HILL LAW

April 27, 2022

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AND FIRST CLASS MAIL

Ms. Sarah Mellish, Chair
Manchester Zoning Board of Appeals
Manchester Town Hall
10 Central Street
Manchester-by-the-Sea, MA 01944-1399

Re: Application for Comprehensive Permit – School Street, Manchester

Dear Chair Mellish:

As you know, this firm represents the Manchester Essex Conservation Trust ("MECT") in the above-referenced matter. We understand that the Project's wastewater arrangements will be the topic of discussion at the Board's upcoming hearing this evening. We would like to take this opportunity to provide our initial comments on this critical design issue.

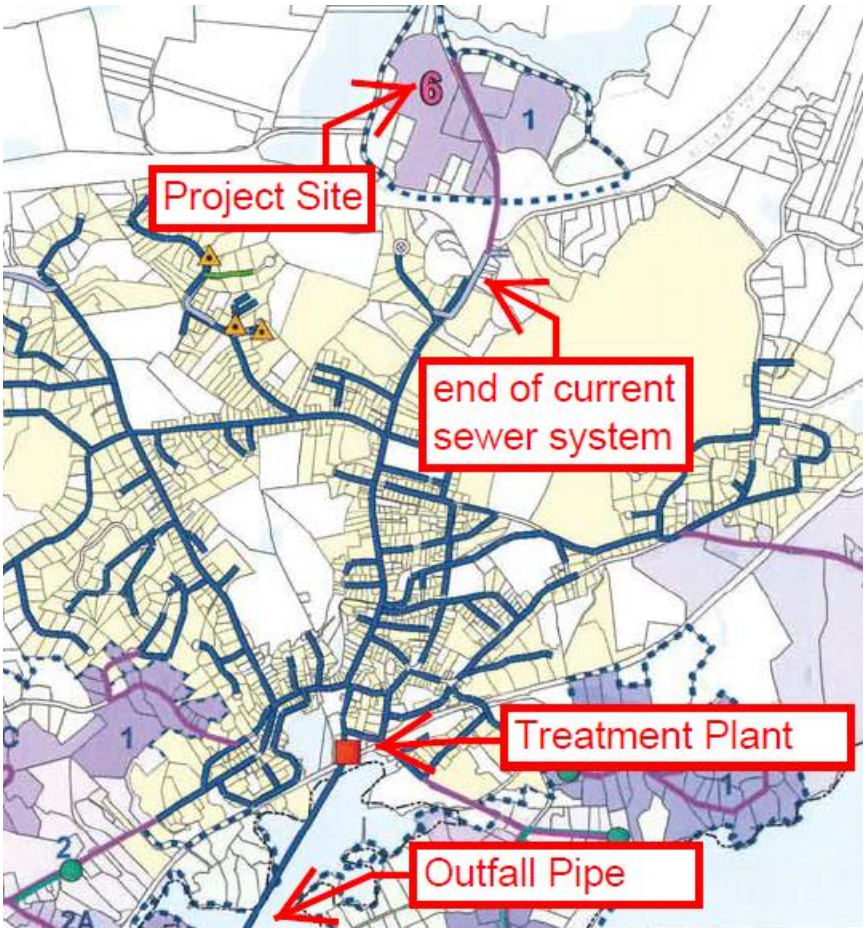
A. Background Facts

Until about a month ago, the Project's wastewater was going to be treated and discharged on-site, through a state-permitted wastewater treatment facility ("WWTF"). On March 25, 2022, nearly five months into the Board's public hearing on this application, the Applicant did an about-face, abandoning the on-site WWTF design and instead proposing a connection to the Town's sewer system. There are no sewers in School Street north of Route 128. To make this connection, the Applicant is proposing to *extend* the Town's sewer system, from a point on School Street "south of Hidden Ledge Road," according to Site Plan sheet C-104.[1]

Manchester's sewer system is regulated by several federal and state statutes that protect the environment. A consolidated permit is issued every five years, commonly referred to as the "NPDES permit," which is an acronym for "National Pollutant Discharge Elimination System." The NPDES permit is issued jointly by the federal Environmental Protection Agency ("EPA"), which administers the federal Clean Water Act, and the state Department of Environmental Protection ("DEP"), which administers the state Clean Waters Act. The current permit was issued in 2020 and expires in 2025.

[1] An annotated excerpt from the existing sewer service area map, Figure VI-1 from the Town's 2016 Comprehensive Wastewater Management Plan, is reproduced below as Figure 1.

Figure 1



The Permit contains a number of restrictions on the operation of the Town's plant, including a cap on the average monthly effluent flow - 670,000 gallons per day.[2] There are also water quality standards that must be met, with frequent monitoring, sampling and reporting. The treatment plant discharges effluent into Salem Sound (Manchester Bay) at the end of a 9,000-foot-long pipe. The discharged effluent must comply with concentration limits set for total suspended solids, dissolved oxygen, and pathogens. The pathogen requirements derive from a federal study (a "TMDL") that identifies Salem Sound as in need of particular protection from sources of fecal coliform and *Enterococci* contamination. See, 2019 "Fact Sheet" accompanying the draft NPDES Permit, p. 13. The TMDL report identified stormwater runoff and wastewater discharges as the primary sources of this type of pollution. Id.

[2] A recent Memorandum from the DPW Director, Chuck Dam, states that the effluent flow limit is a "12-momth rolling average of 670,000 gpd." The prior NPDES permits regulated effluent flow both on a monthly and annual basis. However, the current 2020 NPDES permit only imposes an "average monthly" effluent flow limit. Thus, under the current permit, the 670,000 gpd limit must be met on a monthly basis, not an annual basis. The Board should seek clarification from the DPW Director on this issue. As discussed below, the Town's plant exceeds the flow limit at least one month per year based on recent flow meter data.

Salem Sound is designated under the state surface water quality regulations as a "Class SA" surface water, which waters are "excellent habitat for fish, other aquatic life, and wildlife, including for their reproduction, migration, growth and other critical functions, and for primary and secondary contact recreation." 314 CMR 4.05(4)(a). The regulation states that "these waters shall be suitable for shellfish harvesting without depuration (Approved and Conditionally Approved Shellfish Areas), and that "these waters shall have excellent aesthetic value." Id.

Manchester's sewer system has been under an Administrative Consent Order with the DEP since 2013. The Consent Order was imposed because effluent flows to the plant exceeded 80% of the effluent limit established in the 2011 NPDES permit (670,000 gpd), which required the Town to notify DEP and to proposed mitigation to reduce flow. The Town did not timely respond to those requirements, and consequently DEP imposed a sewer connection moratorium and ordered the Town to develop and implement a plan to reduce stormwater infiltration and inflow ("I/I"). I/I is extraneous water that enters the sewer system during wet weather and seasonal high groundwater conditions, and which reduces the system's capacity to transfer sewage flow to the plant. The Town subsequently engaged a wastewater engineer to study the I/I problem and to develop a "comprehensive wastewater management plan" ("CWMP"). The CWMP, which was completed in 2016, specifically identified I/I as a significant limiting factor to plant expansion. Specifically, according to the CWMP, a 2013 study found that 273,000 gpd of peak infiltration enters the sewer system, and that 1,473,000 gallons of inflow enters the system during a design storm event.[3] CWMP, pp. 19, 83.

The connection moratorium was lifted by DEP last December. However, effluent flows are still higher than allowed under the NPDES permit – according to data provided to us today by the DPW Director, the average daily effluent flow in February, 2022 was 736,000 gallons per day.

There is a third regulatory process that is relevant here – the state Ocean Sanctuaries Act ("OSA"), G.L. c. 132A, §§ 12A, et seq.. This statute prohibits wastewater outfall pipes along most of the Massachusetts coastline, but "grandfathers" certain wastewater plants that pre-date the enactment of the law (including Manchester's outfall pipe). The statute, however, requires a state permit for any "*increase* in volume or change in location of an existing discharge." G.L. c. 132A, § 12A (definition of "modified discharge"). The CWMP makes reference to a state approval supposedly granted under the OSA for a discharge volume of 670,000 gallons per day, but does not indicate when this modified discharge approval was made.[4]

Unlike the NPDES permitting process, the OSA does not set discharge "limits" for wastewater plants; rather, it provides a regulatory review process for proposed increases in volumetric flow, and imposes strict criteria for such approvals, including demonstrating compliance with any applicable TMDL reports. Curiously, Section 16I of the OSA requires municipalities to have a state-approved CWMP before any flow increases are allowed, but this

[3] A conceptual sewer extension across Route 128 to the vicinity of the Project Site was one of several service area expansions evaluated in the 2016 CWMP. The CWMP estimated the cost of this extension to be $2.4 Million, and assumed directional drilling (tunneling) would be required to cross the state highway. CWMP, p. 161.
[4] We have not yet seen this OSA permit.

requirement could not have been met by the Town when the "modified discharge" was apparently approved because the CWMP was only adopted in 2016.

B. Sewer Extensions

DEP estimates that at least 35% and possibly as much as 70% of average daily flows in aging sewer infrastructure are due to I/I. In other words, from a third to more than two-thirds of the hydraulic capacity of a sewer line can be consumed by I/I, reducing the actual capacity for domestic sewage flow. Recognizing this phenomenon, state regulations issued by DEP require I/I mitigation of at least a 4:1 ratio as a condition of approval of any new sewer extension project. That is, four gallons of I/I must be removed from the sewer system for every gallon of new sewage flow: "Such mitigation shall require that four gallons of infiltration and/or inflow be removed for each gallon of new flow to be generated by the new sewer connection or extension, unless otherwise approved by the Department." 314 CMR 12.04(2)(d).

When the volume of sewage flow exceeds the capacity of the sewer mains that deliver raw sewage from customers to the treatment plant, the systems can be surcharged, resulting in "sanitary sewer overflows," or "SSO's." A pipe's capacity is a function of a number of variables, including hydraulics, volume of sewage flow, and volume of I/I that enters the systems and displaces capacity for the sewage flow.

State sewer regulations, 314 CMR §§ 12.08(8) and (9), expressly prohibit sewer connections or extensions that would result in SSOs:

> (8) No person owning or maintaining a sewer system shall operate such system in a manner that causes, or allows additional sewer extensions or sewer connections to the system that would result in: (a) Any surcharging, overflow or bypassing of the system that is not authorized by a discharge permit issued by the Department pursuant to M.G.L. c. 21, § 43; (b) An increase in a surcharge, overflow or bypass permitted by the Department that results in the elimination of an existing beneficial use of the receiving waters as established in the Massachusetts Water Quality Standards or the creation of a threat to the public health, safety or the environment; or (c) Any violation of 314 CMR 12.00.
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> (9) No person owning, maintaining or using a sewer connection shall discharge or allow the discharge of wastewaters through such connection that results in a threat to the public health, safety, or the environment or a violation of 314 CMR 12.00.

314 CMR 12.08(8) and (9); see also 314 CMR 7.06(1) and (2).

The universally-accepted sewer engineering design manual is known as TR-16 Guide for the Design of Wastewater Treatment Works, by the Technical Advisory Board of the New England Interstate Water Pollution Control Commission ("TR-16 Manual"). The TR-16 Manual, which is accepted by DEP, states: "Generally, sanitary sewers should be designed on a peak hourly flow basis. The peak hourly flow rate is defined as the largest volume of flow to be

received during a one-hour period and expressed as volume per unit time." (TR-16 Manual, at 2.2.4). The Manual further states that when designing sewers to serve an existing sewered area, increased wet weather flow due to infiltration and inflow (I/I) must be considered. A peaking factor of 4 or 5 is commonly applied to existing and proposed flows in the modeling of sewer systems. Section 2.2.4 of the TR-16 Manual is reproduced below:

2.2.4 Peak Design Flow

Generally, sanitary sewers should be designed on a peak hourly design flow basis. The peak hourly flow rate is defined as the largest volume of flow to be received during a one-hour period and expressed as volume per unit time.

Wastewater flow consists of four components: domestic, commercial, industrial, and institutional. Where existing data are unavailable, peak domestic design flow may be determined using the ratio of peak to average daily flow as described in Figure 2-1 (from the Water Environment Federation/ American Society of Civil Engineers Manual of Practice (WEF/ASCE) publication, *MOP-FD-5 Gravity Sanitary Sewer Design and Construction*). Commercial, institutional, and industrial flows will generally have a different, lower peaking factor, depending on locations in a system and hours of operation.

When designing sewers to serve an existing sewered area, increased wet weather flow due to infiltration and inflow (I/I) must be considered. The area to be served should submit evidence that excessive I/I does not exist. If a reduction of I/I is proposed, a careful evaluation of the anticipated flow reduction should be made. Flow increases due to the elimination of sewer bypasses and backups should also be evaluated.

C. Comments and Recommendations

Based on the state sewer extension and connection regulations, and well-documented I/I problems in Manchester's sewer system, we concur with the DPW Director's recommendation in his March 30, 2022 memorandum that "at a minimum, a capacity analysis of the collection system would need to be completed." He further opined that "a full design peer review and final approval by DPW should be required."

Under DEP regulations, new sewer extensions do not ordinarily require state approval, provided that the extensions are designed in accordance with the TR-16 Manual and have been approved by the municipality. 314 CMR 7.05(1)(a). As such, these approvals are generally assumed to be within the zoning board's "comprehensive permitting" authority under Chapter 40B. As discussed in prior hearings, the Board cannot, as a matter of law, defer or delegate to other town boards or staff the review and approval of a sewer extension or connection. Rather, the Board must make those permitting decisions itself, after collecting evidence and considering all of the factors during its public hearing. Thus, despite the DPW Director's otherwise logical recommendation that that the proposed sewer extension be subject o the DPW's approval, the Board actually cannot delegate this issue to the DPW.

The Board should put the Applicant on notice now that it considers its application submittals on this issue woefully lacking in detail, and insufficient to demonstrate viability and conformity with state and federal regulatory requirements, including the state sewer extension regulations, the TR-16 Manual, the NPDES permit, and the OSA. The Board should require the Applicant to perform a comprehensive hydraulic capacity analysis of the existing collection system for peer review by the Town's wastewater engineering firm, and provide specific construction details on the proposed extension of the sewer main across Route 128 to the Project Site. Finally, the Applicant should perform a modeling analysis demonstrating that the additional effluent flows from the Project will not cause any exceedances of the performance standards in the NPDES permit.

With respect to the OSA, we believe that the OSA should be interpreted as requiring "modified discharge" approval for any material increases in flow to the Town's system (an "existing discharge"), and subject to the criteria in the statute and the associated regulations. The Board should seek clarification from DEP as to whether this Project, which will add 25,000 gpd of sewage to the Town's plant, triggers review and approval under the OSA.

Thank you for your continued diligence on this application.

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Very truly yours,

/s/ Daniel C. Hill

Daniel C. Hill

Enc.

cc: Client
Town Counsel
Manchester Board of Selectmen
Manchester Department of Public Works
Beals and Thomas
Applicant