

August 29, 2024

Mr. Raymond Lavey, Executive Director
Waterfront District Commission
145 Taunton Avenue, Town Hall 2nd Floor
East Providence, RI 02914

**Re: Waterfront District Commission – Stormwater Peer Review Services
Metacomet Redevelopment
On-Call Professional Engineering Review Services
East Providence, Rhode Island
(Pare Project No. 24039.00)**

Dear Mr. Lavey:

Bohler Engineering is in receipt of a comment letter from Pare Corporation (Pare), dated March 15, 2024. On behalf of the applicant, Metacomet Property LLC, Bohler offered responses in a letter dated May 3, 2024 to outline the anticipated approach to address the comments. Upon receipt of the latest Geotechnical Investigation, those responses no longer reflect the changes that were made. This bulleted list summarizes the major stormwater changes due to the new Geotechnical Investigation:

- Design Point (DP) 4 renumbered to DP7
- DP5 renumbered to DP4
- New DP5, DP6, and DP8 added
- P4.2 renamed to P7.2
- P4.3 renamed to P7.3
- Basins removed – P2.2, P3.5, P3.5.1, P3.11
- Above Ground Infiltration Basins – P2.1, P3.4, P3.10, P7.2, P7.3
- Underground Infiltration Chambers – P3.3, P3.7, P3.9
- Underground Detention Chambers with Jellyfish on outlet – P3.1.2
- Wet Extended Detention Pond treated by Jellyfish and upstream infiltration basin – P3.8

For clarity, the original Pare comments are in **italics**, while our new responses are directly below in **bold** type.

Proposed Site Plan Documents

Comment # 1 Bioretention Basin Detail on Detail Sheet (C-906) does not show the proposed 30-inch perforated pipe illustrated on Drainage Plan D (Sheet C-455) and shown in HydroCAD model. Detail currently shows 4-inch perforated PVC underdrain. Review and revise accordingly.

Response: No Bioretention Basin proposed.

Comment #2 Drainage Plan C (Sheet C-454) Subcatchment PD2.1 appears to surcharge through a proposed catch basin grate to the Proposed Above Ground Stormwater Basin P2.1. The

proposed catch basin rim elevation is above the top of Stormwater Basin P2.1 berm. Review and confirm the intent.

Response: The plan is revised to discharge the pipe to a flared end section with rip rap apron.

Comment #3 Infiltration Basin Detail on Detail Sheet (Sheet C-906) shows a sediment for forebay for the Infiltration Basins. Sediment forebays are not illustrated on the grading or drainage plan sheets. Show limits of pretreatment as required including sediment forebay check dam locations and heights.

a. Update infiltrating areas within calculations.

Response: The detail is revised to remove the forebay. Pretreatment to the surface basins with infiltration are achieved by offline deep sump CBs, NA for contributing roofs with direct discharge to infiltration, and/or proprietary water quality units when CBs are inline.

Comment #4 Pretreatment is not shown for the underground infiltration and detention systems. Confirm pretreatment requirements are met.

Response: Pretreatment is not required for contributing roofs if they discharge directly to the infiltration system. For other areas, Pretreatment is met by offline deep sump catch basins or, where pipe networks utilize catch basins inline, a proprietary water quality unit is proposed prior to discharge.

Comment #5 Maintenance access ports are not shown for the underground infiltration and detention systems. Add system specific details illustrating how the systems will be accessed and maintained.

Response: These are added to the respective detail for each system.

Comment #6 Proposed Underground Stormwater Basin P3.1.1 on Drainage Plan D (Sheet C-455) is annotated as P3.1.2 within the hydrologic model. Review and revise accordingly.

Response: The plan is revised to annotate as P3.1.2.

Comment #7 Review Proposed Diversion-MH 7 and Proposed HDS-MH 249 on Drainage Plan D (Sheet C-455). Confirm flow direction and inverts.

Response: The plans are revised to reflect positively draining pipes.

Comment #8 Confirm how runoff from the proposed parking lot west of Infiltration Basin P4.3 is being directed to the basin on Drainage Plan A (Sheet C-452).

Response: A closed pipe drainage system is added to direct the parking area to P7.3.

Comment #9 Confirm how runoff from the proposed roadway and front of houses south of Bioretention-Infiltration Basin P3.10 is being directed to the basin on Drainage Plan D (Sheet C-455). For Prop. Bunker-CB 267, provide invert of primary outlet and the location.

Response: Runoff from the roadway is collected in CBs at the cul-de-sac, while downspouts from the duplexes discharge into a collector pipe routed to P3.10. A bunker is no longer proposed.

Comment #10 Provide details on how the Wet Extended Detention Basin will be accessed and maintained. Revise grading for access to the sediment forebay as required.

Response: The basin (including outlet control structure) can be accessed from the adjacent roadway, parking lot, and/or sidewalk. As there is no longer a proposed forebay, maintenance to the Wet ED Basin plan is periodic mowing so a designated 12-foot-wide, 15% maintenance access drive is not provided.

Comment #11 The Wet Extended Detention Basin will have approximately 7 feet of ponding during a 100-year storm event. Confirm if fencing, safety benches, or other means of protection should be included.

Response: The revised plans include a fence around the perimeter of the Wet Extended Detention Basin.

Comment #12 The Prop. AG-OCS 11 for the Wet Extended Detention Basin is located at approximately elevation 47±. The detail and hydrologic calculations call for an orifice at elevation 43.5. Please review and provide additional detail.

Response: The location of the OCS is set in the embankment. The orifice at 43.5 is for a reverse slope pond drain so the OCS does not need to have an exposed face at 43.5.

Comment #13 Confirm Bioretention systems are in conformance with Stormwater Management, Design, and Installation Rules (250-RICR-150-10) Section 8.23- Filtering Systems Part D Treatment Subpart 4. Bioretention systems shall consist of the following treatment components... a 6-inch to 9-inch-deep surface ponding area". Confirm ponding depths within Bioretention systems.

a. Update provided WQv within calculations.

Response: No Bioretention Basin proposed.

Comment #14 Confirm Bioretention systems are proposed with the required pretreatment. Show sediment forebays, if applicable, and update the filter areas.

Response: No Bioretention Basin proposed.

Comment #15 Bioretention Basin Detail on Detail Sheet C-906 soil mix should conform with 250-RICR-150-10) Section 8.23- Filtering Systems Part D Treatment Subpart 4. Review and revise accordingly.

Response: No Bioretention Basin proposed.

Comment #16 Landscape plans should show plantings proposed within infiltration, bioretention, and wet extended detention basin.

Response: Acknowledged. Landscape plans will be revised accordingly.

Drainage Report

Comment #1 Appendix A Checklist – review Minimum Standards 4 & 5. DP 4 does not directly discharge to a 4th Order Stream or Pond of 50 Acres or Greater. DP 4 discharges to a forested wetland and Fort Street prior to entering Providence River. Additionally, not all subcatchments in DP 3 discharge directly to Providence River.

Response: The checklist is revised accordingly to match the updated analysis that considered DP3 as only what is realized at the cove via pipe discharge. DP4 (now DP7) meets Minimum Standards 4 and 5.

Comment #2 Provide calculations for sediment forebay pretreatment sizing for surface infiltration and filtering practices. Confirm pretreatment sizing in accordance with the applicable sections of the 250-RICR-150- 10 Section 8.23- Filtering Systems.

Response: Calculations will be provided for the pretreatment practices to the infiltration and filtering practices.

Comment #3 The drainage report references deep sump hooded catch basins. The plans show the RIDOT Standard Detail 4.3.0 with a 3-foot sump. Review and revise the details accordingly in conformance with 250- RICR-150-10 Section 8.30 – Pretreatment – Deep Sump Catch Basins.

Response: The detail will be revised to 4-foot sump depth to comply with the cited section.

Comment #4 Provide calculations to confirm compliance with 250-RICR-150-10 Section 8.23- Filtering Systems Part D Treatment Subpart 6 for minimum filter bed area and other applicable standards for Bioretention Areas.

Response: No Bioretention Basin proposed.

Comment #5 Provide calculations to confirm compliance with 250-RICR-150-10 Section 8.21 Stormwater Infiltration Practices Part C- Conveyance Subpart 3. All infiltration systems shall be designed to fully de-water the entire WQv within 48 hours after the storm event.

Response: Drawdown calculations are included in the revised drainage report to demonstrate de-watering in less than 48 hours.

Comment #6 Appendix A Checklist Table 5.2 – Summary of BMPs identifies that infiltration systems do not meet the Horizontal Setback Criteria. Provide Technical Justification and the distance provided.

Response: The checklist is updated accordingly, and Technical Justifications provided on page 5 of the revised drainage report.

Comment #7 Provide calculations to confirm compliance with 250-RICR-150-10 Section 8.33 Quantity Control – Stormwater Basins Part E and Part F for Using Basins for Additional Pollutant Loading Reduction. Confirm minimum detention times, pretreatment, length to width ratios, drainage area surface area ratios, and permanent pool ratios.

Response: A Jellyfish is added prior to discharge into the Wet ED Basin to meet the pollutant loading reduction rather than utilizing the Wet extended basin for enhanced removal credit. Other inflows to the Wet ED Basin are from the treated outflow from Basin P3.9.

Comment #8 Wet Extended Detention Basins shall have a minimum contributing drainage area of 25 acres, unless groundwater is intercepted. Basins that do intercept groundwater shall not include the volume of the permanent pool in storage calculations. Confirm ESHGT.

Response: Test pit #1, P6, and #3 from the preliminary geotechnical investigation indicates ESHGT at elevation 39, 40.5, and 44 respectively. The basin bottom (elevation 41) intercepts the average groundwater elevation (41.5) and should maintain a permanent pool.

Comment #9 Review Time of Concentration for Subcatchment ED 2 and ED 4. The Time of Concentration currently delineated is not the hydraulically most distant point within the subwatershed. Review and revise existing flows accordingly.

Response: In subcatchment ED2 the slowest path was selected that was not intercepted by an existing catch basin into a closed pipe system. A more distant path in the subwatershed results in a faster time and less conservative design due to less shallow concentrated flow and more channelized flow.

The drainage analysis of DP4 (now DP7) was revised and better reflects the sub watersheds within.

Comment #10 Confirm that test holes were observed by an RI Registered Professional Engineer or DEM-licensed Class IV Soil Evaluator.

Response: Northeast Geotechnical, Inc. has confirmed.

Comment #11 Appendix A Checklist Table 5.3 does not include the soils analysis or separation to groundwater for each BMP and states “awaiting final geotechnical data”. For infiltration practices, provide information in accordance with 250-RICR-150-10 Section 8.21- Stormwater Infiltration Practices providing a minimum of 1 test hole per 5,000 square feet. For filtering systems, provide information to confirm compliance with the requirements of 250-RICR-150-10 Section 8.23- Filtering Systems.

- a. The Test Boring Logs, Test Probe Logs, and Test Pit Logs provided include soil descriptions using Burmister Identification System for the strata observed. For stormwater management design, USDA textural classifications are required for selecting infiltration rates. One sample per hole was taken and grain size distribution tests were completed to determine the USDA textural classifications. Approximate depths of samples are included within a summary table.*

Response: The checklist is revised accordingly. The additional testing demonstrates minimum number of test holes for each infiltration practice.

- b. The ESHGT should be observed and logged based on the identification of redoximorphic features. The Test Pit and Boring Logs do not review ESHGT. Review and confirm ESHGT elevations.*

Response: ESHGT was indicated in the logs in the Preliminary Geotechnical report from 9/6/2022 and these are indicated on the plans. No ESHGT was found by the geotechnical engineer in the report from 1/22/2024.

- c. The preliminary Geotechnical Engineering Report does not include soil data for the following proposed infiltration practices:*
 - *Infiltration Basin P2.1*
 - *Underground Stormwater Basin P3.9*
 - *Infiltration Trench P3.13*
 - *Infiltration Basin P4.3*

Response: The new geotechnical data is included in the revised drainage report.

- d. Underground Stormwater Basin P2.2 shows a bottom of stone elevation of 40.2 and an Estimated Seasonal High Groundwater Elevation (ESHGT) of 38.0 within TP-23 and elevation 39.0 within B-42.*
 - i. Within 250-RICR-150-10 Section 8.21- Stormwater Infiltration Practices, the bottom of infiltration practices shall be separated by at least 3 feet vertically from the ESHGT. Review and revise accordingly.*

Response: Basin P2.2 is removed due to the findings within the latest geotechnical investigation.

Provide a section view of each BMP, showing the soil data collected and the associated elevations of the stratum observed, USDA soil textural class, and the ESHGT determined based on redoximorphic features. The bottoms of systems should be located with the required ESHGT separation, and outside of fill materials and A and B soil horizons.

Response: The necessary information to review the design intent for each BMP can be found in Appendix C and Table 5.3 of Appendix A Checklist. The system bottoms have been located with the required ESHGT separation and the fill materials along with A and B soil horizons will be removed.

Comment #12 Hydrologic Calculations for Infiltration Basin P2.1 show a peak elevation of 15.30 in the 100-year storm. Confirm sufficient freeboard is available from the top of berm elevation (15.50 in HydroCAD and 15.00 on Proposed Site Documents).

Response: The plans and report are revised to provide 1-foot of freeboard in the infiltration basin and resolved discrepancies between them.

Comment #13 Hydrologic Calculations for Infiltration Basin P2.1 show an outflow of 22.29 cfs through the spillway during the 100-year storm event discharging directly to golf course. Confirm safe passage of the 100-year flows and detail any necessary downstream stabilization.

Response: This 100-yr outflow is less than the existing conditions peak flow to DP2 and the proposed overland flow condition is the same as existing conditions, so no downstream stabilization is planned.

Comment #14 Hydrologic Calculations for Infiltration Basin P3.4 show a peak elevation of 49.80 in the 100-year storm. Confirm sufficient freeboard is available from the top of berm elevation (50.50 in HydroCAD and 50.00 on the Proposed Site Documents).

Response: See response to #12.

Comment #15 Hydrologic Calculations for Bioretention-Infiltration Basin P3.10 show a peak elevation of 47.32 in the 100-year storm. Confirm sufficient freeboard is available from the top of berm of elevation (47.50 in HydroCAD and 47.00 on Proposed Site Plan Documents).

Response: See response to #12.

Comment #16 Hydrologic Calculations for Infiltration Basin P4.2 show a peak elevation of 63.98 in the 100-year storm. Confirm sufficient freeboard is available from the top of berm elevation (64.50 in HydroCAD and 64.00 on Proposed Site Documents).

Response: See response to #12.

Comment #17 Confirm Recharge Volume provided, and Water Quality Volume provided for Infiltration Chambers P3.9. The Stage-Area Storage for weir elevation 58.60 is 20,720 cf. A volume of 22,733 cf is listed. Review and revise accordingly.

Response: **Neither are correct with the updated analysis. Discrepancies are revised accordingly on the revised plans and report.**

Comment #18 HydroCAD analysis should be updated using appropriate grate dimensions of the Nyloplast Dome Grate for applicable BMPs.

Response: **No Nyloplast Dome Grates are proposed on the revised plans.**

Comment #19 Provide product flow rates for the Jellyfish Filter Systems and model sizing calculations.

Response: **The backup from Contech Engineered Solutions LLC is included in the revised drainage report.**

Comment #20 Provide HydroCAD 1.2" storm summary to confirm WQf values listed in Exhibit 4-III (Page 434 in Appendix F).

Response: **The revised drainage report includes the 1.2" storm summary in the HydroCAD outputs found in Appendix D and E.**

Comment #21 Appendix A – Part 1, MS4 should be checked for initial discharge location for DP 5 and DP 1.

Response: **The checklist will include these boxes checked.**

We trust the above as well as the attached information are sufficient for your continued review of the project. Should you have any questions or require additional information, please do not hesitate to contact me at (508) 480-9900.

Sincerely,

Bohler



Keith Curran, P.E.