Department of Ecology – Water Quality Program
Development of Low Impact Development (LID) Standards for the Municipal Stormwater General Permits

Joint Advisory Committee Meeting
August 12, 2010, 10:00 am–4:00pm at
Ecology Headquarters
MEETING SUMMARY

Agenda

Overview of Ecology detailed outline and clarifying questions

Advisory Committee members – 3 key pieces of input

Public input

Ecology response and next steps

ATTENDEES

A list of attendees is attached.

MEETING SUMMARY

The meeting summary provided here is a transcription of the flip-chart notes taken by Kate Snider during the meeting and supplemented by staff notes. This does not provide a full documentation of the dialogue, but provides a record of the primary input received from the attendees.

Morning session – Ecology overview and clarifying questions

Ecology Overview

- Ecology staff worked with the agency's senior management to understand the proposal and its implications. The proposal is a first step, as we expect your input and other comments to help us in developing final permit language.
- Ecology expects to issue preliminary draft permit language this fall for informal comment then formal draft permit Mar/April 2011 for Formal public comment. We plan to issue the final permit by the end of 2011, to be effective in 2012.

Development Code Updates

Ecology overview

The threshold questions are:

- Should we require changes to broader development codes? Ecology: yes.

- Should we give specifics what to adopt in the code revisions? Ecology: No, there is too much variation in local code structures. We expect the performance standard to drive what is needed in the codes to meet the site requirements.
- When should this be implemented? Ecology: The proposed deadlines are consistent with GMA update deadlines (2014 and 2015).

Committee clarifying questions:

- Why are there two groups for the timeline?
    - These dates are consistent with two different GMA deadlines for these jurisdictions. We are not lagging Phase 2 behind Phase 1 in those counties where deadlines are 2014.
- Do you plan to incorporate the Puget Sound Partnership (PSP) documents into the permit or as guidance?
    - Yes both that and the EPA checklist are helpful guidance that we will reference as assistance or use as guidance, but we would not incorporate those documents into the permit.
- Would Ecology review GMA updates as part of the Dept of Commerce review process?
    - We don't envision involvement with the Commerce review. The intent is to piggyback on the code review and public process for efficiency, but is not additional involvement in GMA.
- The deadlines are 3-4 yrs out. Where did those numbers come from? During implementation group meetings, 1-2 yr implementation timeframes were discussed. There was some consensus in implementation committee for 2 yrs, was there additional input from local governments?
    - The intent is to align the dates for efficiency by linking up with GMA. We are also hearing from others about concerns with meeting the current timelines.
- Endnote 3 says that new permittees are not subject to the deadline. Who are the new permittees?
    - Under requirements of the Phase 2 federal rule for the Clean Water Act, we will look at a few small cities that now meet the threshold for evaluation for coverage. These are very small towns that don't currently have permit coverage and they will be starting from scratch. These new Phase 2's would not be required to meet the same schedule as the ongoing permittees.
- Like the linkage to GMA but have concerns because in the past those deadlines have slipped. Funding for Commerce has been pulled. These deadlines could change again.
- Will coordination with GMA really add efficiency for NPDES? Exactly what is required for GMA – are the codes really overlapping? Will this add a burden to the municipalities?
    - Ecology is requesting comments on timing and is open to other timelines.

- If you take into account the code updates already done voluntarily by municipalities, could you streamline or accelerate the process for those folks who have already done much of this work?
    - We know there may be early adopters.
- Ecology: We are requesting feedback. The key questions for feedback are: should we link this with GMA? Should we lag or not lag the Phase 2 timeline?

Basin Scale Approach

Ecology overview

- We decided against a broad basin planning approach and instead are requesting comment on using certain triggers for a basin-scale analysis. We do not wish to overlay another basin plan on watersheds or revisit previous planning decisions. The triggers are 1) expansion of the Urban Growth Area (UGA); and 2) an increase in density.
- We propose 80 acres as the threshold area based on talks with Commerce, but in fact it is somewhat arbitrary. We'd like feedback on that as well. The threshold is cumulative, so if there is a 40 acre expansion and 3 years later another 45 acres, it triggers an analysis of the impacts.
- The assessment is a detailed analysis with a modeling effort. Ecology acknowledges there are significant details to work out with this approach. There could be mitigation of water quality impacts, such as LID and other measures.
- We will provide guidance on the analysis with the draft permit.
- If there are residual water quality impacts, the analysis must then look at whether they are in the public interest. This approach to the incremental degradation of water quality is in our water quality standards and mirrors that language.
- It is easier to make the argument that increased density is in the public interest inside the UGA. It's more difficult outside the UGA.

Advisory committee clarifying questions

- Do the thresholds apply to single UGAs or to all UGAs in the jurisdiction?
    - We are thinking it should be cumulative on a sub-basin or sub-watershed scale. The thresholds would apply to separate UGAs. We need to work out the scale at which to implement this requirement.
- Does the change in density also refer to a change in use, such as from residential to commercial? Would Ecology consider applying this to a change in use?
    - The intent is a land use change that increases urbanization, such as when a decision on zoning triggers increased pollutant loading.

- Where there is a range of zoning, such as 4-8 homes per acre, would you apply the higher end of the range? For non-residential areas, such as a manufacturing park changing to a business park, it's hard to measure the change in density when there is a land use change.
    - We propose the local government model the worst case scenario. If that is 8 homes per acre, model for reaching ultimately that level. If it's 4/acre, model for that.
- With this analysis, as with SEPA you identify the impacts and identify the mitigation measures. Then would there be a requirement to implement the mitigation?
    - Yes.
- We see this as simply a study - just an expanded SEPA analysis. It doesn't seem to be a basin plan. Is the mitigation requirement the substance? How do they set targets to track?
    - The analysis could have several outcomes 1) no impacts; 2) significant impacts, but we will mitigate, and this will become requirements; or 3) impacts will happen no matter what. If they cannot fully mitigate them, then there would be a public interest analysis. If there is an impact that can- not be mitigated and it violates water quality standards,, then the change in land use doesn't happen.
- Is this for a change in zoning?
    - Yes, we are not intending to revisit existing land use decisions. This addresses all significant changes from here on out.
- In SEPA the answer often is, yes we can do it because we'll follow the current regulations and that will mitigate the effects. We need more details to clarify the questions that the basin evaluation is really trying to answer. Are we trying to retain natural vegetation or reduce impervious surfaces? It would help to state that up front.
- A procedural question for the analysis, is whether there's a performance standard or guidelines? Without some sort of guidelines regarding impacts what kind of targets are we using? How will it benefit receiving waters? Without that it's just another procedure.
    - To be a meaningful process with on-the-ground changes, performance measures and tools will be necessary. We will need to develop modeling tools. Any proposal would need metrics for the targets, and we'll be working on those.
- There aren't clear requirements for coordination among jurisdictions at a larger scale foreither the planning or the mitigation proposals in the larger watershed. There could be trade-offs in the basin/watershed – how do you get to this analysis?
    - There is a cross-jurisdictional obligation with UGAs between cities and counties. There are various approaches to basin planning – it is poorly defined and in some cases it's expected to fix everything. We will need to clarify how it works for this analysis.
- Has Ecology evaluated the areas likely impacted based on past UGA expansion, in evaluating the appropriateness of the 80 acre trigger?
    - The number was selected through discussion with Commerce but it more or less arbitrary as a starting place for feedback and discussion.

- Appreciate the need for a trigger to address future impacts, but it doesn't get at the current development and water quality, such as with retrofits.
- Could the definition of a "significant" density change be proxy for area of new impervious surface? Density changes can and are being made without increase to impervious area. Reframe to focus on impervious surface change that affects water quality, so it is not just density. This could be intensity rather than density.

Site and Subdivision Scale Provisions

Ecology overview

- Built the requirements around a hydrologic performance standard. We use it to meet technology-based and water quality-based requirements of federal and state law. We also wanted to use it as a tool to protect beneficial uses. Our focus is that land cover change is primarily a change in hydrology. The proposal also addresses pollution control goals.
- We looked at both a volume-based standard and an extended duration. SVR ran the models you saw previously. We did more modeling and made changes in the assumptions. We think that rain gardens and permeable pavement are known and available technologies. So, we assume their use on all development types except high ADT commercial roads.
- Models show the hydrologic performance standard using an extended flow duration curve as implementable with the Western Washington Hydrologic Model (WHHM). We could do some work for the volume-based standard if needed.
- Mandatory list #2 takes into account problems with standing water that can create aesthetic and health problems. Mandatory list #2 does not include rain gardens in order to reduce the risk of extended periods of standing water in the late spring, i.e., more than 3 days to drain 12-inches of water.
- The intent of mandatory list #1 is to give more flexibility. If a project does everything on the list it should come close to meeting the performance standard. So, projects implementing list #1 do not have to demonstrate compliance with the performance standard.
- We created the feasibility criteria list in part with input from technical committee regarding the APWA matrix of BMPs.
- For competing needs we expect input. We would like examples of competing needs for community values and vision. Perhaps these can be addressed on a case-by-case basis using a variance approach.
- Inside the UGA there is more flexibility because there are more constraints. It is stricter outside the UGA because there is more space, more options, and more good habitat.
- Outside the UGA there is no feasibility review and less flexibility. In the table section describing New Development-Outside Current UGA/CUA, the line reading "≥5 acres and any project on parcels 5 acres or larger," should instead read as follows: ≥5 acres and projects exceeding 10,000 sq ft hard surface or ¾ acres disturbed on parcels 5 acres or larger."We are using the thresholds similar to those in the current permit. "Hard surface"

means pervious or impervious surface or gravel. Anywhere the term, "Pervious pavement" is used, assume that it refers to pervious pavement, or to impervious pavement with rainwater collection and spread under the surface to infiltrate.

- To clarify section 1.e. of mandatory list #1 for commercial projects - green roof requirements can be met through dispersion of runoff from a regular roof below the parking lot.
- If using the mandated list option, butsome techniques on the list are infeasible—you have to use what is left on the mandated list. We acknowledge this will not meet performance standard.
- This does not address the Flow Control requirement (which is separate).

Advisory committee clarifying questions

- Is the saturated hydraulic conductivity of 0.15 inches/hr the long-term rate?
    - It's the initial rate. We use it as the long-term rate for rain gardens. When infiltrating under pervious pavement we cut it in half to estimate the long-term rate.
- What if the there are geologic hazard concerns, like a steep slope?
    - If using the flow duration curve to comply, you would have to use LID methods that don't put water into the ground. But if you are using the mandatory list and some techniques are not feasible because of the geologic hazard, you have to use what's left on the list. This is only in regard to the LID performance standard, as the regular, existing flow duration requirement for stream protection still stands. But if you have these issues for the LID standard, you would go to the mandatory list.
- For project sites >2000 square feet, the mandatory list is minimum requirement #5 with pervious pavement. Why not rain gardens? This pushes specific techniques.
    - Comments are welcome. For the rain garden to be on the list we need to specify a minimum size which might be difficult to implement with a project that is between 2000 and 10,000 square feet. Pervious pavement will be standard, but rain gardens take space and involve landscaping. So, we didn't assume they are always feasible on these small projects.
- What if the project has no net effective impervious surface?
    - Can use 65/10, a.k.a.,full dispersion, to achieve no neteffective impervious surface – that's an option on all of these and meets the LID requirement
- Footnote vi requires a variance for granting relief due to a local preference, value, or vision. Variances are expensive and require mitigation. What about showing an equivalence of protection instead?
    - It's my understanding that is part of the variance process.
- The table includes the terms; parcels, disturbed areas, hard sufaces…Is "project site' the same as parcel size in the requirements for redevelopment inside the UGA?
- Project site is the area of disturbance. It may be a smaller area than the parcel size on a larger parcel.

- Clarify the sizing of rain garden in B.1.d for mandatory list #1. How much is required?
    - On the mandatory list, using rain gardens of the size specified and directing all runoff and permeable pavement overflow to them will come close to the performance standard. This is a minimum size. I welcome input on this.
- For competing needs, is the community vision a competing need? For example, in the City of Olympia the downtown area has zero lot line zoning. It that a local community vision?
    - That is a good question that requires more input.
- The performance standard requires meeting flow durations down to 8% of the 2-year flow – where is this on the graph?
    - On the graph, 8% of the 2-year flow for an historic land cover coincides with a flow frequency that is exceeded 10 percent of the time. .
- For treatment credits in B.5, you previously said that bioretention with underdrains is not LID – this says to collect it.
    - Right now there is no runoff reduction credit from the model for infiltration if you have an uderdrain. But if it passes through suitable soils, all that water is considered meeting the treatment goal for enhanced treatment.
- How does a jurisdiction such as Vancouver or Bellingham show that they are in a "highly urbanized area?"
    - This definition is based on Ecology mapping. Ecology has already designated qualifying areas. There are no areas in Vancouver or Bellingham that qualify. The Local government would have to demonstrate it has better information to get additional areas qualified. It's a matter of scale. These are large basins. It would not be done for an individual project. Getting additional areas qualified would have to be sponsored by the local government.
- Highly urbanized areas match hydrology to existing conditions. If there is no net increase in impervious area, could they show they meet the LID standard?
    - If there is no increase in impervious area, they don't have to show this.
- It is surprising that the mandatory list does not include water reuse. Why?
    - Rainwater reuse is not a commonly used practice. There are not a lot of projects, and in fact none of our grants have included this type of project. It can be used to meet the performance standard. If it were on the mandatory list it would be required in a residential development and we don't think we're at that point.
- For mandatory list #1, where did you derive the number 7.5% for sizing rain gardens?
    - We started with SVR's modeling of denser (10 homes/acre) residential development that we shared with you at earlier meetings. We eliminated the small individual lot rain gardens that were in the original assumptions. But we retained the larger rain garden that paralleled the public road. We are proposing that rain gardens occupying 7.5% of the total development area (lots and roads) is a reasonable expectation. Using a rain garden of that size as well as the other assumptions re pervious pavement, should result in compliance with the performance standard.

- What about using soil amendments, which were on the feasibility list?
    - These are already included as part of minimum requirements #5.
- Do the figures 7 1/2% and 4% refer to the toal land area?
    - Yes.
- Are the percentages based on modeling, and if so, what was the infiltration rate?
    - It was applicable to all infiltration rates.
- Does the 7.5% apply to the bottom of the rain garden or the whole footprint?
    - It applies to the surface area, including side slopes – the land taken up. In early guidance documents from the East Coast, they recommended making the rain garden 5% of the drainage area.
- Does this exclude biofiltration with underdrains and biofiltration swales?
    - There is no biofiltration in this proposal. We are not opposed to modeling loss for some of these techniques, but we don't have a way to model them.
- If there is no hydrologic benefit, we can't use them? What if at less than 0.15 inches/hour you add back in part of the surface filtration for treatment?
    - Yes, you can get treatment credit for water that has passed through qualifying soils.
- Did you run scenarios regarding different ponding depths and control structures?
    - We ran the model only at 12 inches ponding depth.

Afternoon session – Each Advisory Committee Member Articulates Top 3 Pieces of Input

Cathy Beam

1. It's important that the feasibility review criteria clarify the relationship of aquifer recharge areas and LID criteria. In our city the drinking water aquifer is under part of the city. We need to know how to implement LID practices and protect groundwater supply for municipal drinking water.
2. Regarding competing needs, most cities have adopted vision documents that go out 20 or 30 years. How should they resolve with new requirements for LID practices, for example, zero lot line development or growth expectations in urban centers. We need to balance these with LID.
3. Regarding the watershed approach and how to meet the targets at that level. Ecology could consider providing some flexibility for urban centers through watershed level mitigation to meet targets, rather than site by site. An example is using transfer of development rights.

Curtis Hinman

1. Regarding the mandatory lists, there are other site practices that are well proven and have good experience with them, but are not on the list. Examples are PIN foundations and rainwater harvesting. They don't apply everywhere, but can be used. The technology is all

there, it's just a matter of public perception. Could there be a broader list allowing flexibility to use these practices?
Regarding bioretention, there should not be a lower size limit. Ecology could do more modeling to achieve an acceptable residence time by adjusting the ponding depths and using underdrain systems with control structures. They can get hydrologic benefit in low permeability soils. Also look at the ratio of contributing area to raingarden.

2. Basin analysis and how it is used is critical. There is a lot more work to do on it, and many people would be available to help. It is especially important in rural areas to protect sensitive areas outside UGAs. Native vegetation protection varies greatly across jurisdictions, so this is a critical piece. We'll need a performance standard associated with watershed analysis.
3. Outside of UGA's the tools are limited. The requirements should apply performance standard to smaller parcels, such as more than 2000 sq ft and less than 10,000 sq ft.

Dave Tucker

1. Suggest Ecology consider making an adjustment to the models being used. Minor modifications could be made to the Western WA model that would be helpful and might be relatively inexpensive.
2. If Ecology couples this process with GMA, it should make sure the permit uses common language for the same things, for example percent slope (compare to GMA geologic hazard areas), and setbacks in rural areas for on-site septics systems (compare to Health requirements to avoid confusion).
3. Regarding the basin proposal, Ecology needs to think about how to approach annexations and incorporation with regard to the triggers. For example, what happens if Silverdale incorporates?

Dave LaClergue (on behalf of Tracey Tackett)

1. Basin thresholds are triggered by density increases. We would prefer the trigger be the anticipated increase in impervious area instead. Jurisdictions can increase density without added impervious coverage. In many cases it is good for the environment to increase density in urban centers. If it makes it harder to increase density in urban areas, that's a problem for us. For example, South Lake Union is close to 100% impervious now, it would be the same after development but with a higher density.
2. We are skeptical of the narrow definition of competing needs. We can meet GMA targets and do LID, but if it requires a tall building and high cost, development will go outside the UGA's. If LID standards restrict urban development such as zero lot line development, is that the community vision or state law? There's a need to discuss further the goals of GMA versus LID goals.
3. The proposal leaves out bioretention in many places where it is appropriate. Bioretention is the "workhorse" of LID. It is the most cost-effective and the most effective. Pervious pavement can be done badly and isn't as well known. We prefer to see "green" LID over "gray" LID practices.

Hans Hunger

1. The basin timelines are good. Ecology needs to define the intent of the basin planning.

2. Regarding treating development inside and outside the UGA differently has some logic to it, but 5 acres in either place and be treated the same. This distinction seems arbitrary if they are the same size. In Pierce County the commercial areas outside UGA's are small, and this is hard to do. Large projects in or out of the UGA should have the same requirements.
3. We have a lot of questions on the model. Is the performance standard really achievable? We need a way to continue to evaluate different scenarios over time, perhaps through a process similar to the TAPE commission.

Art Castle

1. Feasibility criteria need work regarding financial impacts and setbacks. I will provide detailed comments. Competing needs should have a variance process. In general, the proposal should have better definitions.
2. Technical training is missing and needed. The permits should require that jurisdiction staff get training, such as earning technical certification from WSU. This is important for creative application of LID, and for review and design.
3. Regarding the model, it would be better to set the size of LID facilities on the mandatory list based on the site soils and rainfall amounts.

Curtis Koger

1. Test methods for infiltration rates should be specific. Basing them on grain size analysis could be problem because of widely differing results. That piece (estimating infiltration rates) is fundamental, especially at the lower end of infiltration rates. It (infiltration rate estimating) is critical to making systems work without getting adverse impacts and system failures.
2. Concerns regarding unintended adverse consequences due to a horizontal flow rather than vertical, especially in rain gardens and pervious pavements.
3. Maintain design flexibility as much as possible. A case by case approach is needed for design team due to the realities of site and groundwater constraints. Include a variance process.

Ron Wierenga (on behalf of Al Schauer)

1. Regarding the scale of what's being proposed, Ecology should only require LID on larger projects and not small projects such as single family residences, especially in rural areas. This is an unnecessary burden on local govennments and applicants. The cost will go up and will contribute to a public perception about over-regulation.
2. Exempt LID from projects that discharge to large water bodies. The current manual is reasonable and is enough. Don't confuse stream protection standards with the LID standard. If you require LID for LID sake, it will be hard to explain to our communities.
3. In general, the proposal is too prescriptive and too complex. In Clark County we are trying to simplify development code requirements, not make them more complex. It will be a burden to walk applicants through the requirements. There is not enough flexibility. Ecology should start thinking about how jurisdictions can do an alternate, equivalent approach.

Ross Dunning on behalf of Ports

1. Many ports discharge directly to large water bodies and have treatment but not flow control requirements. LID for treatment should be recommended and encouraged but not mandated, especially for ports with industrial sites for heavy containers. They require 20 inches of pavement and can't do LID. The technology is not developed, and if mandated at ports, there could be failures that would set back LID.
2. Regarding cost feasibility, this needs to be included as part of the competing needs evaluation. Land is very expensive and the percent of area taken by a rain garden will be too high for ports. Treatment is required but other treatment technologies are often more appropriate than LID. The requirements should allow flexibility.
3. Provide more detailed guidance to jurisdictions how LID relates to NPDES industrial permits. Applying treatment that will not meet the industrial permit requirements will not help.

Bruce Wishart

1. Regarding the application of the performance standards, concerned that it is not applied to many sites, especially sites less than 5 acres. Sites below 5 acres are likely to opt for the optional mandatory list. A simpler approach is to apply it more broadly with a feasibility cost analysis. The lists are flawed in that they have no water reuse, no green roofs for residential development, no vegetation retention or impervious surface requirements. These will not happen if not required. There is a lack of standards for the mandatory list items.
2. For small projects we are intrigued by the Seattle Public Utilities approach – a checklist and requirements, even incentives.
3. Feasibility review criteria, especially the competing needs criteria for a community vision/GMA exemption is huge. It may eliminate application of performance standard and is not in compliance with Hearings Board decision with regard to feasibility, Maximum Extent Practicable, AKART.

Craig Doberstein

1. Regarding basin planning, uncertain whether the triggers of UGA growth or density accomplishes the goal of protecting existing high value resources. There's also a need for a lot of retrofit.
2. The Pollution Control Hearings Board ruling says to aggressively implement LID to Maximum Extent Feasible (MEF). The proposal needs to do this aggressively, but the flaws of the proposal are the need for more flexibility with bioretention and small sites. The proposal can do more and is falling short of MEF and is too prescriptive.

Wally Costello

1. The proposal defines "significant" as 80 acres. In the City of Bonney Lake 5% of the city is 175 acres, so 80 to 100 acres seems reasonable.
2. Competing needs criteria should consider roads for buses and heavy trucks. Could we collect and infiltrate in close proximity but not under the road? There are structural issues.
3. Will rain gardens count as open space if they are co-located with open space?

Doug Navetski (on behalf of Harry Reinert)

1. Concern regarding pervious pavement on road ROWs, and the impact to the life of the road.
2. Regarding the competing needs criteria, does NPDES trump GMA? There may be concerns about that legally.
3. This is a good start. Consistency in terminology and details will be important. For example, how will infiltration rates be tested? When testing soil infiltration rates, a scraped and compacted site percs very differently than under natural forested conditions.

Wayne Carlson

Comments mirror those from Dave LaClerque

1. This basin planning approach is a good first step to address the PCHB language. But impervious surface should be the trigger.
2. The definition of competing needs is too narrow. The community may have a different vision like zero lot line in an urban downtown.

Tom Putnam (on behalf of Jan Hasselman)

1. Ecology needs to clarify the performance standard. Does it encourage or require LID? Will it achieve protection of beneficial uses? It should be applied to large projects inside UGA. The mandatory list needs to be evaluated by how closely it achieves the performance standard. It should add more bioretention and rainwater harvesting.
2. The proposal falls short regarding basin planning. There is no requirement for inter-jurisdictional cooperation at a watershed scale.
3. The proposal should require that code revisions address removing barriers to LID. Jurisdictions don't know how to require and enforce. They need guidance to remove code barriers, something with metrics. We can't have something that prevents LID. An example is allowing narrow roads.

John Palmer

1. Like the concept of the performance standard and a mandatory list, and think it can work. The key is the strength of the mandatory list. There's potential to use the PSP LID matrix for forest cover and impervious surface. Suggest adding this to the mandatory list as an option. Also, don't abandon the use of rain gardens for mandatory list #2.
2. The basin plan proposal is an elegant design with triggers, but there's concern that we're not getting at protection of high quality basins on the urban fringe. Will this approach protect them? Local governments must identify areas needing basin scale work to protect hydrology, and use land use tools to discourage expansion.
3. Concerned whether the Basin Planning proposal is getting at the issue. Are we using land use tools to protect basins on the urban fringe? May need an approach to protect the high risk – high quality basins from impacts.

Alice Lancaster

1. Rain gardens should be included in MR5. Bioretention is AKART or will be by 2014. Small parcels should still implement green systems, and prefer bioretention to a drywell. So much development occurs on these small sites.
2. Need a clarification of mandatory list #1 regarding redevelopment: areas requiring mtigiation must be mitigated by one of these methods. Items a, c, d, and e are all different BMPs, and a development may not need all to mitigate the impact. It would be too costly and overdesigned. We need the flexibility to choose.
3. Sizing of bioretention on mandatory list #1: Rather than the ratio of total area to footprint, use the contributing surface area and the bottom area of rain garden. In a review of the models, in the City of Seattle with 0.25 inches per hour, a 7.5% sizing factor will infiltrate 95% of runoff. This is more than the performance standard, overachieving in Seattle, and underachieving in other areas. Propose using a simple sizing tool developed under an Ecology grant.

Tom Holtz

1. Add a section for the 'Power of Prayer' to save watersheds. Concerned that this approach will not meet watershed protection goals. Science tells us what limits to development are, and it isnot referenced by this work. The WWHM does not address the watershed.
2. The issue is land use. If we do not solve land use problem then we will not solve watershed health.

DeeAnn Kirkpatrick

1. Not emphasizing enough protection of natural features on sites. There is not enough site development planning. Concerned about giving too much flexibility to jurisdictions in their code updates. Ecology should provide guidance and/or a checklist so jurisdictions will use these practices in code revisions. The 4-5 year timeline is too long. Some have already started.
2. Regarding the basin scale approach, the trigger is good, but the PCHB seemd to say: identify areas where basin planning could reduce impacts, and this is where to start. There should be more definition of what is to be achieved by basin plans. The targets should be 65-10-0.
3. The performance standard should be implemented more broadly, on as many projects as possible. It should be applied to all large parcels and outside the UGA.

Public Input

- Remain concerned in Everett about interflow. Unless the WHHM has been changed, the predicted predevelopment surface rates are a summation of interflow and surface flow. The model assumes LID facilities achieve deep infiltration.
- Actually, you're just putting water into interflow. We will have problems with horizontal movement of flow. The model combines surface water runoff and interflow, and interflow is not addressed by the model.

- Making specific techniques mandatory is problematic. Give more flexibility and a menu like currently with enhanced treatment in the manual. Reuse and rainwater harvest should be an option. It produces energy and reduces the carbon footprint. It's a missed opportunity to leave it out.
- A performance standard or mandatory list arrangement is helpful for designers to help clients evaluate alternatives in early planning and design phases.
- Adequate maintenance is important in LID. Maintenance is a burden on jurisdictions, especially for smaller projects over time. How will we make sure the LID facilities continue to function?
- Native vegetation retention is the best way to achieve LID goals. Concerned how to get jurisdictions to be able to do that, especially relative to King County history of requirements being appealed and overturned.
- Representing the Association of WA cities, with 100 cities statewide that are NPDES permitted:
    - Western Washington has approximately 85 of the 100.
    - How to really understand development regulations in context of GMA. Competing needs is inherently a GMA balancing act. The GMA doesn't say water quality trumps property rights or other GMA goals.
    - Regarding density versus impervious surface: Using impervious surface makes much more sense. We would be uncomfortable with density. Cities and counties are responsible to plan for growth based on population forecasts, not based on water quality or funding for infrastructure. The state needs to help, as there is a shared responsibility with the state
    - The basin planning proposal is complex. Need more detail on how it will really fit with reality.
    - Permittees want both flexibility and a prescriptive approach. It's important that the state provides models for what to adopt, and then appeals are of the state rather than the cities.
- It's very hard to do a conservation or LID project currently due to code conflicts and neighborhood concerns. Changes are hard, due to ingrained attitudes by all, including public employees and fire marshalls. There's a need for education and training.
- Need to provide local governments with specific guidance for code changes, including a model code to be adopted by jurisdictions. Develop a model code with input, similar to critical areas model code. Get a team of engineers, planners, & fire officials to develop a model LID code that can be adopted with minimal changes.
- Ran into an unfortunate situation where jurisdiction required a design of both LID and traditional stormwater management in case of LID failure. Concern that this type of burden will be put on applicants.
- In our city we have problems with narrow roads in residential areas, because we cannot enforce no parking. There are issues with not enough parking and access by garbage trucks.

Advisory Committee - Additional Discussion

- Puget Sound Partnership is working on a model development code. This handbook of model ordinances as a 'how to' for jurisdictions includes how to remove barriers to LID. It will be available June 2011.
- Draft Directors Rule by City of Seattle includes a pre-sized menu that is not so different from the mandatory list. It's a menu of options and performance standards but it could be more implementable. Suggest that it would help to include the flexibility to do bioretention and rainwater harvest where appropriate.
- Regarding the basin scale, what will be done following the analysis? Heard impervious surface or density limits. In the last 3-5 iyears there is more information on the impacts of urbanization. Impervious surface and density are indicators, not drivers. This misses things like native vegetation levels, and road density and network. Consider how to incorporate – it needs more discussion.
- Mandatory list #1, item 1b "as required by local code" (to retain native vegetation). What if code requirements are weak? That is a circular argument.
    - Ecology: The performance standard requirements will require more aggressive local government changes to codes.
- Concern that the lack of requirements for retention of native vegetation weakens the proposal. Ecology could suggest a minimum percent of native vegetation retention in guidance for codes.
- Modeling question on Scenario 5, attachment #2. Why does the pond size in the model inputs not match the pond sizes determined necessary (0.68 and 0.9)?
    - Ecology clarifies that there is an iterative process with the model and the pond area. You should keep modeling until the assumed pond size roughly matches the size needed to meet the standard. We didn't do the iterative approach to make these match completely. However, we did enough to show that we could use LID to meet stream flow control standard.
- Why is the green roof modeled as half lawn and half impervious?
    - Ecology – that is the current approved approach for modeling green roofs. We don't have access to more sophisticated techniques yet in the WWHM. We can look at better ways to model green roofs. This is a possible topic in the revision of the Puget Sound LID Manual.
- Question regarding the performance standard and mandatory list. You could look at in a way similar to how MTCA cleanup standards were developed, where there are alternatives for streamlined prescriptive requirements and an option to do a site specific full analysis. We understand why Ecology did this. It is more streamlined as a path A/B prescriptive standard. It doesn't use the precautionary approach. Need to err on the side of caution. It's better to overachieve. We need the native vegetation and impervious surface standards.
  If have a mandatory list make it conservative—err on overachieving performance standard—

make sure protective. Could include native vegitation protection or effective impervious percentage requirements on mandatory list

Bill Moore, Dept of Ecology - Wrap-Up and Next Steps

We heard good, constructive suggestions today. Ecology would very much appreciate additional input. Particular themes we heard:

- Need more guidance on code revisions.
- Concerns regarding timing. There are pros and cons regarding the GMA link.
- The basin approach triggers, especially density may not be good. Impervious area is better. Density could be counter-productive.
- Need a performance metric for the basin that is more directive.
- Linking land use raises concerns regarding balancing GMA goals.
- Details at the site and subdivision scale need to be worked out – terms and nuances. The concept of the model limitations, and that the mandatory lists are too restrictive. We heard a request for more flexibility.

Ecology plans to coordinate with other efforts:

- Code guidance
  - AHBL and PSP work on model code guidebook.
- Basin Planning
  - Work is underway through EPA grants for basin work that are just beginning. This work looks at how to avoid impacts and it could help inform details.
- Site/Subdiv
  - WSU is working on updates of Puget Sound technical standards.
  - Herrera is developing the Kitsap sizing tool under an Ecology grant.
  - Training is necessary, as this transition will not work without it.

Next steps:

- Please submit written comments to Ecology by 8/27
- We will post them online with your names.
- We'll digest the written comments and contact some individuals to clarify or for additional discussion.
- Advisory committee members should feel free to contact Ecology individually if desired.
- Ecology will synthesize the input and update its proposal.
- We'll review the updated proposal updates with senior management.
- We plan to issue preliminary draft permit language in late Fall. It will be publically available for informal comments.
- We could reconvene this group at that point.
  - Advisory committee members agreed that would be valuable

- Schedule a meeting in Fall after Preliminary Draft permit requirements are out. *Earlier scheduling the better
- Formal Public Review Draft Mar/April 2011
- We'll continue to convey information to the public via the LID list-serve.

Meeting Attendees

Technical Advisory Committee
- Dave Tucker, Kitsap County Public Works
- Curtis Koger, Associated Earth Sciences
- Tom Holz, Consulting Engineer
- Alice Lancaster, Herrera
- Curtis Hinman, WSU Extension Pierce County
- Dave LeClerq for Tracy Tackett, Seattle Public Utilities
- Doug Navetski for Harry Reinert, King County
- Hans Hunger, Pierce County
- Ron Wierenga for Patrick Harbison, Clark County permittees
- John Palmer, EPA Region 10 (also Implementation Committee)
- Ross Dunning, Kennedy Jenks

Implementation Advisory Committee
- Cathy Beam, City of Redmond
- Art Castle, Kitsap Homebuilders Association
- Craig Doberstein, Herrera
- Bruce Wishart, People for Puget Sound
- Tom Putnam, Puget Soundkeeper Alliance for Jan Hasselman
- Ron Wierenga, Clark County for Al Schauer
- DeeAnn Kirkpatrick, National Marine Fisheries Service
- Wally Costello, Quadrant Homes
- Wayne Carlson, AHBL

Other attendees
- David Batts, King County
- Kelly Susewind, Dept of Ecology
- Sean Darcy, Contech
- Terri Parten, City of Port Angeles
- Michael Hintze, AHBL
- Claudia Oates, City of Mt Vernon
- Melva Hill, City of Bainbridge Island
- Erin J. Churchill, UW SMA
- Dino Marshalonis, EPA Region 10
- Brian Cochrane, Yakima County
- Dave Jacobs, GHD
- Dave Williams, AWC
- Jane Zimmerman, City of Everett
- Theresa Wagner, City of Seattle
- Sherell Ehlers, City of Seattle
- Phyllis Varner, City of Bellevue
- Rick Watson, City of Bellevue
- Larry Shaffner, WSDOT
- Jeff Coop, Parametrix
- Pat Allen, Thurston County

Dawn Anderson, Pierce County
Brad Dort, BCRA
Ben Meded, AHBL
Dan Silver
Rod Swanson, Clark County
Mark Maurer, WSDOT
Anita Fitchthorn, Port of Tacoma
Mark Harnra, City of Vancouver
Annette Griffey, City of Vancouver
Ken Milne, City of Federal Way
Will Appleton, City of Federal Way
Amanda Leighton, SVR
Tom von Schraeder, SVR
Glen Sims, PSA
Johann Hellman, Washington Public Ports Association
Mark Palmer, City of Puyallup
Allison Butcher, MBA
Jennifer Jerabek, MBA
Ted Labbe, Wash Dept of Fish and Wildlife
Robin Lee, Brown and Caldwell
Merita Pollard, City of Tacoma
Lisa Stiffer, Sightline Institute

Ecology LID team:
Bill Moore, Stormwater Policy Lead
Ed O'Brien, Stormwater Engineer
Doug Howie, Stormwater Engineer
Harriet Beale, Municipal Stormwater Planner

Consultant - Kate Snider, Floyd/Snider