Skagit County Planning Commission
Capital Facilities Plan Review
Stormwater Management Background Presentation
September 9, 2014

Commissioners:	**Annie Lohman, Chair** **Josh Axthelm, Vice Chair** **Kathy Mitchell** **Robert Temples** **Kevin Meenaghan** **Tammy Candler** **Matt Mahaffie** **Dave Hughes (absent)** **Keith Greenwood (absent)**
Staff:	**Dale Pernula, Planning Director** **Ryan Walters, Civil Deputy Prosecuting Attorney** **Dan Fitting, Facilities and Sustainability Coordinator** **Paul Randall-Grutter, County Engineer** **Tim Holloran, County Administrator** **Bill Dowe, Stormwater Program Coordinator**
Guests:	**Lisa Rozmyn, WSU Stormwater Program Business Resource Manager** **Jenifer McIntyre, WSU Stormwater Program Researcher**
Public Commenters:	**Gary Hagland** **Carol Ehlers**

Chair Annie Lohman: (gavel) I call to order the Skagit County Planning Commission. It is September 9, 2014. So if the Commissioners could review the agenda and offer up any corrections or additions… All right, seeing none, the first thing I'd like to do is welcome a new Planning Commissioner, Kathy Mitchell. Welcome aboard.

Kathy Mitchell: Thank you.

Chair Lohman: I also see that Keith Greenwood and Dave Hughes are not present. So moving on to the next item, it's Public Remarks, and seeing a lot of new faces I'm going to explain how Public Remarks before the Planning Commission works. This is a time on the agenda that's an opportunity for anyone to speak to the Planning Commission about any topic except those that are scheduled on the agenda for a public hearing that same day, or items that have had a public hearing and are still under the Planning Commission deliberation. Public Remarks, which is not part of the formal public participation process for any development regulation or Comprehensive Plan amendment project is limited to three minutes per speaker and up to fifteen minutes total. So it's kind of an informal – your opportunity to address the Planning Commission.

So, anybody who'd like to speak? And we ask that you give your name and your address.

Gary Hagland: Gary Hagland, 2211 37th Court, Anacortes, and I'll take about a minute tonight. I just want to invite everyone – and I only had enough fliers for the Commissioners – but to a water rights – legislative water rights town hall on the 17th of this month at Emmanuel Baptist Church here in Mount Vernon. We're trying to get the legislators from the 10th, 39th, and 40th District – some have already accepted; some have not – plus County Commissioners, PUD Commissioners. But to discuss the water rights and specifically a way forward with exempt wells. A lot of us believe – a lot of us believe that only a legislative solution will work in this. So that's what this is all about. And I should say this is sponsored by the Citizens Alliance for Property Rights, the Skagit chapter. Thank you.

Chair Lohman: Okay, next?

Carol Ehlers: I'm Carol Ehlers. I'm from the west side of Fidalgo Island. This is not coordinated, but – I mean, with Gary – but what I am showing you is the latest version of Skagit County's drainage basins, which is found – well, most of it is found online in the draft version of the Natural Hazard Mitigation Plan, which meeting is tonight in Burlington at 7 o'clock. I deeply regret that, once again, the Planning Commission is not able to go and learn what's there. I deeply regret that the drainage people who are here will not be there to listen too, because drainage is one of *the* main problems. Gary's part of the problem is that in many of the drainage basins the DOE wants to eliminate all building whatsoever in order to protect fish. The question then comes as to which basin map is – which one is used by which legal entity to make which legal decisions deciding that you can't build.

The other side of the problem I have shown here on Fidalgo Island. If you know your geography, you will realize that Guemes Island, which is identified as number 8, but the 8 is on top of Cypress Island. So if you can't tell the difference between Guemes and Cypress Island, you really aren't expert on the west part of the county. If you look carefully also, number 7, which is the downtown part of Anacortes, is correctly described as "frontal on Fidalgo Bay." But if you look carefully, apparently no water goes into the Guemes Channel from that area and number 64, which is one of the last drainage basins identified, which tells me as a researcher that it was the toughest one to do and they weren't quite sure what to do, they have decided that the water in 64 drains into Similk Bay. It does not drain into Deception Pass and it does not drain into Burrows Bay, which again means they didn't look at the topography, the geography, the hydraulics or anything else.

Now it's made by the Oregon Bureau of Land Management. The problem, I suppose, for the – for somebody who was hunting for a drainage basin map was finding anything that looked like it was reasonable. But with all the maps in the Natural Hazard Mitigation Plan, they all say "This map was created from available public records and existing map sources, not from field surveys." And then they go on with one disclaimer after another disclaimer after a third one. Now I don't know how you in the Planning Department or the Planning Commission or the public or anyone else make decisions based on maps that you can't trust. I've seen it done ever since I came to Skagit County. You've heard me again and again on the subject of accurate maps. So here I am requesting that you all look at the Hazard Mitigation Plan. You might have to go to the Anacortes or Concrete library because the only paper copies are there. And since somebody didn't know how to take letter-size – legal-sized maps and put it into a letter-sized PDF file, the east county –

Josh Axthelm: Your time's up, Carol.

Ms. Ehlers: – and west county don't exist. So I've given you a heads up. I hope you pay close attention to it. It's the federal map for Skagit County for the next six years. Be wary. And thanks for the opportunity to warn you. Do try to take part – please.

Chair Lohman: Thank you. Anybody else?

Ms. Ehlers: I'm going so I won't be able to stay.

Chair Lohman: Anybody else for Public Remarks?

(silence)

Chair Lohman: Okay, seeing no one, we'll just move along to the Capital Facilities Plan Review. Dale.

Dale Pernula: Okay, did you get the PowerPoint up? There are going to be several of us that are going to be making some presentations on this element. Okay, the item that we're looking at is the Capital Facilities Plan. This is an introduction. The actual public hearing will be held in two weeks.

The Capital Facilities Plan 2015 through 2020. Why capital facilities planning? Broadly, capital facilities are the infrastructure needed to support development.

Integral part of planning for the future.

Supports the Comprehensive Plan Land Use Element.

Based on the 2007 adopted population growth assumptions.

Ensures we don't build more than we can support.

And is the third promise of GMA, and it's also the one that has been identified as the one that has been most oft broken.

Ryan Walters: So I'm going to read the statuary basis for GMA. If you were here last year at this time, you probably already heard this but we'll go over it again for some new faces.

The Growth Management Act gives us 13 planning goals, and goal 12 is Capital Facilities Planning. You'll see that goal straight from the statute there on the screen. It's a requirement for our Comprehensive Plan and while in some ways it's a six-year plan, in many ways it's actually a 20-year plan, as we'll get into.

The required components are up here on the screen, straight out of the statute, but we've broken them down a little bit so that they fit basically into four bullets. First, we are supposed to have an inventory of our existing capital facilities, and those are capital facilities owned by public entities. So we'll get to the precise definition of a capital facility in a minute, but the important point is that they are owned by public entities, which means not private entities but also not just the County. And we'll talk a little bit more about that.

The next component is the plan needs to have a forecast of the future needs for those facilities and that forecast is supposed to include the proposed locations and capacities of expanded or new capital facilities.

And then the final component, which is the six-year component, is a financing plan. It's basically, How are we going to pay for the things that we'll need, at least over the next six years? And that part of it is supposed to clearly identify sources of public money for those things.

And then the final component, which is actually letter (e) in the statute, is a requirement to reassess the land use element. Basically it's the requirement to harmonize the capital facilities that we have or can reasonably obtain, and how much land use development we are planning for.

So here is the GMA definition of "capital facility." Now if you look in the Growth Management Act you won't find "capital facility" defined – that's why we have attorneys to explain it. We have a couple of definitions that we have to bring together, and what we've done in the plan – we did last year and we kept it in here this year – is – what we've tried to do is get a really good narrative there of what constitutes capital facility with citations to the Growth Board cases that have explained this.

But basically Growth Management requires planning for the following kinds of services that you see on the screen. It's streets and roads and highways and sidewalks; street and road lighting systems. It's traffic signals; it's domestic water systems; it's storm and sanitary sewer systems; it's parks and recreation facilities; schools; and then other public services. Now unlike a City, the County doesn't provide most of these services and, in fact, in some ways we're prohibited from providing some of the services, like sewer. Sewer is not provided in rural areas, with some exceptions. And there's a table in the plan that examines this list of services, how many we do provide, and what level of service we provide for each.

From the GMA definition we shape our own definition because it needs more detail. So the definition in the CFP is an update of the definition that's in the Comprehensive Plan, and what it does is limit the capital facilities to basically those that are $10,000 or more and that have a life expectancy of ten years or more. And it has some other details that you see there. A significant element we back out are vehicles and equipment that are funded by the County's ER & R – Equipment Rental & Repair – fund, because that is a whole separate program that is set up to fund those things.

This document, like last year, is basically – looks basically the same as last year. It's readable online. It's oriented to fit your screen. When you page between the pages, there's no scrolling; it just jumps from page to page and there are links in it. If you switch to the document – which is on the County website at skagitcounty.net/cfp – this is the document which you've probably seen last year. If you go to the next page – not the next tab, but the next page – in that document, there's the table of contents. You can click every item in the table of contents and get to those sections of the document. And also at the top of every page is four major sections of the document so you can click those to jump back and forth. So we tried to make it really readable online. And the reason for that is it's updated every single year so if we have a bunch of paper copies sitting on a shelf it's unlikely that staff will actually use it. And one of the problems we identified last year is that staff were really *not* using the Capital Facilities Plan to

plan for capital facilities, thus sort of defeating its purpose. So we've tried to make it more usable, more updateable, more easily accessible by everyone at once, and this is the result.

If you'll switch back to the presentation… One of the most important features of it is that all our County-owned facilities are listed in there, and by "all" I mean almost all. There's some level of detail that's just not included. For instance, we own a lot of random parcels that are not included, some of which may or may not meet the definition of capital facility.

Next slide: There is one major difference in this year's document and that is that we've taken the Bayview Ridge capital facilities out of the Bayview Ridge Subarea Plan and put it into the Capital Facilities Plan. The reason for that is if we're updating this stuff every year, we'd like to update one document instead of multiple documents, and, frankly, the capital facilities information in the Bayview Ridge Subarea Plan has been forgotten about. It hasn't been updated except when we've updated the Bayview Ridge Subarea Plan, but it should be updated every year so that every year information has moved into the CFP itself. So it's in its own little section. The policies related to capital facilities for Bayview Ridge remain in the Subarea Plan, but the data – the, How many fire trucks do we have in the fire districts that serve the subarea? – that information is in this document instead of the Subarea Plan.

The other big difference this year is that the Transportation Improvement Program is incorporated by reference into the CFP. And we did that last year as well, but this year it's the current draft proposed TIP. So what we did last year, because the TIP and CFP were not on the same schedule, we incorporated the TIP by reference that had been adopted the previous year. This year they're on the same schedule so the current proposed TIP is incorporated by reference into the current proposed CFP. And we'll talk a little bit more about the TIP in a minute.

Now we update the CFP basically every year. We missed, I think, an update two years ago. The Washington Administrative Code recommends that we update it every two years. And then we adopt it into our Comprehensive Plan with the budget, and there's a special exception to the general rule, which is that you can't amend the Comp Plan but once per year, when you do it with the budget. So that's why we do it with the budget. So the process going forward is that you'll hold your public hearing and make your recommendations on the plan. That'll go to the Board. The Board will assumedly then hold it – hold onto it until they actually adopt the budget, and they'll do it all at the same time.

Okay, so now I want to introduce Dan Fitting, who is our Facilities and Sustainability Coordinator. He replaced Kaci Radcliffe, who you may have met last year. And he's going to talk to you a little bit about the County capital facilities that are included in the CFP.

Dan Fitting: Hello, everybody. Like Ryan said, my name is Dan Fitting. I work with the County in Facilities Management.

So regarding the County's capital facilities, organized into groups: general government; community services; law and justice; parks, trails, recreation – Fairgrounds included; solid waste; stormwater management; and transportation. And then the Bayview Ridge is separate, as Ryan mentioned.

So the reason for including non-County facilities into this Capital Facilities Plan is that it's required by the GMA. It also provides one location for all the information to be stored for quick,

easy access, and you can view all the different components into one location or one document, in this case. And then also schools, for the impact fee, which, I think, Ryan can speak to a little bit with more expertise.

Mr. Walters: There's a special provision for schools, and other providers that might want to adopt impact fees. Their capital facilities plan must be incorporated by reference into our Comprehensive Plan. So if they want to collect those impact fees, we've got to account for it in our plan and do the analysis incorporated by reference.

Mr. Fitting: This is just a summary of our proposed projects that we have included in this year's plan for moving forward for the – the six years moving forward. Some of the larger projects there included this year are:

- Administration Building's Roof Replacement, which you might have seen in last year's plan. Unfortunately we weren't able to complete the project this year and it's scheduled for completion of next year.
- Full Jail Mechanical. The current jail mechanical system replacement – this number is – would be considered like the largest number scenario. Because the jail is not going to be used for its traditional or its intended use, we're exploring other options for a mechanical system replacement to meet what the future use might be. This is also not just a mechanical equipment exchange but also a system upgrade to make a more efficient facility out of it. It's not just parts but also systems in this case.
- A WorkSource Remodel – potential WorkSource remodel that could take place, and that has the potential to be much less than the projected amount as well – or the, like I say, budget amount as well.

Some other projects we have, we have new carpet in different locations; some mechanical upgrades in several different facilities throughout the county; and then at juvenile detention, toilet and sink repair/replace project that has gotten a little large, and so we're looking at alternatives and fixes for that situation.

Several of these projects stem from relocation of different communities – or different services that Skagit County gives – provides, I should say. Many of them are coming from the law and justice campus downtown versus the Continental campus up here. So if we want to move nonessential services that don't relate to law and justice particularly downtown and move them out and get more square footage for those law and justice services that are better oriented downtown, we have to put them somewhere and then, vice-versa, fill that space. And so that's where some of these projects stem from, and that comes from our Capital Facilities Needs Analysis Review that we're currently conducting. So those more permanent answers are to come, based on that Needs Analysis.

So an update: I spoke about the old jail and it's not going to be, you know, continued use of that. It's because of the new jail. So a new jail update, which is included for the budgeting plan or finance planning in this document. The schematic design phase is now over and we're moving into design development. That is a recent – of the last week or two. That'll take place through November. The current Maximum Allowed Construction Cost is just over $42 million to that project, and we are currently presenting and discussing different HVAC systems and life cycle costs to the Finance Committee regarding that project.

The public hearing on this is September 23rd, 6 p.m., for both the CFP and the Transportation plan. Deliberations for Planning Commission deliberations (on) October 7th and Board of Commissioners' adoption with the County budget to follow. And more information can be found, again, at skagitcounty.net/cfp, along with the documents and things like that that Ryan spoke to for, you know, electronic perusing.

Mr. Walters: So we also have County Engineer Paul Randall-Grutter here to talk about the Transportation Improvement Program.

Paul Randall-Grutter: Good evening. I believe in your packets you were given our draft version of the Six-Year Transportation Improvement Program. We update that every year. And what that is, it's a planning tool to project out some projects that we're looking at for the next six years. And we have to have projects identified on our Transportation Improvement Program to even apply for any kind of funding, and so our – you know, our dollars are stretched pretty thin here so we have to look for all kind of funding mechanisms as we can. So that's basically what our Transportation Improvement Program is. There's quite a few projects on here. We update them every year. Some get finished so we take them off. We add new ones on. And, you know, they're out there quite a ways. Some of them have been on there for years because we haven't got the funding for them. So on next Tuesday evening we are going to have our informal public meeting out in the lobby that the public can come to. And we'll have the draft plan on our website on Thursday when the press release goes out. So that will be a time for the public to ask for any more information on the projects at that time.

Robert Temples: Paul, I know this __ legislature has been remiss in the last umpteen years of providing a lot of funding for transportation, repairs and maintenance. Is that impacting your division as well?

Mr. Randall-Grutter: It will in the future. I mean, right now we're catching up to projects that we have funded in the future. I mean, we're seeing that the opportunities aren't as prevalent as they have been in the past. So, I mean, we're – we have concerns that some of our infrastructure may not be as maintained or improved as much as we'd like in the future.

Chair Lohman: Were you going to go through the – what you had on the website?

Mr. Randall-Grutter: Well, we don't have it posted on the website at this time. We were going to post it on Thursday, and then at the public – we're doing it a bit different this year. I mean, typically we have our public meeting and then in a few weeks we'll have a work session in front of the Board of County Commissioners, but this year we've switched it a bit so we'll have the public meeting and then – and the Planning Commission is able to ask us if they have comments on any of the projects and they can direct them towards the Public Works department and we can address those. And we'll address questions the public has next week.

Chair Lohman: So are you saying that you don't want our questions for tonight?

Mr. Randall-Grutter: If you have specific ones, I can try and answer them, yes.

Chair Lohman: Well, I have one.

Mr. Randall-Grutter: Okay.

Chair Lohman: I was looking at your – you have Cook Road improvements, several phases including Green Road, so you almost have – it's right next to Cook Road.

Mr. Randall-Grutter: Mm-hmm.

Chair Lohman: I thought they were going to do some work on that railroad overpass.

Mr. Randall-Grutter: Correct.

Chair Lohman: Were they going to be coordinated with that project or not?

Mr. Randall-Grutter: No, the Burlington Northern overpass project is just the bridge itself. We received federal funding from the Bridge Replacement Advisory Commission – it's BRAC, so I don't know the letters exactly. But that can only be used on bridges and so we couldn't use that funding to extend out towards Cook Road and Green Road and all that. What we would hope to do, we're going to try and improve Green Road when we finally get to build the overpass because we'll use – we're planning to use Green Road as a detour route while we close that bridge down, and that probably won't happen for a couple years at the soonest. And we do have – the Cook Road projects you were talking about – we have been trying to improve, you know, from Green Road to the I-5 interchange – you know, improve that intersection – for quite a while and we just keep it on our TIP to try and get some funding.

Chair Lohman: Kathy?

Ms. Mitchell: Yeah, I've got a couple questions, too. Looks like there's a lot of good projects on there as it is, but how do you prioritize what's going to get, aside from funding? Because right off the bat the first two – just as a lay person, the first question comes to mind is, you know, paving trails – we've got some other things to do – you know, gravel works pretty well for the most part and you have some pretty significant projects here. How do you prioritize?

Mr. Randall-Grutter: Well, these are listed alphabetical.

Ms. Mitchell: Okay. Yeah, I see.

Mr. Randall-Grutter: But when we prioritize, we have a priority array that we rate all of our, you know, facilities and our infrastructure and then we, you know, go down the list and the ones that are in the worst case then we go ahead and try to take those ones on. We rate our roads every year with a pavement management system so the ones in worst shape we'll go and either chip seal or put them on our Asphalt Overlay Program. The trails you have in question, those have come over from the Parks Department and we are working with them to facilitate those, because we do a pretty good job of producing the projects and getting those out and managing the construction. So we help them out quite a bit.

Ms. Mitchell: So at the public meeting next week will we be seeing things as you prioritize them then?

Mr. Randall-Grutter: Well, again, like those – I mean, those aren't – this is just a planning tool –

Ms. Mitchell: Right.

Mr. Randall-Grutter: – this TIP, and it's not our construction program. Every year we'll go through the – find out what we have the funding for and what we can construct, and then find out the funding we have and then from that we'll go off the list of what is the higher priority or not.

Ms. Mitchell: Okay.

Mr. Randall-Grutter: And as you can see, I'm not – I mean, those ones that you talk about were – we have on the plan that we – if you look through the, you know, through the pages here over on the side it says "The Funding," the "P" is for "proposed" and "S" is for "secured." So those are just proposed right now because we're still looking for funding on those and those aren't planned to start right now until 2016.

Ms. Mitchell: Okay.

Chair Lohman: Any other questions?

Kevin Meenaghan: I have a question about the CFP. On one of the first slides, it talked about population curves came from 2007, and I believe the GMA Steering Committee just adopted some mew ones from SCOG. So why are we using older figures?

Mr. Pernula: Because they haven't been – those are still initial projections. I'm actually going to go over that later in the meeting.

Mr. Meenaghan: Okay.

Mr. Pernula: But they haven't been adopted as part of our Comprehensive Plan Update. The idea was that those new projections and those new allocations are going to be adopted as part of our 2016 Update, so we're still under the old allocations and projections.

Mr. Walters: It's related to the GMA requirement to have the Comprehensive Plan be internally consistent, because the CFP and all these other little component plans are part of the Comprehensive Plan. Since the Comprehensive Plan remains on through the 2025 Planning horizon, we have to have everything else be on 2025 until the Comp Plan gets updated. This question came up last year as well. We tried to include additional population figures in the CFP to address the reality but that doesn't change the fact that we still have to plan on the same time horizon as everything else.

Mr. Meenaghan: And that's a state law that's telling us to do that.

Mr. Walters: GMA.

Mr. Meenaghan: Can we tell them to fix it?

(laughter)

Mr. Walters: Well, it'll be fixed when we do the Update.

Mr. Meenaghan: Tell the *state* to fix it.

Mr. Walters: Yeah.

Mr. Meenaghan: The other question I had on CFP was the WorkSource remodel. I'm not familiar with that. What building is that?

Mr. Fitting: It's a potential – at the WorkSource – it's up – I can't remember the street address but it's just east of –

Mr. Meenaghan: The one on College Way here?

Mr. Fitting: Yes, sir. Just east of here.

Mr. Meenaghan: Yeah. Oh, is WorkSource moving out?

Mr. Fitting: No.

Mr. Meenaghan: Okay.

Chair Lohman: Is that all for that then?

Tammy Candler: I have a question about the proposed Jail Mechanical. Is that – it sounded like that was just a – still really in the works. Is there anything decided on that or –

Mr. Fitting: What that comes from is several years ago. It's called a Phase II with the efficiency upgrades that the County did for several different buildings. That would be a Phase II of that project, and that's where those numbers come from. We just looked into – just began the process of looking into some grant funding for that as well, so that that number could come down potentially with grants. But the Phase II, it was, I guess, developed pre-new jail ideas and so that number comes from readdressing mechanical systems for the jail in its current use. We now know that that's – we don't necessarily need that to be the case, but we don't know what the use entirely will be, and so that is just the number that we're going with for now because that is the most recent number that we do have. We don't have, you know, firm usage to design around and things like that – what we would need regarding mechanicals.

Ms. Candler: So it sounds like that's likely to be readdressed, given that.

Mr. Fitting: Yes, yes. Absolutely.

Mr. Temples: I must confess I agree with Tammy. I just – I was surprised that they're spending money on this older jail. What's the – is there an ETA at all at this point for the new jail?

Mr. Fitting: Yes, I believe 2017, spring of 2017. But we're spending money on the old jail, yes. Just for, you know, understanding the picture a little bit better: The current system is 31 or 32 years old. I can't remember. I have it in the actual CFP. North of 30 years. Life projected was only 20 years, so we're running on borrowed time. So the building needs it, but to what extent we just don't know until we understand what the building will be used for.

Mr. Temples: Is that building presently leased or owned by the City – by the County – excuse me?

Mr. Fitting: The County owns that building.

Mr. Temples: Okay.

Mr. Fitting: The jail.

Mr. Temples: Hmm?

Mr. Fitting: The jail. When we say "the building" we mean the jail. Yes, we own the jail.

Mr. Temples: So conceivably, when the new one's built then the old one might go up for either some other facility usage or it could be sold.

Mr. Fitting: Yes. And so the facility usage is the unknown. It hasn't entirely been nailed down. So when we say the number, that number will change based off – in theory – based off the need. All right, if we put something – we have a 24-hour, you know, 400-body facility and that requires a lot of air exchanges – a lot of heating or cooling and vice-versa. If that's not the case – we're not putting 500 bodies in there, we're not doing 24-hour operations up there, you have different cycles and needs and things like that.

Chair Lohman: Any other comments, questions?

Ms. Candler: I have a follow-up question on that. What is the process by which the people who decide these things will be deciding what the jail's going to be used for? Is there going to be any further information coming to the Commission about that or – any idea?

Tim Holloran: Dale? I don't know if I could be recognized __?

Chair Lohman: Yeah.

Mr. Holloran: Tim Holloran, County Administrator.

Chair Lohman: Can you come up where there's a microphone?

Mr. Holloran: Sure. The County has actually contracted with Henry Klein Partnerships – Partnership – to do a study – our needs analysis and potential reuse of that building. I need to remind everybody the District Court is located in that building. The Sheriff's office is located in that building. We have to take care of the heating systems and the like. We consciously say we're not going to build a new Sheriff's office. The voters would support a new jail, but not a new Sheriff's office. So at this point in time we're not looking to move the Sheriff's office or District Court. District Court *may* need to expand. We're also looking at the potential expansion for Juvenile so we have a juvenile facility in close proximity to the court system. So we're looking at a bunch of uses. One thing we don't want to do is spend a ton of money on renovating jail space. It's very, very expensive. So Henry Klein Partnership will help us weave through that, and as we meet on that there'll be public meetings on it as well. Any questions?

(silence)

Mr. Holloran: Thank you for allowing me to speak.

Chair Lohman: So was that it for the Capital Facilities and TIP for now? Because we'll be having – during the public hearing we'll have more comment period. Okay? So moving on to the next agenda item, Stormwater Management Background Presentation.

Bill Dowe: Good evening. I'm Bill Dowe, the Stormwater Program Coordinator for the County, but out of the Public Works Department. My background is with the Building Department in the Planning Department. Stormwater is a relatively new thing for me. I've been working in it for about a year. I've been learning everything I can and these ladies have talked about the subject in a way that was useful to me and I thought it might be for you, too. Next year we're going to be updating our drainage code, chapter 14.32 in the Skagit County Code. At the same time we're doing this, every other jurisdiction in western Washington is doing it. Nobody has finished it yet so we have nobody to look to for guidance. But the good news is we have lots of time to do this. I did not bring you the draft ordinance to look at tonight. We're not doing any of that. We're just talking about what is stormwater so that when we get there everybody is thinking the same way.

So the two speakers tonight drove up here from Puyallup for us tonight, and they are Lisa Rozmyn and she'll be talking about the big picture of stormwater. Her background is she worked – she has worked both sides of the permit counter in the stormwater world. She worked for the Department of Ecology for 17 years and then for the Port of Tacoma for four years, so she knows both sides of the story there.

Jenifer McIntyre is a researcher who works in aquatic toxicology down at the Stormwater Center and she has a presentation that I really liked.

So I would like to make of them welcome, and, Lisa, would you like to start?

Lisa Rozmyn: All right. Well, thank you all. Thank you, Commissioners, for allowing us to come up and talk about stormwater today. As Bill mentioned, I am Lisa Rozmyn and I'm with the – oh, no; I apologize for this. Jen, can you help me fix this? I apologize. I'm Lisa Rozmyn. I'm with the Washington Stormwater Center and it's a collaboration between Washington State University and University of Washington, Tacoma. We were set up in 2010 to help businesses and municipalities with their stormwater management. And I'll tell you a little bit more about what we offer at the end of this presentation.

So the discussion topics for today. We're going to talk about:

- what stormwater is
- why it's a problem
- what are the effects of the pollution that comes from stormwater? Jen is going to go into a little more detail on that.
- where does all that pollution go? and
- what are the effects of too much pollution?
- and stop to talk about some best management practices for managing stormwater

So what is stormwater? I'm sure you all have experienced it a number of times. It's basically precipitation. And stormwater itself is not a bad thing. Obviously, it helps our crops grow and it – you know, we drink water and it's a good thing, right? But when it hits the ground and picks up pollution, that's when stormwater becomes a problem. And the Clean Water Act says that we

have to manage both water quantity and water quality in order to be in compliance with the Clean Water Act.

And so who has to do that? Businesses, municipalities – and I have this underlined and bolded because you guys are a municipality so I'm going to talk a little bit more specifically about municipal requirements – and NPDES permit holders. So the NPDES program is under the Clean Water Act. It stands for National Pollutant Discharge Elimination System. Originally they thought they were going to eliminate all discharges from all outfalls and businesses and industry by 1985, and that just didn't happen. So we're a little behind. It's now thought that we're not actually going to eliminate, but to the extent practicable we're going to manage that stormwater and help the pollutants be removed from that. And you and me – we are all responsible for making sure that that stormwater is kept clean.

So stormwater's a problem for two reasons. We talk a lot about quality and all the pollutants that's in there, but we also have to manage it for the quantity for erosion and sediment control because those are a problem as well.

Stormwater runoff quality, it's a toxic stew. And where does it come from? It comes primarily from impervious surfaces – all the dirt and oil and heavy metals that come from vehicles and tires; and oil and dirt that get on the impervious surfaces; aerial deposition from wood stoves and car exhaust and dust; building materials – galvanized surfaces in particular cause a lot of zinc issues; treated lumber and moss killer – all those things that we put on our buildings to make them more pretty and last longer. Those can also be a problem in the environment as well.

Household products and practices: pesticides; fertilizers; washing your car – having all that soap go down the storm drains – that's all not such a good thing; leaking vehicles; and pet waste are all examples of toxic stew that gets in the stormwater.

So the pollutants of concern – and, again, Jen's going to talk about what these pollutants do in the environment – but some of the examples are metals, like zinc and copper; suspended solids; nutrients – like too much phosphorus – that come from fertilizers and runoff from agriculture; pH turbidity; and oil and grease. Again, zinc comes from tires and tires are 1% zinc. It is in the vulcanization process that they put zinc in there. It comes off as tire dust on the roadways. Copper, again – brake pads – exposed copper surfaces and biocides can all get into the stormwater and then into our surface waters and cause problems for fish in the environment. Suspended solids windblown, tracked in. Construction sites can sometimes cause this problem where too much dirt gets in the water and it covers up – I'll talk more about that when I get to it. I apologize.

So stormwater effects on water quality: again, human health; fish and shellfish consumption; recreational uses; bacteria in swimming and drinking water; and aquatic life are affected as well.

Loss of habitat: Again, that's another issue we have here in the Puget Sound region. Shellfish beds are being closed due to bacterial sources; and sedimentation of water bodies.

So where does all that pollution go? How does it get there from our stormwater? It comes through those outfalls in those combined sewer systems that they have down in Seattle and some of the other municipalities and directly discharges to water bodies. So the storm sewer is separate from the sanitary sewer. So everything that goes down a catch basin or comes into a

storm sewer system, none of that gets treated. It all goes directly into the nearest water body. And I'd like to show this quick video – if it'll work – on what an outfall looks like underwater in a city.

This was in Alki Point. And what you're seeing is from a woman who lives in Seattle. She's a diver and she came upon this one day when she was diving and found that there was more happening under the surface of the water in terms of stormwater than she realized.

(video)

So this woman, the diver – Laura James – was diving. She found this column of what she thought was – what looked like smoke, or it looked like a pier footing, and it turns out it was pollution coming out of this outfall for hours and hours during a rain storm. So you can see that all of this that was on the street surfaces and all the impervious surfaces runs off into the surface water.

Mr. Temples: This would be in Seattle?

Ms. Rozmyn: Yeah, this was in Alki Point. I'm sorry. I seem to have lost my – sorry. Thanks, Jen. Yes, thank you. Thanks for being my IT girl today!

So we talked about quality. Let's talk a little bit about quantity. So it's too much water too fast, and what it causes is erosion, riparian damage – which is those areas along the stream banks – loss of shade, which can be bad for fish, and the loss of habitat – sediment covering up of salmon nests. So you can see on the picture on the right all those little salmon eggs, and if there's too much dirt in the water it could cover up those salmon nests and kill them.

So erosion and sediment control. It can be anything from a minor soil erosion – this is a new construction near a house up in the top right – to major damage. And this was Sumner Construction Company that actually caused a highway to be closed because of their lack of sediment and erosion control. And he actually did some jail time for this. So water is pretty powerful and can cause some serious erosion. And I put the picture of the Grand Canyon in there just to show you that, you know, we're all aware of the erosion that water can cause.

Another big issue for quantity is urban flooding. So that lack of capacity in the system; too much impervious areas; and in urban areas the lack of maintenance, so your drains get clogged up, you're not cleaning them out, you're not cleaning your catch basins. And if you have too much rain, plus that lack of maintenance and lack of capacity in the storm sewer system if you're on the water and you have a high tide in addition, you can get flooding. This is a picture of Olympia a couple of years ago where the water came up into the city of Olympia and flooded this restaurant that's right on the waterfront.

So the traditional way of managing that stormwater is to get it out of there as fast as you possibly can so it doesn't cause flooding, right? You don't want it to damage your property. You don't want it to cause a safety hazard. So we want to get it out of there as fast as possible. But what we've been doing, we've been doing the same way for a long time. So this is Pompeii, and those curb and gutters have been used for a long time to get that water away. So it's time we've kind of thought about maybe a new thing.

So, again, those traditional containments and treatments. Those giant ponds you see at housing developments that slow down the water and let it release really slowly so it doesn't cause erosion takes up a lot of property. It takes up a lot of area and are not generally maintained properly. We have some giant treatment balls that we can use. But when it comes down to it, water's a valuable resource, and instead of getting rid of it, or storing it and then getting rid of it, what we really need to do is kind of think of it in a different way.

So that's where the low impact development or green stormwater infrastructure comes in. It's kind of a different way of looking at managing stormwater. So it's trying to make something like this, which is almost all impervious surface, behave like a forest. And the principles behind LID are to mimic the natural hydrology. Instead of getting rid of that water, to make it go back into the ground through infiltration. Through filtering it, it takes out a lot of those pollutants. It detains it so it doesn't run off quickly and cause erosion problems and blow out streams. It recharges the ground water, and you don't concentrate those flows so you use – so you can control and treat that runoff near the source instead of downstream.

Examples of low impact development are bioretention and bioswales. You've probably seen them. They're also called rain gardens. Green roofs and permeable pavements and any way you could infiltrate near the source of that water instead of taking it away and trying to treat it somewhere else is one of those examples.

So our research facility up in Puyallup – our research facility actually has been in Puyallup since 1894. We were part of the land grant from Pullman and we've been there almost as long as the Pullman campus has. So we have a lot of history in the area. We do a lot of great research including bioretention, rain gardens, and what we're calling mesocosms, which are big plastic tanks like columns that we can do testing on different kinds of soils and different kinds of medias (sic) that remove pollutants at different rates. So some of those soil examples would be compost, sand, and other bioretention media that Jen's going to talk about, I think, in her presentation as well.

And we're also – we have one more project that we're working on – so there're some examples of bioretention and rain gardens. Porous asphalt and permeable concrete, we have some – that's actually most of our facility is shown in this picture – we have both concrete and asphalt that we're testing. And we have a new study that we're doing on roofing materials to see what kinds of pollutants come from different kinds of roofing materials. The reason we're doing this is to give municipalities a better idea of the kinds of code changes they may want to make in terms of building code. So, for example, copper – a lot of copper coming off the copper roofs, so a municipality may want to say, you know, We're not going to allow a copper roof right next to a stream or right next to a water body.

So it was a collaborative approach. It was the Department of Ecology, WSU, and a lot of folks from the manufacturers' associations. They were interested in this study. This came about because the Department of Ecology had a toxics loading study that said that 85% of all of the zinc in the Puget Sound basin was coming from roofing. And they had done not a research project necessarily. They had done more of a literature search for this information and some of it was just not quite what the manufacturers thought was actually happening in the real world, so they wanted to see more about what was happening with their roofing types. So they put some money into this study and they helped design the study, as well. So it was a great collaborative effort to make sure that what we're saying about roofing type was correct. And what we found – this is a – this shows just sort of the – a pie chart of what kinds of materials that are used

primarily in the Puget Sound basin. So most of what we use is that asphalt shingle. Another 13% is kind of a built up roof from commercial uses, and you can see the different kinds of roofing that are used in the Puget Sound basin. Copper is like 1%. There's not a lot of copper roofs out there and that's actually probably a good thing, although they are beautiful.

So the good news: New asphalt-based roofing materials, the most prevalent roofing material in Puget Sound, it releases very low concentrations of metals. And the new roofing materials that are less than one year old generally release low concentrations – oh, I'm sorry. Yeah, so just in general the new roofing materials. The exceptions were the copper and arsenic from the treated wood panel, because the treated wood has copper and arsenic in them. And arsenic from the PVC panel – and they use that as a biocide – so the PVC panel is primarily a commercial use panel that would be used in warehouses, on warehouses, and that sort of thing.

Copper from the copper panel, of course, and zinc from a product called "Zincalume," which is a coated metal roof. And then EPDM, which I cannot remember at this moment what it stands for, also contained a lot of zinc. So that was pretty good news. Most of our roofing materials here in the Puget Sound basin are not as bad as we had maybe thought they were.

So, again, the Washington Stormwater Center: We were founded in 2010 by the legislature. Businesses got together and said, We need help with our stormwater management and we need a non-regulatory third party, non-judgmental kind of place to go for help. And so that's where we – how we came about. We help municipalities, businesses. We have an emerging technology program that if you have a widget of some kind that you say is going to remove x-amount of pollutants from the stormwater, you have to go through a protocol to make sure that what you're saying about your product is correct. So we don't just let anyone come and have the newest, greatest thing unless they actually can prove that it is. And then again we have the low impact development research as well at WSU.

So we help municipalities throughout Washington. We're starting more eastern Washington help as well, and trying to locate an office over there. Our business program, we help with permitting and stormwater management needs for NPDES holders. We have that __ program. It's Emerging Technologies Program. And if you want to contact us, there's our contact information.

Are there any questions? I went through that pretty quickly.

(silence)

Ms. Rozmyn: All right. Well, with that, I will turn it over to Jen.

Mr. Dowe: Still _____ enough.

Ms. Rozmyn: Yeah, I know. Was I doing this a lot? Okay, do you know how to – you know how. Okay.

Mr. Pernula: Thank you.

Ms. Rozmyn: Yeah, you're welcome.

Mr. Dowe: Thank you.

Jen McIntyre: All right. Thanks for your continued attention. I know this is going to be a little more difficult because it's getting later and later. I will try to make it entertaining as well.

So as Lisa mentioned, the reason that stormwater is a problem is because this is not a forest. And primarily the way it's not a forest is that this is a lot of impervious surface. That means water can't infiltrate through that surface into the ground underneath it. So because it's not a forest, it doesn't act like one when it rains. The water collects and rapidly moves off of that surface, picking up pollutants with it. Here's an example of a runoff event. This is actually the Montlake Cut in Seattle, and there's obviously a stormwater outfall right there below this bridge. So this is the pollution that people see. And, like Lisa mentioned with the video she showed of the diver, there's visually a lot of pollution related to fine materials that are picked up with the runoff. I'm a toxicologist so I'm even more concerned about the pollution that we *can't* see – which is all of the chemicals that are also carried in that runoff – and what they might be doing in the receiving waters.

So my work at WSU, Washington State University, is in close collaboration with NOAA Fisheries and also U.S. Fish and Wildlife Service. So our focus is kind of "the fish." And we talk about Coho salmon as a sentinel for stormwater impacts for a variety of reasons. This map is showing the Puget Sound basin and all those blue squiggly lines are the basins where the watersheds where historically Coho salmon lived or do continue to live. But they're having a rough time, in large part because of development of this lowland system where we also like to build our homes, right? So the potential for overlap with humans is really big. They spend more than a year of their life in fresh water, which most of the other salmon species do not do. And they're both very sensitive to both water quantity and quality.

So I'm going to show you a couple examples from our research over the past ten years related to stormwater impacts on Coho salmon, on *wild* Coho salmon – salmon that are out there experiencing the real thing. So this is the stylized life cycle here, just showing kind of the adults out in the salt water coming back to spawn and then die in the fresh water, and then they're spending that year as juveniles in the fresh water before they migrate out. So that's when they're most vulnerable to impacts from stormwater runoff.

So the first example is an impact on adult spawners when they come back to fresh water streams. So in the '90s, you guys are probably aware, there was a lot of money spent all over the region to restore urban creeks. And this was great. You know, I think it really helped people feel more connected to their environment. And one of the things in the Seattle area that they did was actually send in monitoring crews: Okay, we built it; did the fish come back? And, low and behold, they found there were adult fish returning to these systems to spawn. So that was good news, but unfortunately they were seeing this suite of symptoms which ultimately led to premature mortality. So this is a silver variety – still hasn't even changed into spawning colors – fresh from the ocean, and after a storm event they're suffering from these kind of neurologically distinct symptoms of the splayed fins gaping. Eventually they become rigid, even though they're still alive at that point. But they die quickly after that.

So here are a few more videos showing abnormal behaviors that we see before they die prematurely. Primarily you're seeing that gaping loss of orientation and loss of equilibrium, as well. They start to – they – first of all, they're unaware that you're there. You know, most healthy salmon will quickly get out of your way and hide somewhere. These ones are bumping around in your legs if you're walking in the creek, you know, weakly trying to get up out of the water. These are not normal salmon behaviors. So we published a paper summarizing eight or nine

years of daily field surveys looking for this condition in urban creeks around the region, and it's recurrent and very consistent. So we'll see mortality rates of 40, 50, up to 90% of all the females in the creek are dead prematurely full of eggs. And obviously this is going to have a very big impact on the sustainability of these populations, and it might go a long way towards explaining why Coho are extirpated in many of our urban creeks.

So a second study that we did on this looked at land use. We might not know what's causing the effect, except that it's related to the amount of impervious area in the basin, the density of roads in the basin and the timing of runoff events. So there's a predictive model that NOAA Fisheries has built to try to, well, predict where you'll see this across urban and developing areas – not just fully built-out but also developing areas – and use it as a predictive map, as well. And right now they're ground-truthing that with more sites around the region.

A third thing is – a third paper that was published looks at that predictability over time – so a modeling exercise looking at – imagine that: rapid, local extinctions if you've got these high rates of pre-spawning mortality.

All right, a second example looks at embryo development. So this is a study that we did in Longfellow Creek, which is an urban creek in west Seattle. Many different land uses right in that area. And up in the image here on the top right is an aquarium holding unfiltered stream water. And this is just to show you what the water looks like. So this is just regular creek water pulled out of this creek. And there are fish in this creek. There are invertebrates in this creek. It's not a dead creek. And then on the left what we did as an experiment was try to filter out and clean up that water, so a series of sand filtration, activated carbon and charcoal, and obviously visually even the water's a lot cleaner. And then we raised up Coho embryos in these two different waters, continuous flow right out of the creek over the eggs and back out, and fresh water coming in all the time. And this is what we saw. So this top image is a pretty normal looking Coho embryo for this period of development. This is about 50 days into the developmental period. And they look a little nasty here because their yolk sac has been removed. About 10% of the embryos were either abnormal or had died at this point. And that's a pretty normal number.

The bottom picture's a fish that was raised in that unfiltered, regular creek water. 75% of them were abnormal or dead at this point. Obviously visually they're a lot smaller, so there's developmental delay. And then you won't be able to make out in this lighting, but the arrow is pointing out cranial hemorrhaging, so blood spots in the head of this developing fish. And that was a fairly common abnormality. This picture – again you may not be able to make it out, but the top one is the filtered creek water and what the image is showing is this beautiful pattern of symmetrical vasculature in the head region of the fish. And the bottom image is one of the fish raised in the regular creek water and you don't see that pattern at all, just some random blood spots.

So these are real examples in the wild of the integrated impacts of stormwater runoff. So this prompted us to get involved and try to understand a bit about maybe how we could prevent these impacts from happening to fish that are exposed to urban runoff and runoff in areas that are urbanizing. So green stormwater infrastructure – just heard a lot about that. There's this potential that it'll do wonders for aquatic animals that are exposed to urban runoff.

So this project's been ongoing now for four years and, like I said, collaboration with a couple federal entities, all pooling resources together to work on this. Funding largely from the U.S. E.P.A. and NOAA's Coastal Storms Program. So our first goal with this work was to look at

what's in stormwater runoff, just as far as chemistry goes. And then to evaluate baseline toxicity to some fish and some invertebrates. And we used kind of some model organisms I'll describe here in a minute. And then ultimately the goal of this research was to identify which – and I say "GSI" for green stormwater infrastructure which is the same idea as low impact development – ultimately which of these approaches are going to be able to minimize direct acute impacts to salmon, and then indirectly through the salmon food web.

All right, so we started collecting runoff to do these tests with and we decided to focus on a bit of the worst of the worst, so we took highway runoff. This highway I've written down 100,000 – you know, the annual average daily traffic – but in fact since the 520 started being a – started being tolled, this number's dropped down into the 60,000 range. And Bill was telling me during dinner that that's, you know, comparable to some of the highways that you have around this region.

Mr. Dowe: I-5 over the Skagit River Bridge is about 68,000 a day. Highway 20 between Burlington and Anacortes out near Fidalgo Bay is about 60,000 a day – so that kind of a number.

Ms. McIntyre: So not just Seattle-specific numbers. We chose this highway because there's a downspout on this highway conveniently located right on top of the parking lot at NOAA Fisheries. So this is the reason we chose this random site.

So we would just collect runoff and basically expose animals to it and run chemistry on it – pretty simple, basic initial approach. Some of the initial tools that we used to look at these impacts was the invertebrate ___ *daphnia* ____. It's a little water flea. And then zebra fish as our model fish organism, and this is a pretty cool animal. It's been used for about a decade now in medical research because the system development is actually very similar to a lot of the systems in humans. For example, the heart. Even though the heart itself is different, its development is similar. It's sensitive to a lot of the same chemicals, for example.

All right, so I'm going to skip this one in the interest of time. This is the toxicity to the fish – so survival. So that value up at the top left of 1 means 100% survival. Same as controls. And then over time – on the bottom you see "Time of Exposure," and some of those have dropped down to that bottom number which is 0% survival. So some of these storm events that we exposed the fish to caused 100% mortality. All of the fish died. Some of them didn't, so there's some variability there as far as lethality.

We're much more interested in the sub-lethal effects because these are going to be the kinds of things we're more likely to see in fish exposed in the wild. So some of those effects that we would see across different storm events were things like developmental delays – so effect on size because they're working to get rid of all these contaminants they're exposed to.

Pericardial edema: I can't point, but the area around the heart you can see in the two right-hand pictures is swollen. It's kind of ballooned out, and usually this means there's a problem with the developing heart itself, with circulation. So it's edema much like you'd see in a human that has congestive heart failure.

We also see directly deformities to the jaw, to the heart itself, and then the stars that are on the eyes there is because we see a small eye phenotype ___, which may also be related to heart problems.

These are some videos of some of the fish – so this is not going to work. All right. I thought that might happen. I have a Mac. This is not a Mac. Anyhow we'll just really quickly describe: So we would see things like fish unable to break out of their chorion, out of their eggshell. Obviously that's going to be a problem for a fish. This middle picture showing that pericardial edema – a big pool of blood behind the heart – so blood that's waiting to move into the heart and out through the body. It's backing up because the heart's not pumping properly. Blood clotting, blood pooling in various parts of the body. This picture's a regular fish – a control fish – and the video I was going to show you it's two-chambered heart just beating, pumping blood – pump, pump, pump. You see the two chambers beating with blood. These other two videos show a two-chambered heart that's not pushing any blood through them in this middle one. And also, lighting in here prevents you from seeing it, but there's cranial hemorrhaging. So, again, like the wild Coho embryos, these fish show blood spots in the head. And this one here on the far bottom right has that huge swelling around the heart and a deformed heart.

We also did dilutions of runoff because, of course, most fish aren't going to be exposed to 100% highway runoff. Even as an initial pass, that didn't really pass the red face test. So we did – we've done dilutions on these runoff, and we see some of these effects down at the lowest concentrations that we looked at. In this example, this was a storm event that didn't even cause mortality and we're seeing down at 5% runoff, so 95% clean water. We're still seeing impacts on some of these things: the heart size area, eye area and the number of them hatched out.

So that's all the bad news. Now is for the silver lining of green stormwater infrastructure. Can it do what we want it to do? How do we know if it's actually working? People typically have measured flows, so it can reduce the flow of water that's coming out. It can reduce the chemicals that are in the runoff. Is that going to be enough? So that's what our project focused on, was that biological effect in this side.

So the first I'm going to show you is this series of large columns. These are in the greenhouse at WSU in Puyallup and they're actually about this tall, about this wide. They actually have plants put in them, so they're much closer to like a rain garden you would have outdoors. And then we brought runoff down here – there it is – took some off, so that would be now our untreated runoff, as if it had just come off the highway. And the rest of it we passed through these columns with and without plants already built into them, collected the runoff, and did a whole variety of tests. So in addition to the invertebrate and the zebra fish, with this test we also collected wild mayfly nymphs and tested the effects on them, and we also test the effects directly on juvenile Coho salmon, and then I have an example later of the adults, as well.

So here's us pouring in the untreated and *treated* now runoff into aquaria, where we'll expose the salmon. Here they are. And then the invertebrates, we actually pick them up from the Cedar River, which has got a pretty great population of very healthy invertebrates. And this figure's showing mortality. So, again, this value of 1 up here on the top left means everybody lives. So for the controls for the invertebrate test – this is the water flea, the wild mayflies, and also the juvenile Coho – pretty much 100% survival in the controls. That's what we're comparing it to. Untreated runoff is this set of bars here and two of them are 0 so all of the organisms died when exposed to the untreated runoff. A few mayflies stuck around surprisingly. Treated runoff, though, whether or not the plants were there, 100% survival. So this was our initial, Wow, this maybe works! Even on this really bad stuff which is, you know, straight highway runoff.

We also looked at sub-lethal effects. Like I said, that's kind of more what we're thinking we'll see out in the wild. With the invertebrates, we were looking at reproductive ability, a very sensitive

test of a sub-lethal effect. We couldn't test the effect on reproduction of the untreated runoff because all those organisms had died. But we thought, Okay, does the treated runoff cause anything different than controls? And this is looking at the number of offspring that these invertebrates produce over a week-long exposure period. And the end of the story is that there's no difference here compared to control. So treated runoff, big checkmark there.

And then back to the fish in those developmental type of effects. This is looking at cardiovascular toxicity, so most of the controls are this color here, which is normal. A few of them have atrial regurgitation, so when I was saying the blood was pooled up behind – it couldn't get into the heart – that's because the blood's pumping into the heart and then getting pushed back out again. That's regurgitation. And we were seeing – a little bit of that's normal. A few fish might have it normally. In the runoff exposure, though, most of the fish either had this atrial regurgitation or circulatory stasis, where there's actually no blood moving at all through the animal's body. They're still alive because they're so small that they can work by diffusion at that early stage of their lives.

In contrast, though, the fish exposed to that treated runoff, although more of them had regurgitation it's obviously much different than the untreated runoff, and statistically it wasn't different than control. So that's again very promising.

And then lastly on this, looking at these series of things: So the proportion of fish that had their swim bladder inflated: That was – none of them had their swim bladder inflated if they had been exposed to untreated runoff. You get smaller fish when they're exposed to untreated runoff, that swelling around the heart cavity, and then smaller eyes. But, then again, with the treated runoff, whether or not the plants were present, you're back up to normal percent of fish with inflated swim bladders, normal size, normal hearts – none of the swelling around the heart itself – and then normal eyes and I have "almost" because there was a slight but significant smaller eyes. There might be something leaching through there but obviously compared to untreated runoff wholly had a lot better. So this is the summary of all those effects for different animals, different end points, different exposures. And most of these effects have been eliminated by this bioretention treatment, with a few that are just significantly reduced. I didn't talk about these, but we're working on developing molecular tools for some of these sensitive effects.

So lastly I just want to bring it back to the adult salmon. And in 2012 we did an exposure. So we've been able in the past to say, Okay, it looks like it's stormwater runoff; the timing is right; the association with land use is right; but we still didn't know for sure. So in 2012 we collected enough runoff and found a group that was willing to let us kill their fish, which ended up being the Suquamish Indian Tribe. They had a Coho fishery that they weren't making use of so they said, Sure. Come on and see how many of our fish you can kill! And what we did was we had control fish, so exposed just to their well water. And then this is our fish in collected stormwater. This is just showing the periods of time that we collected runoff. It wasn't necessarily really dry beforehand. Some days it had rained the day before. And this is just a series of photos showing us sampling various tissues during this experiment to look at those molecular tools.

And here, if you can make it out, are a couple of videos. So this one is a control fish and after a few – this was, what, 3 ½ hours in the exposure. So we've let the fish out of the tubes that we're storing them in – it keeps them calm – and we're just simply observing their behavior – well, seeing if they're alive and observing their behavior. So the fish on the left, that's a pretty normal, kind of upset fish about having been confined. The fish on the right, however, severely affected,

and the same symptoms we see in the wild after a rain event: disorientation, loss of equilibrium, and ultimately leading to death within a few more hours.

So that was 2012. 2013, last fall, we decided to say, Great, we can create the symptoms of pre-spawn mortality. Can we prevent them by treating them with something like bioretention? So we built these transportable bioretention cells, just following the state guidelines for a mixture of sand and compost over a drainage layer; collected runoff in this large stainless steel tank; helped the tribes collect the fish that we would use in the experiment; and then either did or didn't treat that runoff. And here are those different setups then: the control fish in the clean water; fish in the really dirty water; fish in the treated runoff. And we just didn't know what we would see here. It's also dark, not as dark as untreated runoff, and that's probably from the compost – you know, tannins that are present in that organic matter getting leached out. Again, just the rainfall collection for that period of time. And this table summarizes the effect. So from three different runoff events – the first one was just four hours. We wanted to take it out while we thought, Well, the treated runoff didn't seem to affect them after four hours, but maybe it's just going to be delayed. Maybe it'll take a day before they succumb to the very same symptoms. So we started taking it out for a longer period of time. And pretty much the story is simple: So control fish, everybody survived the control exposure to clean water, which actually in adult salmon is almost remarkable in itself, because they are eventually going to be dying here; untreated runoff, after four hours, half of them were dead; after 24 hours, all of them were dead; but in the treated runoff, all alive – 100% lived. We saw a little bit of lethargy in this last treatment so we're interested this fall in seeing, Well, again, you know, is it all just a matter of time? But overall, clearly the effects of treating it with bioretention was a huge improvement over really fast death.

All right, just a couple videos and then I'll summarize what we just talked about. So for 2013 – oh, yeah, that's right. My videos don't work here so never mind. Anyhow, it was the same story where control fish look great; treated water fish look great; untreated water, that loss of equilibrium and disorientation.

So, in summary, green stormwater effectiveness: Urban stormwater runoff can cause multiple symptoms of toxicity, including mortality, including cardiovascular toxicity, including reproductive impairment in aquatic invertebrates, and mortality in both juvenile and adult Coho salmon.

So in bioretention, these initial forays into effectiveness have shown that they can in fact prevent toxicity from this concentrated source even. It's very impressive. Some of the other things we're going to work on in the near future is looking at targeted molecular markers for exposure and injury, and this fall we're going to carry on that adult Coho salmon exposure with longer periods of exposure. Again, is it just a matter of time before they also succumb to the runoff, even if it's been treated, or not? And we're also going to do a simultaneous embryo exposure there and look at the effect of episodic exposures, which is, of course, what happens out in the real world. They're exposed again and again and again over the course of development.

All right. Hopefully that wasn't too fast. Hopefully it was interesting. If you have any questions, I'd love to address them. Yeah?

Mr. Pernula: One thing that comes to my mind is over a period of time, would your bioretention – would it tend to become saturated and lose its effectiveness?

Ms. McIntyre: Right. Great question, and that's an area of future research because nobody knows. As far as contaminant accumulation, whether or not it remains effective biologically, we do know something about contaminant accumulation. Metals are trapped in those systems. They're very much associated with the very first few inches of soil usually in a bioretention system, and they're not going to break down, right? Metals are elemental. They might get taken up by plants and that might be a way to remove them over time but these are areas that we're planning to do more research in the future.

The organic contaminants, which is actually what we think might be causing these effects that we're seeing in the fish – not the metals, but the organics – maybe a little bit in concert but not the metals by themselves. Anyhow, those can be broken down because they're organic. They're bacteria that are kind of cultured in those systems and can directly target and break down the organic hydrocarbons, for example. So sort of an answer, part of it being we don't know yet. Important area for future research. Yeah?

Ms. Candler: That's sort of my question as well. Is anyone – maybe it's outside of the scope of what you're doing, but do you plan to test the plants and see if some of those things – like if this were going through a vegetable garden, for example.

Ms. McIntyre: Right, right. We probably weren't going to use vegetables but I'm a vegetable gardener so I do care about that. We have a study that is going to start perhaps next year, so Department of Ecology's doing this regional stormwater monitoring program and they've put a – everybody's been paying into put a lot of funds towards research. And one of our proposals is going to be funded next year and that involves a more long-term study that includes plants. We're going to be looking at uptake into the plants. Also the inclusion of fungi in those mixtures, whether that can provide added benefits. So more to come. Yeah?

Unidentified female voice in the audience: Do you have any plans to do longer-term studies on fish and natural systems being _____?

Ms. McIntyre: Plans? Dreams, yes. Plans, I think we're not there yet. We're definitely still starting small and we're going to be working towards things like that. Yeah.

Mr. Meenaghan: So thank you for that presentation. It's great to hear people who are extremely knowledgeable and passionate about subjects like this. And that was just really good. So my question for you is – and maybe for Bill and Jan – is, you know, we on the Planning Commission, we make recommendations to the Board of Commissioners. We do code, we do Capital Facilities Plan, we do Comp Plan, we do probably Shoreline Master Plan most important in this case. So what recommendations or suggestions do you have for us on how to take this material that you presented and present that? What do we do with it?

Ms. Rozmyn: Well, I think because –

Chair Lohman: Come on up to the mic.

Ms. Rozmyn: So as a municipality that's required to do a number of things under their municipal stormwater permit, including adopt those codes that'll require folks to use or at least try to use low impact development, I think the story that Jen tells is really a positive one in that when you go to those folks who are making those decisions or cutting the checks for that you can say, We have to do this but look at the good that it does. And I think that's a positive story. Does that

make sense? So you have to do it, but being able to say, And it's a good thing that we have to do this, is going to help you, I think.

Ms. McIntyre: Is that what you mean? Was that what you meant by the question or did you mean, like, We need to have this by this size of bioretention cell installed __ here?

Mr. Meenaghan: Kind of that, too.

Ms. McIntyre: Kind of that, too!

Mr. Meenaghan: Yep. You know, we've talked previously about incentivizing – you know, driveway materials, roofing materials, that kind of stuff, and so that's kind of what I'm – I think that's what we're looking for. What can we put in the Shoreline Master Plan that will help the fish?

Ms. McIntyre: And I can't answer that because that, for me, is an engineering question, and I don't know how engineers play into their picture of implementing these things – whether, you know, whether that's a resource that the state can provide through something like the Stormwater Center or not.

Ms. Rozmyn: Right. And there's also a number of trainings that are being provided right now from the state.

(several unintelligible comments)

Mr. Dowe: I know that when it comes – you're talking about what do the engineers do, and they go to the Stormwater Manual for their references at the moment. A lot of this is new so it's still – we try things and sometimes they work and sometimes they don't. But that's where we go right now. And the 2012 Stormwater Manual has a lot of low impact development things allowed in it. We're the only ones that don't even know about it yet. So that's what I want to be talking about next year.

I also would like to take this opportunity to mention that out in front of our building the garden that you saw is a rain garden. The roof runoff goes through that before it leaves. And then the big parking lot project? I don't know if you noticed it on the way in. That's going to be a giant LID parking lot with pervious pavements and plants and so forth.

Ms. Rozmyn: Yeah, so it sounds like you're ahead of the game in a lot of this area.

(Several people are talking at the same time.)

Ms. Rozmyn: And like I was saying, there are a lot of trainings coming up, and it's being broken down into, for example, specific training for public works folks or for real estate folks or if you need to revise your codes, which it sounds like you do, there's a training for that as well.

Ms. Candler: So who puts that on?

Ms. Rozmyn: So it's being sponsored by the Department of Ecology. It's being put on by Herrera Environmental, and they are going to be all over the state starting tomorrow – no, starting – I think they started today actually. So there's a – on our website – on the Washington

Stormwater website, in the middle column of the front page there's a posting and you can click on that. It'll show you all of the classes that are being offered.

Mr. Dowe: Let me –

Ms. Rozmyn: Oh, yeah!

Mr. Dowe: I bet we can go there.

Ms. Rozmyn: I bet we can: wastormwatercenter.org. Oh, perfect. There it is. So we're having our first Washington State Municipal Stormwater Conference in November, for anyone who's interested, and then we also have this statewide LID training program. So it goes and talks about all the different technical workshops series that they're offering. And I don't see that – there's a – on one of these there's a whole table of where they're being located and what classes are when. And I don't know exactly –

Mr. Dowe: There are a lot of classes and they're all over the state. Some – north is probably Everett. It's probably not Mount Vernon.

Ms. Rozmyn: Up here is the course catalogue, so if you go to the course catalogue there're 64 trainings statewide and they're all free – free of charge. They're not charging. Yeah, it's really great. The Department of Ecology's budget is paying for that so thank you, Department of Ecology. So here's just an example. They have introductory classes, they have intermediate classes, and then advanced, as well. And then if you – you can click on any of these and it'll tell you about the class and it'll give you the agenda and all that. Any other questions?

Mr. Dowe: If you contact me, I'll help you find it.

Ms. Rozmyn: Thank you very much.

Mr. Dowe: Well, thank you.

Chair Lohman: Thank you very much.

Mr. Dowe: Are there any more questions?

Chair Lohman: I don't think so. So moving on on the agenda to the Department Update – Dale, you're on again.

Mr. Pernula: Okay, a little earlier we were talking about the population and employment allocations. You may recall at the last Planning Commission meeting – I'll hand some of these out – there was a presentation by Kevin Murphy, the Executive Director of SCOG. He made a presentation on these population and employment projections and allocations for 2015 to 2036 which will be used in the 2016 Comprehensive Plan Update. Those projections – and he went over a very full report on it – were presented to the GMA Steering Committee on July 31st and these – they were adopted by the GMA Steering Committee.

And now why it's so important is that this is the basis – one of the major bases of what our Comprehensive Plan Update is about. We're making new allocations within each of those urban growth areas and for the rural Skagit County, as depicted in this table at this time. See that

they're still *initial* population projections. Because what we have to do now, as a county and as each of these political entities, they have to go and make sure that they can have a plan where they have the capital facilities to be able to provide the services to these populations and these numbers of employees over that 20-year period. So as you may see, the left hand portion is the population forecast – population allocations and forecast – and on the right hand part is employment. For Skagit County what's important is on the bottom row. It says "Rural" (Outside the UGAs). You can see that the rural population is projected to be 20%. That's the same as it was in the current Comprehensive Plan. And for the UGAs, it's 80%, so that's the same breakdown between the two. However, you might see a little bit of a difference when you're talking in terms of employment because, for example, Bayview Ridge will have a very small population growth of only .2%, yet 11.2% of the employment forecast. Those are a couple areas of the county, the rural population growth and the UGA employment growth for Bayview Ridge. Those are some important factors that you should be aware of that are going to occur with our Comprehensive Plan Update as well as all the other entities' in the county.

That's the first thing that I had on. The second thing is today – actually we put notice – notice was published in the newspaper last week, and today all the Bayview Ridge documents were released for a public hearing four weeks from tonight on October 7th. If you go to the Bayview Ridge webpage off of the Planning and Development Services webpage, you'll see that there's a proposed, revised Subarea Plan. There's also a lot of the maps that are associated with it (and) the Subarea development regulation amendments. There's a staff report. The Notice of Availability is there. The EIS Addendum is there, as well as comments that were made at the community meeting that was held on June 26th. There is a lot of material there, particularly in the Subarea Plan and the development regulations. And the hearing on that is in four weeks. You may recall the history of it. We did adopt a new Subarea Plan last fall, but the Commissioners received a request in the form of a resolution from the Port of Skagit to make some changes and to comply fully with DOT's recommendations regarding airport environs, and we are trying to comply with that.

If you have any questions on that, give us a call and we'll try to help you through it because there is a lot of materials.

In addition to that release, there was also another Comprehensive Plan Amendment release, and that's regarding an application by Kim Yong Ho of 2.65 acres of land located on Highway 20 at the La Conner-Whitney Road. It's from Rural Reserve to Small Scale Business.

Also I'd like to mention future or potential future Planning Commission agendas that are coming up. September 23rd, which is two weeks from tonight, we have the presentation on Transfer of Development Rights by –

Chair Lohman: The same night as the hearing?

Mr. Pernula: The same night as the hearing. We have the hearing on the Capital Facilities Plan. So those two items will be on the 23rd.

On October 7, which is our normal meeting, we will hold a hearing on the items that I just mentioned: the Bayview Ridge and the other Comprehensive Plan Amendment on Highway 20.

Then tentatively we will have deliberations on October 21 – a second meeting in October, if necessary. We'll talk about that later.

Chair Lohman: For which one?

Mr. Pernula: On both of those. And November 4 –

Chair Lohman: Wait. Deliberations on – there's three things.

Mr. Meenaghan: Bayview Ridge and Comp Plan?

Mr. Pernula: Yes.

Mr. Meenaghan: What about CFP?

Chair Lohman: What about the CFP?

Mr. Pernula: Actually have we had action on a separate date on the Capital Facilities Plan or have we done it the same night as the hearing?

Mr. Walters: The Notice of Availability indicates that the public hearing stops two days before the comment period. The comment period goes another two days so you wouldn't be able to take action to make a recommendation on any of these the same night as their hearings.

Mr. Pernula: So on the Capital Facility Plan you could take action on either October 7 or October 21.

Mr. Walters: And I think for scheduling purposes we'd prefer that you deliberate and take action on October 7th because if the Board needs to make any changes it'll need its own time.

Ms. Candler: Dale, do you do a follow-up memo on what you just listed?

Mr. Pernula: I sure can. I can just type this up.

Ms. Candler: Would you please, because I got lost somewhere in the middle.

Mr. Walters: It's also on the Planning Commission –

Chair Lohman: Okay, but logistically are you anticipating a lot of public participation?

Mr. Pernula: On Bayview Ridge, probably yes.

Chair Lohman: On Bayview Ridge. So how about the Ho Comp Plan Amendment?

Mr. Pernula: Probably not.

Mr. Walters: These items are listed on the Planning Commission webpage, too – the dates with their topics.

Ms. Candler: I must have misunderstood you. I thought you said we weren't going to have enough time to be able to put that on October 7th.

Chair Lohman: It's October 21st.

Ms. Candler: So you're saying either October 21st or November 4th?

Chair Lohman: Well, wait a second. He was talking about the Capital Facilities Plan deliberating on the 7th.

Ms. Candler: Okay.

Chair Lohman: And I was questioning logistically can we do that?

Mr. Pernula: You can do it. We can talk about that later, but with a long hearing on Bayview Ridge, maybe not.

Mr. Walters: But there's flexibility. So you can take it up if the hearing is short. If the hearing is long and you want to go home you can –

Chair Lohman: We can always put it on the agenda but not get to it?

Mr. Walters: Right.

Mr. Axthelm: So the hearing's on October 7th and then we'll have the deliberations on October 21st. Is that what you're saying?

Mr. Pernula: On which one?

Mr. Axthelm: For Bayview and Comp Plan.

Mr. Pernula: Bayview Ridge and the other Comprehensive Plan Amendment, the hearing will be on October 7th. Deliberations would be on the 21st, and actions on the 4th.

Chair Lohman: What he's talking about on the 7th, deliberations in addition for the Capital Facilities Plan.

Mr. Axthelm: Okay. That's what –

Matt Mahaffie: Ryan, question for you on the Capital Facilities – the comment hearing running long on purpose? Historically we deliberated the same as the hearing, same day as the hearing on those. I don't think we did last year, but we had before.

Mr. Walters: Some time ago we started setting the comment periods to end two days after the public hearings, at Commissioner Wesen's request, so that anyone who attends the public hearing, speaks, and doesn't have the chance to get additional comments in can have two additional days to submit comments in writing. So that precludes taking action the same night as the public hearing, but it gives people an additional chance to make some comments.

So your September 23rd meeting is maybe a little short because the CFP public hearing is probably short, but you will get that TDR update in that meeting. So this is the Planning Commission webpage, and if you can see it you can see the topics and type of meeting that you're having on each of those dates. And, again, it's somewhat flexible. Public hearing dates are set in stone because they're advertised, but the deliberations could shift.

Mr. Meenaghan: Maybe you answered this already, Ryan. You're saying that we can't do public hearing on Tuesday the 23rd for CFP and deliberate the same night, correct, because of the public comment period?

Mr. Walters: Right. Even if there are no comments.

Mr. Meenaghan: Because October 7th is a – it's ugly. The Bayview Ridge hearing, it's going to be long.

Mr. Walters: On the other hand, your deliberations might be short.

Chair Lohman: If we do the deliberations right off the top.

Mr. Meenaghan: Yeah, true.

Mr. Walters: Usually, unless they're very short, I don't think we'd advocate that because if people were here for the public hearing they'd probably want to –

Chair Lohman: So in crafting the agenda, I think we should put the deliberations on the Capital Facilities Plan first, followed by the hearing.

Mr. Pernula: On the 7th?

Chair Lohman: Yes.

Mr. Pernula: Okay.

Chair Lohman: Is that what you guys think, too?

Mr. Meenaghan: I think it's respectful to the public.

Mr. Mahaffie: Not if things run normally. If they don't, it could be. I mean, normally they're not extensive deliberations maybe, so – grammatical catches of things, but that's about it.

Chair Lohman: Yeah, I –

Mr. Pernula: I think you'll know better after the hearing on the Capital Facilities Plan on the 23rd.

Chair Lohman: I mean, we – on the 23rd we can even adjust our thinking.

Mr. Pernula: True.

Chair Lohman: Because last time it didn't take that long.

Mr. Walters: It's a little longer than just very brief deliberations, though. There were quite a number of changes recommended and a lot of people –

Chair Lohman: Part of it, too, is there was that formatting change completely.

Mr. Walters: Yeah.

Chair Lohman: You went from the old style to the new style. There was a lot of –

Mr. Pernula: A lot of questions about that.

Mr. Walters: There were more questions, though, I think, about particular drainage projects and that kind of stuff.

Ms. Mitchell: I wasn't here then, but we've been pretty thorough! So I'm concerned about that.

Chair Lohman: Okay?

Mr. Pernula: That's all I had.

Chair Lohman: Anything from you, Ryan?

(silence)

Chair Lohman: Okay, Planning Commission Comments and Announcements. Kathy?

Ms. Mitchell: I wanted to thank Dale and staff for helping me get started. It's going to be a long way to go and I do appreciate everything that you've done. And also, too, the Commissioners for allowing me to join you guys to help with County issues, and I'm looking forward to working with each of you. So I'll do my best for you.

Chair Lohman: Welcome aboard!

Ms. Mitchell: Thank you.

Chair Lohman: So is there a motion to adjourn?

Mr. Mahaffie: So moved.

Chair Lohman: (gavel)