headwaters to Felt Dam
- Canyon – Felt Dam to the old Teton Dam site
- Lower section – old Teton Dam site to the bifurcation into the North and South Forks

From a fisheries perspective, the valley is dominated by non-native rainbow and brook trout, with a recent and increasing brown trout invasion. The lower section is dominated by brown and rainbow trout. The canyon section is the last reach dominated by native Yellowstone cutthroat trout, making up about 80% of fish there, versus single-digit percentages in the valley and nearly none in parts of the lower section.

Badger Creek, the first tributary below Felt Dam has perennial flow in the lower 4.2 miles, then about 1 mile that goes dry, then perennial headwaters upstream. The upper perennial reach is about 99% Yellowstone cutthroat trout. The lower 4.2 miles are about 99% rainbow trout, at very high densities comparable to the South Fork of the Snake, even though Badger Creek is much smaller. This lower Badger Creek rainbow population is the primary source of rainbow trout entering Teton Canyon, threatening cutthroat.

Nathan provided range-wide context for Yellowstone cutthroat trout, noting that Rainbow trout compete with cutthroat for food, habitat, spawning sites, and thermal/oxygen refuges. They also hybridize with Yellowstone cutthroat, causing introgression (hybrid genes back-crossing into the native cutthroat population), which threatens their genetic integrity. Yellowstone cutthroat now occupy only about 43% of their historic range and have been petitioned for ESA listing in the past; listing would have major management implications in eastern Idaho.

In explaining why the Badger Creek project was needed, Nathan noted that Rainbow trout have been increasingly "leaking" from Badger Creek into the Teton River and Bitch Creek, the latter being critical spawning and rearing habitat for Yellowstone cutthroat in Teton Canyon. To protect cutthroat, managers decided to dramatically reduce rainbow trout in lower Badger Creek, hoping cutthroat will re-establish.

Rotenone treatment was the chosen management action and was conducted on October 8, 2025. The alternatives were considered:

- Angler incentive harvest – rejected due to difficult, remote access (not enough anglers would participate).

- Mechanical suppression (electrofishing) – rejected as logistically difficult and labor-intensive year after year in rough terrain.
- No action – rejected as inconsistent with Idaho's management plan to conserve cutthroat where possible.

Rotenone is a piscicide (fish toxicant) derived from legume roots, used for centuries by Indigenous peoples in South America to gather fish. It has been used by fisheries managers since the 1930s to remove undesirable or non-native fish (e.g., common carp, rainbow, brown, brook trout) in sensitive systems. Rotenone works by blocking oxygen uptake at the gills, killing fish and some aquatic invertebrates (which generally recover quickly). Rotenone is considered effective, safe, and fiscally responsible when applied precisely following detailed protocols, with minimal lasting impact on groundwater, the broader system, or long-term fishery health at the concentrations used. The team has prior conservation wins with rotenone (e.g., removing brook trout from bull trout waters, removing brown trout near Henry's Fork headwaters).

Because adding chemicals to water raises concerns, Nathan's team met with guides, outfitters, Friends of the Teton River, and landowners; coordinated on messaging and held a public meeting; conducted in-person visits to key stakeholders to get ahead of rumors; coordinated with Western Rivers Conservancy for key access across their land, greatly improving logistics.

- **Question: Keith Esplin** asked why Rainbow trout have established in Badger Creek.
- **Answer: Nathan Tillotson** shared that Badger Creek is the first tributary below Felt Dam, so rainbow trout moving downstream from the Teton Valley likely use it as an early-access site for spawning and refuge. Historical stocking of rainbow trout in Badger Creek also contributed to their presence there. Nowadays, most rainbow trout stocked in the region are triploid (intended to be non-reproducing), but that has only been standard practice in recent years. Nathan noted it's likely they are now correcting past management mistakes: historically, managers stocked non-native fish widely and uncritically (e.g., common carp, Asian carp, brook trout, brown trout), and stocking is how rainbow trout originally became established in Badger Creek.
- **Answer: Brett High** stated that stocking is how rainbow trout got there and water conditions in Badger Creek are specifically why their populations are dense and successful. Spring creek systems are productive for rainbow trout.
- **Question: Jeff Sailors** asked if sinking is why a section of Badger Creek runs dry.
- **Answer: Nathan Tillotson** explained that there is a significant change in gradient so the water does sink down before it comes back out of the ground.

Nathan provided an orientation to the rotenone application setup. The team installed five in-stream drip stations along the lower 4.2 miles of Badger Creek to deliver rotenone, with about 1 hour travel time between stations. They measured travel times ahead of treatment using green dye. Flows in the treated reach varied from 0.6 to 60 cfs, largely due to 12 major springs (each contributing from <0.5 to 16 cfs) entering along the reach, making treatment more complex because fish could escape into fresh, untreated inflows.

Larger springs received their own drip stations; others were treated with "kitty litter bombs" (kitty litter saturated with rotenone that slowly released during the treatment). Sentinel fish cages ("canaries in the coal mine") were placed throughout the treated reach to verify lethal concentrations—all sentinel fish died, confirming full treatment. Additional sentinel cages were placed just above the detox site, in the mouth of Badger Creek, and just downstream in the Teton River to confirm that fish outside the target area were not being killed.

In terms of rotenone deactivation, rotenone naturally degrades with sunlight and organics, but they added an extra safety step with potassium permanganate, which turns the water purple and neutralizes rotenone. They debated three detox locations:

- Felt Power Plant outflow – logistically easy, but would detox a long section of the mainstem Teton unnecessarily.
- Badger Creek–Teton confluence – would require detoxing the entire Teton River at that point (too much chemical, higher risk).
- Inside the mouth of Badger Creek – chosen option, providing 30 minutes of contact time (per SOP) while avoiding treating the full Teton mainstem.

Access to the detox site was very difficult (cliffs, boulders, waterfalls). They tried packing gear on backs, then horses, and finally dragging a raft with equipment because there wasn't enough water to float it in many sections. Detoxing the Teton River itself would have required about 3,300 lbs of potassium permanganate; detoxing just Badger Creek still required ~850 lbs, plus mixing tanks and related gear. All this equipment had to be hauled in and then back out after treatment.

Treatment day required about 34 people. On the two days prior, 15 people per day electrofished the deactivation zone (from detox site to Badger Creek mouth) to remove as many rainbow trout as possible from an area that would not be killed by rotenone, but was estimated to hold up to ~4,000 rainbows. Afterward, 10 people worked for two days to extract gear from the canyon.

Overall, Nathan reported that the treatment went very smoothly, with only minor, quickly-resolved issues. A grad student snorkel surveyed one week post-treatment and found no live fish within the treated reach—exactly the desired short-term outcome.

In terms of next steps, IDFG will not build a fish barrier on Badger Creek, so some rainbow recolonization is expected. Over the next several years, managers will use targeted electrofishing in the treated reach to knock back rainbow trout as they appear, giving Yellowstone cutthroat a chance to re-establish and become more resistant to future invasion. They are evaluating cutthroat translocation from Bitch Creek or upper Badger (both eggs and juveniles) but need to confirm feasibility. In the near term, they plan to plant fertilized Yellowstone cutthroat eggs in artificial redds at the end of the month.

Nathan closed by thanking numerous partner agencies and organizations involved in planning, implementation, and cleanup.

Q&A: Teton River Canyon Yellowstone Cutthroat Trout Conservation Project

- In a nod to how fun this work looked, **Amanda Fowler** asked where it ranks in Nathan's personal career.
    - **Nathan Tillotson** shared that it was fun, but also incredibly stressful. It is the largest project he's personally led and so it has a lot of internal value. It is also an important project because it has the potential to move the needle for cutthroat in the area. Nathan ranked it as top two or three career projects.
- **Brian Murdock** asked why managers aren't immediately stocking (transplanting) Yellowstone cutthroat trout into Badger Creek now that non-native fish have been removed, instead of waiting for cutthroat to naturally recolonize—comparing it to "planting the field" after killing the weeds.
    - **Nathan Tillotson** explained that managers are considering transplanting cutthroat, but adult cutthroat trout often home back to where they came from. If transplanted from places like Bitch Creek or upper Badger Creek, many fish might leave the treated reach and swim back to their original streams, especially during runoff when Badger Creek is fully connected. Instead, allowing cutthroat from the Teton River to naturally recolonize the treated reach is expected to create a more stable, long-term population-level change.
    - **Brett High** added that genetics and fish availability are key reasons they aren't immediately stocking cutthroat. They cannot introduce a different strain of cutthroat from outside the basin; they need the right local genetic stock. Ideally, they would use cutthroat from upper Badger Creek to seed the cleaned out lower reach, but those fish are not currently available in sufficient numbers. For now, they'll see if natural recolonization works, and if it doesn't, they'll explore what it would take to obtain and move the correct strain of cutthroat into the area.
    - **Lucas Ellingson** added that he will be snorkeling lower Badger Creek to see what if any fish have been moving upstream five months later.
- **Amanda Bly** asked if fish were left to decompose.
    - **Nathan Tillotson** shared that the crew tried using a block net to capture and remove dead fish after the rotenone treatment, but when large numbers of fish started moving downstream, the net broke. As a result, most dead fish remained in the stream. This was not considered a problem, because scavengers are not harmed by rotenone and can safely consume the carcasses—essentially providing a food source for wildlife (e.g., bears).

Cloud Seeding for Cold Water Conservation
Max Jones, Rainmaker Technology Corporation

Max Jones introduced himself as the Water Policy Director from Rainmaker Technology Corporation, a cloud seeding company, and explained their work. Rainmaker currently operates in Idaho, Utah, California, Oregon, Colorado, with discussions underway in Washington and elsewhere.

Max explained that the West is facing severe drought and declining flows (as is being observed in the Henry's Fork). Snowpack is viewed as the primary "savings account" of fresh water for irrigation and ecosystems.

Max shared Rainmaker's approach to cloud seeding: They do not do convective/rain cloud seeding; they focus on glaciogenic seeding for snowpack (cold clouds, snow enhancement). Their operations must be measurable and transparent—if they can't validate results with data, they don't think taxpayers should fund it.

In asking why cloud seeding (vs. other water technologies), Max compared to it to desalination or evaporation-capture technologies. He argued that cloud seeding is relatively cheap per acre-foot, easily scalable, and fast to deploy (can start an operation in about three months). Cloud seeding complements, rather than replaces, traditional water management (dams, canals, piping, aquifer recharge, wastewater recycling), by "tapping the solution in the sky" within the closed hydrologic cycle.

In terms of technology and operations, Rainmaker builds their own drones and uses them instead of planes or only ground generators. Drones can fly up to 15,000 feet, stay with a cloud, and release silver iodide. As dry aerosol or flares, which act as "scaffolding" for supercooled liquid water in clouds so it can form ice/snow and fall as precipitation. A software system connects drone sensors, meteorologists, and operators, allowing them to target inefficient clouds most likely to yield additional snow.

Max emphasized data-driven validation using radar and satellite. Similar to weather Doppler radar (green/purple echoes), then running a QPE (Quantitative Precipitation Estimate) to calculate how much precipitation their seeding produced. Max stressed transparency as a differentiator. Rainmaker hosts public events (e.g., in Pendleton, Oregon) where people can see the drones, meet the CEO and research staff, and ask questions.

In the Bear River Basin, their cloud seeding program is a joint effort with the Utah Department of Natural Resources and the Idaho Department of Water Resources, as well as research collaboration with Utah State University and the University of Utah.

- **Question: Keith Esplin** asked how much the drones weigh and how many drones are needed to replace one airplane flight.
- **Answer: Max Jones** shared that the drones weight 55 lbs. Max noted that drone deployment depends on the operation. Each drone carries a couple of flares each. If they're using the dry aerosol system, they have 50 grams of dry aerosol that is dispersed based on what the meteorologist and software system detect. Max offered to get Keith a better answer.
- **Question: Jeff Sailors** recommended Max read *Playing God in Yellowstone* and, noting that he has heard rumors about cloud seeding for years, asked if cloud seeding is settled science and if it is safe over long-term 1500 year projections.

- **Answer: Max Jones** noted that says current science indicates silver iodide (the seeding agent) is safe for aquatic life and humans, and is a fairly effective cloud seeding material. On the concern about "robbing Peter to pay Paul" (taking moisture from other areas), they state that evidence suggests cloud seeding does not significantly harm downwind regions. Cloud seeding only taps into less than 1% of the water in the atmosphere, so it uses a very small fraction of available atmospheric moisture. Max emphasized that better transparency and program management are possible and important as these projects expand.
- **Question: Jeff Sailors** followed up, asking if the industry has come up with the information or if there is settled science.
- **Answer: Max Jones** shared that the National Center of Atmospheric Research, through the National Science Foundation, also says that it works. Max offered to give Jeff his card and share white papers and other studies that demonstrate the efficacy of cloud seeding, the safety of silver iodide, how cloud seeding operates—and not just Rainmaker's interpretation either. He can share studies from other countries and international groups.
- **Question: Jeff Sailors** asked if a government agency says cloud seeding is safe for 1,500 years.
- **Answer: Max Jones** shared that he cannot speak on behalf of federal or other government agencies about long term safety determinations. He explains that, in practice, Rainmaker's projects are coordinated with state agencies—with IDWR (Idaho Department of Water Resources) in Idaho and Department of Natural Resources in Utah. He offers to provide additional information and public scientific reports from researchers (not just company materials) to help answer safety and effectiveness questions.

Rainmaker's software and numerical weather modeling are used with their radar systems to identify "inefficient" clouds—clouds that contain a lot of supercooled liquid water but would not naturally produce much snow. When such clouds are detected, they deploy teams of engineers and operators on the ground and launch drones to seed those specific clouds, aiming to increase snowfall where conditions are most favorable.

- **Question: Glade Mason** asked if Rainmaker is part of the project trying to refill the Great Salt Lake and if there are any monitoring results showing that their efforts are working.
- **Answer: Max Jones** shared that yes, Rainmaker is part of the effort. Rainmaker believes their cloud seeding has increased snowpack in the Great Salt Lake / Bear River program, based on preliminary observations. They will produce an end-of-season analytical report, and the National Center for Atmospheric Research (NCAR) will provide third-party validation of their results. This outside review is intended to support transparency and credibility, so it's not just the company claiming success.
- **Question: Glade Mason** asked how long Rainmaker has been part of the project to refill the Great Salt Lake.
- **Answer: Max Jones** stated since Fall 2025 and that they had an event in Salt Lake City in November to demonstrate what they were doing in the area.

Max highlighted Rainmaker's high-altitude, weather-resistant UAVs (drones) as a key differentiator. The drones are designed and built in the U.S. (by engineers in California), are low-cost and safe, and can operate with ground operators instead of a full-time pilot, making them more efficient and less expensive than plane-based operations. They use advanced X-band radar and satellite data to track where they seed and validate the resulting precipitation, helping to precisely document the impact of their cloud-seeding activities.

- **Question: Jeff Sailors** asked whether the large dust storms from agricultural fields, which carry decades of chemicals and fine topsoil, can also act like cloud-seeding particles in the atmosphere—i.e., do those dust particles help form precipitation the way silver iodide does, or is silver iodide the only effective seeding agent in this context?
- **Answer: Max Jones** explained that cloud seeding also occurs naturally. If a dust storm sends particles high enough into an inefficient cloud that has plenty of supercooled liquid water, those dust particles can act as nuclei ("scaffolding") for ice formation—essentially doing the same job as silver iodide. In other words, various particles (including dust) can seed clouds, not just silver iodide; the key is having something for the supercooled water to attach to. However, Max noted that he doesn't know the specific effects of the particular "toxins or chemicals" in the agricultural dust as mentioned.

In terms of the safety and effectiveness of cloud seeding, Max citeed the World Meteorological Organization (WMO), saying cloud seeding can increase winter precipitation by over 20%. Silver iodide concentrations used in seeding are said to be five orders of magnitude below environmental safety thresholds. Cloud seeding is described as a long-standing American invention with decades of research, but serious renewed interest followed more recent field validation work.

Historically, it was hard to prove the effectiveness of cloud seeding in the real world because natural systems are highly variable and complex; hardware, software, and sensing were often imprecise or outdated. However, the NCAR "SNOWIE" research campaign (2017) was a turning point; using aircraft and radar, they showed clear, "unambiguous" seeding signatures—direct evidence of seeded snowfall—outside the lab.

Building on SNOWIE, Rainmaker uses radar-based validation to detect seeding signatures and quantify added precipitation. They report this winter: 45 unambiguous seeding signatures (about 15× more than SNOWIE) and an estimated ~52 million gallons of additional precipitation (snow water equivalent) so far, with the season still ongoing.

Max shared radar products showing where the drone seeded (star symbol / drone location); composite reflectivity (where precipitation formed); instantaneous precipitation rate; and quantified precipitation estimate (QPE) in millimeters, using color scales similar to standard weather radar. *[Slides redacted from public archive pending white paper publication]*

Max pivoted to share about the Bear River Program, an operational cloud-seeding effort supporting the Bear River Basin. It is a joint effort with Utah Department of Natural Resources (DNR) and Idaho

Department of Water Resources (IDWR). In southeast Idaho, the program includes up to 10 drone teams, and an X-band radar at Cedric Peak for high-resolution monitoring and validation. The program goals are to test the feasibility of UAV-based cloud seeding operations; produce unambiguous physical validation of seeding impacts; evaluate field performance of their full technology stack (drones, radar, software, modeling).

Looking broadly at why cloud seeding matters, Max framed it as "huge" for water management in the American West, with potential benefits for cold-water conservation, irrigators and agriculture, and broader water management as populations grow and pressure on water resources increases.

Q&A: Cloud Seeding for Cold Water Conservation

- **Rob Van Kirk** asked Max to explain the specific storm conditions required for cloud seeding to work—things like temperature, moisture availability, and cloud characteristics. Rob emphasized that cloud seeding cannot create storms from nothing: if there's a multi-week dry spell with no clouds or atmospheric moisture, the technology cannot be used, and they want clarity on what criteria must be met before seeding is possible.
    - **Max Jones** said that says detailed criteria (e.g., exact amounts of supercooled liquid water, orographic lift) are best answered by their meteorologists. Big picture: cloud seeding cannot create weather. No clouds / blue skies → no operations (even if it's clear for weeks, they simply don't seed). They only operate when there is an existing cloud that they believe is "inefficient"—has enough supercooled liquid water to support snow, but would naturally produce less precipitation without seeding. Their goal is just to "squeeze out a little extra precipitation" from suitable storms, not to generate storms from nothing.
- **Brian Murdock**, familiar with Rainmaker's program, noted that drones have been flying from a ranch in Rockland and asks whether this unusually dry winter has reduced flight and seeding opportunities compared to expectations. Brian asked for a rough percentage estimate of how much less Rainmaker has been able to fly and seed this season than they had anticipated in a "normal" year.
    - **Max Jones** shared that he doesn't have a specific number on how many flights they expected vs. actually flew this winter but offers to follow up with precise figures. He explained how operations are structured. Teams of 2–4 operators go out with the drones; when conditions are right, one team can operate for up to ~14 hours, swapping batteries, drones, and seeding material to keep flying. Because the work is demanding, multiple teams rotate: one returns to the Salt Lake City hangar while another team goes out. The main point: when skies are suitable for seeding, they aim to have no operational bottleneck—their staffing and rotations are designed so there's "no lack of our team being out there" whenever the weather is ready to be seeded.
- **Brian Murdock** explained that there are bills in the Idaho Legislature focused on cloud-seeding transparency. Brian acknowledged the need to keep ground units' locations confidential to prevent vandalism but asked whether there's any real downside to providing

more real-time public information about when and where seeding flights occur (e.g., a website showing "we're flying this storm now"). Brian noted that it's currently hard for the public to find out whether cloud-seeding flights actually occurred during specific storms (e.g., near Boise) and said that legislators want to reduce fear and confusion by giving people clear, accessible, near-real-time information about operational activity. The core question: What are the drawbacks, if any, to that level of real-time transparency?

    - **Max Jones** said he needs more time to think through potential drawbacks of real-time public flight information for drone operations. He acknowledged existing concerns about vandalism or tampering with ground generators, which is why those locations are guarded. For drones, he wasn't ready to give a firm answer yet but recognized the importance of transparency and says the company supports efforts to inform the public about how cloud seeding works. He committed to following up with a more considered response on real-time flight transparency.

- **Daniel Wilcox** asked about the total cost of the Bear River cloud seeding project.
    - **Max Jones** said that the project cost is split between Utah and Idaho, and Utah is paying a larger amount.
    - **Brandon Hoffner** noted that Idaho Power has said that the cost of cloud seeding is $3.50 / acre-ft. He asked what the cost is for a private organization, like Rainmaker.
    - **Max Jones** said that he could get Brandon that information.
    - **Keith Esplin** added [uncaptured information].
- **Amanda Fowler** asked Max what his position is at Rainmaker.
    - **Max Jones** stated that he is the Director of Water Policy.
- **Keith Esplin** asked if Rainmaker's operations are prohibited in parts of the West.
    - **Max Jones** stated that cloud seeding is banned in Florida and Tennessee.
    - **Amanda Bly** asked on what grounds.
    - **Max Jones** said that it is very politically charged and recommended a quick Google search.
    - **Keith Esplin** added that one of the local senators recently shared that he and other legislators were getting 15+ emails a day opposed to cloud seeding, and he didn't remember the last time he had one in favor. So [Eastern Idaho Water Rights Coalition?] was churning out information to tell people that [cloud seeding] important, but that there is a lot of misinformation. Keith noted that people see a jet contrails in the summer and think that that's cloud seeding.
    - **Max Jones** added that people think they create weather, but they can't—cloud seeding operations require a cloud and the right conditions. When you see stripes in the sky, that's an airplane—not Rainmaker Tech drones.
- **Brian Murdock** asked Max to explain the difference between cloud seeding and geoengineering.
    - **Max Jones** explained that cloud seeding is enhancing natural processes, whereas geoengineering creates new, large-scale atmospheric interventions (like putting reflective material high in the atmosphere to reflect sunlight). Cloud seeding, by

contrast, has been around for 80 years and is described as mimicking natural processes—doing deliberately what nature already does when dust or other particles seed clouds.

- Suggesting no correlation, **Glade Mason** pointed out that it was snowing moments ago and asked if dust creates moisture when it gets up in the clouds.
    - **Max Jones** shared that yes, dust can create moisture but he can't comment on the current weather event.

Community Building and Wrap Up

- The room shared a moment of silence before **Christina Morrisett** (co-facilitator) invited announcements, questions, and reflection.
- **Mike Rasmusson** noted that multiple entities are involved in cloud seeding in the river system. In particular, Water District 1, which administers water for the South Fork and Snake River down to Milner Dam, contributes up to $235,000 per year to cloud seeding programs. In addition, local organizations (like High Country RC&D) and many individual companies also participate, meaning water users in the area are heavily invested in cloud seeding.
    - **Keith Esplin** shared that in the Upper Snake, cloud seeding is estimated to add about 600,000 acre-feet of water per year—roughly equivalent to the storage of two Teton Dams—providing more impact for less money and on a faster timeline than dam reconstruction. He encouraged supporters to contact their legislators, noting there is a bill backed by Idaho water users that would set clear seasons, reporting, and transparency requirements for cloud seeding, and that this program is considered an important part of the region's water supply strategy.
- **Glade Mason** recalled that historically, sub-irrigation and artesian springs kept soils saturated and supported wetlands, but those springs and delivery systems (head ditches, canals moving water through fields and back to the river) are now gone. He stressed that a healthy watershed includes groundwater, not just surface water, noting that groundwater once moved slowly back to the river and helped stabilize river flows during dry periods. He asked the group to consider how to put more water back into the ground and recharge the aquifer now that the old infrastructure and practices are no longer in place.
    - **Rob Van Kirk** responded that the group has in-house expertise on irrigation efficiency and lost springs—specifically noting that co-facilitator Christina Morrisett has done a dissertation and published work documenting the loss of those springs. He explains that modern, more efficient irrigation has improved control and crop yields but reduced incidental recharge, a tradeoff the group has discussed for years. Rob also clarifies that cloud seeding is essentially the only tool that can actually increase how much water falls on the watershed, whereas dams, managed recharge, and beaver dam analogs only store or reroute existing water—so cloud seeding and storage affect the hydrologic cycle in fundamentally different ways.
- **Keith Esplin** noted that increased storage does allow you to capture water that would runoff later or use it for recharge. They go hand in hand.

    - **Rob Van Kirk** clarified that one adds water and the other just stores it.
- **Jan Neish**, a writer, says she's recently written about cloud seeding, emphasizing that her latest piece explains the lack of toxicity and clarifies misconceptions (like "using up" clouds or contrails), and offered to share it via email to support fact-based, transparent information. Jan noted that she likes to call cloud seeding "snow farming."
- **Jeff Sailors** asked whether there are data on how much groundwater is pumped by pivot irrigation in the 30-mile area and how scientists track how much of that water returns to the system versus being consumed.
    - **Rob Van Kirk** explains that groundwater extractions are fully measured, and in one study they compared the loss of incidental recharge from historic flood irrigation vs. the amount of groundwater pumped from wells. The finding was that groundwater pumping is much smaller than the loss of recharge caused by switching to highly efficient irrigation systems.
    - **Jeff Sailors** followed up by asking whether the water applied by center pivots actually returns to the system or is essentially "lost" (fully consumed) rather than contributing to recharge.
    - **Rob Van Kirk** explained that groundwater-fed pivot irrigation is effectively almost 100% efficient: water is taken directly from the well to the pivot with no conveyance losses, and modern, computerized pivots apply only the exact crop water requirement to each part of the field, leaving essentially no excess water for incidental recharge—with other surface delivery systems being progressively less efficient by comparison.
    - **Daniel Wilcox** added that healthy plants and soils are key parts of the natural water cycle, and encouraged farmers to focus on improving plant and soil health in their operations as a way to reduce consumptive use and help restore more natural rainfall/runoff patterns.
- **Keith Esplin** noted that recharge wells in Idaho have a strong track record, citing a program south of Burley that has operated for about 35 years without contamination issues. They explain that studies are underway to determine safe siting and design (e.g., not placing recharge wells near municipal wells) so that recharge wells can become a safe and efficient way to put water back into the ground.
    - **Glade Mason** responded by recalling that projects like the Egin Lakes were a deliberate effort (around 1970) to put water back into the ground, and contrasts that with earlier times: before extensive flood irrigation, wells were about 100 feet deep, but during the era of sub-irrigation, groundwater rose so high that wells were only about 20 feet deep and soils were saturated—water moved through the ground, feeding both the aquifer and the river, to the point that a lawn would leave you soaked from the high water table.
    - **Keith Esplin** added that it was river water doing it, so it is safe.
    - **Glade Mason** explained that canals and ditches once delivered large volumes of river water across fields, allowing water to soak into the ground and eventually return to

the river—a big, leaky system that kept a lot of water in the subsurface. He noted that this is no longer the case: today, there is much less water in the ground, and well depths have dropped back to around 100 feet or more to reach drinkable water, compared to the much shallower wells during the sub-irrigation era.

- **Amanda Fowler** (Water District 1) announced that the 2025 final accounting and 2026 preliminary accounting are posted on the Water District 1 website and will be updated regularly as the lower valley turns on. As of March 4: American Falls winter water savings is full, American Falls 1921 is 71% full (expected to fill in early–mid April, a bit later than normal), Island Park 1935 is 50% full on paper; if the next three months are very dry, Island Park 35 and Grassy 36 may get no new fill, but more likely a partial fill. Overall, allocations are expected to range between ~67% and 100%, depending on spring conditions.
- **Brian Murdock** expressed appreciation for the group, noting its diversity and how valuable it has been to learn the language, faces, interests, and concerns of others. He reflected that the group was "born out of conflict" and that a more recent conflict reminded everyone of the need to work together, get along, and fulfill their responsibilities, saying he values being part of the group and feels that collaborative spirit in the room.
- **Jeff Sailors** said he is writing an article on dust issues and has been invited onto a large podcast. He praised the number of entities involved in the group and offering kudos to the organizers. He explained he is seeking factual, non-divisive information, especially farmers' views, and ask whether groups are concerned that dust-storm sediment settling in creeks and gravel beds could harm insects and fish (including spawning habitat), requesting input for his story and podcast.
    - **Joshua Thomas** responded that dust storms have occurred naturally "forever" and that ecosystems evolve with nature.
    - **Jeff Sailors** pushed back, suggesting it's not accurate to assume the same amount of dust is always coming from the same brush habitat, and implying that changes in land or habitat conditions could alter dust production and impacts.
    - **Josh Thomas** acknowledged the point.
    - **Jeff Sailors** reiterated that he is seeking information and research.
    - **Josh Thomas** asked whether there are any studies examining how dust affects fish gills or otherwise hinders aquatic life, noting that maybe it is something that hasn't been looked into yet.
    - **Jeff Sailors,** drawing on experience with spring creek reclamation in Montana, notes how sediment can be scoured out to restore high-quality fisheries, and asks whether any groups are concerned about sediment accumulating in local headwaters and its potential impacts on fish and aquatic habitat.
    - **Brian Van Winkle** explained that while it is well established and quantifiable that sediment can suffocate aquatic invertebrates, it would be very difficult to quantify how much sediment from a specific dust storm falls directly into a creek and to measure its precise effects.
    - **Jeff Sailors** reiterated that he is asking questions.

- **Brian Van Winkle** added that he is not aware of any studies specifically showing the effects of dust storms depositing sediment directly into streams—especially at the large scale that would be needed for meaningful data—and doubts that such data exist for a small creek scenario (e.g., a spring creek receiving dust from a St. Anthony storm).
- **Jeff Sailors** asked if anyone is looking for that data or researching it.
- **Nathan Tillotson** noted that identifying the specific sources of sediment in streams is extremely challenging and may be nearly impossible, because many different processes—dust storms, people walking through streams, destabilized banks, habitat degradation, and reduced riparian vegetation—can all contribute particulates to the water.
- **Rob Van Kirk** explained that in a watershed like this, rivers, lakes, and reservoirs make up less than 1% of the land area, so almost all dust from storms falls on land, not directly into water. Sediment reaches streams mainly through runoff and erosion (watershed processes), not direct dust deposition. He emphasized that healthy riparian areas and wetlands act as filters, intercepting sediment before it enters streams, and that restoration and strong riparian buffers are the key leverage points for preventing sediment from getting into rivers.
- **Jeff Sailors** noted that dust is measurable on land, rivers run through land.
- **Rob Van Kirk** reiterated that rivers occupy less than 1% of the watershed area, so most atmospheric dust and sediment falls on land, not directly into streams. Sediment typically reaches streams later via runoff and streambank erosion, which is why healthy riparian areas and wetlands (e.g., willow-lined banks) are critical for filtering and preventing sediment from entering the water.
- **Jack McLaren** stated that dust storms likely have minimal direct impact on headwater streams, but dust transport is well known to affect snowmelt timing (by increasing melt rates) and nutrient flux, with substantial research already available on those topics.
- **Otto Lang** shared that his research on dust on snow in Utah shows dust can significantly speed up snowmelt timing, and that he has often seen wet deposition of dust within snow layers, suggesting dust is efficiently scavenged from the atmosphere during storms, though he does not draw firm conclusions about the dust's direct ecological effects.

- **Christina Morrisett** thanked the group for raising the dust topic and says it can inform future presentations and agendas. She then shared that, through a partnership with the Eastern Idaho Water Rights Coalition and outreach on LinkedIn, the group's mailing list grew from ~300 to ~500 people, which helped fill the room. She thanked everyone for attending, encourages them to forward future emails to colleagues who might be interested, and jokes that as long as attendance stays under about 60 people, they can keep using the current meeting space.
  - **Jeff Sailors** asked how to join the mailing list.

    - **Christina Morrisett** said she just needs his email and can add him this afternoon.
- **Christina Morrisett** announced that the next meeting will be on April 14, featuring water supply updates from the Henry's Fork Foundation and U.S. Bureau of Reclamation; a legislative update from the Idaho Water Users Association; update on invasive species management from ISDA; and an additional update from IDEQ. She notes it will be a busy, "action packed" meeting, thanked everyone for attending, and adjourned the meeting.