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Policy recommendations regarding dredge material placement areas discharging into the Municipal Separate Storm Sewer System

Executive summary

This brief outlines the need for a major amendment to the Texas Pollutant Discharge Elimination System (TPDES) permit no. WQ0004685000, which regulates the Municipal Separate Storm Sewer System (MS4) managed by the City of Houston, Harris County, Harris County Flood Control District, and the Texas Department of Transportation - Houston District (collectively the Storm Water Management Joint Task Force or "JTF"). The current permit, last renewed in 2009, is inadequate to address the challenges presented by the discharge from dredge material placement areas (DMPAs) containing contaminated sediment from the Houston Ship Channel into the MS4 system.

Background

- The MS4 permit was last issued in 2009 and has been administratively continued since its expiration in 2014.
- The Port of Houston and the Army Corps of Engineers require extensive disposal options for dredged material generated by their Houston Ship Channel operations and maintenance activities and expansion activities. Much of the dredged material taken from the segments of the Ship Channel between Boggy Bayou and the Turning Basin is placed in upland disposal sites (referred to as dredge material placement areas or DMPAs)
- These DMPAs are open bermed areas where the dredged material is pumped as a slurry. The solids are then allowed to settle out while the runoff and overflow is discharged through outlets into flood control ditches, the storm sewer system, or directly into bayous and the Ship Channel.
- Sampling of sediments in the Houston Ship Channel conducted by the Army Corps of Engineers in 2012, 2018, 2020, and 2023 has found concerning levels of arsenic, semi-volatile organic compounds, PAHs, dioxins and furans, zinc, silver, and copper, and other heavy metals.
    - These toxicity concerns can be seen in this testing report for the new work dredge material, but apply to operation and maintenance dredging as well
- Soil sampling from the right-of-way outside the Filterbed, Glendale, and East and West Clinton DMPAs conducted by community groups found elevated levels of arsenic, Cadmium, Pentachlorophenol, PCBs, PFOS/PFAS and chromium all of which exceeded EPAs Regional Screening Levels for residential soil. These sampling results also indicated a hotspot for pollutants at the north end of the East and West Clinton placement areas at Mercury Drive. Water sampling from the same right of ways showed additional elevated levels for groundwater of pollutants such as barium, lead, mercury,

selenium, and silver. As these DMPAs have had dredged material placed in them in the past, we believe that these pollutants are being released from the DMPAs through their discharge. Discharge from these placement areas is released directly into the Harris County Flood Control ditch, which is a part of the Harris County MS4 system covered by permit WQ0004685000.

Legal Framework

- In addition to the general NPDES requirements, MS4 permits must: 1) effectively prohibit non-stormwater discharges into the storm sewers, and 2) reduce the discharge of pollutants to the maximum extent practicable (MEP). 33 U.S.C. § 1342((p)(3)(B).
- The City of Houston and Harris County are a large urban area, meaning that the JTF MS4 permit must comply with Phase 1 MS4 requirements. This includes engaging in a comprehensive planning process with public participation to develop a stormwater management program (SWMP), which outlines how the program will use appropriate stormwater controls and best management practices to achieve the MEP standard. 40 C.F.R. § 122.26(d)(2)(iv).
- This SWMP must include measures to detect and eliminate illicit discharges and improper disposals in the storm sewer system and reduce pollution from a variety of areas including landfills, hazardous waste facilities, industrial facilities, and new or redevelopment areas. 40 C.F.R. § 122.26(d)(2)(iv).
- Runoff and overflow from dredged material placed in contained land disposals sites such as the DMPAs is defined as a discharge of dredged material under section 404 of the Clean Water Act. 33 C.F.R. § 323.2(d)(1). As a result, the discharges of runoff from the DMPAs weirs and outlets into Harris County Flood Control Ditches are discharges of non-stormwater into the MS4 system and fall within the MS4 permitting requirement to prohibit non-stormwater discharges into the storm sewer system.
- Furthermore, these discharges are carrying known pollutants—potentially at concerning levels— directly into a portion of the MS4 and from there to waters of the United States. These discharges fall within the MS4 permitting requirement to reduce pollutants to the maximum extent practicable.
- Note that 40 C.F.R. § 122.26(d)(2)(iv)(B) allows for dischargers to the MS4 system to obtain a separate NPDES permit. It is unclear how this would apply to discharges under section 404, as those discharges are not regulated under the NPDES program, but even if 404 applies to the runoff itself, that does not encompass pollutants such as arsenic, PFOS/PFAS, PAHs, dioxins and furans, or other heavy metals, particularly those that may be introduced to the runoff and overflow from the DMPAs themselves.

Recommendations

The JTF's SWMP should identify and list all outfalls from DMPAs (including placement areas receiving operations and maintenance dredging material as well as new work dredging) into the storm sewer system and should include the following special provisions to address concerns related to pollutants from the DMPAs:

- The permit should include testing requirements to screen for all potential toxic pollutants at each of the DMPA outfalls. As these outfalls do not have continuous flow, this may need to be a wet weather screening condition.
    - Testing should include the following categories: Volatile Organics, Semi-Volatile Organics, Pesticides, RCRA Metals + Mercury, Additional metals, incl. Cr+6, Petroleum Hydrocarbons, Dioxins/Furans, PFAs/PFOs, PCB Congeners, Cyanide, Moisture Content, Ammonia
    - This testing should also include human health screening for the constituents of concern listed below.
- The permit should include special discharge monitoring requirements for each MS4 outfall that carries effluent from a DMPA to waters of the United States including outfalls to Huntington Bayou from H102-00-00 and to the Houston Ship Channel from G117-00-00. This monitoring should test for all potential toxic pollutants including the constituents of concern
    - Testing should include the following categories: Volatile Organics, Semi-Volatile Organics, Pesticides, RCRA Metals + Mercury, Additional metals, incl. Cr+6, Petroleum Hydrocarbons, Dioxins/Furans, PFAs/PFOs, PCB Congeners, Cyanide, Moisture Content, Ammonia
- For any constituents that show elevated concentrations or may impact surface water quality standards, the JTF should update the SWMP to incorporate best management practices to reduce the addition of these pollutants. This may require the JTF to negotiate an agreement with the Port of Houston to install control technology at the DMPA outfalls to ensure there is no degradation in surface water quality.

Constituents of concern include: all SVOCs (including hexachlorobutadiene, hexachlorocyclopentadiene), PAHs (individual and total PAHs), ammonia, dioxins and furans (including 2,3,7,8-TCDD TEQ and Total TEQ), PFOS/PFAS, PCBs (including total PCBs as well as PCB 77, PCB 126 and PCB 169), Pentachlorophenol, arsenic, cadmium, chromium, thallium, zinc, copper, silver, and other heavy metals