City of Port Angeles comments on proposed Permit changes:

The City of Port Angeles (COPA) believes that Ecology has failed to correctly apply the ruling of the PCHB in that the PCHB directed Ecology to "prepare Phase II permittees for future permit requirements" and to "require other specific actions (related to LID) on reasonable and flexible time frames, both during this permit cycle (2009 ruling) and in anticipation of future permits". The sweeping application of LID as described in the draft language documents is not the progressive implementation described in the PCHB ruling. The proposed language does not allow for any scale of implementation that might be more appropriate for a rural city with a small population base, difficult soil characteristics and difficult hydrologic conditions. Each one of these factors should be considered in a progressive implementation of LID.

In Port Angeles, we have 5 urban streams. Their watersheds extend upslope into the foot hills of the Olympics, well beyond City jurisdiction. We believe that the new LID provisions and required planning processes will drive development out into the currently unpermitted County. Even if the County were permitted, if the permit applies only to the UGA areas, it may drive development even further out, to the rural areas of our County. The only solution for Port Angeles is that DOE adopt watershed-wide stormwater planning and permitting.

The City has the following specific concerns:

General LID:

The City of Port Angeles (COPA) believes that the pervasive and uncompromising application of LID onto the smallest of projects is financially not feasible. The time, staff, and equipment necessary to implement and maintain the LID requirements and infrastructure at this level will require a dramatic increase in stormwater fees. In addition, the increased costs of these regulations will significantly inhibit development within the City and push development out into the less restrictive rural farm areas.

COPA suggests that before implementation of LID at this level, Ecology should investigate the true and unbiased costs of such regulation and present those estimates to the State Legislature and to the regulated municipalities . The analysis should include increased capital construction cost, the life-cycle maintenance costs of facilities, and enforcement, tracking, engineering,

staffing, and equipment costs. In addition, the maintenance requirements for the existing stormwater infrastructure must still be met.

As Ecology has already noted in the draft document, reducing the thresholds at which LID, flow control, and treatment criteria are applied will have a dramatic effect on the municipal work load for stormwater. Time and staff for review of plans, inspection during construction and maintenance inspection following construction of private facilities, even given our current depressed level of development in the City of Port Angeles, will easily triple.

Port Angeles soils are typically glacial till. For that reason, bioretention BMPs and rain gardens will be infeasible on over 60% of our land area. (NRCS Web Soil Survey) Another significant soil group, the Clallam-Hoypus complex, makes up about 20% of Port Angeles' land area. Hoypus soils (about 13% of the City) are a permeable glacial outwash. In the soil complex, they are in a fine patchwork with the glacial till, which means there is a likelihood that water infiltrated on a particular parcel can cause groundwater problems down gradient of the site. Indeed, Port Angeles is located on the north slope of the Olympic Mountains, and we have a history of groundwater springs that emerge, and that can change location from year to year. Even if a hydrogeologist were hired to understand the movement of ground water, there is the risk of increasing and changing groundwater flow and causing problems with existing structures or slopes. Considering these soil factors, only approximately 7% of the land area in the City is likely to be suitable for LID.

Raingardens:

The City anticipates that most new rain gardens will need underdrain systems due to clay and glacial till soils and perched groundwater conditions throughout the City. We interpret the criteria in Section 8 to mean that raingardens are not feasible over hardpan that is 2-3 feet below ground surface (typical of Port Angeles' glacial till soils), because of perched seasonal groundwater over the impervious surface. In addition, for instances where the soil has a saturated hydraulic conductivity less than 0.15 inches per hour, an owner is not compelled to construct a bioretention/rain garden with an underdrain, but may do so. Please confirm that DOE agrees with this interpretation.

Even if you agree with this interpretation, however, we note that in every case, a property owner will have to demonstrate that the bioretention/raingarden is or is not feasible. This is a new cost that will be significant for many developers, particularly in light of Port Angeles' highly variable soil patterns.

The City would suggest using a cutoff value of .25 inches per hour, consistent with what Seattle Public Utilities is currently using for rain gardens. We feel this is a more appropriate rate and has the added advantage of being more easily implemented for homeowner conducted

percolation tests. The City feels this would be advantageous in its efforts to provide education promoting voluntary raingarden development from its citizens.

We understand that the raingardens would not be required if new stormwater infrastructure is necessary to accept the underdrain system flow. However, because most of the City's stormwater infrastructure was designed and placed before current engineering standards were in place, most of the City's stormwater infrastructure is undersized. Even where stormlines are in place to accept flow from the raingarden underdrains, there would still be a cost to the City or the property owner to determine the available capacity of the system.

Another potential cost issue arises in the distinction between rain garden and bioswale design and construction. For a bioswale, we currently require that it be designed by a registered engineer. The registered engineer then takes responsibility for the design, and the contractor takes responsibility for the correct construction of the bioswale. The draft permit language references the WSU Rain Garden Handbook for Western Washington Homeowners as design guidance for the construction of rain gardens, allowing the smaller facilities to be built without engineering controls and with lower cost. However, if the rain gardens are a required stormwater facility, for which the City will ultimately take responsibility for the performance, it would be best for the City to either supervise the rain garden construction and design (which would require additional staff time), or have them designed by a licensed engineer and built by a contractor who can accept responsibility for a failure, if it occurs. Allowing the homeowner to design a required stormwater facility will lead to disputes over responsibility for failures and associated costs between the City and the property owner.

<u>Pervious Pavements:</u>

COPA also has serious concerns about requiring pervious pavements for the travel lanes of streets. The PSP planning document recommends implementing a pervious pavement standard up to the collector street designation. In Port Angeles this causes several concerns:

- The contractor base for this pavement technology is not sufficiently developed for rural communities. Installations will be subject to premature failure unless the local industry is given time to progressively develop.
- Excessive construction costs are expected (estimated at 2 to 3 times that of conventional asphalt) due to the inexperienced contractor base. In addition, restoration work by overlayment is not applicable, so higher rehabilitation costs are anticipated because the pavement will need to be milled and relaid approximately every 10 years.
- In an FHWA study of the European experience with pervious pavements (Denmark, Netherlands, United Kingdom, Sweden, France, Italy, and Belgium) there have

been historic problems with clogging. Once clogged, they can't be restored and must be milled and relayed. The most appropriate applications were for the faster traffic routes so that the tire action could facilitate maintaining the porosity. However, the current draft permit language requires previous pavement for the lower volume /slower routes. The study can be found at http://international.fhwa.dot.gov/quiet_pav/contents.cfm

- In Europe, these surfaces have historically had 2 years less life than dense pavement surfaces
- The permeability declines rapidly over a 10 year period due to clogging, representing an increased decline in effectiveness for stormwater functions as time goes on.

Because of the clogging issue, the City will have to expend greater budget amounts for staffing and equipment to do the required inspections and the higher levels of maintenance required for these systems. Maintenance requirements and the potential for clogging of pervious pavements is an unknown that will drive up costs. The cost increases could manifest themselves in many ways:

  - Recurring maintenance, inspection, and equipment costs
  - Rehabilitation if and when it fails to perform due to clogging

- Pervious pavements tend to have greater problems with black ice. The European experience indicates that about 50% more salt is required. However, due to the porosity of the pavement, salts will migrate to the water table and create environmental consequences.
- In the winter there is a fair amount of snow and ice in Port Angeles. While the feasibility criteria eliminate the use of porous pavement for sanding operations, would the same exemption apply to de-icers or anti - icers?
- Also, in winter certainly, and perhaps during a large storm event, the water table below the porous pavement will rise due to the glacial till that underlies much of Port Angeles. This will prevent precipitation from being absorbed into the ground and will be a factor in undermining the road substrate. The ability of the soil to treat pollutants under such surfaces will diminish over time as the cation exchange capability of the soil diminishes, causing concentration of pollutants below the roadway and potential direct groundwater contamination. We interpret that for instances where a PGIS is underlain by glacial till, the criteria for soil suitability for providing treatment are not met. In those cases, an applicant has the option of amending the soil, but is not required to do so. Does DOE agree with this interpretation? The City would experience continued dependence on underdrain and stormwater systems to carry stormwater above poorly drained soils. Both Hoypus and

glacial till soils are unsuitable to provide treatment. Please clarify whether permeable pavement would be considered not feasible in such cases.

- There is no exemption provided for a local jurisdiction to make exceptions to the pervious pavement requirement based purely on functionality. One example is competition grade playing courts that require a dense pavement surface. This is just one example, but there are other special cases that it would be appropriate for an exception to occur.

LID Maintenance and Design Life:

Maintenance of LID facilities will be problematic, particularly for privately owned facilities. Rain gardens can potentially be located anywhere on private property and would require access and maintenance agreements with the private property owners (and the inspection of the property and enforcement of these agreements). Changes in property ownership may greatly affect the maintenance of the raingarden.

Finally, at some point the rain garden soil will need to be rehabilitated in order to maintain its treatment and drainage characteristics. Degradation of the raingarden performance would affect the pollutant loading in the local water body and may cause standing water hazards or flooding. Tracking, inspection, and enforcement of privately owned facilities will be a significant program cost, and is likely to breed poor relationships with our citizens if they are required to perform the maintenance. Transferring the maintenance duties to the public sector may improve relationships, but it also transfers costs and liabilities to the public sector.

Maintenance of green roofs is similarly problematic. A poorly maintained green roof could compromise a building's structure. Could the City be held liable? The same issues of tracking, inspection and enforcement that are mentioned above for raingardens will be even more true for green roofs.

The City is also concerned about the safety of citizens trying to maintain their own green roofs. We suggest that residential roofs be exempt or that at the very least, they only be considered for very large residential facilities typically found on high-end properties (e.g., 5,000 SF for a single building). The common citizen just doesn't have the knowledge or wherewithal to perform this type of maintenance in a safe manner as would be required under WISHA for commercial or municipal properties.

The design life of green roofs and of pervious pavements under specific loading conditions and soil types is still uncertain. If the actual design life is shorter than what would have occurred under traditional construction, this will also increase development and redevelopment costs.

LID Performance Standard:

The performance standard will be difficult for municipalities to enforce over time. For instance, if a developer of a large site chooses to implement the hydrologic performance standard with a specific site design including LID, tree cover, native vegetation and a specific percentage of impervious surface, the City would have to have an agreement with the owners/developers that native vegetation could not be removed, and that trees that die or are destroyed are replaced with a specific sized tree and tree canopy. Impervious surface additions would have to be built into the development model at the time of design, i.e. 2% additional impervious surface can be added before the site would no longer meet the performance standard. The City would then have to treat the development itself as a large stormwater facility. We would have to understand and track the design constraints, and prohibit new additions, sheds and decks, etc. beyond the design criteria. The City would also have to periodically inspect project trees and native vegetation areas for removal or death.

Even given these practical difficulties, we agree that it is appropriate to give project proponents an alternative to the purely prescriptive approach, especially since the overall intent of LID is to encourage site-specific design that respects natural topography, vegetation, and characteristics.

Watershed – Scale Stormwater Planning

The requirement for watershed scale stormwater planning is also problematic in our jurisdiction due to known problems in existing water bodies. Would the State prohibit an expansion of incorporated area or a densification within the incorporated City if the water body already does not meet State water quality standards? It would be unlikely that any proposed expansion or densification could be demonstrated to improve water quality within the basin. Would the State require a percentage of retrofit of existing impervious surface to allow the expansion or densification?

As discussed above, Port Angeles has 5 urban streams which have watersheds extending upslope into the foot hills of the Olympics, well beyond City jurisdiction. For purposes of this requirement, does the analysis include the area outside our jurisdiction?

The City has other concerns about the watershed scale stormwater planning provision. We believe that it will also drive development out into the currently unpermitted County. Even if the County were permitted, if the County's permit applies only to the UGA areas, it may drive development even further out, to the rural areas of our County. The only solution for Port Angeles is that DOE adopt watershed-wide stormwater planning and permitting.