Pollutant Parameter Action Levels

For Outfall Testing

Field Observations			
Pollutant Parameter	Indicator	Severity	Action Levels/ Measures
Odor	Distinct odor at site such as sewage or petroleum sources.	0- Non-detectable 1- Faint 2- Easily detected 3- Noticeable from a distance	• Two or more have an action level of 1 or greater, or • One or more of these observations have a severity of 3.
Color	Different colors can indicate various sources of illicit discharge. For example, orange is an indicator of high iron content.	0- No Color 1- Faint 2- Clearly visible in Bottle 3- Clearly Visible in flow	
Turbidity	Can indicate sediment in water and can range from slightly cloudy to opaque, where you cannot see through the water.	0- Clear 1- Slight Cloudiness 2- Cloudy 3- Opaque	
Floatables	Include sanitary products, oil sheen, or soap suds.	0- None 1- Few/ Slight 2- Some 3- Heavy	

Field Analytes		
Analyte	Threshold Levels/ Acceptable Range	Testing/ Notes
pH	6.5-8.5	
Ammonia	≥0.5 mg/L	
Temperature[1]	N/A	Outfalls are only visited one time.
Dissolved Oxygen[2]	8.5-6.5 mg/L	
Total Suspended Solids (TSS)	100 mg/L	
E.Coli (single sample)	406 organisms/100mL	
Total Dissolved Solids (TDS)- Measured as Electrical Conductivity	100.0 mg/L	

[1]The seven day average temperature may not exceed 18.0°Celsius (64.4° Fahrenheit) between October 1st –May 15th, and January 1st through May 15th. [2] 6.5 mg/L is the absolute minimum amount of dissolved oxygen that may be present.

*Field Analytes are to be used if/ when physical indicators fail to identify the source of illicit discharge.

Purpose

In accordance with section A.3.c.vi.F of DEQ's MS4 Phase II General Permit, pollutant parameter action levels have been identified in this document to be used as part of Polk County's dry weather field screening program. The rationale for each testing parameter is described in the following section.

Rationales for Testing Parameters

pH

Fluctuating pH levels can indicate pollution in a waterway and affect the health of the environment in which aquatic animals live. The pH of water determines the solubility and amount of available chemical constituents, such as nutrients, that are available for aquatic life. Optimum range for aquatic organisms falls between a pH of 6.5-8 for fresh water species (EPA, 2021). Heavy metals become more toxic at a lower pH as they are more soluble, and can contribute to pollution loads within a water body (PH and Water, 2019). A low pH can indicate dairy runoff practices into stormwater outfalls and a high pH can indicate agricultural liming practices discharging into stormwater within Polk County's MS4 area. Sample threshold range aligns with OAR 340-041-0345.

Ammonia

Increased levels of ammonia can be an indicator of fecal contamination from raw sewage or fertilize run-off from agricultural practices within the County (Ammonia Test, Ammonia Water Testing & Ammonia Levels Test, 2021). It is important to test for ammonia at outfalls locations due to possible increased loads of this pollutant from human waste and fertilizer application.

Temperature

Outfalls are only tested one time. Temperature will not be a useful indicator.

Dissolved Oxygen

Higher dissolved oxygen levels correlate with less pollution and is an important measure of the health of a body of water. Dissolved oxygen is an important consideration for protecting aquatic species. All streams in Polk County's MS4 discharge into the Willamette River which is an important spawning ground for fish and fish migration (US EPA, 1998). Sample threshold value aligns with OAR 340-041-0016.

Total Suspended Solids (TSS)

High levels of TSS can indicate higher concentrations of bacteria, pesticides, nutrients, or metals in water. These pollutants can be carried into water bodies by stormwater. This can occur by pollutants attaching themselves to sediment particles on land. Once in a water body, pollutants can be released from the sediment as it travels further downstream (Murphy, 2007). Testing for TSS at outfalls with a possible illicit discharge can help identify and eliminate the source of the potential pollutant(s).

E.Coli

Testing for the presence of E.Coli can help prevent excess loads of this pollutant to the recreational waters of the Willamette River and ensure the health and safety of the public. The presence of E.Coli during dry weather flows typically indicates sewage water entering a stream or waterway. Sample threshold aligns with OAR 340-041-0009.

Total Dissolved Solids (TDS)

Total Dissolved Solids (TDS) is a measure of the amount of dissolved materials in water. Changes in TDS concentrations can be harmful to aquatic life. The density of water determines the flow of water into and out of an organisms cells and can also increase water temperatures. Urban runoff and fertilizer runoff can be carried to surface waters by stormwater outfalls and is an important parameter to test for (Murphy, 2007).

Sources:

Murphy, Sheila. *Basin: General Information on Total Suspended Solids*, 23 Apr. 2007, http://bcn.boulder.co.us/basin/data/NEW/info/TSS.html.

"North Dakota State University." *Using Electrical Conductivity and Total Dissolved Solids Meters to Field Test Water Quality - Publications*, July 2019, https://www.ag.ndsu.edu/publications/environment-natural-resources/using-electrical-conductivity-and-total-dissolved-solids-meters-to-field-test-water-quality.

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