

Meeting Notes – 9/23/05
 STATUS AND TRENDS PROPOSAL WORKSHOP #1
 THE SITE SELECTION PROCESS AND SUB-POPULATIONS

Present

- | | | |
|-----|--|--------|
| 1) | Rob Plotnikoff (Ecology): rplo461@ecy.wa.gov | Rob |
| 2) | Paul Ancich (RFEGAB/Governor’s Forum): ancich@rocketmail.com | PaulA |
| 3) | Glenn Merritt (Ecology): gmer461@ecy.wa.gov | Glenn |
| 4) | Carol Smith (WCC): bioforsalmon@comcast.net | Carol |
| 5) | Phil Larsen (EPA): Larsen.Phil@epamail.epa.gov | Phil |
| 6) | Jeff McGowan (Skagit Co.): jeffmc@co.skagit.wa.us | Jeff |
| 7) | Dylan Monahan (Ecology): dymo461@ecy.wa.gov | Dylan |
| 8) | Gino Lucchetti (King Co.): gino.lucchetti@metrokc.gov | Gino |
| 9) | Bob Fuerstenberg (King Co.): Robert.Fuerstenberg@metrokc.gov | BobF |
| 10) | Ed Chadd (Clallam Co. Streamkeepers): streamkeepers@co.clallam.wa.us | Ed |
| 11) | Bruce Crawford (IAC): brucec@iac.wa.gov | Bruce |
| 12) | Bob Cusimano (Ecology): bcus461@ecy.wa.gov | BobC |
| 13) | Paul Wagner (KWA, inc.) pwagner@kwaecoscience.com | PaulW |
| 14) | Chad Wiseman (Ecology): cwis461@ecy.wa.gov | Chad |
| 15) | Keith Wolfe (KWA, inc.) KWolf@KWAECOSCIENCE.COM | Keith |
| 16) | Steve Lanigan (USFS/AREMP/PNAMP) slanigan@fs.fed.us | SteveL |
| 17) | Rick Haley (Skagit Co.): rickh@co.skagit.wa.us | Rick |
| 18) | Kirk Krueger (WDFW/SSHIAP): kruegklk@dfw.wa.gov | Kirk |
| 19) | Bill Ehinger (Ecology/IMW): wehi461@ecy.wa.gov -afternoon only | Bille |
| 20) | Tim Quinn (WDFW/IMW): quinntq@dfw.wa.gov – afternoon only | Tim |

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Introductions – Rob Plotnikoff

Next meetings:

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| #2 – Indicator Perform.: | October 27th | Building = OB2; | Room = Street-Level 04 (SL-04) |
| #3 – Existing Data Sets : | December 1st | Building = OB2; | Room = Street-Level 04 (SL-04) |
| #4 – Data Mgt & Analysis : | January 5th | Building = NRB; | Room = 172 |

Overview – Bob Cusimano

The overview discussed the Quality Assurance Monitoring Plan (QAMP) Washington State will be developing under Ecology’s lead. The plan will describe status and trend monitoring using an EMAP-type probabilistic design. It will outline goals, sampling, quality assurance/quality control, data management, and coordination. We want to focus on status first. The idea is to evaluate status at the scales of Water Resource Inventory Area (WRIA) and Salmon Recovery Region (SRR). We seek to involve people from federal, state, local, and tribal governments as well as local volunteers groups or other private entities. An overall open design will allow the incorporation of design considerations from these cooperators. We envision a “core” (minimum) program that would be complemented by other comparable monitoring. To develop this QAMP, we will be conducting these

meetings to gather input. In the next meeting (to discuss indicators) we hope to expand involvement.

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Background - Bruce

The 2001 State Legislature passed Substitute Senate Bill 5637 which required completion of the Comprehensive Monitoring Strategy (CMS) by 2002 (www.iac.wa.gov/monitoring/docs.htm).

Preparing the CMS involved about 20-22 agencies/entities and over 70 people. Effort was directed toward planning for habitat/fish/water. Initially, a survey (questionnaire) was conducted of existing monitoring programs in the state (what is now being measured?). The response was incomplete (e.g., only 2 tribes responded). There was quite a bit of response from counties and municipalities. The only comprehensive habitat survey, to date, was the Limiting Factors Analysis (LFA; <http://salmon.scc.wa.gov/>) conducted by the Washington State Conservation Commission.

The CMS "Action Plan" makes prioritized recommendations about how (including budgets) to fill gaps over two biennia. Due to the length of the period, costs look high. Therefore, no implementation funds have been secured yet. One of the top priorities of the CMS was the establishment of a status and trends monitoring program statewide for water quality and habitat, using probabilistic techniques such as those in the Environmental Monitoring and Assessment Program (EMAP). The projected cost was about \$6 million. It proposed to monitor at the WRIA level, completing all WRIs within a 5 yr period and reporting statewide status with about 90% confidence after 5 years.

The top priority of the CMS Action Plan was the creation of the Governor's Forum on Monitoring Salmon Recovery and Watershed Health (The Forum; www.iac.wa.gov/monitoring/default.htm). The Forum called for the preparation of the "State-of-the-Salmon (SOS) Report", each biennium. The first SOS report showed condition by SRR, and was based on the LFA. The next SOS has no information on which to draw to describe habitat status. This might put Washington at risk of losing federal salmon recovery funds.

The Forum held a workshop on April 13 and 14th (www.iac.wa.gov/monitoring/minutes.htm) to develop a way to report indicators to Congress to show good use of Salmon funds. There is a need to report fish numbers and the limiting factors that need to be fixed. There were 3 groups: fish, water, and habitat. The habitat group concluded that there is a need for probability sampling according to the EMAP protocol and WRIA-scale sampling rather than just large scale sampling. Local entities were concerned that large-scale monitoring might divert funds from local restoration efforts. Within the Forum, there is great interest (by Bill Ruckelshaus in particular) to have volunteers be used as much as possible. This would gather grassroots support and minimize costs. The Forum recommended distinguishing between major land use types 1) Ag, 2) Urban, and 3) Forestry. There was also a desire to use remote sensing to reduce costs.

The Forum recommended to the Salmon Recovery Funding Board (SRFB) that Washington State should build a framework to incorporate local efforts where possible, with consistent techniques. The Forum recommended for the state to build a coalition of cooperators to be able to report at scales as small as the WRIA. They recommended identification of who would do this and how this would be done; only then could funding mechanisms be determined. The Forum recommended that Ecology should be the lead on this plan, but that it should be a joint effort with others and consistent with the Pacific Northwest Aquatic Monitoring Partnership (PNAMP; www.reo.gov/PNAMP/). The PNAMP recommends the use of common methods across the Pacific Northwest, where possible, to provide for comparable data and cost sharing.

On October 5th (coming up), the Forum will meet again to issue guidance.

MEETING MINUTES

Existing Data + Scales for Monitoring

Rob - What is important to folks: maps, scale?

What is critical?

What do you want to see?"

Need hydrography layer

Western WA has 1:24K now

Eastern WA will likely have 1:24K by end of March 2006

Bill Ehinger has expressed a need for fish/no-fish concept to be included. This would require use of 1:24K."

Keith - "What is the time frame? How far back do we need to go? For example do we just consider present extent or do we consider historical extent or potential extent?"

Rob: "Bruce?" -

Bruce - "Make sure scale is fine enough to show annual presence/absence for any given life stage."

Gino - "Do you want to build a model or do you want to census streams [for presence/absence]?"

Kirk - "IM watersheds are already intensively monitored. This is not data that would be collected statewide but only where the intensive studies are occurring. We are interested in treatment effects."

BobC - "Even at 1:100K, we'd still get a status estimate. What we've heard is that 1:24k provides a better picture."

Gino - "LIDAR, etc. forest models are developing rapidly so that within just a few years, you can probably draw the extent of presence with these in a few years."

Keith - we just did this in the Upper Columbia. It is in the review stage.

Steve L. - "Kelly Burnett at PNW research station...."

Gino - "The modeling falls apart in flat areas".

Kirk - "Another component of which Bill Ehinger is concerned - Monitoring should focus on where the salmon occur."

Rob - LIDAR might be needed to flesh out missing areas.

Steve L. - Is there a coordinated statewide effort to manage databases?

Cusimano – There is an effort between the DNR, Fisheries, and Ecology.

Bruce – from SWIMTAC (Joy Paulus). They are working with the regional ecosystem office (REO) on a 1:24k hydro layer – funding has been short in their effort to get the East side finished. Up until recently, other agencies have been paying DNR and modifying their layer to avoid further costs. USFS/BLM are part of the process. The feds need to line up lines across layers. I'm not sure this has yet been done and put up onto the REO web site.

Rick H. - We have worked to ground-truth layers. Has this been put into the state hydro layer?

Bruce – I hope.

Ed C. - I think that this may be happening. Locals need to feed the state data layer coverage.

Bruce – The counties have better information.

Keith – Regional Fish enhancement groups might be a good place to do this.

Dylan M. - Counties need to use the same LLID to be able to fit into the state system due to Dynamic Segmentation.

Paul – What is the scale on polygons?

Bruce – It was 1:100k, but it is going to 1:24k

Steve L. - What are the rules for densification statewide?

Rob – We will ask John Tooley about rules for densification statewide.

SLIDES DESCRIBING LAYERS:

WARIS

1:24k

Uses LLID

Kirk – “Most of this is being updated. Some is being moved into SSHIAP.

(Unidentified speaker) – Is it web based?

Kirk – Parts. Data are publically available. It doesn't provide for easy downloads.

WDNR

1:24k

Data99

No LLID

Bruce- Limited value. Mostly forested lands.

USGS

Missing notes

Map Showing 1:24K traces vs. 1:100k traces.

Rob – What is missed by losing the streams that are only displayed at 1:24K?

Steve – What is the monitoring question?

Keith – in eastern WA – fine scale maps show many ephemeral streams. We need to know what is naturally perennial or ephemeral.

Rob – This is a fairness/unfairness factor

Rob – GIS contacts at Ecology are Rich Kim, John Tooley, and Dan Saul

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Phil Larsen presentation on “Master Sample”

Don Stevens was originator of the concept. Stevens@orst.edu.gov

Phil and Tony Olsen also worked on this.

GRTS (See www.epa.gov/nheerl/arm for details)

Generalized Random Tessellation Stratified Design

For status, a sample of at least 50 sites gives a reasonable level of confidence in the assessment.

- 1) Randomized
- 2) Spatial balance
- 3) Creates an ordered list of sites.

Combining data:

- 1) Must have similar populations
- 2) Must have same frame.

Master sample would facilitate combining from various scales.

Done for WA @ 1:100k using USGS digital hydrography (available nationally)

The USGS layer distinguishes between perennial and intermittent.

Used selection density of 1 per kilometer due to the size of reaches sampled (about 150-500m each).

About 125,000 points in WA at 1:100K scale.

Distance between point is 1 km (on average).

OR Master Sample Attributes:

Stream ID

Loc

Weight

HUC

Strahler

Elevation (DEM) – **not in WA**

Ecoregion (2,3,4)

Reporting Regions - **WRIA for WA**
Ownership - **not in WA**
Other stuff

Segregated by stream order.
0= non-perennial
1= headwater
2-3 = wadable
>3= non-wadable

50 sites/region
17 sites/group/region
Equal balance of sites among groups (headwater/wadable/non-wadeable)

Pick 1st 17 from selection in each set.

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Questions re Phil's presentation

Gino – Where does 17 come from?

Phil – 50 gives a reasonable picture of status. 17 comes from having 3 groups/region.

Keith – If assessing a smaller area, then intensity increases for the same number of sites.

Phil – There is a competition of needs between “status” and “trends”. Status benefits from more sites. Trends benefits from more replicates. Hence, the panel design.

Bruce- Would it be to our advantage to have volunteers focus on either just the annual samples or just the yearX samples?

Phil – Its a trade off.

Bruce - We need to explore this.

BobC – The core sampling concept.

Phil – Volunteers come and go.

Rob-What about things that change sooner than 5 yrs.?

Phil – OR Coho samping is on a 3 yr cycle to match coho life cycles, but habitat was deemed not as dynamic. They opted to keep habitat monitoring on a 5 yr cycle – thinking that 3 yr cycles would be too costly.

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More on the master sample

WA – statewide (no WRIA)
6 panels
1550 site visits over 5 yrs
310 sites/yr

WA with WRIA design

17 sites/WRIA

6 panels

1550 visits/5yrs

310 site/yr

Keith – Think about the transboundary watersheds, e.g., Okanogan, Kootenai

BobC – How much effort would it take to do this using the 1:24k hydrography for the master sample?

Phil- Don't know. It took about 1 week to come up with the list using the 1:100k maps. The base sample size would increase.

Keith – Actual sampling would likely have to wait a year after site selection due to verification, determining owners, etc.

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Phil – To work across scales, there is a need for **common protocols, a standard frame (same density everywhere from a consistent network). Make sure that rules are the same across the state for the 1:24K network.** Be consistent across the state, **and across time.**

The error rate for drawing non-streams will increase using the 1:24k vs 1:100k.

ODEQ is moving to rotating basin design where...

Year 1 basins

Year 2 basins, etc.

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Ed – What is the time scale that you consider?

Gino- King county needs to make statements about individual fish populations, distributed unevenly in different watersheds. Is this design robust to answer status at the population and WRIA scale?

Phil- OR plan was designed to assess abundance of coho, at the basin scale. They decided that some populations haven't been estimated at the precision required. They are re-designing (triage) and thinking that some populations do not need to be assessed. The question is how to allocate the effort.

Bruce- There is a debate going on for abundance estimates from the probability sample vs. estimating from traditional methods.

Ed and Rick – Bias in selection when denial by private owners.

Gino – Can do sensitivity analysis to see if there is a bias or not.

Phil- In the past, there have been cases where the site list is largely public land, whereas much of the access denials were private landowners.

Bruce – Remote sensing can be used to assess bias in access denial.

Rob- What are the objectives?

BobF – Populations of fish are in unequal numbers on WRIAs.

Rob or BobC – Ed, what are your thoughts/needs?

Ed – We have a technical advisory committee....volunteers chose what we do. The committee is composed of local natural resource managers. I asked them about probability sampling. The advisory committee (almost unanimously) said NO! They said to keep going to targeted sites of interest for water, habitat, biology (mainly bugs). Streamkeepers have found that what they collect has not been used. One of our major clients has become the state.

Rob – Ed, what is the attention span for volunteers. What do they want to do.

Ed – You don't want volunteers to do the gamut of measures. We could staff an elite core that could be a Phab team. A special group could do about 50 sites/yr. The more that you change year to year, the more effort it would take to staff up.

???? - Gino?

Gino – Salmon Watchers is a volunteer group in King Co.. Local watchers are less likely to be flexible. They are more dedicated to specific waters. They will never stop doing targeted sites. They might add on to them. The salmon watchers would likely go to set places each year. Recognize that many can't change. Those from HPA's could be encouraged to adapt. Ask groups if they are flexible. A subset of sites will need to be built up.

PaulA – Groups on board with meeting requirements. Would be interested in doing as much monitoring as possible sites are within "our" region. SOS report.

??? - Trends?

Phil – Depends on indicators: about 2%/year are required for "good" indicators. About 10-15 years in about 80% likelihood.

Keith – NOAA quote "3 things to look for when choosing indicators:

- 1) Is there an effect?
- 2) What is the magnitude of the effect?
- 3) So what?

Carol – This is important to keep in mind for the next meeting.

Keith – we asked local experts in the Okanogan basin: "Where do you think the fish are?" After looking at the probability sample, we found fish where they were not supposed to be, such as Chinook in the mainstem Okanogan. EMAP forces us to challenge our assumptions.

Carol – 1:100k might have a bias by species – a bias away from small-stream species. 1:24k would do better for coho.

SteveL.-It is important for volunteer groups to figure the questions that they are trying to answer.

Ed – to write a plan, we would need to shut down for a year. This is not possible.

Rick – Our program was designed to monitor agricultural practices to avoid putting in buffers if they are not necessary. For water quality, we measure trends on ag lands through a targeted approach and then identify restoration opportunities. We can identify the problems and then chase them upstream. It would be tough to fit a random survey unless one of the sites was a hit.

Phil – There is value in looking at water quality or habitat at co-located stations. There is also value in asking questions at the sub-basin scale.

Rob – There is a predictive value of the random sample that allows for making educated guesses as to where the problems will be.

Rick – every one of our streams is different from others. For example we have 2 streams that come off the same mountain but express completely different sets of water quality signatures. One has temperature and flow problems. The other has no temperature problems but has DO problems. Can we really get enough points to represent the variety of streams?

Phil – How many?

Gino – The top down Hucs won't work at Rick's scale. In King Co., we used HSPF modeling “stem modeling”. Every stream is described in terms of fish use. This was driven by the NMFS tri-county process.

Rob – These are biology-based strata.

??? - Problems might arise from using Subbasins' hydro layers based on modelling done in the past that are old/inaccurate.

Site selection Criteria - Strata

SteveL – Think of the types of questions. Project questions – can these be used for status and trends. Status and Trend questions – can be used at the watershed level. Look for comonality in adjacent scales.

Phil -It is important at the local level to ask - “How do we fit into the larger landscape?”

SteveL – If everyone is sampling something about, say, large pools, then can we look at that in a common way, so that it can be rolled up. Executives like data sharing (cost sharing) amongst agencies.

??? - What questions come from historical programs?

Gino – In past – not now. In King Co., we now have a can of worms – no common vision. I haven't had success at encouraging commonality. In our large-scale programs to monitor ambient changes we require the creation of SAP (“Sampling and Analysis Plan”?) which specifies goals, how, what is measured). An example of past programs might be “baseline of gages” – working with the USGS.

Rob – Do you perceive that a “Status” program would be helpful?

Gino- I'm seeing that state level stuff might not always have relevance at our level. I think that protocols should be consistent, so that we can feed up. Our questions are at a finer scale than at the state level.

BobF – We're project specific. We'd be interested to know if the project increases the performance of the system. How do larger scales affect the performance of interpretations in the project?

Rob – What about the aggregate of BMPs?

BobF – Can point toward different spatial/temporal locations. In the King Co. Critical Areas Ordinance (CAO), monitoring is usually “implementation” only.

PaulA – Need to compare “action” with “no action” to determine effects.

Gino – We have some high quality streams...

Rick – The statewide effort can help us to see if trends during implementation of the Skagit Co. CAO are different than statewide trends.

Ed - ...foresee what impacts humans have on our watersheds – before they are severe. What do humans do that helps watersheds? What should humans do that hurts watersheds? Statewide programs can help to predict effects. They can help local cities take action.

Ed - Could BMP-types could be used as a stratum?

Rob – Could BMPs be used for site selection?

Rick – BMPs are usually applied to land use.

Jeff – Our BMPs are for agricultural areas.

Dylan – Classify by land use. We have the layers.

Gino – It might be more effective to focus on one type of land use. But this moves away from overall monitoring.

SteveL – Mike Furniss wrote a white paper. Its theme is that it is a waste of time looking at in-stream stuff to determine effects of humans.

Gino – Our approach in the CAO is to allow enough buffers to allow natural processes to happen.

Ed – I think that there should be a statewide set of layers maintained with land use/land cover, zoning, and a road network.

SteveL – I may be able to give some information about roads at the next meeting.

BobF – The recovery team is focusing on time lags with effects. What are the temporal signals? When would things show? A statewide effort could help to show how long effects would take to display. A statewide effort could help to show what types of effects (e.g. chemical or physical) of which to be concerned. Stratify by TIME? You might want to sample only when you expect an effect (e.g., storm event monitoring).

Rob – Are there any other design variables to consider? So far we've talked about land use/land cover, zoning, core areas for salmon, sensitivity to disturbance.

Gino – look for things that drive productivity.

Phil – Think about what is desired vs. what is available statewide.

Paul (not sure if PaulA or PaulW) – to get statewide status, don't we need all SRRs?

BillE – CMER needs status estimate for temperature on Fish-bearing vs non-fish-bearing streams. We need 1:24k maps. Modelling is used to estimate which streams are fish-bearing.

Gino – I don't see the value of evaluating fish/no fish at the statewide level. The models won't work on no-topography areas. They need significant relief.

Ed – If land use is used, how should we describe mixed-use areas?

Phil – Maybe impose rules on proximity to the edge. Or, you could do ownership categories (e.g., U.S. Forest Service).

Ed - One way to do it would be to come up with LULC of the whole thing (state?) then impose an imperviousness factor to each polygon, then aggregate those.

Dylan – imperviosity is very dynamic. It would be tough to use this on a long-term assessment.

Ed – that is an argument for not using LULC at all.

Carol – There are other needs to consider, such as riparian conditions.

Rob – PualW, what does your client want?

Paul -

- 1) Where are you?
- 2) What direction are you going?
- 3) How will you allocate in the future?

Rob – Is the tribe interested in using data toward policy promulgation?

PaulW – Those kind of decisions don't involve me.

(I must have missed some notes here)

Bille? - Forest and Fish uses new water typing. This is available at the 1:24K scale on the west side. It will be available in spring for east side streams.

SteveL – For the next meeting, will you give specific tasks for us to do in preparation?

PaulW – I suggest you look at the Wenatchee Analyses of indicators.

SteveL – Rob, focus on specific questions.

Rob – Identify commonalities.

Gino – take measurements away from subjective calls.