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

Technical Advisory Committee Meeting #4
March 18, 2010, 10:00am–3:00pm at Ecology headquarters
MEETING SUMMARY

Goal of the Meeting: The goal of this meeting was to present a more detailed approach to the permit framework, get specific comments from the committee regarding this approach, and begin the discussion of basin planning as it relates to the technical aspects of the permit.

Agenda

Regulatory Approach
Checklist and Feasibility
Basin Planning
Preparation for first joint meeting

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.

Ecology review of the straw proposal provided for discussion and clarifications:

- Saturated hydraulic conductivity is sometimes referred to as infiltration rate.
- The separation of regulatory approaches at the saturated hydraulic conductivity of 0.1 in/hr is based on a general evaluation of the SVR modeling results.
- Ecology did some additional modeling to produce flow duration curves assuming a saturated hydraulic conductivity down to 0.1 in/hr for the development scenario with 10 units/acre and use of rain gardens, permeable pavement in public and private areas. We also looked at a commercial site. When we put in a detention pond to meet the flow control standard, it was more difficult to match the historic flow duration curve in the 1% to 10% range. We couldn't do it using our LID assumptions at 0.1 in/hr, so the appropriate saturated hydraulic conductivity is between 0.1 in/hr and 0.2 in/hr.

- Clarify the parenthetical notes on the table that defines the flow control/treatment thresholds. It should refer to 5,000 sf impervious and greater pollution generating impervious surface.
- In the draft "Regulatory Approach Table," setting the large project size at greater than 5 acres was chosen for purposes of discussion only because it correlates to the previous threshold for sites that needed coverage under the construction general permit. There are limitations to the effectiveness of LID in the UGA because of existing infrastructure and adjacent uses, leading to suggested "off-ramps" for feasibility. The engineering feasibility issues are fairly clear, but we need more input on cost and competing uses feasibility. We think there are more options for design outside the UGA.
- Note the definitions for terms of area differ between inside and outside the UGA.
    - "Project site" means the area of land disturbance and is used inside the UGA.
    - "Site" = parcel means the legal boundaries of the parcel(s) on which the project is located and is used outside the UGA.
- Clarify second row as "projects . . ." delete "small."
- There is no change to the existing stream protection standards by any of the LID standards and approaches presented. This would be in addition to the flow control standard.
- If new development is outside the UGA greater than 5 acres, how do you show that you meet the performance standard? Would a single family residence on 5 acres need to have a geotech analysis done?
    - Answer: A single residence on 5 acres is likely to meet requirements for dispersion and would not normally require a geotech analysis.

Discussion:

Question 1: *What feedback do you have on Ecology's proposal as outlined in the table above? Is it appropriate to treat development outside the UGA different from inside the UGA?*

- Why won't a checklist alone meet the needs? Why do we need a performance standard?
    - Ecology is concerned about the ability to fully protect the aquatic resources without a performance standard. The checklist along doesn't give as much a guarantee of protection of resources as a performance standard.
    - The aquatic resources are not just dependent on hydrology but also buffers etc. The hardest measure for LID is to match the flow duration curve at the lower probability end of the curve (i.e., less than 10% probability of exceedance). The higher flows at the low probability end are a challenge for LID. If a project meets the volume standard they are probably also doing a pretty good job of protecting the aquatic resources.

- Hoping checklist alone can meet the needs. Concerned about whether 1-10% standard is doable or protective. Concerned about an untested new standard.
- Now a fan of using the flow duration curve 1-10% standard. It gets at the environmental concerns raised in the PCHB decision. It addresses the more frequent smaller storms and effects on hydrology and maximizes the LID required.
- Prefer to have the performance standard applied more often where have good infiltration. Suggest applying it to all new development with greater than 0.1 in/hr saturated hydraulic conductivity. Prefer to use the performance standard more and to de-emphasize the checklist. For redevelopment, the performance standard may not work for smaller sites.
- Should not distinguish between saturated hydraulic conductivity at 0.1 in/hr. That's too conservative, as we can get good performance in tight soils. Projects have demonstrated infiltration through clay hardpan, which must have fractures or better soil areas not identified in a couple of soil pits.
- Concerned that the flow duration as a standard does not recognize that the shift from forested to pasture causes harm (reference to Aqua Terra graphic showing "where the water goes"). The flow-duration standard doesn't address the impact of taking the forest down, which causes the channel instability.

  Recommend that we regulate evapotranspiration (ET) as well as flow. Concern that hydrologic performance standard is not enough to preserve the resource. Apply restrictions to preserve ET through land use. *Second part of the question: Is it appropriate to treat areas inside and outside UGA differently?*
- Yes. There are more constraints in the UGA. However, agree that there could be greater use of a performance standard inside the UGA. Meet the performance standard everywhere outside the UGA.
  - Yes. The challenge is that the UGA boundaries move. We need to be careful to tie it to a stormwater basin assessment to determine requirements to protect resources and changes to UGA boundaries.
  - Performance standard provides flexibility in selection of techniques to meet the performance standard, and isn't as easy to meet. Agree with an LID performance standard that allows some level of hybrid stormwater management approaches.
- Agree with a different standard in and out of the UGA, as long as the flow control standard is met.
- Is a performance standard necessary? To the extent that the standard can move on the flow duration curve closer to forested conditions, it's good.
- Concern that the performance standard for 1-10% is a tool that has not been tested. The fact that surface and interflow is coupled is also a concern.
- Are you concerned about having 2 standards and or the interflow/surface flow issue?
  - Answer: Both.

- What is the difference in the UGA between the performance standard with off-ramps and the checklist?
    - Answer: The checklist is not numerical.
- The checklist maximizes LID.
- They are similar but are a different way of going about it.
- All new development projects should meet a performance standard whether in or out of UGA and all sizes, especially where the hydraulic conductivity is greater than 0.1 in/hr.

Question 2: *Is 5 acres a reasonable threshold between urban projects that could be regulated by a performance standard and urban projects that could use the standardized evaluation or checklist approach?*

- Agree that all projects should meet the standard, but also think that the 5 acre threshold is too big. We can meet 65/10/0 on any site down to 1 acre.
- Agree that there's a difference between the checklist and the performance standard with off-ramps. If bioretention is sized in the checklist according to a model, they become the same thing. If the checklist allows for any size for bioretention, then there is a difference.
- But with a performances standard they have to prove it with some kind of modeling they use during the design. When the site is already designed, it is harder to push more LID using the checklist approach.
- The size or project threshold could trigger the need for proof with modeling. Off-ramps could be different according to project size.
- If you set a threshold smaller than 5 acres, you will increase the number of sites that should qualify for off-ramps.
- Urban infill would have far more off-ramps for adjacent uses even with a performance standard at 5 acres. It would require more documentation.
- Agree that 5 acres seems too large. Suggest using 2 acres as the threshold.
- Need further discussion to define off-ramps or stop using the term. It's just another technique.
- A project would still have to do the LID that's feasible. Essentially, it would go to a checklist.

Question 3: *Ecology does not consider a low saturated hydraulic conductivity to be the basis for a reprieve from requirements to use LID techniques. However, low saturated hydraulic conductivity may be a reason for a reprieve from requiring a site to meet a specific performance standard in urban areas. Should Ecology establish a saturated hydraulic conductivity below which only the checklist approach is used?*

a. *Is 0.1 inches per hour an appropriate saturated hydraulic conductivity for that distinction?*
b. *For implementation, should Ecology establish standardized field procedures for determining and reporting saturated hydraulic conductivities? Note that in the proposal, the regulatory approach (performance standard or a checklist) for a project depends upon its size and the site's saturated hydraulic conductivity. What should be included in those field procedures (e.g., type of acceptable tests, number of tests)?*

- Agree that even a low saturated hydraulic conductivity does not prevent effective LID
- Clarification of 0.1 in/hr saturated hydraulic conductivity – is that the long term rate or the field-tested rate? Should use the long-term rate.
    - Answer: That is a field-tested rate.
    - *Post Meeting clarification: 0.1 in/hr was the rate assumed in the runoff model for movemement of water below permeable pavement and rain gardens into the ground. Current guidance does not require any reduction in the field tested method when infiltrating below rain gardens because the overlying, imported soil protects the underlying native soil from clogging. For permeable pavements, the current guidance calls for reducing the field tested rate by a factor of 2.*
- This is an important issue. King County requires a groundwater mounding analysis (King County) where there's a question of a low saturated hydraulic conductivity. In a rain garden that has such a low saturated hydraulic conductivity below it, you'll end up with groundwater mounding. This will reduce the long-term infiltration rate, and this will not achieve downstream protection. Only sites with a much higher saturated hydraulic conductivity should be required to meet a performance standard. If it doesn't take into account the stratification of the receptor horizon, it will daylight at the nearest slope cut or basements, especially in UGAs where density is high. Much of Puget Sound is till, with many areas prone to slope instability.
- Suggest 0.5 in/hr as the dividing line, but with a required mounding analysis. There should be an evaluation of nearby slopes and downstream discharges.
- Recommended looking at K.C. 2009 Storm Water Design Manual procedures for engineered infiltration facilities. These should be followed at lower infiltration rates.
- Concern regarding permeable pavement where we are already seeing piping of subgrade leading to failures on slopes as low in gradient as 3%.
- This could be a threshold infiltration rate that requires a stamp by a geotech regarding long term infiltration rates.
- The design (long-term) rate should be 0.1 in/hr, not the field measured rate.
- Site specific characterization and evaluation that is rigorous is crucial especially in tight soils. This is expensive. The testing is often for the soils over the till layer. Concern that with a checklist process there is no awareness about what is around the site.

- Recognize pervious pavement concerns. Recent engineering techniques have been developed to address such failures. We are learning more all the time.
- Acknowledge that not a lot of mounding analysis has been done for dispersion facilities.
- Every jurisdiction requires that testing occur under the planned facility site.
- The groundwater and infiltration rate problems that we have seen with retention ponds don't occur with distributed LID systems because the ratio of drainage area to infiltrating area is much smaller. So, for instance, if we build a rain garden for each roof, we will be in good shape for not having problems. If we start to increase the ratio of drainage area to infiltrating area, there will be issues.
- There is committee agreement that the saturated hydraulic conductivity (whether 0.1 in/hr or another rate) be the design rate, rather than the measured rate.
- Are you trying to mandate rainwater harvesting and practices other than infiltration?
- Although rainwater harvesting is reasonable for some sorts of projects, it is not feasible for all.
    - It could work in municipal or commercial projects where there is an assured use.
    - Issue of Ecology Director's Interpretative Statement on Rainwater Harvesting and water rights.[1]

Question 4: *Would it be advisable to have the same regulatory approach for a development type and size (e.g., redevelopment > 5 acres inside UGA) regardless of the site saturated hydraulic conductivity?*

- The regulatory approach needs to be tied to protection of sensitive streams.
- Basin plans won't ever deem that it is not necessary to protect a stream.
- If the performance standard is the flow duration in the 1-10% range, then we need to have a different standard for low saturated hydraulic conductivity. Otherwise it sets the bar too high in tight soils and is too hard to achieve. This isn't a problem with the checklist.
- The checklist requirements should still be based on trying to meet a performance standard.
- If the goal is to use everything you can, then you don't need a different regulatory approach.

[1] The October 9, 2009 interpretive statement clarifies that a water right is not required for onsite storage and use of rooftop or guzzler collected rainwater, and identifies the Dept of Ecology's intent to regulate the storage and use of such collected rainwater if and when the cumulative impact is likely to negatively affect instream values or existing water rights. Ecology will track these uses through an amendment to the State Plumbing Code to require all new indoor water storage tanks to be registered with Ecology. For more information see the Ecology website at http://www.ecy.wa.gov/programs/wr/hq/rwh.html

- "Where feasible" means that the regulatory approach must consider saturated hydraulic conductivity.
- We can consider it within the context of the tools we choose to use. Either way, the analysis is similar. Either way, we need an off-ramp.

Question 5: *Performance Standard applicable to projects where saturated hydraulic conductivity is > 0.1 inches per hour: Post- development annual runoff volume must not exceed the historic annual runoff volume, and post-development flow durations must not exceed historic flow durations for flow rates that occur less than 10% of the time.*

a. Is this an appropriate hydrologic performance standard for low impact development?
b. What alternative performance standards would you like to discuss?

- The group seems to have developed two camps:
    a. The 1-10% flow duration is difficult and unproven. Do a robust checklist instead and maximize the LID implemented. It may meet the standard.
    b. Use the flow duration curve approach in the 1-10% range.

Facilitator requests a statement of opinion from each member – do you prefer a robust checklist or a hydrologic performance standard?

- A total volume performance standard will be very difficult to achieve at tight soils. In reality, both a hydrologic performance standard and checklist are needed.
- Prefer a hydrologic performance standard to size facilities, even if it were to be implemented through a checklist. The model is our best tool for now. Bruce Barker has said that the model could be adjusted to address smaller sites and smaller flows. Can support this and would like to see a parcel scale analysis of these BMPs individually in a model to see what they can achieve relative to the performance standard presented in question 5.
- Would like to see a performance standard because it is flexible and measurable. We can learn from it and then adapt it. With a checklist it's not clear what we're achieving.
- Prefer the performance standard at 1-10% for good soils, but not sure what is best in poor soils.
- Need a background performance standard to evaluate where we are, but we only have two real techniques – bioretention and permeable pavement. It helps define "where feasible", but we should evaluate it in the background, not through permitting. New development in a UGA will not reach it, and it sets them up for failure. It's too much in the UGA and we can't do rainwater harvesting for small sites. Prefer a checklist.
- A key concern is that we can meet performance standard on soils with greater than 0.2 in/hr saturated hydraulic conductivity, without implementing LID requirements to get there. We need more than a performance standard to get real LID.

- Like the 1-10% performance standard for good soils. It's important for fish and resources.
- An alternative in addition to performance standards is to include requirements for limits on impervious surface, protection of native vegetation, and dispersed small-scale facilities.
- Would prefer 65-10-0 standard. Only that standard can protect the watershed.
- Even with 65-10-0, we will need a way to predict zero runoff. We need a predictive tool to do a quantitative analysis.
- Suggest the approach should set a goal using a back-end performance standard. Look at the site, and determine if the goal can be met on that site. Use the standard to drive a thoughtful and robust checklist and then do what really makes sense at the specific site.
- Agree that using checklist to achieve LID where feasible. The model is too uncertain. A robust checklist takes into account performance goals.
- Concern regarding how local government reviews a checklist as an issue of implementation.
- Suggest that could draw the lines as follows:
    - Hydrologic performance standard based on matching the flow duration curve in the 1-10% range outside UGAs.
    - In UGAs develop a robust checklist to achieve best results.
    - Still need to determine how much smaller than 5 acres should be the dividing line.
    - Doing LID will by default capture the smaller storms.

Public input

- Preponderance of the soils in Puget Sound are till. Don't give up on LID in those soils.
- Infiltration is not the only factor in LID; we are forgetting about evapotranspiration. We are underpredicting the performance of LID by not accounting for evapotranspiration. We record 1.5 to 2 inches in the winter.
- Regarding the model, we are already overconservative because of a 100% safety factor.
- Basin planning for stream health should be implemented through critical areas ordinances and GMA.
- What happens if the standards regulate to the 1-10% range of the curve, and those that can't meet it can go to conventional techniques?
- Prefer one standard applied to all sites and all conditions. It could be a lesser standard in conjunction with a checklist that can be part of an extended Minimum Requirement 5.

- Be cautious regarding acreage thresholds. In Green Cove (Thurston County) we set tree retention requirements based on acreage, but it did apply at 5.01 acres and did not at 4.99. Firm cutoffs with very different requirements can seem absurd in practice.
- What is difference between pond that has vegetation added and LID bioretention?
- Till presents problems at urban densities. Disagree regarding evaporation, as it can be only about 1 inch in Puyallup in the winter months.
- Clarify the definition of redevelopment regarding what happens if impervious area is less than 35%.
- The distinction between inside and outside of UGAs regarding the size of lots is artificial. That distinction is not related to where the resources are. So do the same approach inside or outside the UGA.
- The infiltration rate should be a design rate. There's a lot of variety in geotech recommendations, so we need geotech guidance with clear methods, standards, and consistency.
- The interflow issue on till soils is important, as in Everett we can have wet crawl spaces and basements.
- We need a permit that we can implement. Some LID techniques require more inspection to ensure maintenance and performance and this raises local government costs.
- There's a lot of uncertainty about homeowner maintenance and concern regarding real world practices and the ability to implement LID.
- LID should not be considered in isolation from the rest of the permit-required stormwater management program. It's another tool for stormwater management but we can't abandon other program components to focus on it. Look at total picture when including LID and take into account how it will perform and what it will take to maintain LID performance by local programs.
- Site specific characterization and performance is much more important than the UGA boundary. Site conditions are a greater factor than opportunities within or outside of the UGA boundary, with regard to the downstream flow pattern, stratigraphy, and groundwater mounding.
- A volume-based standard doesn't provide good BMPs. Prefer duration based before volume based.
- Public health and safety and concerns to life and property are more important than LID for LID's sake.
- The Seattle checklist is strong and effective in achieving LID where feasible. There's a second layer to the checklist to provide sizing with a performance standard as the endpoint. It has technical rigor.
- We can't define all the potential competing needs in a highly urban area. The community defines those and they can evolve over time. The checklist works well to incorporate those.

- Minimum Requirement 5 is for both volume and flow duration standards. Is Ecology proposing to require both?
- Some say it's impossible to meet a hydrologic performance standard in tight soils. But that's not what the model indicates, and it is not what our experience shows. If we cut down the trees, then it's not LID. If there's a lot of pavement, it's not LID. We should require aggressive LID, including going vertical in design and rainwater harvesting.
- The criteria for feasibility should be technical only. If a technique is technically feasible then it should be required. So, prefer a performance standard, but there can be excuses for engineering feasibility.
- To clarify the field rate versus design rate of saturated hydraulic conductivity, we could model various types of projects. Some say things don't work, but there are a lot of factors to evaluate. The checklists should have safety factors.

The committee agreed to adjust the agenda to provide written input on questions 6, 10 and 11.

Question 7: *Retaining a high percentage of native vegetation within the drainage basin of a creek appears to be necessary to prevent degradation of water quality and habitat. Therefore, when setting a performance standard, and when developing a checklist approach, should there be a minimum native vegetation target(s)? For example:*

4 du/acre	*4 – 6 du/acre*	*6 – 8 du/acre*	*Multi-family*	*Commercial*
40% native veg	*30% native veg*	*25% native veg*	*25% native veg*	*15% native veg*

- Concern regarding the lack of continuity of retaining existing vegetation on random parcels. The goal is to maintain base flows in streams, but that depends on the underlying geologic connections of the site. Settings vary.
- Why would there be different requirements by development type or density? This should not be the developer's choice. Why have a range from 15% to 40%? There's no reason for a variable scale based on density.
- No matter what the standard, we must have some requirement for retention of vegetation. The variability could be by intensity of use rather than density. Not sure whether you can offset the loss of vegetation with other techniques.
- Vegetation retention must be a component. It's in the LID definition. It's fundamental.
- Nexus with GMA via intensity and density is important. However, these figures seem low. The Puget Sound Partnership developed numbers for retention in the local assistance project that are based on real world input.

- Agree with the need for a standard for native vegetation retention. Regarding the correct numbers, it would be better to make determinations based on basin planning to determine the needs of water resources in the basin.
- Vegetation retention is fundamental to LID. Where it is located and the continuity between vegetated areas is also important. The Puget Sound LID manual has a hierarchy to evaluate these factors.
- Agree with the concept. Does it make sense to require it for new development only? Redevelopment is already at least 35% pavement. Would we require restoration?
- It can be an option for redevelopment to try to get to these numbers to help restore the soil structure.
- Consider tying it to the basin plan in order to stand up to legal challenges. The parcel-by-parcel approach was overturned in King County.
- Need information on, for example, whether a well-designed LID project with 30% vegetation provides resource protection. Can we build in an adaptive management piece and evaluate it?

Additional Question: *What would be included in a robust checklist?*

- Ecology statement re a checklist approach: It should include BMPs and identify conditions for when they are not feasible. Unless they check the box, they are expected to implement BMP's to meet a target performance standard. The BMPs are in priority order.
- It must include requirements for site specific characterization, including soils, groundwater, offsite downgradient impacts, and critical areas.
- Regarding tying the checklist and a performance standard together, Kitsap County has a grant funded project for simplified sizing factors based on performance standard outcomes of BMPs for the Puget Sound lowland.
- It should describe the amount and type of existing vegetation on site.
- It should include implementing site design and development principles in addition to BMPs
- It needs to clarify whether the site is in a non-flow controlled basin or a flow controlled basin.
- If they intend to reuse water, how much is usable, what is the intended use, and what certainty is provided for this ongoing use?
- What is required for long-term maintenance and how is it ensured.
- Historical land use, such as whether it is a contaminated site.
- Adjacent uses such as drinking water wells, septic systems.
- Everything that's on Seattle's checklist.

- A performance standard and a calculator to quantify whether you've met the target.
- A measurement of "effective impervious area" with a goal of none.
- Whether the BMPs are dispersed or consolidated.
- Where there is downslope influence regarding critical landslide areas.
- The intent should be in all to maximize LID, but the checklists could vary by jurisdiction.

Question 8: *For urban new development, should the checklist for the small projects below the thresholds for treatment & flow control be different than the checklist for the small projects above the thresholds (greater than 5,000 sq. ft. impervious or, ¾ acres land disturbance, but less than 5 acres)?*

- For ease of implementation at the permit counter, simpler is better. Small single family residences are 80% of applications for our county. So keep it simple and preferably not numerical so they don't have to hire a consultant.
- Need to consider how small site geotechnical analysis works. It should be simple, but we need a few checks for steep slopes.
- There are places where LID is not feasible, but if it's too complex, it becomes infeasible. The sizing tool Kitsap is developing may help.
- There are multiple techniques for LID; it should not prescribe.

Question 12: *Except in situations that seem to be generally recognized as precluding LID techniques that rely on infiltration, Ecology considers rain gardens, partial dispersion techniques, and pervious pavements to be known, available and reasonable. Do you agree?*

- Clarify – does that mean we can predict their performance?
- Some dispersion techniques are not as well studied as the infiltration techniques.
- We have enough information on these.
- There are others to add to the list, such as no-excavation foundations and green roofs.
- In our first meetings when defining LID, we moved from discussing specific BMPs to what it does. Feel strongly about not prescribing BMPs.
- We know enough, but also about rainwater harvest and green roofs.

Question 13: The PCHB said: "Ecology has identified the particular importance of basin planning in areas which are relatively undeveloped where new development is occurring. The Board concludes that city and county permittees should identify such areas where potential basin planning would assist in reducing the harmful impacts of stormwater discharges upon aquatic resources. This will assist Ecology in readying for the next round of permits when such a

requirements may be necessary to meet the state AKART standard, and, under federal law, to reduce pollutants in municipal stormwater to MEP."

What does this mean in terms of where basin planning should be focused? Should the permit require basin planning, and/or other actions, for areas which are planned for significant increases in urban development and which currently have relatively high quality stream resources?

- Basin plans take a long time and are hard to implement when multiple jurisdictions share the basins.
- Should not wait for basin plans to implement protective standards unless the local governments put a moratorium on development until the planning is completed and the resulting standards are established.
- The term "basin planning' is ambiguous and means many things. The permit should be specific and prescriptive.
- Target 'urbanizing basins' as the place to start. Each WRIA can identify 2-3 subbasins to complete during the permit cycle based on those that are relatively intact, where growth is likely to occur. Establish a lead among jurisdictions.
- The basin characterization should include land cover, HSPF modeling.
- The plan should identify how ordinances, zoning and other land use codes will achieve the targets for protecting forest cover and meeting limits for effective impervious surface that are defined in the plan.
- A stormwater basin plan is more of capital improvement plan.
- Pierce County has done basin plans the subbasin level with good characterizations. Don't think basin plan should be used to go to a lesser hydrologic performance standard. The plans were able to protect forest cover through the community engagement.
- Use basin planning to identify the resources that should be preserved, as well as those for restoration.
- The tools to use to protect areas are GMA tools and capital improvement plans. The analysis is hydrology.
- Require the basin analysis under the stormwater permit, and use the results to feed to GMA for changes in zoning.
- Concern regarding practicality and expense for collecting data. What can be done without sophisticated analysis?
- Don't call it 'basin plan' but 'basin reconnaissance.' Look at streambank stability and BIBI to develop higher standards.
- Ecology clarification: The PCHB testimony by all sides said that site-level LID alone will not achieve what we want to do. The plans should answer questions like: How much development to allow? Where will it go? What will it look like? Local governments would use the basin planning to defend plans for future development; to demonstrate that the

stormwater and land use requirements will preserve beneficial uses of the aquatic resources. This would be a thought-out strategy by local governments based on the plan to identify what changes are necessary to meet Clean Water Act goals. This is most important in urbanizing watersheds where UGAs will expand.

- In context of stormwater and LID, this applies to more than the manual and critical areas and shoreline programs. An example is road density. The plans should show how to avoid road crossings of streams. This is a shift in context and focus in terms of what we're look at and what we're shooting for. Those are primary indicators.
- Agree with Ecology. As a first step to shorten the process, the plans should analyze forest cover and percent of impervious surfaces wherever development will occur. Focus on those locations to develop a plan to protect forest cover and reduce impervious surfaces and prioritize where to protect high quality habitat.
- The basin plan should also apply protective LID standards everywhere, and not minimize them.
- Basin-level work map could also focus on forest cover restoration.
- If the standard includes minimum forest cover and a basin is identified as a low priority, direct growth into that area and preserve the ones with more forest cover.
- Stormwater planning does not have the influence of many other factors at the local level.

Question 14*: Current recommendations of scientists is that to protect high quality water resources, the following are necessary: 1) preserve a significant percentage of a basin in native vegetation 2) minimize effective impervious area, 3) provide high quality riparian zones along creeks and wetlands of all sizes 4) prohibit development on steep or unstable slopes, and 5) detention and water quality treatment facilities for any stormwater discharges. Should the permits require local governments with identified high quality water resources to conduct basin planning that develops a strategy to achieve the above qualities, and subsequent implementation of the strategy through land use planning, ordinance and rule updating?*

- Emphasize infiltration over detention and water quality treatment. Require a standard of zero effective impervious surface.
- The concept presented in the question is sound and necessary. It's critical to assess transportation systems. Detention not the answer.
- Since at least 2000, Puget Sound plan has been calling on municipalities to do basin planning, including:
    - Identify high value areas and take protective measures, whether GMA or conservation.
    - Be cognizant of high value areas when expanding UGA
- Most GMA plans were done without a focus on preservation of aquatic resources. These must be re-evaluated for future expansion.

- For the permits, Ecology should be specific about how to do basin planning rather than giving us general requirements to create a plan that demonstrates how we will protect the resource. The requirements should be more prescriptive than demonstrative.
- If basin planning is in the permit, it could layer onto the stormwater program and assessment of how, for example, road layouts for subdivisions or road widths could be influenced with the specific goal of stream protection.

Question 15: *What is an appropriate timeline for conducting this type of analysis?*

- They can have all the time they want as long as they impose a moratorium on development during the evaluation and associated adoption of standards.
    - Requirements could set short and long term goals. What are reasonable things that can be done in a 1-year time frame, 2 year time frame, or longer..
- The requirements should be specific. During the first 1-2 years conduct the screening and by the end of the 5 year permit cycle, identify things to affect (like roads) and the strategy to implement those actions.
- Remove term 'basin plan.' Instead 'write down how the actions within this basin protect the resource, and provide it within 2 years.
- Identify within the permit some interim goals and outcomes.
- Concerned about "proving" to Ecology that the resource is protected. In truth, we don't have the capability to 'prove' how we will protect the resource. We spend too much defending the critical areas ordinances, and it went on for years.
- An example of prescriptive is to assess the health of streams using B-IBI methodologies. If there is an intact corridor, the jurisdiction must protect it. Limit road crossings. Use indicators. Identify those that are degraded.
- Does Ecology have the capacity to review basin plans for every basin for every jurisdiction? There is too much variability of opinions to use a demonstrative approach.

Public Input

- Critical areas identify sensitive resources. GMA does this. Suggest using forest cover, and managing forest cover as a critical area.
- Municipal NPDES permit is a program with requirements to manage stormwater, not receiving waters. If the permits move to a watershed based program, it's a huge challenge and fundamentally changes the job. Concerns regarding basin planning:
    - It's a good goal but extremely complex and costly.
    - Can't do basin planning unless all the Phase I and Phase II permittees in the basin have equal status and are at table together. Phase II's are struggling to put their programs together and do O&M.

- The PCHB said that Phase I's should look at what basins could benefit from basin planning, but to do it through GMA. We would need funding for the new level of regulatory coordination and a roadmap for planning.
- Suggest adding a requirement for cooperative agreement between Phase I and Phase II permittees in the next permit for work on a regional basis.
- Adding another mandate to the Phase II permit for land use will tax our abilities. We need more assistance to fully implement the stormwater program. Then if there are critical subbasins, we can focus on those. See this as a 7 to 10 year timeframe.
- Trying to drive zoning and transportation through the stormwater permit won't work.
- Support not having a demonstrative approach. Ecology needs a prescriptive numeric standard. For example, no net loss in vegetation and no net gain in impervious surfaces. Saying 'how you will protect resource' is unachievable and a paperwork exercise. Should move towards restoration over time.
- Ecology should be able to demonstrate that this approach works before requiring it.
- If this is how we're to manage stormwater, is this a change to a watershed based permit?
- A lot of GMA decisions have not been informed by hydrology. There's a limit to how you can "force" it, but it's essential to include it as a consideration.
- Agree that we need monitoring for effectiveness. This is a good nexus. Suggest not doing new planning until there is good monitoring information to tell us how we're doing.

Additional Public input submitted via e-mail:

- Phase II permittee response to discussion materials:
    - DOE thresholds for this issue, less than 5000 sq ft new /replaced impervious use checklist, more than 5000 a hydrologic performance standard.
    - Other than formal standards outlined in an approved manual for large projects, municipalities should be allowed great flexibility in implementing LID both in tech standards and in policy.
    - How to determine saturated hydraulic conductivity probably depends on individual conditions
    - Basin plans are great tools, allows tailoring of approach to soils, geologic hazards etc.
- Consultant
    - For Discussion Question 7 pertaining to native or existing vegetation within drainage basins one firstly needs to define **specifically** what a "creek" is so that field persons can identify and delineate this feature.

- Should consider setting the performance standard for the minimum targets for preservation of native vegetation (based on DU/acre) be **required** for placement within the creek basin/riparian zone so that developers do not place these vegetation percentages in non-connected areas.

Topics for the next meeting on May 12:

- -off ramps
- -checklist

Committee agrees to Ecology's proposed approach for the remaining meetings in the process:

- Develop a summary of input from the TAC and IAC.
  - Identify areas of general consensus and also different opinions.
  - Identify key issues to continue to discuss.
  - It will be a range of responses without names attached.
  - We will provide this to both committees before the May 12 joint meeting.
  - It should capture opinions and recommendations accurately, so your input is clearly articulated to Ecology.
- Two weeks before the June 23 meeting, Ecology will provide a detailed outline of the proposed permit framework.
  - It will not be permit language.
  - It also may have some unresolved issues.
  - Ecology will present it with a rationale.
  - Bring your written comments on the outline, and we will go around the joint committee group for your top 3 issues and submit the full written comments to Ecology.
- This will be the end of the advisory process.
- Ecology will draft the permit and issue it for formal public comment in early/mid 2011.

DEPARTMENT OF ECOLOGY
State of Washington

DEPARTMENT OF ECOLOGY
MEETING SIGN-UP SHEET

Complete and submit this form to the Ecology Fiscal Office (Fiscal), MS 47615, for events which require a sign-up sheet, or when needed to support payment or reimbursement of vendor charges.

NOTE: If the event is training, use the "Completed Developmental Activity Report" (form ECY 010-73) instead of this form.

Events which require a sign-up sheet:

a. All Advisory Group/Committee, Task Force, or Volunteer Committee meetings.

b. Events where Fiscal pays a vendor for a meeting room fee.

c. Events where coffee and/or light refreshments are served, and Fiscal reimburses staff or a vendor.

d. Events where meals are served, and Fiscal reimburses the vendor.
(Sign-up sheet required for each meal and rosters must agree with number of meals served.)

e. Events with lodging costs, and Fiscal reimburses the vendor.
(Sign-up sheet required for each night and rosters must agree with number of persons billed for.)

1. Title of meeting or name of group LID Advisory Committee
2. Meeting Date 3/18/2010 Scheduled Start & End Times (i.e., 8 a.m. - noon) 9 - 3:30
3. Meeting location (city and facility) Ecology - HQ / Lacey
4. Contact Person Harriet Beale Contact Phone 360-407-6457

Attendees

	Name	Representing
1.	Nancy Winters	HDR Engineering
2.	DAVE TUCKER	KITSAP CO.
3.	Curtis Koser	AESI
4.	Jane Zimmerman	City of Everett
5.	[illegible]	WSU
6.	Ross DUNNING	Kennedy / Jenks
7.	JEFF COOP	TARGETRIX
8.	Kathryn Thomason	CONTECH
9.	Kirk Smith	GHD Inc.
10.	Debby Hyde	Pierce County

Agency Representative's Statement

To the best of my knowledge, if a vendor provided a non-state facility, it ☐ did ☐ did not meet the Americans with Disabilities Act (ADA) access criteria.

Signature Date

	Name	Representing
41.	Dawn Anderson	Pierce county
42.	Hans Hunger	Pierce County
43.	Steve Foley	King Co
44.	Jeremy Febus	KPFF
45.	Larry MATEL	Brewton
46.	Kathy Gwilym	SVR Design
47.	PAT Allen	Thurston Co.
48.	Tracy Tackett	Seattle
49.	Theresa Wagner	Seattle
50.	Ben Dort	BCRA
51.	Ron Wierenga	Clark Co
52.	Rod Swanson	Clark Co
53.	Doug Navelski	King Co.
54.	Bruce Wulka	Partnership
55.	PAUL FENDT	CDM
56.	Deeanna Kirkpatrick	NMFS
57.	John [illegible]	EPA
58.	Tom Putnam	PSA
59.	Jay Hasselman	Earthjustice
60.	Alice Lancaster	Herrera
61.	Allison Butcher	MBAKS
62.	MARK HAZUKA	VANCOUVER WA
63.	Kate Snider	Floyd|Snider
64.	Tina Gary	Floyd|Snider
65.	Tom Holz	TWH - LLC
66.	JEFF COOP	PARAMETRIX
67.		
68.		
69.		
70.		