

Date: December 15, 2022 Job No.: 6126
To: Chris Gardner
From: Melissa Recos & Chris Brainard
Subject: Hampton Circle Playground – BMP Retrofit Site Investigation

This memorandum is a follow-up to the previous memo report sent on June 30, 2022 titled “Permittee-Owned BMP Retrofit Locations”. In accordance with the 2016 MS4 General Permit, permittee-owned properties shall be reviewed for feasibility to implement Best Management Practices (BMPs) to reduce the frequency, volume, and pollutant loads of stormwater discharges to and from the Town’s MS4 system. The Hampton Circle Playground (one of the listed locations for potential retrofit opportunity) is currently in design and permitting with the Planning Department for upgrades to the playground equipment and addition of handicap parking with accessible paths. As part of the MS4 program, BETA reviewed the proposed playground design and conducted a site visit during wet weather (0.72-inches of rainfall over 24hrs recorded at Logan Airport) and high tide on December 7, 2022, to provide considerations related to the MS4 permit. Attachment 1 includes photos from the site visit as well as an aerial map of existing conditions and observations described in this memo. BETA’s findings are as follows:

1. Chris Gardner, DPW Director for the Town of Hull, attended the site walk with Melissa Recos, Chris Brainard, and David McKinley of BETA and explained that flooding of two or more feet in depth occurs throughout this low-lying property due to storm surges during high tide periods. In the 17 years that Gardner has been employed by the Town, this type of event has occurred about half a dozen times, roughly once every 3 years. In addition to field and playground flooding, these events include tidal inundation that causes the streets to be submerged and impassible. The Town is discussing climate change resiliency planning in and around the Hampton Circle area including potential seawalls and pumps to address the storm surge events. During more typical storm events and daily high tide conditions such as that observed on December 7th, the drainage system in the park was submerged at or above the existing catch basin rims due to the elevation and tide gate on the drainage system’s outfall pipe. Under these conditions the field is saturated with puddling throughout. The site was most likely filled marsh and NRCS mapping classifies the soils on-site as limited for infiltration based on wet substratum and loamy fill material with a depth to water table of 20-inches. See Attachment 1 below from December 7, 2022 wet weather and high tide site visit.
2. Dog waste was observed throughout the park during the site walk. The site is completely fenced in providing an ideal environment for residents to exercise their dogs. Chris Gardner confirmed that this is a popular use for the park and historically dog waste left in the field is a significant issue. The site has no dog waste receptacles or signs to provide public education on dog waste pollution and proper disposal. The Town has trash cans at all parks in the summer season that are emptied on a weekly basis.
3. BETA confirmed the catchment area for the drainage infrastructure while on-site and observed ponding of water along the roadside in front of the existing swing-set and a location adjacent to the existing roadway catch basin CB-1750 where channelized runoff enters the park from the street, see Attachment 1 with photos from site walk. All of the catch basins within the property

were observed with standing water at or above the rim. Based on previous investigation work all catch basins in the park have significant sediment and rusted grates that can't be opened. The ground was depressed along the outlet pipe of this catch basin running towards the outfall, the pipe is shallow with approximately 2' of cover and assumed to be in poor condition. Just inside the fence line on the North side of the playground is a natural swale depression keeping ponded water on-site.

4. The proposed playground design maintains the existing street curbing directing street runoff to the existing CB-1750 and depression along the street line at the swing-set. The design adds two new paved parking spaces sloped toward a stone infiltration trench on one side with overflow toward a depressed grass areas on the site. Bioretention was considered to increase infiltration potential on-site however just off-site to the north is a resource area overgrown with phragmites which could easily migrate and compromise a bioretention area. Allowing additional runoff from the roadway to enter the site via a curb inlet (or removing curbing) was considered, however, with limited soil infiltration capacity, the risk of long term open standing water around the playground and on adjacent private properties, that recommendation was ruled out. The high groundwater table prevents the installation of subsurface infiltration units.
5. It was determined that maintaining the existing large pervious bowl-shaped open area to the north of the playground where stormwater naturally ponds would best promote infiltration as much as possible.

Based on these observations, data collected and the proposed site use, BETA has the following recommendations for MS4 BMP Retrofits at this location:

- In the playground project design, revise grading to allow street ponding areas to reach the natural infiltration area and add stone infiltration trenches along graded swales and depressions to encourage as much infiltration as possible.
- In the playground project design, extend the stone diaphragm along all the downstream sides of the new parking space area to provide treatment for runoff.
- Implement dog waste education signage and enforcement at this park and consider year-round trash cans or pet stations for proper disposal of pet waste.

Attachment 1:



Photo A – Standing at center of the park looking west toward Marginal Road, field saturated with puddling



Photo B – Standing at center of the park looking northeast toward playground area, submerged catch basin in foreground



Photo C – Wash out observed to right of CB-1750 where road runoff enters the site

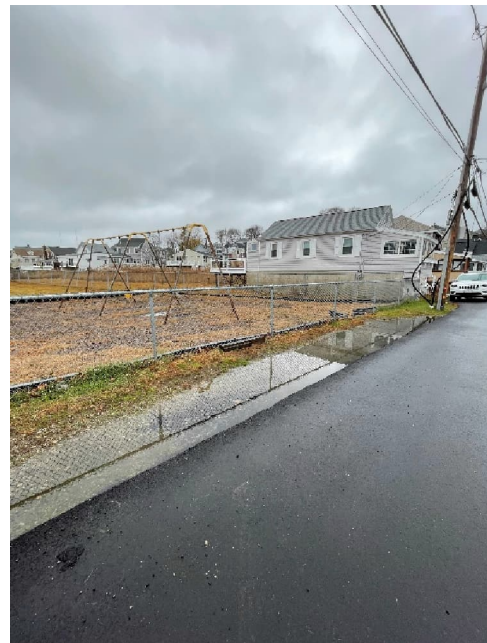


Photo D – Ponded water in front of Hampton Circle Playground swing-set

Stormwater Legend

- Catchment_Areas
- Town CB
- Outfall
- Town DMH
- Pipe

0 80 Feet



2021 MassGIS Aerial Imagery

Map Location

