Geosyntec consultants

SAMPLING REPRESENTATIVE STORMWATER DISCHARGES

ISGP CHALLENGES AND POTENTIAL RESOLUTIONS

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Sampling Representative Stormwater Discharges

- ISGP Permittees are required to sample at least quarterly at designated discharge point(s) representing site stormwater
- All permittees monitor for turbidity, copper, zinc, pH, visible oil sheen
- Additional benchmarks and/or report-only parameters are required for certain facilities based on NAICS. E.g.:
  - PFAS for air transportation and waste management
  - 6PPD-q for transportation, haz waste, and waste management in 2028
- Numeric effluent limits apply to specific industrial groups and discharges to impaired waters (e.g., TSS limit for discharges to Puget Sound Sediment Cleanup Sites)

Sampling Representative Stormwater Discharges

Discharges from Volume-Based BMPs

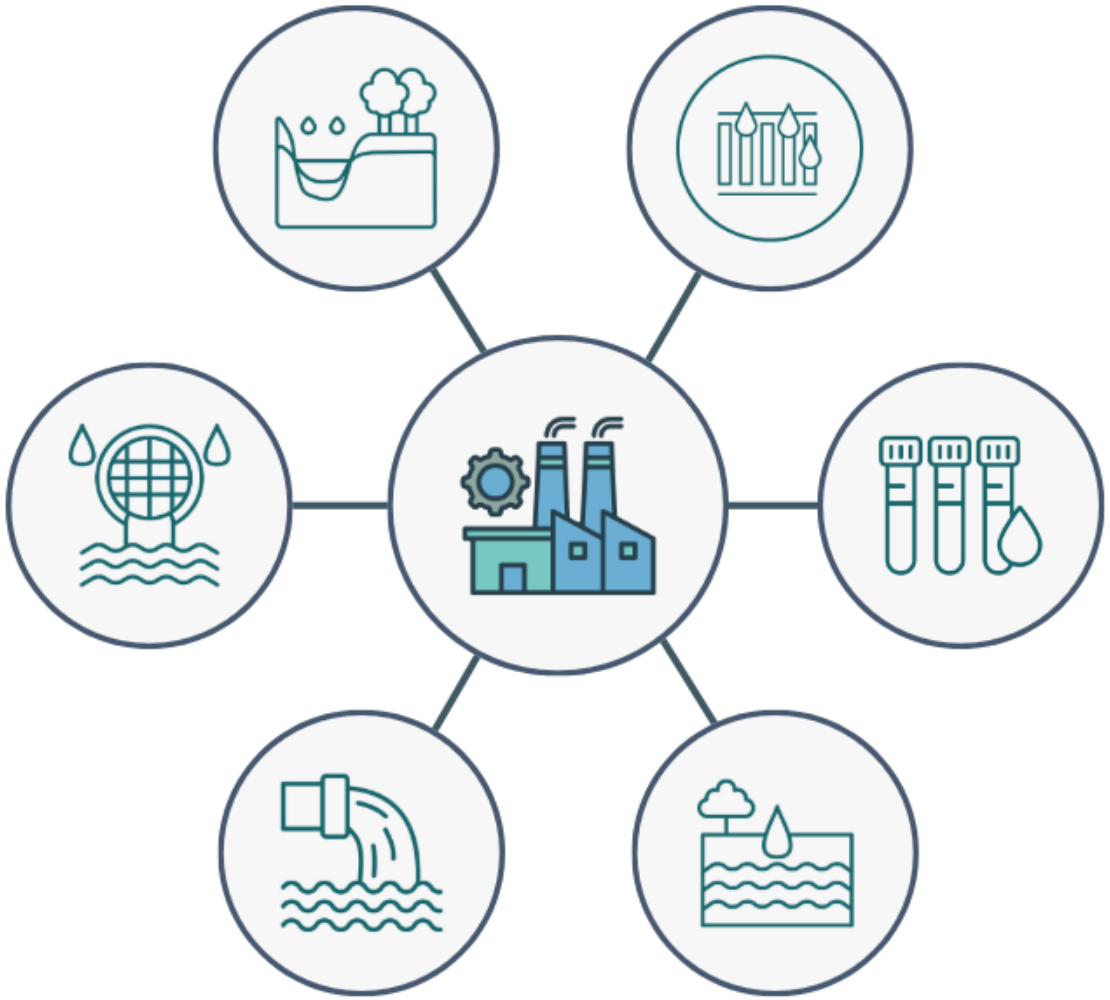
Sampling only when discharges occur or documenting No Discharge

Tidal Effects

Sampling representative of site stormwater without tidal influence

Comingled Discharges

Avoiding offsite stormwater, groundwater, and/or backwater when sampling



Sheet Flow Sampling

Methods for sampling sheet flow when needed to represent site stormwater

Substantially Identical Discharges

Considerations when monitoring at many vs fewer discharge points

Discharges to Ground

Options for facilities required to sample discharges to GW

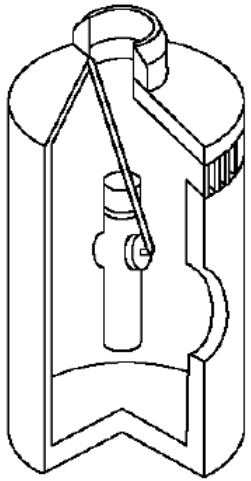
Discharges Only Occur During Large Events

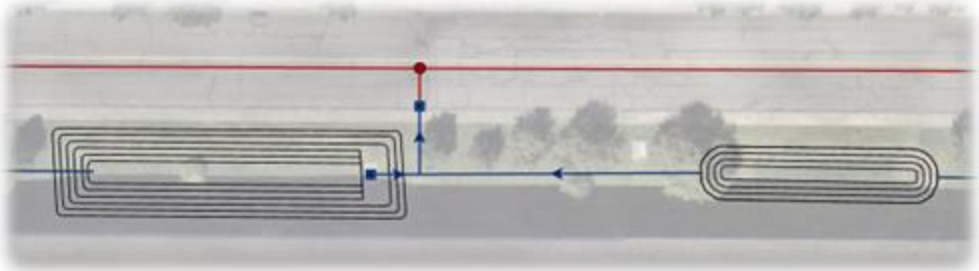
Basin or vault BMP captures a certain runoff volume before discharging

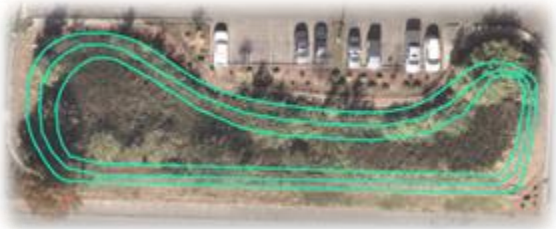
Pressure transducer data + rainfall record can characterize **rainfall-discharge behavior**

OR estimate **pre-discharge capacity** from design details, bathymetry, infiltration rate

Monitor forecast and **mobilize to sample** when likely to discharge







Asserting and Documenting No Discharge

- No Discharge during regular business hours in a quarter
- No Discharge to surface waters (e.g., conductive soils, large infiltration surface, BMPs designed to accommodate potential future expansion or paving, etc.)

H&H Modeling

Site, soil, and BMP characteristics + historical rain record (WWHM, SWMM)

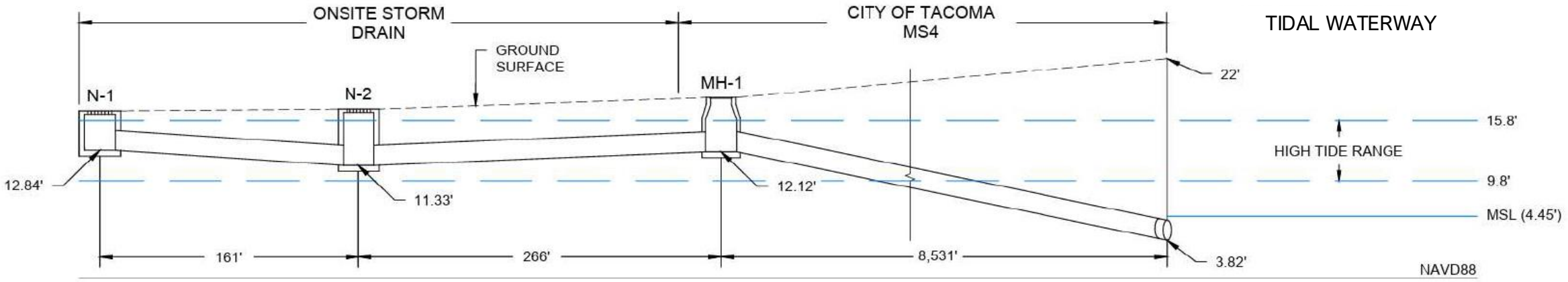
Outlet Control

Remote discharge monitoring via pressure transducer

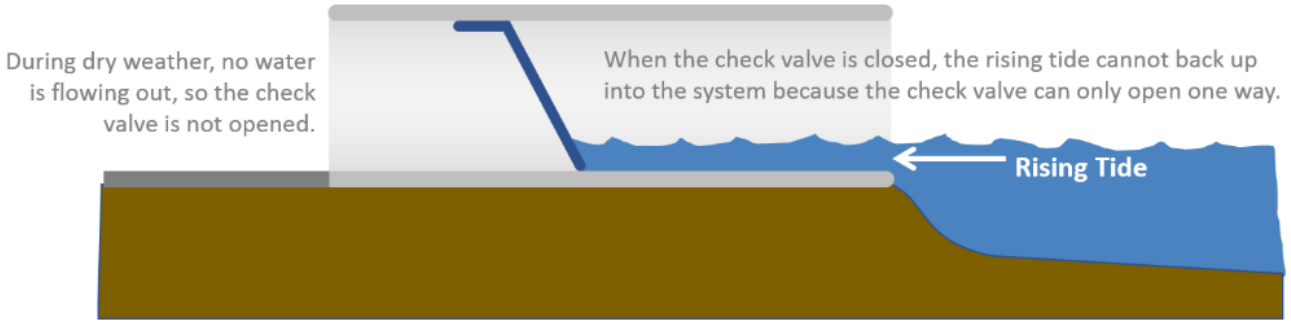
Piezometer

Continuous water level monitoring paired with rainfall record

Tidal and Backwater Effects



- Inline check valves prevent dry weather backwater from tides
- They don't change wet weather hydraulics governed by head

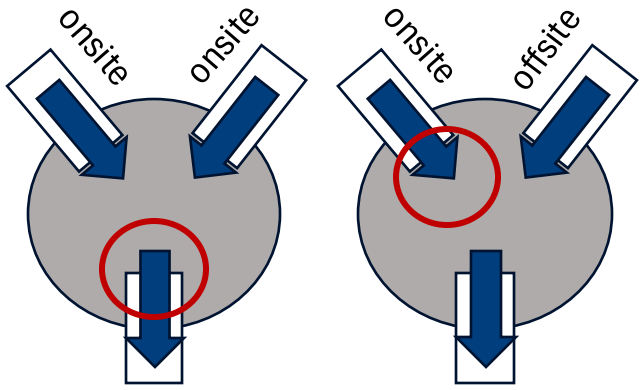


Source: City of Charleston, SC

Excessive tidal surcharge in the winter when soils are saturated (no capacity to absorb tide)

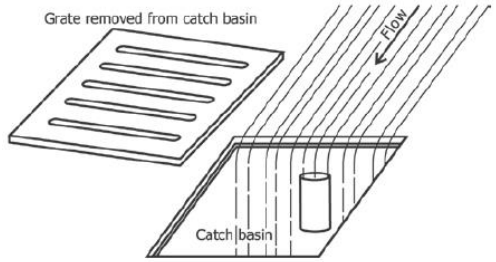
Avoiding Comingled Discharges

- Sampling sheet flow is an option to avoid impacts from:
  - Tidal backwater
  - Groundwater/baseflows
  - Offsite stormwater
- Avoid cross-contamination (e.g., use PFAS-free equipment for PFAS, non-metal dustpan for metals, etc.)
- Caution: petroleum compounds and PFAS stick to plastic



Sampling Sheet Flow

Source: Minnesota PCA



Source: U.S. EPA

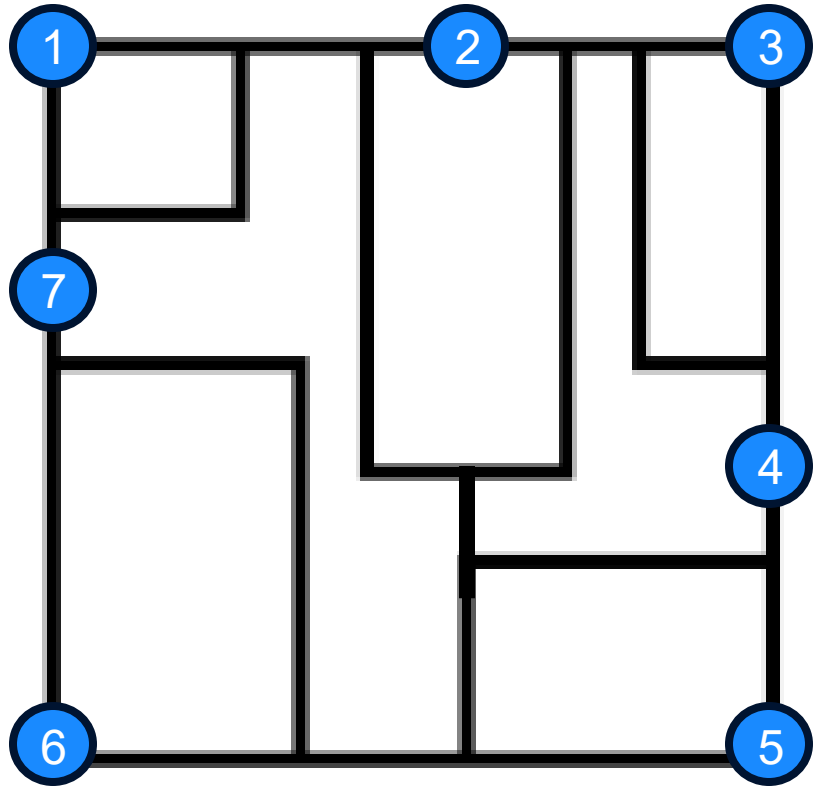
Substantially Identical Discharge Points

*If multiple discharge points are **substantially identical**, a facility can monitor at one to represent the group.*

Definition

Discharge points that share the following characteristics:

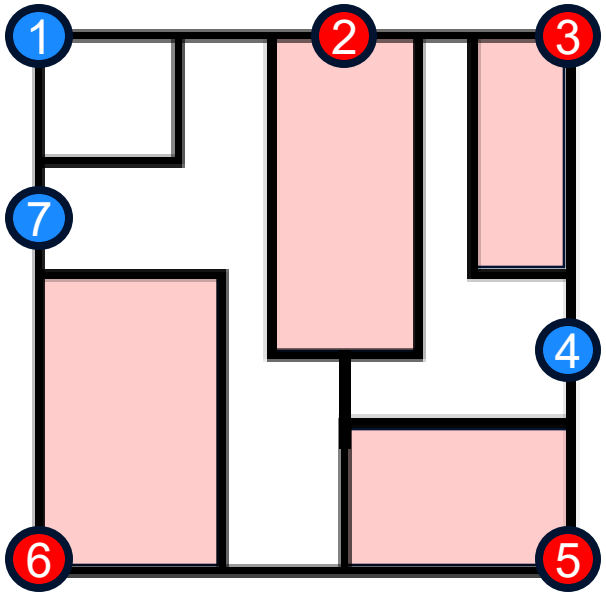
- Same general **industrial activities** conducted in the drainage area
- Same **best management practices** conducted in the drainage area
- Same type of **exposed materials** in the drainage area that are likely to be significant contributors of pollutants to stormwater discharges
- Same type of **surfaces** in the drainage area that could affect percolation of stormwater into the ground
- Same **benchmarks / limits** (except for TSS limit)



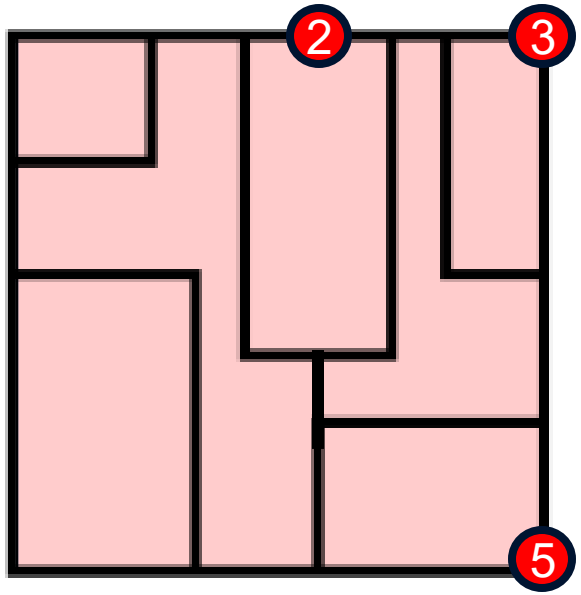
Substantially Identical Discharge Points

Corrective Actions are

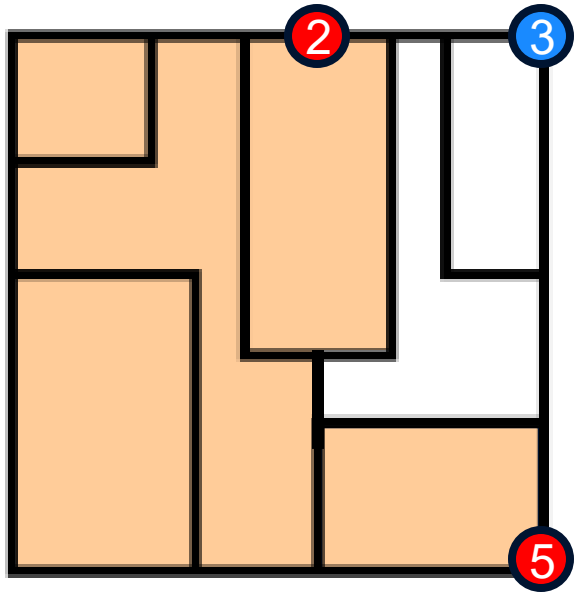
- Tallied facility-wide
- Required for drainage area to any point with one+ contributing exceedance and the substantially identical areas



[Ex] Monitoring at all seven discharge pts
One (Zn) exceedance each*: 2, 3, 5, 6
Level 3 required for drainage areas to 2, 3, 5, 6



[Ex] Monitoring at 2, 3, and 5
Others substantially identical to 2, 3, or 5
One (Zn) exceedance each* → sitewide **Level 3**

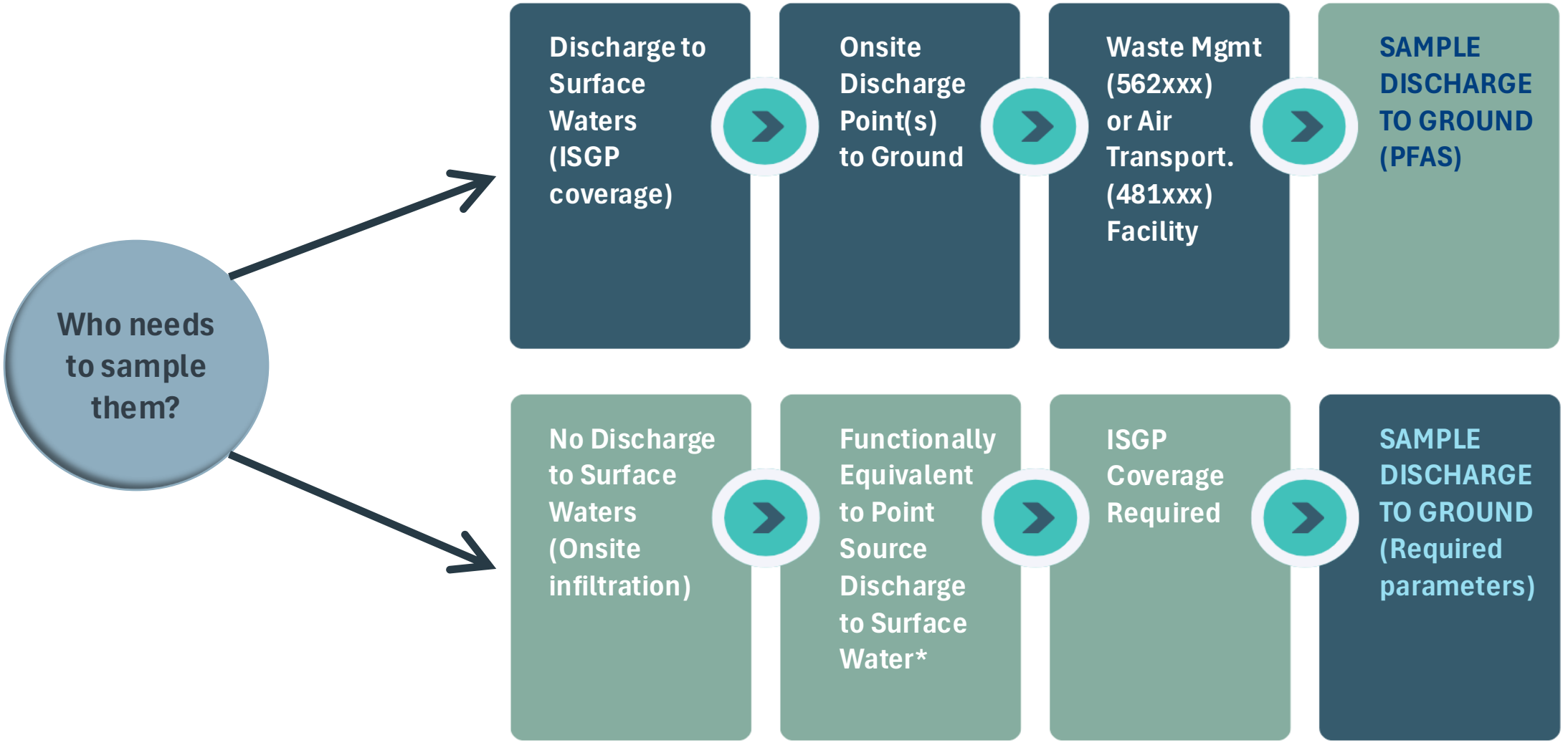


[Ex] Monitoring at 2, 3, and 5 (others SI)
One (Zn) exceedance each across two qtrs: 2, 5
Level 2 for 2, 5, and substantially identical areas

*spread across three quarters

Approach may depend on risk tolerance and monitoring and/or treatment feasibility.
Sampling many outfalls could lead to more corrective actions. Sampling fewer could lead to more area requiring treatment.

Discharges to Ground



*OR facility is a Significant Contributor of Pollutants (Condition S1.B)

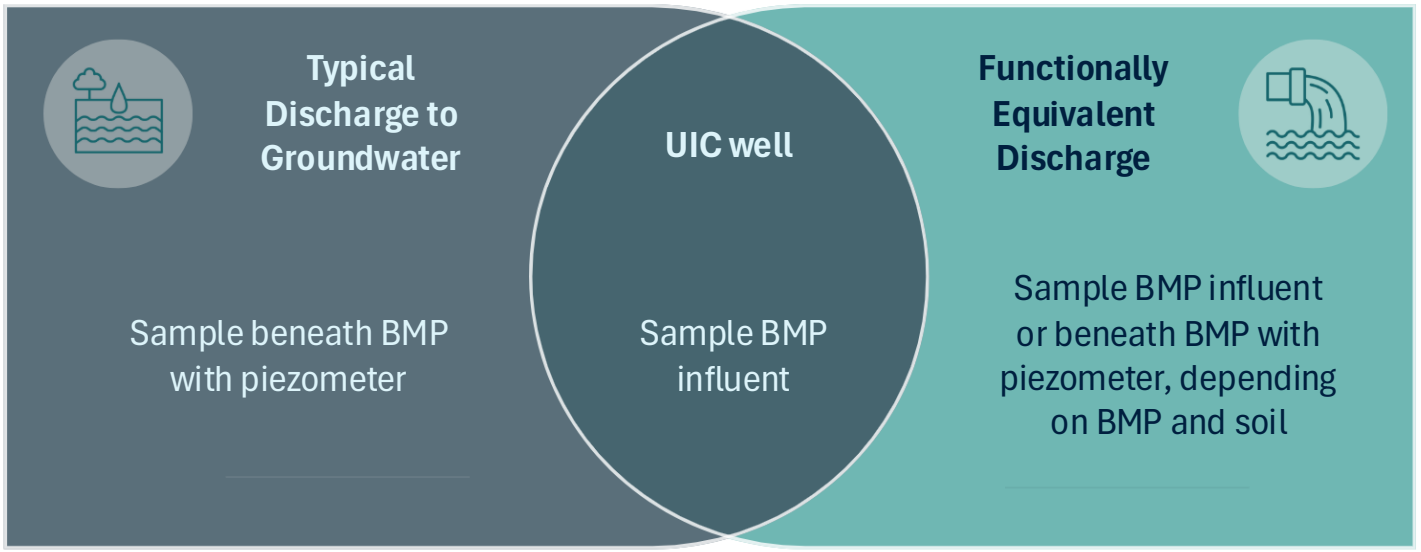
Discharges to Ground

Groundwater Discharge Point (or Discharge to Groundwater) means the location where stormwater associated with industrial activity enters a stormwater infiltration structure that is used, intended or designed to infiltrate water into the ground

Functionally Equivalent to Point Source Discharge to Surface Waters

- Determined by Ecology, primarily based on travel time and distance (underlying geology, porosity, tortuosity). EPA Guidance: NPDES Permits for Certain Point Source Discharges of Pollutants that Travel Through Groundwater to Surface Waters | US EPA
- Ex: discharge through limestone or lava tubes (*County of Maui v. Hawaii Wildlife Fund*)

Source: EngineeringChoice



THANK YOU

Questions or Comments?

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Managing Stormwater in Washington
ADVANCING THE MANAGEMENT OF STORMWATER