

To: Township Committee

From: Stormwater Infrastructure Subcommittee

Date: June 14, 2022

Subject: Memo No. 1

I. Introduction

This is Cranford. Major flooding is a certainty, not a probability. It is WHEN, not IF.

The Township's Stormwater Infrastructure Subcommittee of the [Committee] issues this initial memo regarding recommendations for immediate implementation in recognition that we have entered hurricane season which peaks between mid-August and mid-October.

In this Memo No. 1, we have focused on identifying what we can do for ourselves quickly, meaningfully and at minimal cost.

Since the annual capital budget process and its adoption occur between February and June of each year, we have also focused on what can be done now without the need for line items in the next capital budget. Therefore, this initial memo largely addresses maintenance issues.

Much of our river channel, watershed, park land and existing infrastructure reside within the County and are under the control of the County, not the Township. The County's partnership and cooperation is highly desirable. The Township should negotiate a partnership agreement and plan with the County including an interim plan, if necessary, to these work items to commence this storm season.

We have communicated with the township's hydrological engineer and public works.

- II. **Soft Infrastructure Improvements** – The Subcommittee has identified two maintenance issues that if undertaken immediately and routinely maintained thereafter, mimic infrastructure improvements: (1) tree removal from the Riverside Drive/Balmoral Dike, and (2) removal of downed trees and large branches creating natural dams and waterflow obstructions down river. It is understood that this work is permitted as of right and that no further DEP permitting will be required.

A. The Dike

1. Engineering advises that it has been many years since meaningful tree and vegetation maintenance was done along the dike.
2. Downed trees – at roots - are a threat to the integrity of the dike and thus a threat to person and property depending upon tree size and location.

3. Recommendation: Removal of trees overtime and regular maintenance to remove new trees as they begin to grow.
 - i. First steps – immediate identification (by appropriate professionals and other trained and experienced persons) of those trees most at risk of coming down and/or if they did come down would cause the most significant breaches of the dike and remove them promptly. Leave the rest for an ongoing regular maintenance program.
 - ii. Guidelines for removal - 3” caliber trees are cut flush and stumps left in place. Trees greater than 3” should be grinded to 12” below grade, wood chips removed, and topsoil added, if needed.
 - iii. This project requires collaboration and joint resources of the County and township. The trees are on the river side of the berm, which is County park property.

4. Considerations:
 - i. Development of an aesthetic plan inclusive of planting of indigenous grasses based on shade/sun conditions to remediate post-tree removal visuals. Seek input from Hanson House, Green Team and Environmental Commission as to plant selection.
 - ii. Development of an organic plan for control of invasive species.
 - iii. Identify the absolute demarcation criterion for trees considered a threat to the dike with goal of limiting the number of trees removed consistent with the Township’s overall goals of promoting shade tree growth and maintaining riparian eco-systems. Collaborate with Environmental Commission and Green Team.
 - iv. Development of a sustainable disposal plan for any hard wood removed. Firewood program, mulch program, transplant-a-tree program, accept bids from portable millers for the trees, etc.

B. Natural Dams and Downed Tree and Branch Obstruction.

1. The Issue – Throughout Cranford’s stretch of the Rahway River, there are many natural dams, downed- tree obstructions and some older infrastructure obstructions to waterflow. During a significant rain event, the goal is to move water as quickly as possible downstream. These natural dams and obstructions are impeding that goal yet are easy to remove from a technology and cost perspective. (See attached illustrative photos.)

2. Recommendations:
 - Promptly survey the river within Cranford, identify tree and branch issues, triage for removal, commence removal. Start downstream, within township limits
 - Commence visual inspections of:
 - Orchard Brook at McConnell Park
 - Emphasize clearing near bridges and other hard infrastructure that enhances damming effect:
 - North Avenue bridge near Municipal Building and Riverside Inn;
 - South Avenue bridge near 7-11 and River and Rail;
 - Balmoral Foot Bridge Express sewer bisecting river 100 yards upstream;
 - Balmoral foot bridge;
 - Orchard Brook, West Holly and Spring Garden;
 - North Union bridge near Sperry Park;
 - Springfield Ave bridges;
 - Eastman St. bridges;
 - Parkway bridge – Raritan Road
 - Springfield Avenue at Park Drive;
 - Canterbury flood basin infrastructure areas; and
 - Outfall locations.
 - Consider using drone and citizen volunteers to assist with the survey.
 - Continue promptly with removal of all obstructive trees, branches and other non-vegetative obstructions (picnic tables, grocery carts and the like can be found in these locations). Collaborate with County for human and equipment resources.
 - Document by visual image and weight/volume what has been removed.
- ii. Request County and neighboring communities to do the same downstream and with diligent urgency.
 - Winfield Park, Clark and Rahway - Rahway River Parkway area.
3. The river channel is County controlled and DEP regulated. It is understood that no DEP permits would be required. Confirm this with engineering.
4. Considerations:
 - i. Eco-system preservation for turtles, other reptiles, amphibian, bird and pollinator populations;
 - ii. Manner and location of disposal of removed debris.

III. Immediate Maintenance – As we are currently in the hurricane season, time is of the essence to do as much prophylactic maintenance as we can now to prepare for the inevitable next storm.

A. Outfalls

The Issue – The major outfalls from our stormwater sewer to the river must be unobstructed. During a major rain event our stormwater sewer system must be able to collect and move water quickly to discharge in the river.

1. Recommendations:

i. Request that the County commence an immediate roll-out of visual checks of each of our outfalls at the river for obstructions and upstream moving or movable obstructions that present threats if the debris moves downstream due to increased water currents from a rain event. Request the County clear those obstructions. Township to clear those obstructions in lieu of County agreement to do so timely.

ii. Immediately deploy the Township’s camera truck to visually inspect for obstructions from street access to the river. DPW or contractor to clear those obstructions.

iii. Promptly, after every named storm and any other rain or wind event of either of a TBD magnitude or at the direction of the OEM director repeat i and ii.

iv. Post a map of these locations on Township website. Post a prospective schedule for completion of i and ii. Post actual dates of completion. Summarize findings in the posting. Document the obstructions removed via photograph, weight and/or another metric.

B. Stormwater Basins/Drains Maintenance

The Township’s stormwater basins/drains and has known severe stormwater flooding areas need to be inspected proximate to the spring rainy season and the summer- fall hurricane season. The township has a Stormwater Management Maintenance Plan drafted by its engineers in April 2020 addressing this. Additionally, on or about December 9, 2021, Mott MacDonald issued a memo to the Township Administrator summarizing a meeting of December 2, 2021 and identifying the following General Maintenance Items:

General Maintenance Items

1. All local storm sewer systems should be inspected to confirm catch basins, manholes, piping, and outfalls are free from all debris. In addition, check valves at the outfalls should be checked to confirm they are working properly.
2. The Phase 1 swale and inlet structure behind Herning Ave needs to be cleaned of debris. A significant number of woody debris and fallen trees were observed within the swale and obstructing the inlet to the express sewer. Stormwater runoff bypassing the express sewer would have an adverse impact the Riverside Drive Pump Station.
3. The existing express storm sewers should be inspected and confirmed that they have not been breached or compromised. The integrity of the manhole access points should also be evaluated, and the outlets should be cleared of any debris.

(The above is an excerpt from the Mott Macdonald Memo).

1. Recommendation: Administration to review status of compliance with 2020 Stormwater Management Maintenance Plan drafted by Maser in April 2020.
 - i. Identify failures and stress points and suggest measures to ameliorate and provide needed additional support and resources. Acknowledge impact of Covid-19 pandemic impact on manpower and other obstacles on what is a manpower intensive program.
 - a. interview and collaborate with DPW Superintendent
 - b. supplement the Plan accordingly with emphasis on pre-storm and immediate post-storm measures.
2. Recommendation: Administration to review status of the Mott MacDonald General Maintenance Items and immediately execute any item incomplete or by its nature, particularly no. 2, requiring repetition. Further, repeat 1.i. immediately above.
3. Implement an Adopt-a-Drain program or similar program for urgent and routine citizen inspection of neighborhood basins. Citizen awareness and education is critical.
 - i. Adopt-a-Basin - <https://doc.arcgis.com/en/arcgis-solutions/latest/reference/introduction-to-adopt-a-catch-basin.htm>.
 - ii. Citizen deployment by Nixle alert to inspect and clear (where feasible) neighborhood stormwater basins on an urgent basis when weather forecast dictates as determined by the Director of OEM.
 - iii. Maintain map of basin locations on Township Website for adoption and awareness.
 - v. Leverage Channel 35, the Township website and all Township related social media outlets to promote the program, alert and

encourage residents to inspect their nearest stormwater basin for obstructions, removal of those obstructions (if feasible), and removal of leaves and other debris in the street that may migrate to the basin and cause of obstruction.

iv. DPW to develop a plan for off-site removal of cleared debris.

IV. Pursue NJ Climate Solutions Grant for Permeable Pavement of Public Lots

A. The State of New Jersey currently has a \$15 Million grant program available regarding Blue and Green Carbon Projects. Applications must be submitted by August 15th. <https://www.nj.gov/dep/climatechange/docs/natural-climate-solutions-grant-program.pdf?fbclid=IwAR1YN3GXdzMVBuSsfnmKHEK5rsaTO7xolSc7p3ws56IGROXkYgg80QuFrxs>

1. Recommendation – Cranford to submit an application to fund re-paving various imperviously paved municipal lots, including the Orange Avenue Pool, Centennial Avenue Pool and Memorial Field Lots, with pervious pavement or other pervious surface materials.

Rationale – Will establish and maintain trees and reduce impervious cover and stormwater runoff, while promoting groundwater recharge, in urban areas. Urban land includes land with pavement, and other areas that are essentially impervious to infiltration of rainfall. It's estimated this will reduce runoff into the Rahway River by 26,500 Gallons per inch of rain for every acre replaced.

2. Recommendation – Encourage (and assist if necessary) Union County College to submit a similar grant. to [what]

Rationale – Its estimated Union County College Cranford Campus has 8.6 acres of impervious asphalt surface. We are requesting Union County College move forward with the same grant opportunity which Will establish and maintain trees and reduce impervious cover and stormwater runoff, while promoting groundwater recharge, in urban areas. Urban land includes land with pavement, and other areas that are essentially impervious to infiltration of rainfall.

3. Recommendation – Encourage (and assist if necessary) Board of Education to submit a similar or joint grant.

Rationale – the BOE owns and maintains substantial impervious lot square footage.

V. Next STEPS

A. Liaise with Union County

1. Request point-of-contact with the County regarding all stormwater maintenance issues.

2. Request County update its on-line Stormwater Basin Maintenance Calendar

3. Request County inspect and clear all stormwater basins on Union County-owned roads and properties within Cranford that have not been inspected and cleared since on or after April 1, 2022

4. Develop immediate plan for immediate progress with implementation of IIA and B, IIIA and IV above.

B. Develop Township Plan to:

1. Begin dike tree and vegetation maintenance;

2. Clearance of downed trees and other obstructions to downstream water movement.

3. Commence the review referenced in IIIB.1.

4. Prepare grant application referred to in IV. above.

5. Organize Adopt-a-Basin program.

6. Begin messaging citizen involvement in identifying and clearing drains/basin immediately across all Township media channels.





