



CITY OF BEND

## Stormwater Quality

### Public Advisory Group Meeting

Thursday, August 3, 2017

9:00 AM – 11:30 AM

#### Members and City Staff Attending

Todd Cleveland (Deschutes County Environmental Health); Joanne Richter (UDWC); Chris Hart-Henderson (Heart Springs Landscape Design); Tom Headley (Century West Engineering); David Buchanan, Wendy Edde, Steve Prazak, Sean Mulderig, Gillian Ockner (City of Bend)

#### Key Items Discussed

##### Welcome and Introductions

- No changes to June 8, 2017 meeting summary. No questions regarding written updates included with the agenda.
- Wendy encouraged the PAG members to continue to provide input from the previous SWOT exercises even if they could not attend the meeting(s). Email your comments to Wendy and she will add them to the summary.
- Wendy reviewed a question about process from the last meeting. While the June meeting focused on regional controls, the August meeting focuses on neighborhood street level controls. The upcoming September optional tour and October meeting will focus on individual lot on-site controls. The initial problem definition, Strength-Weakness-Opportunity-Threat (SWOT) results and information need recommendations from these meetings will be summarized into a document for PAG review and discussion of preferred alternatives for Bend planned to begin with the December meeting.
- Meeting materials distributed included “Monitoring the Effectiveness of Green Stormwater Infrastructure” Katie Holzer, City of Gresham, Fall 2016; Storm Depths in Bend; COSM excerpt on Oregon Drainage Law

**Gresham’s Experience.** Wendy distributed power point slides from a recent City of Gresham presentation on Monitoring the Effectiveness of Green Infrastructure.

Key findings included:

- Swales and rain gardens are good at removing heavy metals such as copper and zinc.
- Utility trench swale crossings can convey water down trench lines and into meter boxes.

- Wood weirs are no longer allowed as check dams because water flows around them. Gresham has switched to concrete weirs to help prevent erosion.
- Curb cut design is important, making sure you have a 2-inch drop at the inlet to prevent bypass of stormwater flows past the facility.
- Infiltration rate is improving over time due to plant root growth.
- Average ponding depth was a key factor for reducing runoff volumes. Deeper yet less steep facilities hold more rainfall/higher peak flows.
- Longer facilities can intercept more rainfall if they have multiple inlets. Gresham now requires inlets at least every 25 feet.
- On steep slopes, terrace with check dams in such a way that soil is flat within the facility rather than sloped with the hill.

The presentation also covered lot level facilities:

- Underground facilities take less area but are hard and expensive to maintain; no urban heat island reduction or evapotranspiration benefits; may be UICs.
- Swale/rain garden are cheap to install but home owners are modifying the facilities despite maintenance agreements. Gresham is moving away with these as a result.
- Concrete planters are more difficult for homeowners to manipulate; but are more expensive.

Provide any questions to Wendy, and she can follow-up with the presenter for additional insights.

**Reviewed Bend Design Storm Depths.** Staff distributed a summary handout of storm depths (NRCS Type I).

- Joanne R. – How will Climate Change impact the design storm over time? Current COSM design manual safety factors are believed to be conservative enough to handle the increased flows. This is a question that the PAG can propose to be revisited with the next COSM update.

**Group discussion on several maps displayed around the room:**

- Well Head Protection Areas and Time of Travel
- Slopes Greater Than 20%
- Master Plan, Existing Flooding Problem Areas – Figure 4.2
- Master Plan, Regional Geology - Figure 2.8
- Master Plan, Major Drainage Basins - Figure 5.1
- Master Plan, Hydrologic Soil Groups - Figure 5.3

**Conducted three brainstorming sessions on the strengths, weaknesses, opportunities, and threats/barriers on the following areas:**

- Neighborhood Controls, results from this exercise are included in Appendix A.
- UICs, results from this exercise are included in Appendix B.
- Outside the box ideas, results from this exercise are included in Appendix B.

**Roundtable Discussion**

- Discussed varying soil types and how it can differ across a site.

- UGB expansion and how redevelopment is already starting in the Kings Forest area now that the new sewer main had been installed.
- The Deschutes River Clean-up was successful, 170 people, 20 divers. The City Edition video is up on our website.
- Boise is drafting stormwater MOU`s with private land owners.

### **Key Decisions Made/Key Action Items**

- Scheduling lot level stormwater tour for September; Chris has a contact for a site with a large cistern. Tom offered to include the tour in his PE newsletter if we want to open it up to local engineers. Wendy will check and get back to Tom.
- SWOT analyses will remain open; PAG members are encouraged to add ideas.
- October meeting will also include a review of the stormwater annual report.

### **Meeting Effectiveness Check-in**

- Schedule check in, how is the fixed day and time working? Should we go back to doodle poll? Everyone is extremely busy and it seemed like the consensus was to leave the schedule as is for now.
- Members are excited to see all the information compiled and the list of recommendations that come from this work.

## Attachment A - PAG Group Neighborhood Controls SWOT Exercise Results

### Strengths:

- ◆ Infiltrates close to the source
- ◆ Increase Treatment
- ◆ The amount of Impervious is naturally limited by the requirements to keep stormwater onsite.
- ◆ More frequent maintained due to high visibility
- ◆ Could combine multiple lots into one facilities
- ◆ Requires Engineer Design
- ◆ Doesn't require the loss of lot
- ◆ Provides Habitat
- ◆ Reduces the urban heat island effect

### Weakness:

- ◆ Requires more maintenance and increased cost
- ◆ Determining responsible (private / public)
- ◆ Takes space in areas that are trying to densify
- ◆ Spill Risk
- ◆ Safety Hazards; fall hazard, tripping, getting out of parked cars
- ◆ Rocky Soils and cost for development
- ◆ Irrigation and water use
- ◆ Hard to retrofit.

### Opportunities:

- ◆ Requires more maintenance and increased cost
- ◆ Determining who is responsible (private / public)
- ◆ Takes space in areas that are trying to densify
- ◆ Spill Risk
- ◆ Safety Hazards, fall hazard, tripping, getting out of parking.
- ◆ Rocky Soils and cost for development
- ◆ Irrigation and water use
- ◆ Hard to retro fit.

### Threats:

- ◆ Road Salt could impact plants.
- ◆ Sight Vision issues
- ◆ Chemical Use to control weeds
- ◆ Plant Type Knowledge
- ◆ Bike-Pedestrian Compaction
- ◆ Education- All the new people
- ◆ Mulch - Floating
- ◆ Potential for weed growth
- ◆ Reduce on street parking spaces
- ◆ Utility Conflicts

## Attachment B - PAG Group Underground Injection Control SWOT Exercise Results

### Strengths:

- ◆ Reduce Flow to the River
- ◆ Ground water recharge
- ◆ Smaller foot print
- ◆ Easy Maintenance
- ◆ Fixed Quantity
- ◆ Less Education Needed
- ◆ Change of ownership less important

### Weakness:

- ◆ Large Spills
- ◆ Limited by soil
- ◆ Replacement
- ◆ Los of capacity over time (8 gallons per minute per year)

### Opportunities:

- ◆ Public Education

### Threats:

- ◆ Sediment Blockage
- ◆ Rule Changes
- ◆ Pollutant contamination, Illicit Discharges
- ◆ Mosquitoes

### Outside the Box Ideas

- ◆ Drainage Galleries
- ◆ Permeable Pavements
- ◆ Capture and Reuse
  - Aqua scape - has good info on water use
- ◆ Trees and the shade effects.
  - Tree root issue with sidewalks.
- ◆ Using Steel Grates to capture water, Board walk