

# MEMORANDUM

September 25, 2019

## Town of Scottsville Hyosung Tire Plant - Pump Station Investigation

### Background and Understanding

The Town of Scottsville desires to market the Hyosung Tire Plant site for mixed use redevelopment. According to FEMA Flood Insurance Rate Maps (FIRMs), the site is currently located within the floodplain. It is understood that a berm was constructed, approximately in the mid-1980s, to protect the site from flooding. While the berm and associated drainage infrastructure is intended to keep the James River from entering the site, it could also prevent a storm event over the drainage area from flowing out of the site. Pumping equipment is necessary to evacuate stormwater from the site during high river levels. Timmons Group was enlisted to visit the site, evaluate the existing stormwater pumping equipment, summarize the findings and provide recommendations for the next steps.

### Existing Stormwater Conveyance System

Under normal conditions, a runoff producing rain event falls over the site and flows overland to several drainage inlets throughout the property (refer to Image 1). There are four separate pipe networks (refer to Image 2), ranging in diameter from 12" to 36", that carry flow from the drainage inlets to separate outfalls beyond the berm. Each outfall is equipped with what appears to be a sluice gate type valve (refer to Image 3). The valves are normally open but could be closed when needed with a manual handwheel at the top of a staircase. Once the valves are closed, pumps would need to discharge stormwater from the site.

Timmons Group performed a site visit on August 2, 2019 to inspect the existing pumping equipment. After exploring the site and unsuccessfully locating the existing stormwater pumps, we were joined on site by Matt Lawless, Town Administrator. It was then that we learned there is no permanent stormwater pump station and that temporary portable pumps were used. It is believed that these pumps were stored on-site for rapid deployment.

During a flood event, the water surface elevation of the James River could rise above the outfall pipe, preventing runoff from leaving the site or allowing the river to flow into the site. It is understood that the plan was to close the sluice gates and deploy four portable pumps, one for each pipe network. The drainage inlets were outfitted with a small access hatch to allow for the portable pump suction line (refer to Image 4). The pump discharge line, most likely a flexible hose, would be laid on the ground across the property and over the berm.

The condition and capacity of the portable pumps is unknown, as they were not on-site during our visit. Additionally, it is unclear if the pumps were owned or rented, or if they are still available for use today. Discussions with Town staff also indicate that this plan may have never been implemented, and therefore its effectiveness is undetermined.

## **Summary and Recommendations**

- A field visit confirmed that the Hyosung Tire Plant site did not house a pump station on site as originally suspected.
- Through reviewing record drawings obtained from the Town of the site's stormwater conveyance facilities, various outlet valve locations were identified. However, due to the complete overgrowth with vegetation and/or submergence with water, access for detailed inspection was hampered and visual inspections were done from the perimeter to the best of the team's abilities.
- Additional information and analysis beyond the scope of this preliminary report would be required to make definitive determinations regarding the existing sluice gates and existing portable pumps.
- The team did make contact Tim Karr (the plant operations manager) to request additional information, but he could not recall any knowledge on the existing pump capacity or if/where these pumps were located.
- An updated flood study is critical for finalizing a proposed pump station analysis.

Pending the results of the proposed updated flood study, and assuming the 100-year flood elevation exceeds the outfall pipe elevations and does not overtop the berm, Timmons Group recommends performing a follow-up feasibility study to evaluate the available options for protecting the Hyosung Tire Plant. This study should generally include:

- Hydrologic analysis to confirm the drainage area boundary and peak flows anticipated.
- Hydraulic calculations to confirm capacity of existing drainage piping.
- Condition assessment of existing drainage structures, piping, and valves.
- Hydraulic calculations to size pumps and associated piping.
- Comparative analysis of temporary pumps versus a permanent stormwater pump station.
- Conceptual equipment selection and arrangement.
- Engineer's Opinion of Probable Cost (EOPC) for each option.

**Site Visit Photographs**



**Image 1.** View of drainage inlet from southeastern face of building with berm in the background.



**Image 2.** Drainpipe within drainage inlet structure.



**Image 3.** Sluice gate valve at northern-most outfall.



**Image 4.** Drainage inlet with access hatch for portable pump suction line.