Memorandum

To: Sue Davis, Thurston County
Roy Iwai, Olympia
Cc: Trevor Swanson and Chris Hempleman, Ecology
From: Mindy Roberts, Ecology
Date: April 15, 2004
Subject: Lower Deschutes and Budd Inlet tributaries wet weather monitoring plan

As we discussed March 1, we will be collecting instream and stormwater samples from the Deschutes River/Budd Inlet watershed to identify sources of pollution and to determine load and wasteload reductions necessary for receiving water bodies to meet water quality standards. We agreed to shift the focus of the investigation from stormwater infrastructure to finer-scale instream monitoring. The intent is to isolate reaches that exceed water quality standards as a result of high loading during storm events and to verify that limited stormwater samples have bacteria and nutrient levels similar to those found regionally or nationally. This memorandum summarizes monitoring locations.

Table 1 presents the subwatersheds proposed for stormwater monitoring and the number of monitoring sites per stream. While most monitoring locations are on public lands or rights of way, some intended stations occur on private lands where property owner permissions have been granted. Watersheds are described below, and the attached file includes the referenced figures.

- Adams Creek (Figure 1)—Two sites, including the historical Thurston County site near Boston Harbor Rd, will be monitored. Both the east and south forks will be monitored.
- Ayer Creek (Figure 2)—Two sites, including the currently monitored site at the mouth and one upstream location, will be included. The stations will isolate the influence of the headwater wetlands on water quality.
- Butler Creek (Figure 3)—Three sites, including the historical Thurston County station at French Loop Rd, will be monitored. The sites will isolate each fork of the creek.
- Ellis Creek (Figure 4)—Two sites will include the historical Thurston County monitoring location at East Bay Dr, as well as an upstream site at 33rd Ave NE. (The south fork is not easily accessible.)
- Indian Creek (Figure 5)—Seven sites, including the historical Thurston County monitoring location at Quince Avenue, will be monitored. The six new sites will subdivide the creek into 1,500- to 2,500-foot intervals.
- Mission Creek (Figure 6)—Three sites will be monitored, including the historical Thurston County monitoring location at East Bay Dr and sites located at approximately half-mile intervals upstream.
- Moxlie Creek (Figure 7)—Six sites, including the historical Thurston County monitoring locations at Plum St, will be monitored. Five sites will be added at approximately 1,000-foot intervals through the urban area, where access will be through manholes and will be tide dependent. One new site will be added upstream of Plum St to isolate the effect of the highway.
- Percival Creek (Figure 8)—Five sites, including two historical Thurston County stations at Mottman Rd and the foot bridge, will be monitored. The outlet from Black Lake will be

included, as well as Black Lake Ditch before the confluence with Percival. Percival Creek will be monitored from 54th Ave.

- Spurgeon Creek (Figure 9)—Four sites, including the historical Thurston County station off Rich Rd, will be monitored. The three upstream sites will be located at approximately one-mile intervals.

Between three and six events will be monitored at each subwatershed, with a storm event defined as a minimum 0.10" of rainfall in a 24-hour period preceded by no more than trace rainfall in the previous 24 hours. Due to logistics and timing of storms and hydrologic responses, not all sites will be visited during each storm, and more than three to six storms will be monitored in total. Streams will be prioritized on the basis of fecal coliform levels found to date with Mission, Indian, Moxlie, and Percival subwatershed monitored initially. Remaining stations will be monitored in subsequent storms. In addition, at least one round of dry weather monitoring will be conducted at each site.

Stations will be visited two to four times during the storm. Timing will vary with the timing of the storm. For example, if a strong storm occurs in the morning hours of Day 1, sites could be sampled in the morning and afternoon of Day 1 and Day 2. However, if the storm occurs in the afternoon or evening hours, only one sample may be collected on Day 1 and two samples collected on Day 2. Sites with the quickest hydrologic response, based on land cover characteristics, will be visited first where possible. Up to four sites may be instrumented with automatic sample compositors for nutrients. If no compositors are sited, grab samples will be collected from tributary mouths twice per storm event. Fecal coliform grab samples will be collected as described above.

Samples will be analyzed for fecal coliform bacteria, dissolved and total nutrients, BOD, and organic carbon. Field procedures and sample collection are described in the Quality Assurance Project Plan (Roberts et al., 2004). Field teams will consist of Department of Ecology and Thurston County staff, when available. Storms will be tracked from April through June 2004 and again beginning in September 2004.

Discharge will be measured or estimated using staff gages and rating curves or relationships with other monitoring locations when grab samples are collected.

Following completion of several storms, one basin will be selected for direct stormwater monitoring, based on the levels of bacteria and nutrients from the preceding storms. Ecology will work with the appropriate municipality to map and identify stormwater infrastructure within the selected basin.

Table 1. Proposed stormwater monitoring locations.

SubWS	*#Sites*	*Description*	*Property Owner*
Adams	**2**		
		Boston Harbor Rd **(SG)**	public (from bridge)
		47th Ave NE **(SG)**	public (from bridge)
Ayer	**2**		
		Off Riverlea Rd **(SG)**	James and Judith Deshazo (permission granted)
		Off Rixie Rd SE	public (from bridge)
Butler	**3**	**(SG at confluence)**	
		Southeast fork	public (roadway)
		Southwest fork	public (roadway)
		Northwest fork (Country Club Rd)	public (roadway)
Ellis	**2**		
		East Bay Dr **(flows)**	public (from bridge)
		North fork at 33rd Ave NE	public (from bridge)
Indian	**7**		
		Quince Ave **(SG)**	public (from bridge)
		Wheeler Ave	public (from bridge)
		Frederick St.	public (from bridge)
		path east of Boulevard Rd	public (Olympia ROW)
		Martin Way **(SG)**	public (from bridge)
		South Bay Rd/5th Ave	public (from bridge)
		Barge Ave	public (from bridge)
Mission	**3**		
		East Bay Dr	public (from bridge)
		N Bethel St **(SG)**	public (from bridge)
		Ethridge Ave	public (from bridge)
Moxlie	**6**		
		East Bay Dr	public (from manhole)
		5th Ave	public (from manhole)
		8th Ave	public (from manhole)
		Upstream of Union **(SG)**	public (from manhole)
		Plum St	public (from roadway)
		Near Eastside Dr	public (Olympia property)
Percival	**5**		
		54th Ave	public (from roadway)
		Mottman Rd **(SG/TC)**	public (Tumwater property)
		Black Lake outlet **(SG/TC)**	public (from roadway)
		Black Lake Ditch near Mottman **(SG/TC)**	public (Tumwater property)
		foot bridge **(SG)**	public (General Administration)
Spurgeon	**4**		
		Off Rich Rd **(SG)**	Jerry Boe (permission granted)
		Off Rich Rd/Margaret Moody	Margaret Moody (permission granted)
		93rd Ave SE	public (roadway)
		Equus Ln SE	public (roadway)
Total	***34***		

(SG) indicates that a staff gage will be placed at the site. **(SG/TC)** indicates that Thurston County has previously sited staff gages that will be read during grab sample collection. **(flows)** indicates that discharge will be recorded at each site visit.