

## Methow Restoration Council

February 16, 2016

### Participants:

Name	Organization/Affiliation
Andrea Jedel	WA Dept of Ecology
Brian Fisher	MSRF
Chris Butler	Yakama Nation
Chuck Peven	RTT
Craig Olson	Public
Crystal Elliot-Perez	Trout Unlimited
George Scheider	George Schneider & Associates
Greer Maier	UCSRB
Hans Smith	Yakama Nation
Jarred Johnson	Yakama Nation
Jaqueline Wallace	Trout Unlimited
Jenni Novak	WDFW
Jennifer Molesworth	Reclamation
Jessica Goldberg	MSRF
Joanne Cooper	Libby Creek Watershed Association
John Crandall	MRC
Justin Yeager	NOAA
Ken Muir	USFWS
Kristen Kirkby	CCFEG
Lee Bernheisel	Okanogan Wilderness League
Lee Cobert	Libby Creek Watershed Association
Lisa Pelly	Trout Unlimited
Lynda Hofmann	WDFW
MarySutton Carruthers	UCSRB
Matt Abrahamse	Yakama Nation
Patricia Olsen	The Pacific Watershed Institute
Ray Robertson	Libby Creek
Robes Parrish	US Fish and Wildlife Service
Sam Israel	Public
Steve Ralph	Public
Tom Ring	Yakama Nation

### Meeting Notes:

#### Crystal Elliot and John Crandall– Mission Project Aquatics Report:

Crystal – last summer we did the initial Mission Project intro and the introduction to the Forest Health Collaborative. New Forest Restoration Strategy for the Forest Service, not timber sale status quo. The Collaborative approached the Forest Service and asked how we can help. They asked with help boosting capacity. We had a discussion in MRC about existing data on Libby Creek and Buttermilk Creek watersheds. FS asked for help compiling the information and with field work. John Crandall was hired to do an abbreviated watershed assessment with a limited budget. The work looked at fish distribution in the watershed; the collaborative also helped with the road and culvert surveys.

John – Aquatics Assessment [*presentation*]: what I did was a summarization of existing information about the watersheds as it pertains to aquatics.

Crystal – a few weeks ago there was a presentation at the Grange on the vegetation analysis. The collaborative hired a contractor to do the analysis using the FS model.

John – I relied heavily on existing information from Methow Ranger District stream inventory reports. This protocol has been used in the Methow for several decades; also used different surveys that had been done as a portion of other projects. Also several watershed analysis specific for the watershed. I looked at existing conditions, limiting factors that have been identified, and things that could be done to improve the condition of these watersheds. Also the RTT Biological Strategy that was updated last year. Includes both the Buttermilk and Libby watersheds, which are similar in size and they share the upper headwaters in the Sawtooth. Buttermilk is more shaded than Libby. A lot of public land in the two watersheds; Buttermilk is almost all public land except at the alluvial fan where it meets the Twisp River, and Libby Creek is has more private ownership.

*Fish abundance*– the stream inventories give a snapshot, they are limited, but give a decent picture of fish abundance and distribution. In Libby Creek, fish distribution is dominated by rainbow/steelhead/o.mykiss and cutthroat. Up in the forks you see more cutthroat trout. Headwater lakes in Libby have been stocked over the years, so we are likely seeing some movement of fish out of the lakes into the streams, but genetic work shows that they are pretty pure. Bull trout have been seen in upper Libby Creek, but only one. USGS did some work for a few years, found bull trout, cutthroat, and a few adult spring Chinook. Mission pond is an ongoing source for brook trout. A PIT tag antenna at the bottom of Libby Creek also supports these other data. All three species of ESA listed fish are found in Libby Creek; spring Chinook spawning hasn't been documented but adults have been found so may also be spawning. A fair amount of spawning of steelhead in Libby Creek, most in the first four miles, coho spawning in the lowest section. There is a lot of fish use in Libby Creek.

Buttermilk Creek has O.mykiss, bull trout, cutthroat, and brook trout (not many). Not as much fish survey work in Buttermilk as in Libby Creek, there is a PIT array in the bottom of the stream. Spring Chinook adult holding in the lower section before they move further upstream in the Twisp. Also mountain whitefish and bridgelip suckers. There is a waterfall barrier about four miles up in the east fork. Bull trout spawning in the west fork of Buttermilk.

*Habitat* – there is great habitat in both Libby Creek and Buttermilk systems. They are relatively steep; Libby creek has more flat water especially downstream of Ben Canyon. A lot of pools and rocks, cobble dominated systems; where the stream energy hits something hard like a big rock or bedrock you get a pool. The creeks are not very wide, 20-30 ft. wide, so when a log falls across the channel you get opportunities to develop habitat diversity. More information in the stream inventory reports; there is also a reach assessment for the lower mile in Libby Creek done by the Yakama Nation. There are things that have and are affecting habitat. There have been timber sales, roads, water diversions for grazing purposes, places on the landscape where water is being managed, surface diversions. There is a culvert barrier on Smith Canyon. Three culverts have been fixed on Libby Creek, but no one has looked to see how these have performed. A fair amount of beaver activity with the relocation program. A little less going on in Buttermilk Creek, water managed for grazing purposes, beavers, and barriers.

The report has a summary sheet on habitat condition indicators:

- Temperature is cold in the headwaters, and gets warmer at the mouths.
- Fine sediment – Libby Creek functioning at risk, buttermilk functioning properly;

- Bank stability functioning properly
- Large wood – not a lot in Libby creek, supply is fine in buttermilk
- Barriers – both stream have barriers that could be addressed.

John – a lot of what we see with temperature has to do with climate and streamflow conditions. At certain times the lower portions of the streams are warm, which can limit habitat for fish  
*Limiting factors:* water quantity, sedimentation, habitat access, channel structures and form, exotic species, riparian condition. The report includes restoration considerations with respect to each of the limiting factors

Crystal – we are providing restoration recommendations to the Forest Service, but they are not necessarily what they are going to do

John – Restoration Considerations:

- Water quantity – restore natural hydrological function (timing and volume), developing a natural regime in Libby creek
- Sedimentation – identify and address roads and culverts, crossings, existing landslides, dispersed campground
- Replace fish barrier culverts, assess other culverts, and assess irrigation diversions
- Restore habitat complexity, install large wood in Libby, develop plan for buttermilk
- Exotic species – brook trout in Libby Creek, remove source from Mission Pond
- Riparian condition – evaluate condition, protect from grazing, support beaver project, and evaluate dispersed campgrounds and trails

Discussion – the collaborative commissioned a road inventory for the forest service, came with prescriptions, FS will be doing some of their own

Crystal – anyone can provide recommendations to the FS, and right now they are developing their proposed action

Robes Parrish – John, did you see any impacts on par with what you observed in Upper Goat in terms of grazing impacts?

John – via Dave Hopkins, no, but I'm not sure if anyone is really looking

Discussion – grazing allotments, stock water, these water rights may be interruptible due to flows

Contact Crystal Elliot ([celliot@tu.org](mailto:celliot@tu.org)) if you would like a copy of the aquatics report.

**Hans Smith – 1890s Side Channel Monitoring Project Update:** I'm here with Matt Abrahamse and Tom Ring to talk about the monitoring we are doing at 1890s Side Channel. Matt is working on the monitoring project, and Tom is going to talk later about infiltration gallery and groundwater.  
 Watershed setting – Project is in the Methow sub-basin in UC Region. The Middle Methow (M2) reach is important rearing and migration for juvenile salmonids. The specific project site is near Twisp. The M2 reach is one of the largest historically unconfined reaches in the sub-basin, but there have been a lot of changes due to human influence. The M2 also is one of the largest private land areas abutting the river, and a lot of floodplain is disconnected with riprap and large rock treatments. The RTT Biological Strategy identifies priority restoration actions in the M2

Project background– 1890s Side Channel project was completed in 2014 near Twisp; the side channel was the main river channel in the 1890s. They built the highway in the 1930s, which bisected the floodplain, and a larger levee constructed in 1970s at the north end of the site. Since the 1970s, the side channel filled in.

John – what was the activation of the side channel before the project?

Hans – about a 10-year flood

Hans – the project was the first groundwater infiltration gallery project in the upper Columbia. The project does not use surface water, which creates the thermal buffering against extreme winter/summer temperatures. The infiltration gallery is underground and runs through a slotted pipe to a conveyance pipe to the discharge location. We excavated in a meandering spring creek in the side channel. The project area was about one mile; the lower 2000 feet of the channel is influenced by the river. Project construction took about three months.

*Current habitat conditions* – you can only really see the more confined area from the highway. The spring channel has a width range from 10-14', down to 6' at some of the pools. Low gradient system, built with native substrate. We got 51 pools ranging from 2-4' deep, with a lot of wood cover in all of the pools. There are 50 riffles, typically 3-6 channel widths in length. There is a big pool in the system with wood cover, also a backwater component off the spring-fed creek system. Both groundwater and backwater from the creek. 230 logs with roots were brought in, and we also used wood generated during the construction phase.

*Monitoring plan and year 1 data* – it was an interesting year for the Methow hydrograph in 2015; hyporheic from Methow is driving the discharge in the gallery. Lower reach became a losing reach at base flows.

Matt Abrahamse – the overall goal of the monitoring plan is to detail how target and non-target species use the side channel – species, timing, and life stage. We use snorkel surveys three times per year, spawning ground surveys; and we adjusted for detectability based on Hillman 1992. We think that the coho estimates are overestimates and chinook estimates are underestimates. We had 2 steelhead redds, no chinook redds, and 44 coho redds.

Our second objective is to measure size and growth for fish overwintering in the side channel – we used fall snerding [herding fish while snorkeling], PIT tagging up to 1000 individuals per species, a pit array at the outlet. This is followed up with late winter snerding for recapture, a scan for PIT tags, and direct measure of overwinter growth. This is our baseline data.

Our third objective will be to determine overwinter survival and compare to other side channels and other restoration efforts. We will use direct survival with tagged fish and relative survival with Rocky Reach data.

We still have a lot of work and sampling to do before we can make any determinations. We will be doing snorkel surveys and recaptures, which will give direct measures of overwinter growth and survival, more surveys will be done in the summer to look at usage, and will continue the project for five years.

Hans – so far, the project is performing well in terms of initial goals, particularly with such a low base flow year in the first year of monitoring, and target species and life stages are using the channel. I want to acknowledge Charlie Snows program helping with the monitoring.

Patricia Olsen – where does the losing part start in the stream?

Hans – we need to have the data longer

Patricia – I am wondering why you made the channel so sinuous? You can lose the groundwater if you make it so sinuous.

Hans – we had piezometers in before the project, and the channel was dug below the static groundwater, so the channel is typically gaining along the entire reach

Patricia – did you look at different scenarios for different climates?

Hans – we didn't model it, but there are bedrock controls downstream, but it is possible with climate change it could have issues with it going dry, we did set the gallery deep, so we hope that with the bedrock controls we won't see that

Kristen Kirkby – have you seen an aggradation of fines?

Hans – we did see some at the mouth, but the water movement kept it connected. We could get floodwaters at the top in a flood year

John – what is the mesh size in the well screens?

Hans – we optimized the substrate around the screens, don't remember the mesh size, designed to pass fines, larger particles could eventually cause it to change performance. System is designed to produce design flows even if 50% blocked. A flood over the screens could bring sediment into the system that would introduce fines to the screens, will depend on frequency of those types of events and how turbid the water is

Kristen – we noticed at Hancock that the fish shifted the riffle material, have you seen that and are you concerned about reconstruction?

Hans – haven't seen that

Matt – the coho we had were smaller this year

Kristen – what are you seeing in the backwater?

Matt – some coho and steelhead

Hans – we haven't seen any brook trout in the channel

George Scheider – can you talk about the land ownership?

Hans – we 12 different landowners, also a conservation easement, DOT and Twisp are landowners, and the rest is private land. We did a lot of outreach, creating relationships with the landowners. I think they are 99% satisfied; a lot of them had the historic perspective and knew about that channel from before the 70s, and many wanted to see some kind of flow restoration.

Jennifer Molesworth – are you going to look at how the spring Chinook are doing with all of the coho competition?

Matt – yes, we will be looking at as much data as we can from other monitoring efforts to look at growth and survival; growth will be easier to monitor than survival

Hans – our monitoring project was developed with the knowledge of the other programs that are going on, and with the knowledge that all of the programs are subject to funding

Jennifer – there is an opportunity for you guys get data from your similar Fender Mill using our new PIT tag antenna that is just downstream

John – any thoughts about creating coho habitat vs. habitat for the target species?

Hans – too early to answer that question

John – what if we see that the numbers are coho are reducing the condition of the Chinook?

Discussion – coho outcompeting Chinook in side channel areas, returning coho bring in a big nutrient pulse, hard to know if the chinook are coming in in poor condition since they aren't born in the area

Matt – there is a lot of possibility for interesting information coming out of the study

Robes – back to the earlier discussion on the losing section at the lower end of the channel, I think the planform of the channel and relationship to the mainstem could explain the losing reach at low flows, going east west could lead to loss of water into the aquifer. We see the same thing at Silver.

George – is the discharge controlled?

Hans – controlled by capacity, but it is always flowing open; last year we only got to five cfs

**Tom Ring – Hydrogeologic Effects of 1890s Side Channel:** I have worked for the tribe for the last 25 years as a hydrogeologist, also have taught at CWU. Question was put to me of the effects away from the side channel of the infiltration gallery. Methow Valley is a narrow thin ribbon of permeable alluvium, bedrock poor, recharge from precipitation is small, alluvium mostly recharged by seepage from streams and irrigation. Water always flows from higher head to lower head; it can flow uphill but always down a hydrologic gradient. All groundwater models derive from Darcy's law and the law of conservation of mass. There is a seasonal component to gaining and losing reaches due to changes in

river stage varying the relationship with the aquifer and can have groundwater flooding. When you take water out of the ground you create a cone of depression. Maximum draw-down is at the bottom of the well, infiltration gallery, or drain. Perforated pipe acts both as a drain and also like a leaky irrigation ditch. Two kinds of drains, surface and buried. The infiltration gallery is buried, and the side channel is surface. Maximum drawdown is about 4 feet at the top, and is zero at the river. The drawdown would be expected to decrease rapidly with increasing distance from the gallery and side channel. Diking and simplification have likely affected water table elevation more broadly. The drawdown in the vicinity of galleries may affect riparian vegetation – so may drought/heat, and downcutting of the river.

George – from Ecology’s perspective, did you have to address impairment on the Methow?

Tom – if you are reducing the river before the regulatory minimum flow, you have to have a good reason, and in this case it was to enhance fish life, so the benefits outweighed the impacts. The groundwater analysis was that that it doesn’t result in legal impairment

George – was overriding interest used?

Hans – No. No impairment was identified, all the water that is diverted comes back, and the water is all in a natural channel of the Methow River. It is not an out of stream use, but we got a non-consumptive water right.

Kristen – how does Fender compare?

Hans – we didn’t use the run of the river approach, but it is still non-consumptive fisheries enhancement project and did not violate the instream flow rule because the project does not cross any regulation stations

George – does the project require hydrogeologic monitoring?

Hans – we are monitoring discharge for the permit

Brian – do you have any piezometers?

Hans – the ones that we had were in the channel, so they are gone

Lee Bernheisel – at the outset of the project, the decision was made to put in the gallery instead of taking out the riprap portion of the river, even though addressing that unnatural riprap would have been preferable?

Hans – the highway and private landowners limited the project that could be done, allowed us to be more surgical

Discussion – levee impairing habitat

**John Crandall – Water Quality Survey:** last fall we put out a water quality survey to determine public attitudes and perceptions surrounding water quality in the Methow. We got 156 responses. We got about 50/50 male/female. Mostly people over 40. A high level of education among respondents, who were mostly locals. A lot of different activities, a lot of value to people. Most thought we have very good water quality. Overwhelming support for addressing issues if they exist. Most important thing to improve water quality is to raise awareness. This gives us an opening at the MRC. The thought is to repeat the survey after we do a bunch of outreach and Education.

**MarySutton Carruthers – Implementation Schedule & HWS, UCSRB Updates:** I am asking project sponsors to look at the projects on the Implementation Schedule, both active and proposed projects – need to look at project types, how much they are going to cost, and when they would be implemented, and also see if anything needs to be corrected or updated. We are also trying to do the QAQC for the projects completed in 2015. If you need information, I have guidance for putting things into HWS; we are trying to streamline the reporting across subbasins.

Jessica – I forwarded the Implementation Schedule and HWS QAQC worksheet to the Methow Project sponsors. Please look at the different tabs and send corrected information on the Implementation Schedule HWS to MarySutton. You can also make the changes in HWS, but please email MarySutton and

me letting us know when you make updates and which projects they are for. I will try to help her keep track of where we are and identify any issues that I know about.

MarySutton – also related to HWS stuff, Joy sent out the draft SRFB schedule, and if there are any monitoring projects, we need to have a letter of intent by March 15<sup>th</sup>. The final version of Manual 18 is coming out, RTT is working on the scoring criteria for the monitoring projects. Monitoring projects can only be up to 10% of the region's SRFB allocation, and it is still a two year implementation window. Draft proposals due April 15<sup>th</sup>. Also in Joy's email, the first draft from RCO had incorrectly identified Methow and Entiat qualifying for the IMW money, but it turns out that they do not.

As many of you have heard, the opening for executive director has been extended until the 23<sup>rd</sup>; in the meantime Melody Kriemes is the interim director.

For the Expert Panel process, we are a facilitator to the action agencies, but fewer people were asked to participate this year. Part of this is in response in previous years, but if you want to participate and haven't been contacted, please contact Rosy Mazaika or Jude Trapani.

All of the science conference presentations are on the UCSRB web site.

The Implementation Team meeting is scheduled for March 1<sup>st</sup> in Wenatchee. Presentations from Chelan County, lower Columbia estuary, climate change presentations in the afternoon.

Jen O'Neal at Natural Systems Designs would like anyone to contact her regarding partial barriers or fencing projects, please contact her.

### **Roundtable**

*Hans Smith – Yakama Nation:* the Upper Methow Reach Assessment is available for download on our web site. We're looking at doing a project on the Twisp Ponds property this coming year on the left bank; we're going to do some levee augmentation. Working on developing projects all over the subbasin in the upper and lower Twisp Assessment Units; we are also looking at projects on the M2. Jennifer – anything related to the ice dam issue in Twisp?

Hans – the YN is looking at alternatives for project opportunities; we have survey from lower Twisp RA, and will come back with some concepts on what can be done to alleviate the ice dam issues and improve habitat. It got the town's attention, and we will put something in front of them with regards to restoration.

Lynda Hofmann – will you be doing anything on Libby Creek?

Hans – that was a while back, not sure what the status is on the acquisition, a good time to check in with the state. Right now we're focused on the larger tributaries, but the RA is there for people to pick up and go with

Robes – might you consider acquisitions in the area?

Hans – will need to talk with the state and their plans for the property

Robes – I think there are opportunities with the downstream landowner

Hans – we're not actively engaged there, so if others are interested that would be fine

Robes – if anyone else is interested in working in Libby Creek give me a call.

*Paul Wagner – Colville Tribes:* right now we are in the office for the winter, this spring I will start working on ongoing projects. Our next round of BPA funding starts July 1, so I am working on project lists. Jennifer M and I are meeting with the Forest Service on possible corrections to Volstead road up Beaver Creek.

Last year we had a presentation on bringing EDT to the Methow, and we did get funding for that from BPA. I will give more info on that at the next MRC.

*Kristen Kirkby – CCFEG:* things are moving along with Silver, looking at summer implementation. There is still some field work for Twisp to Carlton RA, and that should be coming out this summer. I have been spending time in the classrooms working with students in the local schools, which has been really fun.

*Sam Israel – Public:* I worked briefly on some of the vegetation recon work on the Mission Project, and I enjoyed the presentation on the aquatics report.

*George Schneider – George Schneider & Assoc:* CCFEG had asked me to bring together stakeholders for a discussion on the Tumwater dam on the Wenatchee; we had 38 participants including tribes, local groups and NGOs, whitewater interests. The dam is the only dam on the Wenatchee River; much of the discussion was debating the pros and cons of continuing to operate the dam, but it is used by fishery agencies for hatchery management – mostly adult management. The discussion was in January, and the meeting minutes will be available if people are interested in the discussion. The dam is probably not going anywhere soon, as it is very important for a lot of folks, but the impacts are not insignificant. Groups will be asked to look at how dam management could be improved to reduce impacts. Kristen – CCFEG is still interested in compiling information on the dam and potential ways to address impacts

George – on a different theme, there is a production coming up at the Merc called *The Last Salmon*, and I encourage you all to spread the word about it. Based on a book by Phil Davis, a part time Methow resident. It's especially a kids' show. More information is available at this link: [The Last Salmon at the Merc Playhouse](#)

*Chris Butler – Yakama Nation:* Chewuch RM 17-20 will probably be ready to present in May. Design for RM 15-17 is moving forward with the Forest Service. The design contract for Eightmile creek is out for bid now. Forest Service has agreed to deal with some of the issues that come with that. Looking at the barriers, brook trout, etc.

*Lee Bernheisel – Okanogan Wilderness League:* happy to see people digging in to the scientific information today. Years back, OWL petitioned Ecology to adjudicate the Methow basin, but we were told then that it wasn't appropriate. We plan to take another run at getting the state to do an adjudication for the Methow Basin. Yakima is the only fully adjudicated basin in the state. If we had that, we would be able to know who has a water right, and that would give us more surety moving forward. If people are interested in supporting this, please contact me; we will probably be doing that in the next couple of months.

Kristen – what are the steps?

Lee – generally you petition the regional manager of water resources in Yakima; however, this time we plan to go to the director and petition her directly.

Tom – actually, the Yakima has taken 39 years and isn't done yet

Lee – the Methow is a lot smaller compared to the Yakima, so it should be easier

*Jarred Johnson – Yakama Nation:* I am currently working on the Newby Narrows project on the upper Twisp; I will give a presentation likely in June. We have the Big Valley project, but we are still working on the language in the Conservation License with DNR. We are still moving forward with the contractor, but isn't a fast process. The hope is to construct this in July.

Scaffold Camp acquisitions – the acquisitions have presented to Priest Rapids twice, should hear soon about that. We've also got the Beaver Creek Reach Assessment this summer, Michael Notaro is starting the outreach. Our upper limit is Lightning Creek, it's a reach assessment, not a watershed assessment, and we are doing the aquatics portion.

*Lynda Hofmann – WDFW:* it has been quiet – I am waiting for all of those permit applications to come in.

*John Crandall – Methow Monitoring Coordinator:* every year we have the monitoring coordination meeting, this year it is being called the Monitoring Support Meeting. The meeting is next Tuesday the 23<sup>rd</sup> at the Chelan Fire Hall, if you are doing monitoring please come so we can coordinate activities. We will also have speakers for the day, have a speaker on PTGIS, PNAMP, drones, etc. We will provide lunch. Please return the monitoring programmatic worksheet to John ASAP. Also, we have to do an annual update to our outreach plan very soon, so if you have outreach events planned for the year, let John know ASAP.

*Jenni Novak – WDFW Screening:* we are finishing up the final design for upper wolf creek and for a project on Frazer Creek. We will construct those this fall.

*Crystal Elliot – TU:* last MRC Derek gave a presentation on our legislative work on suction dredging, we gave it a good go, but unfortunately it died this week. This year we took an approach on fairness in permitting in response to our work the last year. We will keep going with it, also on parallel tracks with the governor's office; stay tuned.

Partnered with Ecology on a proposal to clean up mine sites on the Methow, the funding is being negotiated, but we should hear in the next couple of months. If funded we could take care of the Red Shirt Mill and Alder Mill sites. We are also developing a partnership model with the state for cleaning up mine sites, but there is no money right now. However we hope to get the structure in place so when there is money available we will have a route.

TU is flying two positions, one in the Lake Sammamish area and one in the Olympic peninsula for project managers that I will be supervising.

*Jacqueline Wallace – TU:* I am the new project manager for TU, I just started and I'm still learning all of the different projects

*Jennifer Molesworth – Bureau of Reclamation:* Reclamation is working with BPA, MSRF, and UCSRB on the Barkley Bear habitat project. We are working on the initial stages, we should be at 30% this fall. We will be constructing in 2018.

The MVID project is just about done, some work with the individual wells; heavy construction is pretty much done, it will be running at the start of the irrigation season. TU is also working on the Barkley irrigation project.

I'm going to the Expert Panel next week, Methow look back is the morning of the 25<sup>th</sup>. The look forward will be in June, but we will only be looking to 2018

*Robes Parrish – USFWS:* as Kristen said, we have ongoing work at Silver, hoping to see that constructed this summer; we need to coordinate with Charlie on the PIT tag array.

John and I will go up to Goat Creek to replace batteries in our cameras, probably in the second week in April, is that a good time to look for steelhead redds?

John – may be early, but won't hurt to look; can also look at the PIT tag data from below

**Next MRC March 15<sup>th</sup>**

<b>Definitions of Commonly used Acronyms</b>	
AEM	Action Effectiveness Monitoring
ANS	Aquatic Nuisance Species
AREMP	Aquatic and Riparian Effectiveness Monitoring Program
BACI	Before, After, Control, Impact (study design type)
BEF	Bonneville Environmental Foundation
BO/BiOp	Biological Opinion
BPA	Bonneville Power Administration
CAC	Citizens Advisory Committee (for SRFB funding applications)
CAO	Critical Areas Ordinance
CBFWA	Columbia Basin Fish and Wildlife Authority (pronounced "cubfwah")
CCFEG	Columbia Cascade Fisheries Enhancement Group
CCT	Colville Confederated Tribes
CHaMP	Columbia Habitat Monitoring Program
CMZ	Channel Migration Zone
CREP	Conservation Reserve Enhancement Program
CSF	Community Salmon Fund
EDT	Ecosystem Diagnosis and Treatment
ESA	Endangered Species Act
FCRPS	Federal Columbia River Power System
FFFP	Family Forest Fish Passage Program
FIA	Forest Inventory and Analysis program (USFS)
Four "H"s	The four factors affecting salmon recovery: Hatchery, Hydro, Habitat, Harvest
HACCP	Hazard Analysis and Critical Control Point
HGMP	Hatchery Genetic Management Plan
HPA	Hydraulic Project Approval
HSRG	Hatchery Scientific Review Group
HWS	Habitat Work Schedule
IMW	Intensively Monitored Watershed
IS	Implementation Schedule
ISEMP	Integrated Status and Effectiveness Monitoring Project
ISRP	Independent Scientific Review Panel
IT	Implementation Team
LW/LWD	Large Wood/Large Woody Debris
M2	Middle Methow (a project area defined as the reach between Winthrop and Twisp)
MaDMC	Monitoring and Data Management Committee (pronounced "madmac")
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MRC	Methow Restoration Council
MSRF	Methow Salmon Recovery Foundation (pronounced "em-surf")
MVRD	Methow Valley Ranger District
MWC	Methow Watershed Council
MYAP	Multi-year Action Plan (also sometimes called the 3-year workplan)
NFF	National Forest Foundation
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration

NPCC	Northwest Power and Conservation Council
OCD	Okanogan Conservation District
OBMEP	Okanogan Basin Monitoring and Evaluation Program
OWL	Okanogan Wilderness League
PCSRF	Pacific Coastal Salmon Recovery Fund (pronounced "Pacsurf")
PIBO	PACFISH/INFISH* Biological Opinion
PNAMP	Pacific Northwest Aquatic Monitoring Partnership
PUD	Public Utility District
QAQC	Quality Assurance, Quality Control
RA	Reach Assessment
RCO	(Washington State) Recreation and Conservation Office
REI	Reach-based Ecosystem Indicators (used in Reach Assessments)
RFEG	Regional Fisheries Enhancement Group
RFP	Request for Proposals
RM	River Mile
RPA	Reasonable and Prudent Alternative(s)
RTT	Regional Technical Team
SEPA	State Environmental Policy Act
SMP	Shoreline Management Plan
SOAL	State Owned Aquatic Lands
SOW	Statement of Work
SPIF	Specific Project Information Form (used with the Corps ESA programmatic)
SRFB	(Washington State) Salmon Recovery Funding Board (pronounced "surfboard")
SRP	State Review Panel (for SRFB funding applications)
STEM Database	Status, Trend and Effectiveness Monitoring database at NOAA's Northwest Fisheries Science Center
UCSRB	Upper Columbia Salmon Recovery Board
TRT	Technical Recovery Team (NOAA)
USFS	US Forest Service
USGS	US Geological Survey
VSP	Viable Salmonid Population
WAT	Watershed Action Team (the MRC is our WAT)
WDFW	Washington Department of Fish and Wildlife
WDNR	Washington Department of Natural Resources
WNFH	Winthrop National Fish Hatchery
WWP-TU	Washington Water Project of Trout Unlimited
YN	Yakama Nation

\*PACFISH/INFISH The PACFISH/INFISH Biological Opinion (PIBO) Effectiveness Monitoring Program was initiated in 1998 to provide a consistent framework for monitoring aquatic and riparian resources on most Forest Service and Bureau of Land Management lands within the Upper Columbia River Basin.