

**Sediment Workgroup
June 2, 2010 Meeting Summary**

Location

Tacoma Wastewater Treatment Plant, Tacoma, WA

Sediment Workgroup Members Present

Joanne Snarski, Paul Fuglevand (not attending), Lon Kissinger (not attending), Glen St. Amant, Teresa Michelsen, Pete Rude, Clay Patmont, Jack Word (not attending)

Ecology Participants

Chance Asher, Laura Inouye, Fu-Shin Lee, Russ McMillan, Pete Adolphson, Dave Sternberg, Brad Helland, Donna Podger, Stacie Singleton.

Audience

Todd Thornburg, Heather Trim, Denice Taylor

Agenda

1. Discussion of July 26 joint meeting with MTCA/SMS Advisory Group
2. Freshwater Standards: Biological Criteria and SQV Technical Report
3. Bioaccumulatives – Ecological Risk
4. MTCA/SMS Integration

Meeting notes are organized by the agenda number and include a short summary of material presented with a brief summary of the main discussion points. Detailed notes on the discussion are included in an appendix.

Acronyms

AET – Apparent Effects Threshold
ASTM – American Society for Testing and Materials
BPJ – Best Professional Judgment
CERCLA – Comprehensive Environmental Recovery, Compensation and Liability Act
CSL – Cleanup Screening Level
COC – Chemical of Concern
EPA – US Environmental Protection Agency
EPH – Extractable Petroleum Hydrocarbon
ESA – Endangered Species Act
FW – Freshwater
IBI – Index of Biotic Integrity
LDW – Lower Duwamish Waterway

MCL – Minimum Cleanup Level
MTCA – Model Toxics Control Act
NOAA – National Oceanic and Atmospheric Agency
ODEQ – Oregon Department of Environmental Quality
PAH – Polycyclic Aromatic Hydrocarbon
PCB – Polychlorinated Biphenyls
PLP – Potentially Liable Party
QA – Quality Assurance
QC – Quality Control
RSET – Regional Sediment Evaluation Team
SAPA – Sampling and Analysis Plan Appendix
SEM-AVS – Simultaneously extracted metal – acid volatile sulfide
SMS – Sediment Management Standards
SQG – Sediment Quality Guideline
SQS – Sediment Quality Standards
SQV – Sediment Quality Value
TMDL – Total Maximum Daily Load
TPH – Total Petroleum Hydrocarbon
TOC – Total Organic Carbon
USEPA – United States Environmental Protection Agency
VPH – Volatile Petroleum Hydrocarbon
WQ – Water Quality

A. Summary notes

1. Discussion of upcoming meetings

- Joint meeting with the SMS/MTCA advisory group was originally scheduled for June 21st but needs to be rescheduled due to scheduling changes with the larger group.
- The workgroup members would like most of the group to be able to attend, and July 26th is not a good date for that. They also would like the meeting to focus on Ecology’s decisions and draft rule language. Since Ecology will likely not be fully ready for this type of discussion by July, they suggested postponing the joint meeting until Fall 2010.
- The workgroup members would like to wait for a joint meeting until Ecology has started to formulate their approach on some of these issues, based on what they heard from the groups. But they don’t want to wait until it is too late in the process to provide input on the direction. Draft rule language would be helpful to some, or even a more detailed approach outlined. The approach should include a description of what will be done overall – what goes in rule, what goes in supporting guidance, some of the implementation details.

- The workgroup would like to have a draft sent to them by email for review prior to the joint meeting. Some members of the workgroup said they would even like to review specific pieces – such as the other deleterious substance piece – whenever it is ready.
- Ecology is still compiling comments on the draft Human Health/Background paper that was discussed in March and April, and will revise once all the comments are in. If Ecology feels that they need more clarification on what they heard from the advisory groups, the workgroup may be open to another meeting for discussion, or email discussion.
- Chance will discuss scheduling the joint meeting with Dave Bradley and get back to the group.

2. Freshwater standards

Laura led a discussion on some of the comments received on the freshwater chemical and biological standards. Some of the topics included TOC normalization, comparison to background, use of reference sites. Russ led a discussion on biological criteria – types of tests required, and endpoints.

TOC normalization discussion

- Comments were received about TOC normalization of the criteria similar to the marine standards.
- Laura explained the theory that organic carbon binds to some contaminants and makes it less bioavailable, and theoretically TOC normalization would improve the relationship between sediment concentration and effects. This did not prove to be true in the freshwater analysis.
- TOC normalization also makes the results more variable, as small changes in TOC make big changes in TOC normalized concentrations. This affects statistical comparisons.
- It's not recommended to normalize for low TOC values, so would have to have two sets of criteria in the rule – TOC normalized and dry weight.
- Latest science shows that TOC interactions with contaminants are quite complex and depend on the type of OC present. Multi-compartment models showed that using OC to predict bioavailability added a lot of complexity and gave only a small increment of improved predictability.
- Teresa added that TOC tends to affect the pore water concentrations, but she doesn't believe that pore water concentrations are relevant to benthic toxicity. She also said that using TOC for developing sediment quality guidelines across the state was problematic where you may have a wide range of TOC types.
- Clay thought that evaluating pore water concentrations were a valid approach to assess bioavailability, one that has been used successfully elsewhere, and should be permitted for use on a site-specific basis. He felt that the bulk concentrations were okay for screening values but the rule needed to have the flexibility to do site-specific bioavailability evaluations that included approaches like pore water analysis.

- Pete thought that the TOC normalization added a lot of unnecessary complexity at the screening stage. He would like to see TOC normalization taken out of the marine standards too.

Biological standards

Russ led a discussion about the biological standards, including which types of bioassays to require, comparison to reference sediments, and whether QA requirements should go in the rule or in guidance.

- A suite of bioassays will be used, similar to the marine biological standards, but do not have as many test species for freshwater (just *Hyalella*, *Chironomus*, *Microtox* right now). The requirements would include-
 - 3 bioassay tests (endpoints)
 - At least 2 species
 - At least one chronic test
 - At least one sub lethal test.
- The workgroup discussed whether the sub lethal test should also be a chronic test. If the sub lethal test is also a chronic test it would be a 20-day *Chironomus* growth – but would you need to run two separate 20-day bioassays to get the growth and mortality endpoints, or could you get both endpoints from one 20-day test? The group discussed how mortality may affect the growth endpoint in the test, but Teresa suggested that using the biomass endpoint instead to make it more efficient and able to get two endpoints from one test. Teresa suggested that the other option is to allow a sub lethal endpoint on the acute test such as the 10-day *Chironomus* growth endpoint.
- The workgroup discussed the *Microtox* bioassay and whether it should be put in the rule. It was stated that *Microtox* is a chronic and sub lethal test but should not be used alone to determine a CSL hit – only to corroborate other results. The workgroup generally agreed that it was rarely used alone.
- The workgroup discussed how prescriptive the rule or guidance should be in specifying certain tests, whether that choice should be made by the PLP or the site manager. Russ asked for suggestions on rule language on how to specify biological tests that are representative of the benthic community and sensitive to the contaminants of concern.
- The workgroup discussed whether biological test comparison to reference stations should go in the rule or in guidance. The points were made that appropriate freshwater reference areas may be impossible to find, that failure of bioassays from reference areas are problematic to interpret the data, and finding appropriate reference areas and collecting adequate data in freshwater environments may be very cumbersome and costly. The general agreement is that requirement for reference areas should not be in the rule, but in guidance should provide the option to use reference comparisons if PLP prefers, including ability to use reference envelope approach or other options.

- The workgroup discussed whether the quality assurance criteria should go into the rule or guidance. ASTM will be updating their QA standards within a couple years for all these bioassays and endpoints. The workgroup did not want the rule to specify what the QA standards are, but may refer to ASTM standards or “other Ecology approved protocols”, then the details could go into guidance.
- Teresa reviewed her discussions with Oregon Department of Environmental Quality (ODEQ) on the freshwater standards. A meeting last week included ODEQ management and technical staff from cleanup, water quality and toxicology groups. The toxicology group still has some concerns about whether values are conservative enough, but other groups seem to agree with balance of reliability and not having a lot of false positives that can waste agency resources. The RSET group will be discussing this again soon, Teresa expects that it will probably go well. ODEQ will make a final decision on the sediment quality guidelines after review by the RSET group.
- There was discussion about whether new rule requirements would affect sites that are already in process. Chance said that a reasonable policy would be developed to “grandfather” sites that already had legal agreements.
- Audience comments included concerns about the biological CSL hits being either 2 exceedances of SQS endpoints or 1 exceedance of greater magnitude in the endpoint, and whether those should have equal consideration. Teresa, Laura, and Russ discussed the reliability of the CSL single endpoint.

3. Bioaccumulatives – Ecological Risk

Dave Sternberg led a discussion of the substance of the narrative language. Ecology asked for identification of “show stopper” scientific or technical issues on narrative language.

- Dave Sternberg presented the ecological bioaccumulative narratives in draft rule language format. He tried to incorporate all the comments he has heard so far.
- He has heard four major concerns from previous meetings. Guidance has been requested, but at this point he is just focusing on the rule framework. Every site is different, so including a specific number of trophic levels to be addressed at sites is not appropriate. The rule language should cover a broad range of sites. He also heard concerns about costs as well as human health and background.
- Workgroup members commented that while risk assessments identify the COCs, ecological risk assessments may still be needed at certain sites even if the COCs are known and discrete. Also, what about footprint issues where cleaning up one contaminant may also result in nearly cleaning up another. How will this be taken into account?
- Overall, the workgroup members were rather pleased with the draft rule language. They thought it had a good level of detail. In addition, the language should also cover Ecology taking COCs into account for both human health and background. Also, there’s the potential to pull in too

many chemicals with the way the language is written. We should be focusing on just the chemicals found and used in Western and Eastern Washington. Ecology might start with looking at DMMP's list of COCs for Puget Sound as well as look at RSET's set of chemical lists. Ecology's PBT list is rather broad. The audience cautioned about the use of proprietary chemicals.

- The workgroup members expressed concern about having this language in the rule without guidance, at least before guidance was completed. They were concerned about how the language would be interpreted. Without guidance, there is potential for confusion.
- The workgroup members also expressed wanting off ramps clearly defined for this section. They also commented on the need for being able to use interchangeably the information/data from very similar sites. This would simplify and reduce costs. Public access to this information was identified as a question.
- The workgroup members would like to see protection of ecological receptors such as fish, birds, and wildlife in the reserved section. They agreed there are different ways to do this. It's important to at least have a placeholder to address effects on threatened and endangered species.

4. MTCA/SMS Integration

Discussion of Sediment Workgroup comments. Resolution of identified issues.

- Discussion began with the cleanup goal and how to address the cleanup goal as stated throughout the regulation. Minimum cleanup level and maximum allowable level (these are two different levels) were also discussed. The maximum allowable level may also include benthic cleanup level as well as human health and ecological risk.
- The workgroup members noted that they like this change in terminology and believe this language is clearer. Maximum allowable level is much clearer than the minimum cleanup level and it is cleaner to separate the action numeric standard from the timeframe.
- The workgroup was also concerned that some of the changes might result in extended timeframes for cleanups.
- Additional changes in terminology include reducing redundant terminology, such as cleanup screening levels. Some terminology from MTCA was brought in, such as remediation level.
- The workgroup members noted that sometimes for sediments, the remediation level might be below the cleanup standard. Consider starting with the lower number if you want to achieve the cleanup standard over time. The group also noted that the background narrative may be unachievable, but the overall structure looks good.
- The workgroup also discussed dropping the 10 year timeframe, as it is not always relevant. It's been found that at many sites, benthic recovery can take less than 10 years. Also, at some sites, there may be 50 year plans for continued stormwater inputs. Also, 10 years was originally chosen as the approximate time it took for site cleanup from start to finish.

- Ecology noted that this may be a concern from a legal perspective and 10 years seems to be a good middle ground.
- Ecology tried to incorporate most of the comments that they heard regarding the definitions. The bioassay definition didn't really cover all bioassays available so it was redefined closer to what is found in the literature. This will allow additional assays to be used if needed. Also Ecology proposed taking out acute bioassay and chronic bioassay in favor of leaving acute and chronic in the definitions section.
- The workgroup thought it was important to leave in the acute bioassay and chronic bioassay definitions. They were also concerned that opening up the bioassay definition too much could cause a lot of confusion.
- Ecology stated that the prescribed bioassays in the regulation will not change, but the definition change allows for doing assays such as a tissue analysis if needed.
- Ecology may make some changes to the definition of sediment to include ephemeral areas in both marine and freshwater environments. Ecology is concerned that open settling basins may pose risks to wildlife and benthic organisms.
- The workgroup asked if the new sediment definition implies waters of the state or any water body or engineered structure. Ecology stated that their intent is any water body. The group discussed whether or not it included engineered structures such as aeration stabilization ponds. On one hand, they can be open and wildlife may be exposed. On the other hand, they may be under NPDES permits, in which case this definition wouldn't apply unless they were in cleanup. The group decided that more clarity is needed around this issue.
- Ecology also brought up the definition of site boundaries. The concern is sloughing upland banks where the dirt will eventually become sediments that may be contaminated before they hit the water. The workgroup believes this is a source control issue.

B. Detailed notes

1. Discussion of upcoming meetings

Chance Asher - we talked last month about what you would like out of the joint meeting. We heard feedback from Glen that you would really like to know what Ecology is thinking and what direction we are going. So we were hoping to have that meeting June 21, but because they rescheduled their meeting, and we could use more time, it's not going to work. Also gives us a little more time to do some thinking. We would like to reschedule for July 26. Do we still want a joint meeting? I think it would be beneficial. It would be to focus on the human health and background issue more than anything. What I was thinking I would do in the next month, and I'd like to get feedback on this, is update the Human Health/Background summary framework document based on feedback from both groups, and send it out to you for comment via e-mail. There are still some comments coming in, so I have not been able to synthesize them and update the document. We discussed that document at SMARM. Most group members were there. That

feedback still needs to get synthesized for us internally as well. We need to have a lot more discussion internally to synthesize all this information.

Teresa Michelsen - it would be good to have as many members of this group at the joint meeting as possible. It might be better not to stuff it into one of their dates. Set aside a date that will work for everybody's schedules and make it a joint meeting for just that one topic, so we can focus on that. We need to have everyone on this committee that can be there.

Chance Asher - yes, I have just gotten feedback from 3 of you that you cannot attend in July, and I was concerned about that. You have been really helpful on this issue, and it would be good to have all of you there with the other group. The problem is trying to schedule that meeting, and when would it be. Martha was talking about trying to schedule an August meeting, but that's bad for many because it is vacation month. And we have a Science Panel meeting on the 25th.

Teresa Michelsen - I don't know if August is any worse than any other month.

Glen St Amant - I am very interested in having a joint meeting on the human health and background issue. Am I correct that this is our last meeting? What I was really hoping for was a little more comprehensive plan from Ecology at this point, including implementation. What are the big picture things that you see moving forward in terms of draft language? I guess I was hoping to have a broader opportunity to understand where Ecology is going with this. Background is a significant issue, but it's not the only issue. Since this is the last meeting, I was hoping to hear back on how Ecology is contemplating on the changes.

Chance Asher- is that on all the issues we are dealing with?

Glen St Amant - yes

Teresa Michelsen- what if you ask the groups about a September retreat or workshop – even if it takes 2 days. I agree with that. I think everybody would like to see what Ecology is putting together on this and have a chance to look at it in advance, think about it and be ready to have working sessions.

Russ McMillan - and you are thinking draft rule language would be the best way to go about that?

Teresa Michelsen- yes, but if there is stuff to go around the rule language, that would be important – SAPA changes, or guidance, or different legal mechanisms to help resolve liability. What are the pieces that need to be put together to support rule language, as well as the rule language.

Chance Asher- and you think that would best be served in a joint meeting – remember there are a lot of people in that other group, plus you guys, it would be close to 30 people.

Teresa Michelsen- you could have breakout sessions on topics – like vapor intrusion. Probably the same people wouldn't care about every topic. Maybe not everyone would attend every topic.

Chance Asher- well we were toying with the idea of taking a couple months hiatus, work through the feedback we've received from both advisory groups, and then coming back with a little more solid footing.

Teresa Michelsen- give us enough time to schedule it and it would be out of the summer vacation schedule.

Laura Inouye - and it would give us enough time to put things together.

Teresa Michelsen - and we need time to review before the actual meeting.

Clay Patmont- so we need to frame it a little differently – how much time do you need to put something together?

Chance Asher- I think with a number of these issues we are pretty darn close. Like the bioaccumulation piece that we sent out today. It's not perfect, but it's getting close. The integration piece, I think we are getting there too. The background and human health piece – those are complicated, and we need to make some pretty big decisions. In terms of rule language, it won't be that complex. What will be complex will be how that is implemented and what guidance is needed. Being able to tease that out – we will probably be much further along in a couple of months. But giving you the specifics of what a guidance document would look like, we may not be there. We're seeing if we can get some help putting a guidance document together. We've already developed an outline framework of what guidance would look like. If that is what you are thinking, we definitely would be more ready by fall than July.

Teresa Michelsen- if you need ideas for organizing that section please let me know. One thing I'm envisioning, pretty much everyone will be interested in this human health background piece, so that could be one big joint session. For some of the smaller things were you are pretty close to rule language, you could do simultaneous sessions so you aren't pulling in the whole group into a discussion they don't care about. It could be organized in a way that you get the best possible feedback from people who care about those issues.

Chance Asher- Glen, when you say more of a comprehensive picture – you mean what would rule language look like, what would implementation of that rule language look like?

Glen St Amant - I'm not focused so much on the meeting- soliciting specific comments on the proposed rule language, but think about how we've got these issues about SMS/MTCA integration, issues about setting sediment standards implementation and background – and giving us an idea what you've heard in the discussions and where you think Ecology is going to be heading. The rule language will reflect that, but more bringing us back full circle to where we started. You asked for our input to help with some of these decisions. Where do you think you are right now? Your rule making procedures – that is one of the reasons I valued sitting in on this – besides hearing the expertise with everyone sitting at this table – but to be able to have this dialog with Ecology – I'd like to understand what Ecology is thinking.

Chance Asher- that's really helpful. What we tried to do putting together the framework on human health/background was to show you what we heard, some of the original thinking, some of the tweaked thinking based on what we heard. That was kind of a start. We've gotten a number of comments back.

Glen St Amant- maybe this is just me, but it looks like that document is just assembling some of the comments of the group. It didn't sound like this is what Ecology is thinking about.

Teresa Michelsen- yes, you were careful not to say that it was Ecology's approach.

Glen St Amant- yes. If I hear from that is Ecology's approach, then that's a little more transparent to me. But that's the part that I just don't see.

Chance Asher- that's really helpful. Just to lay it out on the table. The reason that we put that wording in the first paragraph of the summary document - that it isn't Ecology's approach it is

just to synthesize what we've heard – because that is really what it was. We still need a lot of internal discussion to work through at Ecology. We are a very bureaucratic agency – it has to go from our internal workgroup, outside of that to management team. This was a start to ensure we heard what you guys are saying and get feedback from you if we should continue to work through this framework. We've got a lot of great and helpful comments to help with the synthesis document and we still need to work through what Ecology is thinking. What we are doing is listening and thinking about what you said and how to incorporate that into our decision making. And we just aren't there yet.

Teresa Michelsen- we need to wait until you are there is a good idea. That's what we are all interested in.

Chance Asher- it wasn't an attempt to not be transparent, we're just not at a decision point yet.

Glen St Amant- oh no, I didn't mean it that way at all.

Chance Asher- good. Just want to put that on the record. So the goal with this group was to listen to you guys, and try to synthesize that information. The goal was to try to do that as we discussed it, and we did that on some of the issues, but the human health and background is just so big and complex, that we've just been synthesizing it internally and not regurgitating back because we just aren't there yet.

Clay Patmont- seems like there would be two different purposes, for our group meeting again – one would be to clarify what you've heard. You've heard a lot of different things. One reason for this group to meet again would be to help clarify the main thoughts that were discussed. If you feel like you have a pretty good handle on what we are saying – then I agree that the next time to meet is when you have an outline of where you want to go, but before you get to actual rule revision. I think that's where this group could help the most.

Chance Asher- something that Pete had asked was whether we were looking to get a recommendation or consensus from this group. And the answer is no, it would be great if we got a consensus recommendation or a set of them, but we don't need that. We want honest feedback. It sounds like what we are hearing is if Ecology feels like we have the input we need from these limited meetings, and we feel like we've been able to synthesize what we've heard, then we need to go back and do fair amount of homework and then bring that back to you guys to know the direction that we are definitely considering. –Whether that looks like draft rule language, or an outline and a framework, kind of up in the air, or would you prefer to look at some language?

Teresa Michelsen - you don't have to wait until you have it all figured out. If you have something you want us to look at – you can send it out. Say here's a little piece on other deleterious substances – especially something small like that – just send it out to us. I would like to see the rule language. I'm used to working with rules, I think one of the things I can do is be helpful at looking at issues in rule language, and also I think the general outline of the concepts is useful too. And as long as the rule language is draft and still able to be changed, not set in stone and you won't consider changing it. For example, I was very happy to see the actual rule language on the bioaccumulation piece, especially since that is the only thing we are going to get on that – is actual rule language. Extra issues associated with it. For background and human health I think

it's alright to have a conceptual piece and continue working on that because that's not done in any way, either internally or externally. And then that can be translated into some draft rule language. I guess it depends on the issue, but feel free to email us and continue to use us for advice.

Pete rude- I guess I would like to see ideas in the early stage and give feedback before you get too set on it and pouring the cement. See it before – while it's still in the truck being mixed a little bit.

Chance Asher- would you be willing to review, a conceptual framework similar to the Human Health/Background Summary document that says :here is where Ecology is thinking of going"? Would you be willing to provide feedback on that? That would help us get to rule language, rather than a meeting.

Pete Rude- yes.

Teresa Michelsen – yes, especially since it seems to be hard to schedule these meetings.

Chance Asher- and I don't want to keep asking you to meet. You agreed to 6 meetings, you are now at 7 meetings. And we are asking for one more as a joint meeting. I don't want to keep asking you to extend your time.

Clay Patmont- on the consensus idea, a lot of us are voicing some similar issues. I don't know how close we are, but I don't think we are far apart in this group.

Teresa Michelsen- I don't know how far we are from the other group, but we'll find that out I guess.

Chance Asher- any comments that we receive either from you guys or the other group are on the internet, or they will be posted soon. We just posted comments from the port association, on the human health and background framework document. So we are posting all of those comments. On the sediment workgroup page I'm posting comments under each meeting where we discussed the issue or followed up on the issue. And we have a folder with comments from the larger group as well.

Brad Helland- so the question seems to be is it useful to have something that says “this group thinks.....” Or not.

Chance Asher- no, I think they want to hear what we are thinking on this.

Brad Helland- yes of course. But as a precursor to that, are you saying Clay do we want to have a paper that says this is what the sediment group thinks – this is what the majority thinks, this is what the minority thinks on these issues. Is that something that is useful for us or not.

Teresa Michelsen- that takes a fair amount of facilitation work, and not all the members are able to come.

Chance Asher- that's a really interesting concept. Perhaps we could fulfill that with the framework document. We've received comments on that, perhaps we could look at when some of the similar comments are and tease those out a little bit better. But I hesitate to focus on consensus since that wasn't what we were setting out to do.

Brad Helland- I wasn't promoting consensus. I was asking whether it was useful. I'm not talking logistics, I'm asking it is useful, because if it isn't useful...

Laura Inouye- if they go through the problem of doing it, would we use it, that's the question. That's what Brad is asking or is it just going to be another document in the file.

Teresa Michelsen- one alternative to trying to create a consensus document- I know Glen has expressed some issues of not being able to put things in writing unless it's gone to the tribal council for approval. If he's not able to participate in that way we have lost his voice. So an alternative, in this larger group – it could be informal or formal types of endorsements, so there's a sense of consensus without having to develop a consensus document.

Chance Asher- okay, I think we could morph some of this. Let's move on.

Clay Patmont- so how does this apply to the meeting date the July 26th meeting date you opened this discussion with.

Chance Asher- what I'm hearing from everybody about what you want – I'm not sure I'm going to have that ready by July 26th. You are really asking to hear about what direction Ecology is going, and we need to have a lot more discussion, and have some time to synthesize, and some time to think. I'm not sure that July 26th will work from what I've heard. I need to go back and talk to my higher-ups, but you guys know what you want, so I'll let them know that.

Clay Patmont- it seems to me, absent the fact that a bunch of us can't be there, it sounds like the timing might not work out. If you are thinking about having something in the summer, I need at least a month's notice to work it out in my schedule. I've got the 27th of July open for this thing, but if you really want to use that date, you need to nail it down soon.

Chance Asher- I'll go back and check on that asap.

Laura Inouye- if it's not in July, it will have to be in September because everyone is gone in August.

Pete Rude- was there another potential meeting of this group before the joint meeting or not?

Chance Asher- what I'm hearing from this group is that if we feel that we know what we heard, and we don't necessarily need clarification, it might be best to only have a joint meeting later in the fall. We'll send out some type of a framework document for you to review first, and then we'll have a joint meeting to really discuss it and rule language in detail.

Teresa Michelsen- I'm still interested in the write-up of pieces such as the ODS. So whenever you get through your legal review, I'd like to see that.

Chance Asher- we'll definitely let you know. Right now that one is on hold. So I will go back and talk to Dave Bradley today or tomorrow. And let you know whether it is going to be July, or a meeting in August or September if that makes more sense. Okay let's move on then to freshwater standards.

2. Freshwater standards

Laura Inouye- I'm going to do that little introduction and start with the freshwater rule revision. The goal for today was to hear any other comments. We got 3 official comments, but didn't hear from others. So today, we are going to review those comments and give those of you who didn't have a chance to comment to provide us comments. There were 3 reviewers who provided comments on the draft technical report, those comments are available online in the Ecology website. I say only 3 comments, but some of those are pretty detailed. So today I'm going to review the major points, not each of the detailed comments. What are the bioassays we are talking about including the endpoints. We are going to tackle that at the end of the discussion –

Russ will do that. Several people were wondering if we are not comparing to reference, how we are going to incorporate comparison of reference. Consideration of analytical limitations of all kinds, and if we are comparing to background, consideration of metals. And TOC normalization. So the reference comparison. Comparing reference for all tests would be a huge burden especially for freshwater. Finding a reference site, there's a great paper on how to do that the RSET group put together. But that's a pretty heavy time and expense burden. However it's been pointed out that comparison to reference can be useful, so it would be nice to include them. We have two ways to go on comparison to reference. If we are going to use comparison to reference performance criteria in the rule, we need to have language on when it is used and when it is absolutely needed rather than requiring it at every single project. Another option is to put the reference performance criteria in guidance, and including other ways of using reference, such as the reference envelope approach, which is the latest greatest way. These are fairly burdensome on the amount of effort it takes to conduct. So, highly doubtful to put something in the rule talking about requiring reference or reference envelope approach. We are debating whether the reference performance criteria, which we will show you later, will be in the rule or not in the rule. The next topic is consideration of the analytical limitations for all the compounds when comparing to background, and specifically the metals. Somebody brought up asking if this was a problem. Unlike the 2003 run, there really weren't any compounds that were at or below the detection limits. So for the organic compounds it's really not an issue. It was noted that the SL1 for nickel is below state soil background levels – we don't have sediment background levels but we do have soil. If the soil background concentrations are below this level, then chances are good that we are going to see a lot of sediment concentrations above the SL1. So some possible solutions are going to natural background, which sounds familiar. But there are issues with background for metals due to natural sources, due to natural variations, not just mining. They do mine because the minerals are naturally higher in that area. In some cases mercury may be elevated due to volcanic deposits – we are trying to figure out how to get background for some locations.

Laura Inouye - TOC normalization – the theory of why you should consider organic carbon normalized – contaminants tend to associate with the organic carbon. So high contamination tends to be associated with higher organic carbon levels even with the absence of any source in the area just because the chemical associates with it. Additionally higher organic carbon can reduce the bioavailability of the contaminant because it bonds with it, reducing the pore water concentration. Reduces what is available for uptake by organisms, therefore reducing toxicity to organisms, even with elevated TOC levels. The theory goes that normalization by TOC should improve the association between contaminant loads in tissue and sediment and the bioassay toxicity or bioaccumulation. However in past and current runs of the freshwater floating percentile methods, TOC normalization did not improve the reliability of resulting toxicity values. TOC normalization has known issues when TOC is extremely low or extremely high. When you have very low TOC, you are dividing by a very small number and small variances in that number make huge changes in the TOC normalized data. The other problem with that is that

if you do have extremely low TOC values, it's not recommended to normalize to TOC. So if you decided to promulgate TOC values then in those cases with low TOC what do you do – your rule would be TOC normalized, and if you have low TOC it is recommended not to TOC normalize – so that's another issue we have to consider. Lastly the state of the art for total organic carbon analysis is extremely complex right now. The last SETAC conference that I went to they described multi-compartment models, trying to analyze different types of TOC, the aromaticity of the TOC, the different sources of TOC. For all of the complexity, what they showed was that the more complex you get – you get small increments of predictability, maybe that extra 5 to 10% of that variation, but it really doesn't get you better than dry weight. Those are rationales on why we are not organic carbon normalizing.

Teresa Michelsen- I'd add a little bit to that. The theory is that it affects pore water concentrations, and it's pore water concentrations that matter. For benthic toxicity it's never been clear to me that that's the case. Because benthic organisms feed directly on sediments, ingest the sediments directly. They may be dissociating contaminants from organic carbon that is different from pore water. Another thing that was discussed at SETAC is that different organisms feed in different ways and uptake organic matter in different ways, which really confounds the bioavailability of the contaminant to the organism. All of those things far outweigh any affect that one can see from organic carbon normalization, and the fact that it's never been demonstrated on real data that I've ever seen. It is in EPA's guidance documents which are all based on theory, which as I know have not been implemented in any state or province. So no one's using them for a very good reason, which is that it doesn't work, it isn't played out in the environment at least on a large scale, and I haven't seen any site-specific data. If you have some I'd love to see it.

Clay Patmont- I wasn't going to go down here – but I disagree. I think there is a lot of site-specific information - they just have to get it out there. It's not from the northwest. It's from the Midwest and northeast – that's where and with in situ toxicity it's far better correlation with pore water concentrations – and the technology has improved a lot. I would agree that it's complicated with the different types of carbon and the multi-compartment TOC models it gets really complicated. There are situations – and you should put this in guidance- where you get correlation with the pore water and no correlation with the bulk sediments. And most of the sites I see are pH related.

Teresa Michelsen- I would agree that it's correlated with pore water concentrations. But the question is, are pore water concentrations relevant?

Clay Patmont- again it's just a different set of information that you are looking at, but there's a lot of in situ bioassay and sediment data that is really well correlated with the pore water.

Laura Inouye- so that's pore water and not TOC normalization.

Clay Patmont- yes, it's about bioavailability issue – is there a way to improve our assessments of the bioavailability.

Russ McMillan - there's two different applications. One is about setting sediment quality values that you would use across the state of Washington and there when you are pooling information from a variety of sources you are going to be dealing with a much wider range of types of TOC that

come into play and really confound the issue of developing sediment guidelines. At a particular site where there might be OC from a particular source or have a particular feature to it that plays into the bioavailability that might be a different story.

Teresa Michelsen- it might be but I am still waiting to see the data. Show me the data.

Laura Inouye - the other problem you see is TOC analytical reliability. You might measure TOC at 1% but that's 1% plus or minus 0.2%. That seems like a fairly small number, but it makes a huge difference when you divide the dry weight number. You actually get larger variabilityfor example, we took the BOLD data and we took two aliquots and ran all the different sample analysis on both of those and the variability when you OC normalize versus when you don't – you get a lot more noise when you OC normalize. When you start comparing t-test of the duplicate samples – you pair them up – you get higher P values when you OC normalize – starting to say that they are not – more of a chance that they are from different population because the variability is greater.

Clay Patmont - I think it gets even more complicated than that. And comparison to screening values makes sense as an initial step. But it's more about whether there is another step beyond that. At a lot of our larger sites, we could debate the technical stuff and this probably isn't the forum for it, but we should put in rule the opportunity to be able to do a site-specific evaluation of bioavailability.

Teresa Michelsen - that's what the bioavailability override is for – you do a toxicity test.

Clay Patmont - it could be toxicity test related. We need to get to some of the issues there. But I think that pore water is key – there's a conceptual model about bioavailability being related to pore water and a lot of people have gone that direction. And there are really good techniques in directly measuring pore water. And given the problems associated with TOC, and the advances in measuring pore water, I think that pore water methodology is pretty much ready for prime time.

Laura Inouye - it's a good suggestion and maybe it could be used on a site specific basis. But as far as developing values there's no data.

Chance Asher- it sounds like you have some comments about some other ways to test bioavailability, and maybe you could think of some alternatives that could go into the SAPA. In terms of rule language, I don't know if we need to discuss this further.

Brad Helland- in the current rule, is there opportunity to do other methods as approved or whatever.

Teresa Michelsen - yes it's there.

Clay Patmont - I don't want to be the odd person out on this, but I think the rule could be improved.

Chance Asher- do you have specific suggestions?

Clay Patmont - yes I could provide that. We were emailing back and forth on this a couple weeks ago and I could provide some specific language. A lot of site managers don't understand the flexibility that we have and the need to look at bioavailability.

Chance Asher- if you want to provide that Clay, you can send me some comments on how to do that.

Russ McMillan - in the broadest sense, we have best available science, alternate approaches can be proposed whether it's bioassays protocols or efforts to characterize the effects at a site that

warrant attention. I think there doesn't have to be specific language that OC could be a specific element that is used. Take a look at some of the administrative principles in the front of the rule and see if that doesn't allow you the window to try some of these other approaches. What you are trying to avoid is so narrow language that we can only use the chemical standards or the bioassay results that we identify here in this rule. Is that what you are saying?

Clay Patmont - it's not all sites, but there are going to be sites where the best measure is not going to be based on the bioassay themselves, but based on the pore water measure.

Pete Rude- I don't think I commented on TOC in my formal comments. But if I had a nickel for every time I've had to explain or correct or something over this TOC normalization in the marine standards over the 20 years I've been in this business, I wouldn't be here today. Keep it simple for screening. I know it's complex in other ways. But keep it simple. If you could get TOC normalization out of the marine standards too, that would be great. It adds so much churning at the screening point.

Chance Asher- last comments.

Laura Inouye - one of the comments from Clay alluding bioassays are not the best endpoint either, one of the things we noted was that for a particular compound what set the lower limit is the 10-day acute toxicity and what set the upper limit was the 28-day. We said it didn't make sense that the 28-day was actually less sensitive than the 10-day. And we think what happened was that for the higher concentrations at 28-days they were basically all dead. So the longer term one you don't have the sensitivity for the higher concentration range because it's too toxic and basically everything is dead. You only get the upper concentrations where they are surviving.

Teresa Michelsen - I remember that comment too, and I think it was bis(2-ethylhexyl)phthalate. I think he was actually saying the opposite – the lower concentration was set by the acute test and the higher concentration was set by the chronic test and that seems backwards. I have to agree that seems backwards. We have resolved a lot similar of issues we've observed like that in the previous runs. I am totally committed to going in and looking at that particular compound. Right now I don't have the response because I haven't looked at it yet. But I agree that it looks weird.

Clay Patmont - and it looks weird because there is a large gap between the two numbers...

Teresa Michelsen - I don't think that is a problem, but it does look weird.

Laura Inouye - the difference might also be because of where the data came from and if there is a data gap in the data sets.

Teresa Michelsen - that's entirely possible.

Laura Inouye - that's a high value of phthalates. Both the upper and the lower number are high values.

Clay Patmont - the other part of that comment is what is going on with regional background.

Chance Asher- I need to do a time check here. We may continue the discussion – but I wanted to check in with Russ, Laura and Teresa – we have 40 minutes left. Do we need to finish this issue?

Teresa Michelsen - I need a clarification on this issue.

Chance Asher- so you need to clarify, you want to know what you should do?

Teresa Michelsen - no, I need to clarify his comment. Clay you said the lower value was above regional background, but did you mean it was below regional background?

Clay Patmont - there are going to be locations where the criteria are going to be below regional background, or our understanding of what regional background is.

Chance Asher- any other comments on Laura's piece.

Biological standards

Russ McMillan - so none of this stuff is new, we've discussed the biological standards last time around. What we are going to do is take a look of the range of bioassays we have in front of us and how we would incorporate those into biological standards. The first thing we are doing is just mimicking the paradigm we have in the marine standards, where we have a suite of bioassays to choose from. Those bioassays are intended to represent the sensitivity in the benthic community so we are having some acute tests, some chronic tests, trying to catch some of those same sensitivities of those different life history stages, and different organisms that you might see in a macro benthic community. So we are also looking at extending the range of species that we would incorporate in our range of bioassays, if they are available to use in that suite of chronic and acute tests. In this suite of bioassays we are making the distinction between the length of the test being acute or chronic and the endpoint being lethal or sub lethal. And this is a little different than how we approached the marine standards. We've got the *Hyaella*, *Chironomus* and *Microtox*. The first two columns represent the bioassays and represents the duration in relation to the life history of the animal. I just want to run this past you and see if you see it the same way. It is different than I listed it before. The first 5 rows are the bioassays used in developing the sediment quality guidelines. The two additional 20-day mortality for *Chironomus* and 20-day growth are the new ones there. I think we've got enough confidence in both running the bioassay and the endpoint is truly representative of enough of that animal's life history stage that we can get to an endpoint that makes sense for a chronic test. We have two different endpoints for this. For 20 day mortality we have a lethal endpoint, for 20-day growth we are looking at a sub lethal. So with the tests we have a question whether, like the marine standards, we will employ 3 bioassays. We don't have the spread of species like we do in the marine standards. We would look at least two species and one chronic test as a minimum. Let me throw this out – should we use a chronic test that has a lethal endpoint, or a chronic test that has a sub lethal endpoint. And let me jump to the framework that we would select by. So we've got 3 bioassays, at least one chronic test, and this is the most conservative approach. With a sub lethal endpoint, and at least two species so you would have to have *Hyaella* and *Chironomus*. You notice that I'm not mentioning *Microtox*.

Clay Patmont - yes I've noticed you are not mentioning it.

Russ McMillan - well I just wanted to focus on the idea about the chronic endpoint and whether that should include lethal and sub lethal endpoints. So it could be *Hyaella* the 28-day chronic test, but have a lethal endpoint, as opposed to a chronic test with a sub lethal end point. These are

both acute so we can't use the 10-day. But we could use the 20-day with a lethal endpoint or sub lethal.

Teresa Michelsen - they always run those together.

Russ McMillan - on the same animals in the same chambers, and report mortality as mortality and growth as growth. Statistically there is an issue with that. And that is something we should explore. Is that viable? -Can we run the 2 bioassays and read 3 endpoints on those two bioassays. So you would run one *Hyalella* and the *Chironomus* 20-day both endpoints. Does that make sense? Are we looking at a sensitive enough response or would we require running two 20-day *Chironomus* as separate bioassays?

Teresa Michelsen - Jack's not here. Here's my thought on that, usually where it causes problems is when there is high mortality, there is high potential for it to cause lower or higher growth. What we did in Portland Harbor, writing that guidance, is if you have high mortality, you don't count that growth. You are already going to fail in that test for mortality anyway, so your station is going to fail anyway. But you don't try to do statistics on the growth endpoint. The other option they are doing - in Portland Harbor - they have moved to a biomass endpoint that helps address some of this problem.

Russ McMillan - they are moving to a biomass endpoint or away from a biomass endpoint?

Teresa Michelsen - it has to do with whether you are measuring the growth of the organisms or the growth of the whole beaker. I don't know all the details - but somehow the growth in the beaker in these is better than the growth in the individual.

Laura Inouye - when you have a lot of lethality in it, when you do it by individual, the growth gets boosted up high because the remaining animals have more to eat. So the growth in the beaker is more representative.

Teresa Michelsen - it's more representative of the lower overall growth that takes into account the organisms that have died. So that might be one way to still be one way to calculate both endpoints of one test and make it more efficient, given that people are already having to run a long expensive test. The other option is to use the 10-day growth endpoint as sub lethal endpoint, and not say that the sub lethal endpoint has to be the same as the chronic endpoint.

Russ McMillan - say that again?

Teresa Michelsen - you have to have at least one chronic endpoint and one sub lethal endpoint but it doesn't have to necessarily be the same endpoint. That might be another option. But since these tests tend to be run all at once, you could at least get those types of data out of those.

Clay Patmont - I like the option you just described - one chronic endpoint, and separate sub lethal endpoint.

Laura Inouye - in that case, no one is going to run 28 day anything. You won't those more sensitive chronic long term endpoints. If you can run two 10-day assays why would you ever run the 28-day.

Teresa Michelsen - no because you have to run one chronic test and one sub lethal endpoint. And since your chronic tests all give a sub lethal endpoint anyway, you have to do two. That way it relieves the possibility that you don't have to run mortality and growth on the same thing. That

way we can do a 10-day *Chironomus* mortality and growth and a 28-day *Hyalella*. We don't know how this national dialog is going to resolve on the growth endpoint and that will give us a little more flexibility.

Russ McMillan - from my experience in doing bioassays, the fewer you do the greater the problems that you encounter. And I hate to push for the additional expense of doing two 28-days side by side when you are looking at two different endpoints. But if it gives you a more reliable outcome to make decisions on a project, that's a benefit. But it comes at a cost if you've got a big project and a lot of stations. It's deciding on the balance between costs of testing and the benefits of more reliable decision making.

Clay Patmont - could you elaborate on that a little bit? From the standpoint of where you do the bioassays and everything goes well. I agree there are a lot of issues where there's mortality with the growth endpoint. In that case, the test is going to fail, but what about where they pass.

Russ McMillan - I like that everything seems so black and white... But you know you're going to get to that first project when you get results back and they are in the gray. And you get that mortality in that 28-day and look what happens in the growth of those critters.

Teresa Michelsen - if you went to this biomass endpoint, and I think that is where it is going nationally, you might resolve that issue. It's good to leave the door open for that to resolve that issue. Since we are in that transition zone and we don't know what is going to happen. And I'd like to think that sometime we will have a 3rd species to use.

Clay Patmont - might be a while though.

Laura Inouye - actually Virginia has made a lot of improvements since it first came out 10 years ago, and the Great Lakes in using it.

Russ McMillan - we could send our material over to the Great Lakes labs to do. That's what it's coming down to.

Laura Inouye - or do we train up in our area.

Clay Patmont - the overlay I have is that I see a lot of issues in these bioassays at sites – there are some unexplained effects in almost all of them. I think you see it also in the reference areas. The bioassays are unfortunately not the gold standard that we would want. I think they've got some wrinkles in them.

Russ McMillan - for all of the trouble we have been through on all of our projects, I can't disagree. Again it's not black and white. We are entering the gray zone. It helps to maintain flexibility in how we deal with this.

Chance Asher- so are you getting the recommendations that you need?

Russ McMillan - I can just write these up and throw them back at you over the next couple of weeks. We are looking at 3 endpoints, and then the question of how to interpret the chronic endpoint – should it include sub lethal, at least 2 species, we had *Hexagenia* in there.

Glen St Amant - many of the results of your bioassay runs the chronic test with the sub lethal endpoint you get some of the most sensitive values. Is that true?

Teresa Michelsen - not necessarily. That's one of the reasons I would suggest changing that to one chronic test and then a separate bullet, one sub lethal endpoint. Because, with the growth

endpoints in particular there is a lot of variability, and the longer the test the more variability. So a lot of assessments have seen that with the chronic tests, especially the growth endpoint, less so with mortality, are less sensitive than the acute growth test because of the increase of variability. So if you have any sub lethal endpoint in there, the 10-day *Chironomus* growth might be pretty good. And that could be another way of approaching it.

Russ McMillan - one of the things we need to do is to go through the SQS levels for different bioassays and different endpoints to just better understand how sensitive the nonlethal endpoints are compared to the others. I think that will help us understand.

Clay Patmont - do you want to talk about Microtox?

Chance Asher- just to give you a time check you have 25 minutes.

Russ McMillan - okay let's go. So Microtox, one of the options we have moving forward is leaving it in there but to truly decide where does it fit. Is it a chronic bioassay? Or is it a lethal endpoint.

Laura Inouye - it's not lethal endpoint. They are still alive, they are just stressed out. Technically as it is in the rule, it's a chronic and it is a sub lethal endpoint. It's just a weird one.

Russ McMillan - if that were the case, every time I were asked to do a chronic and sub lethal assay I would do Microtox because of the cost.

Teresa Michelsen - that's great for the project proponents but not from an ecological standpoint.

Clay Patmont - we avoid Microtox like the plague. Because a lot of folks don't believe in it. It's either pass or fail.

Teresa Michelsen - I think dredging projects use it a lot.

Laura Inouye - no never.

Teresa Michelsen - let's just take it off.

Russ McMillan - here's one of the options, if there is enough confidence to carry it forward you could find funds to run it concurrently with the normal suite of other bioassays. Just so we get enough results to see if it is performing and maybe what kind of things cause confounding factors.

Teresa Michelsen - but I'm not hearing that anybody wants to use it. There's no demand for this test.

Glen St Amant - you are just talking freshwater.

Teresa Michelsen - we used this test originally because we didn't have any chronic test. It was included in the suite in the 1990s because we didn't have a chronic test, but now we have them. I don't know where you would use this. Maybe if you were in a river system where everything is moving very fast – the river is going to silt in and things will be changing and there isn't time to do a chronic. If you had a really time-critical decision, an emergency or something like that. Maybe that could be a back pocket alternative technology but it doesn't need to be in the rule.

Chance Asher- Glen you asked whether we were just talking about freshwater. That's true – did you have a comment on that.

Glen St Amant - my recollection was that Microtox was used to set several of the AET values in the marine standards. So if you were talking about a broader removal of Microtox it would affect your marine standards – PCB SQS for example.

Teresa Michelsen - Microtox wasn't allowed to create a hit all by itself, because people didn't really trust it. It's actually written into the rule that unlike the other, you can't get a hit just on Microtox.

Glen St Amant - yes it just corroborates.

Russ McMillan - it constitutes an SQS level hit but not a CSL. Chance Asher- so strong opinion from Teresa and Clay. Others have any follow up comments to what you heard about Microtox? Pete, I know you have a definite opinion.

Pete Adolphson- well my opinion – these meetings are to get input from those outside of Ecology. I'm here to hear what they have to say.

Chance Asher- I'm asking if you have follow up questions.

Pete Adolphson- no I don't.

Chance Asher- anyone else.

Pete Rude- is there expectation that there will be a menu – a choice of two of these three? Or will it narrow down ultimately for the rule?

Russ McMillan - we'll have at least one chronic test, and possibly moving this sub lethal endpoint down to its own line.

Teresa Michelsen - yes, just move the sub lethal endpoint down to its own bullet so it is separate than the chronic endpoint.

Russ McMillan - so that's one of the options we might move forward with.

Pete Rude- so the proponents doing the test, they will have a consultant to help them. But how will they decide? Most people just think about what costs the least. Is there a reason that Ecology wouldn't narrow it down for them? Then you would have a more consistent track, and more consistent data over the years.

Russ McMillan - putting something like this in the rule – we might have these kinds of general terms. With guidance in the SAPA that better directs based on recent experience with the bioassays. Clay Patmont - do you think that a good idea? It seems like a kind of flavor of the month approach. Some people like to do the *Hyalella*, some people have more confidence in them. Even more so with marine. Is that really a good idea? Different site managers have different preferences. And I don't think that depends on a statistical analysis, but what happened on their last project – this one seemed to do a little better. It seems like it's too subject to ebbs and flows. I would suggest that we don't leave it up to the site manager to specify. If we are comfortable with these tests, if they are good tests, then leave it up to the proponent to get the recommendation. A lot of time it comes down the bioassay laboratory. If you get a site manager that over specifies the bioassays, you paint yourself into a corner and I think it's unnecessary.

Brad Helland- I'm not clear on what you are advocating.

Clay Patmont - I would steer away from giving the site manager the authority to unequivocally specify a certain test. In my experience it is usually based on the last project they did.

Brad Helland- so are you saying we should specify the tests in the rule?

Pete Rude- keep the menu in the rule, and not in the SAPA. Don't be too prescriptive there.

Clay Patmont - there seemed to be more of a misuse, rather than a use appropriate.

Teresa Michelsen - that is what it was supposed to be originally. You had the menu of tests, these guidelines you had the three endpoints. And it was supposed to be up to the proponent to choose what they wanted to use. That was the original intent, and what is reflected in the rule language. If that is shifted somehow.

Dave Sternberg- speaking for some site managers, there are specific reasons to want specific tests. There different toxicity associated with metals for *Hyalella* and *Chironomus*, different pesticides. You look at the literature you expect to see some differences. So to make the assumption that the site manager doesn't know. They may have DDE, DDT and I want to see what it is going to do the *Chironomus*.

Teresa Michelsen - well in this case you would have to pick a *Chironomus* and a *Hyalella* anyway. So you'd end up with both species we have regardless. So in this case it doesn't matter.

Teresa Michelsen - so this is a really an issue about policy and science. The site manager may have reason to think that a certain test is appropriate but the policy says, the rule says the chronic endpoint is the proponents to choose. Where does Ecology come down on that -that's an internal discussion you need to have with your site managers.

Brad Helland- the way the rule is written, if the site manager doesn't believe that the test is appropriate to demonstrate that, that's a problem.

Teresa Michelsen - then we have a problem with the rule. Then maybe that test shouldn't be in the menu. That's why I'm not advocating having Microtox in the menu because I'm not sure where that fits with being a chronic sub lethal test.

Brad Helland- leave Microtox off.

Teresa Michelsen - I'm just using that as an example. If the site managers are feeling uncomfortable about the appropriateness of the test, then maybe they shouldn't be in the menu.

Russ McMillan - good point. One of the things to keep in mind – you may have an organism that is not particularly sensitive to metals. If you choose to have that at your site, not so much an issue here because we are only choosing from two species. But you could dance around it by choosing species to avoid, what should be representative of the species in the benthic community that are subjected to those metals. If you are hand picking to avoid it. If there is way to put language in the rule to specify how best to represent a broad spectrum of species that are sensitive to the variety of contaminants that you have on site, I'm listening.

Glen St Amant - I guess I don't understand the relevance of that language when you only have two tests.

Teresa Michelsen - no it's not relevant in this case. It's more relevant on a marine site.

Russ McMillan - the hope would be if we had *Hexagenia* added to our suite, then we might...

Glen St Amant - but then would you have to revise the rule annually?

Chance Asher- let's talk about here and now and make sure we get what we need.

Russ McMillan - think I'm done here.

Clay Patmont - so are we going to discuss the reference comparison?

Russ McMillan - the one thing we are thinking here, we'd like to include whatever we can in the rule. I'd like to include the reference/control as a part of our picture. But not necessarily require

reference at every site. The PLP could use reference if they think they could find an appropriate reference. That's what you would have to do – provide appropriate evidence that the reference is suitable and then come back and run the test in comparison to that reference. I think we should maintain that flexibility. Under the circumstances, we might hold somewhat loosely to the values here that we've got for control reference so that we aren't throwing out reference right off the bat if we are too stringent in the control reference.

Teresa Michelsen - I'm having some second thoughts about it. Originally I thought that. But the more I look at the approaches that are starting to be used nationally, we are moving away from the t-test comparisons toward reference envelopes and other ways to make statistical comparisons. It makes these QA limits and comparisons ideas outdated. If we are requiring reference, and reference is going to be a very high bar, there are going to be very few sites that can accomplish that for freshwater. You would have entire rivers that are contaminated and no clean areas in Washington State. And you have other issues that are going to make it very hard to find reference areas for many contaminated areas that meet the standards, at least that RSET has put out. So it's going to be a rare case that a party is going to need to go through that much trouble. But if they do, they probably have a lot of data and then these other methods might be a lot more appropriate than the standard t-test comparisons. In which case I would want to have more flexibility on the reference and how it's interpreted. I'm struggling with this one. Those reference comparisons have never had a strong basis in science, not like the control QA ones that have undergone round robin and other tests. The reference standards are pretty loose. I'm wondering whether we really want to put these in the rule, or put these in the SAPA now and see what develops around reference area comparisons nationally.

Russ McMillan - I'm thinking that the reference envelope approach, we don't have a lot of reference data in our area, but there is a lot from Willamette river. Is that applicable in somewhere like Whatcom County?

Teresa Michelsen - totally not. This is the problem with reference data is that a party is going to have a really good reference area and a fair amount of data from the reference area. In eastern Washington we tried to find uncontaminated areas, and in some cases it was almost impossible. And in western Washington, also have some lakes that are contaminated at a similar level and no real upstream. So you have some serious issues with finding reference sites. And if you do, I think it will be a site with a pretty big data set like Portland harbor or Lower Duwamish.

Clay Patmont - I think that eastern Washington is tougher. In western Washington, not the whole lake is affected, there may be some good data. King County has a really good database for Lake Washington and Lake Sammamish. The reference areas at Lake Sammamish and other lakes, they are not going to meet that reference criteria. A lot of them won't.

Teresa Michelsen - and that's part of what I'm saying. I'm not sure that....

Clay Patmont - I really agree. I've always struggled with the technical basis for having reference criteria when you've already passed the control criteria. You've already determined it's a good test. If something happened to your reference – then you're only conclusion is I don't know what's wrong with that test but I'm going to throw it out. That's always bothered me and

continues to bother me about the marine test. For all intents and purposes, it is collected from a place where it has gone through all the drills, when there are no contaminants, but if the reference sample doesn't pass, it's out of there. And you end up with false positives and end up chasing your tail. Everybody recognizes that it's a problem, but it's in the rule.

Chance Asher- so what is your suggestion Clay?

Clay Patmont - I would take out the reference requirements in the rule.

Teresa Michelsen - I don't have any problem with putting them in the SAPA and also recognizing that there are other reference approaches.

Chance Asher- does anybody else have an opinion on that?

Russ McMillan - so the rest of the QA stuff on our table here is okay to put into the rule.

Teresa Michelsen - what are you going to do when ASTM reduces one of these control limits. I mean that is imminent.

Pete Rude- what is the issue?

Teresa Michelsen - ASTM is about to change all of the QA control numbers for all the tests. When the tests were pretty new, the numbers were pretty loose. But it's turning out that with the recent analysis of lab data, most labs are doing much better. So for every single test we are talking about, not just acute mortality, they are ratcheting down on those control limits. That's going to be in a 2-3 year time frame, which means it will be right after we promulgate these numbers. So I would like to see all this QA stuff go in the SAPA, and the SQS CSL stuff go in the rule. So the SAPA can be updated with the national guidance.

Chance Asher- anyone else have strong opinions about that?

Pete Adolphson- what is the benefit and risk of putting it in the guidance and not in the rule.

Teresa Michelsen - well the rule can refer to the guidance. The rule could refer to the ASTM protocols, it doesn't have to be a separate guidance.

Clay Patmont - but they may not be promulgated by the time we have the rule.

Teresa Michelsen - couldn't they be the current ASTM protocols.

Russ McMillan - just like we refer to PSAMP protocols.

Teresa Michelsen - and those are out of date. And those are only for marine sediments.

Chance Asher- what about something in the rule like ASTM or Ecology approved protocols so that it provides some flexibility for more updated protocols.

Russ McMillan - well that is certainly the benefit of the SAPA – that we can keep updating that on a more frequent basis. There is a lot more flexibility there.

Pete Adolphson- is Russ going to be the one updating the SAPA?

Chance Asher- yes, until he retires.

Chance Asher- I know we are almost out of time and I know Teresa wanted to give an update on her discussions with ODEQ.

Update on ODEQ

Teresa Michelsen - yesterday I went down and did the equivalent of the management team meeting there and also with the toxicology group. As some of you know the toxicologists group has been

ultra conservative. They want to continue using the TELs but the problem is it has an 86% false positive rate. So I went and presented the freshwater report information, but a lot of it was about how long this has been in process, all of the different peer review processes over the last 10-13 years. It originally started in Portland Harbor when Portland Harbor was a state site. So reminding them of some of that history about the floating percentile method. A lot about what Ecology is doing, with this peer review process and the Science Panel, and all the things that Ecology is going through for peer review. And giving them an overview of the reliability analysis, all of the graphs that we put together that were relatively simple to understand to see the tradeoff between the TELs that they are currently using and the floating percentile method. And then the toxicologists group got a chance to present their perspective. And then we had some back and forth discussion. We talked about the technical difference changes that we recently made – why we did that. It was partly in response to their concern that they wanted to use all the tests in the rule. In order to use all the tests we had to make them all reliable. It was a fairly short meeting. Because of that we did not reach a final conclusion. We had the Cleanup Program, the Dredging Program, and the Water Quality Program all there. It looks like Water Quality is ready to sign off. They really want to be working with all of the other federal and state agencies, and dredging in the Columbia River, and have it be consistent. It really sounds like DEQ on the Water Quality side are ready to sign off on this. The Cleanup group is uncomfortable by the toxicologists group opposition, although the toxicologists group seem to be moving more and more towards being comfortable with it as we work through those issues. But the managers still seem to understand the benefits to having more reliable guidelines, to not spend resources on the 86% of sites that are false positives. So they are moving toward a decision, but a lot of this was very technical for them, even though we tried to make it simple and plain language. So they need some time to digest all of this. We are meeting with the RSET workgroup, on June 15th. What happened is that DEQ wants to meet with the RSET workgroup and hear from them before they make their final decision. So I think we will get a positive response but I can't absolutely predict that. We had a pretty positive response when we left it, so now that we've improved it I'm hoping we will have an even more positive response. But if RSET gives it a go, then I think that DEQ will give it a go. One complication is that Keith Johnson, RSET ODEQ Chair, has been pulled over to Air Quality, just like Bruce Hope, and they have to write 30,000 permits. He went over to Air Quality for 1 year, which means a new person will be shepherding this through management team. He's the manager for the Portland Harbor group and he's been pretty involved, and he seems pretty knowledgeable. He attended the management team meeting, he will be at the RSET meeting.

Laura Inouye - Keith is still attending the June 15 RSET meeting.

Teresa Michelsen- yes Keith is still attending the RSET meeting but he won't be at the last management team meeting where they make this final decision. I think the Water Quality Program is there, I think the toxicity group is almost there. One of their issues is that are using sl1 to screen in sites, and we are using the CSL to screen in sites. That's partly a difference in how the two rules are written – they have more conservative language in their rule. Also they

are also maybe looking at rewriting their rule – because it is all written for upland risk assessments – and it's very hard to translate to when you can actually measure toxicity in the sediment, the benthic community, and they've been struggling with that since day one. It was interesting that some of the people that were originally involved in the rule writing said that you know what the lawyers really wanted, they wanted for 50% of the organisms to die. We were going to have an LC50 in the rule. We were trying to put some perspective on this, because it sounds so horrible. But I guess when they were first starting to work on this rule, there was frustration from the community of people –they wanted to see actual effects before we had regulations and not just theoretical effects.

Laura Inouye - not just effects, dead effects.

Teresa Michelsen - so they pulled back from the 50%. Bruce Hope and the others that were there, we got to 20% and that is reasonable. But the tox group says no – that is too much. But I don't even think we can measure 10%. So that's where we've been in this debate – between 10% and 20%. And then we pointed out that those acute tests really aren't setting very many of the guidelines anyway. This whole debate is somewhat moot. It got a little heated toward the end. But we are definitely making progress. It was the first time we had everybody in the same room. Some of the toxic managers are really thinking about being effective and efficient and using the agency's resources wisely. No one in an agency wants to overrule their technical people. But it's an issue of risk management versus risk assessment.

Chance Asher- any last comments on freshwater?

Pete Rude- one of my comments was about sulfide and ammonia having actual criteria. I know there is a lot of background on that. But why is that there. It seems like it could be a real tricky game.

Teresa Michelsen - it's there because the model told us it was important- that it contributed to toxicity in the samples. I've seen that at some sites where ammonia and sulfides were real issues. So it's not at levels that you would typically find in sediments. If they don't have some pretty heavy organic contamination that makes it anaerobic, or adds ammonia and sulfide. To have those higher levels of ammonia and sulfide, it would have to be from something anthropogenic. These are just the numbers that came out of the models, but it's Ecology's choice how many of those to actually put in the rule, and how many of those to require at a site. The model does work best if all the chemicals are included. But that said, you have to make a sensible determination based on the site model of what chemicals make sense for a particular site, those that are likely to be present. If they aren't likely to be present, there's no need to include them in the suite. We can comment on this report, but the report is just a report of what the model says. What I'm interested in is what Ecology is going to do as far as the rule language on these values. I imagine it will parallel the marine standards to a large degree. So they are in there because I tried taking them out and got much poorer predictiveness in terms of predicting toxicity. They clearly have an impact in terms of freshwater environments. Probably should have been in the marine standards too. You asked a lot of good questions about the difference between the marine and the freshwater. Clearly they are different. In my opinion, long ago we should have taken out the PAH. The AET's were developed as they were in 1988 and they

haven't changed. So unless someone wants to update something that really isn't broken, we won't be updating those anytime soon. Although we could. One could take that same data set and make them more consistent.

Russ McMillan - 7-9 new species and endpoints there could be some potential improvement.

Teresa Michelsen - Tom Gries did a lot of work on that but it never made it into rule during our last rule revision attempt. There's definite upgrades that could be made. The differences were there because they were calculated at such different times with such different methods.

Russ McMillan - Pete, are there things that stuck out in your mind how this is going to affect sites. Were there circumstances where you see that being an issue that we should take into consideration whether to include those.

Pete Rude- well those two that Teresa mentioned, I wasn't that familiar with typical background levels in freshwater. And if typical levels are bouncing around each other – then you are back into this – what is the background. And sites that don't have any chemicals, but have a little extra sulfide, all of a sudden they are a site. You seem to have a handle on that.

Teresa Michelsen - well you shouldn't be using this model on any chemicals that are below background or below detection limits, otherwise they wouldn't have come out of the model. Just the way that the model is designed mathematically. I think that nickel is an issue though. In Oregon there is one embayment in particular that has nickel. And he knows that this is going to cause problems for him at those sites. So it looks like nickel varies significantly in different environments and in some environments it may be toxic at levels that are perfectly natural. So I think Ecology is going to have to think about making a blanket statement, raising that level to one that is natural for one area but higher than others. I don't know about that. Maybe we need to put something in there that says if your natural background is higher than this, if you can demonstrate that. I think we already have that in the rule but we may need to make that more explicit.

Chance Asher- in MTCA.

Teresa Michelsen - in MTCA, yes, but maybe we need to make it more explicit in the SMS.

Laura Inouye - for freshwater there's only a reserved narrative – so it's not clear.

Teresa Michelsen - even on the marine side, I don't think it's really clear that if the metals are higher.

Donna- it does have non-anthropogenic background can be used if it is higher than the numeric values.

Teresa Michelsen - yes. It's in a different section, but it's not clear.

Pete Rude- so what's in that report is not necessarily the policy.

Laura Inouye - it's definitely selected that way – a technical report. Policy things will be the notes from these meetings, in the guidance, and the technical documentation.

Pete Rude- another one of my comments – TPH – petroleum hydrocarbons, I know there is a whole world around that. With that as an example, but there are freshwater sites that are in progress right now. What will happen if a project is underway and then there are new rules promulgated, including TPH? Will that site get thrown way back, or will there be a grandfather clause?

Chance Asher- that was brought up in the advisory group as well. We definitely need to have some kind of grandfather clause. If you've got to a certain point and you had legal agreements that had been made, we need to honor that. That's a question that would come up no matter when you were doing a rule.

Pete Adolphson- I'd also like to mention that there's a paradigm in the rule. Hopefully we are following the same one, that if you're bioassays pass, and your TPH is up here – you are still okay. It's not going to change any of my sites. I've done TPH cleanups in freshwater and marine, and I'm currently doing one in marine, it doesn't really do anything. It's going to let you know if you measure TPH, you might have a problem. And PLPs are going say I don't think I have a problem. But if you don't test it you are going to have to clean it up. So everybody does a bioassay that overrides anyway. And some of the locations override and some of them don't.

Glen St Amant - isn't what you are getting at background and what you are measuring as background?

Pete Rude- sort of. It's also more general even then the criteria. It's the bioassays that we use. Pete, I think we might even be thinking about the same site. There's new endpoints – if they don't meet those new endpoints, those could come back.

Pete Adolphson- I don't see the site manager going backward.

Chance Asher- we would need to make a policy call on that and it would need to be a reasonable policy. We are behind...now I need to see if we have any comments from the audience on the freshwater piece.

Audience

Todd Thornburg (Anchor QEA) looking at the previous slide that Russ had up on the interpretive criteria. And I don't think these are new. This is just an observation. A CSL hit is either a higher level of effects in one endpoint or failure of two different endpoints. And that got me thinking back to some of the data that Teresa presented, in which she looked at effects at SQS and CSL levels and the data sets were almost indistinguishable. Whereas there was a lot more difference when you start looking at different endpoints. It seems that those two criteria aren't all that comparable. That's telling us that the CSL interpretive criteria of a hit of two different endpoints is a higher substantive level of effects. It's an observation, I'm not sure what I'm suggesting. But those two criteria are somewhat different, one I think should carry more weight than the other. Just a CSL hit of one endpoint, probably a lot more noise than a hit of two separate endpoints.

Russ McMillan - I hear what you are saying, but when you see a bigger effect in that one endpoint, hopefully you are getting further and further out of the noise. That's one of the things we looked at up front was the magnitude of the effect before we counted it as SQS or CSL. I hear what you are saying. I don't know quite how to respond. One of the thoughts we had was that we didn't want severe effects on any one bioassay or organism that might be representing the benthic community. And that's the reason for that second level.

Laura Inouye - the reliability at the second endpoint was substantially better than the lower endpoint. And I think that's why that is at the CSL. We were fairly certain, it's fairly reliable that you see hits at that level you start seeing impacts. Whereas with the SQS there is a lot more noise around it. That's one of the reasons why – just because you are looking at a more subtle effect at the SQS definition, you wanted a more substantial effect at the CSL ones.

Teresa Michelsen - we didn't do any two hit analysis for the freshwater standards. But it is true that the reliability of the CSL is substantially better. You are up in the 90s instead of 75-80 percent reliability. Those higher level numbers are pretty reliable. The lower level numbers are as reliable but not as certain as the higher ones.

Russ McMillan - that was a surprise looking at the whole thing. If you have any suggestions as to weighted responses looking at 2 SQS hits versus a single CSL hit endpoint – we'd like to hear that. Whether you respond now or get back to this later.

Todd Thornburg- I'll have to think about that some and get back to you.

Chance Asher- need to move on. More comments?

Lunch break

Chance Asher - we will be discussing the bioaccumulatives and ecological risk piece. Dave Sternberg has a presentation. You have very rough draft rule language in the packets for discussion that is based on feedback from you.

Dave Sternberg – went through the information and tried to put it in rule language format as an ecological bioaccumulative narrative. Would like to point out that this is a technical review right now. Not gone through legal or other reviews at this point. The reason I choose that we have quite different environmental issues throughout Washington. Spokane River versus Puget Sound. Huge differences. Therefore that's a one page narrative, not the full eco risk assessment methodologies. As far as bioaccumulative risk narrative, the discussion, want to go through and discuss the narrative. We recognize the comments made in previous mtgs. Focus on the showstopper science and technical issues. That's what we want from everyone. Also want to know if anyone wants to review future guidance, let me know.

Chance Asher – we are trying to have some guidance for this as well as guidance for human health, but human health would be more extensive. The bioaccumulatives for ecological risk would be simpler. Would like to have ready with the rule promulgation but can't guarantee right now. Depends on how much money we get.

Dave Sternberg – four major concerns going through the previous notes. People want guidance to evaluate eco risk. This narrative statement doesn't do that. This addresses the when, when to look at it, not the how-to. Comments related to framework, I will keep all the comments in mind. Different trophic levels, etc. Every site is so different from each other about eco risk assessment, that putting a specific number of trophic levels into rule really wouldn't be appropriate. We want rule language to be broad to cover spectrum of sites. Concerns about costs, are we expanding the spectrum of these chemicals we are looking at. What about human health and background. I

addressed how in the narrative statement, cases where human health determined that the stuff is above background. Probably not need to spend money. Finally, there's a concern about non-bioaccumulative effects. We recognize that it's a potential issue and we put a place holder for addressing it in the future. Recognizing those are potential problems but doesn't go in detail on it. The first paragraph is protection of ecological receptors and really emphasizes the bioaccumulatives. The second concern is that we need the people who do risk assessments and the procedures for it. Really cannot look at the "how-to," this is the "when." We've written the when for the chemicals on Ecology's PBT list, which is available on the website. T Properties that indicate there's a potential problem, such as they have a propensity to bioaccumulate.

Clay Patmont - the Kow at 3.5 is going to...

Dave Sternberg - that just comes from specific RSET values.

Teresa Michelsen – I'd like to propose an alternative but I know you don't have time

Dave Sternberg – this is an example. Would like to hear everyone's comments. This is not set in stone and won't go into rule this way. Just a rough draft. The framework for conducting ERA, the only thing I really went into, is taking some rule language we already had in MTCA concerning individual population level effects and recognizing there are criteria that are in MTCA and understanding that having a little bit of flexibility added to this when it comes to understanding the ecological communities and the species that you are looking at, is probably a good idea. So, we put it in there; instead of looking at nothing but species level, we could actually potentially look at life strategies of organisms. Obviously if you have something that doesn't reach sexual maturity until 10-20 years old, is different than a bug with a totally different reproductive strategy and is producing thousands of offspring, potentially. Understanding with a benthic organism, that if you have a clean area upstream of a dirty area, there's potential for recolonization and to have a little bit of flexibility in that arena, which isn't there in MTCA and so I'm trying to merge the two. The other thing is that we have to be protective of the ecological receptors. Protective of human health and the environment, however, the ecological risk assessments aren't going to be always required in places where you have cleanup levels set at background or based on human health. There may be some basis where it's worth doing that ecological thing because you don't want to go to background, but to leave that option. Like we use sometimes at MTCA sites, we don't want to go through this, it's not worth it, and we will just cleanup to background levels.

Glen St Amant – I see that as making sense for sites where you've got some kind of discrete, known COCs. Risk assessments identify your COCs in some circumstances, but may still need to do ecological risk assessments for certain chemicals before deciding you don't need to do ecological risk assessments. Because you are doing PCBs and PAHs, for example, there may be other chemicals at your site that you may need to run a risk assessment on, the concentrations that exist at the site are at sufficient levels to cause eco risk or unacceptable eco risk. So I don't know how to balance that.

Teresa Michelsen - what would you need to do if you are already cleaning up the site?

Glen St Amant - so that would be the question – if you have a known footprint for PCBs on the PSR example. A known, large footprint for PAHs, a smaller footprint for PCBs, but it is slightly offset. Is cleaning up the PAHs going to take care of your total problem?

Teresa Michelsen – so it’s a footprint issue.

Glen St Amant – yes.

Dave Sternberg – okay, let’s go back.

Glen St Amant – could be an exposure pathway issue...my site has been cleaned up to background for PAHs, on child beach play scenarios, spots here, but it’s not a waterway for nickel or whatever.

Dave Sternberg – you know, I think that any extra comments we can get are going to be really valuable. When we do guidance eventually or do the risk narrative standard. This is just a draft we put together and circulated amongst ourselves in Ecology to make it better but it’s far from perfect. The key concern over non bioaccumulative effects, one thing I can say the comments are recognized and appreciated. And we will really have to address them in the future. But at this point we have to really have to focus this on the bioaccumulatives and we will have that reserved area where we recognize the non bioaccumulative issues.

Chance Asher – but if people have comments about that, if they would like it reiterated so we have it on record we could talk to our management about it, but this is what its limited to, for this discussion today.

Dave Sternberg – and there’s also the other place in the SMS where they talk about chronic effects. So that reference is also applicable here, when it comes to these non bioaccumulative effects. As far as any showstoppers, that’s really what we would like to know. Does anybody see these technical showstoppers? Is anyone thinking- “wow, you really missed something!” I went through this presentation a lot faster than expected.

Teresa Michelsen – could it be not a “showstopper” but still a comment?

Dave Sternberg – yes, we want all the comments we can get.

Teresa Michelsen – I am very pleasantly surprised by this. It will be a vast improvement over what’s in the rule, which is basically nothing. I think it’s a good level of detail. More detail than expected and happy for that. Appreciate that. It could have been a lot shorter and more general than it is. I appreciate this level of detail. A couple of specific comments. One is on the COCs. I would really like Ecology to consider both on the human health side and on the ecological risk side the fact that all of the federal and state agencies have worked together to find these COCs for sediments for 3 regions of the state - for Puget Sound area, for the Columbia river area, for the Walla Walla eastern Washington area. We already have these COCs and they are based on not only these two criteria, so they are consistent with these. But in addition we have done exhaustive reviews on existing sediment and tissue data as well as all human health and ecological risk toxicity data that’s out there to further refine the list of chemicals used and that exist in Washington State. And those found in sediments and tissues. If you just have this language as stated, you would pull in everything. We were trying to focus on which chemicals

are used in eastern Washington and which chemicals are used in Puget Sound. Which chemicals do we actually find in analyzed sediment and tissue?

Chance Asher – Teresa, just for the record, for clarification, when you say “we” please define.

Teresa Michelsen– RSET committee. And also DMMP. DMMP really started this with their list of COCs for Puget Sound.

Laura Inouye – there is the caveat – a whole new slew of chemicals produced and we need to leave a place for the unidentified or new compounds.

Teresa Michelsen – we’ll need to have toxicity data for them before we can really do anything about them. One of our criteria was (RSET) had to have toxicity data to work with those chemicals and the list is updated. So I just hope you’ll consider that that level of effort was really significant.

Among the federal and state agencies and they are good lists.

Chance Asher – can you clarify when you were saying when Ecology’s PBT list versus RSET’s list, I didn’t understand.

Teresa Michelsen – Ecology’s PBT list, and I could be wrong, is a more general list based on chemical properties and RSET lists (multiple lists) is based on that plus actual usage in the state, present in sediment and tissue in the state, and the availability of toxicity data for human health and ecological risk. So if it doesn’t have toxicity data yet, it goes on a secondary list (list b). As soon as we get toxicity data, we’ll move it up from list b to list a. But you can’t work with chemicals and a risk assessment that doesn’t have any toxicity data, so we applied some additional criteria to the PBT list, which is where you would start. To further refine and focus in on the chemicals you would actually find and are used and are present and can be included in a risk assessment.

Pete Adolphson - wondering if something to consider is rather than citing a specific list, look at the set of criteria.

Teresa Michelsen – it is really complicated. I know it might be hard, but you could put it in the guidance for sure.

Pete Adolphson – and have language that’s loose enough to allow us to incorporate some sort of criteria into the rule.

Dave Sternberg – heard 2 ideas. That this has been done – don’t reinvent the wheel, the criteria exist. And the concept of a tiered analysis, where yes, these criteria may exist but the toxicity data don’t.

Teresa Michelsen – those are part of the criteria. RSET actually has four lists, so you have list a, which is everything that is toxic and bioaccumulative and there is toxicity data for them. List b is everything that would meet the criteria if we had toxicity data for them. As soon as we get toxicity data for them, we’ll move them up to list a. List c is “we don’t know” and list d is not a COC but not enough data to say it is not a COC. So every chemical that we’ve found in sediments or tissues is on one of those 4 lists and gets moved, each year according to what we know and Ecology’s part of this group that develops this list. Laura being involved in DMMP, so it just doesn’t make sense to do a whole different, separate list.

Dave Sternberg – so that I understand, is the PBT list is in elsewhere a different rule. Is that equivalent to lists a, b, and c?

Teresa Michelsen – any chemical that's on the PBT list should be on one of the four RSET lists

Dave Sternberg – well, it wouldn't be on the fourth list.

Teresa Michelsen – no, it wouldn't be.

Dave Sternberg – RSET lists are more extensive than the PBT list.

Teresa Michelsen – anything ever detected, we put on one of the four lists. So, just to let you know it is out there and for both human health and ecological risk. This would pull in too many contaminants that we don't have toxicity data for or aren't found in Washington.

Dave Sternberg – Laura and I have had this discussion that we agree that it's just a matter of how to put it in there. We recognize it, but how do you work that? Does anybody have suggestions?

Teresa Michelsen – I'll try to send it in. I think it would be useful just as you put in some general guidelines for the types of endpoints considering, also include general guidelines, types of species you want to look at. Really general, like- resident and anadromous fish, I've got a list and will send it to you. Would be nice so that when people do an ecological risk assessment what they need to consider.

Dave Sternberg –I agree. Just one of these...the more detail we get into that and I know because I do the terrestrial ecological evaluations for the whole state. When we start getting into those lists and we start looking at trophic levels, which ones are we going to look at, we very, very quickly get into an area that needs to be reviewed by the Science Panel. Because then it isn't broad enough. You are missing several things. I think having flexibility that enables us to apply it at a wider variety of sites and use some best professional judgment. We can get in trouble- "oh, we're going to go 2 trophic levels." Well, that's not good enough here. But at another site, that's perfectly acceptable. So yes, I recognize you need to be protective of these types of species and those species may change. Looking at fish eating mammals - other things are going to eat them, potentially. And to have that flexibility.

Teresa Michelsen – yes, but I'd like to have the most obvious ones there, like anadromous fish.

Pete Adolphson – we can provide examples. We don't have to say.

Teresa Michelsen – yes, like examples. They are really helpful in some ways. They show intent. And if they are particularly important examples and this is going to get to my last comment on the reserved sections.

Chance Asher – does anyone else have comments on this? On what Teresa commented on, before we get to the reserved section.

Joanne Snarski – I think the flipside of some of this I'm hearing, is the level of predictability of what you are getting into and I think you are touching on that with the trophic level issue. Because it can be a big world out there and so there has to be limits to how far it can go but has to be useful and meaningful. That's going to be the challenge.

Chance Asher – the balance between being too general and too specific.

Joanne Snarski – yes.

Dave Sternberg – that’s where the difficulty lies, with a narrative statement like the TEE regulations which would take years to develop. There we look at surrogate species as representative and which is a decent approach to do, but now we have got to do that in a narrative statement. It is a challenge.

Clay Patmont – what are you trying to accomplish with this narrative?

Dave Sternberg – I wanted it to be broad enough to capture the sites and this is what you have to look at. And under these circumstances you need to look at and evaluate bioaccumulatives. How we go about doing that is going to have to be looked at in the future in guidance or not in this rule. We just can’t do that. The scope it creates is too large.

Clay Patmont – it would. The initial approach (ideas) I had in going through this, was that would be very few sites that would not get caught up in this requirement. Particularly if...

Dave Sternberg – the thing is it is worthwhile. You always are protective. You have to be protective with human health and the environment. The cases of human health, that’s going to be a driver. Enable you not to.

Chance Asher – let’s let Clay finish his thought.

Clay Patmont – I see where you are trying to go and you are looking down the road when you have the anadromous pulled in, is what I’m hearing. This on its own just provides a little bit of a road map and I think it is a positive thing to do on risk. I’m looking at the interesting point of having this in the rule without/for the period before you have guidance. It’s going to be a slippery slope. There will be lots of interpretations of it.

Pete Adolphson – in your experience, like at the ALCOA site as an example, the rule required us to do this anyway. Kind of little bit nebulous. We are trying to clarify what it actually meant. That’s what this is meant to do, is to say- “you know what, here’s a little bit clearer road map.” It’s not going to be crystal clear. And then we’ve done another step beyond. Which is we need to clarify as time goes on, it will get clearer and clearer, but we didn’t have the opportunity to put all the guidelines in place before ...like getting your foot in the door and making it a little bit clearer compared to what was in the rule previously. I understand your concern about it, being a slippery slope. But it was even more slippery before. So we’re really just putting in little steps.

Chance Asher – to clarify we heard from clay that when we have a narrative like this, we should have some guidance written, when it’s promulgated. Am I hearing that?

Clay Patmont – I tend to look at this like we are at a site where no one in this room is involved. A site manager is trying to work their way through it and doesn’t have much backup and I think there are a lot of those sites. And that kind of situation, I think in a lot of cases like ALCOA, I think we are able to have an intelligent conversation but this kind of language without the supporting information for someone who’s out there, maybe alone, I think that’s the only caveat. I don’t have an answer for it. I can see some folks getting wrapped around the axle about it. Bis-phthalate has got a Kow higher than 3.5 and we don’t really have phthalate data. You need to maybe sample fish and then you, it seems like it has the potential to go awry. That’s why I asked what the intent is. I don’t have an answer for you.

Brad Helland – so almost as much an administrative problem on our end as the rule

Clay Patmont – and it's a staffing issue.

Joanne Snarski – it's an interpretation issue.

Brad Helland – feel free to make that comment.

Chance Asher – to make sure we understand, would the answer be a guidance document?

Clay Patmont – well I think ultimately a guidance doc is what you need.

Joanne Snarski – one thing I would offer is maybe there's an opportunity, I know there's one off ramp identified in here maybe there's an option to clarify other off ramps of what will get you out of there. That's also my understanding with the uplands stuff. And I'm not real proficient on that. But that might be an opportunity to clarify some of the no-brainer things.

Chance Asher – does anyone have suggestions for off ramps? That's a good point.

Teresa Michelsen - I would start with the VCOCs, narrowing those down further. To me that's an off ramp that isn't currently in there.

Clay Patmont – isn't there an alternative using RSET? Aren't there some tissue-level off ramps?

Teresa Michelsen - there are tissue levels...we have target tissue levels that are actually below those levels. You would get an off ramp. Without the guidance document. I'd also point out that we have the list of species for Washington State, as well, so we are way down the road on this. Feel free to borrow and steal. Don't feel like you have to redo it.

Pete Adolphson – I think we had some discussion about borrowing and stealing when we developed our guidance.

Teresa Michelsen – feel free.

Joanne Snarski – does that include all those three regions, Teresa?

Teresa Michelsen – yes, that list of species is more like coastal versus inland, because you will have things like whales and stuff that don't apply to eastern Washington.

Chance Asher – Dave, are there any other issues you want comments on?

Dave Sternberg – not really. Love to figure it out and do all of it. Found it a little overwhelming to try to look at the whole ecological risk, the two volumes from EPA and put it into this. At least the one off ramp. If there's any others that would make sense that would enable people to understand that we are going here for human health. That's going to be the driver. Also be protective of the ecological receptors and its' a balance. Like the Spokane River. We did look at let's make sure its protective of aquatic life. We did go down a path to make sure it was protective of ecological receptors. That was done by the site mangers.

Glen St Amant – I was thinking about additional off ramps. A lot of sites are going to have common ecological receptors and perhaps to the extent you would allow results from an appropriate ecological risk assessment done for another site, when the factors are appropriate (like the receptors and the contaminants) to actually play in and you don't have to do redo an ecological risk assessment for an anadromous species for two sites that are similar. There might be some ways that make sense that you wouldn't sacrifice any of the conservative intents. You wouldn't be creating paper for the sake of creating paper.

Dave Sternberg – from a terrestrial point of view, we have that. One of the ways of looking at toxicity in terms of literature searches- hey, look at this, we found these reputable journals that show

these concentrations at which levels we are not expecting to see a problem. Okay Ecology, that's in document that took years to develop.

Clay Patmont – doesn't Ecology already have that discretion? Thinking of in a marine system the mercury concentrations that we developed up at Bellingham Bay is going to apply to the sites. It's a little different context ...going into a screening level in sediments, below that you can be rest assured it's not of concern, but don't you already have that?

Pete Adolphson – yes, BPJ and data from other locations that are appropriate it just doesn't spell it out. Just wondering if Glen's saying that that might be one of the off ramps that you spell out.

Glen St Amant – yes, I didn't know if you could do this at "site x" you have an individual PAH that you have some fish concerns for. You could say- look, we've done an ecological risk assessment at this other site and we have sufficient information about the concentrations at this site to either screen this in or this out based on the eco risk. We are not going to make you do a separate ecological risk assessment.

Clay Patmont – it would look exactly like the other one.

Glen St Amant – exactly. And that's the attempt of balancing the need for site specific information with moving forward in cleanup in an expeditious way, so we can get to the end game.

Teresa Michelsen – one problem is knowing where to access that information both from the public's side and the site manager's side. Maybe have a central place for some of those risk assessments to go. Like mercury in crabs, identifying the receptors. People could access it, there could be an ecological risk assessment section, a sediments section.

Pete Adolphson – I will mention that we are currently undergoing an ISIS redevelopment which is accessible and any of the reports that are linked to sites will also be hyper-linked to the EIM data and you'll be able to pull up the reports, so if there is an ecological risk assessment done at that site, you should be able to pull that up in PDF form. So all those reports done for site cleanup are now going to be accessible.

Teresa Michelsen – assuming you know where the site is. It might be easier to index by chemical or something. In a really easy way.

Pete Adolphson – that's a possibility, too.

Donna Podger – you have to remember there can be a lot of site specific differences, such as bioavailability, particularly for mercury. Be very careful about taking that study and applying to sites.

Joanne Snarski – I was thinking in the same context, in freshwater context, eastern Washington and all that, potentially a big burden for small communities. There being another emphasis for those important off ramps.

Dave Sternberg - I think working toward some of these...supportive of model risk assessments. I have a couple sites that are contaminated with the same thing and basically really close to each other, same environmental conditions. I think what would be in your best interest to evaluate this however, I think that evaluation is applicable to a number of sites.

Laura Inouye – freshwater hardness can make a huge difference.

Glen St Amant – there are definitely need to be some criteria. Wouldn't be a *de facto* to get to default to on this.

Dave Sternberg – I am supportive. If most factors are the same and can demonstrate that, almost a weight of evidence approach. That toxicity data would say it is alright. The data from this other risk assessment would say it is alright. So we think it's alright. But you are really getting down that line in the guidance where it isn't a one pager anymore.

Teresa Michelsen – I really want to get to this last issue and I know Glen's on the same page. This reserve language is very general. Another case where an example would be good. PAHs affect some fish, particularly endangered species. I think there needs to be a clear recognition in the rule that that particular endpoint is important and we've been skirting around this for a long time and it is never going to get any traction if we don't put it in the rule somehow and probably same with ESA and treaty issues and get it done.

Glen St Amant – I agree with what Teresa said. Because in my mind this significance of the issue, the way we've been considering this, it seems upside down to me it's not that I disagree with the language, but we've been shoving everything under these bioaccumulative labels. We're really talking about effects to other ecological receptors, non-benthic eco risk receptors. So rather than having this buried under bioaccumulative risk narratives there's a subsection it doesn't fit in. It's kind of an afterthought. Can we structure it more appropriately. That's what we're really talking about. There are effects to non-benthic eco risk receptors and bioaccumulative effects and straight effects. Is there a way to structure this in rule language that is more logical?

Teresa Michelsen- I was wondering that too. Like protection of ecological risk receptors.

Chance Asher – just to clarify. We'll take your comments under consideration, but to let you know, it is written this way because this is the issue we identified and got approved through our management that we would deal with bioaccumulative impacts, not necessarily the impacts of other contaminants. So this is why is written this way.

Laura Inouye – one of the big concerns we had, aside from we weren't supposed to go into non-bioaccumulative thing, part of impacts to ecological receptors, RSET's been having this problem too, because NOAA who we've been hoping for 1.5 years to get more input on the PAH issue and the hockey puck model and where the limits and they have gone quiet on it. A matter of workload. They are smashed on their workload and they are having a hard time coming out with guidance on this. Start to see impacts to the fish and a level we think you should the screening level. We are not able to get past that. So would be hard to address in rule.

Glen St Amant - I'm not talking about addressing numeric standards at this point. I think this is gone in a good direction of putting some meat on the bones. Stuff we all knew was there in narrative sense. This is just clarifying the narrative with more narrative. To the extent we can be clear about issues that we know are important. I think that's being honest with everything. We know that's an important issue. Services bring it up and tribes bring it up. So at least acknowledge it and figure out how we address it.

Teresa Michelsen – I can't see how, with my stakeholder hat, Ecology can through management review choose to ignore a critical issue to other agencies and tribes, just because it wasn't on the

original list of issues to discuss. Because it's waiting for another agency to make up its mind about something. This is Ecology's responsibility, it's not necessarily NOAA's responsibility. It's a MTCA requirement and it's a key receptor. And I think when we went through the RSET process, we recognized that it was a key receptor and had to have its box in the framework even if we didn't yet know how to...just like with bioaccumulation and human health, we don't know yet how to back calculate from target tissue levels to sediments. We know we are going to need to do it and we just don't know how yet, but it's still in our framework. Here we need to recognize it explicitly as an important receptor that needs protection, because our current rule actually doesn't include it anywhere and it's a glaring omission and has been for 20 years. So wanted to put that on the record.

Pete Adolphson – can I ask...are you advocating that what we do is we have a separate identified section that talks about non-bioaccumulative risk to non benthic species?

Teresa Michelsen – actually, I prefer Glen's approach. When I did my original comments, I didn't see the little reserved section. But I would like to see protection of ecological receptors and want to put hard trophic level ecological receptors to include fish, wildlife, and birds. Whatever you want to say there, but it's not limited to effects from bioaccumulative toxins. That's the point. Protection of human health which includes carcinogenic and non carcinogenic effects and also direct contact as well as bioaccumulation. We should have the same paradigm for ecological receptors that should include both bioaccumulative and direct contact types of facts. There's no reason to do it differently.

Pete Adolphson – so it's a if we were to take the reserved part and perhaps expand on it and separate it under an ecological risk section and have one part that says bioaccumulative and another part that says non-bioaccumulative. Is that what I'm hearing?

Teresa Michelsen – you could do that. There are different ways you can structure it.

Pete Adolphson –I guess though, my question. This is the part I'm confused about. The reserved section does allow and does very specifically say that you must address non bioaccumulative risks.

Teresa Michelsen – it actually does not say that. It says if we want to do this, we do it on a case by case basis.

Pete Adolphson – right, in other words, just like human health, just like the reserve part of human health.

Teresa Michelsen – which has been continuously ignored.

Chance Asher – we will have to move on.

Teresa Michelsen – stuff that's in the reserved sections gets ignored.

Chance Asher – we've heard clearly what you guys like and I think we understand the questions that Pete is asking, but let's move on. Clay has comments we and need to allow the audience to comment as well.

Clay Patmont – I think the new language you've got in here actually does make sense. I'm not a risk assessment expert on this but I know this is the subject of a lot of controversy. And I don't believe its anywhere near the unequivocal sort of a glaring omission, I think it's a tough issue to

deal with. And I think the fact that NOAA has not come forward on RSET, I don't know exactly what that's about but There's a lot of competing science out there on this topic and I can't begin to interpret it but I would say you have your hands full with what you've...this could be a Pandora's box. I think there's a lot of people with a lot of resources that aren't represented here today but this has been the topic of a lot of debate a lot of NRDA issues that are turning on this. Seems like of the things you would choose from this to carry forward, yes it is an issue, but I'd say it's a future issue. Maybe RSET or someone else takes the first step or because I don't think the 1st step has been taken yet. I'd say this is good but you can adapt. If things change you can pull that out.

Chance Asher – anyone else want to comment on the narrative before we allow the audience to weigh in?

Glen St Amant – I guess I want to follow up on something Clay said. To the extent the SMS are considered part of Washington's water quality standards, its reviewed as a water quality standard gets subject to PSA review. I think it's important to at least have a place to address effects for threatened and endangered species. I know it's controversial. I'm familiar with the debates. But I think it's important to have at least a placeholder to address the issue and maybe you, for "site x" you don't have enough evidence to make a decision on that but you have evidence based on some other actions you will take that feel like your approach is sufficiently protective. But I think it's important to have an index in there for discussion.

Clay Patmont – in terms of what's in here now, do you think that it allows that? It gives Ecology discretion to do exactly what you are talking about.

Glen St Amant - I don't disagree that it gives Ecology discretion. I don't think it tells Ecology it should look at. I'm not prescribing Ecology has to make cleanup decision based on it. I think it's important that they at least address it square on, rather than "you can address it." It's a little too squishy for me right now.

Chance Asher – I'd like to allow the audience a chance to comment. Heather has to leave early, so Heather...

Heather Trim – thank you. So obviously very pleased with this new language you've got in here. And I have two comments. One is that there needs to be room for emerging chemicals and think there should be explicit language to allow room for that. The second thing is the criteria that Teresa mentioned. I would very much object to the criteria of using "common use" in Washington State. Two reasons. I used to be a regulator in California in the early days of working on MTBE in groundwater and that was a proprietary chemical even through there was plenty of toxicity data on it and we discovered it only because people did scans. It was not being reported. Started seeing it in our drinking water wells. So the companies are not going to let us know what chemicals might be out there. We don't even have good data on pesticides. A good example right now are the dispersants being used in the gulf and they have these proprietary chemicals lists. I think that criteria should not be in the rules.

Teresa Michelsen – just to clarify, we didn't actually use that to put them on or off the list. It was more informational to search for chemicals we might already have on our list. It was to add to our list, not to take anything off our list.

Heather Trim – best not to have it on there. Makes people or just not. Allow room for things that are out there that we don't know about yet that could be toxic.

Teresa Michelsen – yes.

Denice Taylor – in looking at this language, I'm wondering is if we lose a big picture of accumulative effects. It seems to get into specific contaminants and dealing with contaminants one by one. I'm wondering if we are losing the ability to look at the overall accumulative effects on sites and also looking at the idea of cleanup levels. Does this need to be broadened to include clean up objectives and goals for our sites where we are going to default to background levels. How do we still keep in front of us that the objectives and goals of a cleanup is also protection of the ecological receptors. If there are not specific cleanup levels set for ecological receptors.

Chance Asher – do you need more time for comments? We only have a week. How about June 15?

Glen St Amant – really appreciate the effort. This is helpful.

Chance Asher – ok. We will move on to the integration piece. You guys had a chance to look at and send comments on the terms and definitions. So incorporated those comments. Pete and Donna will discuss that. Pete will start out talking on a different issue. Would like to know what you think – we haven't settled on it yet. Still in internal discussions.

MTCA/SMS Integration

Pete Adolphson – I'm starting with the SMS cleanup goal and how to address meeting the cleanup goal that's peppered throughout the rule. Then will go through the terms and definitions. I tried to incorporate as many comments as possible and will give you rationale as to why I did not incorporate some of the other comments. Hopefully you'll understand my rationale and we can further discuss. Let me start out with the "cleanup goal." What was in the original issue paper said cleanup timeline rather than cleanup goal. I changed it to "goal" because it's essentially related to all the portions in the rule which refer to cleanup trying to meet as closely as possible the SQS level. And there are some portions in the rule which seem to be in conflict with one another but we believe that if you go through each one of the bullets under cleanup goal, you'll understand the modifications. At the bottom, it says current language under section 570 that's the current language then there's proposed language underneath that. Let me go through where it says under current language under section 570. Minimum cleanup level- the minimum cleanup level is the maximum allowed chemical concentration and level of biological effects permissible at the cleanup site to be achieved (and here's the key part) by year ten after completion of the active cleanup action. Ecology doesn't think the intent of the SMS is to meet the CSL because that's how you actually identify how a site is a site. It should be the SQS. That doesn't mean you are going to cleanup to SQS after the cleanup action, it means you should meet that potentially 10 years later if there's natural attenuation, that sort of thing, if it's going on. But if you also notice, one of the definitions we went through that I added to the rule, was "active cleanup action" because that wasn't anywhere and I think that needed clarifying. That's why I did that

because this part needed clarifying. Donna did a nice job of incorporating and she'll go through this in her section, modification of the definition of minimum cleanup level to change the wording because it didn't make sense and then some of the modifications to that. The proposed language- maximum allowable level. The maximum allowable level (MAL) (formerly "minimum cleanup level")

Donna Podger – no, no, it's different. It's not formerly the minimum cleanup level it's a different thing. It's different.

Pete Adolphson – yes, it is different.

Donna Podger – it's not just the words, this does not refer to -520.

Pete Adolphson – no, it's under -570(3), right?

Donna Podger – right. I'll show you when we get to my section. Don't say it's formerly known cleanup level.

Teresa Michelsen – that's what it said.

Pete Adolphson – obviously we need to coordinate on this.

Joanne Snarski – read it without that.

Pete Adolphson – the maximum allowable level or the MAL is the maximum allowed chemical concentration level of biological effects that is permissible at a site after completion of the active cleanup action. So I took out the 10 year part, so that after the active cleanup action the CSL must be met. This is the upper end of the range for setting cleanup standards. So I want to flip through to page 4 where it says active cleanup action. Those activities requiring physical implementation whose intent is to result in meeting the cleanup standard. Actions include but are not limited to dredging and capping. Passive action such as natural attenuation, natural recovery and other time dependent actions are not included. The active actions are dredging, capping, etc. That you are taking an active role in. Doesn't include natural capping that occurs at a site. You allow time to go by to see if the top 10 cm begins to meet those SQS criteria over time. That was the intent of the SMS.

Teresa Michelsen – this is a really small question, but you've got chemical concentration and local biological effects but none of that was already in there but that would imply that you have to meet both. If we are using biological override, it should be an "or."

Brad Helland – that should be an "or."

Pete Adolphson – you are correct, that should be an "or."

Teresa Michelsen – otherwise I love the change in terminology. The minimum cleanup level was crazy this is so much clearer.

Pete Adolphson – let me also do something else. I want to do a couple of other things. The intent of the rule is one thing. We realize there is practicality associated with that intent. There are some sites you are not going to be able to meet that. Go to second bullet at top of first page. It says to allow for extended time frame if certain conditions are met. That's still the case. So those conditions occur at a site, you are not going to meet the cleanup standard at the site within that 10 year timeframe or even immediately after the action. The other thing we included was this maximum allowable level is going to include not only the benthic cleanup level but also the

human health and also the ecorisk and so Donna is going to go through that. We recognize, especially for human health, that you are not going to be able to meet all of those. We haven't included this in rule yet but we've talked about it. There may be a requirement in a section somewhere in rule that talks about technical feasibility. For example, we cannot cap or dredge all of Puget Sound for dioxin – this is an issue because it's above Natural Background (MTCA definition) throughout Puget Sound. So it may be we have to address something like that. I didn't want people to get wrapped around the axle about “how are you going to meet that” when you have these other requirements.

Clay Patmont – I think this is huge. I think for the benthic thing, the reason this is in here is we had a bunch of sites that couldn't get to the current CSL even after cleanup and there was an expectation it would take 10 years. The way we are talking about regional background and depending on what happens there. I think you can have, almost every case is going to require an extended timeframe.

Chance Asher – yes, that's the question we want to talk about.

Clay Patmont – kind of need the answer to that first. But the way we are going, I don't think this is workable.

Joanne Snarski – well, that's been my question that I wrote. Does the MAL equal the regional background? Or can it?

Pete Adolphson – these are the questions I think will be answered when Donna goes through her presentation. I think rather than answering all these questions, I think it will expedite progress if we allow her to explain it. You might have questions after that, but a lot of them might be answered.

Donna Podger – do you want me to jump in now?

Pete Adolphson – I think we could go through yours rather than the definitions now then we can follow up with the definitions.

Joanne Snarski – but do more definitions pertain to what she's going to talk about?

Pete Adolphson – no. They are independent.

Chance Asher – through the questions you all just addressed, I think we need to be looking at the timeframe not necessarily the intent to the rule. How do you meet that intent in the timeframe we are talking about? That's what we'd like to hear from you.

Teresa Michelsen – so my response is twofold. One, maximum allowable level is way clearer than minimum cleanup level. I think it's cleaner in the rule to separate the action numeric standard from the timeframe. They are both issues but it's cleaner to separate them. Say here's the standard and here's the timeframe and the different conditions under which you might need these timeframes. They are really two different things and I like separating them.

Donna Podger – what I'm going to talk about is the terminology for sediment cleanup standards and potential changes. Really tied to the structure of the rule, so will also talk about the structure of the rule. Mainly about terminology and structure. This is the current structure of the rule. We have 3 different sections with different purposes and each one of them refers to two different levels of criteria. We have the one level of criteria with 3 different names. Section -520, if you

look at that section, it says “cleanup screening levels” and “minimum cleanup levels”. It’s completely redundant, the two names. So this is the current structure of the sediment cleanup standards. You guys know all this. Your sediment cleanup standards are set within a range. The bottom of that range is called the “sediment cleanup objective” and the top of that range is the “maximum allowable” or “minimum cleanup level,” it’s referring to the 520 section of the rule that describes the minimum cleanup level and has effects based concentrations. Some are narratives and some are numeric and non-anthropogenic background and it’s the same structure with the sediment quality standards in -320. So right now what the rule says is the bottom end of the range equals the SQS and the top edge of the range is called the minimum cleanup level. From our previous conversation, our rule revision is focused on the section -570. That’s what we’ve been constrained to work on. That has a lot to do with how we have to structure the revisions. Here’s some of the terminology. Add a couple of terms that are familiar in MTCA such as “remediation level” and making “sediment cleanup level” and “sediment cleanup standard” two different things like MTCA has a cleanup level and a cleanup standard, then talk about the SMS unique terminology. The criteria right now we have the duplicate names for “cleanup screening levels” and “minimum cleanup level” in section -520 and we are going to get rid of “minimum cleanup level” in section -520 and just call it “cleanup screening level” and then the range for the cleanup levels is going to the top of the bottom of the range. “Sediment cleanup objective” is already there. We’re going to keep that the same. The top of the range will be “maximum allowable level.” In section 570, this is currently how they are done. The top of the range is described in -570(2), a new term - “maximum allowable level.” And then our goal we are trying to achieve is our “sediment cleanup objective” will still be in -570(3) and in -570(4) we will talk about both the “sediment cleanup level” and the “sediment cleanup standard.” So that’s what you have to achieve at your site. The difference between these being this is a concentration deemed protective and this is a concentration for a compliance point, plus ARARs.

Teresa Michelsen – wait, go through that again.

Donna Podger – you could look in your paper, too. They have the definitions in there. I took the definitions straight out of MTCA, so the cleanup levels are actually the concentration. The sediment cleanup standard is equivalent to the MTCA cleanup standard. It’s the cleanup level plus the point of compliance for that cleanup level plus ARARs.

Teresa Michelsen – it doesn’t yet have a timeframe?

Donna Podger – no. And then remediation level is the same idea as in MTCA. It’s more about triggering an action. It can be set anywhere about the sediment cleanup level. It’s by definition above the cleanup level. But it’s more about the action you choose to select. So those definitions are in there. Let me show you this in a little more detail than how this fits together with the narratives we’ve been talking about and these are generic. The details aren’t clear yet. So your sediment cleanup objective is now going to be the highest of either your effects based concentration, background, or PQL. And I’m just saying right there, background. We’ve been talking about natural background being this lower level. And then your effects based

concentration is the lowest of either the sediment quality standard, which is your benthic or your other deleterious substance or your human health narrative or your ecological narrative or other state and federal regulations. So the lowest of these gives you an effects based concentration and the highest that is below background you would need to use background or PQL. It's the same structure on the top here, except we are falling upon this cleanup screening level (section 520) and this background narrative may be the regional background narrative we've been talking about. I'm not describing what this is right now because this is more about terminology and structure than details of what these different things are. So that's the new terminology and how it fits together.

Teresa Michelsen – strikes me that occasionally for sediments your remediation level might be below your sediment cleanup standard for a couple of reasons. One is you might be allowing for some recontamination. Seems like you might want to start off with the lower if you want to achieve that cleanup standard over time. The other thing is sometimes it's just not convenient to dredge down to native. So even if the standard is somewhere in the middle and you are worried about potential summary contamination from shipping activities, the most convenient thing is to dredge down to native so that after active remediation you are demonstrating you are at native. That's your remediation level. You are showing you got down to native but the actual standard is higher than that. So over time, if you are monitoring or looking at the site later, there's a little bit of room there for vessel emissions or stormwater or something. Doesn't have to stay perfect, because that's what you remediated it to. So I would actually open up just because sediment remediation is different from upland remediation, there's always this dynamic with things changing. There might be occasions of cleaning up to less than your actual cleanup standard.

Donna Podger – right now it's in the MTCA definition, so you are saying we should probably take that out.

Teresa Michelsen – I don't know you need to say one way or other that your remediation level is what your actively cleaning up to, that you could just leave it at that without specifying whether its greater than or equal to.

Pete Adolphson – your actual action versus your goal. They are a little bit different.

Teresa Michelsen – right, could be higher than or lower than or equal to.

Donna Podger – does this make sense? Are people following this?

Clay Patmont – I think this is what we've been talking about. Yes. The elephant in the room is the fact that your background narrative is going to be unachievable. Call it what you want but for PCBs and dioxins for the majority of our sites, we're going to have levels that are below a widespread area. Remediation levels - this is at a level of complexity that we are never going to care about. There's going to be much bigger issue to deal with.

Teresa Michelsen –structurally, it is what we've been talking about. It flows from the rule and the requirements.

Glen St Amant – can see if we get two background narratives in here. You got natural background and you've got regional background.

Pete Adolphson – does it make sense that we are crossing t's and dotting i's? Does the sentence make sense?

Teresa Michelsen – you have to do both.

Brad Helland – the terminology is helpful. My question about it. When you get to the far right column where you have both the MAL and CSL, there's two different levels. But in the right hand column, still not clear how they are two different levels. Lowest of effects based. So how does that work essentially without trying to pin it down?

Teresa Michelsen – they might collapse.

Donna Podger – it could be that these narratives are the same at both the top and the bottom and what would make it different. Kind of what we've been talking about. This background narrative maybe natural background.

Brad Helland –whether we are potentially picking human health narrative, for example, could look at the EPA range instead of what we have in MTCA. When you are looking at these and trying to bracket the range, probably doesn't make a lot of differences in a lot of cases. I understand that. But conceptually, the right hand boxes could be different for the two different terms... or something else, they still may be equal, understood.

Donna Podger – that's an option. Yes.

Brad Helland – likewise the bioaccumulative narrative, the high level effects

Laura Inouye – it doesn't say

Clay Patmont – until we resolve that, these are all words that hopefully describe it. But we are all here, at least I'm here because we have a big, big issue in this human health narrative and how you define background. Are you going to propose a change that you meet that at the completion of cleanup? I just think we should focus on what we are really doing. This doesn't actually help.

Pete Adolphson – I think I know what you are seeing in your mind. You're seeing very specific . There are sites that you would end up going to background, there are sites you don't. You know that. And this is the formulation of how we have to address the human health and the bioaccumulation along with the benthic. That's how we've put it all together. And now we've had to have this maximum allowable level, so what we're doing is we are just formulating this. We haven't made a decision on it yet. We're still working through those which is why these are placeholders.

Teresa Michelsen – I want to moderate this a little bit. I totally hear what you are saying. You're focusing on the key issues but I also think you have to have this structure clearly defined and this is the first time it has been. I think it's exactly right and so when you go in and plug in your issues, then that will help Ecology see what would be the effect of this or that. Because the structure is right and if the structure wasn't defined, we wouldn't be able to do the what-ifs as clearly.

Clay Patmont – my only real comments. I think the structure is totally right and it's helpful. Can you come up with another term besides MAL? It's a subliminal message.

Chance Asher – can we go back to your point because this is the crux of why we are having this external discussion about why the intent of the rule, the wording in the rule, the “at 10 years

phrase” doesn’t jive with the intent of the rule. So let’s think about what you were saying about the concern about having to meet a background value whether regional or natural after the cleanup action that would be your required standard. But separate,, as Teresa mentioned the possibility of having a timeframe separate from the intent of the rule.

Pete Adolphson – and the technical and feasibility issues.

Chance Asher – and the technical and feasibility issues which we already have it already written into rule. It’s just not clear it’s a technical and feasibility issue. But can we somehow use a timeframe and the technical feasibility issue to meet a standard with a certain point, with the intent you would meet, you’d have a maximum that you’d have to meet. That would be the intent of the rule, because it is the intent of the rule. But that there are some off ramps and time frame if you met certain criteria or a technical feasibility.

Pete Adolphson – and if, for example, you establish equilibrium both for a 30 year period. Nothing’s changing. That then that would be an example of the technical feasibility.

Chance Asher – or is it necessary to worry about this?

Brad Helland – you have to meet it right afterwards.

Clay Patmont – there’s 3 or 4 things here. I think technical feasibility, if done through EPA’s side, TI waivers, EPA can’t agree as to what they are.

Chance Asher – well, we’re not really saying a TI waiver. We’re saying how do you bring in the technical feasibility piece?

Clay Patmont – how would you define what’s technically infeasible versus technically impractical versus disproportionate costs versus sending 4 or 5 companies into bankruptcy. These are tough questions. The technical infeasibility analysis, I would caution, it’s fraught with...

Pete Adolphson – remember we are not EPA

Clay Patmont – the timeframe. I think many of us have this perspective that if we set a regional background as the standard for our MAL, I think the majority of the sites, it will not be achieved. No way, within 10 years.

Chance Asher – can you clarify that. Do you mean maintained or achieved?

Clay Patmont – you can clean them up to whatever level, you can dredge to native and cap and within 2-3 years it is right back to ambient.

Chance Asher – so, let’s deal with that piece first. So they can meet the standard. The question is, can they maintain the standard and that goes back to the issues we’ve all been talking about, about recontamination and who is responsible or liable for recontamination of a site?

Teresa Michelsen – and could they get a liability buy off?

Chance Asher – what we’ve heard from you guys is that the PLP, if they take care of their “schmutz”, then there should be some type of settlement for them. If the site gets recontaminated from, say stormwater that is not from the PLP, they are not responsible for it. Hold on to that thought.

Brad Helland – I don’t think you can meet the “standard” by cleaning up to a level you know you cannot attain.

Chance Asher – maintain, you mean?

Brad Helland - maintain equals attain, in my mind. I don't see how you would ever give anybody any kind of settlement or agree or even push them. Can you imagine trying to get your clients to dredge to something, knowing it's going to recontaminate. Well, as long as it's not yours, it will be okay.

Clay Patmont – it's almost a non-starter. And that's the problem with the way we are going.

Brad Helland – I don't think it would actually pass the threshold criteria in MTCA, really.

Joanne Snarski – just to clarify the threshold criteria.

Brad Helland – I don't think that a remedy that says clean it up to here and it's going to come back to her even though the protective level is down here, it doesn't pass the protectiveness threshold criteria. That would be my position.

Teresa Michelsen – well, maximum cleanup level? Just a thought. The timeframe. So I suggest that you simplify the rule by eliminating the 10 year timeframe. When we first developed that, it was based on benthic, our notions of how long we were willing to allow benthic recovery to take. In the subsequent years, since the rule first written, we've found that benthic recovery is usually faster than that. If the site is truly clean, its 3 to 5 years. So the 10 year time frame isn't that relevant for its original purpose. And we know it won't necessarily be adequate for this purpose. I think, like Clay, the recovery timeframe for some of these issues, like those with regional stormwater, are going to be much longer than 10 years. So I would suggest simplifying the rule, taking out the 10 year that's in there now and continuing to allow for some form of time. But instead of 10 year category and criteria that allow you to go beyond 10 years. Because the 10 years are official and are really relevant to our original purpose. Just take that out. Having one consideration of timeframes based on certain criteria that you use to determine that timeframe but not necessarily specify that you get up to 10 years or it cannot be longer than 10 years.

Chance Asher – so, an Ecology-approved timeframe?

Teresa Michelsen – yes. Something simple because at a truly benthic site, it could be 5 years. At another site with continued stormwater inputs, where we know the city has a 50 year plan to achieve that goal, it could be 50 years. But it has to be based on site specific considerations.

Pete Adolphson – I have some concern over that from a legal perspective. The AGs office is always looking for potential issues. If we are not consistent in how we apply a very defined set of criteria up front, that is identified in rule as to how we do that, then we could go willy-nilly and allow someone 50 years and allow someone else 5 years. The 10 years was good because it established a goal for that cleanup area and if you have a monitoring plan and if nothing happens over years 1, 3, 5, etc, and nothing's happening, then you can take additional active remediation. There's no natural capping occurring, there's no recovery, otherwise I'm not sure what your action should be.

Teresa Michelsen – I'd rather see narrative criteria that would define that timeframe than an artificial timeframe that doesn't actually do what we originally intended it to do and just creates divisions and complexity in the rule. I understand your issue.

Brad Helland – reasonable goal restoration timeframe

Teresa Michelsen – but then taking into consideration x, y, and z.

Glen St Amant – maybe you are complicating this, but I do have some concern with these more complex sites. Throwing the baby out with the bathwater. Where you got your bioaccumulative fish issues that are going to be background driven, you have, I think legitimately long term timeframe issues. You also have some areas within the site that you are cleaning up to protect eco receptors and I don't want those to get lost in the same time frame. There's no reason those sites can't be cleaned up and shouldn't be cleaned up. And are feasible to remain clean by those standards within that larger site. I'm nervous that we're using too big of a brush here.

Clay Patmont – that's a good point.

Teresa Michelsen – that's a really good point.

Clay Patmont – 10 years, remember for those who were around, it was an RI/FS. Trying to forecast what happens, it could take a year, maybe two more years to get to the end of that evaluation, to a cleanup plan. You need to go through a year or two of permitting then do your construction and there's a temporary impact there. Then actually get back to the natural recovery period. That was the rationale, the time period to get through a decision process, design, permitting, and cleanup, then recovery equals about ten years. That's where the 10 years came from.

Glen St Amant – and in reality, with some of the Lower Duwamish scenarios, that really needs 30-40 years from today.

Brad Helland – because different projects are going to go at different times. I would submit that you could and maybe it needs to be written down somehow, you could address exactly what you are talking about with interim actions. We're not going to wait until the paint is dry. It can be addressed. The other question is whether you say something about it in the rule revision.

Pete Adolphson – yes, otherwise, how do you get somebody to do it if they've got time.

Glen St Amant – that's what I was nervous about, this broader discussion is appropriate particularly relevant to the background issues but timeframe effects a lot of things.

Chance Asher – and it speaks to the intent of the rule.

Teresa Michelsen – so instead of trying to smush everything into one SQO, or whatever you want to call them, you have different ones for different site units. Maybe we really need to go back to that consideration, that we've got different site units that have different driving factors and different cleanup standards with different timeframes.

Donna Podger – I think that's in this section already.

Chance Asher – yes, it's written in the rule.

Teresa Michelsen – different cleanup standards.

Chance Asher – let's go through the rest of the terminology and definitions and then we could come back to see what we need to wrap up.

Donna Podger – is everybody ok with adding the MTCA remediation level and cleanup level standard?

Teresa Michelsen – that was the goal, wasn't it?

Donna Podger – it's adding even more terms. Is that okay?

Teresa Michelsen – since they are the same terms for the site managers that move from upland sites, it's really important to have the same terminology.

Pete Adolphson – it is. Plus the integration term.

Joanne Snarski – okay, I'm having a problem. What is OTRBDS?

Chance Asher – oh, that just the other toxic, radioactive, biological, deleterious substances phrase in the SMS.

Pete Adolphson – okay, let's go through these definitions. I'm going to go fast. I received a number of comments on the definitions. I tried to incorporate the comments. And it was somewhat stressful to try to determine if I should keep the definitions that I had included and then discard some other ones. Even got some additional comments from Russ. I'll see if I can explain what I'm thinking on these. The definition of bioassay was extensive but confusing. Whether or not it was necessary for consistency with what bioassays actually are versus what they've always become known to be in the rule is what the issue became. I looked at bioassay the way it was defined in the rule. It really doesn't cover all bioassays. Any kind of biological assessment (e.g., tissue analysis) and the original definition did not include all biological assessment. It included toxicity tests, essentially. So the original definition meant toxicity test. So I said, let's redefine this appropriately, the way the literature uses them. Russ thought, and I think it's probably true, he thought that everyone has come to learn what these terms mean based upon what was written in the rule rather than what was written in literature.

Teresa Michelsen – I see that exact same thing.

Pete Adolphson – so yes. So why change it? So that's why a lot of these say retain for discussion. Do not eliminate, open for discussion. So that's the basis for potentially retaining the old definition of bioassay as well as where it says biological toxicity test, not even using that because that's not anywhere in the rule. And not replacing appropriate biological test term, because that was inclusive of benthic community analysis as well as the toxicity tests, which are called bioassays in the rule. And then potentially discarding chronic bioassays and just leaving the definition of chronic in the rule, the way it is. I did make some modifications based on comments on chronic bioassay, but I'm not even sure if we should include that now. Same thing with acute bioassay. Maybe just retain acute, the way it is currently in the rule.

Brad Helland – can you speak to what value you think you are adding by making a change?

Pete Adolphson – if someone outside of Washington were to come in from a bioassay lab, like me, and read these, they would wonder what they meant. The way they were defined, they just were not appropriate according to what's in the literature. If you read ASTM, it's just not right. I thought it would help to avoid confusion. But I also thought people are already using the rule.

Teresa Michelsen – can I comment on the chronic and acute? I do think it's important to define "chronic bioassays" and "acute bioassays" without the effects as Russ pointed out earlier. Different terminology for the bioassays and the effects is really helpful. I would keep these because there's been a lot of confusion about chronic bioassays versus chronic effects in the past, so the short versions of acute and chronic I really like.

Joanne Snarski – to be clear, you are saying the original versions?

Teresa Michelsen – the new definition, the short version for chronic bioassay and acute bioassay I like better. They just say these are biological assessments that are long or short with respect to the lifespan of the organisms.

Joanne Snarski – I want to back up. My comment to bioassay. When I read it, I read that it could potentially be opening things up to all these endless studies and tests that we don't have standards for. Because you are saying, perform the bioassays now. Bioassays have this huge definition and we can see where we're going and the tests for freshwater. And I think we would do the same. Did you have that intent to open the door to all these tests?

Pete Adolphson – no, what was intended to do was, if for example we wanted to assess whether or not trophic levels were being affected. We could do a tissue biological assessment, take the samples, analyze the tissue, that sort of thing, and that would be included. Whereas in the rule it limits it to toxicity tests.

Joanne Snarski – right. And I understand that and there's some good logic in it, but this may overlap with Clay's earlier comment on ecological risk assessment. What are the right tests? What do we understand about it? What levels are we trying to pursue.

Pete Adolphson – right. Which is different from the definition. I was just defining what that word meant.

Joanne Snarski – right. But there's reference to doing bioassays.

Teresa Michelsen – you are making a definition in the context of a rule which is different from other definitions.

Joanne Snarski – correct.

Pete Adolphson – and I looked at all the references to the word bioassay in the rule and whether or not this would fit appropriately and

Chance Asher – let's move the discussion, because I think we actually addressed it.

Joanne Snarski – I want to hear his answer to what he was just saying. He was just going down the path of what I wanted to hear.

Pete Adolphson – I was looking at the context of the rule and whether or not this new term would fit in all those locations.

Joanne Snarski – changed any of those meanings.

Pete Adolphson – right. It does not. It still says, when it says bioassay and it says which bioassays to use, it doesn't open up the door. It says use these bioassays.

Joanne Snarski – it doesn't say it singularly as bioassay. Ok.

Pete Adolphson – this rule still says, you use these toxicity tests.

Joanne Snarski – ok, so it's very specific when it's referenced.

Pete Adolphson – correct.

Joanne Snarski – okay, that answers my question, Chance.

Brad Helland – and there still is latitude to do other things?

Pete Adolphson – correct and the rule already says that, too. It wouldn't change that.

Joanne Snarski – okay, that's helpful.

Pete Adolphson – okay, so I'm going to go to the definition of sediment. There are a couple of changes in here based on comments. These were actually Russ's comments. I thought they were good comments. Russ wanted to make sure we addressed both marine and freshwater environments and what level we were talking about as well as ephemeral systems, which is what my concern has always been. Upland site managers will just use soil for ephemeral areas whenever they feel it's dry. So that's why this is an issue. You had some comments about whether or not it would include outfall pipes and sediment/outfall pipes, aeration stabilization basins, things like that. And my response to that is we usually address those because they are a source. You normally don't go up pipe, but if you have a settling basin, you do want to ensure that stuff/sediment (according to the definition) doesn't end up in the open environment. So you do want to address those particles. If they are contaminated, they don't end up in the environment. And so I didn't want to eliminate a manmade structure if it was open to a non manmade structure, a river system or something like that. That's why I kept it.

Brad Helland – we probably need to be more clear about body of water, it implies waters of the state. Does that really matter?

Pete Adolphson – no. Because you should be able to ensure in a cleanup site that they do not have sediment loads that are coming out of their system.

Brad Helland – I understand your intent. My question is whether you want to consider, for example, a stormwater retention facility that is a large basin. That's not really a body of water, but you are implying that it is.

Pete Adolphson – well, I'll give you an example. Aeration stabilization basin, Bellingham Bay. 28 acres. Went up there and looked at it; ducks are using it. There's all kinds of water fowl using it, there are insects in it, so it is open to the environment. They are carrying that toxic stuff off they are getting impacted by it, that sort of thing. So those are water bodies that are not natural but they are open to the environment. They are not completely sealed. Now if they are completely sealed and there's nothing coming out of them, that would qualify for not meeting the sediment piece, I suppose.

Clay Patmont – can you say excluding the wastewater, I think you want to exclude a permitted wastewater treatment device.

Teresa Michelsen – yes, you can't. They are permitted.

Pete Adolphson – well, I'm not excluding anything, I'm defining the term sediment.

Clay Patmont – maybe like the ASB (aeration stabilization basin) is not an open water site. Because I'm trying to make sure that this definition doesn't make the sediments of the ASB or of other wastewater treatment facilities, doesn't make the sediments...

Joanne Snarski – sediment cleanup sites.

Clay Patmont - yes. I think that's what you are saying.

Brad Helland- once you define sediment, then SMS applies.

Pete Adolphson – once it is identified as a site, those would be included in the site. Right. And I don't know how they would not be because they are potential sediment sources to the open environment.

Teresa Michelsen – but they are permitted facilities and they get dredged periodically and disposed of. That's not something you could call a cleanup site.

Pete Adolphson – there you go. It's part of the NPDES permit, then. Right?

Teresa Michelsen- I'm just worried about implying that it is a potential sediment regulated as a cleanup site. I don't think we could actually call it a cleanup site if it's permitted.

Brad Helland- I think some clarity, need more clarity around that, or definition.

Joanne Snarski – the issue is that there's no fish or benthic community living there.

Pete Adolphson – right, those sorts of things would be based that would be sediment but it wouldn't have any way of getting exposure scenario, so you don't do it as a cleanup site. Sediment has an exposure scenario of risk to human health and the environment then it's part of the cleanup site, otherwise it's just a part of sediment. Still fits the definition but you don't address it under that cleanup.

Chance Asher – I'm hearing some concern. It's identified as sediment and there's exposure risk to critters or people - that that's a problem with folks.?

Laura Inouye – d Does the SMS apply to waters of the state? Or any water? If it only applies to waters of the state, defining sediment this way, shouldn't include things that are not waters of the state. Once it's part of a cleanup, it might be brought in. Does SMS refer to waters of the state?

Chance Asher – It does refer to state waters but I don't know that it is exclusive. We'll have to check that..

Clay Patmont – I suppose it should.

Joanne Snarski – I think that's the point, we don't want to open up a door that's needed to be there. My concern is the public's interpretation of it. And filing lawsuits and all kinds of things.

Pete Adolphson – I don't know if it is just waters of the state. Because if you have a pond and you are dumping toxic waste in it and its affecting the groundwater, what do you do with that? It's not ours, you don't have to worry about it.

Clay Patmont- if it's a wastewater treatment pond. A wastewater treatment facility.

Pete Adolphson – right.

Teresa Michelsen – if it has sludge and the sludge gets removed periodically.

Pete Adolphson – that's part of their NPDES permit. It shouldn't have a cleanup.

Brad Helland – NPDES is not a shield for state cleanup.

Pete Adolphson - but MTCA/SMS can provide input to the NPDES permit so that it does not cause a cleanup site.

Chance Asher – running out of time. Can we get comments from you guys on the definition of sediment by e-mail? Comments on the definitions as they were presented as well.

Pete Adolphson - and how would you fix it?

Russ McMillan – one more detail. Where do you draw a boundary. Here we've tried to include high water marks or upper tidal elevations. There's something else that comes into play. If you have an erosional bluff in a marine environment, that will be sloughing down into it and the soil levels are less protective than sediments, then it's likely to become a sediment within a year. It doesn't fit the definition here. But I would look at that as a boundary between any two media where the

most protective applies to within some measure of reason that sediment standards might apply to that stuff if it's going to be sloughing off that bluff into the water. I don't think we need to capture it here, necessarily. Maybe in the language where two media bump into each other but think about that and where ...Clay you've run into that.

Clay Patmont - I think so, that is the Duwamish. There's a lot of bank issues up there. It's a source issue that's really problematic when you are dealing with groundwater, surface water, sediment protection. Maybe it's part of that whole picture.

Brad Helland – it's a source control issue rather than a sense of the rule, and NPDES permit. Cleanup.

Yes, exactly what you said. Must be protective of the most restrictive criteria.

Chance Asher – it's a little outside of this discussion.

Flipchart notes for June 2, 2010
Sediment Workgroup

July 26 meeting discussion – focus on human health and background

Teresa Michelsen – important to have SWG people at joint meeting.

July 26 won't work for everyone.

Glen St Amant – wants discussion on background implementation; where are big picture parts moving forward? Opportunity to understand where Ecology is going; how will Ecology make changes on all.

Teresa Michelsen – September? Workshop? Retreat? Wants to know what Ecology is doing work sessions. (time to review) What are pieces? Rule language? Breakout sessions?

Teresa Michelsen – human health and background – one session, other final language – breakout session

Glen St Amant – less specific comments. implement, background, give idea of what Ecology heard and where Ecology is going. What are the decisions Ecology made on the discussion? Appreciates the dialogue. This is the approach Ecology is taking; want to hear/see this.

Teresa Michelsen – wait until are there to share Ecology's thinking/direction.

Clay Patmont – clarify what Ecology heard; distill thoughts. Heading this way – what are your thoughts?

Teresa Michelsen – don't wait until big meeting to ask SWG more questions; like to see rule language. Looking for issues in draft (pro) rule language. Great to see bioaccumulation rule language for human health and background. Need concept piece to continue working on – then draft language. Feel free to email us.

Pete Rude – nice to see stuff before you get too far.

Clay Patmont – many voicing similar issues; don't seem too far apart.

Brad Helland – do we want a paper that says – “SWG thinks this ...”?

Teresa Michelsen – alter to create consensus. Glen St Amant may not be able to participate in the process. Could be consensus without consensus/inform.

Clay Patmont – how does this apply to the meeting date? Need several months' notice; need to get date set soon.

Pete Rude – another meeting before the joint group meeting?

Teresa Michelsen – still interested in random pieces.

TOC – normal

Clay Patmont – yes, some data but from Midwest/East; very complicated; may be related to pore water measure guidance.

Teresa Michelsen – are pore water concentrations relevant?

Clay Patmont – sediments and bio correlates better with pore water bioavailability issue.

Russ McMillan – different kinds of TOC confounding.

Teresa Michelsen – show me the data.

Laura Inouye – variability in replicating analysis; huge difference on dry weight; larger variability. Organic carbon normal – up 'noise'; up chance from different populations.

Clay Patmont – even more complex than that. Dry weight makes sense. Large sites. Opportunity to do site-specific toxicity test related. Pore water toxicity measurements advances vs. TOC.

Laura Inouye – no data to develop values.

Clay Patmont – rule could be improved. Site managers don't understand existing flexibility.

Russ McMillan – broader – alternative approaches can be proposed. Doesn't have to be specific language. Look at administrative principles to use, other approaches. Want to avoid very narrow language.

Clay Patmont – best means at some sites; may be pore water.

Pete Rude – TOC norm marine – adds so much churning.

Teresa Michelsen – lower concentrations set. Appears higher concentrations set by acute; haven't looked at yet.

Teresa Michelsen – clarify clay Patmont comment; lower value higher regional background?

Clay Patmont – are located where lower regional background depends how close to urban source.

Teresa Michelsen – higher mortality – don't count the growth; station failed; don't do stats on that growth data. Growth per individual versus beaker. Better overall growth than individual – more, or use 10 day growth as sub lethal endpoint; at least one sub lethal but not chronic test.

Clay Patmont – like the option; one chronic and one sub lethal endpoint test.

Teresa Michelsen – allows for possibility of not getting the data from same test; more flexible.

Russ McMillan – don't want to ask for 2 chronic tests but benefit with higher data/endpoints; expensive; balance between what makes sense.

Clay Patmont – what about *in situ*?

Russ McMillan – gray zone.

Teresa Michelsen – biomass endpoint – where national discussion is going. Leave door open – transition zone; would like to think eventually 3rd species.

Russ McMillan – do we send all samples to great lakes.

Clay Patmont – unexplained effects in bioassays; bioassays is not the gold standard.

Russ McMillan – not black & white; gray zone; maintain flexibility.

Teresa Michelsen – Not time to do chronic bioassays?

Glen St Amant – Microtox – probably affects to numeric standards.

Pete Rude – could choose 2 of 3?

Russ McMillan – will put into rules.

Teresa Michelsen – don't tie sub lethal endpoint to chronic ?

Pete Rude – how will PLP decide on which test? More consistent track over years.

Russ McMillan – determine which suite would be in guidance.

Clay Patmont – some site managers have preferred to test not based on stats but experience; no seeming basis; don't allow site managers to specify which tests, especially if Ecology has confidence in the tests. Keep menu? In the rule, not in the guidance.

Teresa Michelsen – originally in rule; up to project manager to choose; may not be followed consistently.

Dave Sternberg – there is a difference between what site managers want for different sites.

Teresa Michelsen – will end up with both species? Good point about policy though.

Brad Helland – site managers need flexibility for different sites.

Teresa Michelsen – if we are uncertain about a test, shouldn't be on the menu.

Russ McMillan – if way to specify in rule how to represent chronic species/contamination let him know.

Glen St Amant – don't underestimate relevancy?

Clay Patmont – opened for comparison?

Russ McMillan – looking ahead; want to include? But not reference at every site. Provide evidence that the ref is suitable – maintain flexibility.

Teresa Michelsen – second thoughts. Nationally, they are moving away from t-tests. These comparisons would be outdated. Few sites will accomplish for freshwater; rare case to go through that much trouble. Other methods may be better.

Teresa Michelsen – will need more data from reference areas. Tougher Washington reference – couldn't find good match. Western Washington – contaminated lakes and serious issues with finding a good reference.

Clay Patmont – good databases – Lake Sammamish. Struggled with ref criterion; end up with false positives; take out reference QA in rule.

Russ McMillan – rest on table ok to include.

Teresa Michelsen – put QA in SAPA. ASTM will change QA/QC control; ratcheting down on control limits. SQS/CSL? In the rule to update. QA easier.

Pa – what is the benefit/risk about removal from rule and into guidance?

Teresa Michelsen – can refer to ASTM protocol and not in rule/guidance.

Russ McMillan – can update SAPA easier, faster, more often than rule.

Teresa Michelsen – toxicity group very conservative; long develop over 10 – 13 years; started with Portland Harbor. Oregon DEQ ready to sign on & move forward; toxicity group more comfort; see benefit of reliable guidelines. Moving toward decision/need time; meeting with RSET – June 15. Looking for possible response. If RSET ok, then Oregon DEQ probably ok. May need to rewrite their rule. Current written for uplands.

Pr – sulfide and ammonia – act criteria; why is it there?

Teresa Michelsen – model said it contributes to toxicity, not at typical levels.

Teresa Michelsen – higher sulfide ammonia – probably anything adds; model best if all chemicals are included. If chemicals not present, no need to include them. What will Ecology do around this? The marine? Took out – do impact results. Upgrades could be made.

Pete Rude – wasn't familiar with levels in freshwater.

Teresa Michelsen – may be an issue; varies significantly in different environmental Ecology – statewide level? Or if natural background higher, then demonstrate.

Pete Rude – technical report/policy. TPH example – freshwater sites in project; new regulations – will that site be grandfathered?

Pete Adolphson – paradigm in rule; it bioassays pass + TPH at certain level, you are still ok. Might have problem – need to test; everyone does bioassays overrides anyway.

Pete Rude – the bioassays that are used.

Pete Adolphson – policy issue.

Todd – interpret criteria CSL hit – back to tm data – effects at CSL, SQS. Very little difference. Those two criteria may not be that common problem. Hit of 2 endpoints – higher level of effects. 2 interpretation cut difference – carry different weight?

Russ McMillan – hopefully getting out of noise.

Russ McMillan – didn't want severe effects on one endpoint/sp.

Laura Inouye – reliability of 2nd endpoint better than that of lower endpoint. Subtle effect at / greater imp to organism.

Teresa Michelsen – no 2nd hit analysis; reliability – higher level number pretty reliable; lower level number not as reliable.

Russ McMillan – response to CSL hit? Need to hear this.

Teresa Michelsen – thinking about it. Eco risk present?

Glen St Amant – known PCB footprint/PAH. PAH cleanup would take care of problem.

Teresa Michelsen – good improvement and level of detail. Definition of VCOC – consider all federal and state agencies have defined these. Based on these two criteria and review of data and human health and ecological risk to refine for Washington; language now as is – pull in everything – RSET/DMMP.

Laura Inouye – new chemicals introduced. Room for introducing chemicals.

Teresa Michelsen – consider the level of effort – goods lists to use. Washington PBT list more general. This list uses more information to refine it. Has 2nd list for chemicals with less data. Additional criteria to PBT list.

Pete Adolphson – look at sediment criteria.

Teresa Michelsen – put into guidance. RSET has 4 lists. Ecology part of group that develops these lists. Draft list would pull in too many chemicals. Include general guidelines for types of species so people know what they need to consider. Would like most obvious ones there, examples.

Joanne Snarski – a level of predictability. Touching with trophic level. Limits but useful and meaningful.

Clay Patmont – what are we/you trying to accomplish with narrative? There would be few sites not caught up by this. Looking at down the road; possible thing to do. Having this in rule without guidance – slippery slope.

Pa – rule requires us to do this; trying to clarify. Another step beyond – can't put all guidelines into place before the rule.

Clay Patmont – a site supporting info/alone would be different. Potential to go awry – what is the intent? Interpretation and staffing issue. Need guidance document.

Joanne Snarski – opportunity to clarify other off ramps?

Teresa Michelsen – start with VCOCs – not in there.

Clay Patmont – tissue level off ramps?

Teresa Michelsen – borrow and steal with the four lists.

Glen St Amant – many sites common ecological receptors – use receptors in similar sites. Use same receptors in similar/close sites?

Clay Patmont – does Ecology have that discretion?

Pete Adolphson – yes, BPJ & data but not spelled out.

Glen St Amant – individual site/PAH – similar sites have data for ecological risk – can this be used at similar site?

Teresa Michelsen – the question is knowing where to access this information.

Pete Adolphson – currently ISIS redevelopment is making it more accessible.

Teresa Michelsen – can index by chemical and not site?

Donna Podger – can be many site specific – be careful.

Joanne Snarski – eastern Washington/could be big burden on small communities.

Dave Sternberg – supportive of “model sites.”

Teresa Michelsen – reserve language very general; example would be good – PAH’s effects on fish especially endangered species. That endpoint is very important. Need to do; acknowledge the treaty issue.

Glen St Amant – agree with that Teresa said. Showing everything under bioaccumulation effects to other ecological receptors; structured appropriately in rule language that is more logical.

Laura Inouye – concern; RSET having same problem. Matter of workload; level – impacts to fish – need this.

Glen St Amant – not talking numeric standards right now; just clarify the narrative with narrative. Be clear about important issues.

Teresa Michelsen – Ecology can choose to ignore a critical issue because it’s not on a list or waiting – this is an Ecology responsibility – key receptor. We don’t know how to back calculate sediments – tissue but know we need to address.

Pete Adolphson – receptor.

Teresa Michelsen – prefer Glen’s approach; protect ecological receptors. Not limited to effects from bioaccumulations.

Pete Adolphson – expand reserved part – bioaccumulative and non-bio structure?

Clay Patmont – narrative language does make sense; controversies – tough issue; more competing science on this; hands full – could be a Pandora’s box. More debate on this. Maybe a future issue; good as is.

Glen St Amant – important for placeholder/to address issue; for threatened & endangered species. Important to have index for discussion or discretion?

Clay Patmont – doesn’t it give Ecology discretion?

Glen St Amant – need to address it; too squishy for me.

Heather Trim – pleased with new language; needs room for emerging chemicals. Teresa Michelsen criteria – objects to common use in Washington state; comp won't let us know what chemicals are out there – proprietary chemicals? Allow room for toxic unknowns.

Denice Taylor – if we lose big picture of cumulative effects, do we lose ability to look over all? Big picture?

Teresa Michelsen – maximum level more clear than minimum; cleaner to support; here's standard and here's time frame; separate them.

Donna Podger – narratives could be same at top and bottom; maybe regulation (or require?) Natural background.

Brad Helland – human health narrative – ex – look at the EPA range; trying to bracket range.

Donna Podger – yes, an option.

Clay Patmont – these are words but – big issue. Focus on what we are really doing; seeing specific sites/whole bays.

Pete Adolphson – sites with different requirements – background, etc. Address – how we put it together; haven't made decision yet – place holder.

Teresa Michelsen – focusing on key issues; think it's right – when plug in issues, will give info ?

Clay Patmont – come up with something other than what?

Pete Adolphson – equilibrium over 30 year

Clay Patmont – how to define? Tough issues. If set regional background – major sites won't achieve within 10 years.

Chance Asher – meet versus maintain standard; buyoff.

Brad Helland – don't clean up to standard; can't maintain; would it pass threshold criteria in MTCA?

Teresa Michelsen – maximum cleanup level? time frame – simplify by eliminating 10 year time frame. Benthic recovery usually faster. 10 year artificial/time frames based on certain criteria; Ecology approved; something simple.

Pete Adolphson – concern of legal perspective. Legal liability with time frame; 10 years good goal.

Teresa Michelsen – would rather see narrative criteria.

Brad Helland – need reasonable time.

Glen St Amant – concern; more complex sites; bioaccumulation issues; legitimate long time frame; cleanup to protect eco receptors; are we using too big a brush?

Clay Patmont – could take two to three years to evaluate; 2-3 years permit; 2-3 years construct; recovery equals 10 years.

Glen St Amant – some sites – 30 to 40 years like the Lower Duwamish.

Brad Helland – say in rule revision.

Glen St Amant – broader discussion; time frame affects everyone.

Teresa Michelsen – different ones for different site units with different driving factors/cleanup standards in sec 510.

Teresa Michelsen – keep acute/chronic bioassay definitions and keep acute/chronic definitions; helpful.

Joanne Snarski – does this open up too many other tests?

Pete Adolphson – could open to tissue biological assessments. Rule is limited now.

Joanne Snarski – what are the right tests?

Pete Adolphson – doesn't open up the rule to additional tests; just gives a little more latitude.

Teresa Michelsen – unintended sediments/water pulled into reg.

Pete Adolphson – exposure scenario + sediment = cleanup site risk.

Laura Inouye – does SMS = 'waters of state' vs. All water?

Clay Patmont – it should.

Joanne Snarski – don't want to open it up too much.

Pete Adolphson – part of NPDES – not a cleanup site.

Russ McMillan – where to draw boundaries? Soil levels less protected than SMS but will become sed. Standards applying to “potent” sediments? Boundary definitions.

Clay Patmont – this is the Lower Duwamish – bank issues.

Brad Helland – source control issue.

Clay Patmont – EPA – active better than non-active; don't think you need this; presupposes priority.

Russ McMillan – net environmental benefits.

Clay Patmont – EPA same process and didn't make sense. Not sure it fits well; department on exposure.

Donna Podger – refer to sections 320 & 340 won't have human health criteria.

Pete Adolphson – yes; haven't finalized yet.

Todd Thornberg – concern about too broad on sediments definition – these are source control issues.

Brad Helland – engineered system? How to handle engineered systems.