

HUDSON LOGISTICS CENTER

SP #12-22

January 11, 2023

Staff Report #4

(please see Staff Reports #1-10/12/22, #2-11/9/22 & #3-12/14/22 for additional detail)

SITE: Map 234/Lots 005, 034 & 035; Map 239/Lot 001; aka Green Meadow Golf Club

ZONING: General-1 (G-1)

PURPOSE OF PROPOSALS:

From the Site Plan Application: Proposed redevelopment of Property for a warehouse and distribution facility, representing a reduction of the scope of the approved Hudson Logistics Center originally approved by Site Plan Decision (SP #04-20) issued on May 5, 2021 for redevelopment of three (3) buildings having a footprint collectively consisting of 2,614,984 s.f., to a single building having a footprint of approximately 1,393,822 s.f. for warehouse, distribution, and associated uses and structures on a single 375.37-acre lot, along with access driveways, parking, stormwater/drainage, and other utility infrastructure, along with lighting, landscaping and other improvements shown on the plans.

A complete list of submittals provided at end of this report

APPLICATION TRACKING:

- September 12, 2022: Application received.
- September 14, 2022: Application determined as have potential for regional impact pursuant to RSA 36:56.
- October 12, 2022: Application accepted, public input received, site walk scheduled, hearing continued to November 9, 2022.
- October 22, 2022: site walk conducted.
- November 9, 2022: hearing continued, waivers granted from §276-13 – underground utilities, §275-8(C)(4) – parking space dimension, §193-10.G – number of driveways, §193-10.F – driveway width.
- November 14, 2022: Conservation Commission issued recommendation for Wetlands Conditional Use Permit.
- December 14, 2022: hearing continued, public input received, Wetlands Conditional Use Permit conditionally approved.
- January 11, 2023: hearing continued.

ATTACHMENTS TO THIS STAFF REPORT

- A. Memo - Site Plan Narrative, submitted for Applicant by John Smolak, Esq. Smolak & Vaughan, LLP & Justin Pasay, Esq., Donahue, Tucker & Ciandella, PLLC, dated/submitted December 28, 2022.
 - B. Memo - Site Plan Application Resubmission Memo, Langan Engineering, dated December 20 2022, submitted December 22, 2022.
 - C. Memo – Comment Response Letter (Sewer Design Review), Langan Engineering, dated/submitted December 22, 2022.
 - D. Memo – Comment Response Letter (Water Utility Review), Langan Engineering, dated/submitted December 22, 2022.
 - E. Memo – Response to Code Enforcement Officer Comments, Langan Engineering, dated/submitted December 26, 2022.
 - F. (Revised) Traffic Impact Study Executive Summary, Langan Engineering, revised October 2022, submitted December 26, 2022. [full report provided digitally only]
 - G. (Revised) Stormwater Management Report, Langan Engineering, revised December 2022, submitted December 22, 2022. [full report with drawings and appendices provided digitally only]
 - H. (Revised) Air Quality Impacts Report, Epsilon Associates, revised December 20, 2022, submitted December 22, 2022.
 - I. NH Department of Transportation approval letter, dated/received December 14, 2022.
 - J. Offsite Improvements Design Review closing letter, Fuss & O’Neill, dated/received January 3, 2023.
 - K. Water System Review – FINAL, dated December 30, 2022; and comment response email dated January 3, 2023; prepared on behalf of Town by Weston & Sampson.
 - L. Follow up to Peer Review of the Sound Study, HMMH, dated/received December 15, 2022.
 - M. Letter Re: Hudson Logistics Center from Fire Chief Scott Tice, dated December 23, 2022.
 - N. CAP Fee worksheet
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COMMENTS:

APPLICANT RESPONSES

The Applicant's representatives, Smolak & Vaughan, LLP and Donahue, Tucker & Ciandella, PLLC, submitted a Site Plan Narrative (**Attachment A**) summarizing their application stating that:

“[...] the Applicant as met its burden of establishing that it has met the criteria required under the Regulations, as well as other applicable requirements under the Hudson's Land Use Regulation, and respectfully requests the Board to vote to issue an approval of the Amended Site Plan Application.”

The Applicant's Engineer, Langan Engineering an Environmental Services, Inc., submitted a memorandum describing the revisions made to the Site Plan Application Plan originally dated September 9, 2022 revised through December 19, 2022 in response to the Planning Board's review (**Attachment B**).

Response memos were also submitted by Langan responsive to:

- Sewer Design Review – **Attachment C**,
- Water Utility Review – **Attachment D**, and
- Code Enforcement Officer comments – Attachment E.

Executive summaries of the revised Traffic Impact Study (**Attachment F**) and revised Stormwater Management Report (**Attachment G**) were also submitted in response to the Planning Board review process.

A revised Air Quality Impacts Report (**Attachment H**) was submitted, responsive to the reposne memo submitted November 30, 2022 and attached as part of the Planning Board's December 14, 2022 meeting packet.

FINAL REVIEWS

The New Hampshire Department of Transportation issued letter approving the proposed traffic impact mitigation for the proposal (**Attachment I**).

Fuss & O'Neill also issued a letter concluding their review of the proposed off-site improvements (**Attachment J**). It is noted that execution of the easement required on the “Goodwill” property is still ongoing. Review and approval of these improvements were ongoing pursuant to the previous approval.

Weston & Sampson, the Town's water consultant, concluded their hydraulic review with respect to the revised design finding no issue to supply or adverse effects on the system (**Attachment K**).

The Town's sound consultant, HMMH, concluded that the Applicant's sound study adequately addressed their comments (**Attachment L**).

At the time of this report, Fuss & O'Neill is finalizing its review respective of the site plan, stormwater management, sewer design and air quality. This primarily consists of confirming that the revisions represented in previous response letters are complete.

FIRE DEPARTMENT & EXACTION/MITIGATIONS

Fire Chief Scott Tice issued a memorandum discussing the Fire Department's need necessitated by this proposal (**Attachment M**). These items relate to the potential conditions of approval and the Scope and Schedule – Impact Mitigation and Exactions that was previously approved. The suggested revisions to the conditions of a potential approval of this application are presented below for discussion.

First, staff recommends the Planning Board review the allocation of the exaction funds. Of significance, the cost of the Platform Truck has significantly increased from \$1.4 million in 2021 to approximately \$2 million today (net \$600,000). Additionally, the Applicant has stated that although the development impact scope has decreased from the original approval, they would remain committed to the "bottomline" of the Exaction schedule, an amount of \$7,750,000. This contribution is in addition to the funds provided for off-site traffic improvements, sidewalk monies and CAP Fees. The funds needed to account for the increased price of the Platform Truck will need to be recovered within this overall schedule.

The Impact Mitigation and Exactions Schedule is summarized here:

a) STEM Program for CTE - \$3 million

Intent: To provide annual funding for a period of ten years for STEM related activities and/or training at the Palmer CTE School.

Note: This is the largest allocation of these funds.

b) Riverfront Recreation - \$1.5 million

Intent: To identify, plan, design construct and procure necessary equipment related to public recreation and an emergency services boat ramp associated with the Merrimack River.

Note: Conceptually, this could support the rehabilitation of Merrill Park and construction of a boat ramp, emergency and/or public use should be considered not yet determined.

c) Shoreline Improvement - \$500,000

Intent: To identify, plan, design, construct and procure necessary equipment related to public recreational trails along the Merrimack River, including within the easement area identified in the Applicant's plans.

Note: These funds could be used to establish the recreational trail along the Merrimack River on the subject property and connect it to the limited existing trail network on the north side of the Sagamore Bridge.

d) Public Safety - \$1 million

Intent: To provide the Fire and Police Department's with training and equipment and other requirements necessitated by the development.

Note: These funds will support the equipment and training needs of the Police and Fire Departments.

- e) Fire Department Platform Truck - \$1.4 million

Intent: To procure a platform truck needed to service the proposed buildings.

Note: The present estimated cost is now \$2 million showing a shortfall of \$600,000.

- f) Master Planning - \$200,000

Intent: To provide funding to the Hudson Planning Board and Planning Department to conduct Master Planning activities, including public outreach.

Note: While the Master Plan is currently undergoing an update, it should be continuously updated as making isolated, sporadic efforts to improve Town planning does not foster long term results. These funds strategically align the Town to have the ability to respond to the needs identified by recent efforts and extend to strategic planning studies, corridor studies and other undertakings that would require a consultant team.

- g) Community Fee - \$100,000

Intent: To support the Town of Hudson's Community Grants program.

Note: This is a fund that the Town uses to support monetary donations to charitable groups that provide a service Hudson residents.

- h) Regional HazMat Program - \$50,000

Intent: To support the regional Hazmat program.

Staff recommends the Board consider covering the Platform Truck price increase by re-allocating funds among these items without compromising the intent of each fund. For instance, reallocating \$600,000 from the \$3 million STEM program represents a 20% reduction, still contributing \$240,000 annually, in addition to the additional tax revenue projected by this development. In this scenario, the intent of the overall exaction schedule is not impaired.

REVISIONS TO PREVIOUS APPROVAL LANGUAGE

The Draft Motion below includes modifications to the conditions of approval brought forth by discussion between staff and the applicant's representative. Key issues include:

- Language related to reduction of warehouse buildings
- Relationship with previous approval
- Items that have been resolved since previous approval
- Incorporating the Scope and Schedule – Impact Mitigation and Exactions within the decision instead of as an Exhibit. Note: The \$600,000 needed for the Platform Truck has not yet been reallocated in this draft.

A colorized Track Changes version of this motion immediately follows the last page of this report.

RECOMMENDATIONS:

Staff recommends the Planning Board reviewing the status of the final reviews and determine if more information is needed to make a decision, or proceed with consideration of conditional approval.

DRAFT MOTIONS

CONTINUE the site plan applications:

I move to (accept/not accept) site plan application SP #12-22, Hudson Logistics Center for Map 234/Lots 005, 034 & 035; Map 239/Lot 001, to date certain, _____.

Motion by: _____ Second: _____ Carried/Failed: _____

APPROVE the site plan application:

I move to approve the Amended Site Plan application (SP #12-22) for the Hudson Logistics Center prepared by: Langan Engineering & Environmental Services, Inc., 888 Boylston St., Boston, MA 02116; prepared for: Hillwood Enterprises, L.P, 5050 W. Tilghman St., Suite 435, Allentown, PA 18104; and, Greenmeadow Golf Club, Inc., c/o Thomas Friel, 55 Marsh Rd., Hudson, NH 03501; dated September 9, 2022; last revised December 19, 2022 (the “Amended Plan” or the “plan”); subject to, and revised per, the following conditions subsequent, many of which are stipulations of the Original Approval which are amended and restated herein for consistency:

1. All stipulations of approval shall be incorporated into an Amended Development Agreement, which shall be recorded at the Hillsborough County Registry of Deeds (the “HCRD”), together with the Amended Plan, and shall amend and restate the conditions contained within the Original Development Agreement which is that Development Agreement, dated September 7, 2022, including the conditions pertaining to the original Wetlands Overlay District Conditional Use Permit (CU# 02-20), the original Site Plan Waivers, the stipulations contained within the Original Approval (SP# 04-20) including Attachment A, as well as the general provisions under Articles I through XVIII of the Original Development Agreement, which is recorded with the HCRD in Book 9650, Page 470. The Amended Plan shall also be recorded at the HCRD at the same time as the Amended Development Agreement, and shall amend the original Site Plan which consists of eleven (11) sheets and is recorded as Plan # 41557 (the ”Original Site Plan”).
2. The “Applicant” refers to Hillwood Enterprises, L.P., 5050 W. Tilghman Street, Suite 435, Allentown, Pennsylvania 18104, c/o Brian Kutz, Vice President - Development, the Applicant with respect to this Decision, its successors and assigns.
3. This decision hereby approves the use of one warehouse distribution facility building (the “Main Building”) and associated accessory structures and uses as presented by the Applicant, as a non-sort facility, as defined by the “Trip Generation Manual, 11th Edition Supplement”, dated September 2021 by the Institute of Traffic Engineers. Any use other

than a non-sort facility shall be deemed a new use and/or change of use, and shall be subject to site plan review and approval by the Planning Board.

4. A cost allocation procedure (CAP) shall be paid prior to the issuance of a Certificate of Occupancy for the Main Building in the amount of \$1,666,861.00.
5. Subject to final administrative review by the Town Planner and Town Engineer.
6. The plan shall be subject to receipt, and shall be amended to incorporate any requirements, of an Alteration of Terrain Permit and Wetlands Permit from NH DES.
7. The plan shall be subject to approval of the traffic mitigation plan by NH DOT.
8. Construction activities involving this plan shall be limited to the hours between 7:00 A.M. and 7:00 P.M., Monday through Saturday. No exterior construction shall occur on Sunday.
9. For purposes of this site plan approval, the term “active and substantial development or building” shall mean the construction of the site improvements on the Property related to but not including the Main Building, to include construction of Green Meadow Drive and the access to Walmart Boulevard, construction of the fire lanes, utilities, and corresponding stormwater facilities, all as to be shown on the construction phasing plan approved by the Town Planner as described above.
10. “Substantial completion” shall be defined as completion of the Main Building.
11. Per HR 276-4, the Applicant shall post with the Town of Hudson a performance surety in an amount to be approved by the Town Engineer in a form approved by the Town Attorney, if necessary.
12. No construction vehicles shall park or stand on residential streets. The use of Steele Road by construction vehicles shall cease upon establishment of the proposed access ways.
13. The proposed Main Building shall require an approved sprinkler system. The Hudson Fire Department upon review of the building plans shall conduct this review. This requirement is in accordance with the International Building Code (IBC) and Hudson Town Code (HTC), current revision, Chapter 21O, Article VI. Any fire protection system shall be monitored by an approved fire alarm system.

The following shall be completed prior to the issuance of a building permit for the Main Building:

14. The Applicant shall meet with the Fire Chief and Town Planner to review and develop a schedule for the implementation of the Fire Chief’s recommendations and requirements described in the Fire Chief’s September 29, 2022 Memorandum to Brian Groth, Town Planner. Notwithstanding the timing of the implementation of the Fire Chief’s recommendations in his September 29, 2022 memorandum and in this decision, the Fire

Chief (in consultation with the Town Planner and the Applicant), may modify the timing and/or implementation of such requirements.

15. Prior to the issuance of a building permit the Applicant shall secure a contract and pay for a tower truck (upon terms approved by the Fire Chief) with the design, vendor and construction schedule approved by the Hudson Fire Chief, utilizing funds identified in Condition #61. Timing of this deliverable may be modified with the Hudson Fire Chief's approval.
16. Prior to the issuance of a building permit, the Applicant shall meet with the Hudson Fire Chief to identify technical rescue training programs and equipment needs as identified by the Hudson Fire Department, and which programs and equipment needs shall be paid for utilizing funds provided by the Applicant and identified in Condition #61. Timing of this deliverable may be modified with the Hudson Fire Chief's approval.
17. The Inspectional Services Division and Planning Department shall be provided with a construction schedule, which shall include the details, timing, construction phasing plan, and related safety measures for the demolition and construction of the on-site and off-site improvements.
18. The Applicant shall schedule a pre-construction meeting with the Town Engineer and other Town Staff.
19. The Applicant shall provide the Town Planner and Town Engineer for its review and approval a phased construction plan for Green Meadow Drive so that no detour to the Mercury Systems building (267 Lowell Rd) is required during the construction of the roadway.
20. The earthen berm and sound fence shall be constructed prior to the issuance of the building permit for the Main Building.
21. The Applicant shall construct and stabilize the earthen berm as designed at the height and length shown in drawings to mitigate potential sound and visual impacts.
22. The Applicant shall install an approximately 2,000-foot-long noise control fence along the spline of the proposed earthen berm as shown on the plan, designed and presented.
23. The Applicant shall also install approximately ± 785 total feet of fencing as shown on the plan, designed and presented to mitigate potential visual impacts and noise to off-site residential receptors.
24. The sound fence shall meet the following requirements to be confirmed by the Town Engineer:
 - a. The fence needs to be solid, without openings, and a minimum surface weight of 7 lbs/SF.
 - b. Appropriate materials of construction for the fence to include natural, non-reflective materials such as wood or wood composite.

- c. The fence must be designed to resist wind load and will have engineered footings.
 - d. In the event the sound fence fails to meet the standards set forth in the sound study, the Applicant, at its sole expense, shall remediate the fence to ensure full compliance with said standards, which shall be confirmed by the Town Engineer.
25. A turnaround for emergency vehicles shall be installed at the westerly terminus of the Steele Road access easement outside the shoreland protection area. The Town may, at its sole election and expense, design, permit and install permanent infrastructure such as a turnaround, or other infrastructure that the Fire Department desires, within the shoreland protection area as described in Condition #42 below.

Conditions related to construction practices:

26. There shall be weekly construction meetings scheduled and available for attendance by Town staff until such time as Inspectional Services reasonably determines that weekly inspections, or less frequent or no further scheduled meetings are necessary.
27. The Applicant shall pay for the cost of locating a construction trailer on the site (with appropriate HVAC, electrical, and other utilities) to support a work space for the Town of Hudson Inspectional Service and Land Use Divisions. The Applicant shall also pay for the retention of inspector(s) solely for the purpose of inspecting the construction and project for the duration of the project as reasonably agreed by the Applicant and Fire Chief. The inspectional services trailer shall be located on the site within thirty (30) days after notice by the Inspectional Services Division to the Applicant, but not later than the commencement of construction of the Main Building foundation, and remain on the site until the Certificate of Occupancy is issued or as otherwise agreed between the Applicant and Fire Chief.
28. All new gas, telephone, cable, electric and other utilities, except for temporary utilities, shall be installed underground as specified by the respective utility companies unless otherwise waived, or except for so called “green utility boxes” or other aboveground poles or structures as may be required by the utility companies, and except as may otherwise be temporarily required to effect the movement and operation of any other temporary improvements. If final locations of appurtenant equipment to these utilities (e.g. transformer pads) not shown on the plan materially impact the design, the Applicant and/or Project Owner shall provide such details of such modification to the Town Planner for review.
29. Additional stormwater and infiltration testing required, if any, by the NHDES shall be performed during construction to complete the design, and all infiltration testing results shall be submitted to the engineer of record, the Town Planner, the Town Engineer, and the NHDES Permitting Department for review.
30. A blasting permit shall be required for any blasting on the site in accordance with the Hudson Town Code, Chapter 202.

31. During construction, the Applicant shall submit plans for controlling fugitive dust during excavation and construction including mechanical street sweeping, wetting and/or misting portions of the site during periods of high wind, and careful removal of debris by covered trucks.
32. The construction contract shall provide measures to be used by contractors to reduce potential emissions and minimize impacts. These measures are expected to include:
 - a. Using wetting agents on area of exposed soil on a scheduled basis;
 - b. Using covered trucks to transport any debris or other materials to or from the site;
 - c. Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;
 - d. Minimizing storage of debris on the site; and
 - e. Periodic street and sidewalk cleaning with water to minimize dust accumulations.
 - f. Limit maximum travel speeds on unpaved areas; and
 - g. Provide wheel wash stations to limit trackout of soil during the excavation phase.
33. Construction equipment engines shall comply with requirements for the use of ultra-low sulfur diesel (ULSD) in off-road engines. The construction contractor will be encouraged to use diesel construction equipment with installed exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines.
34. All trucks leaving the site shall have all dirt/mud removed from the wheels and undercarriage of the truck prior to leaving the site. In addition, any loads containing soil for off-site disposal shall be covered.
35. Construction vehicles and equipment shall not be permitted to be washed in the streets outside of the Project site. Excess water from the wheel wash stations shall be managed and catch basins in the surrounding street will be protected from potential runoff from the cleaning operations.
36. The Applicant shall encourage contractors to use proper emission controls, use of clean fuels, control of truck and equipment idling times.

The following shall be completed prior to the issuance of a Certificate of Occupancy for the Main Building:

37. Prior to the issuance of a final certificate of occupancy for the Main Building, a L.L.S. certified “As-Built” site plan shall be provided to the Town of Hudson Planning Department confirming that the Main Building and accessory structures, as appropriate, conform to the plan.
38. The Applicant shall coordinate with the Fire Department on the appropriate location and type of gate for use on Steele Road, and coordinate the Fire Department’s access

requirements through such gate, to reach and use the Steele Road Extension Easement discussed in Condition #42.

39. The Applicant shall convey conservation easements for the 30 +/- acres along the Merrimack (the “Merrimack River Conservation Easement”), as well as the 90 +/- acres along the easterly side of the Property (the “Eastern Conservation Easement”), as depicted on the plan, in a form acceptable to the Town Planner and Town Attorney.
40. The Eastern Conservation Easement shall not allow access to the general public and the use shall be strictly limited to rights of the Conservation Commission (or its agents) to enter and access the conservation easement areas for the sole purpose of monitoring and maintaining the Eastern Conservation Easement areas.
41. The Merrimack River Conservation Easement shall include rights of the Conservation Commission (or its agents) to enter and access the conservation easement area for the purpose of monitoring and maintaining the Merrimack River Conservation Easement area. As a part of the proposed Merrimack River Conservation Easement, the Applicant shall also grant a public trail easement where, once completed, the public’s use of the trail easement for passive recreation purposes (walking, jogging, bicycling, and cross country skiing, snowshoeing) and such uses may be made only between dawn and dusk. The limits of the public trail easement shall extend from the northern boundary of the Property, adjacent to Merrimack River and the Circumferential Highway Bridge, and running southerly within said conservation easement to the southerly boundary of the Property located within the conservation easement. The Town has the right, but not the obligation, to design, permit, construct, repair and maintain such trail improvements as deemed necessary for the purposes described above, subject to any permits, approvals or conditions which may be imposed by the NHDES or any other regulatory authority. If the Town permits and constructs a public trail within the Merrimack River Conservation Easement area pursuant to this Stipulation, no public access or other rights to same will be granted to or from the Property except as otherwise expressly provided herein.
42. The Applicant shall convey a 30-foot-wide non-exclusive easement to the Town which extends from Steele Road westerly to the Merrimack River as depicted on the plan (the “Steele Road Extension Easement”). The Steele Road Extension Easement will not allow access to the general public except for the area of the easement which is located within the Merrimack River Conservation Easement, and only for those uses described in the Merrimack River Conservation Easement described in Condition #41 above. Otherwise, the use of the Steele Road Extension Easement shall be strictly limited to the Town of Hudson’s emergency services personnel to access the Merrimack River for water withdrawal or other public safety uses, and for the Town of Hudson Conservation Commission members for purposes of using said easement to access the Merrimack River Conservation Easement area for purposes of monitoring compliance with the landscape requirements contained within the Merrimack River Conservation Easement as described in the Decision, and thereafter, for purposes of maintaining the vegetation within the Merrimack River Conservation Easement, as more specifically described in Condition

#41. Access over this easement area shall be restricted utilizing the existing swing gate on the existing driveway, with use of the gate to be coordinated with emergency services. This gate is noted to remain on drawings CS100 and CS116. As a part of the Steele Road Extension Easement, the Applicant grants the Town an access easement of sufficient size, from the end of the constructed Steele Road Extension through the 250-foot shoreland area depicted in the Merrimack River Conservation Easement area to the River, to allow the Town's right, but not the obligation, to design, permit, and install infrastructure, such as a turnaround, or other infrastructure the Town and Fire Department require within the Merrimack River Conservation Easement area, as deemed necessary for the emergency services purposes described above. The Town's use of this easement area will be through a Town design, permitting and construction process separate from the Applicant's permitting process. The language of the Steele Road Extension Easement is subject to the Town Planner's and Town Attorney's approval, and shall include a temporary easement to allow for the construction of improvements described in Condition #25 above.

43. If required, a General State Permit (GSP) for Internal Combustion Engines – Emergency Generators or Fire Pump Engines for each unit to be included for the Main Building for the backup power emergency generators in accordance with ENV-A-610 shall be secured prior to the issuance of a certificate of occupancy for the Main Building.
44. The off-site roadway improvements depicted in the Traffic Impact Study and Construction Plans (Revised December 1, 2022) shall be substantially completed, such that the impact of the development's traffic is addressed.

Other Conditions:

45. Upon completion of construction, evidence of a retained contractor's Salt Application Certification under the NHDES Green SnowPro Certification Program shall be submitted to the Town Planner.
46. The Applicant shall be obligated to maintain the paved portions of the Steele Road Extension Easement from the paved limits of the easement along the westerly end of the site, easterly to the Steele Road gate.
47. Additional landscaping for the purposes of screening 267 Lowell Road shall be provided as shown on the plan.
48. The Main Building shall have internal refuse control and dumpsters and compactors directly connected to the building, and occupying loading dock bays. There shall be no freestanding dumpsters elsewhere on the site. Therefore, the trash removal activity will be very similar to other truck activity on the site.
49. The recommendations in the September 29, 2022 Memorandum to Brian Groth, Town Planner, from Scott Tice, Fire Chief, shall be implemented and comply with the conditions contained therein relating to fire suppression and public safety to the

reasonable satisfaction of the Fire Chief, and written Fire Department acknowledgement of compliance with such recommendations shall constitute satisfaction of this condition.

50. The Amended Project shall comply with the vehicle idling requirements of New Hampshire regulation ENV-A-1100, as amended, unless otherwise exempt.
51. The Applicant shall equip all terminal tractors with smart, ambient sensing, multi-frequency back-up alarms.
52. The Amended Project, having received a sewer allocation, and the Applicant having paid for the sewer allocation, which allocation has been incorporated by reference to this Amended Site Plan and this Decision, shall be serviced by a private sewer line connected to the existing public sewer line on the Property. The Amended Project shall be serviced by the public water system. All water and sewer infrastructure requirements shall be provided in accordance with Town's regulations and guidelines in coordination with the Town Engineer.
53. All Tier II reporting requirements shall be followed each year for all facilities if there will be inside or outside storage above the exempt amounts of hazardous materials, liquids or chemicals presenting a physical or health hazard as listed in the International Building Code, Sections 307, 414 or 415.
54. All storage either inside or outside of hazardous materials, liquids or chemicals presenting a physical or health hazard as listed in NFPA 1, Section 20.15.2.2 shall be in accordance with the applicable portions of the following:
 - a. NFPA 13, Standard for the Installation of Sprinkler Systems
 - b. NFPA 30, Flammable and Combustible Liquids Code;
 - c. NFPA 308, Code for the Manufacture and Storage of Aerosol Products
 - d. NFPA 230, Standard for the Fire Protection of Storage;
 - e. NFPA 430, Code for the Storage of Liquid and Solid Oxidizers;
 - f. NFPA 432, Code for the Storage of Organic Peroxide Formulations; and,
 - g. NFPA 434, Code for the Storage of Pesticides.
55. The fire alarm system shall be connected to the Hudson Fire Department's municipal fire alarm system or a substantially equivalent system in accordance with the Hudson Town Code, Chapter 210. A site plan detailing the aerial or underground layout to the municipal fire alarm connection must be provided before the utilities are completed for this project.
56. Any required fire alarm system component shall remain accessible and visible at all times.

57. Based upon the Town Engineer's recommendations, the Stormwater Management and Erosion Control Plan (SMECP) is hereby approved as the Project complies with Chapter 290 of the Town Code, and the incorporation of this condition within the Development Agreement when recorded constitutes the required notice to all persons that may acquire any property that the property is subject to the requirements and responsibilities described within the approved SMECP, including the operation and maintenance requirements and all BMPs.
58. The Applicant agrees to provide \$250,000 to the Town of Hudson's sidewalk fund for the purpose of funding a sidewalk along the easterly side of Lowell Road extending from Rena Avenue to Wal-Mart Boulevard. In the event these funds are not used in this location, these funds may be used for general sidewalk purposes consistent with the purposes of this fund.
59. The Applicant agrees to fund the following potential future improvements at the town intersection of Lowell Road/Wason Road/Flagstone Drive as identified in the Traffic Impact Study, dated September, 2022 (Revised October, 2022). The Applicant shall fund the physical improvements in the form of an escrow account with \$100,000 increments (with the Applicant's total obligation not to exceed \$1,000,000), as needed and requested by the Engineering Department, which may include:
 - a. Widening the northbound approach to provide an exclusive left-turn lane, three through lanes and two exclusive right-turn lanes;
 - b. Widening the eastbound approach to provide a shared left-turn/through lane and two exclusive right-turn lanes;
 - c. Widening to provide an additional northbound receiving lane on the north side of the intersection that becomes an exclusive right-turn lane into the Market Basket plaza; and,
 - d. Installing variable lane usage signing/controls for the northbound approach to allow for two exclusive left-turn lanes, two through lanes and two exclusive right-turn lanes during the weekday morning commuter peak to account for the high volume of left-turning traffic onto Flagstone Drive.
60. Directional signage, directing truck traffic back to Route 3 (the Sagamore Bridge) shall be included in the traffic mitigation plan.
61. The Applicant has voluntarily offered to provide funding to the Town as set forth in the *Scope and Schedule - Impact Mitigation and Exactions*, which is described below, to be assessed as exactions and as a condition of approval. The Planning Board hereby assesses said fees in the total amount of \$7,750,000.00, which shall be paid by the Applicant to offset the impacts caused by the development. These fees are described in full detail and shall be incorporated into the Amended Development Agreement, to be recorded at the HCRD. The Applicant agrees that the fees are properly assessed as off-site exactions as permitted by applicable law.

Scope and Schedule – Impact Mitigation and Exactions

(a) STEM Program for CTE: \$3 million

Intent: To provide annual funding for a period of ten years for STEM related activities and/or training at the Palmer CTE School.

Payable: \$300,000 annual payments for 10 years beginning at time of issuance of Certificate of Occupancy (C.O.) for Main Building and recurring on that anniversary. Payments to be made to SAU 81. In lieu of the foregoing scheduled annual payments, payments may be made according to such terms as may be mutually agreed upon between the School Board and the Applicant, including, by way of example, a single lump sum payment at an agreed upon present value.

(b) Riverfront Recreation: \$1.5 million

Intent: To identify, plan, design, construct and procure necessary equipment related to public recreation & an emergency services boat ramp associated with the Merrimack River.

Payable: \$500,000 annual payments for 3 years beginning at time of issuance of C.O. for Main Building and recurring on that anniversary.

(c) Shoreline Improvement: \$500,000

Intent: To identify, plan, design, construct and procure necessary equipment related to public recreational trails along the Merrimack River, including within the easement area identified in the Applicant's plans.

Payable: At time of issuance of C.O. for Main Building.

(d) Public Safety: \$1 million

Intent: To provide the Fire and Police Department's with training and equipment and other requirements necessitated by the development.

Payable: Prior to issuance of building permit for Main Building. Timing of this deliverable may be modified with the Hudson Fire Chief's and Police Chief's approval.

(e) Fire Department Platform Truck: \$1.4 million

Intent: To procure a platform truck needed to service the proposed buildings.

Payable: prior to issuance of building permit for Main Building. Timing of this deliverable may be modified with the Hudson Fire Chief's approval.

(f) Master Planning: \$200,000

Intent: To provide funding to the Hudson Planning Board and Planning Department to conduct Master Planning activities, including public outreach.

Payable: \$100,000 annual payments for 2 years beginning at time of building permit for Main Building, and recurring on that anniversary.

(g) Community Fee: \$100,000

Intent: To support the Town of Hudson's Community Grants program.

Payable: at time of C.O. issuance for Main Building.

(h) Regional Hazardous Materials Program: \$50,000

Intent: To support the regional Hazmat program.

Payable: at time of C.O. issuance for Main Building.

- 62. Steele Road shall be addressed as indicated in plan notes, or by other lawful means.
- 63. This Amended Site Plan has been approved in accordance with the Town of Hudson Town Code, including but not limited to, Chapter 275 and in accordance with the requirements for an amended site plan pursuant to Chapter 276-5.
- 64. The conditions contained within this Amended Approval will amend and replace the conditions contained within the Original Approval, effective as of the date of the recording of the Amended Site Plan and Amended Development Agreement, at which time the conditions and stipulations contained in the Original Approval and the Original Plan shall no longer be in effect.
- 65. Any Stipulations of the Original Approval not expressly addressed or modified by this amended and restated approval are incorporated herein by reference.
- 66. In the event of a discrepancy between the Original Approval and this amended and restated approval, the terms of this amended and restated approval shall control.
- 67. In the event of a discrepancy between the spoken motion and the written motion, the written motion, as amended by the Planning Board at its January __, 2023 meeting, shall control.

Motion by: _____ Second: _____ Carried/Failed: _____

APPENDIX: LIST OF SUBMITTALS AND ATTACHMENTS

PLAN UNDER REVIEW:

Hudson Logistics Center, Site Plan & Wetlands Conditional Use Applications; dated September 9, 2022; consisting of 164 sheets including cover, and notes on Sheet CS003; prepared by: Langan Engineering & Environmental Services, Inc., 888 Boylston St., Boston, MA 02116, with surveying by: Hayner/Swanson, Inc., 3 Congress St., Nashua, NH 03062, and wetlands & natural resources by: Gove Environmental Services, 8 Continental Drive Bldg. 2, Unit H, Exeter, NH 03833; prepared for Applicant, Hillwood Enterprises, L.P. 5050 W. Tilghman St., Suite 435, Allentown, PA 18104 and Owner, Greenmeadow Golf Club, Inc., 55 Marsh Rd., Hudson, NH 03051.

ADDITIONAL SITE PLAN SUBMITTALS UNDER REVIEW:

1. Hudson Logistics Center – Site Plan Narrative, prepared by Smolak & Vaughan, LLP & Donahue, Tucker & Ciandella, PLLC, dated September 12, 2022.
2. Traffic Impact Study for Hudson Logistics Center, prepared by Langan Engineering, dated September, 2022, and Executive Summaries.
3. Stormwater Management Report, prepared by Langan Engineering, dated September 2022, and Executive Summaries.
4. Geotechnical Engineering Study for Hudson Logistics Center, prepared by Langan Engineering, dated September 9, 2022, and Executive Summaries.
5. Air Quality Impacts Report, prepared by Epsilon Associates, Inc., dated September 7, 2022.
6. Sound Level Assessment Report, prepared by Epsilon Associates, Inc., dated September 7, 2022.
7. Real Estate Appraisal Services Report, Proposed Hudson Logistics Center, dated September 7, 2022, prepared by Wesley G. Reeks, MAI.
8. Letter from John D. Krebs, dated September 7, 2022.
9. Fiscal Impact Analysis –Hudson Logistics Center, prepared by RKG Associates, Inc., dated September 9, 2022.
10. Waiver Requests, prepared by Langan Engineering.

ADDITIONAL CONDITIONAL USE PERMIT APPLICATION SUBMITTALS UNDER REVIEW:

11. Revised Hudson Logistics Center, Application for Amended Conditional Use Permit, prepared by prepared by Smolak & Vaughan, LLP & Donahue, Tucker & Ciandella, PLLC, dated September 12, 2022
12. Wetland Natural Resources Report for Revised Hudson Logistics Center Project, prepared by Gove Environmental Services, Inc., dated September 9, 2022.
13. Wildlife Habitat Evaluation: 2022 Update, prepared by Lucas Environmental, LLC, dated September 9, 2022.

**PDF copies of application materials can be found here:*

<https://www.hudsonnh.gov/planning/page/hudson-logistics-center-2022>

OCT 12 REPORT #1 ATTACHMENTS

- A. Town Department Review Comments as of 10/8/22
- B. Peer Review, Land Use Regulations, prepared by Fuss & O'Neill, dated September 28, 2022.
- C. Peer Review, Traffic Study, prepared by Fuss & O'Neill, dated September 28, 2022.
- D. Peer Review, Sound Study, prepared by HMMH, dated September 29, 2022.

NOV 9 REPORT #2 ATTACHMENTS

- A. Response to Peer Review of Site Plan, received October 13, 2022
- B. Response to Peer Review of Traffic, received October 13, 2022
- C. Response to Peer Review of Sound Study, received October 13, 2022
- D. Supplemental Information, received October 26, 2022
 - a. Response to Town Engineer Comments
 - b. Response to comments received at October 12, 2022 Planning Board hearing.
 - c. Revised Infiltration Feasibility for Stormwater Report
 - d. Addendum to Appraisal Service Report
- E. Written Public Input Received, as of November 1, 2022

DEC 14 REPORT #3 ATTACHMENTS

- A. Conditional Use Permit Application Recommendation, Hudson Conservation Commission, dated November 14, 2022, received November 18, 2022. *Previous CUP decision included as reference*
- B. Recommendation of Lower Merrimack River Advisory Committee
- C. Fiscal Impacts, prepared by Police Chief Dionne, dated November 4, 2022 received November 7, 2022.
- D. Fiscal Impact Analysis Addendum, prepared for Applicant by RKG Associates, dated November 15, 2022, received November 18, 2022.
- E. Peer Review of Hudson Logistics Center Fiscal Impact Analysis and Real Estate Appraisal Services Report, prepared for Planning Board by Camoin Associates, dated/received November 21, 2022.
- F. Peer Review of the Hudson Logistics Center Project Air Quality Modeling Report, prepared for Planning Board by TRC Companies, dated November 18, 2022, received November 21, 2022.
- G. Response to Air Quality Peer Review, prepared for Applicant by Epsilon Associates, dated November 30, 2022.
- H. Sound Level Assessment Report, prepared for Applicant by Epsilon Associates, dated November 23, 2022. (revised per peer review)
- I. Fire Department Comment Response, prepared for Applicant by Langan Engineering, dated November 28, 2022.
- J. Correspondence from BCM Environmental & Land Law dated/received November 16, 2022.

RECEIVED AT MEETINGS

- A. Sight Line Study dated September 23, 2022, received at meeting October 12, 2022.

- B. Distribution Center Truck Routing, presented at November 9, 2022 meeting, distributed via email November 10, 2022.
- C. Public Input, written & in-person.

1. All stipulations of approval shall be incorporated into ~~the an~~ Amended Development Agreement, which shall be recorded at the Hillsborough County Registry of Deeds (the "HCRD"), together with the Amended Plan, and shall amend and restate the conditions contained within the Original Development Agreement which is that Development Agreement, dated September 7, 2022, including the conditions pertaining to the original Wetlands Overlay District Conditional Use Permit (CU# 02-20), the original Site Plan Waivers, the stipulations contained within the Original Approval (SP# 04-20) including Attachment A, as well as the general provisions under Articles I through XVIII of the Original Development Agreement, which is recorded with the HCRD in Book 9650, Page 470. The Amended Plan shall also be recorded at the HCRD at the same time as the Amended Development Agreement, and shall amend the original Site Plan which consists of eleven (11) sheets and is recorded as Plan # 41557 (the "Original Site Plan").
2. The "Applicant" refers to Hillwood Enterprises, L.P., 5050 W. Tilghman Street, Suite 435, Allentown, Pennsylvania 18104, c/o Brian Kutz, Vice President - Development, the Applicant with respect to this Decision, its successors and assigns.
3. This decision hereby approves the use of ~~the three~~ one warehouse distribution facility ~~buildings including building (the "Main Building") and~~ associated accessory structures and uses, as presented by the Applicant, as a non-sort facilities facility, as defined by the "Trip Generation Manual, 10th 11th Edition Supplement", dated ~~February 2020~~ September 2021 by the Institute of Traffic Engineers. Any use other than a non-sort facility shall be deemed a new use and/or change of use, and shall be subject to site plan review and approval by the Planning Board.
4. A cost allocation procedure (CAP) shall be paid prior to the issuance of a Certificate of Occupancy for ~~each building as follows: \$944,885.75 for Building A, \$713,890.80 for Building B, and \$376,189.24 for Building C.~~ the Main Building in the amount of \$1,666,861.00.
5. Subject to final administrative review by the Town Planner and Town Engineer.
6. The plan shall be subject to ~~receiving receipt, and shall be amended to incorporate any~~ requirements, of an Alteration of Terrain Permit and Wetlands Permit from NH DES.
7. The plan shall be subject to approval of the traffic mitigation plan by NH DOT.
8. Construction activities involving this plan shall be limited to the hours between 7:00 A.M. and 7:00 P.M., Monday through Saturday. No exterior construction shall occur on Sunday.
9. For purposes of this site plan approval, the term "active and substantial development or building" shall mean the construction of the site improvements on the Property

~~relating~~related to ~~but not including the Main~~ Building ~~A and Building B~~, to include construction of Green Meadow Drive and the access to Walmart Boulevard, construction of the fire lanes, utilities, and corresponding stormwater facilities, all as to be shown on the construction phasing plan approved by the Town Planner as described above.

10. “Substantial completion” shall be defined as completion of ~~Buildings A and B.~~the Main Building.
11. Per HR 276-4, the Applicant shall post with the Town of Hudson a performance surety in an amount to be approved by the Town Engineer in a form approved by the Town Attorney, if necessary.
12. No construction vehicles shall park or stand on residential streets. The use of Steele Road by construction vehicles shall cease upon establishment of the proposed access ways.
13. The proposed ~~buildings~~Main Building shall require an approved sprinkler system. The Hudson Fire Department upon review of the building plans shall conduct this review. This requirement is in accordance with the International Building Code (IBC) and Hudson Town Code (HTC), current revision, Chapter 21O, Article VI. Any fire protection system shall be monitored by an approved fire alarm system.
- ~~14. The final plans shall be amended to include the following:~~
 - ~~a. Note 18 on Sheet CS003 shall be amended to provide that “all proposed utilities will be located underground except as waived by the Planning Board.”~~
 - ~~b. Note 39 on Sheet CS003 shall be deleted and replaced with the following: “All signs are subject to approval by the Zoning Administrator/Code Enforcement Officer prior to installation thereof.”~~
 - ~~c. The Planning Board requests the applicant not to install street lighting along Steele Road, and a plan note shall reflect this condition.~~
 - ~~d. Sheet CS 119 shall be amended to remove the light pole fixture from the shoreland protection area.~~
 - ~~e. The final plan set shall properly index Sheet CP 125, which was misplaced in the most recent revision plan set.~~
 - ~~f. Shall be subject to any comments and adjustments as required by the NHDES.~~
 - ~~g. A temporary turnaround for emergency vehicles shall be installed at the westerly terminus of the Steele Road access easement outside the shoreland protection area, until such time as the design, permitting and installation of the permanent infrastructure such as a~~

~~turnaround, or other infrastructure that the Town or Fire Department desires within the shoreland protection area is complete as described in Condition #48 below.~~

The following shall be completed prior to the issuance of a building permit for the Main Building ~~A and/or B~~:

14. ~~15.~~ The Applicant shall meet with the Fire Chief and Town Planner to review and develop a schedule for the implementation of the Fire Chief's recommendations and requirements described in the Fire Chief's ~~March 2, 2021~~ September 29, 2022 Memorandum to Brian Groth, Town Planner. Notwithstanding the timing of the implementation of the Fire Chief's recommendations in his ~~March 2, 2021~~ September 29, 2022 memorandum and in this decision, the Fire Chief (in consultation with the Town Planner and the Applicant), may modify the timing ~~of the~~ and/or implementation of such requirements.
15. ~~16.~~ Prior to the issuance of a building permit the ~~applicant~~ Applicant shall secure a contract and pay ~~in full~~ for a tower truck (upon terms approved by the Fire Chief) with the design, vendor and construction schedule approved by the Hudson Fire Chief, utilizing funds identified in Condition #~~7~~ 61. Timing of this deliverable may be modified with the Hudson Fire Chief's approval.
16. ~~17.~~ Prior to the issuance of a building permit, the ~~applicant~~ Applicant shall meet with the Hudson Fire Chief to identify technical rescue training programs and equipment needs as identified by the Hudson Fire Department, and which programs and equipment needs shall be paid for utilizing funds provided by the Applicant and identified in Condition #~~71~~. ~~The applicant shall pay for this additional training and equipment in entirety~~ 61. Timing of this deliverable may be modified with the Hudson Fire Chief's approval.
17. ~~18.~~ The Inspectional Services Division and Planning Department shall be provided with a construction schedule, which shall include the details, timing, construction phasing plan, and related safety measures for the demolition and construction of the on-site and off-site improvements.
18. ~~19.~~ The Applicant shall schedule a pre-construction meeting with the Town Engineer and other Town Staff.
19. ~~20.~~ The Applicant shall provide the Town Planner and Town Engineer for its review and approval a phased construction plan for Green Meadow Drive so that no detour to the Mercury Systems building (267 Lowell Rd) is required during the construction of the roadway.
20. ~~21.~~ The earthen berm and sound fence shall be constructed prior to the issuance of ~~any the~~ building permit ~~of~~ for the Main Building ~~A and/or Building B~~.
21. ~~22.~~ The Applicant shall construct and stabilize the earthen berm as designed at the height and length shown in drawings to mitigate potential sound and visual impacts.

22. ~~23.~~ The Applicant shall install an approximately 2,000-foot-long noise control fence along the spline of the proposed earthen berm as shown on the plan, designed and presented.
23. ~~24.~~ The Applicant shall also install ~~an approximate~~approximately ± 785 ~~foot-long fence~~ total feet of fencing as shown on the plan, designed and presented ~~near the southeastern corner of Building C~~ to mitigate potential visual impacts and noise to off-site residential receptors.
24. ~~25.~~ The sound fence shall meet the following requirements to be confirmed by the Town Engineer:
- a. The fence needs to be solid, without openings, and a minimum surface weight of 7 lbs/SF.
 - b. Appropriate materials of construction for the fence to include natural, non-reflective materials such as wood or wood composite.
 - c. The fence must be designed to resist wind load and will have engineered footings.
 - d. In the event the sound fence fails to meet the standards set forth in the sound study, the Applicant, at ~~their~~its sole expense, shall remediate the fence to ensure full compliance with said standards, which shall be confirmed by the Town Engineer.

~~The following shall be completed prior to the issuance of a building permit for Building C:~~

~~26. Prior to the issuance of a building permit for Building C, a post opening traffic assessment subsequent to the opening and normal operations of Buildings A and B shall be conducted by an independent, third-party peer review identified by Town staff, at the sole expense of the Applicant. This assessment must confirm the Project's proposed traffic mitigation as evaluated in the submitted traffic impact study ("TIS"), if necessary. This information will be provided to the Town Planner to confirm the actual operations of the two buildings. No additional Planning Board action is required.~~

~~25. A turnaround for emergency vehicles shall be installed at the westerly terminus of the Steele Road access easement outside the shoreland protection area. The Town may, at its sole election and expense, design, permit and install permanent infrastructure such as a turnaround, or other infrastructure that the Fire Department desires, within the shoreland protection area as described in Condition #42 below.~~

~~27. The post opening traffic evaluation shall be conducted during a period of the Building A & B operations that mimic the period evaluated in the TIS. The study is anticipated to be undertaken within six months after the commencement of full operations of Building A and Building B, or other period agreeable to the Applicant and the Town Planner.~~

~~28. Applicant shall present the post opening traffic evaluation to the Town Planner and Town Engineer, and if requested, to a peer review firm selected by the town and paid for by the Applicant, all for the purpose of confirming the TIS recommendations.~~

~~29. If the post opening traffic evaluation identifies post occupancy operating conditions which identify operational impacts differing from those identified in the TIS, the Applicant may be required to perform additional mitigation to the extent permitted by the Town in cooperation with NHDOT.~~

~~30. The Applicant shall provide evidence to the Town Planner and Code Enforcement Officer demonstrating that Building C shall comply with the Building Height limitations as required by the Zoning Ordinance³¹.~~

Conditions related to construction practices:

26. ~~32.~~ There shall be weekly construction meetings scheduled and available for attendance by Town staff until such time as Inspectional Services reasonably determines that weekly inspections, or less frequent or no further scheduled meetings are necessary.

27. ~~33.~~ The Applicant shall pay for the cost of locating a construction trailer on the site (with appropriate HVAC, electrical, and other utilities) to support a work space for the Town of Hudson Inspectional Service and Land Use Divisions. The Applicant shall also pay for the retention of inspector(s) solely for the purpose of inspecting the construction and project for the duration of the project as reasonably agreed by the Applicant and Fire Chief. The inspectional services trailer shall be located on the site within thirty (30) days after notice by the Inspectional Services Division to the Applicant, but not later than the commencement of construction of the ~~first building~~ Main Building foundation, and remain on the site until the Certificate of Occupancy is issued ~~for the last building~~ or as otherwise agreed between the Applicant and Fire Chief.

28. ~~34.~~ All new gas, telephone, cable, electric and other utilities, except for temporary utilities, shall be installed underground as specified by the respective utility companies unless otherwise waived, or except for so called “green utility boxes” or other aboveground poles or structures as may be required by the utility companies, and except as may otherwise be temporarily required to effect the movement and operation of any other temporary improvements. If final locations of appurtenant equipment to these utilities (e.g. transformer pads) not shown on the Plansplan materially impact the design, the Applicant and/or Project Owner shall provide such details of such modification to the Town Planner for review.

29. ~~35.~~ Additional stormwater and infiltration testing required, if any, by the NHDES shall be performed during construction to complete the design, and all infiltration testing results shall be submitted to the engineer of record, the Town Planner, the Town Engineer, and the NHDES Permitting Department for review.

30. ~~36.~~ A blasting permit shall be required for any blasting on the site in accordance with the Hudson Town Code, Chapter 202.

31. ~~37.~~ During construction, the Applicant shall submit plans for controlling fugitive dust during excavation and construction ~~include~~including mechanical street sweeping, wetting and/or misting portions of the site during periods of high wind, and careful removal of debris by covered trucks.

32. ~~38.~~ The construction contract shall provide measures to be used by contractors to reduce potential emissions and minimize impacts. These measures are expected to include:

- a. Using wetting agents on area of exposed soil on a scheduled basis;
- b. Using covered trucks to transport any debris or other materials to or from the site;
- c. Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;
- d. Minimizing storage of debris on the site; and
- e. Periodic street and sidewalk cleaning with water to minimize dust accumulations. _____
- f. Limit maximum travel speeds on unpaved areas; and
- g. Provide wheel wash stations to limit trackout of soil during the excavation phase.

33. ~~39.~~ Construction equipment engines shall comply with requirements for the use of ultra-low sulfur diesel (ULSD) in off-road engines. The construction contractor will be encouraged to use diesel construction equipment with installed exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines.

34. ~~40.~~ All trucks leaving the site shall have all dirt/mud removed from the wheels and undercarriage of the truck prior to leaving the site. In addition, any loads containing soil for off-site disposal shall be covered.

35. ~~41.~~ Construction vehicles and equipment shall not be permitted to be washed in the streets outside of the Project site. Excess water from the wheel wash stations shall be managed and catch basins in the surrounding street will be protected from potential runoff from the cleaning operations.

36. ~~42.~~ The Applicant shall encourage contractors to use proper emission controls, use of clean fuels, control of truck and equipment idling times.

The following shall be completed prior to the issuance of a Certificate of Occupancy for the Main Building ~~A and/or Building B~~:

37. ~~43.~~ Prior to the issuance of a final certificate of occupancy for the Main Building A and/or Building B, a L.L.S. certified “As-Built” site plan shall be provided to the Town of Hudson Planning Department confirming that the Main Building A and/or Building B accessory structures, as appropriate, conform to the Planplan.

38. ~~44.~~ The Applicant shall coordinate with the Fire Department on the appropriate location and type of gate for use on Steele Road, and coordinate the Fire Department’s access requirements through such gate, to reach and use the SteelSteele Road Extension Easement discussed in Condition #42.

39. ~~45.~~ The Applicant shall convey conservation easements for the 30 +/- acres along the Merrimack (the “Merrimack River Conservation Easement”), as well as the 90 +/- acres along the easterly side of the Property (the “Eastern Conservation Easement”), as depicted on the plan, in a form acceptable to the Town Planner and Town Attorney.

40. ~~46.~~ The Eastern Conservation Easement shall not allow access to the general public ~~but~~ and the use shall be strictly limited to rights ~~for~~ of the Conservation Commission (or its agents) to enter and access the conservation easement Areasareas for the sole purpose of monitoring and maintaining the Eastern Conservation Easement areas.

41. ~~47.~~ The Merrimack River Conservation Easement shall include rights of the Conservation Commission (or its agents) to enter and access the conservation easement area for the purpose of monitoring and maintaining the Merrimack River Conservation Easement area. As a part of the proposed Merrimack River Conservation Easement, the Applicant shall also grant a public trail easement where, once completed, the public’s use of the trail easement for passive recreation purposes (walking, jogging, bicycling, and cross country skiing, snowshoeing) ~~shall~~ and such uses may be limitedmade only between dawn and dusk. The limits of the public trail easement shall extend from the northern boundary of the Property, adjacent to Merrimack River and the Circumferential Highway ~~bridge~~ Bridge, and running southerly within said conservation easement to the southerly boundary of the Property located within the conservation easement. The Town has the right, but not the obligation, to design, permit, construct, repair and maintain such trail improvements as deemed necessary for the purposes described above, subject to any permits, approvals or conditions which may be imposed by the NHDES ~~;~~ or any other regulatory authority. If the Town permits and constructs a public trail within the Merrimack River Conservation Easement area pursuant to this Stipulation, no public access or other rights to same will be granted to or from the Property except as otherwise expressly provided herein.

42. ~~48.~~ The Applicant shall convey a 30-foot-wide non-exclusive easement to the Town which extends from Steele Road westerly to the Merrimack River as depicted on the Site Planplan (the “Steele Road Extension Easement”). The ~~easement shall~~ Steele Road Extension Easement will not allow access to the general public, except for the area of the easement which is located within the ~~250-foot shoreland area~~ Merrimack River Conservation Easement, and only for ~~the trail easement purposes~~ those uses described in the Merrimack River Conservation Easement described in Condition #~~47~~ 41 above, ~~but~~.

~~Otherwise,~~ the use of the ~~easement~~Steele Road Extension Easement shall ~~otherwise~~ be strictly limited to ~~the~~ Town of ~~Hudson and its~~Hudson's emergency services personnel to access the Merrimack River for water withdrawal or other public safety uses, and for the Town of Hudson Conservation Commission members for purposes of using said easement ~~for access~~to access the Merrimack River Conservation Easement area for purposes of monitoring compliance with the landscape requirements contained within the Merrimack River Conservation Easement as described in the Decision, and thereafter, for purposes of maintaining the vegetation within the Merrimack River Conservation Easement, as ~~needed~~more specifically described in Condition #41. Access over this easement area shall be restricted utilizing the existing swing gate on the existing driveway, with use of the gate to be coordinated with emergency services. This gate is noted to remain on drawings CS100 and ~~CS120~~CS116. As a part of ~~this easement~~the Steele Road Extension Easement, the Applicant grants the ~~town~~Town an access easement, of sufficient size, from the end of the constructed ~~access drive~~Steele Road Extension through the 250-foot shoreland area, depicted in the Merrimack River Conservation Easement area to the ~~river, allowing~~River, to allow the ~~town~~Town's right, but not the obligation, to design, permit, and install ~~the~~ infrastructure, such as a ~~turn around~~turnaround, or other infrastructure the Town and Fire Department require within ~~said 250-foot shoreland boundary~~the Merrimack River Conservation Easement area, as deemed necessary for the emergency services purposes described above. The Town's use of this easement area will be through a Town design, permitting and construction process separate from the Applicant's permitting process. -The language of the ~~easement~~Steele Road Extension Easement is subject to the Town Planner's and Town Attorney's approval, and shall include a temporary easement to allow for the construction of improvements described in Condition #~~14.g~~25 above.

~~49. A General State Permit (GSP) for Internal Combustion Engines—Emergency Generators or Fire Pump Engines shall be required for each unit to be included for Building A and Building B for the backup power emergency generators in accordance with ENV-A-610, and shall be secured prior to the issuance of a certificate of occupancy for each building.~~

~~The following shall be completed prior to the issuance of a Certificate of Occupancy for Building C:~~

~~51. Prior to the issuance of a final certificate of occupancy for Building C, a L.L.S. certified "As-Built" site plan shall be provided to the Town of Hudson Planning Department confirming that the Building C site conforms to the Plan.~~

43. ~~52.~~If required, a General State Permit (GSP) for Internal Combustion Engines – Emergency Generators or Fire Pump Engines ~~shall be required~~ for each unit to be included for the Main Building ~~C~~ for the backup power emergency generators in accordance with ENV-A-610, ~~and~~ shall be secured prior to the issuance of a certificate of occupancy for ~~each building~~the Main Building.

~~53. HVAC equipment plans for Building C shall be consistent with Buildings A and B, keeping in mind acoustical performance to ensure project noise goals are met in compliance with Hudson Ordinances.~~

44. ~~50.~~ The off-site roadway improvements depicted in the Traffic Impact Study and Construction Plans (Revised December 1, 2022) shall be substantially completed, such that the impact of the development's traffic is addressed.

Other ~~conditions~~ Conditions:

45. ~~54.~~ Upon completion of construction, evidence of a retained contractor's Salt Application Certification under the NHDES Green SnowPro Certification Program shall be submitted to the Town Planner.

46. ~~55.~~ The Applicant shall be obligated to maintain the paved portions of the Steele Road Extension Easement from the paved limits of the easement along the westerly end of the site, easterly to the Steele Road gate.

47. ~~56.~~ ~~The Applicant shall provide additional evergreen~~ Additional landscaping for the purposes of screening 267 Lowell Road shall be provided as shown on the plan.

48. ~~57.~~ The ~~buildings~~ Main Building shall have internal refuse control and dumpsters and compactors directly connected to the building, and occupying loading dock bays. There shall be no freestanding dumpsters elsewhere on the site. Therefore, the trash removal activity will be very similar to other truck activity on the site.

49. ~~58.~~ The recommendations in the ~~March 2, 2021~~ September 29, 2022 Memorandum to Brian Groth, Town Planner, from ~~Robert Buxton~~ Scott Tice, Fire Chief, shall be implemented and comply with the conditions contained therein relating to fire suppression and public safety to the reasonable satisfaction of the Fire Chief, and written Fire Department acknowledgement of compliance with such recommendations shall constitute satisfaction of this condition.

50. ~~59.~~ The Amended Project shall comply with the vehicle idling requirements of New Hampshire regulation ENV-A-1100, as amended, unless otherwise exempt.

51. ~~60.~~ The Applicant shall equip all terminal tractors with smart, ambient sensing, multi-frequency back-up alarms.

52. ~~61.~~ The Amended Project, having received a sewer allocation, and the Applicant having paid for the sewer allocation, which allocation has been incorporated by reference to this Amended Site Plan and this Decision, shall be serviced by a private sewer line connected to the existing public sewer line on the Property. The Amended Project shall be serviced by the public water system. All water and sewer infrastructure requirements shall be provided in accordance with Town's regulations and guidelines in coordination with the Town Engineer.

53. ~~62.~~All Tier II reporting requirements shall be followed each year for all facilities if there will be inside or outside storage above the exempt amounts of hazardous materials, liquids or chemicals presenting a physical or health hazard as listed in the International Building Code, Sections 307, 414 or 415.

54. ~~63.~~All storage either inside or outside of hazardous materials, liquids or chemicals presenting a physical or health hazard as listed in NFPA 1, Section 20.15.2.2 shall be in accordance with the applicable portions of the following:

- a. NFPA 13, Standard for the Installation of Sprinkler Systems
- b. NFPA 30, Flammable and Combustible Liquids Code;
- c. NFPA 308, Code for the Manufacture and Storage of Aerosol Products
- d. NFPA 230, Standard for the Fire Protection of Storage;
- e. NFPA 430, Code for the Storage of Liquid and Solid Oxidizers;
- f. NFPA 432, Code for the Storage of Organic Peroxide Formulations; and,
- g. NFPA 434, Code for the Storage of Pesticides.

55. ~~64.~~The fire alarm system shall be connected to the Hudson Fire Department's municipal fire alarm system or a substantially equivalent system in accordance with the Hudson Town Code, Chapter 210. A site plan detailing the aerial or underground layout to the municipal fire alarm connection must be provided before the utilities are completed for this project.

56. ~~65.~~Any required fire alarm system component shall remain accessible and visible at all times.

~~66. Upon commencement of operations of the completed improvements, drivers shall be allowed to take their Federal Motor Carrier Safety Administration (FMCSA) Hours of Service Regulations required non-driving interruptions and off-duty break periods on the Property.~~

57. ~~67.~~Based upon the Town Engineer's recommendations, the Stormwater Management and Erosion Control Plan (SMECP) is hereby approved as the Project complies with Chapter 290, ~~and the property owner of record shall record at the Registry of Deeds documentation sufficient to provide~~ of the Town Code, and the incorporation of this condition within the Development Agreement when recorded constitutes the required notice to all persons that may acquire any property that the property is subject to the requirements and responsibilities described within the approved SMECP, including the operation and maintenance requirements and all BMPs.

58. ~~68.~~ The Applicant agrees to provide \$250,000 to the Town of Hudson's sidewalk fund for the purpose of funding a sidewalk along the easterly side of Lowell Road extending from Rena Avenue to Wal-Mart Boulevard. In the event these funds are not used in this location, these funds may be used for general sidewalk purposes consistent with the purposes of this fund.

59. ~~69.~~ The Applicant agrees to fund the following potential future improvements at the town intersection of Lowell Road/Wason Road/Flagstone Drive as identified in the Traffic Impact Study, dated September, ~~2020-2022~~ (Revised October, 2022). The Applicant shall fund the physical improvements in the form of an escrow account with \$100,000 increments (with the Applicant's total obligation not to exceed \$1,000,000), as needed and requested by the Engineering Department, which may include:

- a. Widening the northbound approach to provide an exclusive left-turn lane, three through lanes and two exclusive right-turn lanes;
- b. Widening the eastbound approach to provide a shared left-turn/through lane and two exclusive right-turn lanes;
- c. Widening- to provide an additional northbound receiving lane on the north side of the intersection that becomes an exclusive right-turn lane into the Market Basket plaza; and,
- d. Installing variable lane usage signing/controls for the northbound approach to allow for two exclusive left-turn lanes, two through lanes and two exclusive right-turn lanes during the weekday morning commuter peak to account for the high volume of left-turning traffic onto Flagstone Drive.

60. ~~70.~~ Directional signage, directing truck traffic back to Route 3 (the Sagamore Bridge) shall be included in the traffic mitigation plan.

61. ~~71. and Exhibit A.~~ The Applicant has voluntarily offered to provide funding to the Town as set forth in the *Scope and Schedule - Impact Mitigation and Exactions*, which is ~~attached hereto~~ described below, to be assessed as exactions and as a condition of approval. The Planning Board hereby assesses said fees in the total amount of \$7,750,000.00, which shall be paid by the Applicant to offset the impacts caused by the development. These fees are described in full detail ~~in the document entitled "Scope and Schedule - Impact Mitigation and Exactions," which shall be included as Exhibit A~~ to be incorporated into the Amended Development Agreement, to be recorded at the HCRD. The Applicant agrees that the fees are properly assessed as off-site exactions as permitted by applicable law.

Scope and Schedule – Impact Mitigation and Exactions

(a) STEM Program for CTE: \$3 million

Intent: To provide annual funding for a period of ten years for STEM related activities and/or training at the Palmer CTE School.

Payable: \$300,000 annual payments for 10 years beginning at time of issuance of Certificate of Occupancy (C.O.) for Main Building and recurring on that anniversary. Payments to be made to SAU 81. In lieu of the foregoing scheduled annual payments, payments may be made according to such terms as may be mutually agreed upon between the School Board and the Applicant, including, by way of example, a single lump sum payment at an agreed upon present value.

(b) Riverfront Recreation: \$1.5 million

Intent: To identify, plan, design, construct and procure necessary equipment related to public recreation & an emergency services boat ramp associated with the Merrimack River.

Payable: \$500,000 annual payments for 3 years beginning at time of issuance of C.O. for Main Building and recurring on that anniversary.

(c) Shoreline Improvement: \$500,000

Intent: To identify, plan, design, construct and procure necessary equipment related to public recreational trails along the Merrimack River, including within the easement area identified in the Applicant's plans.

Payable: At time of issuance of C.O. for Main Building.

(d) Public Safety: \$1 million

Intent: To provide the Fire and Police Department's with training and equipment and other requirements necessitated by the development.

Payable: Prior to issuance of building permit for Main Building. Timing of this deliverable may be modified with the Hudson Fire Chief's and Police Chief's approval.

(e) Fire Department Platform Truck: \$1.4 million

Intent: To procure a platform truck needed to service the proposed buildings.

Payable: prior to issuance of building permit for Main Building. Timing of this deliverable may be modified with the Hudson Fire Chief's approval.

(f) Master Planning: \$200,000

Intent: To provide funding to the Hudson Planning Board and Planning Department to conduct Master Planning activities, including public outreach.

Payable: \$100,000 annual payments for 2 years beginning at time of building permit for Main Building, and recurring on that anniversary.

(g) Community Fee: \$100,000

Intent: To support the Town of Hudson's Community Grants program.

Payable: at time of C.O. issuance for Main Building.

(h) Regional Hazardous Materials Program: \$50,000

Intent: To support the regional Hazmat program.

Payable: at time of C.O. issuance for Main Building.

62. ~~31.~~ Steele Road shall be addressed as indicated in plan notes, or by other lawful means.

63. This Amended Site Plan has been approved in accordance with the Town of Hudson Town Code, including but not limited to, Chapter 275 and in accordance with the requirements for an amended site plan pursuant to Chapter 276-5.

64. The conditions contained within this Amended Approval will amend and replace the conditions contained within the Original Approval, effective as of the date of the recording of the Amended Site Plan and Amended Development Agreement, at which time the conditions and stipulations contained in the Original Approval and the Original Plan shall no longer be in effect.

65. Any Stipulations of the Original Approval not expressly addressed or modified by this amended and restated approval are incorporated herein by reference.

66. In the event of a discrepancy between the Original Approval and this amended and restated approval, the terms of this amended and restated approval shall control.

67. ~~72.~~ In the event of a discrepancy between the spoken motion and the written motion, the written motion, as amended by the Planning Board at its ~~May 5, 2024~~ January __, 2023 meeting, shall control.

MEMORANDUM

To: Hudson Planning Board (Timothy Malley, Chair)
Brian Groth, Town Planner

From: John T. Smolak, Esq. Smolak & Vaughan, LLP &
Justin L. Pasay, Esq., Donahue, Tucker & Ciandella, PLLC

Re: Hudson Logistics Center –Site Plan Narrative

Date: December 28, 2022

INTRODUCTION

On behalf of the Applicant, Hillwood Enterprises, L.P. (the “Applicant” or “Hillwood”), the following sets forth the basis for Hillwood’s Amended Site Plan Review Application’s compliance with all applicable criteria under the Town’s Site Plan Review Regulations found in Chapter 275 of the Town Code (the “Regulations”) to accommodate an amended Hudson Logistics Center project (the “HLC”), as detailed below.¹

The original approvals for the HLC consisted of a Site Plan Review Approval in Planning Board Case Number SP# 04-20, inclusive of six (6) waivers (the “Original Site Plan Approval”), a Conditional Use Permit in case CU# 02-20 (the “Original CUP Approval”), and a lot line relocation and lot consolidation approval in case SB# 01-21, which approval consolidated 375.37 acres of land across several lots into a single lot, as depicted on the plan recorded as Plan #41556 at the Hillsborough County Registry of Deeds (the “Lot” or the “Lot Approval”) (collectively, the Original Site Plan Approval, Original CUP Approval and Lot Approval are referred to herein as the “Approved Project”).

By this Memorandum, and consistent with the Planning Board’s review of Hillwood’s revised HLC proposal as an amended site plan application (SP# 12-22)², the Applicant expressly incorporates the entire administrative record associated with the Approved Project into the record of the Amended Project proposal.

¹ At the November 9, 2022 Planning Board meeting, the Board unanimously approved five (5) requested Site Plan Review Regulation waivers. At the December 14, 2022 Planning Board meeting, the Board unanimously approved the Applicant’s Amended Conditional Use Permit Application in Planning Board Case Number CU# 07-22 (the “Amended CUP”). As such neither the requested waivers nor the Amended CUP will be discussed or analyzed herein.

² Hudson’s Land Use Regulations expressly contemplate amended permit applications, to include Site Plan Review applications, and historically, the Planning Board entertains such amended applications. See Town Code, Chapter 276, §276-5.

DESCRIPTION OF AMENDED PROJECT

As a result of unanticipated changes to the Approved Project, Hillwood proposes the Amended Project which substantially reduces the Approved Project's scope and related potential impacts. As further detailed in the following materials, as well as the plans, specifications and expert analyses filed in support of the amended HLC project, the Amended Project includes the following foundational details:

- **Building Program.** The Amended Project will include a single building with a footprint of 1,393,822 s.f. (the "Main Building"), when compared to the total footprint of the three warehouse buildings in the Approved Project of 2,614,984 s.f., resulting in a total Main Building footprint reduction of 1,221,072 s.f., or a reduction of building footprint of approximately 47%. The Amended Project will also include several smaller supporting structures on the Property such as a guard shack (1,114 s.f.), a trailer maintenance building (7,427 s.f.), a transportation building (3,538 s.f.), a fire pump house (440 s.f.), a pull-through inspection canopy area (13,700 s.f.), exterior pallet storage, as well as other facilities and related improvements shown on the "Site Plans," as defined below. The proposed warehouse and distribution Main Building is approximately 2,210,403 s.f. of GFA, including internal mezzanine space, and total GFA of all buildings on the Property (not including the fire pump house or pull-through inspection area) is 2,222,482 s.f. This Amended Project represents a total reduction in overall building GFA, when compared to the Approved Project, of approximately 643,667 s.f., or 22%. The Amended Project use is the same as the use contemplated by the Approved Project, and will include a warehouse and distribution use, along with accessory uses as described above, which are customarily incidental to the primary use described above, all of which are proposed as programming needs for Target Corporation, the new tenant for the Amended Project.
- **Buffers and Setbacks.** The proposed Main Building has been moved, to the extent practicable, more northerly on the Property than the three warehouse buildings contemplated by the Approved Project resulting in the closest setback from the proposed Main Building to the southerly boundary of a residential lot along the southerly property line being approximately 1,341 feet (or approximately ¼ mile), where the closest Approved Project setback from a building to the southerly boundary of a residential lot is approximately 454 feet, an increase in setback of 887 feet. In connection with this change, the sound fence is also being moved approximately 150 feet northerly on average from the existing approved sound fence location, with substantially increased open space buffer area and allows for increased mature tree preservation along the southerly Property boundary.
- **Parking and Loading Spaces.** The Amended Project includes a total of 1,585 parking spaces for employees and other visitors (where a total of 3,705 parking

spaces are required), along with a total of 1,034 loading spaces to serve the proposed use. The Approved Project includes the approval of a total of 1,806 parking spaces on the Property (reduced by waiver from 4,777 parking spaces), along with a total of 1,244 loading spaces on the Property. This modification results in a net reduction of 221 parking spaces, and a net reduction of 210 loading spaces from the Approved Project. As was requested and approved in the Approved Project, Hillwood has requested, and the Planning Board has approved, a waiver to reduce the required number of passenger parking spaces, as well as a reduction in parking space dimensions, which in turn reduces the amount of impervious surfaces that would otherwise needed to be treated as a part of the Amended Project stormwater management system.

- Reduced Traffic Impacts; Same Proposed Traffic Improvements. Although there is a reduction in building footprint and size, and as a part of the Amended Project, Hillwood has committed to all of the proposed off-site traffic improvements approved as a part of the Approved Project, including the roadway and traffic signal improvements in the Lowell Road corridor, subject the NHDOT approval. As a result of the reduced scale of the Project, and based on the proposed tenant's operations, it is expected that the total average daily trips generated by the Amended Project will be reduced by approximately 1,700 trips, representing a 42% reduction in average daily trips from that previously approved as a part of the Approved Project.
- Same Access Driveway Locations. Primary access to the Amended Project will be substantially the same as described in the Approved Project, and access will be through a new dedicated private driveway, now described as Green Meadow Drive, which will consist of a shared driveway with the abutting Mercury Systems property (Tax Map 234, Lot 35, known as 267 Lowell Road), and extend from Lowell Road, consistent with the access as described as a part of the Approved Project, westerly via a driveway, but which eliminates the traffic circle in the Approved Project, and which then extends driveways to the Main Building and related improvements. A second private driveway access to the Property includes rights for access and utilities to Lowell Road through the abutting Sam's Club lot (Tax Map 228, Lot 4) known as Walmart Boulevard (the "Northern Access Road").
- Expanded Open Space. As a result of the reduction in the size and scope of the Project, the Amended Project increases open space across the Property to a total of approximately 213.7 acres, or an increase of 25% when compared to the Approved Project open space of 171.4 acres. This includes expanded open space buffers proposed to the west (along the Merrimack River), to the east (near existing sensitive wetlands), and to the southerly property boundary.
- Increased Open Space Buffers. The increase in open space under the Amended Project allows for expanded open space buffers around the Property perimeter,

including: an expanded open space buffer along the Merrimack River to be approximately 47.6 acres, where 36.8 acres of open space were proposed in the Approved Project; and an expanded open space buffer along the eastern side of the Property which now includes a total of 109.5 acres, where 104.6 acres of open space were proposed in the Approved Project, thereby providing additional protection and restoration area near or along Limit Brook. Additionally, open space along the southerly residential boundary is proposed to be approximately 56.6 acres, where 30.0 acres of open space were proposed in the Approved Project. The increased open space in the revised application has enabled the development to be placed further away from sensitive receptors and features and allows for the preservation of a large stand of mature trees located along the southerly boundary of the Property. Open areas between the Merrimack River, southerly abutting residential properties and the eastern wetland systems have all been increased providing greater separation from the development.

- Improved Wetlands Protection. As detailed in the Applicant's Amended CUP filing, which has now been unanimously approved by the Planning Board, the amount of proposed Wetlands Conservation District impact under the Amended Project has been significantly reduced by 13%, when compared to the Approved Project, and 95% of impacts are related to the necessary driveway crossings to access the Property from Lowell Road. These reductions are the result of the elimination of the traffic circle and other infrastructure approved in the Approved Project. The expanded open spaces also eliminate the need to fill any of the ponds used by the current golf course such that two of the ponds which were formerly proposed to be filled under the Approved Decision, will not be filled. As a result, all four of these ponds will be preserved, representing the enhancement of additional amenities and protection of environmental resources.
- Water and Wastewater. The Amended Project is proposed to be served by Town water and sewer, consistent with the Approved Project and the sewer allocation award already approved by the Town.
- Reduction of Impervious Surfaces/Improved Stormwater Management. As a result of the reduced project building size, reduced impervious surfaces due to reduced paved areas, and a reduction of wetlands impacts and other impervious surfaces, a redesigned stormwater management system has been proposed to mitigate, collect and treat stormwater runoff, consistent with the requirements of the Town's Stormwater Management Regulations (Chapter 290), as well as NHDES Alteration of Terrain Permit (AOT) requirements. As a result, the amount of paved and other impervious surfaces has also been reduced by a total of 1,645,479 square feet (or a reduction of approximately 37.8 acres, when compared to the currently Approved Project).
- Mitigation and Related Community Benefits. While the Amended Project scope has been substantially reduced as noted above, Hillwood is committing to the

construction of the same off-site traffic improvements approved as a part of the Approved Project and is also honoring its commitment to provide up to \$7,750,000.00 in mitigation and related community benefits as described and attached as Exhibit A to the Approved Site Plan Decision, in addition to Amended Project CAP (or Impact) Fees. As time has passed since the community benefits were first approved, we anticipate further discussions about potential adjustments to identified categories as approved.

LEGAL STANDARD OF PLANNING BOARD REVIEW

Site plan review in New Hampshire is designed to ensure that uses permitted by a zoning ordinance are “constructed on a site in such a way that they fit into the area in which they are being constructed without causing drainage, traffic, or lighting problems.”³ Similarly, site plan review is intended to ensure that “sites will be developed in a safe and attractive manner and in a way that will not involve danger or injury to the health, safety, or prosperity of abutting property owners or the general public.”⁴ These purposes are accomplished by “subjecting the plan to the very expertise expected of a planning board in cases where it would not be feasible to set forth in the ordinance a set of specific requirements upon which a building inspector could readily grant or refuse a permit.”⁵

Site plan review is, nonetheless, limited.⁶ A Planning Board’s review “does not give the Planning Board the authority to deny a particular use simply because it does not feel that the proposed use is an appropriate use of the land. Whether the use is appropriate is a zoning question.”⁷ Moreover, in New Hampshire, Planning Board members hearing site plan applications sit in a judicial or quasi-judicial capacity.⁸ Accordingly, Planning Board members may only make a decision after weighing and considering such arguments and evidence as the parties choose to lay before them, and while members are permitted to rely on their personal knowledge of certain factors in reaching decisions, Planning Board decisions must be based on “more than the mere personal opinion of its members.”⁹ Additionally, Planning Board members may base their conclusions upon

³ Summa Humma Enters. v. Town of Tilton, 151 N.H. 75, 78 (2004) (quoting 15 Loughlin, New Hampshire Practice, Land Use Planning and Zoning § 30.01, at 425 (2000)).

⁴ Id. See also Regulations, §275-3 defining the purpose of the Town’s Regulations (“This chapter is to assure that minimum standards shall be attained, so as to provide for and protect the public health, safety and general wellbeing”).

⁵ Id.

⁶ Id.

⁷ Id. (quoting 15 Loughlin, § 30.09, at 437)

⁸ Sanborn v. Fellows, 22 N.H. 473 489 (1851); Winslow v. Town of Holderness Planning Board, 125 N.H. 262, 267 (1984).

⁹ Condos East Corporation v. Town of Conway, 132 N.H. 431 (1989); See also 15 Loughlin, New Hampshire Practice: Land Use Planning and Zoning, § 28.10 (4th Ed.)

their own knowledge, experience and observations in addition to expert testimony, but they may not simply choose to ignore expert advice, especially if it is uncontradicted.”¹⁰

Finally, Planning Boards “cannot supersede the specific regulations and ordinances that control the site plan review process with their own personal feelings and then justify their reasoning through the application of general considerations.”¹¹ Nor can Planning Boards base decisions on *ad hoc* considerations or on vague concerns.¹²

ANALYSIS: PLANNING BOARD REVIEW OF THE AMENDED PROJECT

A. Background

On September 12, 2022, the Applicant filed an Amended Site Plan Application, and an Amended Conditional Use Permit Application, along with accompanying plans and other supporting documentation as required under the Hudson Land Use Regulations (collectively, the “Applications”). At its meeting on September 14, 2022, the Planning Board determined that the Amended Site Plan Application titled “Hudson Logistics Center” constituted a Development of Regional Impact and was therefore processed by the Planning Board according to the procedures established in RSA 36:54-58. Thereafter, on October 12, 2022, the Planning Board voted unanimously to accept jurisdiction over the Applications, and more specifically, the Amended Site Plan Review Application SP# 12-22 and the Amended Conditional Use Permit Application CU# 07-22. Since that time, the Hudson Planning Board has conducted a number of public meetings, including those held on: October 12, 2022; a joint Planning Board & Conservation Commission Meeting (site walk) on October 22, 2022; November 9, 2022; December 14, 2022; and January 11, 2022.

¹⁰ Id.

¹¹ Trustees of Dartmouth College v. Town of Hanover, 171 N.H. 497, 514 (2018). In Dartmouth, Dartmouth College proposed to build a large sports complex in proximity to residential uses. The proposed sports complex complied with all local zoning regulations regarding height, massing, building footprint, setback, etc. Despite this, a vocal opposition group comprised primarily of abutters were successful in convincing the Hanover Planning Board to deny Dartmouth’s site plan review application after a lengthy process. In so doing, the Supreme Court held:

Here, the planning board essentially decided that the [sports complex] is: (1) too large and imposing, despite the project’s compliance with Hanover’s I-District zoning ordinances regulating a structure’s height and size; (2) too close to the abutting neighborhood, despite the project’s compliance with the unique setback and height restrictions imposed by its proximity to a residential neighborhood; and (3) not a harmonious or aesthetically pleasing fit with the development of the town and its environs, despite the fact that the [sports complex] constitutes a permitted use within a “special district” that not only contemplates large warehouse and recreational facilities, but currently includes two indoor sports facilities of similar sizes. A planning board cannot supersede the specific regulations and ordinance that control the site plan review process with their own personal feelings and then justify their reasoning through the application of general considerations.

The Town of Hudson Conservation Commission also held several meetings to review and discuss the Applicant's Amended CUP Application, including the following meetings: October 22, 2022 (joint Planning Board & Conservation Commission Meeting site walk); October 24, 2022; November 12, 2022 (second site walk); and, November 14, 2022, on which date the Conservation Commission voted unanimously, by a vote of 5-0, to recommend to the Planning Board to approve the Applicant's Amended CUP Application with a list of 14 proposed stipulations. As noted above, on December 14, 2022, the Planning Board unanimously voted to approve the Amended CUP Application with a list of stipulations.

Based upon recommendations of the Planning Board, the Conservation Commission, the Town Planner, and/or at the Applicant's own initiative, the Applicant prepared supplemental amended studies regarding traffic, noise, air pollution, property market valuation, stormwater, screening and buffering, wildlife impacts, and fiscal impacts, from qualified professionals. These expert studies were independently evaluated by the Town's Planning Board, the Planning Board's third-party independent peer review professionals, the New Hampshire DOT with respect to traffic matters, and/or Town officials and staff for conformance with the Town's Land Use Regulations and other requirements, as well as generally recognized standards for evaluating the particular subject matter as further described below. Over the course of the extensive review of the proposed Amended HLC, the Planning Board has heard testimony from the Applicant, individual Planning Board Members, the Applicant's professional consultants, the Planning Board's peer review professional consultants, Town staff, and the public.

B. SITE PLAN REVIEW CRITERIA

The Regulations under Chapter 275 outline a number of criteria which must be considered satisfied by the Planning Board before an amended site plan review application will be approved. To support the Applicant's demonstration that the Amended Project meets or exceeds the requirements under the Site Plan Review Criteria, the Applicant prepared and presented updated and/or supplemental studies from several consultants to include: Langan Engineering and Environmental Services, Inc. ("Langan"), RKG Associates, Inc. ("RKG"), Wesley G. Reeks, MAI ("Mr. Reeks"), Gove Environmental Services, Inc. ("Gove"), John D. Krebs ("Krebs"), Lucas Environmental, LLC ("Lucas"), Stantec Engineering Company ("Stantec"), and Epsilon Associates, Inc. ("Epsilon"), and the findings of these reports have been incorporated into the applicable site plan criteria below.

Section 275-6 of the Regulations requires that the Planning Board find 22 individual criteria are met. As reflected in the Application and supporting materials, each of these criteria are satisfied as further set forth below.¹³ The Applicant submits that its Amended

¹³ We note that a number of the Site Plan Review criteria, and the information provided by the Applicant to satisfy the same, are overlapping with one another. In those instances, we have attempted to incorporate and categorize the findings accordingly.

Site Plan Review Application meets or exceeds all of these requirements, as outlined below.

- **§275-6(A) The safe and attractive DEVELOPMENT of the site and to guard against such conditions as would involve danger or injury to health or safety, and no significant diminution in value of surrounding properties would be suffered.**

The Applicant has undertaken extensive efforts to design an Amended Project which is a safe and attractive development which guards against conditions which would involve danger or injury to health and safety in the following ways:

1. The Applicant's Project Team has filed comprehensive site plan package which includes plans and related notes and details described as: existing conditions; site plans and details; grading and drainage; subgrade drainage; grading and drainage details; wetland impacts; utilities; utility details; soil erosion and sediment control (phases 1-3); soil erosion and sediment control details; lighting plans; lighting notes and details; landscape planting plans; landscape notes and details; site signage; and floor plans and elevations for the proposed buildings, all of which were designed by professional engineers, landscape architects and architects and other qualified professionals demonstrating that the proposed Amended Project is both a safe and attractive development and to guard against such conditions as would involve danger or injury to health or safety.¹⁴

¹⁴ See: (i) set of site plans and specifications, consisting of 196 sheets, entitled "Hudson Logistics Center, Site Plan & Conditional Use Permit Applications, Lowell Road, Map 234, Lots 5, 34 & 35, Map 239, Lot 1, Town of Hudson, Hillsborough County, New Hampshire," dated September 9, 2022 (Revised December 19, 2022 except as otherwise shown), prepared for Greenmeadow Golf Club, Inc. (Owner) and Hillwood (Applicant), by Langan Engineering and Environmental Services, Inc., including: Cover Sheet, Index and Master Index of Notes (CS001-CS003); Existing Conditions (EC100-EC108); Overall Site Plans (CS100-CS123); Site Details (CS501-CS506); Overall Grading & Drainage Plans (CG100-CG123); Overall Sub-Grade Drainage Plan (CG200-CG203); Grading & Drainage Details (CG501-CG506); Wetlands Impact Plan (FG01); Overall Utility Plan (CU100-CU120); Northeast Access Road, East Access, Fire Protection, and Building Water Profiles (CU201-CU217); Sewer Profiles (CU300-CU313); Utility Details (CU501-CU506); Soil Erosion & Sediment Control Plan (Phases 1-3)(CE101-CE304); Soil Erosion & Sediment Control Details Phase I (CE501-CE503); Overall Lighting Plan (LL100-LL119); Lighting Plan & Details (LL501-LL502); Overall Planting Plan (LP100-LP123A); Landscape Notes & Details (LP501-LP503); and Architectural Plans and Specifications, dated September 9, 2022, including: Floor Plan, Floor Plan-Mezzanine, and Roof Plan (A4.1-A4.3); Guard Shack Floor and Roof Plan (A4.4A-A4.4B); Transportation Building Floor and Roof Plan (A4.5A-A4.5B); Inspection Canopy Floor and Roof Plan (A4.6-A4.7); Maintenance Building Floor Plan (A4.8); Pump House and Tank(s) Floor and Roof Plan (A4.10); Exterior Elevations (A5.1); Guard Shack Exterior Elevations (A5.2); Transportation Building Exterior Elevations (A5.3); Inspection Canopy Exterior Elevations (A5.4); Maintenance Building Exterior Elevations (A5.5); and, Pump House and Tanks Exterior Elevations (A5.6)(collectively, the "Site Plans"); (ii) Traffic Impact Study for Hudson Logistics Center, dated September, 2022 (Revised October, 2022), as supplemented ; (iii) Stormwater Management Report, prepared by Langan, dated September 2022 (Revised December, 2022); and, (iv) Geotechnical Engineering Study for Hudson Logistics Center, prepared for Hillwood by Langan, dated September 9, 2022.

2. The Main Building has been moved, to the extent practicable, more northerly on the Property than the buildings of the Approved Project, resulting in the closest setback from the proposed Building to the southerly boundary of a residential lot along the southerly property line being approximately 1,341 feet (or approximately ¼ mile).¹⁵ In connection with this change, the sound fence is also proposed to be extended laterally and moved approximately 150 feet northerly on average from the existing approved sound fence location, with substantially increased open space buffer area and allows for increased mature tree preservation along the southerly Property boundary.
3. The Applicant has developed a robust landscaping design to ensure a safe and attractive development which incorporates an extensive and effective buffer with screening consisting of a combination of existing landscaping, new landscaping, an earthen berm, and a sound fence, all of which are designed to create a reasonable effective visual screening barrier as explained in greater detail below.¹⁶
4. As detailed below, the Applicant's Team has designed the Amended Project as well as on-site and off-site access and travel points to ensure the Amended Project traffic design creates a safe and attractive development which guards against conditions which would involve danger or injury to health and safety.¹⁷
5. From a planning perspective, the Applicant has incorporated design elements to maintain a safe and attractive development.¹⁸
6. The Amended Project site shall be maintained as a safe and attractive development and to guard against such conditions as would involve danger or injury to health or safety.
7. The Amended Project Site Plans have been extensively peer reviewed by the Planning Board, its peer review consultants, Fuss & O'Neill (and its subconsultants), among others, to ensure compliance with applicable stormwater, zoning, site plan, landscaping, lighting, wetlands, and erosion and sedimentation control requirements.¹⁹ The Applicant's engineering and design team has provided detailed

¹⁵ See Site Plans.

¹⁶ See Landscape Plans & Specifications, Overall Planting Plan (LP100-LP123A); Landscape Notes & Details (LP501-LP503), and contained within the Amended Project Site Plans and Sight Line Study package, dated September 2022 (Revised December 19, 2022), as amended.

¹⁷ See below.

¹⁸ See Letter from John Krebs, dated September 7, 2022.

¹⁹ See Fuss & O'Neill Peer Review Letter #1, dated September 28, 2022 – Site Plan, Administrative, Driveway, Utility Design, Drainage Design/Stormwater, Zoning, Erosion Control, Wetland Impacts, Landscaping; Fuss & O'Neill Peer Review Letter – Off-Site Traffic Improvements, dated November 29, 2022 ; Stantec Response to Fuss & O'Neill Off-Site Traffic Improvements Letter, dated December 5, 2022; Fuss & O'Neill Peer Review Letter #2, dated December 9, 2022 –Utility Design.

responses to Fuss & O'Neill, and all peer reviewers, as requested,²⁰ in order to respond to those matters, to ensure that no project design or operational conditions would involve danger or injury to health or safety.

With regard to the requirement of Section 275-6(A) to ensure that development not cause "significant diminution in value of surrounding properties [...] be suffered[,]" the Applicant has demonstrated compliance with this regulation as follows.

8. The Applicant's certified New Hampshire Real Estate Appraiser, Mr. Reeks, completed an updated property valuation analyses entitled Proposed Hudson Logistics Center, Real Estate Appraisal Services Report, dated September 7, 2022, prepared by Wesley G. Reeks, MAI (the "Reeks Report"), as supplemented by an Addendum Letter to Market Data Research and Analysis Report dated 7 September 2022 Associated with the Proposed Hudson Logistics Center in Hudson, New Hampshire, dated October 23, 2022, prepared by Wesley G. Reeks, MAI (collectively, the Updated Reeks Report"). This Updated Reeks Report includes an analysis employing industry standard methodologies and concluded that the data provides substantial evidence that development of three comparable logistics centers in other New Hampshire locations did not diminish the market value of their neighboring residential properties. The Updated Reeks Report also concludes that the Amended Hudson Logistics Center will have no significant diminution in property values (and in fact will have no discernable negative impact on market value at all) in Green Meadow Subdivision or other nearby residential properties. This Updated Reeks Report built and expanded upon prior property studies for the Approved Project.²¹
9. The Updated Reeks Report was able to identify listings and sales occurring after the Approved Project was announced in order to identify whether the known presence of

²⁰ See Langan Response to September 28, 2022 Fuss & O'Neill Peer Review Letter, dated October 12, 2022; Memorandum to Elvis Dhima, P.E., dated December 5, 2022, from David MacNamara, P.E., Stantec, enclosing response to November 29, 2022 Fuss & O'Neill Peer Review Letter – Off-Site Traffic Improvements, including off-site improvements plans and Memorandum from John Plante, P.E., Langan, dated August 17, 2022, to David McNamara, Stantec, enclosing subsurface exploration data in connection with off-site improvements include twenty two mast arm and overhead sign pole locations as indicated on the New Hampshire Department of Transportation (NHDOT) Bureau of Highway Design roadway improvement plans (75%); Langan Response to Fuss & O'Neill Peer Review Letter #2, dated December 22, 2022; Engineering Report for Gravity Sewer and Sanitary Sewer Lift Station, Hudson Logistics Center, Hudson, New Hampshire, dated December 22, 2022, prepared for Hillwood by Langan Engineering and Environmental Services, Inc.

²¹ See Proposed Hudson Logistics Center, Real Estate Appraisal Services Report, dated August 1, 2020, prepared by Wesley G. Reeks, MAI, , as amended by Proposed Hudson Logistics Center, Real Estate Appraisal Services Report, dated February 9, 2021, prepared by Wesley G. Reeks, MAI, (collectively, the "Reeks Report"); and Property Value Analysis, dated 7.10.20, prepared by Trimont Real Estate Advisors (the "Trimont Report"), all of which shall be expressly incorporated by reference into the record of this Amended Site Plan hearing.

the pending Project had resulted in any diminution of market values of surrounding properties.

10. The Updated Reeks Report identifies listings and sales in the Ridgecrest Subdivision and additional properties sold in the Green Meadow Subdivision. These site-specific sales, several of which were sold at the highest price per square foot in both subdivisions ever, closed when the existence of the proposed Project was well-known.
11. Mr. Reeks added that further analysis of these recent sales in the Green Meadow and Ridgecrest subdivisions indicate their average value increases are consistent with the overall Hudson market.
12. As a result, the Updated Reeks Report concludes that these residential sales continue to support his original conclusion from prior reports listed herein that there would be no diminishment of market value by reason of the Project on surrounding properties.
13. Moreover, from a non-residential perspective, the Updated Reeks Report notes that no evidence was found of any negative impacts to surrounding commercial/industrial property values from construction of a large warehouse facility nearby, and it concluded that the Hudson Logistics Center will have no negative impact on market values of commercial/industrial properties in the immediate area of the Hudson Logistics Center.
14. As a result, Mr. Reeks concluded that no evidence was found of any negative impacts to surrounding property values from the construction of a large warehouse facility nearby. It is concluded that the proposed Hudson Logistics Center will have no negative impact on market values of residential and commercial properties in the immediate area of the proposed Hudson Logistics Center.
15. The Updated Reeks Report identified the various studies that were prepared for the Amended Project, including those relating to traffic; air quality; stormwater management; wetlands; noise; and screening and buffering,²² and suggests that these types of considerations are already captured by the traditional appraisal methodology used in the Updated Weeks Report.
16. The Updated Weeks Report also suggests the Amended Hudson Logistics Center Project is smaller, less impactful in every way, and is located hundreds of feet further away from the Green Meadow Subdivision which factual considerations further support the conclusions of the study.
17. Based upon the foregoing, the Updated Reeks Report concludes that it does not appear that these matters would become a factor of concern in the evaluation of

²² See Revised Reeks Report, p. 31.

potential impacts to property values such that they would result in a negative or substantial diminution of surrounding property values.

18. Moreover, the Updated Weeks Report was peer reviewed by Camoin Associates, the Planning Board's peer review consultant.²³ The Camoin Report indicated that "Mr. Reeks employs standard methods and provides a sound, thorough analysis given data and other constraints. The review identified some minor adjustments that could be made, but these would not affect his conclusions."²⁴

19. The Camoin Report also makes the following findings:

- The analysis conducted by Mr. Reeks follows a reasonable and standard methodology;
- Reeks follows best practices and compares sales of Green Meadow subdivision residential properties abutting the proposed Hudson Logistics Center site with sales of similar, nonadjacent properties in the same development.
- Reeks also evaluates three pairs of same-property sales in Green Meadow that happened before and after announcement of the logistics center proposal, and finds that ...” this is an appropriate analytical technique that strengthens Reeks’ conclusions.”
- Reeks’ conclusion that “the high likelihood of redevelopment of Green Meadow Golf Course with an industrial use has had no impact on the prices paid for dwellings in Ridgecrest” is still applicable. Importantly, Reeks also notes that “price increases coincide with the overall Hudson market,” providing a sound external point of reference.
- The Camois Report notes that “one concern with this type of analysis is the fact that the warehouse proposal has been publicly announced does not mean that all residential real estate buyers have knowledge of it. Nor does the prospect of a new distribution facility necessarily have the same impacts as the existence of such a facility, with its attendant noise, lights, and increased traffic. To address this, Mr. Reeks analyzes similar, completed developments elsewhere in southern New Hampshire to assess the effects of the existence of such a facility on neighboring residential property values. He looks at Pettengill Commerce Park in Londonderry/Manchester, a Walmart distribution facility in Raymond, and a new industrial/warehouse facility in Sagamore Industrial Park in Hudson.”
- By doing so, the Camoin Report suggests Reeks’ analysis of Pettengill Commerce Park provides a sound point of comparison. ...and provides good support for his conclusion that the proximity of Pettengill

²³ See Memorandum to Steven Reichert, Fuss & O’Neill, Inc., dated November 21, 2022, from Camoin Associates regarding Peer Review of Hudson Logistics Center Fiscal Impact Analysis and Real Estate Appraisal Services Report (the “Camoin Report”).

²⁴ Camoin Report, Key Findings, p.2.

Commerce Park, including the Webb distribution facility, does not adversely affect neighboring residential property values.”

- The Camoin Report also notes methodological points raised by Russ Thibeault of Applied Economic Research who reviewed Mr. Weeks’ previous (2020) analysis of the potential impacts of the proposed Hudson Logistics Center. The Camoin Report, however, concludes that “while Thibeault does raise valid methodological points, the analysis may be “good enough” in the face of an unobtainable perfection, limited cases for comparison, and finite budgets.
- Lastly, the Camoin Report concludes that “Mr. Reeks’ conclusion that the proposed Hudson Logistics Center would not adversely affect neighboring or nearby property values appears defensible.”

20. Accordingly, and consistent both with the utilization of industry standards and methodology, and as further independently peer reviewed by the Board’s peer review professionals, the data and evidence before the Planning Board conclusively shows that not only would there be no significant diminution in value of surrounding properties suffered, but more importantly, the Updated Reeks Report concludes there would be no diminution of surrounding property values at all by reason of the Amended HLC Project.

- **§275-6(B) Traffic circulation and access, including adequacy of entrances and exits, traffic flow, sight distances, curb cuts, turning lanes and traffic signalization.**

21. The Applicant and its team have undertaken an extension traffic analysis of the Amended Project, in consultation with the Town (including the Planning Board, Fire Department, Police Department, and Town Engineer), the New Hampshire DOT (“NHDOT”), the Town’s peer review engineering professionals, Fuss & O’Neill, and Stantec.

22. The adequacy of the Amended Project’s traffic circulation and access, including adequacy of entrances and exits, traffic flow, sight distances, curb cuts, turning lanes and traffic signalization, has been demonstrated, as confirmed below. See Traffic Impact Study for Hudson Logistics Center, Hudson, New Hampshire, Prepared for Hillwood Enterprises, L.P. by Langan Engineering & Environmental Services, Inc., dated September, 2022 (Revised October, 2022) (the “Updated TIS”). The Updated TIS for the Amended Project builds upon the extensive traffic review and analysis previously completed for the Approved Project.²⁵

²⁵ The Updated TIS for the Amended Project references the extensive traffic review and analysis previously completed for the Approved Project, including but not limited to, the following: (i) Traffic Impact Study for Hudson Logistics Center, Hudson, New Hampshire, Prepared for Hillwood Enterprises, L.P. by Langan Engineering & Environmental Services, Inc., dated April, 2020 (Revised September, 2020)(the “TIS”); (ii) TIS Supplement prepared by Langan dated September, 2020; (iii) Potential Peak

23. As a result of this consultation and review, a final Traffic Impact Study, final Amended Project Site Plans, proposed on-site traffic design, and off-site traffic control and roadway conceptual designs have been prepared and peer reviewed. The information prepared by the Applicant and others is as follows:

- Traffic Impact Study for Hudson Logistics Center, dated September, 2022 (Revised October, 2022);
- Response to Peer Review of Traffic, dated October 10, 2022, prepared by Langan;
- Response to comments received at October 12, 2022 Planning Board hearing, dated October 26, 2022, prepared by Langan (traffic signalization upgrades);
- Greater Boston Truck Distribution Map and Location List presentation slide (undated), presented at Planning Board's November 9, 2022 Public Hearing;
- Overall (Offsite) Corridor Improvements Plan, dated October 10, 2022;
- Applicant's PowerPoint Presentation to Planning Board, dated October 12, 2022 (including summary of traffic study area, land use, shifts, trip generation, truck trips, trip distribution, site access, capacity analysis, and proposed off-site improvements and related mitigation);
- Fuss & O'Neill Peer Review Letter – Off-Site Traffic Improvements, dated November 29, 2022;
- Memorandum to Elvis Dhima, P.E., dated December 5, 2022, from David MacNamara, P.E., Stantec, enclosing response to November 29, 2022 Fuss & O'Neill Peer Review Letter – Off-Site Traffic Improvements, including off-site improvements and Memorandum from John Plante, P.E., Langan, dated August 17, 2022, to David McNamara, Stantec, enclosing subsurface exploration data in connection with off-site improvements; and,
- Letter to John D. Plante, P.E., Langan., dated December 14, 2022, from Brian A. Desfosses, P.E., Assistant District Engineer, State of New Hampshire Department of Transportation.

Season Trip Generation Memorandum from Langan dated 9.22.20; (iii) VISSIM Evaluation of Merge and Weave Segments Along Sagamore Bridge Road, prepared by Stantec, dated 8.20.20; (vi) Synchro files associated with TIS, dated 9.9.20; (iv) Conceptual Off-Site Improvement Plans included in the Supplemental TIS, dated September, 2020; (v) Memorandum to Brian Defosses, NHDOT, dated 10.9.20, from John Plante, P.E., Langan (Response to TIS Comments); (vi) Trip Generation Review, dated 10.19.20, prepared for Hillwood Enterprises, L.P., by Richard S. Bryant, P.E., Stantec (includes a third party peer review by traffic engineering consultants); (vii) Applicant's PowerPoint Presentation to Planning Board, dated November 18, 2020 (including summary of traffic analysis, trip distribution, proposed off-site improvements and related mitigation, and reduction of vehicle queuing created by off-site improvements); and, (viii) Traffic Peer Review prepared by VHB, dated 10.15.20. All of the documents referenced herein, as well as other documents produced for the record in connection with the Approved Project, are expressly incorporated into the record by reference for the Amended Project site plan hearing.

24. The results of the Updated TIS indicates that the Amended Project and associated proposed off-site improvements are compliant with applicable Site Plan criteria.
25. We note that when compared to the Approved Project, the Amended Project results in similar, or a reduction in, potential impacts. The Amended Project anticipates significantly less average daily traffic than the Approved Project.
26. Hillwood is committing to the implementation of all of the off-site traffic improvements referenced as a part of the Approved Decision, into the Amended Project, subject to NHDOT permits.
27. The data and evidence presented by the Applicant regarding compliance with Section 275-6(B) of the Regulations has been thoroughly reviewed as a part of the Amended Project.²⁶
28. As a result of this consultation and review process, the peer review and other traffic engineering professionals have unanimously confirmed the adequacy and scope of the traffic analysis on-site, as well as off-site, including proposed mitigation.
29. The NHDOT has reviewed the Traffic Impact Study (TIS) for the Amended Project and found that the currently proposed mitigation is appropriate to mitigate the development's traffic impact.²⁷
30. The Board's professional traffic engineering peer review engineers, Fuss & O'Neill, also thoroughly reviewed the Amended Project's traffic circulation and access, including adequacy of entrances and exits, traffic flow, sight distances, curb cuts, turning lanes and traffic signalization.²⁸
31. The data and evidence presented by the Applicant regarding compliance with Section 275-6(B) of the Regulations has been thoroughly reviewed and corroborated and

²⁶ See Peer Review, Traffic Study, prepared by Fuss & O'Neill, dated September 28, 2022; Response to Peer Review of Traffic, dated October 10, 2022, prepared by Langan; Response to comments received at October 12, 2022 Planning Board hearing, dated October 26, 2022, prepared by Langan (traffic signalization upgrades); Greater Boston Truck Distribution Map and Location List presentation slide (undated), presented at Planning Board's November 9, 2022 Public Hearing; Fuss & O'Neill Peer Review Letter – Off-Site Traffic Improvements, dated November 29, 2022 ; Memorandum to Elvis Dhima, P.E., dated December 5, 2022, from David MacNamara, P.E., Stantec, enclosing response to November 29, 2022 Fuss & O'Neill Peer Review Letter – Off-Site Traffic Improvements, including off-site improvements and Memorandum from John Plante, P.E., Langan, dated August 17, 2022, to David McNamara, Stantec, enclosing subsurface exploration data in connection with off-site improvements; and, Peer Review, Traffic Study #2, Fuss & O'Neill, dated November 29, 2022.

²⁷ See Letter to John D. Plante, P.E., Langan Engineering & Environmental Services, Inc., dated December 14, 2022, from Brian A. Desfosses, P.E., Assistant District Engineer, State of New Hampshire Department of Transportation; (stating that NHDOT has reviewed the Traffic Impact Study (TIS) for the revised project and found that the currently proposed mitigation is appropriate to mitigate the development's traffic impact).

²⁸ See Footnote 26 above.

there is no legitimate and substantive evidence tending to rebut or undermine the foundational conclusion that the improvements proposed by the Applicant to mitigate anticipated traffic impacts are adequate to support the project.

- **§275-6(C) Pedestrian and bicycle safety and access.**

The Applicant has undertaken efforts to provide for pedestrian and bicycle safety and access in conformity with Section 275-6(C) of the Regulations as follows.

32. Specifically, pedestrian accommodations provide circulation throughout the site in areas of pedestrian activity and emergency egress as depicted on the Amended Site Plans. A sidewalk is provided along Green Meadow Drive, through to the pick-up/drop-off area, and to the employee entrance. Multiple sidewalks and pedestrian crosswalks are provided in the employee parking lots providing safe and protected pedestrian access for the parking lots to the building. Sidewalks are provided adjacent to the building and provide access to the employee entrance. The pick-up/drop-off area has been situated to direct access to the employee entrance via a sidewalk. Bike racks are provided adjacent to the employee entrance. The site driveways are wide enough to accommodate bicycles and vehicles.
33. The Project plans have been extensively peer reviewed by Fuss & O'Neill to ensure compliance with applicable code requirements, including sidewalk and bicycle requirements. The Applicant's engineering and design team provided detailed responses to Fuss & O'Neill in order to respond to those matters, to ensure that no Project design or operational conditions would involve danger or injury to health or safety.
34. In addition to onsite operational improvements referenced above, the Applicant is offering for the Amended Project, as it did with the Approved Project, to provide \$250,000 to the Town of Hudson's sidewalk fund for the purpose of funding off-site pedestrian and bicycle safety improvements, including a sidewalk along the easterly side of Lowell Road extending from Rena Avenue to Wal-Mart Boulevard. In the event these funds are not used in this location, these funds may be used for general sidewalk purposes consistent with the purposes of this fund.
35. Moreover, the Applicant is offering to provide an easement (and funding) for an area extending for over ½ mile along the Property's entire westerly boundary along the Merrimack River, for the Town's future establishment of a recreational pedestrian and bicycle trail, intended to provide a link between existing future recreational areas extending from Sagamore Bridge Road southerly past the southerly boundary of the Property.
36. As a result, and based upon the matters of record in this hearing, the Amended Project has established adequate provision for both pedestrian and bicycle safety and access consistent with, and in conformance with, §275-6(C).

- **§275-6(D) Off-street parking and loading.**

The Applicant complies with the Town's off-street parking requirements as follows.

37. As a part of the Amended Project and based upon the Tenant's operational requirements for the Main Building and related improvements, the Amended Project will provide adequate parking and loading facilities in a manner that minimizes impact and reduces impervious surfaces as follows.
38. Based upon parking requirements in Section 275-8.C.2 of the Regulations for industrial uses, required parking includes 1 space for every 600 s.f. of gross floor space or 0.75 space for each employee of the combined employment of the two largest shifts, whichever is larger, the Amended Project is proposed to include a total of 1,585 parking spaces for employees and other visitors (where a total of 3,705 parking spaces are required), along with a total of 1,034 loading spaces to serve the proposed use. The Approved Project includes the approval of a total of 1,806 parking spaces on the Property (reduced by waiver from 4,777 parking spaces), along with a total of 1,244 loading spaces on the Property. This Amended Project results in a net reduction of 221 parking spaces, and a net reduction of 210 loading spaces when compared to the Approved Project. As was requested and approved in the Approved Project and Amended Project, the Planning Board has granted a waiver to reduce the required number of passenger parking spaces, as well as a reduction in parking space dimensions, which in turn reduces the amount of impervious surfaces that would otherwise needed to be treated as a part of the Amended Project stormwater management system. As a result, the amount of paved and other impervious surfaces has also been reduced by 1,645,479 square feet (or a reduction of approximately 37.8 acres, when compared to the currently Approved Project).
39. Because the proposed off-street parking is less than that which is required by the Regulations but still meets the needs of the Amended Project, the Applicant has requested, and the Planning Board unanimously voted to grant, a waiver from the required number of parking spaces. In short, given the nature of the proposed use and the personnel needed for same, the Amended Project does not demand the volume of parking spaces prescribed by the Regulations.
40. In addition, the Applicant had requested, and the Planning Board unanimously granted, a waiver from the parking space dimensional requirements to allow for the parking spaces to be reduced from 10' x 20' to 9 x 18' for the reasons described in the waiver request.

41. The Applicant is also providing for adequate loading facilities as required under Section 275-8.C.(6), as depicted on the Site Plans, and as confirmed by the Planning Board's peer review engineering consultant.²⁹
42. Reducing the number of off-street parking and the size of the off-street parking spaces utilized will minimize the impact of the development on the Property and minimize impervious surface area, while at the same time, adequately providing the Amended Project with sufficient parking and loading to meet operational needs.
43. The applicant has proposed thirty-seven (37) handicapped accessible parking spaces for the Amended Project, which well exceeds the minimum number of accessible spaces required based on the overall total of spaces proposed.
44. The data and evidence presented by the Applicant regarding compliance with Section 275-6(D) (Off-street parking and loading) of the Regulations has been thoroughly reviewed and corroborated and there is no legitimate and substantive evidence tending to rebut or undermine the foundational conclusion that the improvements proposed by the Applicant to mitigate anticipated traffic impacts are adequate to support the project.

- **§275-6(E) Emergency vehicle access, including fire lanes.**

The Applicant has undertaken efforts to ensure the provision of adequate emergency vehicle access, including fire lanes.

45. Provisions for emergency vehicle circulation have been provided at the two driveways and throughout the site, allowing for movements to all areas of the site. The proposed development also provides an emergency access road (extension of Steele Road as an easement) to provide the Town's emergency services access adjacent to the Merrimack River. At gated access points, emergency services will be provided with direct access as required. Fire lanes will be provided at locations where loading docks and parking are not adjacent to the building (as coordinated with, and approved by, the Hudson Fire Chief).
46. The Amended Project Site Plans have been peer reviewed by Fuss & O'Neill, to ensure compliance with applicable Regulations, including emergency access requirements.³⁰ The Applicant's engineering and design team has provided detailed responses to Fuss & O'Neill in order to respond to those matters, to demonstrate that

²⁹ See Fuss & O'Neill Peer Review Letter #1, dated September 28, 2022 noting compliance with the loading requirements under HR 275-8.C.(6). ("The applicant has provided loading space calculations on the plan set showing that 224 loading spaces are required and has proposed 1,034 loading spaces.")

³⁰ See Site Plans; Fuss & O'Neill Peer Review Letter #1, dated September 28, 2022 – Site Plan, Administrative, Driveway, Utility Design, Drainage Design/Stormwater, Zoning, Erosion Control, Wetland Impacts, Landscaping, Lighting, Federal, State & Local Permits, Other.

no project design or operational conditions would involve danger or injury to health or safety.³¹

47. The Hudson Fire Department has, based upon the review of the materials of record, confirmed the adequacy of emergency access, including fire lanes, from a public safety standpoint.³²
48. The Hudson Police Department has confirmed it has no further comment on the Amended Project.³³
49. The data and evidence presented by the Applicant regarding compliance with Section 275-6(E) (Emergency vehicle access including fire lanes) of the Regulations has been thoroughly reviewed and corroborated and there is no legitimate and substantive evidence tending to rebut or undermine the foundational conclusion that the improvements proposed by the Applicant to mitigate anticipated traffic impacts are adequate to support the Amended Project.

- **§275-6(F) Stormwater drainage and groundwater recharge.**

The Applicant has undertaken extensive efforts to ensure the provision of adequate stormwater drainage and adequate groundwater recharge, as demonstrated by the following.

50. The Applicant's Project Team filed Amended Project site plans and specifications, as well as a comprehensive stormwater management report, and other requirements depicting the Amended Project's stormwater management design, treatment summary and collection system, and specifications and details which provide for stormwater drainage and groundwater recharge in accordance with the Town of Hudson Stormwater Ordinance (Chapter 290).³⁴

³¹ See Langan Response to September 28, 2022 Fuss & O'Neill Peer Review Letter, dated October 12, 2022.

³² See Memorandum to Brian Groth, Town Planner, dated September 29, 2022, from Scott Tice, Fire Chief, Hudson Fire Department; Hudson Logistics Center: Fire Department Comment Response Letter to Brian Groth, Town Planner, dated November 28, 2022, from Langan Engineering and Environmental Services, Inc.; and, Memorandum to Brian Groth, Town Planner, dated September 29, 2022, from Scott Tice, Fire Chief, Hudson Fire Department ("The engineer and the developer have addressed all of our concerns to this point. With their anticipated continued cooperation I see no reason for the Hudson Fire Department to not support this project from a public safety standpoint").

³³ See Site Plan Application Department Comment Response Form, dated September 20, 2022.

³⁴ See Project Site Plans (Rev. December 19, 2022), including: Overall Grading & Drainage Plans (CG100-CG123); Grading & Drainage Details (CG501-CG506); Soil Erosion & Sediment Control Plan (Phases 1-3)(CE101-CE304); Soil Erosion & Sediment Control Details (CE501-CE503); and Stormwater Management Report for Hudson Logistics Center, dated September, 2022 (Revised December 2022), prepared for Hillwood Enterprises, LP by Langan Engineering & Environmental Services, Inc., (the "Stormwater Report"); Revised Appendix F. Infiltration Feasibility Report for Stormwater Management, Hudson Logistic Center, Hudson, New Hampshire, dated October 2022, prepared by Langan. Note that a

51. The Project Site Plans and Stormwater Report have been peer reviewed by Fuss & O'Neill to ensure compliance with applicable stormwater management requirements.³⁵ The Applicant's engineering and design team responded to Fuss & O'Neill's peer review comments to ensure that the proposed stormwater management system will support the requirements of the Amended Project.³⁶
52. The Applicant also met with the Lower Merrimack River Local Advisory Committee on November 30, 2022, and provided supporting materials to the Committee in connection with the Committee's review of stormwater and related mitigation as related to the potential impacts to the Merrimack River. Based upon that meeting, the Committee issued a letter.³⁷
53. Specifically, the Committee recommended that "... where the over-all environmental impact of the new design is less than the previously approved Project, the Committee decided not to make any substantive suggestions with the hope and expectation that the commitments made to NHDES and the Town of Hudson (including conservations easements and an increased building set back from the Merrimack River) would be fulfilled."³⁸
54. The Project Stormwater Management Plan is subject to review, comment and approval by the NHDES of an Alteration of Terrain Permit and a NHDES Wetland Permit, as well as the US Army Corps Programmatic Permit for New Hampshire, a US EPA NPDES Construction General Permit, as well as a New Hampshire Small MS4 General Permit, which is enforced, in part, through the Town of Hudson Stormwater Ordinance as well as the NHDOT MS4 Permit.
55. The data and evidence presented by the Applicant regarding compliance with Section 275-6(F) (Stormwater drainage and groundwater recharge) of the Regulations has been thoroughly reviewed and corroborated and there is no legitimate and substantive evidence tending to rebut or undermine the foundational conclusion that the stormwater management improvements proposed by the Applicant both comply with the Town of Hudson Stormwater Ordinance (Chapter 290), and adequately provide for stormwater management designed to mitigate anticipated stormwater impacts in order to support the Amended Project.

Memorandum from James Gove, Gove Environmental, dated 12.7.20 regarding Green Meadow Golf Course Soil Mapping, is incorporated by reference into the record of this Amended Project site plan hearing.

³⁵ See Fuss & O'Neill Peer Review Letter #1, dated September 28, 2022 – Site Plan, Administrative, Driveway, Utility Design, Drainage Design/Stormwater, Zoning, Erosion Control, Wetland Impacts, Landscaping, Lighting, Federal, State & Local Permits, Other.

³⁶ See Langan Response to September 28, 2022 Fuss & O'Neill Peer Review Letter, dated October 12, 2022.

³⁷ See Comment Letter from Francis Murphy, Chair, Lower Merrimack River Local Advisory Committee, dated December 1, 2022, to Ridge Mauck, NHDES.

³⁸ Id.

- **§275-6(G) Water supply, wastewater disposal and solid waste disposal.**

The Applicant has made adequate provision for water supply, wastewater disposal, and solid waste disposal, based upon the following.

56. The Applicant has made adequate provision for water supply. The Amended Project Site Plans include utility plans captioned as Overall Utility Plan (CU100-CU120); Northeast Access Road, East Access, Fire Protection, and Building Water Profiles (CU201-CU217); Sewer Profiles (CU300-CU313); and Utility Details (CU501-CU506), which include plans, specifications and related notes and details related to water and sewer utilities.

57. The Applicant's water and sewer utilities have been peer reviewed by Weston & Sampson and Fuss & O'Neill, and have also been reviewed by the Hudson Town Engineer, and the proposed water and sewer services facilities and infrastructure for the Amended Project are subject to approval pursuant to the Town's utility requirements.³⁹ Beyond the foregoing, the Applicant was awarded adequate sewer disposal allocation by the Town and has paid the Town for said allocation, upon which it continues to rely.

58. The Project was re-evaluated to reconfirm that the Hudson water supply system is capable of handling the domestic water and supplemental fire supply to the Amended Project site by the Town's water peer review consulting engineers, Weston & Sampson.⁴⁰ We understand that Weston & Sampson concurs with the Applicant's

³⁹ See Email correspondence to Brian Groth, dated September 19, 2022, from Elvis Dhima, P.E., Town Engineer, concerning traffic controls, water, sewer; Fuss & O'Neill Peer Review Letter #1, dated September 28, 2022 – Site Plan, Administrative, Driveway, Utility Design, Drainage Design/Stormwater, Zoning, Erosion Control, Wetland Impacts, Landscaping, Lighting, Federal, State & Local Permits, Other; Response to September 28, 2022 Fuss & O'Neill Peer Review Letter, dated October 12, 2022, prepared by Langan; Response to Town Engineer Comments, dated October 26, 2022, prepared by Langan; Water Peer Review Memorandum to Elvis Dhima, Town Engineer, dated November 11, 2022, from Weston & Sampson RE: Hudson Logistics Center – Water System Review; Langan Response Letter to November 11, 2022 Weston & Sampson Water Peer Review Memo, including Final water /pump sta. designs, dated November 22, 2022; Fuss & O'Neill Peer Review Letter #2, dated December 9, 2022 –Utility Design; Langan Response to Fuss & O'Neill Peer Review Letter #2, dated December 22, 2022; Engineering Report for Gravity Sewer and Sanitary Sewer Lift Station, Hudson Logistics Center, Hudson, New Hampshire, dated December 22, 2022, prepared for Hillwood by Langan Engineering and Environmental Services, Inc..

⁴⁰ See Water Peer Review Memorandum to Elvis Dhima, Town Engineer, dated November 11, 2022, from Weston & Sampson RE: Hudson Logistics Center – Water System Review; Langan Response Letter to November 11, 2022 Weston & Sampson Water Peer Review Memo, including Final water /pump sta. designs, dated November 22, 2022; Fuss & O'Neill Peer Review Letter #2, dated December 9, 2022 – Utility Design; Langan Response to Fuss & O'Neill Peer Review Letter #2, dated December 22, 2022; and,

opinion that the Hudson water and sewer system can support the water and sewer demands of the Hudson Logistics Center.⁴¹

59. The Applicant has made adequate provision for solid waste disposal. Unlike many commercial facilities, the Main Building will have internal refuse control and dumpsters and compactors directly connected to the building, occupying loading dock bays. There are no freestanding dumpsters elsewhere on the site. Accordingly, trash removal will be conducted by a commercial trash hauler.

60. The data and evidence presented by the Applicant regarding compliance with Section 275-6(G) (Water supply, wastewater disposal and solid waste disposal) of the Regulations has been thoroughly reviewed and corroborated and there is no legitimate and substantive evidence tending to rebut or undermine the foundational conclusion that the water, sewer and solid waste improvements proposed by the Applicant adequately provide for the Amended Project without undue burden on the Town of Hudson's municipal water, sewer and solid waste facilities.

- **§275-6(H) Elimination of undesirable and preventable elements of pollution, such as noise, smoke, soot, particulates or any other discharge, into the environment which might prove harmful to persons, structures, or adjacent properties.**

61. The Applicant's Amended Project demonstrates that it shall eliminate undesirable and preventable elements of pollution, such as noise, smoke, soot, particulates or any other discharge, into the environment which might prove harmful to persons, structures or adjacent properties in the following ways. With the substantially reduced Amended Project scope and size, and based upon the reports prepared by the Applicant's professional team and peer reviewed by the Board's professional consultants, the Applicant feels it has confirmed that the Amended Project will eliminate undesirable and preventable elements of pollution, such as noise, smoke,

Engineering Report for Gravity Sewer and Sanitary Sewer Lift Station, Hudson Logistics Center, Hudson, New Hampshire, dated December 22, 2022, prepared for Hillwood by Langan Engineering and Environmental Services, Inc.

⁴¹ See also the following documentation which was produced as a part of the Approved Project, including: (i) Memorandum to Elvis Dhima, Town Engineer, dated December 15, 2020, prepared by Weston & Sampson Engineering, Inc.; (ii) Memorandum to Brian Groth, Town Planner, to Elvis Dhima, Town Engineer, dated February 24, 2021, confirming the water utility system can accommodate domestic and fire protection for the Project; (iii) the Applicant's request to the Town, by letter dated January 5, 2021, through the Town Engineer; (iv) Town Engineer Memorandum, dated January 7, 2021; (v) and Town approval for access to the Town sewer system with an allocation of 36,900 GPD for the amount of \$130,257 to be paid by Hillwood; (vi) Hillwood has paid the sewer use allocation fees to the Town; and, (vii) the Project's proposed sewer facilities and infrastructure would be subject to the Town's sewer line acceptance procedures. See Memorandum to Brian Groth, Town Planner, to Elvis Dhima, Town Engineer, dated February 24, 2021, confirming the sewer facilities allocation. All of the information above is expressly incorporated into, and is a part of, the record for this Amended Project site plan hearing.

soot, particulates or any other discharge, into the environment which might prove harmful to persons, structures or adjacent properties in the following ways.

62. The Applicant's Project has demonstrated that noise pollution and other elements of noise can be adequately controlled and mitigated such that it has demonstrated compliance with the Hudson Noise Ordinance. In addition to the sound evaluation performed with respect to the Approved Project,⁴² the Applicant commissioned the preparation of a new sound evaluation study from Epsilon Associates (the "Epsilon Sound Study"), to demonstrate that the Amended Project will comply with the Town of Hudson Noise Ordinance (Town Code, Chapter 294).⁴³ The Epsilon Sound Study was reviewed by the Board and the Board's acoustical engineering peer review consultants.⁴⁴
63. As a part of the Epsilon Sound Study, Epsilon recommended mitigation to include, among other things: (a) the construction of an earthen berm and sound fence with a 10-foot-tall, 2,010-foot-long sound fence on top of the berm, and two 15-foot-tall fences, a 378-foot-long fence near the southeast edge of the main building and 407-foot-long fence east of the berm as shown on the Site Plans; (b) the equipping of onsite terminal tractors with broadband or ambient-sensing backup alarms to

⁴² The following documents from the Approved Project are incorporated into the record of the Amended Project site plan hearing, and include the following: (i) "Sight Sound Evaluation and Control - Proposed Hudson Logistics Center, Hudson, NH," Prepared by Benjamin C. Mueller, P.E., OAA File 4228A, 5.18.20.; (ii) Fuss & O'Neill/HMMH Peer Review Letter, 6.29.20 – Sound.; (iii) Sound Study Update, dated 7.13.20, prepared by Ostergaard; (iv) Letter from HMMH to Steven Reichert, dated 9.15.20 with the subject "Peer Review of the Ostergaard Acoustical Associates Letter dated 13 July 2020 with the subject "Sound Study Update, Proposed Hudson Logistics Center, Hudson, New Hampshire; (v) Memorandum to Brian Groth/Town of Hudson from Ostergaard, dated 12.1.20 (response to public comments); (vi) Sound Study (Revision 2), prepared Ostergaard, dated 12.1.20; (vii) Letter from Christopher Bajdek to Steven Reichert, dated 1.14.21 with the subject "Peer Review of the report entitled 'Site Sound Evaluation and Control - Proposed Hudson Logistics Center, Hudson, NH,' by Ostergaard Acoustical Associates and other related materials" (The revised Report addresses the majority of the comments made in prior reviews. However, it is my professional opinion that the applicant has not demonstrated that the Project will produce noise levels that are within 10 dB(A) of background sound levels in the community, as required by Section 294-4 (D) of the Noise Ordinance."); (viii) Letter to Brian Kutz, Hillwood Enterprises, L.P., dated 2.10.21 prepared by Ostergaard (Re: Sound Study Update – Code Compliance Support Information); (ix) Fuss & O'Neill/HMMH Peer Review Letter, dated 2.17.21 – Peer Review of the Ostergaard Acoustical Associates Letter dated 10 February with the subject "Sound Study Update – Code Compliance Support Information – Proposed Hudson Logistics Center, Hudson, New Hampshire."

⁴³ See Sound Level Assessment Report – Hudson Logistics Center Project, dated September 7, 2022, prepared by Epsilon Associates, Inc., as supplemented by an Updated Sound Level Assessment Report, Hudson Logistics Center Project, Town of Hudson, Hillsborough County, NH, dated November 23, 2022, both prepared by Epsilon Associates, Inc. (collectively, the "Sound Study" or "Epsilon Sound Study").

⁴⁴ See Peer Review of the Sound Study for the Amended Site Plan for Hudson Logistics Center in Hudson, NH, dated September 29, 2022, prepared by Harris, Miller, Miller and Hanson, Inc. (HMMH); Letter Response from Epsilon Associates, Inc., dated October 11, 2022, to HMMH Peer Review Letter, dated September 29, 2022; and Letter to Steven Reichert, P.E., Fuss & O'Neill, Inc., dated December 12, 2022, from Christopher Menge, INCE Sr. Vice President/Principal Consultant, HMMH, Inc. ("HMMH Closure Letter").

minimize any tonal noise from reversing vehicles, and which are designed to provide a similar level of worker protection while minimizing the impact of tonal sounds on nearby receptors; (c) providing that construction activities should adhere to the limitations set forth in Noise Limit 9 as discussed in Section 8.1.9 of the Epsilon Sound Study; and, (d) the restricting certain site activities such as idling and horn use to comply with the requirements of Noise Limit 10 as discussed in Section 8.1.10 of Epsilon Sound Study.⁴⁵

64. These proposed improvements are reflected in the Amended Project Site Plans.
65. The Epsilon Sound Study adds that the "...proposed Project also results in a further reduction in predicted continuous noise levels at the receptor locations adjacent to the residential and other areas when compared to the previously Approved Project."⁴⁶
66. Moreover, the Epsilon Sound Study adds that "since the applicable provisions of the Hudson Noise Ordinance will be complied with, the proposed Project and related operations at the site make adequate provision '... to guard against such conditions as would involve danger or injury to health or safety,...' and will eliminate, "undesirable and preventable elements of pollution, such as noise, ..., into the environment which might prove harmful to persons, structures or adjacent properties,' all as required under Section 275-6.H of the Hudson Site Plan Regulations."⁴⁷
67. The Epsilon Sound Study states that "the results of the modeling demonstrate that, with the proposed mitigation measures, and provided that applicable performance practices under the Hudson Noise Ordinance are complied with, the future sound levels from the Project are predicted to be below the limits set forth in the Hudson Town Code. This includes limits applicable under §249-4 that are not otherwise excluded or exempt under § 249-5, at all receptors under the Hudson Noise Ordinance and applicable noise requirements under the Site Plan Regulation criteria. Thus, no negative acoustical impact is anticipated."⁴⁸
68. The Epsilon Sound Study also states that the proposed mitigation features and use of non-tonal back-up alarms for on-site terminal tractors demonstrate good acoustical planning and will put the end users in the best position to minimize impacts on neighbors. Section 249-1 of Chapter 249 of the Hudson Ordinances states the Noise Ordinance "is enacted to protect, preserve and promote the health, safety, welfare and quality of life for the citizens of Hudson, New Hampshire, through the reduction, control and prevention of noise by establishing maximum noise levels upon and between premises, prohibiting certain noise-producing activities..."

⁴⁵ See Epsilon Sound Study, Section 9.0, p. 9-1.

⁴⁶ See Epsilon Sound Study, Section 10.0, p. 10-1.

⁴⁷ See Epsilon Sound Study, Section 10.0, p. 10-1.

⁴⁸ See Epsilon Sound Study, Section 10.0, p. 10-1.

69. Ultimately, the Epsilon Sound Study provides that assuming the performance standards described in the Hudson Noise Ordinance above are followed, the proposed site activities will comply with the applicable standards described under Chapter 249. The Amended Project also results in a further reduction in predicted continuous noise levels at the receptor locations adjacent to the residential and other areas when compared to the Approved Project.
70. Moreover, since the applicable provisions of the Hudson Noise Ordinance will be complied with, the Amended Project and related operations at the site make adequate provision "... to guard against such conditions as would involve danger or injury to health or safety,..." and will eliminate, "undesirable and preventable elements of pollution, such as noise, ..., into the environment which might prove harmful to persons, structures or adjacent properties," all as required under Section 275-6.H of the Hudson Site Plan Regulations.⁴⁹
71. The Applicant's Wildlife Consultant, Lucas Environmental, has prepared an updated wildlife habitat evaluation⁵⁰ (the "Wildlife Study Update") and has re-confirmed no detrimental impact to wildlife arising from sound, and noted as follows:
- "In the short term, temporary sound (noise) impacts will result from construction of the Project. As with most construction projects, these effects will be temporary, will occur mostly during normal working hours and may, for short durations, be audible off-Property. More variable noise levels during construction may affect foraging, breeding, and nesting behavior of wildlife in the immediate Project area. Noise during construction will be temporary but may possibly cause wildlife to reduce their use of land immediately adjacent to the Property during normal working hours. But when these impacts are considered in the context of the Property setting (e.g., existing noise resulting from Circumferential Highway and Lowell Road), it is considered unlikely that these short-term impacts will result in a significant impact to the wildlife community in the area."⁵¹
 - The Wildlife Study Update states the "Project will employ common and practical Best Management Practices ("BMPs") to mitigate short-term noise impacts. Long-term increased noise levels will occur, resulting in a potential overall increase in ambient sound levels from increased truck and vehicle traffic, idling trucks, and trucks backing

⁴⁹ Id.

⁵⁰ See Wildlife Habitat Evaluation 2022 Update, Hudson Logistics Center, dated 9.9.22, prepared for Hillwood Enterprises, L.P. by Lucas Environmental, LLC (Section 5.2). See also, Section 5.2 (Sound) in Wildlife Habitat Evaluation, Hudson Logistics Center, dated 11.9.20, prepared for Hillwood Enterprises, L.P. by Lucas Environmental, LLC, which are incorporated by reference into the record of the Amended Project site plan hearing.

⁵¹ See Wildlife Study Update, Section 5.2, pp. 14-15.

up. The proposed Project incorporates several sound mitigation components that complies with the state and local noise ordinance requirements. Limitations on vehicle idling are also included, consistent with Env-A 1102.02 (Idling Limitations for Motor Vehicles). Additionally, limitations to the degree practicable on loudspeaker use, vehicle idling, and other high decibel noises are also included, consistent with the Town of Hudson Noise Ordinance (Chapter 249 of the Hudson Town Code).”⁵²

- The Wildlife Study Update adds that “...wildlife species that are tolerant of development, such as many of the commonly occurring wildlife at the Property, are not anticipated to be affected by the proposed noise levels as they are accustomed to existing noise levels from Circumferential Highway, Lowell Road and from the on-site and abutting property activity, and will acclimate to the facility operational noise levels after the Hudson Logistics Center is completed. Based on the Sound Level Assessment Report, dated September 9, 2022 and prepared by Epsilon Associates, Inc., noise levels at all receptor locations analyzed, and in general, are less than those of the previously Approved Project.”⁵³
- Further, the Wildlife Habitat Update concludes that “wildlife species that are tolerant of development, such as many of the commonly occurring wildlife at the Property, are not anticipated to be affected by the proposed noise levels as they are accustomed to existing noise levels from Circumferential Highway, Lowell Road and from the on-site and abutting property activity, and will acclimate to the facility operational noise levels after the Hudson Logistics Center is completed. Based on the Sound Level Assessment Report, dated September 9, 2022 and prepared by Epsilon Associates, Inc., noise levels at all receptor locations analyzed, and in general, are less than those of the previously Approved Project.”⁵⁴

72. The Planning Board’s acoustical peer review consultant, HMMH, concluded that “...all comments have been adequately addressed.”⁵⁵

73. The Applicant’s Amended Project also demonstrates that air pollution can be adequately controlled and mitigated such that it has demonstrated compliance with

⁵² Id., p.15.

⁵³ Id., p.15.

⁵⁴ Id., p.15

⁵⁵ See Letter to Steven Reichert, P.E., Fuss & O’Neill, Inc., dated December 12, 2022, from Christopher Menge, INCE Sr. Vice President/Principal Consultant, HMMH, Inc.(HMMH Closure Letter).

applicable state and federal air pollution control regulations, as demonstrated by the following.

74. The Applicant's air pollution control engineer, Epsilon Associates, Inc., prepared an "Air Quality Impacts Report, Hudson Logistics Center, Hudson, New Hampshire," dated September 7, 2022 (Revised December 20, 2022), as amended (the "Air Quality Report").⁵⁶
75. The Air Quality Report evaluated air quality impacts from stationary sources located onsite, as well as potential impacts from Project-generated traffic, for potential on-site and neighborhood impacts. The Air Quality Report also indicated that the Report has been prepared to analyze whether the potential air quality impacts meet certain air quality standards as prescribed by the Town of Hudson Site Plan Review Ordinance under Section 275-6 (General Requirements). One of these requirements is to show that adequate provisions be made for a development to demonstrate that a development will not contribute to a condition of air pollution, and to guard against such conditions which would subject the nearby properties to danger or injury to health or safety, and that no significant diminution in value of surrounding properties would be suffered. Further, the Amended Project is required to reduce and/or eliminate elements of pollution, such as noise, smoke, soot, particulates or any other discharge, into the environment which might prove harmful to persons, structures or adjacent properties." (See Air Quality Study, pp. 1-1 to 1-2).
76. Section 4.0 of the Air Quality Report describes how all applicable air quality standards will be met, and Section 4.7 of the Air Quality Report concludes that "since all predicted concentrations are below their applicable NAAQS and/or RTAP standards, it can be concluded that the proposed Project will not cause or contribute to a condition of air pollution in the area." Further, and as noted in Section 2.1 of the Air Quality Report, "the NAAQS are established to be protective of both short-term health effects and long-term health effects by defining the averaging time for the standards. The secondary standards are protective of wildlife, crops, vegetation and buildings."
77. Section 4.6.2 of the Air Quality Report states that "based upon the analysis above which demonstrates that both stationary and mobile sources of potential pollutants are expected to be well below applicable federal and state standards, the Project's diesel emissions including particulates from exhaust, tire wear, and brake wear, are not expected to cause or exacerbate health conditions, such as asthma, for those persons living in nearby residential dwellings."

⁵⁶ See Air Quality Impact Analysis, Hudson Logistics Center, Hudson, New Hampshire, dated September 7, 2022, prepared by Epsilon Associates, Inc.; Peer Review of the Hudson Logistics Center Project Air Quality Modeling Report Letter to Steve Reichert, P.E. Senior Project Director Fuss & O'Neill, Inc., dated November 18, 2022, from TRC Environmental Corporation; Comment Response for Air Modeling Analysis Prepared for Hudson Logistics Center, dated November 30, 2022, prepared by Epsilon Associates, Inc.; and, Updated Air Quality Impact Analysis, Hudson Logistics Center, Hudson, New Hampshire, dated September 7, 2022 (Revised December 20, 2022, prepared by Epsilon Associates, Inc.

78. Therefore, with respect to air quality impacts, the Air Quality Study states that “since all predicted concentrations are below their applicable NAAQS and/or RTAP standards, it can be concluded that the proposed Project will not cause or contribute to a condition of air pollution in the area.” Because there is no legitimate evidence to the contrary, it would be reasonable for the Planning Board to conclude that the Amended Project will not subject the nearby properties to “danger or injury to health or safety” as a result of potential impacts to air quality. Moreover, the Amended Project is required to reduce and/or eliminate elements of pollution, such as smoke, soot, particulates or any other discharge, into the environment, which might prove harmful to persons, structures or adjacent properties, and as to air quality. The Air Quality Report demonstrates compliance with these requirements. Overall, with respect to air quality impacts, the Amended Project meets the requirements laid out in Chapter 275 of the Town of Hudson’s Site Plan Review regulations.”⁵⁷
79. The Air Quality Report also recommended certain mitigation, including: (a) prevention of unnecessary idling both during construction and post-construction operations as required by New Hampshire regulation ENV-A-1100; (b) secure permits for the backup power emergency generators, in accordance with ENV-A-610, a General State Permit (GSP) for Internal Combustion Engines – Emergency Generators or Fire Pump Engines; and, (c) incorporate practices for fugitive dust emissions during construction which are factored into the Stormwater Pollution Prevention Plan required to be implemented under the U.S. EPA NPDES Construction General Permit Program.⁵⁸
80. Section 4.7.1 of the Air Quality Report also refers to an air quality report prepared for the Approved Project.⁵⁹ The Air Quality Report states the following. “This analysis and Epsilon’s 2020 analysis reach the same conclusion –the evaluation shows that the impacts from mobile and stationary air emissions sources will not cause any condition of unhealthy air. The two analyses provide results generally within the same range, but specific results cannot be compared directly, because the analysis techniques have been updated. Most notably, this current analysis uses an updated version of EPA’s AERMOD program. Emission factors also incorporate an updated traffic analysis and reflect current best practices. Each of these changes means that the current analysis uses the best current science and analytical techniques, but it also means that any increases or decreases in presented results from the prior analysis are more likely to be attributable to changes in the analytical methods than to changes in the design or operation of the Project.”

⁵⁷ See Air Quality Study, pp. 4-1 to 4-7.

⁵⁸ See Air Quality Report, pp. 4-2 through 4-5.

⁵⁹ See Air Quality Impact Analysis, Hudson Logistics Center, Hudson, New Hampshire” (REVISED November 30, 2020), prepared by Epsilon Associates, Inc., and Memorandum to Brian Groth, dated October 31, 2020, from Dale T. Raczynski, PE, Principal, Epsilon Associates, Inc., both of which are incorporated into the record by reference into this Site Plan hearing.

81. The Applicant's Amended Project has demonstrated that potential pollution from stormwater management and runoff and work within regulated wetlands can be adequately controlled and mitigated such that it has demonstrated compliance with applicable local, state, and federal regulations, as demonstrated by the following:

- See Subsection F. Stormwater drainage and groundwater recharge, above.
- See Subsection M. Signage and exterior lighting, demonstrating compliance of lighting with applicable standards in order to prevent light pollution, below.
- See Wetlands Conditional Use Permit Application and related materials, unanimously approved by the Planning Board, which describe how the Amended Project demonstrates avoidance and minimization of impacts to wetland resources, protection of wetland resources, and prevention of downstream impacts, with no flooding or other adverse impacts from work, and the protection of wildlife interests.

82. The data and evidence presented by the Applicant regarding compliance with Section 275-6(H) (Elimination of undesirable and preventable elements of pollution) of the Regulations has been thoroughly reviewed and corroborated and there is no legitimate and substantive evidence tending to rebut or undermine the foundational conclusion that the Amended Project has eliminated or mitigated undesirable and preventable elements of pollution.

- **§275-6(I) Adequate provision for fire safety, prevention and control.**

The Applicant has undertaken efforts to ensure the provision of adequate fire safety, prevention and control, as follows.

83. The Amended Site Plans depict accessways which account for fire lanes and adequate provision for fire safety, prevention and control for the Main Building and other Property improvements, all of which were designed by professional engineers and others demonstrating that these measures are adequate to serve the Project.⁶⁰

84. The Hudson Fire Department has, based upon the review of the materials of record, confirmed the adequacy of fire safety, prevention and control.⁶¹

⁶⁰ See Project Site Plans, Sheets CS100-CS123.

⁶¹ See Memorandum to Brian Groth, Town Planner, dated September 29, 2022, from Scott Tice, Fire Chief, Hudson Fire Department; Hudson Logistics Center: Fire Department Comment Response Letter to Brian Groth, Town Planner, dated November 28, 2022, from Langan Engineering and Environmental Services, Inc.; and, Memorandum to Brian Groth, Town Planner, dated December 23, 2022, from Scott Tice, Fire Chief, Hudson Fire Department (“The engineer and the developer have addressed all of our concerns to this point. With their anticipated continued cooperation I see no reason for the Hudson Fire Department to not support this project from a public safety standpoint”).

85. The data and evidence presented by the Applicant regarding compliance with Section 275-6(I) (Adequate provision for fire safety, prevention and control) of the Regulations has been thoroughly reviewed and corroborated and there is no legitimate and substantive evidence tending to rebut or undermine the foundational conclusion that the improvements proposed by the Applicant to provide for adequate provision for fire safety, prevention and control to support the Amended Project.

- **§275-6(J) Harmonious and aesthetically pleasing DEVELOPMENT of the municipality and its environs.**

The Applicant has demonstrated the Project has adequately provided for harmonious and aesthetically pleasing development of the municipality and its environs in the following ways.

86. The Amended Project landscaping has been enhanced to provide both screening and buffering between the Amended Project buildings and the abutting residential properties.⁶²

87. The Applicant has undertaken extensive efforts through berming, buffering, landscaping, and other screening to ensure that the Amended Project remains compatible with the surrounding neighborhood.⁶³

88. Amended Project lighting has been designed to ensure no light spillover, and lighting poles and the Main Building are at heights which would not result in any visual impacts to the abutting residential properties to the south of the Property.⁶⁴

89. The Applicant also obtained the expert opinion of John D. Krebs, a Planning Consultant, who reviewed the Amended Project and stated in relevant part, the following:⁶⁵

⁶² See “Hudson Logistics Center, Site Plan & Conditional Use Permit Applications, Lowell Road, Map 234, Lots 5, 34 & 35, Map 239, Lot 1, Town of Hudson, Hillsborough County, New Hampshire,” dated September 9, 2022 (Revised December 19, 2022), prepared for Greenmeadow Golf Club, Inc. (Owner) and Hillwood (Applicant), by Langan Engineering and Environmental Services, Inc., including: Overall Lighting Plan (LL100-LL119); Lighting Plan & Details (LL501-LL503); Overall Planting Plan (LP100-LP123A); Landscape Notes & Details (LP501-LP503); Fuss & O’Neill Peer Review Letter #1, dated September 28, 2022 – Site Plan, Administrative, Driveway, Utility Design, Drainage Design/Stormwater, Zoning, Erosion Control, Wetland Impacts, Landscaping, Lighting, Federal, State & Local Permits, Other; Langan Response to September 28, 2022 Fuss & O’Neill Peer Review Letter, dated October 12, 2022;

⁶³ See Site Line Study, prepared by Langan, dated September, 2022; and, Response to comments received at October 12, 2022 Planning Board hearing, dated October 26, 2022, prepared by Langan (lighting heights, site views diagrams).

⁶⁴ See Hudson Logistics Center, Maximum Building Height Calculation Illustration (3 sheets)(undated), attached as Exhibit E to Staff Report #2; Amended Site Line Setback (showing representative light pole heights and sight lines for 2 Eagle Drive, 8 Eagle Drive, 9 Fairway Drive, and 15 Fairway Drive, and overall site lighting analysis), presentation slides at Planning Board’s November 9, 2022 Public Hearing.

⁶⁵ See John D. Krebs letter dated September 7, 2022 (“Krebs Letter”).

- The Amended Project contemplates 1,221,162 square feet less building footprint (47%) than the Approved Project. As discussed at length in my Original Analysis,⁶⁶ the Amended Project's minimal building to land area ratio is noteworthy and conservative.
- Hillwood is proposing, consistent with the Approved Project, the conveyance of a conservation easement to the Town of approximately 120 acres of conservation land (+/-32% of the Property) for permanent protection to include nearly 90 acres of land on the eastern portion of the Property, and 30 acres of land along the Merrimack River, and proposes the restoration of approximately 40 acres of sensitive wetland and wetland buffer areas. The Amended Project includes this area, plus an additional approximately 50 acres of natural buffer area to the south of the proposed distribution building which will further insulate the Project from residential properties.
- Hillwood is also proposing an intensive screening configuration on the southern boundary of the Property to include all of the screening mechanisms called out for in the Site Plan Review Regulations (preservation of existing landscaping, new plantings, and sound wall).
- Further, the lone distribution facility building in the Amended Project (the Main Building) has been pushed considerably north on the Property such that the closest the building comes to the southern Property line, which is shared with residential properties, is 1,341 feet, or about ¼ mile from the residential property boundary to the south.
- This Property has been zoned for industrial uses since 1956, and throughout the intervening years the Zoning Ordinance has expanded the allowable commercial uses and was last amended in 2017 to specifically increase the permitted building height on the Property from 38 feet to 50 feet.
- The Town of Hudson zoned this land for industrial uses, broadened these uses over the past six decades, and recently specifically legislated an increased building height of 50 feet for this specific Property, to encourage other industrial uses. This is a clear indication that industrial operations were anticipated. The noise level emanating from the proposed development will have little impact on surrounding properties in light of the robust buffering from same.
- The Amended Project contemplates a reduction in the number and size of buildings, and a 42% reduction in the average daily trips at the Property.

⁶⁶ See also, John D. Krebs letter dated March 2, 2021, which is incorporated into the record of this Amended Site Plan hearing record.

- Despite the smaller scope and scale of the Amended Project, Hillwood remains committed to the same off-site traffic improvements that were previously reviewed and approved as part of the Approved Project, subject to NHDOT approvals.
- It is clear that the Amended Project, which is smaller and less impactful than the Approved Project, is consistent with the policies set forth in Hudson's Master Plans, both current and past; the Amended Project complies with all applicable land use regulations; the Amended Project provides an economic enhancement to the Town creating high tax-value buildings and good paying jobs. The proposed amended Site Plan represents a safe and attractive development of the site, will ensure that impacts on abutting properties are eliminated or reasonably mitigated, is an example of a harmonious and aesthetically pleasing development which incorporates high quality landscaping in keeping with the general character of the surrounding area, and minimizes encroachment on neighboring land uses, all of which is consistent with the planning requirements of the site plan criteria described under the Town's Site Plan Regulations (Chapter 275).

90. In addition to the comments provided in the Krebs Letter, the Amended Project also complies with recent Zoning Amendments adopted in March, 2022 pursuant to § 334-14.B whereby buildings that are between 38 feet and 50 feet in height shall be setback a minimum 400 feet from residential zones, and such setback shall increase by 10 feet for buildings with a footprint of 100,000 square feet and additionally at a rate of 10 feet for every 100,000 feet thereafter.⁶⁷

91. The data and evidence presented by the Applicant regarding compliance with Section 275-6(J) of the Regulations has been thoroughly reviewed and corroborated and there is no legitimate and substantive evidence tending to rebut or undermine the foundational conclusion that the Amended Project improvements proposed by the Applicant depicting the landscaping, lighting, screening and buffering, and other design improvements adequately provide for harmonious and aesthetically pleasing development.⁶⁸

⁶⁷ See § 334-14.B [Added 3-8-2022 by Amdt. No. 7]; Site Project Site Plans including Sheet CS 100.

⁶⁸ See Project Site Plans, Sheets LP100-LP123A (Landscape Planting Plans), LP501-LP502 (Landscape Notes & Details), Sheets LL100-LL119 (Lighting Plans), and Sheets LL501-LL502 (Lighting Plans & Details).

- **§275-6(K) Suitably located travelways of sufficient width to accommodate existing and prospective traffic and to afford adequate light, air and access for fire-fighting apparatus and equipment to buildings, and be coordinated so as to compose a convenient system.**

92. The Applicant has undertaken efforts to ensure the provision of suitably located travelways of sufficient width to accommodate prospective traffic and to afford adequate light, air and access for fire-fighting apparatus and equipment to buildings, as follows.
93. The Amended Site Plans depict the Project travelways which are of sufficient width to accommodate prospective traffic, and to afford adequate light, air and access for fire-fighting apparatus and equipment to buildings, and all of these improvements have been coordinated to compose a convenient system.⁶⁹
94. The Amended Site Plans have been peer reviewed by Fuss & O’Neill to ensure compliance with applicable Regulations including design measures which have been established for travelways which are of sufficient width to accommodate existing and prospective traffic, and which afford adequate light, air and access for fire-fighting apparatus and equipment to buildings.⁷⁰
95. The Hudson Fire Department has, based upon the review of the materials of record, confirmed the adequacy of emergency access, including fire lanes.⁷¹

⁶⁹ See set of site plans and specifications, consisting of 196 sheets, entitled “Hudson Logistics Center, Site Plan & Conditional Use Permit Applications, Lowell Road, Map 234, Lots 5, 34 & 35, Map 239, Lot 1, Town of Hudson, Hillsborough County, New Hampshire,” dated September 9, 2022 (Rev. December 19, 2022), prepared for Greenmeadow Golf Club, Inc. (Owner) and Hillwood (Applicant), by Langan Engineering and Environmental Services, Inc., including: Cover Sheet, Index and Master Index of Notes (CS001-CS003); Overall Site Plans (CS100-CS123); Site Details (CS501-CS508); Overall Sub-Grade Drainage Plan (CG200-CG203); Overall Grading & Drainage Plans (CG100-CG123); Grading & Drainage Details (CG501-CG506); Soil Erosion & Sediment Control Plan (Phases 1-3)(CE101-CE304); Soil Erosion & Sediment Control Details (CE501-CE503); Overall Lighting Plan (LL100-LL119); and, Lighting Plan & Details (LL501-LL503).

⁷⁰ See Fuss & O’Neill Peer Review Letter #1, dated September 28, 2022 – Site Plan, Administrative, Driveway, Utility Design, Drainage Design/Stormwater, Zoning, Erosion Control, Wetland Impacts, Landscaping, Lighting, Federal, State & Local Permits, Other; Fuss & O’Neill Peer Review Letter #1, dated September 28, 2022 – Traffic Study Review; Fuss & O’Neill Peer Review Letter – Off-Site Traffic Improvements, dated November 29, 2022.

⁷¹ See Memorandum to Brian Groth, Town Planner, dated September 29, 2022, from Scott Tice, Fire Chief, Hudson Fire Department; Hudson Logistics Center: Fire Department Comment Response Letter to Brian Groth, Town Planner, dated November 28, 2022, from Langan Engineering and Environmental Services, Inc.; and, Memorandum to Brian Groth, Town Planner, dated December 23, 2022, from Scott Tice, Fire Chief, Hudson Fire Department (“The engineer and the developer have addressed all of our concerns to this point. With their anticipated continued cooperation I see no reason for the Hudson Fire Department to not support this project from a public safety standpoint”).

96. The Hudson Police Department has confirmed it has no further comment on the Amended Project.⁷²
97. Accordingly, the data and evidence presented by the Applicant regarding compliance with Section 275-6(K) of the Regulations has been thoroughly reviewed and corroborated and there is no legitimate and substantive evidence tending to rebut or undermine the foundational conclusion that the Amended Project improvements proposed by the Applicant adequately provides for suitably located travelways of sufficient width to accommodate existing and prospective traffic and to afford adequate light, air and access for fire-fighting apparatus and equipment to buildings, and be coordinated so as to compose a convenient system.
- **§275-6(L) Landscaping in keeping with the general character of the surrounding area, showing trees, shrubbery and grass areas and other reasonable landscape details.**
98. The Applicant developed a landscaping design in keeping with the general character of the surrounding area, showing trees, shrubbery and grass areas and other reasonable landscape details.
99. More specifically, an extensive landscape design and implementation plan has been developed by the Applicant in accordance with the landscaping requirements of the Town (Town Code Chapter 275, 276).⁷³
100. All plantings have been closely reviewed with the Conservation Commission to select a diverse range of native species that are indigenous to and thrive in the region.
101. Restoration size trees and shrubs are proposed within the 250-foot Shoreland buffer (some of which is currently occupied by manicured golf holes), the 50 foot wetland buffer and upland restoration areas are proposed to be planted; and 120 acres is proposed to be protected and enhanced pervious land within the Property, and subject to conservation easements.⁷⁴
102. In addition to these plantings, the landscape plan restores the existing manicured golf course areas to native grass and wildflower meadows, which will serve to create biodiversity, heal the soil strata, attract pollinator species, and provide cover for wildlife and habitat. The proposed restoration area will create a successional habitat, installing young meadows, shrubs, and trees that will grow into a young forest during the observation period, and will eventually become a mature forest.

⁷² See Site Plan Application Department Comment Response Form, dated September 20, 2022.

⁷³ See Landscape Plans & Specifications, Overall Planting Plan (LP100-LP123A); Landscape Notes & Details (LP501-LP503), and contained within the Project Site Plans and Sight Line Study package, dated September 2022, as amended.

⁷⁴ Id.

103. The Applicant has developed a robust landscaping design as well as a sight line study with particular attention paid to the southerly boundary of the Property to provide a safe and attractive development which incorporates an attractive and effective buffer with screening consisting of a combination of landscaping, berming and fencing design elements to ensure that a safe and attractive development, and to provide a reasonable effective visual barrier by the use of existing vegetation and terrain where possible, new plantings, and grade separations, fences or similar features.⁷⁵ The Applicant has also added additional landscaping along the northerly/northwesterly perimeter of the Property to provide additional screening and buffering elements.⁷⁶

104. Accordingly, the data and evidence presented by the Applicant regarding compliance with Section 275-6(1) of the Regulations has been thoroughly reviewed and corroborated and there is no legitimate and substantive evidence tending to rebut or undermine the foundational conclusion that the Amended Project improvements and related landscape and screening details proposed by the Applicant adequately provides for landscaping in keeping with the general character of the surrounding area.

- **§275-6(M) Signage and exterior lighting.**

The Applicant has made provision for exterior lighting and signage that will comply with applicable requirements.

105. Site lighting has been developed to ensure no spillover onto abutting properties.

- All site lighting fixtures proposed are led-energy efficient, full cut-off fixtures, with a soft white 3,000 kelvin color temperature and are dark-sky compliant. All site lighting is directional and focused on the development areas only, reducing any impacts on conservation, wetland and buffer areas, and meets

⁷⁵ Id.; See Site Line Study, prepared by Langan, dated September, 2022; Response to comments received at October 12, 2022 Planning Board hearing, dated October 26, 2022, prepared by Langan (lighting heights, site views diagrams); Amended Site Line Setback (showing representative light pole heights and sight lines for 2 Eagle Drive, 8 Eagle Drive, 9 Fairway Drive, and 15 Fairway Drive, and overall site lighting analysis), presentation slides at Planning Board's November 9, 2022 Public Hearing; Revised Hudson Logistics Center, Application for Amended Conditional Use Permit, prepared by prepared by Smolak & Vaughan, LLP & Donahue, Tucker & Ciandella, PLLC, dated September 12, 2022; Wetland Natural Resources Report for Revised Hudson Logistics Center Project, prepared by Gove Environmental Services, Inc., dated September 9, 2022; Wildlife Habitat Evaluation: 2022 Update, prepared by Lucas Environmental, LLC, dated September 9, 2022. Letter to Conservation Commission, dated November 7, 2022, including supplemental site walk, wetlands impact and other materials; Letter to Conservation Commission, dated November 14, 2022, including response to supplemental questions arising from site walk; and, Memorandum from William Collins, Chair, Hudson Conservation Commission, dated November 14, 2022, to Hudson Planning Board including favorable recommendation on Conditional Use Permit review, with conditions.

⁷⁶ See Site Plans.

town ordinance requirements, as well as IESNA (Illuminating Engineering Society of North America) recommendations.

- Additionally, all fixtures along the perimeter include internal house-side shields to further reduce glare and focus light towards the site.
- Light fixtures at the center of the development are 40 ft. mounting height, lowering to a height of 30-ft around the perimeter, and 20-ft for wall mounted fixtures. The plan also proposes 20-ft height wall-mounted fixtures on the buildings⁷⁷.

106. Site lighting has been designed to ensure it is narrowly focused on paved and building surfaces to minimize potential impacts to wildlife. Proposed light levels are not anticipated to significantly exceed light levels used by residential or commercial developments of a similar scale, with no at grade light migrating beyond the developed area of the Property. Refer to the Lighting Plans in the Project Plan Set.⁷⁸

107. Light fixtures will be shielded to prevent lighting affecting the nearby Shoreland Protection Zone along the Merrimack River and the proposed Conservation Areas to the East. Site lighting is designed to minimize impacts to wildlife at the proposed wetland crossing for Green Meadow Drive (Impact Area F) and the Secondary Access roadway.⁷⁹

108. Site signage has been developed to ensure compliance with Article XII of the Zoning Ordinance (Chapter 334), subject to review and approval by the Zoning Administrator/Code Enforcement Officer.⁸⁰

109. Accordingly, the data and evidence presented by the Applicant regarding compliance with Section 275-6(M) of the Regulations has been thoroughly reviewed and corroborated and there is no legitimate and substantive evidence tending to rebut

⁷⁷ See “Hudson Logistics Center, Site Plan & Conditional Use Permit Applications, Lowell Road, Map 234, Lots 5, 34 & 35, Map 239, Lot 1, Town of Hudson, Hillsborough County, New Hampshire,” dated September 9, 2022 (Rev. December 19, 2022), prepared for Greenmeadow Golf Club, Inc. (Owner) and Hillwood (Applicant), by Langan Engineering and Environmental Services, Inc., including: Overall Lighting Plan (LL100-LL119); Lighting Plan & Details (LL501-LL503); Overall Planting Plan (LP100-LP123A); Landscape Notes & Details (LP501-LP503).

⁷⁸ Id. See also, Site Line Study, prepared by Langan, dated September, 2022; Fuss & O’Neill Peer Review Letter #1, dated September 28, 2022 – Site Plan, Administrative, Driveway, Utility Design, Drainage Design/Stormwater, Zoning, Erosion Control, Wetland Impacts, Landscaping, Lighting, Federal, State & Local Permits, Other; Langan Response to September 28, 2022 Fuss & O’Neill Peer Review Letter, dated October 12, 2022; Response to comments received at October 12, 2022 Planning Board hearing, dated October 26, 2022, prepared by Langan (lighting heights, site views diagrams); and, Amended Site Line Setback (showing representative light pole heights and sight lines for 2 Eagle Drive, 8 Eagle Drive, 9 Fairway Drive, and 15 Fairway Drive, and overall site lighting analysis), presentation slides at Planning Board’s November 9, 2022 Public Hearing.

⁷⁹ See Section 5.3 (Lighting) in Wildlife Habitat Evaluation.

⁸⁰ See Langan Response to September 20, 2022 Code Enforcement Officer Letter, dated December 26, 2022.

or undermine the foundational conclusion that the Amended Project improvements proposed by the Applicant adequately provide for signage and exterior lighting.

- **§275-6(N) Conformance with all existing codes.**

110. The Applicant has designed the Amended Project to comply with all applicable Town Codes, including but not limited to, Zoning (Chapter 334), Site Plan Review (275), Administrative (Chapter 276), Stormwater (Chapter 290), Noise (Chapter 249), Driveways (Chapter 193), Sewers (Chapter 270, Ordinance No. 77, and Engineering Department Guidance), and water supply guidance described in the Town of Hudson Water Utility Rules and Regulations, and traffic, except as otherwise waived by the Planning Board and Engineering Department, as applicable.⁸¹

111. The Site Plans have been peer reviewed by Fuss & O'Neill (and other independent third party professional subconsultants) to ensure compliance with applicable stormwater, zoning (including use, dimensional, building height and other applicable requirements), site plan, landscaping, lighting, wetlands, and erosion and sedimentation and control requirements.⁸²

⁸¹ See set of site plans and specifications, consisting of 196 sheets, entitled "Hudson Logistics Center, Site Plan & Conditional Use Permit Applications, Lowell Road, Map 234, Lots 5, 34 & 35, Map 239, Lot 1, Town of Hudson, Hillsborough County, New Hampshire," dated September 9, 2022 (Revised December 19, 2022 except as otherwise shown), prepared for Greenmeadow Golf Club, Inc. (Owner) and Hillwood (Applicant), by Langan Engineering and Environmental Services, Inc., including: Cover Sheet, Index and Master Index of Notes (CS001-CS003); Existing Conditions (EC100-EC108); Overall Site Plans (CS100-CS123); Site Details (CS501-CS506); Overall Grading & Drainage Plans (CG100-CG123); Overall Sub-Grade Drainage Plan (CG200-CG203); Grading & Drainage Details (CG501-CG506); Wetlands Impact Plan (FG01); Overall Utility Plan (CU100-CU120); Northeast Access Road, East Access, Fire Protection, and Building Water Profiles (CU201-CU217); Sewer Profiles (CU300-CU313); Utility Details (CU501-CU506); Soil Erosion & Sediment Control Plan (Phases 1-3)(CE101-CE304); Soil Erosion & Sediment Control Details Phase I (CE501-CE503); Overall Lighting Plan (LL100-LL119); Lighting Plan & Details (LL501-LL502); Overall Planting Plan (LP100-LP123A); Landscape Notes & Details (LP501-LP503); and Architectural Plans and Specifications, dated September 9, 2022, including: Floor Plan, Floor Plan-Mezzanine, and Roof Plan (A4.1-A4.3); Guard Shack Floor and Roof Plan (A4.4A-A4.4B); Transportation Building Floor and Roof Plan (A4.5A-A4.5B); Inspection Canopy Floor and Roof Plan (A4.6-A4.7); Maintenance Building Floor Plan (A4.8); Pump House and Tank(s) Floor and Roof Plan (A4.10); Exterior Elevations (A5.1); Guard Shack Exterior Elevations (A5.2); Transportation Building Exterior Elevations (A5.3); Inspection Canopy Exterior Elevations (A5.4); Maintenance Building Exterior Elevations (A5.5); and, Pump House and Tanks Exterior Elevations (A5.6) (collectively, the "Site Plans").

⁸² See Fuss & O'Neill Peer Review Letter #1, dated September 28, 2022 – Site Plan, Administrative, Driveway, Utility Design, Drainage Design/Stormwater, Zoning, Erosion Control, Wetland Impacts, Landscaping, Lighting, Federal, State & Local Permits, Other; Fuss & O'Neill Peer Review Letter #2, dated December 9, 2022 –Utility Design; Langan Response to Fuss & O'Neill Peer Review Letter #2, dated December 22, 2022; Engineering Report for Gravity Sewer and Sanitary Sewer Lift Station, Hudson Logistics Center, Hudson, New Hampshire, dated December 22, 2022, prepared for Hillwood by Langan Engineering and Environmental Services, Inc.; Peer Review of the Sound Study for the Amended Site Plan for Hudson Logistics Center in Hudson, NH, dated September 29, 2022, prepared by Harris, Miller, Miller and Hanson, Inc. (HMMH); Response to comments received at October 12, 2022 Planning Board hearing, dated October 26, 2022, prepared by Langan (building height); Hudson Logistics Center, Maximum

112. The Amended Project will also comply with all applicable State and Federal Requirements, including NHDES Alteration of Terrain, NHDES Wetlands, NHDES Sewer Connection, NHDES Air Requirements, as well as the US Army Corps Programmatic Permit for New Hampshire, a US EPA NPDES Construction General Permit, and New Hampshire Small MS4 General Permit (with permit modifications effective on January 6, 2021), which is enforced, in part, through the Town of Hudson Stormwater Ordinance as well as the NHDOT MS4 Permit.
113. Accordingly, the data and evidence presented by the Applicant regarding compliance with Section 275-6(N) of the Regulations has been thoroughly reviewed and corroborated and there is no legitimate and substantive evidence tending to rebut or undermine the foundational conclusion that the Amended Project conformance with all existing codes.
- **§275-6(O) (Reserved)**
 - **§275-6(P) Compliance with the provisions of the Zoning Ordinance.**

The Project has been designed to be constructed and operated in accordance with the Hudson Zoning Ordinance.

114. The Project complies with the Hudson Zoning Ordinance (Chapter 334) as depicted on the Site Plans.⁸³
115. The Project has been peer reviewed in connection with zoning by the Planning Board's Peer Review Engineers to confirm zoning compliance.⁸⁴

Building Height Calculation Illustration (3 sheets)(undated), attached as Exhibit E to Staff Report #2;Memorandum to Elvis Dhima, Town Engineer, dated November 11, 2022, from Weston & Sampson RE: Hudson Logistics Center – Water System Review; Peer Review of the Hudson Logistics Center Project Air Quality Modeling Report Letter to Steve Reichert, P.E. Senior Project Director Fuss & O'Neill, Inc., dated November 18, 2022, from TRC Environmental Corporation; Memorandum to Steven Reichert, Fuss & O'Neill, Inc., dated November 21, 2022, from Camoin Associates regarding Peer Review of Hudson Logistics Center Fiscal Impact Analysis and Real Estate Appraisal Services Report (Camoin Closure Letter); Letter to Steven Reichert, P.E., Fuss & O'Neill, Inc., dated December 12, 2022, from Christopher Menge, INCE Sr. Vice President/Principal Consultant, HMMH, Inc.(HMMH Closure Letter); Fuss & O'Neill Peer Review Letter #1, dated September 28, 2022 – Traffic Study Review; Traffic Impact Study for Hudson Logistics Center, dated September, 2022 (Revised October 2022); Fuss & O'Neill Peer Review Letter – Off-Site Traffic Improvements, dated November 29, 2022; Memorandum to Elvis Dhima, P.E., dated December 5, 2022, from David MacNamara, P.E., Stantec, enclosing response to November 29, 2022 Fuss & O'Neill Peer Review Letter – Off-Site Traffic Improvements, including off-site improvements and Memorandum from John Plante, P.E., Langan, dated August 17, 2022, to David McNamara, Stantec, enclosing subsurface exploration data in connection with off-site improvements; Letter to John Plante, P.E., Langan, dated December 14, 2022, from Brian Desfosses, P.E., Assistant District Engineer, NHDOT.

⁸³ See Site Plans.

⁸⁴ See Fuss & O'Neill Peer Review Letter #1, dated September 28, 2022 – Site Plan, Administrative, Driveway, Utility Design, Drainage Design/Stormwater, Zoning, Erosion Control, Wetland Impacts,

116. Accordingly, the data and evidence presented by the Applicant regarding compliance with Section 275-6(P) of the Regulations has been thoroughly reviewed and corroborated and there is no legitimate and substantive evidence tending to rebut or undermine the foundational conclusion that the Amended Project conforms with the Hudson Zoning Ordinance.

- **§275-6(Q) The minimization of encroachment on neighboring land uses.**

The Applicant has undertaken extensive design efforts to minimize any encroachment on neighboring land uses and has provided increased buffering and screening to create an effective separation between the Project and other uses.

117. The Project complies with zoning setbacks and administrative requirements for buffer and screening and does not encroach upon neighboring land uses.

118. As demonstrated in the Site Plans, the Project complies with the applicable setback requirements of the Zoning Ordinance, as amended, and the 200-foot buffer requirement within the Administrative Requirements, and well as newly adopted zoning setback provisions under § 334-14.B.⁸⁵

119. The Applicant has undertaken extensive efforts to establish an effective screening between the Project and neighboring residential land uses, including the screening in the form of berming, fencing, landscaping and movement of development away from the southerly boundary of the Property as described above.

120. As described in the response to the landscaping criterion under §275-6(L) described above, the Applicant has developed a robust landscaping, buffering and screening plan to ensure that the Project does not encroach upon neighboring land uses.

121. Moreover, and given that the Amended Project does not provide for much greater buffers than what was previously approved under the Approved Project, the Amended Project provides for even less of a potential to encroach on neighboring land uses.

Landscaping, Lighting, Federal, State & Local Permits, Other; Langan Response to September 28, 2022 Fuss & O'Neill Peer Review Letter, dated October 12, 2022; Langan Supplemental Response to September 28, 2022 Fuss & O'Neill Peer Review Letter including final sewer/pump sta. designs, dated November 22, 2022; Fuss & O'Neill Peer Review Letter #2, dated December 9, 2022 –Utility Design.

⁸⁵ See Project Site Plans, Sheet CS100 and narrative on compliance with the Hudson Zoning Ordinance described under §275-6(P) above; Hudson Logistics Center, Maximum Building Height Calculation Illustration (3 sheets)(undated), attached as Exhibit E to Staff Report #2.

- **§275-6(R) Green areas, open space, conservation easements, pedestrian easements, slope easements and such other easements as may be applicable.**

The Project design has incorporated green areas, open space, conservation easements and such other easements as may be applicable as follows.

122. The Project design has incorporated extensive areas of the Property as defined “open space.”
123. Open Space is defined under Section 276-11.1B.(24)(b) as “grassed, treed, landscaped or natural growth areas designated for no activity associated with the nonresidential use proposed; there must be reasonable open space near or adjacent to each building or structure, including pavement, as determined by the Planning Board.”
124. The Amended Project increases open space across the Property to a total of approximately 213.79 acres, an increase of approximately 25% when compared to the Approved Project open space of 171.4 acres.⁸⁶
125. This open space provided as a part of the Amended Project is approximately 57% of the 375+-acre Property.
126. The Amended Project proposes to create over 120 acres of land to be subject to a conservation easement to be granted to the Town, and which we understand is second only to Benson Park in terms of area of open space dedicated for conservation use within Hudson.⁸⁷
127. The Applicant proposes to convey conservation easements to the Town of Hudson which will cover approximately 120 acres of land, nearly a third of the Property. Included in this area is the entire 250-foot protected Shoreland along the Merrimack River as well as the majority of the land east of the development, including Limit Brook, its associated wetlands, and upland buffers.
128. The Applicant’s proposed conservation easements will ensure permanent protection of these sensitive ecological areas. The proposed preservation area alone is more than 129 times the proposed Lot Development Impact or more than 6 times the preservation that would be required under the US Army Corps of Engineers Compensatory Mitigation Guidance at the relevant 20:1 ratio.
129. In addition to the Applicant’s proposed preservation, additional mitigation is also being provided through restoration of approximately 40 acres of the future conservation area, currently consisting primarily of managed golf course turf, using

⁸⁶ See Site Plans.

⁸⁷ Id.

native seed, shrubs, and trees. The proposed restoration focuses on revegetating riparian areas, wetland buffers, and other uplands surrounding the primary wetland systems on the site, some of which have been devoid of a natural buffer for upwards of 90 years, and will remove approximately 25,700 SF of impervious surfaces (golf cart paths) within the protected Shoreland along the Merrimack River.⁸⁸

130. Additional details of the restoration planting are provided on the landscaping plan sheets in the Amended Site Plans, and as more detailed within the Application for Wetlands Conditional Use Permit, which application was unanimously approved by the Planning Board on December 14, 2022.

- **§275-6(S) The use of a shared driveway for access to two or more proposed SITE PLANS shall be allowed.**

The Applicant has integrated its design to minimize the number of driveway curb cuts by using shared driveways to access the Property.

131. The Applicant intends to integrate the shared driveway access extending from Lowell Road to Green Meadow Drive by sharing the Project Driveway with 267 Lowell Road.

132. The Applicant intends to integrate the shared driveway access known as Walmart Boulevard which extends from Lowell Road westerly past Sam's Club to the project Property.

133. Both shared access driveway points were contemplated by the Planning Board in past approvals of both the Sam's Club Project as well as the 267 Lowell Road Project in order to ensure that the buildable upland occupied by the Greenmeadow Golf Course would have adequate access to Lowell Road so that it could be developed in the future.⁸⁹ The planning foresight by prior Planning Boards have enabled the implementation of the Amended Project.

134. The Amended Project complies with this site plan criterion.

⁸⁸ See Memorandum from William Collins, Chair, Hudson Conservation Commission, dated November 14, 2022, to Hudson Planning Board including favorable recommendation on Conditional Use Permit review, with conditions.

⁸⁹ See Project Site Plans.

- **§275-6(T) Installation of improvements.**

(1) The PLANNING BOARD shall weigh the burden that proposed DEVELOPMENT places on public facilities, infrastructure, sewers and amenities and shall require the installation of public improvements, both on-site and off-site, to compensate for this burden. Improvements may include, but are not limited to:

(a) Granite curbing.

- The Applicant has designed the Project to include curbing as described in the Site Plans, including sloped curbing in wildlife habitat sensitive areas.⁹⁰

(b) Sidewalk and STREET trees.

- The Applicant has incorporated both sidewalks and trees along the Project driveways, while incorporating existing trees along the site frontage and driveways to create a more natural aesthetic along with the meadow mix ground cover plantings. See Project Site Plans.

(c) Improvements to existing roadways and drainage.

- The Applicant has agreed to extensive traffic mitigation improvements designed to not only mitigate for the Project traffic, but also to mitigate the existing problems along Lowell Road and beyond. See Traffic materials described above.

(d) Traffic control devices.

- The Applicant has committed to the installation of adaptive signal control technology to not only more efficiently and safely move the Project traffic, but to also attempt to mitigate existing conditions so as to provide an additional public benefit which reduces queuing.

(e) Open space.

- The Applicant has proposed to set aside over 120 acres of land into permanent conservation easements.

(f) Recreational space.

- Opportunities for off-site recreational opportunities have been discussed with the Planning Board.

(g) Moneys granted in lieu of land for recreational space, which shall be held by the Town in a nonlapsing fund for the future purchase and DEVELOPMENT of recreational space/facilities to serve this particular neighborhood/DEVELOPMENT.

- Opportunities for off-site recreational opportunities along the Merrimack River corridor have been discussed with the Board consistent with the Approved Project.

(h) Improvements to nearby traffic corridors as warranted by the Town's cost allocation procedure traffic study.

- The Applicant has proposed mitigation which will lead to improvements of nearby traffic corridors.

(2) All requested improvements, whether on-site or off, shall be consistent with the standards enunciated by the New Hampshire Supreme Court and this legislature.

- The Applicant acknowledges this requirement.

⁹⁰ See Project Site Plans.

- **§275-6(U) The PLANNING BOARD shall require the APPLICANT to execute a DEVELOPMENT agreement. This agreement shall detail the terms, conditions and responsibilities of the Applicant and the Town in conjunction with an approved plan.**

135. Should the Planning Board vote to approve the Amended Site Plan as described above, the Applicant agrees to execute an Amended Development Agreement which would detail the terms, conditions and responsibilities of the Applicant and the Town in conjunction with an approved site plan.

- **§275-6(V) Installation or placement of outside appurtenances: e.g., utility boxes, storage containers, trash receptacles and/or air-conditioning equipment.**

136. The Amended Project will include outside appurtenances, but all utilities other than overhead lines along a segment of Green Meadow Drive (for which a waiver is requested) as well as any so-called utility “green boxes” which may be required to be installed by the electrical utility service provider will be underground.

137. All mechanical equipment for the buildings are located on the roof, but set back from the southerly side of the building to create greater separation from the residences to the south of the Property.

138. The Amended Project will not include any outside product storage or containers other than the trailers parking spaces and pallet storage are. Unlike many commercial facilities, these buildings will have internal refuse control and dumpsters and compactors directly connected to the building, occupying loading dock bays. There are no freestanding dumpsters elsewhere on the site. Therefore the trash removal activity will be very similar to other truck activity on the site.

- **§275-6(W) Exterior storage or display areas.**

139. The Amended Project will include no exterior storage or display areas other than a pallet storage area (which is located to the north of the building and away from sight of residential dwellings) and what might be temporarily stored in trailers as part of customary logistics operations.

- **§275-6(X) Reserved.**

140. Although not recognized as a site plan criterion, the Technical Memorandum, dated September 9, 2022, to Brian Kutz, Hillwood Enterprises, LP, prepared by RKG Associates, Inc., as amended (the “RKG Study”), very conservatively projects the

generation of approximately \$4.08 million in new gross tax revenue generated annually upon full buildout.⁹¹

141. In terms of gross and unadjusted tax receipts, the Barrett analysis (for the Approved Project) concluded a contribution of nearly \$5.10 million (excluding the county portion) as compared with \$4.08 million in the RKG analysis. This represents a decline of approximately \$1.02 million (or 20.0%, consistent with the reduction in the development square footage).
142. However, in addition to the annual revenues produced above, the RKG Report projects additional one time revenue and other benefits to the Town, emanating from building permit fees, the exactions which Hillwood remains committed to dedicating to the Town, the CAP fees and other funds which Hillwood has committed to under the Approved Project Site Plan Decision, could amount to in excess of \$11,500,000.00.

⁹¹ See Technical Memorandum, dated September 9, 2022, to Brian Kutz, Hillwood Enterprises, LP, prepared by RKG Associates, Inc., as supplemented by a November 15, 2022 Addendum Memorandum (the "RKG Study") The following documents are hereby incorporated into the record of the Amended Project site plan hearing: (i) Hudson Logistics Center, Hudson, New Hampshire, Fiscal Impact Analysis, 6.20, prepared by Barrett Planning Group LLC; (ii) Preliminary Draft – Fiscal Impact Peer Review, dated 8.4.20, prepared by Applied Economics Research (AER); (iii) Assessing Department review of Barrett Fiscal Impact Analysis, dated 7.7.20, prepared by Jim Michaud, Town of Hudson Chief Assessor; (iv) Supplemental Responses, Fiscal Impact Study prepared by the Barrett Planning Group, dated 9.1.20; (v) PowerPoint, Fiscal Impact, dated 9.9.20, presented to the Hudson Planning Board; and, (vi) Letter to Timothy Malley, Chair, from Judi Barrett, Barrett Planning Group, LLC, dated 12.16.20, responding to various comments on fiscal impact; (vii) Letter to Timothy Malley, Chair, from Judi Barrett, Barrett Planning Group, LLC, dated 3.8.21, concerning adjustments based upon mezzanine space; and, , responding to various comments on fiscal impact ; and, (viii) Letter to Timothy Malley, Chair, from Judi Barrett, Barrett Planning Group, LLC, dated 3.8.21, responding to valuation with conservation easements.

C. CONCLUSION

For the reasons described above, the Applicant has met its burden of establishing that it has met the criteria required under the Regulations, as well as other applicable requirements under the Hudson's Land Use Regulations, and respectfully requests the Board to vote to issue an approval of the Amended Site Plan Application.

Respectfully submitted,

Hillwood Enterprises, L.P.

By its attorneys,



By: _____
John T. Smolak, Esq.,
Smolak & Vaughan, LLP



By: _____
Justin Pasay, Esq.
Donahue, Tucker & Ciandella, PLLC



December 20, 2022

Brian Groth
Town Planner
Town of Hudson, NH
12 School St.
Hudson, NH 03051
bgroth@hudsonnh.gov

**Re: Site Plan Application Resubmission
2022 Planning Board Hearing
Hudson Logistics Center
Hudson, NH
Langan Project No.: 151010101**

Dear Mr. Groth,

On behalf of Hillwood, Langan is submitting this memorandum to summarize relevant design updates to the Site Plan Application Plan Set submitted to the Planning Board on September 9th, 2022 included in our drawing set revised through December 19th, 2022.

Updates to the plans are summarized according to drawing series as outlined below:

General

- The required statement adjacent to the approval block has been added on all sheets of the plan set

Existing Conditions Plans (EC Series)

Revised Existing Conditions plans have been provided to include the sizes and heights of existing buildings on site, and are stamped by the wetland scientist.

Site Plans (CS Series)

- The proposed parking space dimensions are now drawn at 9 feet by 18 feet.
- The passenger parking lot has been reconfigured to include larger landscaped islands as a result of the parking stall resizing.
- Parking stalls equipped with electric vehicle charging stations are included in the passenger parking lot.
- Stalls designated for future electric vehicle charging are reflected in the site plans.
- An area allocated for snow removal equipment storage has been added to the parking lot adjacent to the entry guardhouse. Sight distances for proposed driveways has been added to the site plans.

- Turnstiles and security card readers have been added where gate access to pedestrian access to parking lots is shown on the plans.

Several notes have been added to the Master Legend & Notes sheet (CS003) at the request of the peer review consultant:

- A note pertaining to signage approval subject to the Hudson Planning Board has been added.
- A note stating pertinent highway projects has been added.
- Eastern Box Turtle photos and wildlife notes have been added to the Sheet Index Plan sheet CS002.

Grading & Drainage Plans (CG Series)

The buildings and associated truck courts, loading and maneuvering areas, and parking lots were lowered 0.5-feet to better balance the site. The finish floor elevation reflects this lowering, at ± 146.50 . The inverts of various drainage structures throughout the truck courts and parking lots have been revised due to the lowering of the site to maintain minimum cover throughout.

A retaining wall has been added to the northwestern corner of the building where an elevated patio is proposed. Drainage for patio canopies has been coordinated at multiple locations on the building.

Utility Plans (CU Series)

- Water main profiles have been added to the drawing set, see CU200 series. Gravity sewer and force main profiles have been added to the drawing set, see CU300 series.
- Sewer, electric, gas, and domestic water service connections to all out buildings were revised per updated outbuilding plumbing plans.
- The sanitary sewer lines from the back-in trailer maintenance building, pull-through inspection, transportation building, and lift station were updated to maintain the minimum of 6' of cover. Additional invert information has been added to the plans.
- Hydrants were added to the fire protection line within every 1000 feet for flushing purposes.
- Electric service line, transformer, and generator locations updated per electrical plans.
- Gas service lines added for the gas-fired heating equipment in the out buildings.

Additional location specific changes are as follows:

- The sewer size has been increased to 6" diameter pipes at both the sewer from the east side of the pump house and the pull through inspection area.

- Cleanouts were added to low points and air release valves were added to high points for the 3" sanitary force main.
- Oil water separator removed from the gravity sewer line exiting the guard house.
- Electric duct banks were added to service the Yeti snow removal system located in the eastern truck court and EV charging utility pad adjacent to the western parking lot.
- Transformers were relocated from the landscaped island to the patio in the western truck court.
- Switchgears were added to the transportation building landscaped area.
- A pump station was added to the back-in trailer maintenance building sanitary connection, and the gravity sewer connection was revised to be a 1-1/4" sanitary force main.

Soil Erosion & Sediment Control Plans (CE Series)

Several notes have been added to the Soil Erosion & Sediment Control Details I sheet (CE501) at the request of the peer review consultant:

- A note pertaining to the testing of imported fill material has been added.
- A note pertaining to the prohibition of stump disposal areas has been added.
- A note requiring pre-construction meeting coordination has been added.

Refueling areas have been added to each phase of the Soil Erosion & Sediment Control plans. Construction entrances have been added to each of the three phases of the Soil Erosion & Sediment Control Plans for construction vehicle entrancing and exiting.

Revised Soil Erosion & Sediment Control plans have been stamped by the wetland scientist.

In addition to the enclosed Site Plan Application Resubmission plan set, a revised Stormwater Management Report has been prepared. An updated Infiltration Feasibility Report has been included as part of the Stormwater Management report to include additional test pit and infiltration test results. Calculations have been revised to include grading revisions, include the rerouting of CLCB-7 (renamed to CLCB-4) from BASIN B1-3 to BASIN B5-2. A more detailed Inspection and Maintenance checklist has been provided within the Stormwater Management Report.

Sincerely,

Langan Engineering and Environmental Services, Inc.



Frank Holmes, PE

Senior Associate

Attachments: Site Plan Application Resubmission Plan Set, dated 12/19/2022

Meeting Date: 1/11/23

SP #12-22 Hudson Logistics Center - Attachment B

2022 Planning Board Hearing

December 20, 2022

Hudson Logistics Center

Page 4 of 4

Hudson, NH

Langan Project No.: 151010101

Stormwater Management Report for Hudson Logistics Center, revised December 2022

cc: Brian Kutz, Hillwood
Steve Reichert, Fuss & O'Neill
John Smolak, Smolak & Vaughan LLP
Justin Pasay, Donahue, Tucker & Ciandella, PLLC

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LANGAN

December 22, 2022

Mr. Brian Groth
Town Planner
Town of Hudson
12 School Street
Hudson, NH 03051

**Re: Comment Response Letter
Hudson Logistics Center Amended Site Plan
Hudson, NH
Langan Project No.: 151010102**

Dear Mr. Groth,

On behalf of Hillwood, Langan is submitting this response to the comments contained in the letter from Fuss & O'Neill to you dated 12/9/2022 Hudson Logistics Center relative to the sewer design for the Hudson Logistics Center project. Below please find each comment followed by our response in **bold**.

COMMENT RESPONSES

The following items have outstanding issues:

5. UTILITY DESIGN/CONFLICTS

- f. *Former Fuss & O'Neill Comment: The proposed force main from the primary Sanitary Lift Station on Dwg. CU114 is labeled as 3-inch PVC. Env-Wq 704.07 requires a 4-inch or larger diameter force main. We have noted that two smaller E-One grinder pump stations are also specified at the facility.*

Current Fuss & O'Neill Comment: He proposed primary force main is noted as 3" diameter, Schedule 80 in Section D of the Engineering Report, but listed as Schedule 40 in Section F. Also, NHDES Regulation Env-Wq 704.07 requires a minimum 4-inch nominal diameter force main for non-pressure (grinder pump) sewers. The applicant has noted that NHDES had approved the 3" diameter submission.

LANGAN COMMENT RESPONSE: For the approved project, 3" pipe was allowed by NHDES. Our application to the NHDES for the amended project will include our proposed design with 3" diameter, but if NHDES takes exception then we will redesign for 4" pipe and edit our drawings and Engineering Report accordingly. Schedule 40 pipe will be used, and the attached Engineering Report has been corrected to clarify.

- k. *Former Fuss & O'Neill Comment: The applicant has not provided a detail for the oil-water separators in the plans. Also, the applicant should provide additional detail about proposed sewer flows from the Pump House, Truck Inspection, and Guard House structures and the need for these separators.*

Current Fuss & O'Neill Comment: The applicant has noted that oil-water separators will be shown on the plumbing plans and has clarified what buildings will require them. We recommend that they also be shown on the Utility plans for the site contractor's use during sewer infrastructure installation.

LANGAN COMMENT RESPONSE: Our revised drawings CU107, CU112, and CU118 (attached) include a note at each oil-water separator noting to refer to the plumbing plans for details.

- r. New Fuss & O'Neill Comment: The applicant has stated that waste generation per employee in Section IV B is a rate of 10 GPD/employee. NHDES Env-Wq 704.03 (b)(1) references Table 3-3 from Metcalf and Eddy/AECOM. That Table 3-3 indicates a flow rate of 15 GPD/employee for the "Industrial building (sanitary waste only)" source which would be a close comparable source to the proposed warehousing use. Other flows, e.g., floor cleaning, discharges from the oil-water separators, were not identified. We also note that heading of IV is mislabeled as VI on page 4 of the Report.

LANGAN COMMENT RESPONSE: NHDES Env-Wq 1000 Table 1008-1 lists 10 gpd per person for warehouse, which is the most appropriate flow rate to use for this amended application.

- s. New Fuss & O'Neill Comment: The applicant has not accounted for Infiltration Allowance. We note that the proposed flow rate did not include for this flow component. NHDES Env-Wq 704.03 (f) requires 300 Gallons inch/mile/day be included for sewers under design.

LANGAN COMMENT RESPONSE: Our attached revised Engineering Report includes an infiltration allowance per NHDES Env-Wq 704.03 (f).

- t. New Fuss & O'Neill Comment: In Section IV C, the applicant indicates a peaking factor of 2 was used to estimate flows. NHDES Env-Wq 704.03 (d) requires a peaking factor of 6 be used for average daily flows of less than 100,000 GPD.

LANGAN COMMENT RESPONSE: Given the twenty four hour operation of the proposed facility, a peaking factor of two is more appropriate, and will be included in our sewer connection permit application to NHDES. Should NHDES require a higher peaking factor, we will adjust the design of the pump station accordingly.

- u. New Fuss & O'Neill Comment: A crest is shown from about Sta. 29+00 to 30+50 on the 3" force main as it is routed over a proposed box culvert. This interval is proposed to be insulated, but no air release valve is specified. We have noted that the clearance over the box culvert is dimensioned as 2', but farther back at Sta. 15+00, the separation over a 48" drain is only 6". The applicant should review if the profile can be adjusted over the box culvert to prevent a crest in the profile.

LANGAN COMMENT RESPONSE: We have adjusted the profile to remove the crest and the need for an air release valve. We continue to call for insulation where the force main will cross over the culvert. Revised drawing CU310 is attached.

- v. New Fuss & O'Neill Comment: Details of the pump station, valve chamber, cleanout, and air release vaults were not included for review.

LANGAN COMMENT RESPONSE: Details of the pump station, valve chamber, clean out and air release valves are included on the attached drawings CU501, CU502, and CU505.

The following items require coordination with the Town by the applicant:

5. UTILITY DESIGN/CONFLICTS

- a. Former Fuss & O'Neill Comment: HR 275-9.E. The applicant should review the proposed sewer design with the Town of Hudson Sewer Department to ensure that enough capacity exists in the existing sewer mains to handle the flows that will be generated by the proposed project.

Current Fuss & O'Neill Comment: The applicant has noted that they will confirm capacity with the Town Sewer Department.

LANGAN COMMENT RESPONSE: The sewer capacity was calculated to be 3,325 GPM during the approval of the project in 2021, and that calculation was accepted by the Town Sewer Department. The capacity is stated in the Engineering Report.

- l. Former Fuss & O'Neill Comment: HETGTD 720.8.5. The applicant should confirm that floor drains, roof drains, sump pumps or any other non-sanitary sewerage drain will not be connected to any of the proposed sewer service connections.

Current Fuss & O'Neill Comment: The applicant has stated that roof drains and sump pumps will not be connected to the sewer. The applicant has also stated that floor drains will be connected to the sewer for the Pump House, which is a requirement of the International Building Code. If floor drains for other structures are being proposed the applicant needs to confirm with the Town that this is acceptable.

LANGAN COMMENT RESPONSE: Acknowledged. In addition to the pump house, floor drains will be included in the back-in maintenance building. Drains from beneath the pull through inspection will also be connected to sanitary sewer, per International Building Code requirements. Oil / water separators will be provided for each of these three connections.

Please let us know if you have any questions or further comments.

Sincerely,

Langan Engineering and Environmental Services, Inc.



Frank Holmes
Senior Associate

cc: Brian Kutz, Hillwood
Steve Reichert, Fuss & O'Neill
John Smolak, Smolak & Vaughan
Justin Pasay, Donahue, Tucker & Ciandella, PLLC

Attachments: Engineering Report revised 12/19/2022
Drawing CU107 Revised 12/19/2022
Drawing CU112 Revised 12/19/2022
Drawing CU118 Revised 12/19/2022
Drawing CU310 Revised 12/19/2022
Drawing CU501 Revised 12/19/2022
Drawing CU502 Revised 12/19/2022
Drawing CU505 Revised 12/19/2022

December 22, 2022

Mr. Brian Groth
Town Planner
Town of Hudson
12 School Street
Hudson, NH 03051

**Re: Comment Response Letter
Hudson Logistics Center- Water Utility Plan Review
Hudson, NH
Langan Project No.: 151010102**

Dear Mr. Groth,

On behalf of Hillwood, Langan is submitting this response to the comments contained in the letter from Weston & Sampson to you dated 12/6/2022 relative to the water utility plans for the Hudson Logistics Center project. Below please find each comment followed by our response in **bold**.

COMMENT RESPONSES

The following summarizes the comments included within the appended design drawings:

SHEET CU203 – NORTHWEST ENTRANCE WATER PROFILE

- Weston & Sampson Comment: Consider the use of 2 – 45 degree bends over 1 – 90 degree bend to reduce head loss and thrust on bends.

LANGAN COMMENT RESPONSE: The profile for on CU203 has been adjusted to include to 90 degree bends to allow the water service to enter the water meter enclosure vertically.

SHEET CU204 – EAST ACCESS ROAD WATER PROFILE

- Weston & Sampson Comment: Provide insulation where water main cover is less than 5-feet.

LANGAN COMMENT RESPONSE: Two 45-degree vertical bends were added to the water line to provide a minimum of five feet of cover; see drawing CU205.

- Weston & Sampson Comment: Consider installation of water main above existing culvert due to depth/difficulty in proposed installation method – Can roadway grade be raised to provide more cover above water main if installed above culvert?

LANGAN COMMENT RESPONSE: Raising the roadway grade would require additional wetland filling and will not be considered at this time. The design of this crossing for the amended site plan is the same as the approved project.

SHEET CU205 – EAST ACCESS ROAD WATER PROFILE

- Weston & Sampson Comment: Relocate tee and valve cluster away from drain pipes.

LANGAN COMMENT RESPONSE: This tee and valve cluster has been adjusted, revised drawings CU112 and CU205 is attached for reference.

SHEET CU214 – GUARD HOUSE WATER PROFILE

- Weston & Sampson Comment: Confirm size of Fire Protection Service water pipe – preceding tee outlined as 6- or 10-inch.

LANGAN COMMENT RESPONSE: Drawing CU107 and CU214 have been edited, clarifying that the fire protection water service is 4”.

SHEET CU216 – MULDOON STREET SERVICE WATER PROFILE

- Weston & Sampson Comment: Provide air release valve.

LANGAN COMMENT RESPONSE: An air release valve has been added at this location. See the attached drawings CU112 and CU216 for reference.

- Weston & Sampson Comment: Consider water main realignment due to excessive depth of proposed water main.

LANGAN COMMENT RESPONSE: The profile has been edited as suggested. See the attached drawing CU216.

SHEET CU217 – MULDOON STREET SERVICE WATER PROFILE

- Weston & Sampson Comment: Show water main encased in steel per plan Sheet CU120.

LANGAN COMMENT RESPONSE: The attached drawing CU217 has been revised to show steel pipe encasement around the water main.

- Weston & Sampson Comment: Provide air release valve.

LANGAN COMMENT RESPONSE: The revised drawings CU120 and CU217 show an air release valve at this location as suggested.

Please let us know if you have any questions or further comments.

Sincerely,
Langan Engineering and Environmental Services, Inc.

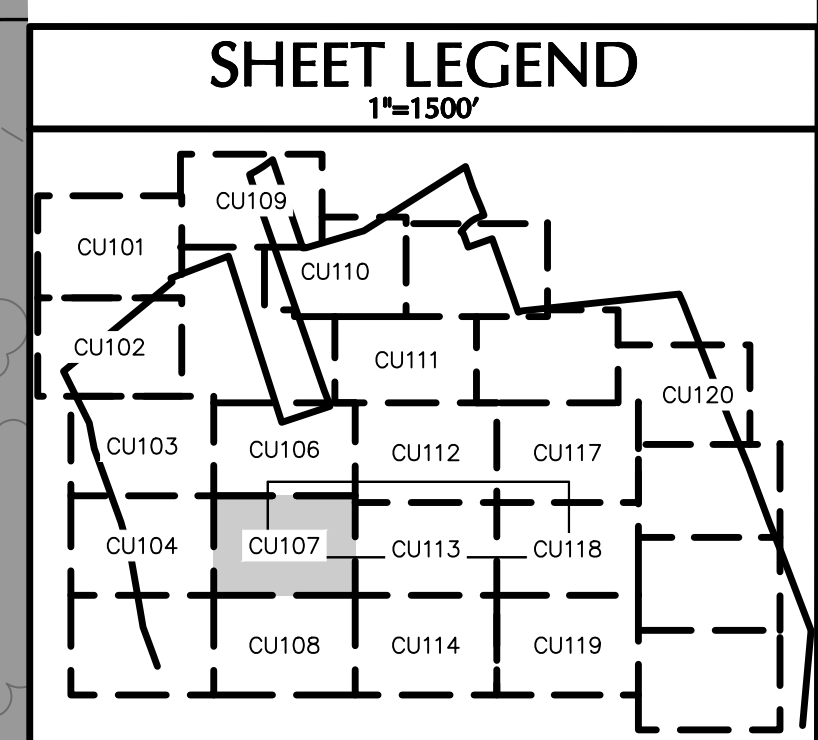
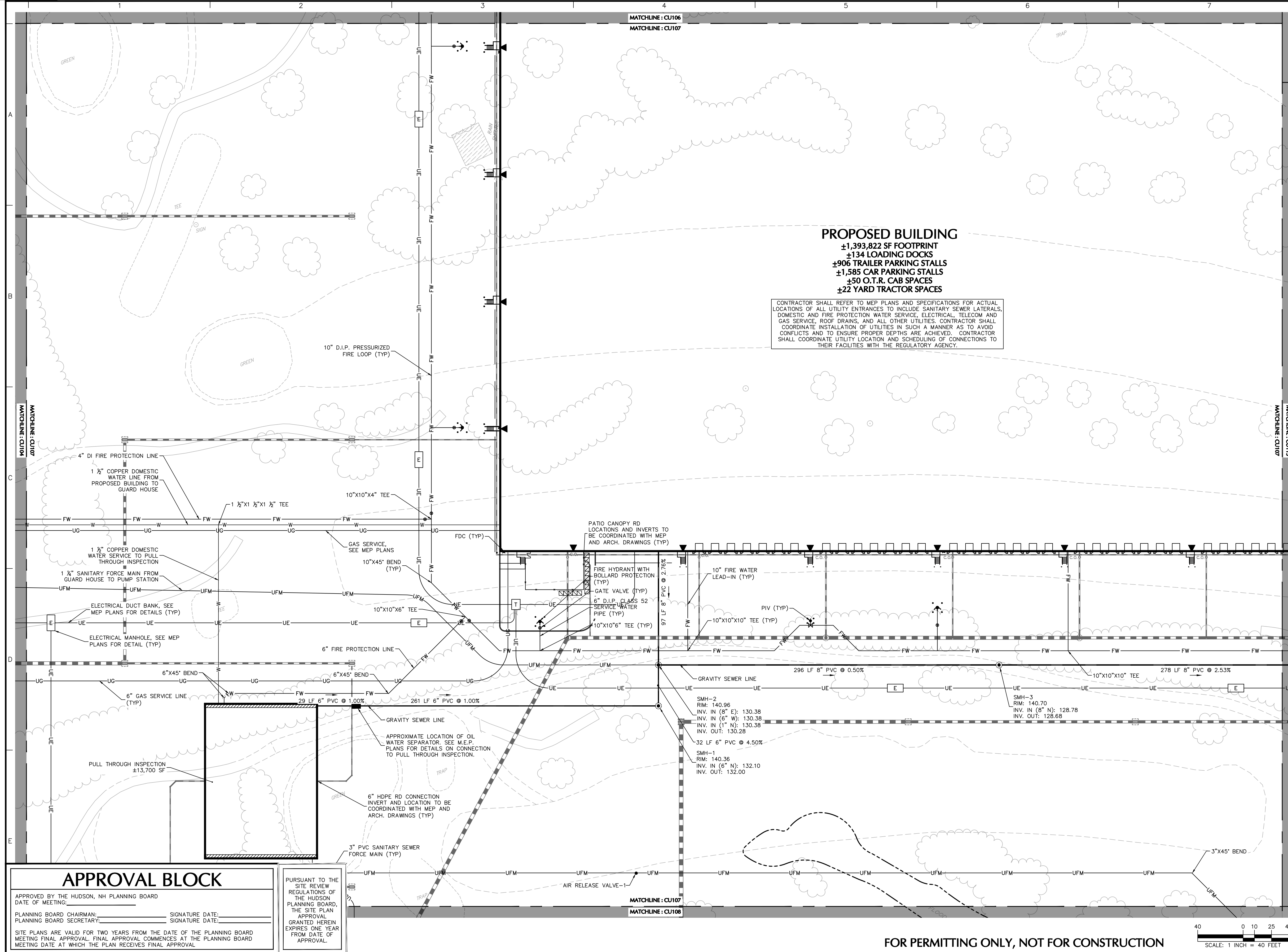


Frank Holmes
Senior Associate

cc: Brian Kutz, Hillwood
Ethan Beaulier, Weston and Sampson
John Smolak, Smolak & Vaughan
Justin Pasay, Donahue, Tucker & Ciandella, PLLC

Attachments:

Drawing CU107, Revised 12/19/2022
Drawing CU112, Revised 12/19/2022
Drawing CU120, Revised 12/19/2022
Drawing CU203, Revised 12/19/2022
Drawing CU205, Revised 12/19/2022
Drawing CU212, Revised 12/19/2022
Drawing CU214, Revised 12/19/2022
Drawing CU216, Revised 12/19/2022
Drawing CU217 Revised 12/19/2022



PROPOSED BUILDING
 ±1,393,822 SF FOOTPRINT
 ±134 LOADING DOCKS
 ±906 TRAILER PARKING STALLS
 ±1,585 CAR PARKING STALLS
 ±50 O.T.R. CAB SPACES
 ±22 YARD TRACTOR SPACES

CONTRACTOR SHALL REFER TO MEP PLANS AND SPECIFICATIONS FOR ACTUAL LOCATIONS OF ALL UTILITY ENTRANCES TO INCLUDE SANITARY SEWER LATERALS, DOMESTIC AND FIRE PROTECTION WATER SERVICE, ELECTRICAL, TELECOM AND GAS SERVICE, ROOF DRAINS, AND ALL OTHER UTILITIES. CONTRACTOR SHALL COORDINATE INSTALLATION OF UTILITIES IN SUCH A MANNER AS TO AVOID CONFLICTS AND TO ENSURE PROPER DEPTHS ARE ACHIEVED. CONTRACTOR SHALL COORDINATE UTILITY LOCATION AND SCHEDULING OF CONNECTIONS TO THEIR FACILITIES WITH THE REGULATORY AGENCY.

Date	Description	No.
------	-------------	-----

Revisions

JOHN D. PLANTE
 NH P.E. Lic. No. 14072

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 Langan Engineering and Environmental Services, Inc.
 100 CAMBRIDGE STREET, SUITE 1310
 Boston, MA 02114
 T: 617.824.9100 F: 617.824.9101 www.langan.com

Project
HUDSON LOGISTICS CENTER
 MAP No. 239, LOT No. 1
 HUDSON
 HILLSBOROUGH NEW HAMPSHIRE

Drawing Title
UTILITY PLAN VII

Project No. 151010101	Drawing No. CU107
Date 09/09/2022	Drawn By MPG
Checked By FH	

APPROVAL BLOCK

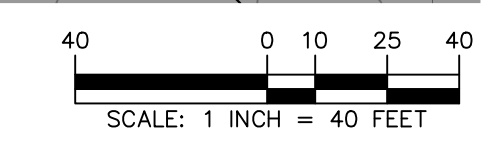
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 DATE OF MEETING: _____

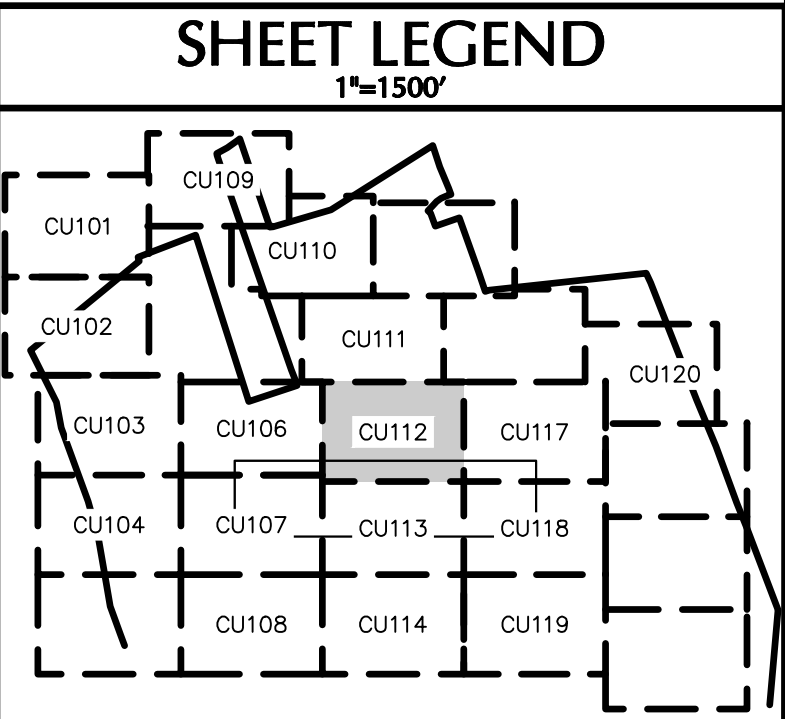
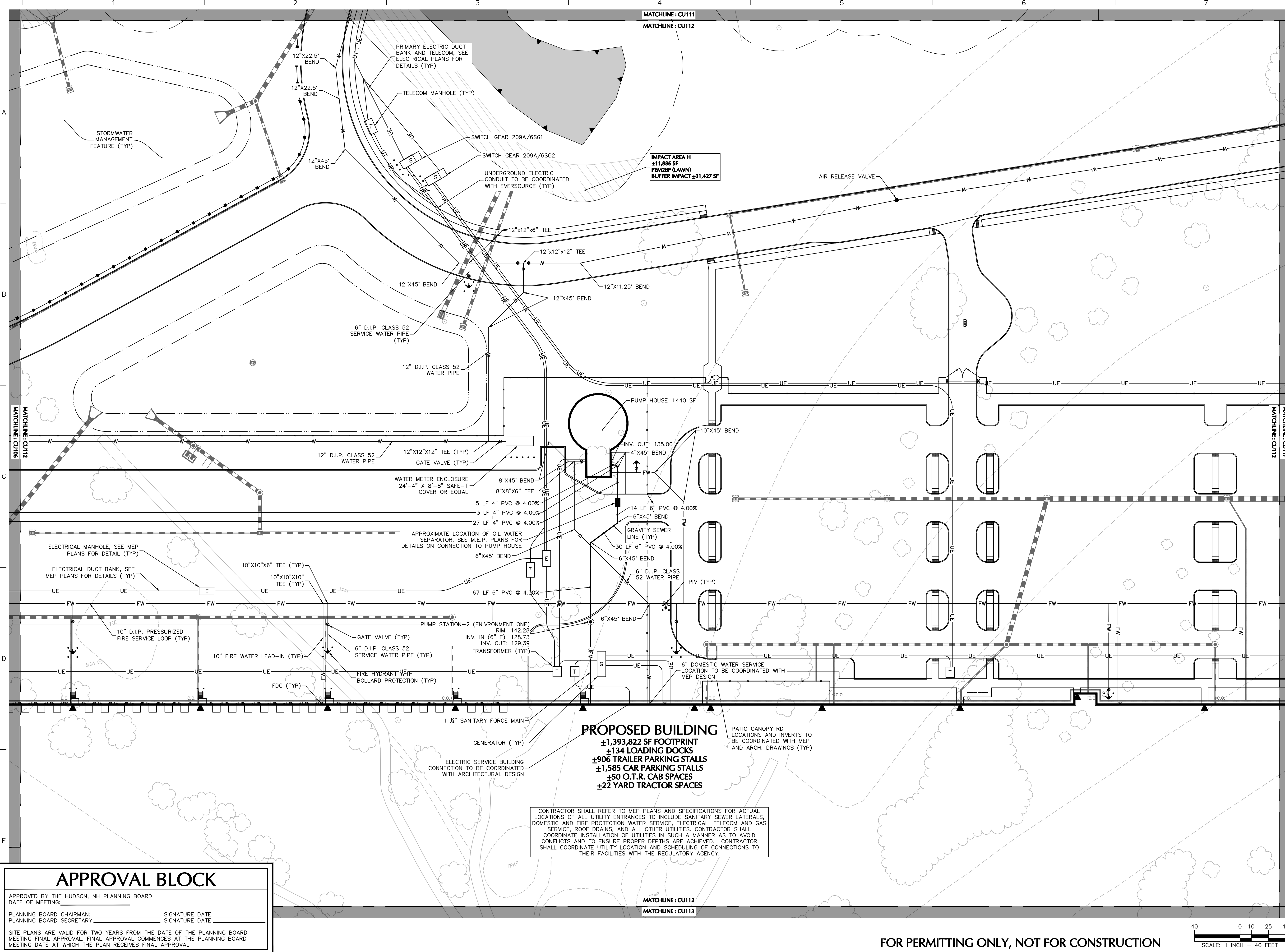
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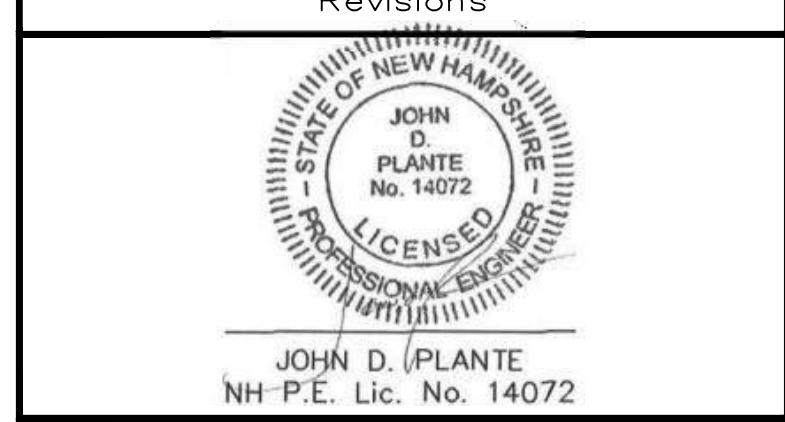
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Revisions		



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Project
HUDSON LOGISTICS CENTER
 MAP No. 239, LOT No. 1
 HUDSON
 HILLSBOROUGH NEW HAMPSHIRE

Drawing Title
UTILITY PLAN XII

Project No. 151010101	Drawing No. CU112
Date 09/09/2022	
Drawn By MPG	
Checked By FH	

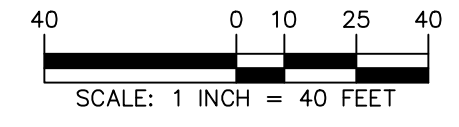
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SHEET LEGEND
1"=1500'

Date	Description	No.
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Revisions

JOHN D. (PLANTE)
NH - P.E. Lic. No. 14072

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Project
HUDSON LOGISTICS CENTER
MAP No. 239, LOT No. 1
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Drawing Title
UTILITY PLAN XX

Project No. 151010101	Drawing No. CU120
Date 09/09/2022	
Drawn By MPG	
Checked By FH	



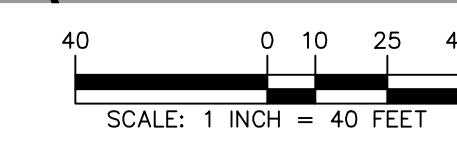
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DATE OF MEETING: _____

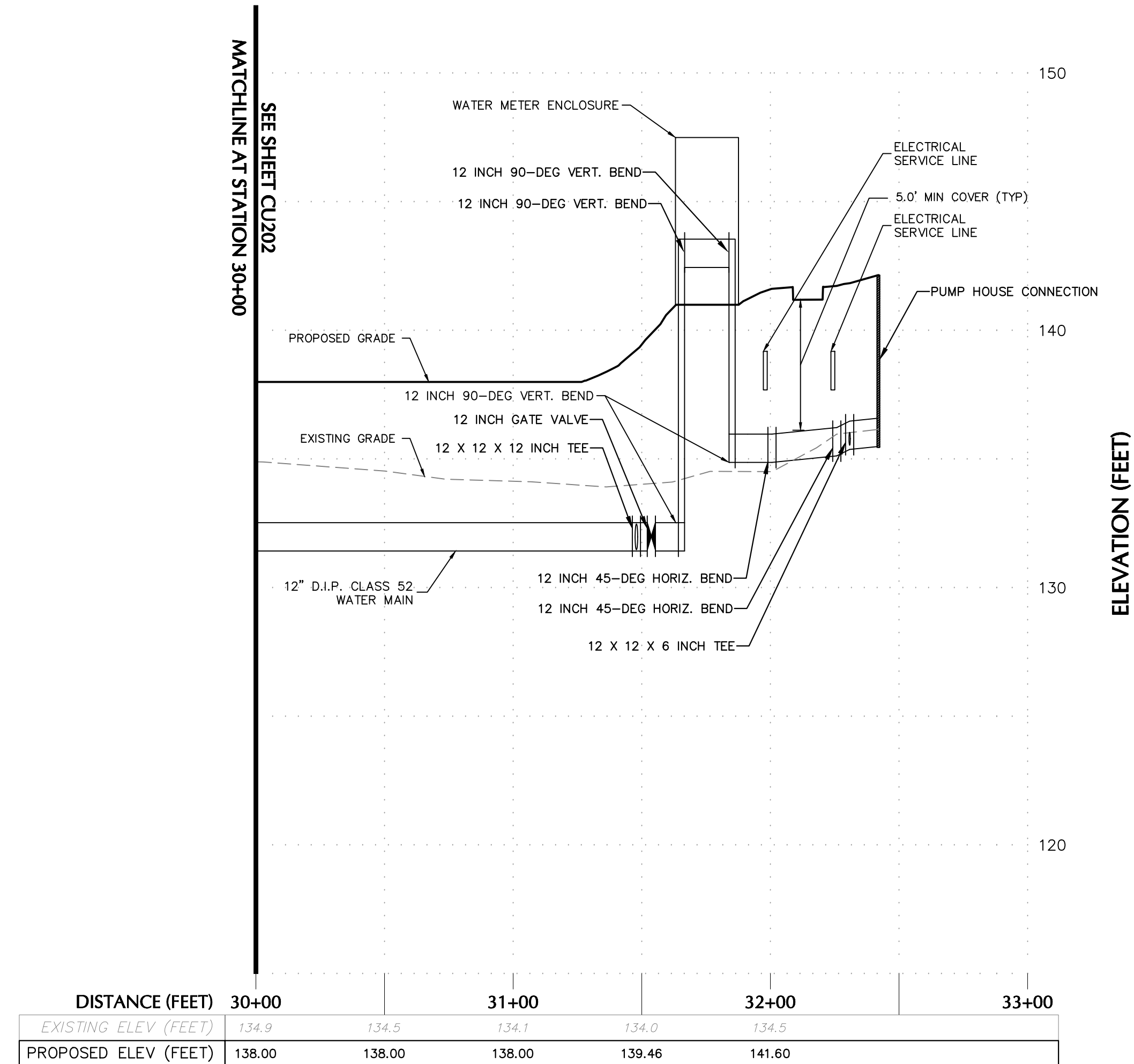
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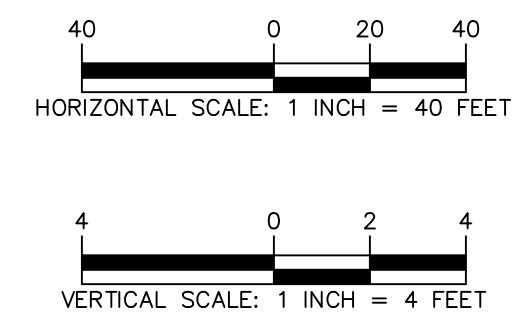
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A
B
C
D
E



**WATER PROFILE
(WATER SERVICE MAIN)
30+00 TO 33+00**



Date	Description	No.
Revisions		
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Project

HUDSON LOGISTICS CENTER

MAP No. 239, LOT No. 1
HUDSON
HILLSBOROUGH NEW HAMPSHIRE

Drawing Title

NORTHWEST ENTRANCE WATER PROFILE

Project No. 151010101	Drawing No. CU203
Date 11/18/2022	
Drawn By MPG	
Checked By FH	

APPROVAL BLOCK

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DATE OF MEETING: _____

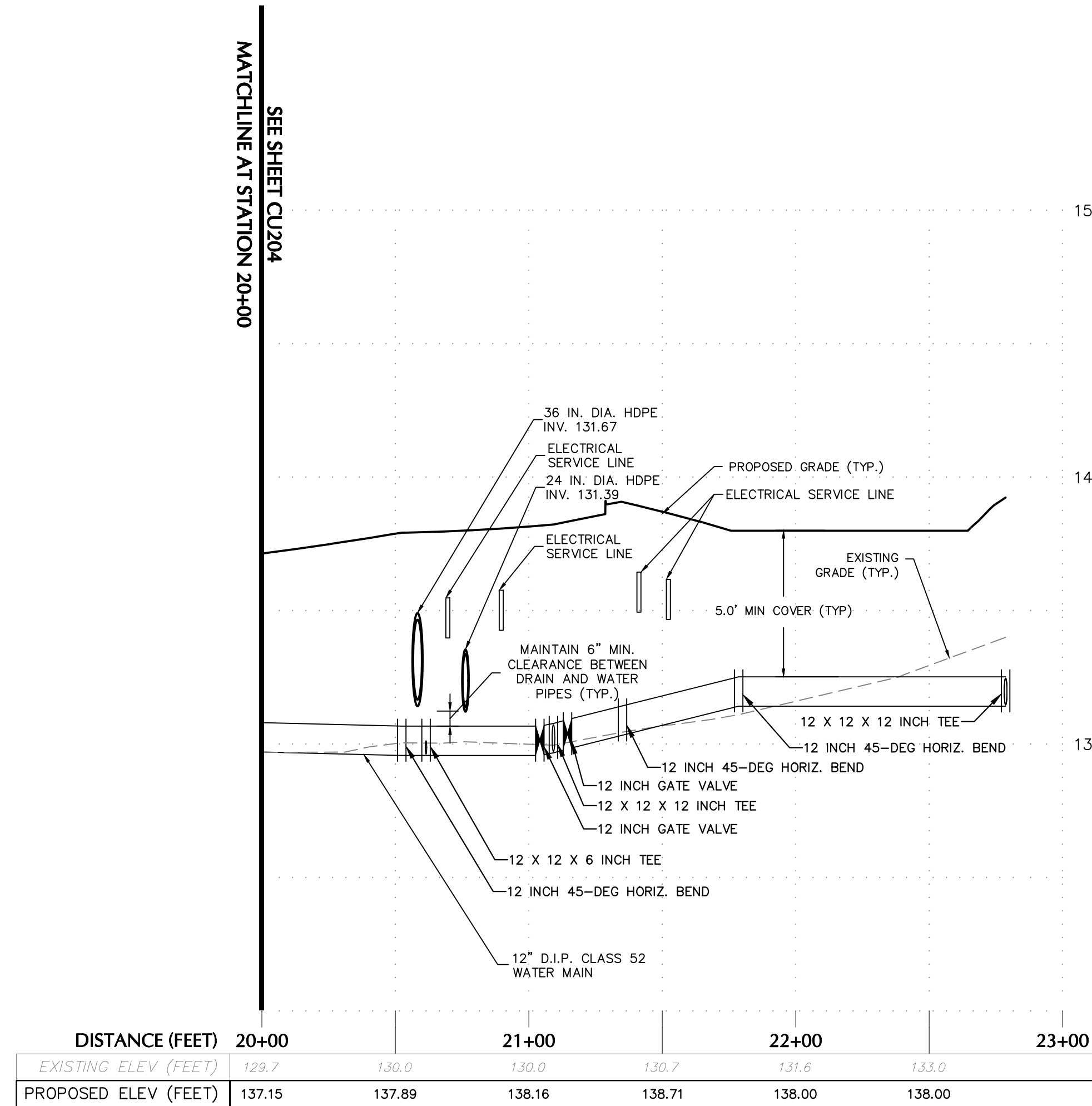
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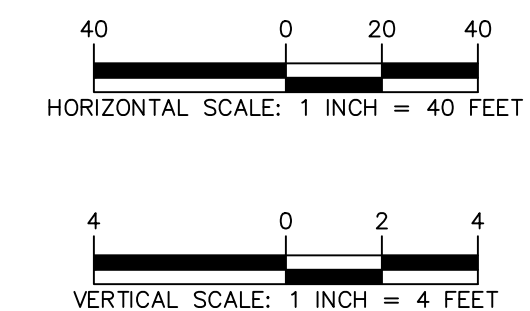
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A
B
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D
E



**WATER PROFILE
(ACCESS ROAD WATER SERVICE)
20+00 TO 23+00**



Date	Description	No.
Revisions		
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Project

HUDSON LOGISTICS CENTER

MAP No. 239, LOT No. 1
HUDSON
HILLSBOROUGH NEW HAMPSHIRE

Drawing Title

EAST ACCESS ROAD WATER PROFILE

Project No. 151010101	Drawing No. CU205
Date 11/18/2022	
Drawn By MPG	
Checked By FH	

APPROVAL BLOCK

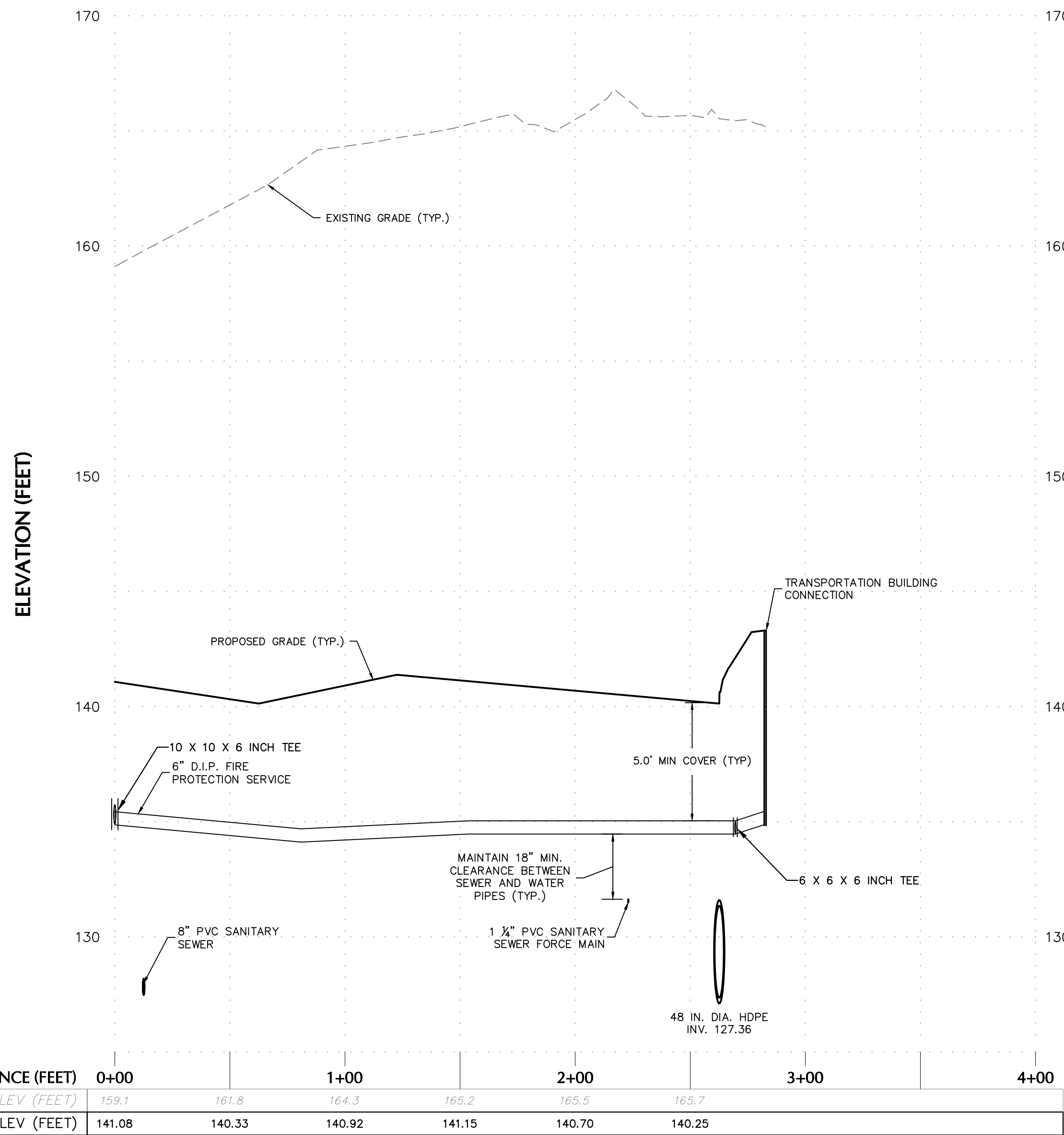
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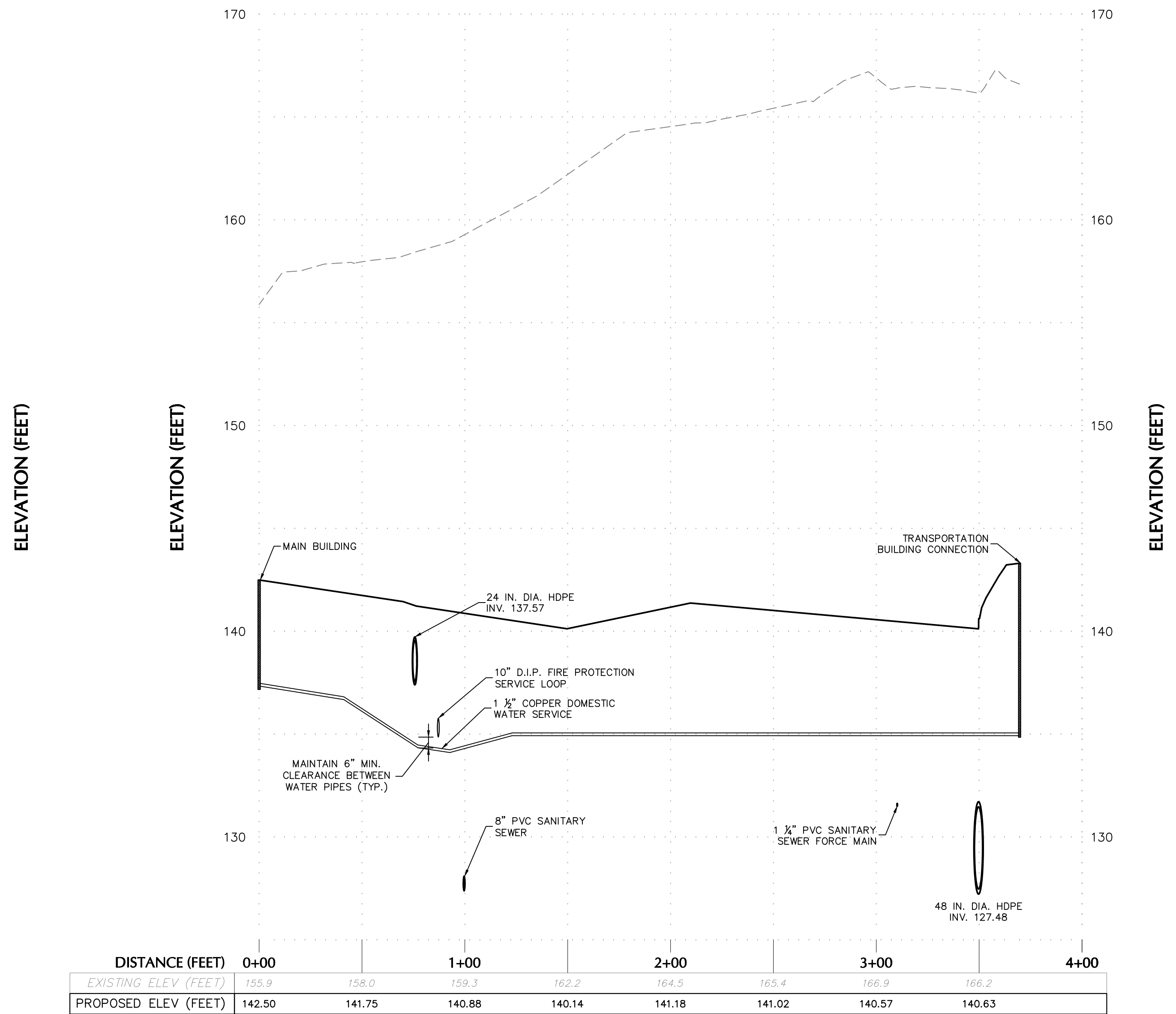
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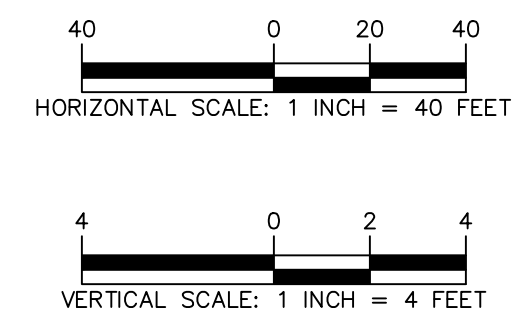
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WATER PROFILE
(FIRE PROTECTION SERVICE TO TRANSPORTATION BUILDING)
0+00 TO 4+00



WATER PROFILE
(DOMESTIC WATER SERVICE TO TRANSPORTATION BUILDING)
0+00 TO 4+00



Date	Description	No.
Revisions		
LANGAN Langan Engineering and Environmental Services, Inc. 100 CAMBRIDGE STREET, SUITE 1310 Boston, MA 02114 T: 617.824.9100 F: 617.824.9101 www.langan.com		

Project

HUDSON LOGISTICS CENTER

MAP No. 239, LOT No. 1
HUDSON

HILLSBOROUGH NEW HAMPSHIRE

Drawing Title

TRANSPORTATION BUILDING WATER PROFILE

APPROVAL BLOCK

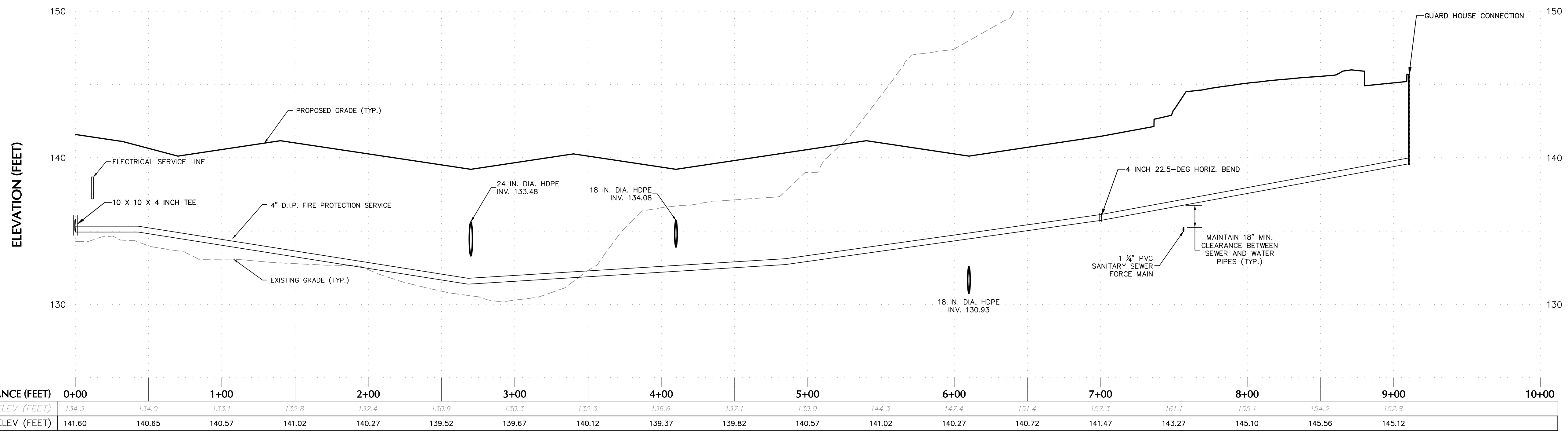
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DATE OF MEETING: _____

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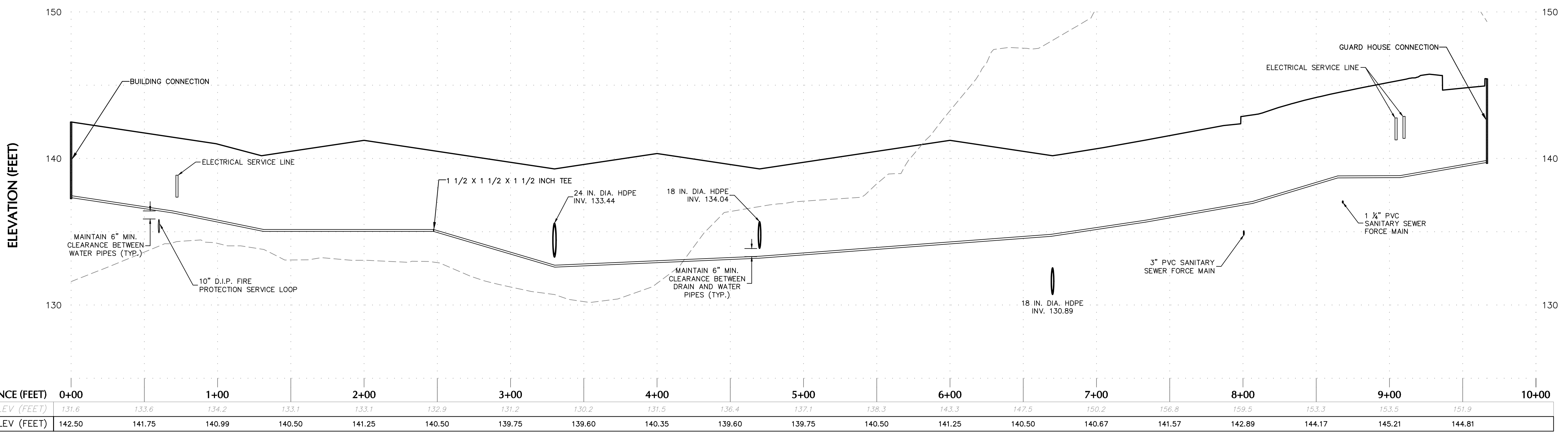
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**WATER PROFILE
(FIRE PROTECTION SERVICE TO GUARD HOUSE)
0+00 TO 10+00**



**WATER PROFILE
(DOMESTIC WATER SERVICE TO GUARD HOUSE)
0+00 TO 10+00**

Date	Description	No.
Revisions		
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Project
HUDSON LOGISTICS CENTER
MAP No. 239, LOT No. 1
HUDSON
HILLSBOROUGH NEW HAMPSHIRE

Drawing Title
GUARD HOUSE WATER PROFILE

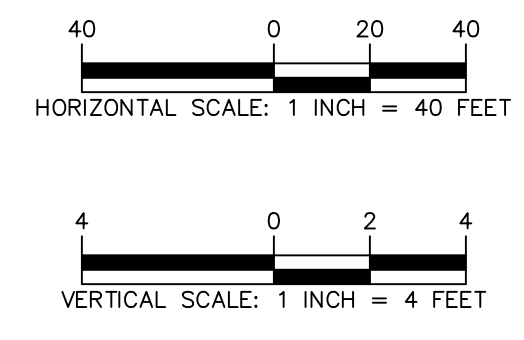
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APPROVED BY THE HUDSON, NH PLANNING BOARD
DATE OF MEETING: _____

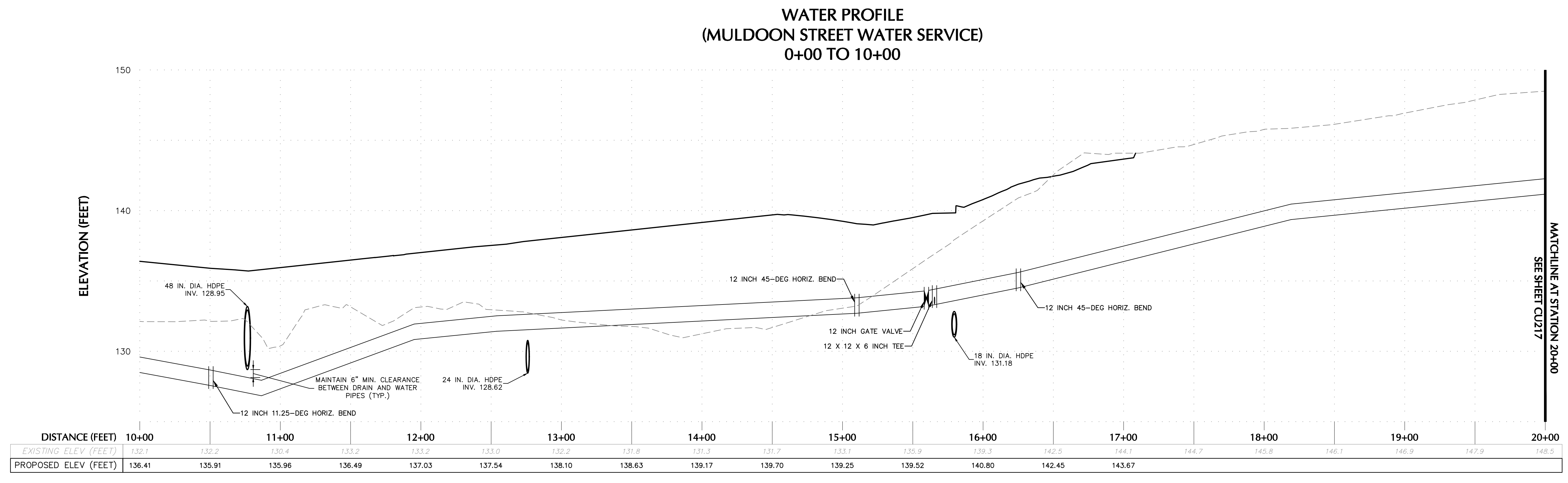
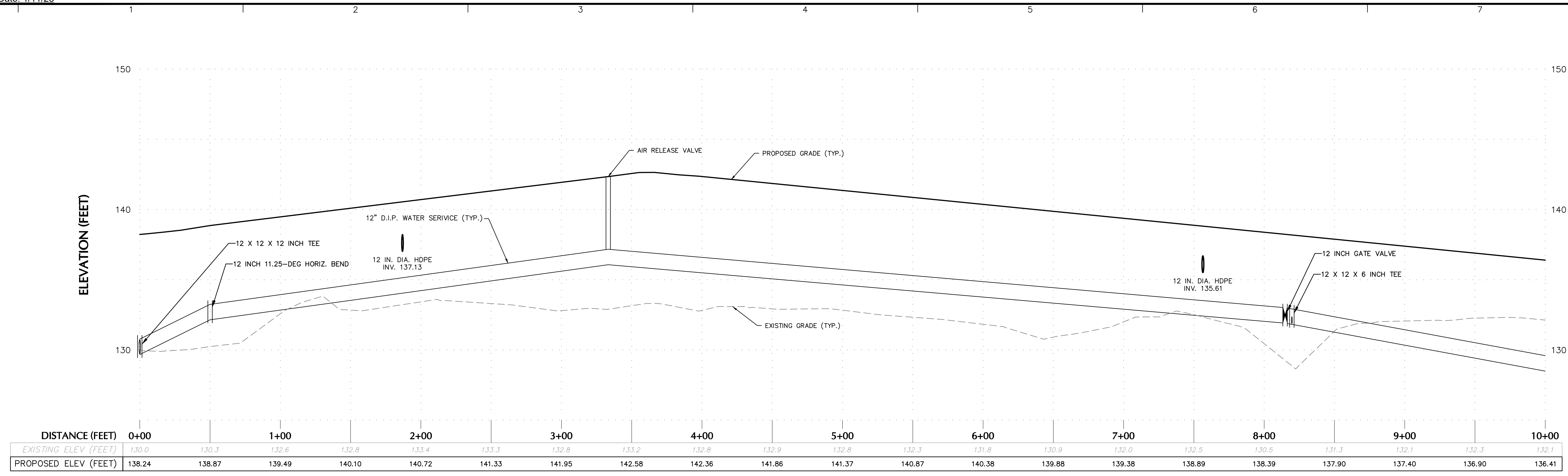
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ELEVATION (FEET)

ELEVATION (FEET)

MATCHLINE AT STATION 20+00
SEE SHEET CU217

Date	Description	No.
Revisions		

JOHN D. PLANTE
 NH P.E. Lic. No. 14072

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 Environmental Services, Inc.
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Project
HUDSON LOGISTICS CENTER
 MAP No. 239, LOT No. 1
 HUDSON
 HILLSBOROUGH NEW HAMPSHIRE

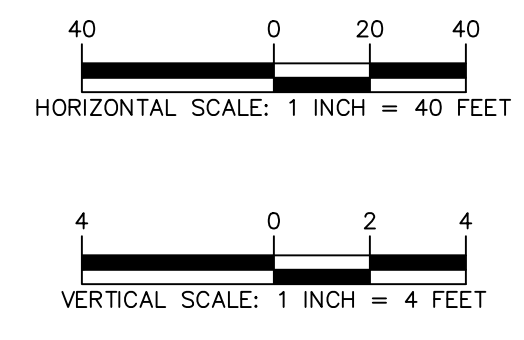
Drawing Title
MULDOON STREET SERVICE WATER PROFILE

Project No. 151010101	Drawing No. CU216
Date 11/18/2022	
Drawn By MPG	
Checked By FH	

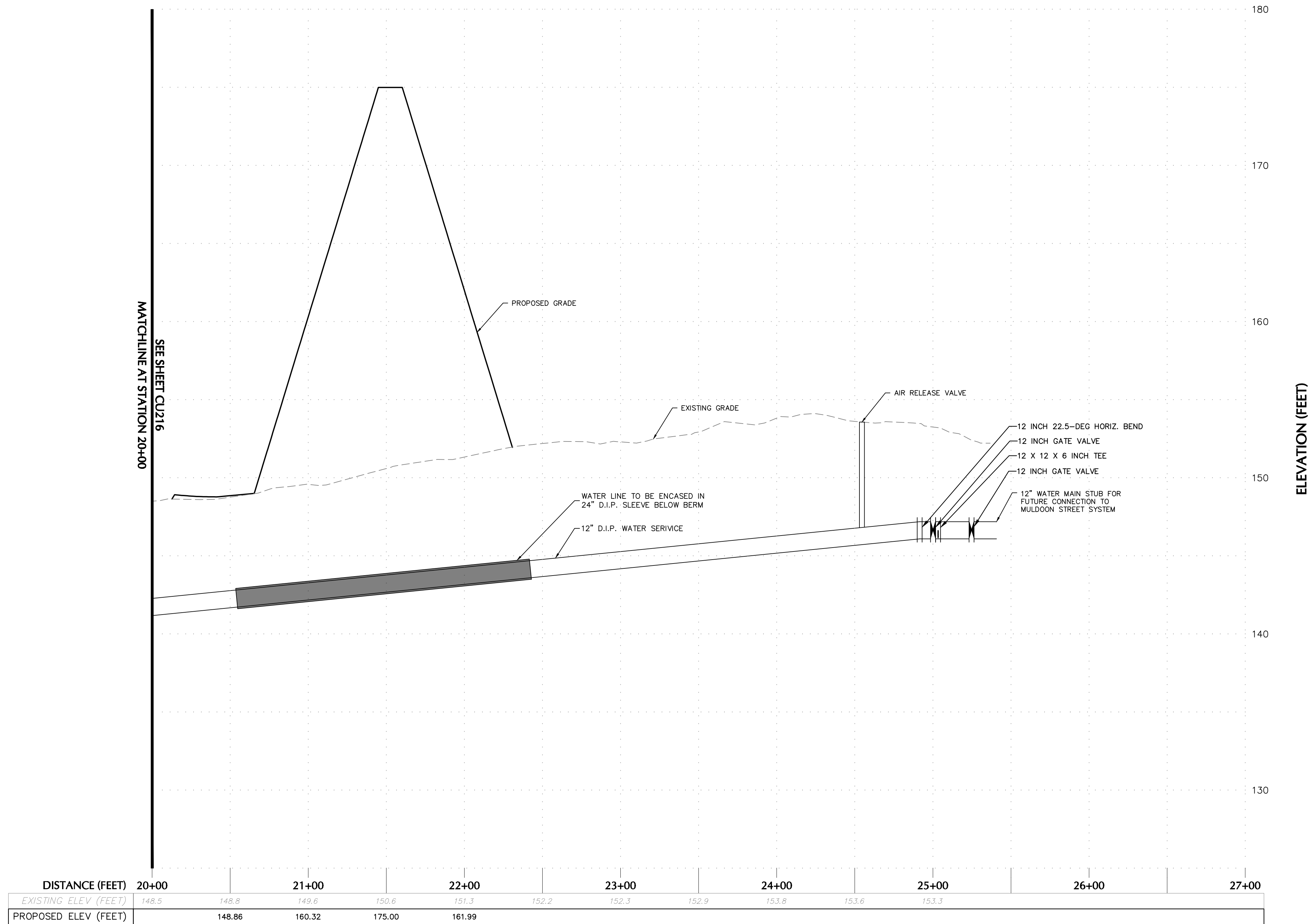
APPROVAL BLOCK

APPROVED BY THE HUDSON, NH PLANNING BOARD
 DATE OF MEETING: _____
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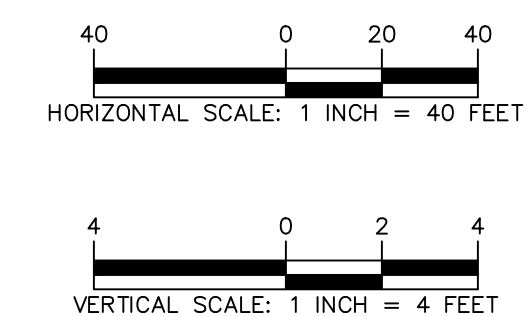
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**WATER PROFILE
(MULDOON STREET WATER SERVICE)
20+00 TO 27+00**



Date	Description	No.
Revisions		
LANGAN Langan Engineering and Environmental Services, Inc. 100 CAMBRIDGE STREET, SUITE 1310 Boston, MA 02114 T: 617.824.9100 F: 617.824.9101 www.langan.com		

Project

HUDSON LOGISTICS CENTER

MAP No. 239, LOT No. 1
HUDSON
HILLSBOROUGH NEW HAMPSHIRE

Drawing Title

MULDOON STREET SERVICE WATER PROFILE

Project No.	151010101	Drawing No.	CU217	
Date	11/18/2022	Drawn By		MPG
Checked By	FH			

APPROVAL BLOCK	PURSUANT TO THE SITE REVIEW REGULATIONS OF THE HUDSON PLANNING BOARD, THE SITE PLAN APPROVAL GRANTED HEREIN EXPIRES ONE YEAR FROM DATE OF APPROVAL.
APPROVED BY THE HUDSON, NH PLANNING BOARD DATE OF MEETING: _____	
PLANNING BOARD CHAIRMAN: _____ SIGNATURE DATE: _____ PLANNING BOARD SECRETARY: _____ SIGNATURE DATE: _____	
SITE PLANS ARE VALID FOR TWO YEARS FROM THE DATE OF THE PLANNING BOARD MEETING FINAL APPROVAL. FINAL APPROVAL COMMENCES AT THE PLANNING BOARD MEETING DATE AT WHICH THE PLAN RECEIVES FINAL APPROVAL.	

FOR PERMITTING ONLY, NOT FOR CONSTRUCTION

December 26, 2022

Brian Groth
Town Planner
Town of Hudson, NH
12 School St.
Hudson, NH 03051
bgroth@hudsonnh.gov

**Re: Response to Code Enforcement Officer Comments
Hudson Logistics Center
Hudson, NH
Langan Project No.: 151010101**

Dear Mr. Groth,

On behalf of Hillwood, Langan is submitting this letter in response to comments received from the Zoning Administrator / Code Enforcement Officer dated September 20, 2022 regarding the Hudson Logistics Center project. Below please find each comment followed by our response in **bold**.

Comment #1: The Zoning Ordinance §334-14A states that the maximum building height shall be 50 feet and §334-14 states height is measured from the average elevation of finished grade within 5 feet of the structure to the highest point of the roof. Please confirm such requirement is met.

LANGAN COMMENT RESPONSE: We have calculated building height to be 48.43'. Calculations that were presented at the public hearing for the project's site plan review application held on November 9, 2022 are attached.

Comment #2: Dwg CS101: Site Plan I. There is a monument sign shown by Lowell Rd. This is lacking details: Is this proposed as §334-65 Industrial park signs/business park? There is no size or height details etc.

LANGAN COMMENT RESPONSE: Permitting of the monument sign will be obtained through a separate permit process. That permit application will include size and height details.

Comment #3: Dwg CS109: Site Plan IX. There is a monument sign shown by Lowell Rd. This is lacking details: Is this proposed as §334-65 Industrial park signs/business park? There is no size or height details etc.

LANGAN COMMENT RESPONSE: Permitting of the monument sign will be obtained through a separate permit process. That permit application will include size and height details.

Comment #4: Dwg CS109: Site Plan IX. There is a “proposed mercury systems sign” shown on Map 234/Lot 001 which refers to mercury systems located on Map 234 / Lot 005, and is off premise advertising (reference §334-60B). This sign is located within the side yard setback (reference §334-60D). This is lacking size or height details.

LANGAN COMMENT RESPONSE: Permitting of the Mercury Systems sign will be obtained through a separate permit process. That permit application will include size and height details, and will address the sign setback.

Please let me know if you have any questions or if you require additional information.

Sincerely,
Langan Engineering and Environmental Services, Inc.



Frank Holmes, PE
Senior Associate

Attachments: Hudson Logistics Center Maximum Building Height Calculations Pages 1 and 3 of 3

cc: Brian Kutz, Hillwood
John Smolak, Smolak & Vaughan LLP
Justin Pasay, Donahue, Tucker & Ciandella, PLLC

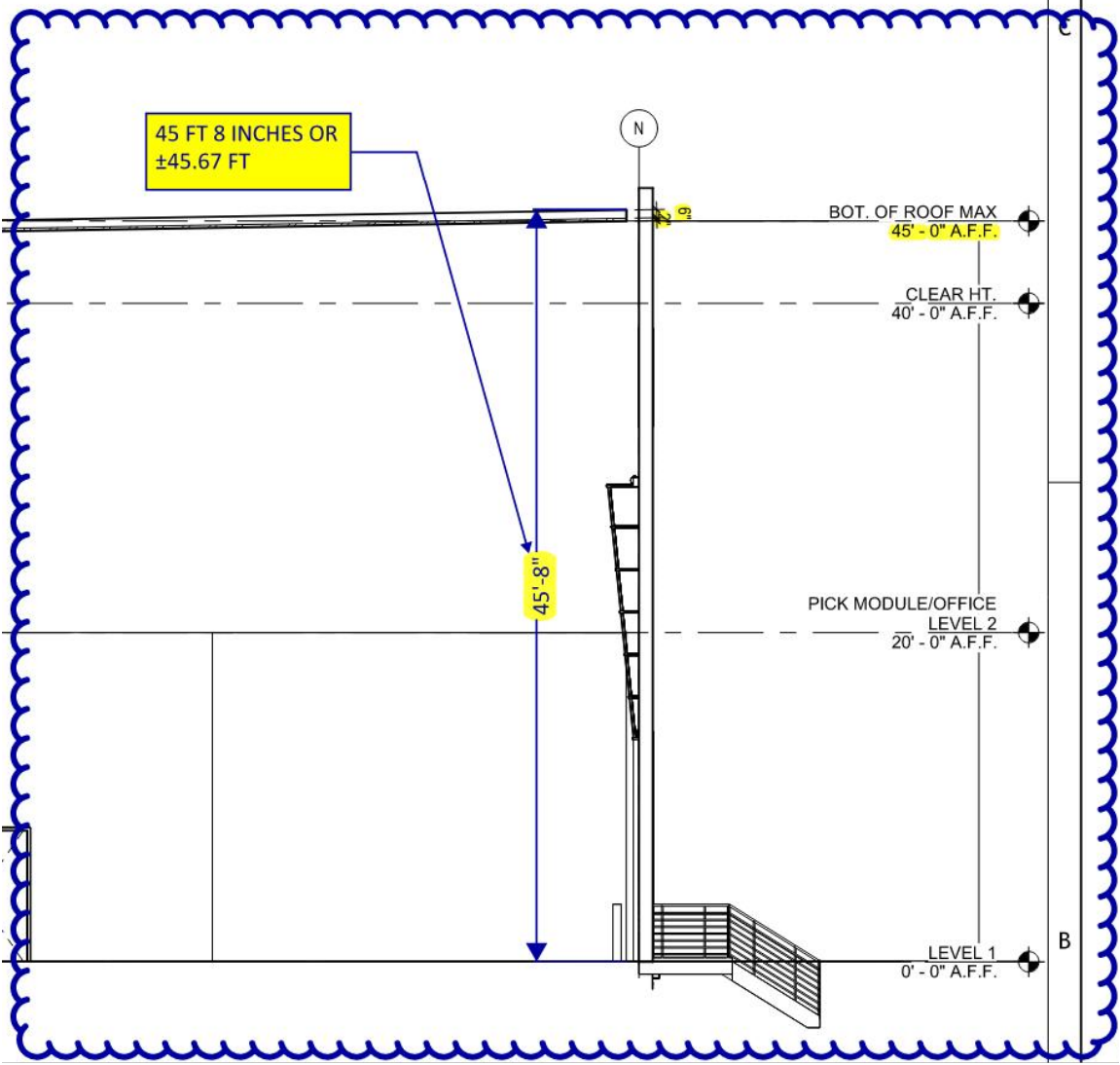
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HUDSON LOGISTICS CENTER

MAXIMUM BUILDING HEIGHT CALCULATION | PAGE 1 OF 3

PROPOSED BUILDING

Height of Building from FFE to Exterior Peak of Sloped Roof



HUDSON LOGISTICS CENTER

MAXIMUM BUILDING HEIGHT CALCULATION | PAGE 3 OF 3

BLDG FFE CALC @ 5-FT O/S

Note: CCW from NW corner

±50-FT INCREMENTS & BLDG CORNERS

Station	Elevation	Distance from previous (ft)	Station	Elevation	Distance from previous (ft)	Station	Elevation	Distance from previous (ft)
+00.00	142.86	0	20+00.04	142.92	50	41+10.71	145.35	50
0+50.00	142.92	50	20+50.04	142.92	50	41+60.71	143.92	50
1+00.00	142.92	50	21+00.04	142.92	50	42+10.71	143.92	50
1+50.00	142.92	50	21+50.04	142.92	50	42+60.71	142.93	50
2+00.00	142.92	50	22+00.04	142.92	50	43+10.71	142.93	50
2+50.00	142.92	50	22+50.26	142.63	50.226	43+60.71	142.93	50
3+00.00	142.92	50	22+71.26	142.63	20.999	44+10.71	142.93	50
3+50.00	142.92	50	23+00.04	142.93	28.774	44+60.71	142.93	50
4+00.00	142.92	50	23+50.04	142.93	50	45+10.71	142.93	50
4+50.00	142.92	50	24+00.04	144.03	50	45+60.71	142.93	50
5+00.00	142.92	50	24+13.37	144.59	13.333	46+10.71	142.93	50
5+50.00	142.92	50	24+63.37	146.62	50	46+60.71	142.93	50
6+00.00	142.92	50	25+13.37	146.90	50	47+10.71	142.93	50
6+50.00	142.92	50	25+63.37	146.90	50	47+60.71	142.93	50
7+00.00	142.92	50	26+13.37	146.90	50	48+10.71	142.93	50
7+50.00	142.92	50	26+63.37	146.90	50	48+60.71	142.93	50
8+00.00	142.92	50	27+13.37	146.90	50	49+10.71	142.93	50
8+50.00	142.92	50	27+63.37	146.90	50	49+60.71	142.93	50
9+00.00	142.92	50	28+13.37	146.90	50	50+10.71	142.93	50
9+50.00	142.92	50	28+63.37	146.90	50	50+60.71	142.93	50
10+00.00	142.92	50	29+13.37	146.90	50	50+60.71	142.93	50
10+50.00	142.92	50	29+63.37	146.90	50	51+24.04	142.93	50
11+00.00	142.92	50	30+14.71	146.84	51.336	51+60.71	142.93	50
11+50.00	142.92	50	30+64.71	146.91	50	51+74.04	142.93	50
12+00.00	142.92	50	31+14.71	146.91	50	52+10.71	142.93	50
12+50.00	142.92	50	31+64.71	146.91	50	52+37.37	142.85	63.333
13+00.00	142.92	50	32+14.71	146.91	50	52+61.37	142.90	50.668
13+50.00	142.92	50	32+64.71	146.91	50	52+87.37	142.89	50
14+00.00	142.92	50	32+99.37	146.72	34.667	53+11.37	142.90	50
14+50.00	142.92	50	33+29.79	146.72	30.418	53+37.37	142.92	50
15+00.00	142.92	50	33+64.71	146.91	34.915	53+61.37	142.90	50
15+50.00	142.92	50	34+14.71	146.92	50	53+87.37	142.87	50
16+00.00	142.92	50	34+64.71	146.91	50	54+11.37	142.90	50
16+50.00	142.92	50	35+04.75	146.72	40.04	54+37.37	142.92	50
16+62.17	142.63	12.166	35+35.16	146.72	30.418	54+61.37	142.90	50
16+83.17	142.63	20.999	35+60.71	146.91	25.542	54+87.37	142.90	50
17+00.00	142.93	16.833	36+10.71	146.91	50	55+11.37	142.90	50
17+50.00	142.92	50	36+60.71	146.91	50			
18+00.00	142.92	50	37+10.71	146.91	50			
18+50.00	142.92	50	37+28.75	146.72	18.04			
19+00.00	142.92	50	37+59.16	146.72	30.418			
19+14.26	142.63	14.266	38+10.71	146.91	51.542			
19+35.26	142.63	20.999	38+60.71	146.86	50			
19+50.04	142.92	14.774	39+10.71	146.86	50			
			39+60.71	146.86	50			
			40+10.71	146.91	50			
			40+60.71	146.91	50			

Ave. Grade 5' ft from Bldg. 144.24

FFE Elevation: 147.00

Difference from FFE: -2.76

PROPOSED BUILDING - AVERAGE GRADE CALCULATION

FFE to Highest Peak of Roof (45.67') +
Average Grade 5 ft Off of Building (2.76')
 ≤ 48.43 FT

TRAFFIC IMPACT STUDY

for

**Hudson Logistics Center
43 Steele Road
Hudson, New Hampshire**

Prepared for:

**Hillwood Enterprises, L.P.
5050 W. Tilghman Street, Suite 435
Allentown, PA 181104**



Prepared By:

**Langan Engineering & Environmental Services, Inc.
100 Cambridge Street, Suite 1310
Boston, MA 02114**

A handwritten signature in blue ink, appearing to read 'Maximo Polanco', is written over a horizontal line.

Maximo Polanco

A handwritten signature in black ink, appearing to read 'John D. Plante', is written over a horizontal line.

John D. Plante, P.E.

New Hampshire Licensed Professional Engineer No. 14072

September 2022

Revised: October 2022

Langan Project.: 151010101

LANGAN

Traffic Impact Study for
Hudson Logistics Center
Hudson, New Hampshire

Revised: October 2022
Langan Project.: 151010101

EXECUTIVE SUMMARY

Langan has prepared this traffic impact study to identify the operating conditions of the existing roadway network, the potential impacts of the amended Hudson Logistics Center (HLC) redevelopment at 43 Steele Road in Hudson, New Hampshire (See Figure 1 for the Location Map), improvements to address existing conditions, and to mitigate the impacts of the proposed development. The project site is approximately 377 acres, which is currently the Green Meadows Golf Course.

The town recently approved a three building fulfillment center warehouse development of 2.6 million square-foot under application SP04-20 on the subject site. The applicant is requesting to amend the development with a single building, with a ± 1.4 million square-foot footprint, to be operated by a single fulfillment center warehouse tenant. There are accessory structures (truck court guardhouse, maintenance building, and transportation center) supporting the operations on the site. **We compared the trip generation data for both developments (approved and amended) and determined that the single tenant will generate less average daily traffic (2406) compared to the approved development (4114), a 42% reduction in trips.** The peak hour volumes of the amended development are generally the same volumes as the approved development. As would be expected, the study intersections are anticipated to operate in similar or better conditions compared to the approved development.

Even though the proposed amended development is expected to generate significantly less average daily traffic than the approved development, to mitigate the peak hour volumes the applicant is committing to the construction of all the improvements identified in the previous approval and will have the same two private access driveways for the site as previously planned. One driveway (Green Meadow Drive) will connect to Lowell Road at the current location of the Mercury Systems driveway, at the intersection with Rena Avenue. The second site driveway is an extension of Wal-Mart Boulevard into the proposed development. (See Site Plan in Appendix A). Due to the configuration and operations associated with the new site plan, the Wal-Mart Boulevard driveway will be the primary access for trucks.

The proposed tenant's facility, a fulfillment center warehouse, has a similar role in the supply chain as the previously approved HLC development. This facility is a link in the tenant's supply chain and will not serve consumers directly.

The development's building construction schedule is anticipated to start in 2023 with a completion date of late 2024. Therefore, design years of the previous study (2022 and 2032) has changed to a build year analysis of 2024 and a 10-year horizon build-out for 2034, in accordance with New Hampshire Department of Transportation guidelines.

The proposed project's trip generation is based on ITE Land Use Code 155 High-Cube Fulfillment Center Warehouse (Non-Sort) which was used to evaluate the peak-hour 2024 opening year and the 2034 horizon year traffic operating conditions. The proposed tenant has developed very

Traffic Impact Study for
Hudson Logistics Center
Hudson, New Hampshire

Revised: October 2022
Langan Project.: 151010101

specific operational characteristics for this facility and have purposely staggered shift changes outside the roadway peak hours to further mitigate the project's impacts to the surrounding roadway network. For the purpose of this study, we are assigning the expected trip generation peak-hours of the generator to the roadway peak-hours to provide a conservative analysis, resulting in an over estimation of the traffic impacts.

A review of the analysis for the amended development shows that all study intersections are expected to operate within an acceptable Level of Service (LOS) and at better or similar conditions compared to the previously approved development. The proposed improvements will improve existing operating conditions and mitigate the project related traffic impacts. The adaptive signal control technology to be implemented at the five intersections on the Lowell Road corridor will operate more efficiently than traditional signals by adapting to video observations of the actual volumes on the road at any specific time.

Based on our analyses, the following previously approved by Hudson and NHDOT improvements continue to be recommended to improve existing operating conditions and mitigate the potential traffic impacts associated with the proposed development:

- Installation of new adaptive traffic signal controllers at the following intersections and place these intersection under town of Hudson control:
 - Lowell Road (Route 3A) & Wason Road/Flagstone Drive
 - Lowell Road (Route 3A) & Sagamore Bridge Road
 - Lowell Road (Route 3A) & Wal-Mart Boulevard
 - Lowell Road (Route 3A) & Green Meadow Drive/Rena Avenue
 - Lowell Road (Route 3A)/River Road/Dracut Road/Steele Road (depending on option selected)
- Signal timing optimization at the following intersections during the 2034 conditions:
 - Lowell Road (Route 3A) & Executive Drive
 - Lowell Road (Route 3A) & Fox Hollow Drive
 - Lowell Road (Route 3A) & Pelham Road
- Construction of the following improvements at the intersection of Lowell Road and Dracut Road /Steele Road:
 - Restripe one of the southbound thru lanes to a second exclusive left-turn lane onto Dracut Road and widen Dracut Road south of the intersection to accept a second receiving lane, which would transition back down to a single lane with a lane drop
 - Replace the stormwater drainage culvert under Lowell Road
- Construction of the following improvements at the intersection of Lowell Road and Rena Avenue/Mercury Systems driveway
 - Reconfigure the Mercury Systems driveway (Green Meadow Drive) as a private driveway serving both Mercury Systems and the proposed development, intersecting with Rena Avenue at the existing traffic signal

- Provide two left-turn lanes and a shared thru/right-turn lane on the eastbound approach
 - Widen the west side of Lowell Road to provide a southbound exclusive left-turn lane, two thru lanes and a shared thru/right-turn lane.
 - Adjust the existing median island north of the intersection to allow for turning movements from Green Meadow Drive
- Reconstruction the intersection of Lowell Road and Wal-Mart Boulevard
 - Construct a southbound exclusive right turn lane with approximately 315 feet of storage by modifying the existing median north of Wal-Mart Boulevard and restripe the northbound existing lanes.
 - Convert the existing northbound exclusive right turn lane to a shared thru/right-turn lane and restripe/widen on the north side of the intersection to receive the additional through lane.
- Reconstruction the intersection of Lowell Road and Sagamore Bridge Road
 - Construction of a third northbound left-turn lane
 - Widen/restripe a segment of Lowell Road (Route 3A) to provide three northbound thru-lanes from Rena Avenue to Wal-Mart Boulevard
 - Reconfigure the channelization island on Lowell Road
- Reconstruct the intersection of Lowell Road and Wason Road/Flagstone Road
 - Construction of a second northbound right-turn lane
 - Construction of an additional receiving lane on Wason Road eastbound to accept the two right-turning lanes from Lowell Road northbound
 - Provide a lane drop approximately 700 feet east of Lowell Road to meet existing Wason Road eastbound geometry
- Restriping at the intersection of Lowell Road and Fox Hollow Drive of the northbound right-turn-only lane to a shared thru/right-turn lane. Two northbound thru receiving lanes currently exist.
- Construction of a 5-foot wide sidewalk along the east side Green Meadow Drive from Lower Road to the project's main entrance.

In addition to the proposed improvements, as per the previous approval, the applicant has agreed to fund the potential future improvements identified at the intersection of Lowell Road and Wason Road/Flagstone Road in the form of an escrow account up to \$1,000,000. These improvements may include the following items:

Traffic Impact Study for
Hudson Logistics Center
Hudson, New Hampshire

Revised: October 2022

Langan Project.: 151010101

- Widen the northbound approach to provide an exclusive left-turn lane, three thru lanes and two exclusive right-turn lanes
- Widen the eastbound approach to provide a shared left-turn/thru lane and two exclusive right-turn lanes
- Widen to provide an additional northbound receiving lane on the north side of the intersection that becomes an exclusive right-turn lane into the Market Basket plaza
- Install variable lane usage signing/controls for the northbound approach to allow for two exclusive left-turn lanes, two thru lanes and two exclusive right-turn lanes during the weekday morning commuter peak to account for the high volume of left-turning traffic onto Flagstone Drive

In addition to the traditional Synchro analysis, a SimTraffic micro-simulation modeling was performed for all the intersection in the study area, with a focus on the intersection with the proposed adaptive signal control technology, based on the ITE trip generation. The SimTraffic model provides for additional operating characteristics to be considered in the analysis and more accurately reflects the effectiveness of the adaptive signal technology. The results of the analysis indicates that the roadway corridor will operate more effectively than indicated in the Synchro analysis indicates. This confirms that the roadway network has adequate capacity to accommodate the proposed development.

Another additional analysis was conducted to evaluate the actual tenant operating conditions, number of employees and the anticipated tenant trip generation. The proposed tenant has an operating program, which includes a specific shift changes and the number of employees on each of the two shifts. These shift changes generally occur outside of the roadway peak hours. In an effort to evaluate the potential impacts of the actual shift change traffic volumes, we prepared a 2024 build analysis of these tenant volumes during the roadway peak hours and compared it to the peak hour analysis based on ITE anticipated project trips and found that based on the tenant schedule the traffic impacts are expected to be generally similar or less compared to the ITE analysis. This would be expected, as the trip generation based on the tenant schedule is generally less during the evening peak hour, which is the timeframe with more traffic in the study area.

Upon implementation of the recommended improvements, the traffic impact of the proposed development is mitigated and existing operating conditions will be improved as compared to current conditions. It is our professional opinion that these improvements mitigate the traffic impacts of the proposed development.

The amended development is in compliance with the traffic related items in the town of Hudson Site Plan Criteria, Section 275-6, specifically:

6(B) Traffic circulation and access, including adequacy of entrances and exits, traffic flow, sight distances, curb cuts, turning lanes and traffic signalization - The results of the this

Traffic Impact Study for
Hudson Logistics Center
Hudson, New Hampshire

Revised: October 2022

Langan Project.: 151010101

traffic impact study indicates that the development and the associated proposed off-site improvements are compliant with the section of the Site Plan Criteria.

6(C) Pedestrian and bicycle safety and access - Pedestrian accommodations provide circulation throughout the site in areas of pedestrian activity and emergency egress. A sidewalk is provided along Green Meadow Drive, through the pick-up/drop-off area, and to the employee entrance. Multiple sidewalks and pedestrian crosswalks are provided in the employee parking lot providing safe and protected pedestrian access for the parking lots to the building, Sidewalks are provided adjacent to the building and providing access to the employee entrance. The pick-up/drop-off area has been situated to direct access to the employee entrance via a sidewalk. Bike racks are provided adjacent to the employee entrance. The site driveways are wide enough to accommodate bicycles and vehicles.

6(E) Emergency vehicle access, including fire lanes – Provisions for emergency vehicles circulation has been provided at the two driveways and throughout the site, allowing for movements to all areas of the site. The proposed development also provides an emergency access road (extension of Steele Road) to provide the town's emergency services access adjacent to the Merrimack River. At gated access points emergency services will be provided provisions to provide them direct access in required. Fire lanes will be provided at locations where loading docks and parking are not adjacent to the building (to be coordinated with fire marshal).

6(K) Suitably located travelways of sufficient width to accommodate existing and prospective traffic and to afford adequate light, air and access for fire-fighting apparatus and equipment to buildings, and be coordinated so as to compose a convenient system -

The public and private travelways are of sufficient width and configuration to accommodate the existing and proposed traffic, as well as access to the buildings for fire-fighting apparatus.

STORMWATER MANAGEMENT REPORT

for

**Hudson Logistics Center
43 Lowell Road
Hudson, New Hampshire**

Prepared For:

**Hillwood Enterprises, L.P.
5050 W. Tilghman Street, Suite 435
Allentown, PA 18104**



Prepared By:

**Langan Engineering & Environmental Services, Inc.
100 Cambridge Street, Suite 1310
Boston, MA 02114**

A handwritten signature in black ink, appearing to read 'Tim O'Neill', is written over a horizontal line.

**Timothy D. O'Neill, P.E.
New Hampshire Professional Engineer No. 16259**

A handwritten signature in black ink, appearing to read 'John D. Plante', is written over a horizontal line.

**John D. Plante, P.E.
New Hampshire Professional Engineer No. 14072**

**September 2022
Revised December 2022
Langan Project No. 1510101**

LANGAN

TABLE OF CONTENTS

	<u>Page No.</u>
EXECUTIVE SUMMARY	1
1.0 PROJECT OVERVIEW.....	1
1.1 Owner.....	1
1.2 Address of Development.....	1
1.3 Location of Site	1
1.4 Description of the Receiving Waters.....	1
1.5 Nature and Purpose of Land Disturbing Activity	2
1.6 Limits of Disturbance.....	3
1.7 Construction Schedule	3
2.0 EXISTING CONDITIONS SUMMARY	4
2.1 Existing Site Conditions	4
2.2 Wetlands and Streams.....	5
2.3 Soil Conditions	6
2.4 FEMA	9
3.0 PROPOSED STORMWATER TREATMENT SUMMARY	10
3.1 Design Criteria	10
3.2 Design Methodology.....	10
3.3 Existing Runoff Discharges (See Appendix A for Calculations)	11
3.4 Proposed Runoff Discharges (See Appendix B for Calculations).....	16
3.5 Existing vs. Proposed Discharge Comparison	22
3.6 Stormwater Management	23
3.7 Stormwater Treatment Measures	26
3.8 Geotechnical Considerations	31
4.0 STORM DRAINAGE COLLECTION SYSTEM DESIGN (SEE APPENDIX D FOR CALCULATIONS)	34
4.1 Design Criteria	34
4.2 Design Methodology.....	34
4.3 Storm Drainage Collection Summary	35
5.0 OFF-SITE ANALYSIS	35
6.0 CONCLUSION	36
7.0 REFERENCES	37

TABLE OF CONTENTS
(Continued)

FIGURES

Figure 1	Site Location Map
Figure 2	Aerial Map
Figure 3	Zoning Map
Figure 4	Effective FEMA Flood Map
Figure 5	NRCS Soils Map

DRAWINGS

Drawing CG Series	Grading & Drainage Plans (Under Separate Cover)
Drawing CE Series	Soil Erosion & Sediment Control Plans (Under Separate Cover)
Drawing CE 501	Soil Erosion & Sediment Control Notes & Details (Under Separate Cover)
Drawing SSSM Series	Site Specific Soil Map
Drawing EX-WS Series	Existing Watershed Map
Drawing PR-WS Series	Proposed Watershed Map
Drawing DA-CB Series	Drainage Area Map

APPENDICES

Appendix A	Existing Stormwater Discharge Calculations
Appendix B	Proposed Stormwater Discharge Calculations
Appendix C	Stormwater Quality and Groundwater Recharge Calculations (NH DES BMP Worksheets)
Appendix D	Stormwater Collection System Calculations
Appendix E	Inspection and Maintenance Manual
Appendix F	Infiltration Feasibility
Appendix G	Preliminary Geotechnical Engineering Study (Under Separate Cover)
Appendix H	Site-Specific Soil Survey Report
Appendix I	Groundwater Model
Appendix J	FEMA Flood Zone A Elevation Determination

EXECUTIVE SUMMARY

This stormwater management report has been prepared in support of the proposed development of approximately 375 acre site located at 43 Steele Road in the Town of Hudson New Hampshire. The existing site is currently developed as a 39-hole golf course known as Green Meadow Golf Club and is accessed from Steele Road. The existing topography on the site exhibits significant grade changes of up to 90 feet in elevation change. Many high and low points, and rolling topography can be found on site.

The proposed development is the construction and operation of a distribution warehouse facility known as the Hudson Logistics Center. The main warehousing building will have a footprint of approximately 1.4 million SF with a finished floor elevation of approximately 146.50. The development is to include a truck court entry guardhouse, pull-through inspection facility, back-in trailer maintenance building, and transportation building to support the operations on site.

The current access via Steele road to the site is unable to support the proposed facilities as the main access road. Therefore an entrance drive will be created for the redevelopment. A secondary access is proposed in northeast portion of the property. Upgraded utility service lines will be brought to the site within the proposed entrance ways.

Hydrologically, the site is located in the Merrimack River watershed, which is approximately 5,014 square miles, of which the project site encompasses a nominal amount of approximately 0.075%. The site is part of the Limit Brook – Merrimack River sub-watershed which encompasses approximately the southern three quarters of the Town of Hudson. Under the proposed conditions, the majority of the developed site will drain through closed pipe networks to the stormwater treatment systems before discharging off site at a controlled rate. Existing drainage patterns are being maintained to the greatest extent possible.

The proposed stormwater management system has been designed in accordance with the Town of Hudson current requirements, the New Hampshire Stormwater Manual, and the New Hampshire Department of Environmental Services regulations. The system incorporates elevated levels of stormwater quality, decreases the existing peak rate of runoff for all storm events analyzed, and provides above the required groundwater recharge volumes. The design of the proposed stormwater management system incorporates comments and feedback received throughout the permitting process of the previously approved application. This revised design, as compared to the previously approved application, more similarly maintains watershed areas and flow patterns in the proposed condition to those of the existing condition.

1.0 PROJECT OVERVIEW

1.1 Owner

The current owner of the site is as follows:

Green Meadow Golf Club, Inc.—Friel (condo lots 239/1 & 234/34)
55 Marsh Road
Hudson, New Hampshire

1.2 Address of Development

The site address is as follows:

43 Steele Road
Hudson New Hampshire
&
11 Steele Road
Hudson New Hampshire

1.3 Location of Site

The two-parcel site is currently known as the Green Meadow Golf Club located off of Steele Road in the Town of Hudson, New Hampshire on roughly 375 acres. The property is bounded to the northeast by multiple commercial sites including Sam's Club and Mercury Systems; to the southeast by an undeveloped lot along Lowell Road and residential properties; along the southern property line by residential properties; along the western property line by the Merrimack River; and along the northern property line by the Circumferential Highway (See Figure 1).

1.4 Description of the Receiving Waters

Hydrologically, the site is located in the Merrimack River watershed, which is approximately 5,014 square miles, of which the project site encompasses a nominal amount of approximately 0.075%. The site is part of the Limit Brook – Merrimack River sub-watershed which encompasses approximately the southern three quarters of the Town of Hudson. Under the proposed conditions, the majority of the developed site will drain through closed pipe networks to the stormwater treatment systems before discharging off site at a controlled rate. Existing drainage patterns are being maintained to the greatest extent practical.

1.5 Nature and Purpose of Land Disturbing Activity

The project proposes the development of a distribution facility on the current Green Meadows Golf Course and is being referred to as the Hudson Logistics Center. The existing Green Meadows site consists of a 39-hole golf course and under existing conditions, has a single access location through a residential neighborhood with limited utility infrastructure as is typical of a development of this nature.

The proposed development will be a single parcel consisting of a newly constructed warehousing and distribution facility with a foot print of roughly 1.4M sf and a finished floor elevation of 146.50'. In support of the warehousing facility a truck court entry guard house ($\pm 1,114$ sf), a transportation building ($\pm 3,538$ sf), a maintenance building ($\pm 7,427$ sf), and a pull through inspection canopy structure ($\pm 13,700$ sf) will also be constructed. In addition to the structures described above, to support the operation of the facility, site improvements including the follow features are proposed; vehicular parking and a drop off area for employees, employee patio areas, loading bays, truck courts with trailer parking, circulation drives, pedestrian designated walkways, a snow removal system, and landscaped areas.

The facility will require a secure, fenced truck court area and separate, fenced associate parking area. A guard house will be located at the main access point to the truck court yard. Circulation drives will be partially separated between truck traffic and passenger vehicles to reduce on-site conflicts and ensure the safety of onsite operations. The number of employee parking stalls is based on the number employees required to operate the facility under peak season conditions. The loading bays and trailer parking stalls allow for the most efficient and effective operation of the facility in the smallest practical footprint.

A shared, private entrance roadway is proposed at the existing signal on Lowell Road that currently services the Mercury Systems building to allow access to the site. A second, private access road will connect to the western extent of Walmart Boulevard within an existing easement.

Upgraded utility infrastructure will be brought into the site within the two proposed entrance roadways to service the facility. The improvements have been coordinated with abutting properties to ensure service is appropriately maintained in the proposed condition.

1.6 Limits of Disturbance

The limits of disturbance have been kept to a practical minimum. The proposed warehouse and site improvements require large, flat areas with minimum variation in elevation. The existing topography on site includes large elevation changes. Flattening these areas to accommodate the building pad and surrounding paved areas will require cut and fill slopes that extend horizontally from the limits of the site improvements to meet existing grades. A relative flat tie-in slope of 4 feet horizontal to 1 foot vertical has been incorporated across majority of the site to ensure slope stability.

The required site access roads create necessary disturbance for reasons discussed above. The access roadways extend into the site and across several smaller wetland features to allow for the development to avoid the impacts to more high quality wetland systems. All disturbance to sensitive buffer areas and wetlands have been kept as low as practical through the use of increased tie-in grades and retaining walls. The specific layout for the development, associate site features and stormwater treatment systems were designed in a manner to encourage the most compact development footprint practical. For further site layout design details refer to the Low Impact Design (LID) discussion of Minimize Disturbance Areas in section 3.6 Stormwater Management.

During construction, the designed limits of disturbance will include soil erosion and sediment control features such as fiber rolls and silt fencing to ensure no unnecessary disturbance to natural areas will occur.

1.7 Construction Schedule

Due to the complexities of construction sequencing on a project of this magnitude, a general contractor will need to be consulted to outline specific details based on their individual approach. As a general contractor has not yet been selected for the project a rough three phased construction sequence identifying major construction actives has been outlined below. The schedule below is subject to change based on input from the general contractor, availability of materials and final permitting approval.

Phase 1

Quarter 1 2023

- Install phase 1 Soil Erosion and Sediment control Measures
- Install construction and demolition staging areas
- Utility and services disconnect

- Establish temporary services
- Site demolition, clearing and grubbing
- Install and construct Northeastern stream crossing

Phase 2

Quarter 1 2023

- Install phase 2 Soil Erosion and Sediment control Measures
- Mass earthwork and rough grading
 - Construct southern berm as soon as possible and stabilize soils
- Building pad construction

Phase 3

Quarter 3/4 2023

- Install phase 3 Soil Erosion and Sediment control Measures
- Stormwater conveyance system and utility installation
- Building construction
- Paving and landscaping installation
- Final site stabilization

Quarter 1 2024

- Certificate of Occupancy
- Removal of Soil Erosion and Sediment Control features

2.0 EXISTING CONDITIONS SUMMARY

2.1 Existing Site Conditions

Under existing conditions, Green Meadow Golf Course consists of a 39-hole golf course with associated cart paths, water and sand hazards, rolling topography, and supporting infrastructure. The site has two building on the property with access from Steele Road; a roughly 5,300 sf club house at elevation 158 feet in the center of the property with a small refreshment service and a roughly 11,000 sf maintenance facility with detached garage at elevation 138 feet in the south west corner of the property. The club house includes a several acre, paved parking lot and cart storage/staging area. Paved and gravel access roads service the club house and maintenance facility. The maintenance facility has dirt and gravel storage and service areas surrounding the building.

The existing topography on the site has significant grade changes with elevations varying up to 90 feet. Grades along Lowell Road from the northern intersection at Lowell Road and Walmart Boulevard to the southern intersection of Lowell Road and the Mercury System drive entrance are roughly elevation 160 to 170 feet respectively. Heading in a

westerly direction into the subject site, elevation drops to varying low points ranging between elevation 120 and 125 feet in the main wetland systems which runs from the north property line, along the rear of the Mercury Systems property line to the southern border. Further west into the site, elevations rise amongst rolling golf course topography to the top of a shallow ridge line which splits the major site watersheds. This ridge line begins at the northern extent of the property at roughly elevation 155 feet and continues south, approximately two thirds the length of the property where it reaches its highest elevation of ± 170 feet. The ridge continues to the south where it meets the existing property line at elevation ± 160 feet. To the west of the ridge, elevation drops over rolling golf course topography to the top of a steep slope about 60 feet from the edge of the Merrimack River. Elevations along the top of this steep slope vary from a north to south direction from approximately 120 to 100 feet in elevation. The edge of the Merrimack River from a north to south direction along the property limits is roughly elevation 88 to 87 feet.

2.2 Wetlands and Streams

Four main categories of wetlands exist on the site today; isolated ponds, the northeast wetlands, the southeast wetlands, and the Merrimack River. The isolated ponds, northeast and southeast wetlands on site have a long history of alteration predating the regulation of freshwater wetlands. The site was cleared and use for the agricultural purposes prior to the construction of the golf course in the 1950s. Between 1952 and 1965 large earthwork manipulation took place to construct the existing golf course. On-site wetlands were manipulated over this time period through clearing, filling, channelization, and excavation. Areas were also excavated outside of existing wetland areas to place water hazards, creating multiple isolated wetlands and some hydrologically connected wetlands through the use of pipes. The result is the complex wetland system on site today with varying levels of quality and function.

The northeastern wetland system is a mostly wooded area containing excavated ditches to provide a drainage path for stormwater discharge from an upstream detention pond located off the subject site. These excavated ditches flow to an unnamed perennial stream that discharges to the Merrimack River approximately 1,600 feet to the northeast.

The southeasterly wetland system contains wooded areas, scrub-shrub, emergent and open water wetlands; some of which are directly associate with Limit Brook. Limit Brook is a perennial tributary to the Merrimack River. Limit Brook enters the property to the southeast corner of the site, curves to the west and exists the site to the south. The

portion of the curve located on site was modified to create water hazards during the construction of the golf course.

More detailed descriptions of the wetland area functionalities and proposed impacts can be found in the NH DES Wetland Bureau Major Impact Dredge & Fill Application as an Appendix to this report under separate cover.

2.3 Soil Conditions

According to the USDA Natural Resources Conservation Service (NRCS) Web Soil Survey, the hydrologic soil type on site is predominantly group A and B (see Figure 5). However, upon further investigation out lined in “Site-specific Soil Survey Report, Hudson Logistics Center, Lowell and Steel Roads Hudson, NH, GES #2019216” performed by Gove Environmental Services, Inc. dated May 4th, 2020, found as an Appendix to this report, the following soils have been identified on site. The boundaries and locations of these soils can be found on the Site Specific Soil Survey Map Series.

Table 1: Soil Identification Chart

Map Unit Symbol	Map Unit Name	Rating
4	Pootatuck Very Fine Sandy Loam	B
24	Agawam Fine Sandy Loam	B
115	Scarboro Muck	D
400	Udorthents, Sandy	A
513	Ninigret Fine Sandy Loam	B
540	Raypol Loamy Fine Sand	D
699	Urban land	IMPERVIOUS
917	Ninigret Variant (Somewhat Poorly Drained)	C
Ponds	Open Water	N/A

A summary of the basic characteristics of the soil series present on-site are outlined below:

Pootatuck Very Fine Sandy Soil – Pootatuck Very Fine Sandy Soil occurs on flood plains that flood sporadically. These are fine textured soils that are moderately well drained. In this case, the Pootatuck series is found adjacent the Merrimac River.

Agawam Fine Sandy Loam – occurs on glacial outwash plains and alluvial deposits. The Agawam series has a fine sandy loam topsoil and subsoil, then becomes loamy sand in the substratum. This is a well-drained soil with estimated seasonal high water tables deeper than 40 inches. While this soil map unit is in a golf course that has undergone significant grading, the essential soil characteristics are present to identify the soil series. Common inclusions in depressions and swales is the soil series Ninigret.

Scarboro Muck – Scarboro Muck occurs in the wetlands on the site. Scarboro is very poorly drained and has an organic topsoil. Common inclusions are the poorly drained Raypol series and the Borohemists that have deeper organic deposits.

Udorthents, Sandy – Udorthents, Sandy represent areas on the site where excavation and filling have occurred to the extent that no soil characteristics remain to classify as a soil series. These are typically sandy or gravelly areas that are well to excessively drained.

Ninigret Fine Sandy Loam – Ninigret Fine Sandy Loam is the moderately well drained analog of the Agawam soil series. This is a moderately well drained soil that has an estimated seasonal high water table 20 to 30 inches below the soil surface. Like Agawam, the topsoil is fine sandy loam, the subsoil is fine sandy loam, and the substratum becomes coarser such as loamy sand or fine sand. It occurs on the same glacial outwash

landforms as Agawam, but is found more in the flat areas, drainage ways and swales. Inclusions are Deerfield loamy sand and the Ninigret Variant.

Raypol Loamy Fine Sand – Raypol Loamy Fine Sand is a hydric soil that is found on glacial outwash plains. It is found in conjunction with Agawam, Ninigret and Ninigret variant. It is found between the upland moderately well drained and somewhat poorly drained soils and the very poorly drained Scarboro muck. It is typically identified as wetlands.

Urban Land – Urban Land is a map unit that represents impervious areas of buildings, pavement and packed gravel parking areas.

Ninigret Variant (Somewhat Poorly Drained) – Ninigret Variant (Somewhat Poorly Drained) is the wetter analog of the Ninigret series. This is a somewhat poorly drained soil that has a seasonal high water table from 0 to 15 inches below the soil surface, but has high chroma matrices that do not make the soil hydric. This most occurs on this site as an inclusion to the Ninigret map unit.

Soils are classified into hydrologic soil groups (HSG) to indicate the minimum rate of infiltration obtained for bare soil after prolonged wetting. The HSGs, which are A, B, C and D, are one element used to determine runoff curve numbers and analyzing stormwater characteristics of a site.

Group A: Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B: Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C: Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D: Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

2.4 FEMA

According to the Flood Insurance Rate Map of Hillsborough County, New Hampshire conducted by the Federal Emergency Management Agency (FEMA) map number 33011C0656D and map number 33011C0658D with effective dates of September 25, 2009 the site is located within the following zones:

- FEMA Flood Zone X (Unshaded)
- FEMA Flood Zone X (Shaded)
- FEMA Flood Zone A
- FEMA Flood Zone AE with a base flood elevation (BFE) of 111 (see Figure 4)
- Floodway Areas in Zone AE

The FEMA figure does not accurately reflect the limits of the Zone AE flood plain based on more accurate topographic information provided by the topographical survey used for this development. The Zone AE limits follow Base Flood Elevation (BFE) 111 contour in the northwestern portion of the site and the BFE 110 in the southwestern portion of the site. The accurate Zone AE flood limits, adjusted to the design vertical datum, is reflected in the proposed design documents. The survey files reflect the FEMA delineated line.

The project will not including any fill condition within the 100 year flood plain.

The Zone A flood area located in the south east region of the site along Limit brook was analyzed in the army corps of engineer's software known as HEC-Ras to determine the 100 year flood elevations. These calculations can be found in Appendix J of this report.

The limits of the Zone A floodplain have been reflected similarly to those of the adjusted Zone AE limits discussed above.

3.0 PROPOSED STORMWATER TREATMENT SUMMARY

The purpose of the Stormwater Management Plan is to provide long-term protection of natural resources in and around the site. This is achieved by implementing stormwater quality and quantity control measures designed to reduce pollutant discharge from the site, maintain a level of stormwater recharge and control discharge flow rates.

3.1 Design Criteria

Peak flow rates at all points of discharge from the site were analyzed to compare proposed discharge rates with the existing condition.

The storms analyzed include the following:

- A 2-year, 24-hour storm consisting of 3.11 inches of rainfall
- A 10-year, 24-hour storm consisting of 4.79 inches of rainfall
- A 25-year, 24-hour storm consisting of 5.84 inches of rainfall
- A 50-year, 24-hour storm consisting of 6.62 inches of rainfall

These events are based on the site specific location data provided by the National Weather Service (NOAA) Precipitation Frequency Data Server (PFDS) and the Northeast Regional Climate Center (NRCC) "Atlas of Precipitation Extremes for the Northeastern United States and Southeast Canada" Type III, 24-hour storm event for Hudson New Hampshire. NOAA Atlas 14, Volume 10, Version 3.

3.2 Design Methodology

The peak runoff discharges for the existing and proposed conditions were analyzed using Soil Conservation Service (SCS) methodology, which outlines procedures for calculating peak rates of runoff resulting from precipitation events, and procedures for developing runoff hydrographs. Values for area, curve number, and time of concentration were calculated for the existing and proposed conditions.

The curve number "CN" is a land-sensitive coefficient that dictates the relationship between total rainfall depth and direct storm runoff. The soils within the watershed are divided into hydrologic soil groups (A, B, C and D) as previously described.

The time of concentration, T_c , is defined as the time for runoff to travel from the hydraulically most distant point in the watershed to a point of interest. Values of time of concentration were determined for existing and proposed conditions based on land cover and slope of the flow path, using methods outlined in the SCS methodology.

For this study, a 24-hour SCS Type III standard rainfall distribution was used to determine the peak flow rate to all points of discharge from the site.

3.3 Existing Runoff Discharges (See Appendix A for Calculations)

The project site directs stormwater run-off to two analysis locations under the existing conditions. Watershed A discharges run off directly to the Merrimack River along the western Property line via sheet flow or pipe discharge. Watershed B discharges run off, to wetland systems running north to south through the eastern region of the property west of Lowell Road. This wetlands system includes portions of an unnamed stream to the north and portions of Limit Brook to the south. Both of which ultimately discharge to the Merrimack River.

The watershed analysis includes surrounding areas beyond the property line that contribute flow to the project site's watersheds and drainage analysis. The existing watersheds A and B analyzed in this report were further delineated into Watersheds A1, A2, A3, A4, A5, A6, A7, A8, A9, A10, A11, A12 and Watersheds B1, B2, B3, B4, B5, B6, B7, B8, B9, B10, B11, B12, B13 to more accurately model the existing flow patterns. These watersheds are described below:

Watershed A

Watershed A1, ±32.78 acres, is located along the western region of the project site. The watershed consists of areas of the golf course including fairways, paths, trees and sand traps as well some more heavily wooded regions. Run off sheet flows over land in a south westerly direction where majority of the run off is directed through an existing 48 inch RCP culvert and discharged directly into the Merrimack River. A small area in the southern section of the watershed sheet flows directly over land to the watershed analysis point A, the Merrimack River.

Watershed A2, ±2.84 acres, is located along the northern property line. The watershed consists of some fairway areas, paths, and lightly wooded regions. Run off sheet flows over land in a north easterly direction where it enters an offsite drainage channel that discharges to the Watershed analysis point A, the Merrimack River.

Watershed A3, ±25.56 acres, is located along the southern property line. The watershed consists of areas of the golf course including fairways, paths, trees and sand traps as well some more heavily wooded regions. Run off sheet flows over land in a westerly direction to the watershed analysis point A, the Merrimack River.

Watershed A4, ±32.41 acres, is located in the southerly region of the site. The watershed consists of areas of the golf course areas including fairways, paths, trees, sand traps and a small pond feature that functions as a golf water hazard. More heavily wooded areas exist on steep slopes in the watershed. A maintenance facility including a main building and a smaller accessory structure, gravel parking / staging areas and roadway exist in this watershed. Run off sheet flows over land in a westerly direction to the water hazard pond. Overflow volumes are directed through watershed A11 to watershed analysis point A, the Merrimack River.

Watershed A5, ±18.17 acres, is located in the south west region of the site. The watershed consists of areas of the golf course areas including fairways, paths, trees, sand traps and a shallow, wooded wetland depression. Run off sheet flows over land in a westerly direction to the wetland depression where it captured. Overflow volumes are directed through watershed A11 to watershed analysis point A, the Merrimack River.

Watershed A6, ±9.80 acres, is located in the norther east corner of the site, along the northern property line. The watershed consists of areas of the golf course areas including fairways, paths, trees, and sand traps. Run off sheet flows over land in a westerly direction to shallow channel directing flows to watershed A-8 where run off ultimately discharges to Watershed analysis point A, the Merrimack River.

Watershed A7, ±12.15 acres, is located in the northern region of the site. The watershed consists of areas of the golf course areas including fairways, paths, trees, sand traps, and more minor areas of more densely wooded sections. Run off sheet flows over land and is partially captured in shallow depressions created by the golf course topography where shallow pools are infiltrated. By passing flows are directed to watershed A12.

Watershed A8, ±1.75 acres, is located in the north western property line and runs along the Merrimack River. This watershed consists of mainly wooded areas and steep slopes along the river bank. Some grassy areas associated with the golf course are included along the eastern watershed extent. Run off from this watershed sheet flows directly over land to Watershed analysis point A, the Merrimack River.

Watershed A9, ±9.69 acres, is located in the central, western region of the site. The majority of watershed consists of the main club house building and patio, paved parking lot, cart storage staging area, paths, drives and walkways. Areas of the golf course including fairways, trees, and sand traps make up the remained or the watershed. Run off sheet flows over land in a westerly direction to a rip rap channel with a pipe inlet. Water is captured and conveyed via closed pipe network to a direct discharge location in watershed A1 along the bank of the Merrimack River, watershed analysis point A.

Watershed A10, ±9.46 acres, is located in the central region of the site. The majority of watershed consists of the golf course areas including fairways, paths, trees, and sand traps with a more densely wooded area toward the middle of the watershed. Run off sheet flows over land in a westerly direction to a shallow depression with a catch basin inlet. Linked pipe information is available, however flows appear to be conveyed via closed pipe network and daylight in watershed A4 and ultimately, watershed analysis point A, the Merrimack River.

Watershed A11, ±6.18 acres, is located along the western property line and runs along the Merrimack River. This watershed consists of mainly wooded areas and steep slopes along the river bank. Some grassy areas and sand traps associated with the golf course are included along the eastern watershed extent. Run off from this watershed sheet flows directly over land to Watershed analysis point A, the Merrimack River

Watershed A12, ±22.00 acres, is located in the northern central area of the site. The watershed consists of areas of the golf course areas including fairways, paths, trees and sand traps. Run off sheet flows over land and is partially captured in shallow depressions created by the golf course topography where shallow pools are infiltrated. By passing flows are directed to watershed A1 where run off ultimate discharges to watershed analysis point A, the Merrimack River.

Watershed B

Watershed B1, ±33.06 acres, is located in the northeastern area of the project site. A small portion of watershed B-1 is located to the northern side of the existing Mercury System drive entrance. The northern half of the crowned access drive sheet flows to a wetland system discharging to the unnamed stream located in the main portion of watershed B1. The eastern two thirds of the main watershed consists of woods, wetlands and an unnamed stream as well as a portion of Walmart Boulevard. The western

third includes portions of the golf course including fairways, paths, trees and sand traps. Run off sheet flows directly to the main wetland system of Watershed analysis point B.

Watershed B2, ±12.77 acres, is located in the central northern section of the site. The area includes portions of the golf course including fairways, paths, trees, sand traps and a water hazard pond. Run off sheet flows over land to the water hazard pond and subsequently to the main wetland system of Watershed analysis point B within watershed B3.

Watershed B3, ±18.52 acres, is located in the central, eastern region of the project site. The eastern half of the watershed consists of wooded and wetland areas. The western half includes areas of the golf course including fairways, paths, trees and sand traps. Run off sheet flows directly to the main wetland system of watershed analysis point B.

Watershed B4, ±29.73 acres, is located along the eastern property line within the existing property lines. The watershed consists of woods and wetland areas to the north and portions of the golf course including fairways, paths, trees sand traps, wetlands and a portion of Limit Brook to the south. Run off sheet flows in a southerly direction over land to wetlands connected to Limit Brook and to the main wetland system of Watershed analysis point B.

Watershed B5, ±34.44 acres, is located in the central eastern region of the project site. The eastern region of the watershed consists of wetland areas, a section of Limit Brook and a wooded portion of the property. The western half consists of sections of the golf course including fairways, paths, trees, sand traps and sections of the main access drive. Run off sheet flows in an easterly direction over land to the main wetland system of watershed analysis point B.

Watershed B6, ±27.95 acres, is located in the south eastern region of the project site. The watershed consists of sections of the golf course including fairways, paths, trees, sand traps and sections of the main access drive as well a region of Limit Brook and wetland systems containing minimal trees. Run off sheet flows in an easterly direction over land to the main wetland system of watershed analysis point B.

Watershed B7, ±7.76 acres, is the south eastern extent of the project site. The watershed consists mainly of woods, wetlands and region of Limit Brook. A section of the golf course fairways, paths, and trees occupy the western extent of the watershed. Run off sheet

flows in an easterly direction over land to the main wetland system of watershed analysis point B.

Watershed B8, ±10.50 acres, is located along the southern property line near the eastern corner. The watershed consists of golf course fairways, paths, sand traps, trees and a pond. Run off sheet flows in an easterly direction over land to the pond. The pond discharges over flow volumes easterly to combine with watershed B-7 and ultimately discharge to the main wetland system of watershed analysis point B.

Watershed B9, ±10.08 acres, is located centrally to the project area. The watershed consists of portions of the golf course including fairways, paths, trees and sand traps. Run off sheet flows over land and is partially captured in shallow depressions created by the golf course topography where shallow pools are infiltrated. By passing flows are directed into the main wetland system of watershed analysis point B through watershed B5.

Watershed B10, ±1.01 acres, is located along the northern property line. This area consists of mainly woods. Run off sheet flows over land and is partially captured in shallow depressions created by the golf course topography where shallow pools are infiltrated. By passing flows are directed into the main wetland system of Watershed analysis point B through watershed B1.

Watershed B11, ±1.28 acres, is located along the northern property line. This area consists of mainly woods. Run off sheet flows over land and is partially captured in shallow depressions created by the golf course topography where shallow pools are infiltrated. By passing flows are directed into the main wetland system of watershed analysis point B through watershed B1.

Watershed B12, ±5.24 acres, is located in the south east region of the site. The watershed consists of golf course fairways, paths, sand traps, trees and a pond. Run off sheet flows in an easterly direction over land to the pond. The pond discharges over flow volumes easterly to combine with watershed B-5 and ultimately discharge to the main wetland system of watershed analysis point B

Watershed B13, ±14.40 acres, is located along the western extent of Lowell Road and extends to the eastern existing property line of the subject property. The majority of this watershed consists of woods and wetland areas. Portions of the northern abutter's access driveway and roadway shoulders along Lowell Road are also included in the

watershed. Run off sheet flows in a south westerly direction over land to wetlands connected to Limit Brook and to the main wetland system of watershed analysis point B.

3.4 Proposed Runoff Discharges (See Appendix B for Calculations)

The proposed watershed analysis utilizes the same two discharge locations as under the existing conditions, A and B. The outer limits and overall area analyzed under the proposed conditions is consistent with the existing conditions. Having consistent analysis of overall areas and discharge locations between the existing and proposed conditions ensures the model represents an accurate pre and post construction run off comparison.

In order to accurately model and route the various stormwater features the proposed watersheds have been further delineated. Several of the existing watershed no longer exist. The elimination of these watersheds is a result of the areas being significantly altered requiring them to be combine with other watersheds. The proposed watersheds area have been identified as follows;

- Watershed A
 - A1-1
 - A1-2
 - A1-3
 - A2
 - A3
 - A4
 - A5
 - A6
 - A8
 - A11-1
 - A11-2

- Watershed B
 - B1-1
 - B1-2
 - B1-3
 - B2
 - B3-1
 - B3-2
 - B4
 - B5-1
 - B5-2
 - B6-1
 - B6-2
 - B7
 - B8
 - B10
 - B11
 - B13

Watershed A

Watershed A1-1, ±22.14 acres, includes the western portion of existing watershed A1. The eastern most potion of the watershed area has been reduced and a seeded fill slope now occupies a section of the area. Flows patterns in this watershed have been substantially maintained as under existing conditions.

Watershed A1-2, ±21.47 acres, includes the central western region of the roof area, the central, western region of the loading bays and truck court, the transportation building, O.T.R. and tractor parking lots, pedestrian walk ways and landscaped areas. Run off from this watershed is collected by four foot deep sumped catchbasins or roof leaders and conveyed via a closed pipe network. Run off collected from the truck court area passes through an oil water separator. Stormwater is discharged from the collection network to a sediment forebay located in Infiltration basin A1-2. The stormwater quality volume is treated, groundwater recharge provided, and flows attenuated before discharging at a controlled rate through an outlet control structure. Flows discharge over a preformed scour hole and combine with watershed A1.

Watershed A1-3, ±31.97 acres, is located entirely in the north western region of the developed area. The watershed includes the north western region the main building's roof area, the northern western loading bays and truck court areas, main truck entrance guard shack and parking lot, truck turn around area, snow scrapper, pull-through inspection canopy, pedestrian paths, and landscaped areas. Run off from this watershed is collected by four foot deep sumped catchbasins or roof leaders and conveyed via a closed pipe network. Run off collected from the truck court area passes through an oil water separator. Stormwater is discharged from the collection network to a sediment forebay located in Infiltration basin A1-3. The stormwater quality volume is treated, groundwater recharge provided, and flows attenuated before discharging at a controlled rate through an outlet control structure. Flows discharge over a preformed scour hole and combine with watershed A1-1.

Watershed A2, ±0.16 acres, includes the remaining area of existing watershed A2. The southernmost area of the watershed has been reduced. Flows patterns in this watershed have been substantially maintained as compared to the existing conditions. Run off sheet flows over land in a north easterly direction where it enters an offsite drainage channel that discharges to the Watershed analysis point A, the Merrimack River.

Watershed A3, ±23.40 acres, includes the remaining area of existing watershed A3. The northernmost area of the watershed has been reduced. A large section of the planted berm is included in this watershed. A grass swale has been included to ensure run off from the berm is directed to the south, away from the neighboring residential properties. The swale discharges to a shallow pool which over tops to a level spreader dissipating flow to ensure no erosion will occur. From there, water sheet flows towards the Merrimack River.

Watershed A4, ±14.77 acres, includes the remaining area of existing watershed A4. The north eastern most area of the watershed has been reduced. A seeded and planted area is proposed where the demolished maintenance building stood. Flows patterns in this watershed have been substantially maintained as compared to existing conditions.

Watershed A5, ±5.47 acres, includes the remaining area of existing watershed A5. The easternmost area of the watershed has been reduced and now contains a portion of the earthen berm. Flows patterns in this watershed have been substantially maintained as compared to the existing conditions.

Watershed A6, ±4.89 acres, includes the remaining area of existing watershed A6. The north eastern area of the watershed has been reduced and now contains the seeded fill slope of Infiltration basin A1-3. Flows patterns in this watershed have been substantially maintained as compared to the existing conditions.

Watershed A8, ±1.75 acres, is located in the north western property line and runs along the Merrimack River and remains untouched from the existing condition. This watershed consists of mainly wooded areas and steep slopes along the river bank. Some grassy areas associated with the golf course are included along the eastern watershed extent. Run off from this watershed sheet flows directly over land to Watershed analysis point A, the Merrimack River.

Watershed A11-1, ±6.18 acres, remains unaltered in the proposed condition with the exception of additional planting. Flow patterns have been maintained from existing conditions.

Watershed A11-2, ±34.74 acres, includes a portion of the northern face of the earthen berm, a section of the emergency access road and areas of the existing golf course that are to be planted. Run off flows overland to infiltration basin A11-2. A11-2 is continued in the south western region of the development. The watershed includes the south western region of the roof area, the south western region of the loading bays and truck court, the maintenance building and associated parking lot, south west associate parking lot, pedestrian walk ways and landscaped areas. Run off from this watershed is collected by four foot deep sumped catchbasins or roof leaders and conveyed via a closed pipe network. Run off collected from the truck court area passes through an oil water separator. Stormwater is discharged from the collection network to a sediment forebay located in Infiltration basin A11-2. The stormwater quality volume is treated, groundwater recharge provided, and flows attenuated before discharging at a controlled rate through

an outlet control structure. Flows discharge over a preformed scour hole and combine with watershed A11-1.

Watershed B

Watershed B1-1, ±26.80 acres, includes the remaining area of existing watershed B-1. The western most portion of the watershed was reduced. The northern Walmart Blvd. access road way split the main watershed in an east to west direction. All proposed impervious run off is removed from the watershed. Where the roadway crosses the wetland and unnamed stream, an arched, open bottom culvert crossing has been proposed to maintain ecological and hydrologic connectivity as under existing conditions. The small portion to the north of the Mercury Systems drive has also been reduced, removing impervious areas and incorporating planted slopes. Flows patterns in this watershed have been substantially maintained as under existing conditions.

Watershed B1-2, ±4.40 acres, is located in the northern eastern region of the development and includes the northern access roadway, a segment of the truck entrance and guard shack parking area drive, and a portion of north eastern site circulation road. Run off from this watershed is collected by catchbasins and conveyed in a four foot deep sumped catchbasin, closed pipe network. Water is discharged from the collection network to a sediment forebay located in Infiltration basin B1-2. The stormwater quality volume is treated, groundwater recharge provided, and flows attenuated before discharging at a controlled rate through an outlet control structure. Flows discharge to a preformed scour hole and combine with watershed B1-1.

Watershed B1-3, ±19.56 acres, is located in the north eastern region of the development and include a portion of the truck court area, pallet storage area, roof drainage and landscaped areas. Run off from this watershed is collected by four foot deep sumped catchbasins or roof leaders and conveyed via a closed pipe network. Run off collected from the truck court area passes through an oil water separator. Stormwater is discharged from the collection network to a sediment forebay located in extended dry detention basin B1-3. The stormwater quality volume is treated, and flows attenuated before discharging at a controlled rate through an outlet control structure. Flows discharge over a preformed scour hole in infiltration basin B1-2 and continue downstream as described above.

Watershed B2, ±7.32 acres, includes the remaining area of existing watershed B-2. The western most portion of the watershed was reduced and a seeded fill slope now occupies

a section of the area. Flow patterns in this watershed have been substantially maintained as compared to the existing conditions.

Watershed B3-1, ±13.90 acres, includes the remaining area of existing watershed B-3. The western and southern most portion of the watershed has been reduced and a seeded fill slope and retaining wall now occupy a section of the area. Flow patterns in this watershed have been substantially maintained as compared to the existing conditions.

Watershed B3-2, ±7.08 acres, encompasses the entirety of the central site access roadway, portions of the eastern site circulation roadway, landscaped areas and pedestrian walkways. Run off from this watershed is collected by catchbasins and conveyed in a four foot deep sumped catchbasin, closed pipe network. Water is discharged from the collection network to a sediment forebay located in extended dry detention basin B3-2. The stormwater quality volume is treated, and flows attenuated before discharging at a controlled rate through an outlet control structure. Flows discharge to a preformed scour hole and combine with watershed B3.

Watershed B4, ±28.64 acres, includes the remaining area of existing watershed B-4. The watershed has been split by the main access drive. All proposed impervious run off is removed from the watershed. Seeded side slopes and drainage features are now included in the watershed. Flow patterns in this watershed have been substantially maintained as compared to the existing conditions.

Watershed B5-1, ±24.06 acres, includes the remaining area of existing watershed B-5. The watershed has been split by the main access drive. All proposed impervious run off is removed from the watershed. Seeded side slopes and drainage features are now included in the watershed. Where the main access road crossed the wetland, an arched open bottom culvert has been installed to maintain ecological and hydrologic connectivity as under existing conditions. Flow patterns in this watershed have been substantially maintained as compared to the existing conditions.

Watershed B5-2, ±11.27 acres, is located eastern central region of the development and includes a portion of the south eastern truck court, water tower, landscaped areas and pedestrian walk ways. Run off from this watershed is collected by four foot deep sumped catchbasins or roof leaders and conveyed via a closed pipe network. Run off collected from the truck court area passes through an oil water separator. Water is discharged from the collection network to a sediment forebay located in Infiltration basin B5-2. The stormwater quality volume is treated, groundwater recharge provided, and flows

attenuated before discharging at a controlled rate through an outlet control structure. Flows discharge to a preformed scour hole and combine with watershed B5.

Watershed B6-1, ±10.05 acres, includes the remaining area of existing watershed B-6. The western region of the watershed has been reduced and now includes planted slopes and a portion of the emergency access road. Flow patterns in this watershed have been substantially maintained as compared to the existing conditions.

Watershed B6-2, ±39.00 acres, is located in the south eastern region of the development. The watershed includes the south eastern portion the main building's roof area, eastern associate parking lots, associate entry gates, drop off area, south eastern circulation road, emergency access road, patio areas, north eastern extent of the berm, pedestrian paths, and landscaped areas. Run off from this watershed is collected by four foot deep sumped catchbasins or roof leaders and conveyed via a closed pipe network. Stormwater is discharged from the collection network to a sediment forebay located in Infiltration basin B6-2. The stormwater quality volume is treated, groundwater recharge provided, and flows attenuated before discharging at a controlled rate through an outlet control structure. Flows discharge over a preformed scour hole and combine with watershed B6-1.

Watershed B7, ±8.04 acres, includes the remaining area of existing watershed B-7. The western most portion of the watershed was reduced and a seeded berm slope now occupies a section of the area. Flow patterns in this watershed have been substantially maintained as compared to the existing conditions.

Watershed B8, ±7.57 acres, includes the remaining area of existing watershed B-8. The western most portion of the watershed was reduced and seeded berm slopes now occupy a section of the area. The existing, manmade pond was left intact. Flow patterns in this watershed have been substantially maintained as compared to the existing conditions.

Watershed B10, ±0.70 acres, includes the remaining area of existing watershed B-10. The southernmost portion of the watershed was reduced. Flow patterns in this watershed have been substantially maintained as compared to the existing conditions.

Watershed B11, ±0.73 acres, includes the remaining area of existing watershed B-11. The southernmost portion of the watershed was reduced. Flow patterns in this watershed have been substantially maintained as compared to the existing conditions.

Watershed B13, ±13.44 acres, includes the remaining area of existing watershed B-13. The northernmost portion of the watershed was reduced. Flow patterns in this watershed have been substantially maintained as compared to the existing conditions.

In the above described watershed, the impervious areas have increased from the existing to the proposed condition. Impervious areas were strategically placed as far from sensitive areas as discussed in section 3.6. The vast majority of proposed impervious area will be captured and treated at a very high level as described in the section below. The existing impervious area is roughly ±11.59 acres (±504,860 sf). In the proposed condition, the impervious coverage is ±110.90 acres (±4,830,760 sf). Standing water is considered an impervious coverage area from a stormwater analysis perspective and has been included as such in the above areas. The development will result in a net increase of ±99.31 acres (±4,325,900 sf) of impervious area.

3.5 Existing vs. Proposed Discharge Comparison

The proposed stormwater management plan, discussed in this report, results in a net reduction of peak offsite flows from watershed A and B. While the impervious area on site will increase, stormwater BMPs have been sized to not only meet but exceed the current regulations for stormwater treatment, flow attenuation and groundwater recharge requirements. Stormwater treatment will be discussed later on in this report.

Table 2 provides a comparison of the peak runoff rates from the pre development state to the post development state. Flow comparison is provided for the 2, 10, 25, and 50 year storm events and the percentage reduction in flow is listed for each instance.

Table 2: Peak Flow Runoff Rate Comparison (cubic-feet per second)

		FLOW (CFS)			
		2-year	10-year	25-year	50-year
A	Pre	20.37	81.97	145.64	211.88
	Post	9.00	48.31	81.83	108.74
	Delta	-55.82%	-41.06%	-43.81%	-48.68%
B	Pre	49.99	190.62	299.32	387.69
	Post	44.88	155.15	239.09	306.12
	Delta	-10.22%	-18.61%	-20.12%	-21.04%

Table 3 provides a comparison of the volume runoff conditions in the same manner as the peak runoff Table 2 above. The 2 year storm volume is a critical measure to ensure

appropriate channel protection (CP). As seen in Table 3 below, the post development 2 year storm event volumes do not exceed pre development volume. Having reduced the peak flows from the 2-yr storm as well, the downstream channel protection criteria has been met for the site discharge.

Table 3: Runoff Volume Comparison (acre-feet)

		VOLUME (AC-FT)			
		2-year	10-year	25-year	50-year
A	Pre	3.97	13.34	20.92	27.11
	Post	1.88	7.84	13.18	17.37
	Delta	-52.59%	-41.26%	-36.99%	-35.93%
B	Pre	7.00	20.91	31.73	40.51
	Post	5.66	16.22	24.74	32.07
	Delta	-19.15%	-22.44%	-22.02%	-20.84%

3.6 Stormwater Management

The stormwater management system described in this reports meets or exceeds the applicable regulatory criteria. Site layout, stormwater management features, BMPs, watershed layout, and LID practices have been carefully designed to provide an environmentally sensitive and sustainable stormwater treatment train. The major aspects of these design will be discussed in this section.

The Low impact development (LID) practices used to in this design include minimized disturbance areas, minimized impervious areas, flow path practices, preservation of infiltratable soils, preservation of natural depression areas, and natural vegetation preservation.

Minimize Disturbance Areas

The site layout was chosen to incorporate a large footprint development on the property while avoiding sensitive areas and limiting over all disturbance to areas such as wetlands and the shoreland protection buffer. Roadways, building pads, parking lots, truck courts, circulation routes and other impervious areas have been placed entirely out side of the shoreline protection buffer. The main access roads to the site have been routed to minimize direct wetland impact at required crossing to the greatest extent practical. Interior roadways, building pads, parking lots, truck courts, circulation routes and other

impervious areas have been consolidated to the center of the site, avoiding sensitive areas to the east and west.

No major site improvements or stormwater BMPs have been located in the shoreland buffer. Areas of disturbance in the shoreland buffer consist of impervious surface removal, minor utility installation, and plantings and restoration efforts to return the fairways and open areas to a more natural state. This will allow any direct run off in the buffer to filter through large swaths of vegetation before entering the Merrimack River and for natural habitat growth within the buffer zone. Disturbance within the buffer is located in areas that limit effects on natural vegetation growth close the river such as wooded areas and vegetation not previously maintained by the existing golf course.

Impervious placement of site features and disturbance to wetland buffers were avoided as much as practical. Direct wetland impacts are necessary to construct the development. Roadway layout and wetland crossings were located in the least intrusive locations while maintaining ecological and hydrologic connectivity, allowing for flows for designed storms to operate as under existing conditions. The direct wetland impacts were reduced through the use of retaining walls and steeper tie-in slopes. Disturbance to four existing man-made ponds have been intentional avoided by proposed development. The ponds are to remain and receive restoration plantings around the perimeter to improve their overall function.

Minimize Impervious Areas

Impervious areas were minimized as much as possible through reduced roadway width and pedestrian areas while incorporating many landscaped island and grassy areas to break up large impervious surfaces when possible. Disconnected impervious areas do not lend themselves well to a development of this magnitude and its location in close proximity to wetlands and buffer areas. To ensure high levels of treatment, as much run off from impervious areas as practical is being captured and treated beyond the required volume. In many situations, run off will pass through multiple BMPs in series before reaching the final discharge location. To further provided elevated treatment, roof run off will be treated the same as other impervious areas receiving full pretreatment before entering BMPs.

Flow Path Practices

Flow paths are ultimately directed to the same discharge locations as under existing conditions. Run off from impervious areas are mainly captured by closed pipe, 4 foot deep sumped catchbasin networks before discharging to the treatment BMPs. The majority of runoff from truck court surfaces is directed to oil water separators prior to entering downstream BMPs.

Outfall locations from treatment and attenuation features where chosen to encourage long overland flow paths through vegetated areas prior to leaving the site where practical. These locations have also been chosen to avoiding channelization and downstream erosion.

Preservation of Infiltrative Soils

Based on recent sub surface investigation performed by Langan, the soils on site vary greatly in infiltration rate. Across the entire project site, measures were taken to provide protection to existing areas of infiltration. As previously discussed, the main impervious portions in the proposed condition are located in the center of the site, away from setback areas and wetlands. The center of the site is also the highest topographical location on the site under existing conditions. Currently, this directs run off to the east and west. Along the eastern side, wetlands occupy the low lying areas. To the west, many shallow ponding areas and depressions exist due to the rolling topography of the existing golf course. In the proposed condition, the existing topographic features to the east, west and south of the developed areas will be left as is and a meadow mix planted. This will maintain the infiltrative capacity of undisturbed areas while locating majority of the site on the existing high points that currently deflect run off rather than infiltrate.

Areas that are proposed as infiltration basins have been call out in the soil erosion and sediment control phasing plans to be protected. They will be protected from construction activities and compaction. If over land construction run off is directed towards the infiltration basins, the temporary bottoms are to be constructed feet above the finished proposed infiltration basin floors. All fines and infiltration limiting materials that have accumulated are to be dug out and clean soils exposed before planting and final stabilization.

Preservation of Naturally Depressed Areas,

Existing low points and depressions have been preserved in much the same manner as discussed above in the preservation of infiltrative soils sections. In addition to maintaining

depressed topography in undisturbed locations, proposed BMP locations were sited to utilize natural depressions and low points on site. Infiltration basins A1-1 and A11-1 are placed in existing depressions where run off natural flows to. Placing ponds in natural depressions has allowed for lower exterior pond embankment heights and a stormwater management features that blend into the natural surrounds. Infiltration basin B1-2, B5-1, and B6-2 incorporate the tie in slope of the adjacent roadway and are located in areas that are topographically depressed in the existing condition. Pond B1-3 and B5-2 take advantage of the area between the development and the main circulation road rather than creating additional disturbance in close proximity to wetland areas. Discharge locations from ponds were sited to daylight in low depressed areas with shallow slopes to provide as much over land flow through vegetative, infiltratable area before reaching the final discharge locations.

All four existing manmade ponds or golf course water hazards are to be maintained. These pond will also receive planting in the buffer zone surrounding the wetlands to improve the overall function of the habitats under the proposed condition.

Natural Vegetation Preservation

Disturbance of natural vegetation has been avoid as much as practical while laying out the site design and grading features in the proposed condition. As discussed in the Minimize Disturbance Areas under section 3.6 the wetlands and buffer areas, including associated vegetation were avoid as much as practical. The berm with sound fence near the southern property line was located to maintain as many well established trees and vegetation as practical. A large region of undeveloped area between the southern associate parking and the northern face of the berm has been left undisturbed with the exception of an emergency access road that has been sited to avoid existing vegetation as much as possible. Where disturbance for the development is not necessary, natural vegetation such as trees and underlying growth will remain. Fairways and maintained grasses for golf course use will be replaced with a specifically designed meadow mix or planting.

3.7 Stormwater Treatment Measures

The proposed development includes many forms of stormwater treatment. This section discusses how the proposed stormwater management system satisfies the water quality treatment and groundwater recharge requirements of the governing authorities.

This stormwater management report has been designed in accordance with the criteria set forth in The Town of Hudson Zoning Ordinance Chapter 290 Stormwater Management and with the New Hampshire Department of Environmental Services. This application is considered a New Development under the Town of Hudson Zoning Ordinance, chapter 290 states the following for new developments:

- (1) *New Development: In addition to the Basic Stormwater Management Standards in Subsection A above, new development projects that will disturb 40,000 square feet or more shall also meet one of the following enhanced stormwater management requirements in accordance with EPA's MS4 Stormwater Permit requirements:*
- (a) *Incorporate stormwater treatment BMPs into the project design that are designed to retain the Water Quality Volume generated from the total post-construction impervious area to the maximum extent practicable and calculated in accordance with N.H. Code Admin. R. Part Env-Wq 1504.10.; or*
 - (b) *Incorporate stormwater treatment BMPs designed to remove 80% of the average annual Total Suspended Solids (TSS) load and 50% of the average annual Total Phosphorus (TP) load generated from the total post-construction impervious area to the maximum extent practicable. [NOTE: Pollutant removal efficiencies shall be based on procedures contained in Attachment 3 of Appendix F of the 2017 NH MS4 Permit or by using the Best Management Practices (BMP) Performance Data Contained in the Appendix E of the NH Stormwater Manual, Volume 1, 2008 or as amended.]*

The proposed design will not only satisfy criteria 1(a) by sizing BMPs to treat water quality volumes from the total post-construction impervious areas to the maximum extent practicable calculated using the NHDES BMP worksheets but incorporates specific BMPs to remove, at a minimum, 80% TSS removal and target phosphorous and nutrient removal.

In-ground Infiltration Basins

The main water quality, pollutant removal and groundwater recharge treatment is provided through several infiltration basin BMPs. All Infiltration basins conform to the New Hampshire Stormwater Manual design criteria. Each basin has been designed to contain the 50 year storm with a minimum of 1 foot of free board, maintain a minimum of 3 feet of separation from the bottom of the pond to the seasonal high groundwater table, provide a minimum of 25% pretreatment of the full water quality volume, a maximum of 4:1 side slopes, and incorporates access locations for maintenance. These basins are equipped with outlet control structures designed to retain, at a minimum, the required WQV below the lowest orifice. As a back-up measure, dry well structures are incorporated to ensure

the basins will not remain wet if infiltration rates fail over time. Sediment forebays within the infiltration basins have been excluded from the total retention / attenuation capacity, infiltration rate drawdown times, groundwater recharge and total water quality calculations. The forebays have also been sized to accommodate a minimum of 25% of the total WQV, including the roof areas which are allowed to bypass forebays according to the New Hampshire Stormwater Manual.

The design infiltration rate of these basins vary based on the location of the feature. The infiltration feasibility report included as an appendix to this report outlines the infiltration testing procedure and rates used for each area based on soil type and infield testing. A factor of safety of 2 has been applied to ensure a conservative approach.

Dry Extended Detention Basin with Micropool

Two dry extended detention basins with micro pools have been included in the proposed design. The two locations have been chosen for detention because they require low bottoms of pond with less than 3 feet of separation to groundwater to allow long run horizontal conveyance lines to discharge at appropriate elevations. The ponds are designed to accommodate the 50 year storm volume with a minimum of 1 foot of freeboard. Sediment forebays have been sized to accommodate 25% of the overall WQv and are excluded from retention volumes. The micro pool has been designed to accommodate between 10% and 50% of the total WQV and 5% of the larger pool area. A low flow outlet is placed at the same elevation of the larger pool bottom to ensure the basin fully drains.

Sediment Forebays

Sediment forebays have been sized to accommodate a minimum of 25% of the calculated WQv for the respective watershed below the first opportunity to enter the overall feature. These features are proposed above the water table. While some benefit is expected, no WQv, GRv, or pollutant removal credit has been taken for these features other than pretreatment.

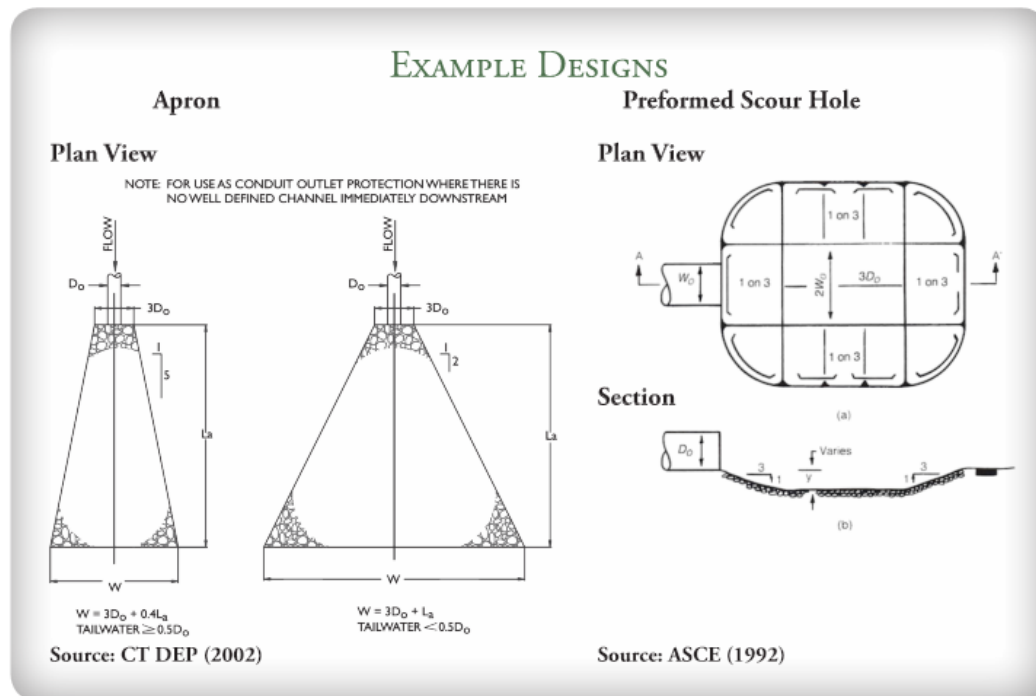
Oil / Water Separators

Oil / Water separators have been provided to treat majority of truck court run off areas. These units have been sized to treat the first flush of a rainfall event or a 1 inch storm. While no fueling operations will take place on the proposed development, the truck court areas are more prone to leaks and spills. The units has been placed where applicable to

ensure that majority of floatable pollutants, such as oil or fuel, will not be discharged to the treatment features or off site.

Preformed Scour Holes (Permanent Outlet Protection)

Rip Rap lined, preformed scour holes will be placed at all proposed pipe outfall locations on site, including outlet locations to treatment features and final site discharge locations with the exception of pipes installed within wetland system which provide ecological and hydrological connectivity. The preformed scour holes are sized based on pipe diameter, water velocity and, at a minimum, to the specifications outlined in the detail shown below taken from Volume 2 of the New Hampshire Stormwater Manual.



4 Foot Deep Sump Catch Basin

All catch basin structures will include a 4 foot deep sump. This allows for the sediment of suspended particulates has the run off flows to the discharge locations. Captured materials in the sump locations can be removed by vacuuming and disposed of off site, avoiding degradation of downstream treatment features. While the conveyance systems do not meet all the criteria set forth in the New Hampshire Stormwater Manual for true deep sump catch basins, some treatment is expected. No water treatment has been taken credit for in the calculations.

Street Sweeping

A street sweeping schedule has been developed, in line with the New Hampshire Stormwater Manual design criteria, as part of the long term maintenance and operations plans for the site.

Snow and Ice Management

A snow and ice management plan has been developed, in line with the New Hampshire Stormwater Manual design criteria, as part of the long term maintenance and operations plans for the site. Snow removal will be performed by a Green SnowPro certified contractor or state approved equal.

Water Treatment Summary

Table 4 shown below, depicts each treatment feature in the proposed condition. The table displays the type of feature, associated watershed, the required and provided water quality volume associated with the watershed, the required and provided pretreatment volume of the feature and the groundwater recharge volume provided by the feature. Some features do not provide water quality volume or groundwater recharge. Other features on site have been oversized to accommodate the required volumes for the site as a whole.

Table 5 depicts a condensed summary of the water quality volume and groundwater recharge volumes required and provided for the site as a whole. The proposed management system treats a substantially larger volume than required then required under the state and local stormwater ordinance.

While the proposed design meets and exceeds the required treatment rates for the project as a whole and does not need to target nutrient and phosphorous removal, infiltration basins have a removal rate of 60% for nutrients and 65% for phosphorous.

Groundwater recharge volume for the site as a whole has been provided multiple times over the minimum requirement.

Table 4: BMP Sizing Summary

BMP Sizing Summary Chart (CF Unless otherwise noted)						
Stormwater Feature	Watershed	WQv (Required)	WQv (Provided)	Pre-treatment (Required)	Pre-treatment (Provided)	GRv (Provided)
Infiltration Basin	A1-2	50,353	52,698	12,588	20,648	52,698
Infiltration Basin	A1-3	87,211	90,194	21,803	24,609	90,194
Infiltration Basin	A11-2	56,990	131,341	14,248	26,038	131,341
Infiltration Basin	B1-2	8,215	23,923	2,054	6,029	23,923
Infiltration Basin	B5-2	27,644	100,355	7,634	6,950	100,355
Infiltration Basin	B6-2	71,168	106,905	17,792	20,316	106,905
Dry Ext. Det. Pond w/ Micro Pool	B1-3	56,575	84,481	5,658	19,001	
Dry Ext. Det. Pond w/ Micro Pool	B3-2	14,238	93,635	3,560	4,362	

Table 5: Water Quality Volume and Groundwater Recharge Volume Summary

GRv		In Excess of Required
Required	108,675	
Total Provided	505,416	396,741

WQv		In Excess of Required
Required	372,394	
Total Provided	683,532	311,138

3.8 Geotechnical Considerations

Groundwater elevation, depth to bedrock, and infiltration rates are based on the reports titled "Geotechnical Engineering Study for Hudson Logistic Center Hudson New Hampshire", prepared by Langan Engineering & Environmental Services, Inc. and updated November 2022. This document can be found in Appendix G of this report.

Groundwater Impacts

Groundwater was found to vary greatly across the project site with shallow seasonal high water elevations in the eastern region of the site near the major wetland systems and at relatively deep elevations along the western property line next to the Merrimack River. Majority of site maintains several feet of separation between finished grade and seasonal high groundwater. Due to the large, flat footprint required by the specific use, the central

and central southern portions of the site are located in a large cut area. This cut will impact and expose the existing groundwater surface.

To ensure there will be no hydrostatic lift and proper drainage below the proposed improvements, extensive sub-grade drainage systems have been designed in the areas of impact. A groundwater surface model was developed from the numerous borings and test pits performed across the site. The limits of groundwater 4 feet below the finished grade were then identified. Within those limits, below impervious surfaces and building slabs, a sub-grade drainage system was designed. The system drains by gravity to the stormwater conveyance networks.

Once the impacted areas of groundwater within 4 feet of the finished grade were established, a groundwater flow analysis was performed for each area. The affected areas were secluded in the groundwater analysis model to ensure drawdown from lower elevation impacts would not decrease daily flows from higher elevation impact areas, ensuring a conservative model. The following flow rates to each system have been included in the sizing of the stormwater management system peak discharge rates and volumes. Where collected groundwater is introduced to the conveyance network, the flow rate for the entire impact area is applied to the most upstream structure to ensure conservative hydraulic grade line modeling and pipe sizing. Groundwater impact areas and proposed sub-grade drainage networks can be seen in the CG200 Series.

Table 6: Additional Flow Due to Sub-Grade Drainage System

Additional Flow Due to Sub-Grade Drainage System		
Feature	Structure	Flow (CFS)
Infiltration Basin A1-1	CLCB-23 (A1-3)	0.38
Infiltration Basin A1-2	CCB-5 (A1-2)	0.13
Infiltration Basin A1-2	DOUBLE CLCB-12 (A1-2)	0.64
Infiltration Basin A1-2	CCB-3 (A1-2)	0.54

Infiltration Basin B6-2	MH-5 (B6-2)	0.22
Infiltration Basin B6-2	CLCB-20 (B6-2)	0.50

For additional information on groundwater, please refer to the geotechnical engineering study.

Bedrock

Refusal was encountered in various location on site at varying depths. A rock surface model has been developed to ensure proper separation from sensitive stormwater features and to be incorporated into the site design. Detail information on rock elevations can be found in the geotechnical engineering studies attached to this report.

Infiltration Rates

Infiltration rates have been determined through field testing and observation, site specific soils, and the "Ksat Values for New Hampshire Soils" SSSNNE Special publication No.5 dated September, 2009. Each infiltration practice has been assigned a unique design infiltration rate. This rate was determined by identifying the soils at the specific location and elevation through the site specific soils map, test pits and borings, and performing field infiltration tests at specified elevations corresponding to the bottom of the practice. The observed and calculated infiltration rate, based on the process outlined in Chapter ENv-Wq 150 Alteration of Terrain, was then reduced by half to provide a factor of safety of two. Detailed infiltration testing locations, descriptions and rates can be found in the Infiltration Feasibility Report included as an appendix to this report.

Additional testing has been performed within the final footprints of select infiltration basins to meet the minimum number of tests defined by the state New Hampshire since the first issue of this report. Infiltration rates have been updated and incorporated into the stormwater model and calculations.

Receiving Waters

The receiving waters of run off from this site are not classified as impaired waterways. Limit Brook in the southeastern region of the site and the unnamed stream to the north eastern, Assessment Unit ID NHRIV700061206-23 and NHRIV700061206-13 respectively

of the New Hampshire’s watershed report cards, are not classified as impaired waterways and convey water over a short distance directly to the Merrimack River. The Merrimack River, Assessment Unit ID NHRIV700061206-24 of the New Hampshire’s watershed report cards, is listed under the Surface Water Impairments 2016 with 1 Mile Buffer” layer of the New Hampshire GIS database. Impairments listed as related to stormwater are Aluminum, Chlorophyll-a, and Escherichia coli. The specific BMPs chosen for this site include nutrient removal benefits and will help to protect against downstream receiving water pollutants.

4.0 STORM DRAINAGE COLLECTION SYSTEM DESIGN (SEE APPENDIX D FOR CALCULATIONS)

4.1 Design Criteria

The proposed subsurface storm drainage collection system is designed to convey the 25 -year design storm event to the discharge locations while maintaining an HGL below the proposed grade. This is in accordance with the Town of Hudson Engineering Department Engineering Guidelines & Typical Details.

4.2 Design Methodology

The storm drainage system was analyzed using the Rational Method for estimating runoff for a 25-year design storm event. The site was divided into subareas, each contributing runoff to an individual catch basin, inlet or roof drain. A value for area, time of concentration, and runoff coefficient was calculated for each contributing subarea.

Values of time of concentration were chosen based on land cover and flow path slope from the hydraulically most distant point in the subarea to the appropriate inlet. The average runoff coefficient, which is the ratio of peak runoff rate to the average rainfall rate for the period known as the time of concentration, was chosen using the following values:

<u>CONDITION</u>	<u>C</u>
Grass/Landscaping	0.30
Paved/Impervious	0.90

Rainfall intensities were taken from the intensity-duration-frequency curve for Hudson, New Hampshire as presented in National Weather Service (NOAA) Precipitation Frequency Data Server (PFDS). Storm drainage pipes were then sized based on calculated flows using Manning’s Equation and were verified by solving for the hydraulic

grade line. Starting hydraulic grade lines for the pipe networks were set to the calculated maximum water elevations in the respective ponds for the 25-year-design storm event creating a conservative tail water condition. Additional, calculated flows have been included in the most upstream structure for the discharge rate of the sub-grade drainage systems where applicable.

4.3 Storm Drainage Collection Summary

The runoff from the development will be collected using a conventional roof drain, 4 foot deep sump catch basin, and manhole system. In cases of large storm events where overtopping occurs along the collection system, all flooding is directed away from buildings and critical areas to designated stormwater attenuation features or safely conveyed offsite via overland flow.

5.0 OFF-SITE ANALYSIS

As discussed above, the site is located in the sub-watershed Limit Brook – Merrimack River. After treatment and attenuation, analysis point B enters either the unnamed stream or Limit Brook and is conveyed over a short distance before discharging directly to the Merrimack River. After treatment and attenuation, analysis point A discharges directly to the Merrimack River. The Merrimack River continues in a southerly direction for roughly three quarters of a mile before crossing the New Hampshire / Massachusetts boarder.

Runoff will be treated from the vast majority of proposed imperious surfaces before reaching the final discharge locations. Through the above described treatment method, downstream receiving waters are well protected. Sedimentation and erosion are mitigated through TSS removal in BMPs and attenuated flows matching or reducing peak rates from the existing condition. All discharge locations are directed over preformed scour holes to further dissipate flow velocities. Shallow slopes have been designed to ensure that erodible soils on site will not run off of planted slopes. The water quality provided by the proposed system is well in excess of Town of Hudson stormwater ordinance and BMPs have been specifically selected to target nutrient and phosphorus removal.

Should a spill occur on site at one of the facilities, the operations and maintenance manual addresses the method to safely clean and disposes of any harmful materials. In most instances, should a spill occur that reaches the stormwater conveyance system in the truck court areas, the runoff will pass through an oil water separator rated for separation

and storage of oils and other floatable debris until it can manually cleaned out and properly disposed of.

The receiving waters will have the capacity to handle run off for the post development condition. All post construction peak flow rate have been significantly reduced which will lessen the needed capacity of the receiving waters during high run off periods. Volumes to the Merrimack River, analysis point A, have been significantly reduced through all storm events. This will reduce the need for capacity of the receiving water downstream. Analysis point B reduces volumes during each storm event, improving existing flooding conditions downstream, while maintaining a similar level of overall contributing volume to maintain the wetlands system.

6.0 CONCLUSION

The proposed stormwater management system has been designed in accordance with the Town of Hudson current requirements, the New Hampshire Stormwater Manual, and the New Hampshire Department of Environmental Services. The system incorporates elevated levels of stormwater quality, maintains or decreases the existing peak rate of runoff for all storm events analyzed, and provides above the required groundwater recharge volumes.

It is the opinion of this office and the findings of this report that the proposed stormwater management system, as designed, will effectively manage quality and quantity of stormwater runoff for the proposed development.

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AIR QUALITY IMPACTS REPORT

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TABLE OF CONTENTS

1.0	INTRODUCTION	1-1
1.1	Project Description	1-1
1.2	Purpose	1-1
1.3	Revisions from September 7 th , 2022 Air Quality Analysis and Report	1-2
2.0	NATIONAL AMBIENT AIR QUALITY STANDARDS AND BACKGROUND CONCENTRATIONS	2-1
2.1	National Ambient Air Quality Standards	2-1
2.2	Background Air Quality	2-2
2.3	Hazardous Air Pollutants	2-3
3.0	AIR QUALITY ANALYSIS	3-1
3.1	Selected Pollutants	3-1
3.2	General Methodology	3-1
3.2.1	Air Quality Model Selection	3-2
3.2.2	Modeling Options	3-2
3.2.3	NO _x to NO ₂ Conversion	3-3
3.2.4	Urban/Rural Determination	3-3
3.2.5	Meteorological Data	3-3
3.2.6	Terrain Effects	3-4
3.2.7	Receptors	3-5
3.2.8	RTAP Methodology	3-5
3.3	Source Specific Data	3-5
3.3.1	Stationary Sources	3-5
3.3.1.1	Emissions and Source Parameters	3-6
3.3.1.2	Building Downwash	3-10
3.3.2	Mobile Sources	3-10
3.3.2.1	Emissions and Source Parameters	3-11
3.3.2.1.1	Roadways	3-11
3.3.2.1.2	Intersections	3-12
3.3.2.1.3	Property Parking and Truck Areas	3-13
3.3.2.2	Building Downwash	3-14
3.3.2.3	Temporal Variations	3-14
4.0	RESULTS AND CONCLUSIONS	4-1
4.1	Criteria Pollutant Results	4-1
4.2	RTAP Results	4-2
4.3	Mitigation	4-3
4.4	Air Quality Permits	4-3
4.5	Construction	4-3
4.6	Other Potential Impacts	4-5

4.6.1	Distance Between Proposed Project Buildings and Existing Residential Dwellings.	4-5
4.6.2	Diesel Emissions and Particulates.	4-5
4.6.3	Truck Idling.	4-5
4.7	Conclusions	4-5
4.7.1	Comparison to Prior Report	4-6

FIGURES

ATTACHMENT A – MOBILE & STATIONARY SOURCE INPUTS

ATTACHMENT B – CONSTRUCTION EMISSIONS

ATTACHMENT C – COMMENT RESPONSE

LIST OF TABLES

Table 2-1	National Ambient Air Quality Standards	2-2
Table 2-2	Selected Background Levels	2-3
Table 2-3	Regulated Toxic Air Pollutants and Hazardous	2-4
Table 3-1	Modeled Source Descriptions	3-6
Table 3-2	Source Stack Physical Data	3-6
Table 3-3	Emergency Generator Emission Rate Comparison	3-6
Table 3-4	Emergency Generator Criteria Pollutant Emission Rates	3-7
Table 3-5	Emergency Generator Hazardous Air Pollutant Emission Rates	3-8
Table 3-6	Rooftop HVAC Emission Rates	3-9
Table 3-6	Modeled Roadway Links	3-11
Table 3-7	Modeled Intersections	3-13
Table 3-8	Modeled Parking Lots	3-13
Table 4-1	Mobile and Stationary Source NAAQS Results	4-7
Table 4-2	Mobile and Stationary Source HAP (RTAP) Results	4-8

LIST OF FIGURES

Figure 1	Site Location
Figure 2	Urban/Rural 3km Radius
Figure 3	Wind Rose
Figure 4	Receptor Locations
Figure 5	Stationary Source and Building Locations
Figure 6	Mobile Source Locations

1.0 INTRODUCTION

1.1 Project Description

The Hudson Logistics Center Project includes the development of a building with a footprint of approximately 1.4 million square-feet including a single main warehouse and several accessory buildings located on an approximate 375-acre lot (the Property). The Property is located west of Lowell Road and Steele Road in the Town of Hudson, Hillsborough County, NH (the Project, or Amended Project). Epsilon Associates, Inc. (Epsilon) has been retained by Langan Engineering & Environmental Services, Inc. (Langan) to conduct an air quality study to estimate the impacts of Project-related stationary and mobile sources (trucks and vehicles).

A previously approved project on the Property consisted of three warehouse buildings totaling approximately 2.6 million square feet of building footprint (the Approved Project). Epsilon conducted an air quality analysis for the Approved Project which concluded that the Approved Project-related vehicle and truck traffic would not contribute to an exceedance of federal health-based air quality standards and therefore would not adversely impact nearby residential communities in conformity with local land use regulations.

As noted previously, in 2018, the Nashua Regional Planning Commission identified the area where the Project is located as perhaps the greatest opportunity for both commercial and industrial development in Hudson and in the overall region based on their study, "Hudson Economic Development Assessment". Approximately 230 of the site's 375 acres will remain as green space – including significant natural buffers between the Merrimack River, adjoining neighborhoods, and the development.

Logistics centers are hubs that play a vital role in America's supply chain. Logistics centers include buildings designed to efficiently store and distribute products around the region and ultimately to homes and businesses.

As part of the environmental analysis for this Amended Project, air quality impacts from stationary sources located onsite, as well as potential impacts from Project-generated traffic, were evaluated for potential neighborhood impacts.

This Air Quality Impacts Report presents the methods and results from this new air quality study based on the updated Site Plan, an updated traffic impact study (TIS) and using an updated US EPA model to ensure that the new development would not adversely impact the air quality of nearby residents.

1.2 Purpose

This analysis has been prepared to analyze whether the potential air quality impacts meet certain air quality standards as prescribed by the Town of Hudson Site Plan Review Ordinance under Section 275-6 (General Requirements). One of these requirements is to show that adequate provisions be made for a development to demonstrate that the Project will not contribute to a condition of air pollution, and to guard against such conditions which would subject the nearby properties to "danger or injury to health or safety, and that no significant diminution in value of surrounding properties would be suffered." Additionally, the Project is

required to reduce and/or eliminate elements of pollution, such as noise, smoke, soot, particulates or any other discharge, into the environment which might prove harmful to persons, structures or adjacent properties.¹

To analyze whether the Project will cause any adverse air quality impacts, a detailed quantitative analysis has been performed. Pollutant emissions from onsite combustion sources, as well as from Project-generated traffic have been calculated and offsite concentrations have been estimated using U.S. EPA and NHDES regulatory approved methodology. Section 2 provides a description of the air quality standards used to show a project's regulatory compliance, as well as the existing air quality levels in the area. Section 3 details the analysis methodology, showing specific model and source inputs, describing the meteorological data, and presenting the analysis area. Section 4 presents the results of the analysis, other areas in which the Project will address air quality, and the final conclusions. Finally, the Attachment provide additional details on the analysis methodology and model inputs.

The air quality analysis conducted by Epsilon demonstrates that any Project-related air pollution contributions, added to background levels, results in concentrations that are well below applicable standards for health, safety, property, and the environment. Therefore, the Project will not cause a condition of air pollution and will not pose any danger of injury to health and safety or be harmful to persons, structures, or properties. Based on these observations and conclusions, in Epsilon's opinion, the Amended Project will comply with the specific provisions of the Chapter 275 regulations with respect to potential air quality impacts as described above. These findings are consistent with the results from the prior air quality analysis conducted by Epsilon.²

1.3 Revisions from September 7th, 2022 Air Quality Analysis and Report

The following revisions were made to the prior report:

- Revised the air quality analysis to include natural gas fired rooftop heating and ventilation (HVAC) units.
- Revisions to the air toxic modeling to correct an issue with the air toxic emission rates.
- Added construction emission estimates to Appendix B.
- Revisions to the Air Quality Report to reflect comments received from TRC.

The revisions resulted in minor changes to the results. All predicted concentrations of criteria pollutants and hazardous air pollutants remain well below all applicable U.S. EPA and NHDES thresholds which are designed to ensure health and safety and public welfare from any known or anticipated adverse effects associated with the presence of air pollutants, such as including but not limited to, potential damage to wetland resources, other vegetation, and the environment.

¹ Town of Hudson (NH). Chapter 275. Site Plan Regulations. Sections 275-6(A) and (H).

² See Section 4.7.1 "Comparison to Prior Report."

2.0 NATIONAL AMBIENT AIR QUALITY STANDARDS AND BACKGROUND CONCENTRATIONS

Background air quality concentrations and federal air quality standards were utilized to conduct the air quality impact analyses for the Project. Specifically, the projected emissions associated with the Project were added to monitored background values and then compared to the Federal National Ambient Air Quality Standards (NAAQS) to demonstrate compliance with these health-based standards. These standards were developed by the U.S. Environmental Protection Agency (U.S. EPA) to protect human health against adverse health effects with a margin of safety. The modeling methodologies are developed in accordance with the latest NHDES modeling policies and federal modeling guidelines.³ The following sections outline the NAAQS and detail the sources of background air quality data.

2.1 National Ambient Air Quality Standards

The 1970 Federal Clean Air Act was enacted by the U.S. Congress to protect the health and welfare of the public from the adverse effects of air pollution. As required by the Federal Clean Air Act, the U.S. EPA promulgated NAAQS for the following criteria pollutants: nitrogen dioxide (NO₂), sulfur dioxide (SO₂), particulate matter (PM) (PM₁₀ and PM_{2.5}), carbon monoxide (CO), ozone (O₃), and lead (Pb). The NAAQS are listed in **Table 2-1**. New Hampshire Ambient Air Quality Standards (NHAAQS) are identical to NAAQS.⁴ Such criteria pollutants are those which the U.S. EPA has determined to have the greatest potential for human health impacts and are the generally accepted pollutants of concern which are evaluated when conducting air quality impact studies of this nature.

NAAQS specifies concentration levels for various averaging times and includes both “primary” and “secondary” standards. Primary standards are intended to protect human health, whereas secondary standards are intended to protect public welfare from any known or anticipated adverse effects associated with the presence of air pollutants, such as damage to vegetation. The more stringent of the primary or secondary standards were applied when comparing to the modeling results for this Project, which yields a more conservative result.

³ 40 CFR 51 Appendix W, Guideline on Air Quality Models, 82 FR 5182, Jan. 17, 2017

⁴ NAAQS will reference NAAQS and NHAAQS throughout this document.

Table 2-1 National Ambient Air Quality Standards

Pollutant	Averaging Period	NAAQS/NHAAQS ($\mu\text{g}/\text{m}^3$)	
		Primary	Secondary
NO ₂	Annual ⁽¹⁾	100	Same
	1-hour ⁽²⁾	188	None
SO ₂	3-hour ⁽³⁾	None	1300
	1-hour ⁽⁴⁾	196	None
PM _{2.5}	Annual ⁽¹⁾	12	15
	24-hour ⁽⁵⁾	35	Same
PM ₁₀	24-hour ⁽³⁾	150	Same
CO	8-hour ⁽³⁾	10,000	Same
	1-hour ⁽³⁾	40,000	Same
Ozone	8-hour ⁽⁶⁾	147	Same
Pb	3-month ⁽¹⁾	1.5	Same

Source: <http://www.epa.gov/ttn/naaqs/criteria.html> and ENV-A 300

⁽¹⁾ Not to be exceeded.

⁽²⁾ 98th percentile of one-hour daily maximum concentrations, averaged over three years.

⁽³⁾ Not to be exceeded more than once per year.

⁽⁴⁾ 99th percentile of one-hour daily maximum concentrations, averaged over three years.

⁽⁵⁾ 98th percentile, averaged over three years.

⁽⁶⁾ Annual fourth-highest daily maximum eight-hour concentration, averaged over three years.

Compliance with the primary NAAQS is designed to assure, with an adequate margin of safety, a lack of significant public health risks. Because the primary NAAQS are solely health-based, they are not adjusted for factors such as technological feasibility, or costs and benefits. By incorporating a margin of safety, the NAAQS are set to address both uncertainties in the state of the science and the possibility of additional harms that might be identified in the future. Furthermore, the NAAQS are intended to be protective of the health of sensitive subpopulations, such as people with pre-existing diseases (*e.g.*, cardiovascular diseases or asthma), children, and older adults. Similarly, the NAAQS are established to be protective of both short-term health effects and long-term health effects by defining the averaging time for the standards. The secondary standards are protective of wildlife, crops, vegetation, and buildings.

2.2 Background Air Quality

Ambient background concentrations are added to the source impacts to obtain total concentrations, which, in turn, are compared to the NAAQS. US EPA reports air pollutant concentrations with respect to how the NAAQS are calculated.⁵ These are called “design values.” Where available the most recent design values were used as the background concentrations from the nearest air monitoring station to the Project location.

⁵ [Air Quality Design Values | US EPA](#)

The closest air monitoring station to the Project location for which design values are available is in Londonderry, NH, approximately 11 miles northeast of the Project. The location of this monitoring station is suburban and is considered to be a good measure of regional background air pollution. A summary of the background air quality concentrations is presented in **Table 2-2**.

Table 2-2 Selected Background Levels

POLLUTANT	AVG TIME	Form	Background ($\mu\text{g}/\text{m}^3$)	NAAQS	Percent of NAAQS
SO ₂ ^{(1),(7)}	1-Hr ⁽⁴⁾	99 th %	7.9	196.0	4%
	3-Hr ⁽⁵⁾	H2H	8	1300.0	1%
PM10	24-Hr ⁽⁵⁾	H2H	42	150.0	11%
PM2.5	24-Hr ⁽⁴⁾	98 th %	14.0	35.0	40%
	Annual ⁽⁴⁾	H	5.7	12.0	48%
NO ₂ ^{(3),(8)}	1-Hr ⁽⁶⁾	98 th %	37.6	188.0	20%
	Annual ⁽⁶⁾	H	5.0	100.0	4.7%
CO ⁽²⁾	1-Hr ⁽⁴⁾	H2H	687.6	40000.0	2%
	8-Hr ⁽⁴⁾	H2H	687.6	10000.0	7%
Notes: From U.S. EPA's AirData Website (1) SO ₂ reported ppb. Converted to $\mu\text{g}/\text{m}^3$ using factor of 1 ppb = 2.62 $\mu\text{g}/\text{m}^3$. (2) CO reported in ppm. Converted to $\mu\text{g}/\text{m}^3$ using factor of 1 ppm = 1146 $\mu\text{g}/\text{m}^3$. (3) NO ₂ reported in ppb. Converted to $\mu\text{g}/\text{m}^3$ using factor of 1 ppb = 1.88 $\mu\text{g}/\text{m}^3$. (4) Background level is the design value for 2019-2021 (5) Background level is the 2 nd highest max reported in U.S. EPA's Air Data Website (2019-2021) (6) Background level is the design value for 2018-2020 (7) The 24-hour and annual standards were revoked by U.S. EPA on June 22, 2010, Federal Register 75-119, p. 35520. (8) Data represents 2018-2020 as 2021 did not meet the minimum completeness criteria.					

2.3 Hazardous Air Pollutants

Hazardous Air Pollutants (HAPs, or "regulated toxic air pollutants", or RTAPs in NH) are regulated through Section 112 of the Federal Clean Air Act. These are pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects. These chemicals enter the body through inhalation, ingestion, or contact exposure. There are currently 187 Federally listed HAPs.⁶

In New Hampshire, the New Hampshire Code of Administrative Rules, Section Env-A 1400 Regulated Toxic Air Pollutants governs the analysis of RTAPs in the state. Changes to the regulations were adopted in February 2022. Table 1450-1 in Env-A 1450.01 lists the allowable maximum 24-hour and annual concentrations of RTAPs, and their de minimis allowable emission

⁶ 42 U.S.C. §7401 et seq. (1990)

rates. To demonstrate compliance with the RTAPs, a source must show that they are either below de minimis emissions, or compliant with the RTAP concentrations.

Diesel exhaust particulate matter (DPM), although not a regulated hazardous air pollutant, is often a pollutant of concern from diesel-powered vehicles. There are no regulatory federal or New Hampshire air quality standards for diesel exhaust PM such as the HAPs and RTAPs discussed above. However, U.S. EPA has established a Reference Concentration (RfC) of $5 \mu\text{g}/\text{m}^3$ over an annual period for DPM.⁷ The RfC is an estimate of inhalation exposure which humans may be exposed throughout their lifetime without being likely to experience adverse non-cancer respiratory effects and is the appropriate and relevant health based safe exposure level to compare to Project associated DPM impacts. Also, in general, compliance with the other air quality standards, namely NO_2 and $\text{PM}_{2.5}$ indicates acceptable levels of DPM from a public health, safety, and environmental perspective. No significant odor or visual impacts would be noticed by residents. Furthermore, there is an adequate buffer that even the occasional puff of smoke from a diesel truck while onsite either traveling or idling should be diluted by the time it reaches nearby neighborhoods. These occasional puffs are not harmful as health effects would be associated with long-term exposures and that is why the standards are based on average exposures of 24-hours and a year. Table 2-3 lists the RTAPs, and hazardous air pollutants selected for this analysis.

Table 2-3 Regulated Toxic Air Pollutants and Hazardous

POLLUTANT	AVERAGING TIME	STANDARD ($\mu\text{g}/\text{m}^3$)
1,3-Butadiene	24 HOUR	2
	ANNUAL	2
Acetaldehyde	24 HOUR	161
	ANNUAL	9
Acrolein	24 HOUR	0.82
	ANNUAL	0.02
Anthracene	24 HOUR	0.71
	ANNUAL	0.48
Arsenic Compounds	24 HOUR	0.036
	ANNUAL	0.024
Barium	24 HOUR	2.5
	ANNUAL	1.7
Benzene	24 HOUR	5.7
	ANNUAL	3.8
Benz(a)anthracene	24 HOUR	0.36
	ANNUAL	0.24
Benzo(a)pyrene	24 HOUR	0.002
	ANNUAL	0.002

⁷ U.S. EPA, "Health Assessment Document for Diesel Particulate Matter", EPA/600/8-90/057F, May 2002.

POLLUTANT	AVERAGING TIME	STANDARD ($\mu\text{g}/\text{m}^3$)
Benzo(b)fluoranthene	24 HOUR	0.36
	ANNUAL	0.24
Beryllium	24 HOUR	0.00018
	ANNUAL	0.00012
Cadmium	24 HOUR	0.036
	ANNUAL	0.024
Chromium 6+	24 HOUR	0.00071
	ANNUAL	0.00048
Chrysene	24 HOUR	0.36
	ANNUAL	0.24
Cobalt	24 HOUR	0.14
	ANNUAL	0.067
Copper	24 HOUR	0.71
	ANNUAL	0.48
Diesel Particulate¹	ANNUAL	5
Ethyl Benzene	24 HOUR	1000
	ANNUAL	1000
Formaldehyde	24 HOUR	9.8
	ANNUAL	3.6
Hexane	24 HOUR	885
	ANNUAL	700
Manganese Compounds	24 HOUR	0.1
	ANNUAL	0.05
Molybdenum	24 HOUR	1.8
	ANNUAL	1.2
Naphthalene	24 HOUR	186
	ANNUAL	3
Nickel Compounds	24 HOUR	0.36
	ANNUAL	0.24
Phenanthrene	24 HOUR	0.71
	ANNUAL	0.48
Propionaldehyde	24 HOUR	239
	ANNUAL	8
Pyrene	24 HOUR	0.71
	ANNUAL	0.48
Selenium	24 HOUR	0.71
	ANNUAL	0.48
Styrene	24 HOUR	1000
	ANNUAL	1000

POLLUTANT	AVERAGING TIME	STANDARD ($\mu\text{g}/\text{m}^3$)
Toluene	24 HOUR	5000
	ANNUAL	5000
Total Mercury Compounds	24 HOUR	0.3
	ANNUAL	0.3
Vanadium	24 HOUR	0.18
	ANNUAL	0.12
Xylene	24 HOUR	1550
	ANNUAL	100
Zinc	24 HOUR	10
	ANNUAL	6.7

¹Diesel Particulate is not considered a RTAP by NH

3.0 AIR QUALITY ANALYSIS

As stated, an air quality impact analysis was performed to assess adverse pollutant impacts as a result of the Project stationery and mobile sources.

The analysis was performed to assess the combined impacts from stationary sources of air pollution onsite and air pollutant emissions from Project-generated traffic both on-site and on local roadways.

3.1 Selected Pollutants

Air quality analyses use state-of-the-art dispersion modeling to estimate the concentration of air pollutants from Project sources and compare these concentrations to applicable health-based standards. The Project-related air pollutants of concern include the criteria pollutants, as described in Table 2-1, and toxic or hazardous air pollutants, as described in Table 2-3.

The Project-related sources included in the analysis consist of a diesel emergency generator, rooftop HVAC equipment and motor vehicles. The criteria pollutants included in the analysis are Carbon Monoxide (CO), Sulfur Dioxide (SO₂), Nitrogen Dioxide (NO₂) and Particulate Matter (PM) as both PM₁₀ and PM_{2.5}, representative of the two size fractions of PM in microns.

Carbon Dioxide (CO₂), although considered a greenhouse gas, is not considered a pollutant of direct health impact, and as such, there are no CO₂ health-based standards. Therefore, CO₂ is also not included in this analysis.

Selection of hazardous air pollutants is based on both the published emissions of such pollutants from the sources included in the analysis, as well as available NH RTAP standards. Any toxic or hazardous pollutant emitted that does not have a NH RTAP was not included in the analysis.

DPM is included in air quality analysis. Diesel exhaust particulate is a subset of all PM emissions. Therefore, it is considered both in the overall evaluation of PM as well as separately as a distinct air pollutant.

DPM emissions are based on the PM_{2.5} emissions rates because it is a subset of PM_{2.5}. As noted by the California Air Resource Board (CARB) "More than 90% of DPM is less than 1 µm in diameter (about 1/70th the diameter of a human hair), and thus is a subset of particulate matter less than 2.5 microns in diameter (PM_{2.5}).” Thus, using PM_{2.5} as a surrogate for diesel particulate is not only justified, but also conservative.

3.2 General Methodology

As was done previously for the prior proposed Hudson Logistics Facility Project (the Approved Project), the procedures and analysis used for this report follow U.S. Environmental Protection Agency (U.S. EPA) and New Hampshire Department of Environmental Services (NHDES) guidance and other generally recognized guidance, procedures, and standards where applicable.

3.2.1 Air Quality Model Selection

The updated U.S. EPA's AERMOD model (Version 22112) was used to estimate concentrations from the stationary and mobile sources related to the Project. AERMOD is the U.S. EPA's preferred model for regulatory applications. The use of AERMOD provides the benefits of using the most current algorithms available for steady state dispersion modeling.

The AERMOD View graphical user interface (GUI) Version 10.2.1, created by Lakes Environmental, was used to facilitate model setup and post-processing of data. The AERMOD model is selected for this analysis because it:

- is the required U.S. EPA model for all refined regulatory analyses for receptors within 50 km of a source;
- is a refined model for facilities with multiple sources, source types, and building-induced downwash;
- uses actual representative hourly meteorological data;
- incorporates direction-specific building parameters which can be used to predict impacts within the wake region of nearby structures;
- allows the modeling of multiple sources together to predict cumulative downwind impacts, if needed;
- provides for variable emission rates;
- provides options to select multiple averaging periods between one-hour and one year (scaling factors can be applied to adjust the one-hour impact to a peak impact less than one-hour); and,
- allows the use of large Cartesian and polar receptor grids, as well as discrete receptor locations.

3.2.2 Modeling Options

Modeling was performed with all regulatory default options. Regulatory default options adopted for the model include:

- *Use stack-tip downwash (except for building downwash).* Stack-tip downwash is an adjustment of the actual stack release height for conditions when the gas exit velocity is less than 1.5 times the wind speed. For these conditions, the effective release height is reduced a bit, based on the diameter of the stack and the wind and gas exit velocity. This option applies to point sources only, such as emergency generators.
- *Use the missing data and calms processing routines.* The model treats missing meteorological data in the same way as the calms processing routine, i.e., it sets the concentration values to zero for that hour and calculates the short-term averages

according to U.S. EPA's calms policy, as set forth in the Guideline on Air Quality Models (Appendix W to 40 CFR 51).

A complete description of the AERMOD dispersion model may be found in the AERMOD User's guide⁸ and the AERMOD model implementation guide.⁹

3.2.3 *NO_x to NO₂ Conversion*

Though the NAAQS are based on NO₂ concentrations, the majority of nitrogen oxides (NO_x) emissions are in the form of nitric oxide (NO) rather than NO₂. NO_x undergoes chemical conversion with atmospheric ozone to form NO₂. U.S. EPA allows the use of the Ambient Ratio Method (ARM2). For this analysis, the ARM2 method was used with default input ratios (0.5/0.9)

3.2.4 *Urban/Rural Determination*

The AERMOD model is able to assign sources to a rural or urban category to allow specified urban sources to use the effects of increased surface heating under stable atmospheric conditions. The rural dispersion classification was selected based on NHDES guidelines¹⁰. The area within 3 km of the site is shown in **Figure 2**.

3.2.5 *Meteorological Data*

Surface meteorological data is automatically sampled at various locations, primarily at airports. The data includes measurements of temperature, moisture, wind speed and direction, and other parameters all measured once every minute. The National Weather Service (NWS) operates more than 900 Automated Surface Observing System (ASOS) stations in the United States, while hundreds more surface observation locations are located throughout the world.

Upper air data is sampled at far fewer locations. These data are sampled using a measurement apparatus (radiosonde) tethered to a large balloon and radioed back to the ground observer. As the balloon rises, the radiosonde samples temperature and moisture. Its location in time indicates the wind speed and direction aloft. There are only 92 upper air monitoring locations in North America. Those nearest to the site are Gray, ME and Albany, NY, and the use of these locations is in accordance with generally accepted practice for this type of study, consistent with US EPA modeling requirements and consistent with NH DES guidance.

AERMOD-ready meteorological data files were provided by NHDES. NHDES dictates which meteorological data set is to be used based on the location of the Project and are used for both state-level and federal-level air quality permitting. NHDES has processed and made these files available for consistency for all air quality modeling analyses conducted in the state. The files are a processed combination of surface and upper air meteorological data. Based on terrain,

⁸ U.S. EPA, 2022: User's Guide for the AMS/EPA Regulatory Model – AERMOD. EPA-454/B-22-007. U.S. Environmental Protection Agency, Research Triangle Park, NC 27711.

⁹ U.S. EPA, 2022: AERMOD Implementation Guide. EPA-454/B-22-008. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

¹⁰ NHDES. Guidance And Procedure for Performing Air Quality Impact Modeling In New Hampshire. Air Resources Division, Concord, NH. December 2019.

land use, and proximity, NHDES has determined which files are appropriate for air quality analyses at locations throughout the state. For modeling in Hudson, NHDES requires the use of the Concord/Gray meteorological set they provide. Meteorological data for the years 2016-2020, obtained from NHDES, was used for this analysis.¹¹

The meteorological data required to run AERMOD includes five years (2016-2020) of representative surface and upper air observations. The regional meteorology in Hudson is approximated with meteorological data collected at Concord Municipal Airport. The station is located roughly 34 miles north of the Project site and is considered to be representative of the site by NHDES¹². A wind rose showing the distribution of wind speed and direction is presented in **Figure 3**, Winds are generally out of the northwest and southeast, following the orientation of the Merrimack River valley in the Concord and Hudson NH areas. Over 40,000 hours of actual wind data from all directions and wind speeds were analyzed in the air modeling analysis and thus all meteorological conditions that any receptor in the study area may experience are included. Hourly surface data from the Concord Municipal Airport, with twice-daily upper air soundings from Gray, ME were used.

Surface data and upper air sounding data were processed into AERMOD-ready input files by NHDES using version 21112 of AERMET. Based on a review of the files, the U-star adjustment was used. Raw 1-minute data were included to reduce the incidence of “calm” winds. A 0.5 m/s threshold was input.

A base elevation of 339 feet was input, representative of the Concord airport (ASOS) station site as provided by NHDES. The base elevation input adjusts the wind speeds at the meteorological site to the elevation of the Project site within the AERMOD model.

Testing of this data found that the five-year period of 43,848 total hours, 483 calm hours (1.10%) were identified, and 960 (2.19%) missing hours were identified¹³. Thus, these data should be deemed complete and representative for air quality modeling of the Project site.

3.2.6 Terrain Effects

Source and receptor terrain elevations were included in the analysis, as is required for regulatory refined modeling. One-third arc-second terrain data were obtained from the U.S.G.S.

¹¹ We obtained more recent meteorological data from NHDES for the years 2017-2021 processed with the most current AERMET version, but upon review of the data we found that almost 10% of the data was missing, indicative of a problem that was confirmed by NHDES. Therefore, we used the most recent complete data available for this analysis, which would yield more conservative results.

¹² NHDES. Guidance And Procedure for Performing Air Quality Impact Modeling In New Hampshire. Air Resources Division, Concord, NH. December 2019.

¹³ The 2017-2021 meteorological data files received from NHDES had a total of 566 calm hours (1.3%) and 4,303 (9.8%) missing hours and therefore these data were not used in this analysis.

National Map Seamless Server according to guidance set forth by U.S. EPA.¹⁴ Source, building, and receptor elevations were processed using the AERMAP (version 18081) processor by way of the Lakes AERMOD View interface.

3.2.7 Receptors

A total of 1,711 receptors were modeled. A uniform cartesian grid encompassing 15 square kilometers and extending 3 kilometers east and west and 5 km north and south was overlaid on the area. Receptors are spaced 100 meters apart and extend well into the residential areas closest to the main arterial roadways. There are 144 receptors placed at individual homes located to the south and east of the facility. Receptors were placed along the property boundary spaced at 50-meter intervals and receptors within the property were removed. Since vehicle exhaust is relatively low temperature, and has no initial vertical momentum, the highest impacts are expected close to the roadways. Receptor locations used in the analysis are shown in **Figure 4**.

3.2.8 RTAP Methodology

RTAP modeling was conducted using the Lakes AERMOD View multi-pollutant processing routines. The software automatically creates the unit emission AERMOD inputs for each source, and postprocesses the results at the completion of the AERMOD runs to calculate pollutant-specific concentrations. Postprocessing consists of multiplying the normalized concentrations produced with a unit emission rate by pollutant specific emission rates for each source, then summing the concentrations at each receptor for each modeled hour. Lastly, concentrations in the form of the RTAP standards are calculated for regulatory comparison.

3.3 Source Specific Data

3.3.1 Stationary Sources

Stationary sources of air pollutant emissions at the facility include a single emergency generator running on ultra-low sulfur diesel (ULSD) fuel and (50) natural gas fired roof-top HVAC units. In this section, the inputs to the air dispersion model are provided.

The emergency generator engine has a stub stack surrounded by an enclosure. The HVAC units are located on the roof of the warehouse building and exhaust horizontally. The emissions from both source types are quantified and the stack parameters such as diameter, height, exhaust velocity and temperature are determined as inputs to the model. The model then disperses the emissions based on the stack plume rise as it moved by the wind. The emission rates are determined based on emission limits established by U.S. EPA or by emission factors for ULSD engines provided by U.S. EPA.

¹⁴ U.S. EPA, 2022: AERMOD Implementation Guide. EPA-454/B-22-008. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711.

3.3.1.1 Emissions and Source Parameters

The emergency generator is rated at 300 kW electrical output at full standby load. Potential models include the Cummins DQDAC, or a similar engine offered by Caterpillar. This analysis uses the Cummins information; Caterpillar operating parameters would be similar.

The generator will be rated at 464 horsepower at full standby and certified to meet U.S. EPA's New Source Performance Standards for Compression Ignition Internal Combustion Engines (40 CFR 60, Subpart IIII), Tier 3 for emergency engines. These engines are limited to 3.5 g/kWhr of carbon monoxide (CO), 4g/KWhr of oxides of nitrogen (NO_x) and non-methane hydrocarbons, and 0.2 g/kWhr of fine particulate matter (PM_{2.5}).

The HVAC units are each rated at 400,000 British thermal units per hour (BTU/hr). Emission information from the manufacturer was not available, therefore emissions were calculated using EPA AP-42 emission factors for Natural Gas Combustion.

The modeled ID corresponding to the sources are shown in **Table 3-1**. Physical stack height and diameter were obtained via discussions with the client and fan specification sheets and are presented in **Table 3-2**. Detailed emission calculations are included in Attachment A.

Table 3-1 Modeled Source Descriptions

ID	Description	Output Power Rating
STCK1	Cummins DQDAC or equivalent	300 kW
HVAC1-HVAC50	Carrier or equivalent	400,000 BTU/hr

Table 3-2 Source Stack Physical Data

Source ID	Release Height [m]	Gas Exit Temperature [K]	Gas Exit Velocity [m/s]	Inside Diameter [m]
STCK1	2.29	825	33.4	0.2032
HVAC1-HVAC50	16.45	366.5	0.786	1.873

Relevant EPA Tier 3 emission limits are presented in **Table 3-3**, SO₂ emission rates were determined using EPA AP-42 3.3-1 for diesel engines. The EPA limits the total of NO_x and Non-Methane Hydrocarbons (NMHC). The modeling analysis conservatively assumes all the emissions are NO_x.

Table 3-3 Emergency Generator Emission Rate Comparison

Pollutant	NSPS Emission Rate ¹ (g/hp-hr)
NO _x & NMHC	4
CO	3.5
PM ₁₀ /PM _{2.5}	0.2
¹ 40 CFR 60, Subpart IIII	

Emergency engines are limited to 500 hours per year per the General State Permit (See Section 4.4 below), with up to 100 of those hours for non-maintenance and readiness testing.

For modeling purposes, the limit of 500 hours can be used to account for the intermittent operation of these units. A factor of 0.0571 (500/8760) was used in the calculation of an annual average emission rate to account for this limitation. U.S. EPA also allows the use of this factor in the calculation of the 1-hour NO₂ concentration, considering the probabilistic form of the 1-hour NO₂ standard, and the intermittent nature of emergency generator operation. In its March 1, 2011 memo, U.S. EPA states:¹⁵

“Another approach that may be considered in cases where there is more uncertainty regarding the applicability of this guidance would be to model impacts from intermittent emissions based on an average hourly rate, rather than the maximum hourly emission. For example, if a proposed permit includes a limit of 500 hours/year or less for an emergency generator, a modeling analysis could be based on assuming continuous operation at the average hourly rate, i.e., the maximum hourly rate times 500/8760. This approach would account for potential worst-case meteorological conditions associated with emergency generator emissions by assuming continuous operation, while use of the average hourly emission represents a simple approach to account for the probability of the emergency generator actually operating for a given hour. Also note that the contribution of intermittent emissions to annual impacts should continue to be addressed as in the past to demonstrate compliance with the annual NO₂ standard.”

Given U.S. EPA’s stance on modeling intermittent sources with respect to the 1-hour NO₂ standard and the example provided by U.S. EPA specifically citing emergency generators, the use of the annual average hourly emission rate based on 500 hours per year is applicable for this Project and is used in the modeling analysis.

The modeled criteria pollutant emission rates for the emergency generator are presented in **Table 3-4**.

Table 3-4 Emergency Generator Criteria Pollutant Emission Rates

Source ID Pollutant	STCK1	
	Short Term (g/s)	Annual (g/s)
NOx (as NO ₂)	0.0219*	0.0219
PM ₁₀ / PM _{2.5}	0.0192	0.0011
CO	0.3364	0.0192
SO ₂	0.12	0.00684
*scaled by 500/8760 per EPA Guidance (2011)		

¹⁵ EPA Clarification Memo, Additional Clarification Regarding Application of Appendix W Modeling Guidance for the 1-hour NO₂, National Ambient Air Quality Standard, March 1, 2011

The modeled hazardous air pollutant emission rates for the emergency generator are presented in **Table 3-5**. Emission rates are from EPA AP-42 Table 3.3-2 and are conservative because they are based on testing of older engines without modern combustion controls. The diesel particulate emission rate uses PM2.5 as a surrogate.

Table 3-5 Emergency Generator Hazardous Air Pollutant Emission Rates

Source ID Pollutant	STCK1	
	Short Term (g/s)	Annual (g/s)
Benzene	3.72E-04	2.12E-05
Toluene	1.63E-04	9.31E-06
Xylenes	1.14E-04	6.49E-06
1,3 Butadiene	1.56E-05	8.90E-07
Formaldehyde	4.71E-04	2.69E-05
Acetaldehyde	3.06E-04	1.75E-05
Acrolein	3.69E-05	2.11E-06
Fluorene	1.16E-05	6.65E-07
Naphthalene	3.38E-05	1.93E-06
Phenanthrene	1.17E-05	6.69E-07
Anthracene	7.46E-07	4.26E-08
Fluoranthene	3.03E-06	1.73E-07
Pyrene	1.91E-06	1.09E-07
Benzo(a)anthracene	6.70E-07	3.82E-08
Chrysene	1.41E-07	8.03E-09
Benzo(b)fluoranthene	3.95E-08	2.26E-09
Benzo(k)fluoranthene	6.18E-08	3.53E-09
Benzo(a)pyrene	7.50E-08	4.28E-09
Indeno(1,2,3-cd)pyrene	1.50E-07	8.53E-09
Dibenz(a,h)anthracene	2.32E-07	1.33E-08
Benzo(g,h,i)perylene	1.95E-07	1.11E-08
Diesel Particulate ¹		1.10E-3

¹ PM_{2.5} emission rate is used as a surrogate as there is no DPM emissions data available.

The modeled air pollutant emission rates for the HVAC units are presented in **Table 3-6**. Emission rates are from EPA AP-42 Table 1.4-1 and are conservative because they are based on testing of older engines without modern combustion controls. The diesel particulate emission rate uses PM2.5 as a surrogate.

Table 3-6 Rooftop HVAC Emission Rates

Pollutant	Emission Rate (per unit)
	(g/s)
NOx	4.94E-03
CO	4.15E-03
PM10	3.76E-04
PM2.5	3.76E-04
SO2	2.96E-05
Benzene	1.04E-07
Formaldehyde	3.71E-06
Naphthalene	3.01E-08
Acenaphthene	8.89E-11
Acenaphthylene	8.89E-11
Anthracene	1.19E-10
Benz(a)anthracene	8.89E-11
Benzo(a)pyrene	5.93E-11
Benzo(b)fluoranthene	8.89E-11
Benzo(g,h,i)perylene	5.93E-11
Benzo(k)fluoranthene	8.89E-11
Chrysene	8.89E-11
Dibenzo(a,h)anthracene	5.93E-11
Fluoranthene	1.48E-10
Fluorene	1.38E-10
Indeno(1,2,3,c,d)pyrene	8.89E-11
Phenanthrene	8.40E-10
Pyrene	2.47E-10
Polycyclic Organic Matter	1.80E-09
Arsenic	9.88E-09
Barium	2.17E-07
Beryllium	5.93E-10
Cadmium	5.44E-08
Chromium	6.92E-08
Cobalt	4.15E-09
Copper	4.20E-08
Manganese	1.88E-08
Mercury	1.28E-08

Pollutant	Emission Rate (per unit) (g/s)
Molybdenum	5.44E-08
Nickel	1.04E-07
Selenium	1.19E-09
Vanadium	1.14E-07
Zinc	1.43E-06

Figure 5 presents the source and receptor locations, as well as the buildings used in the stack height/downwash analysis described below.

3.3.1.2 Building Downwash

AERMOD requires direction specific building parameters to incorporate the aerodynamic effects of buildings on pollutant plume dispersion. The most recent version (04274) of the Building Profile Input Program with the Prime downwash algorithms (BPIP-Prime) was used to calculate these parameters. BPIP-Prime uses the stack information, as well as the height information of nearby buildings to calculate the required heights, widths, and setbacks required to account for building downwash.

The facility consists of a single main building and several smaller buildings. Given the location of the stacks, it is probable the main building may be subject to aerodynamic influences that would affect the dispersion of the exhaust. Thus, the nearby building and the engine and HVAC stacks are input into the BPIP Prime program to create direction-specific dimension inputs for the AERMOD model. Building tiers are shown in **Figure 5**.

3.3.2 Mobile Sources

Mobile sources of air pollutant emissions at the facility include tractor trailer trucks, diesel tractor trailer pushers, and employee vehicles. There are no other mobile sources servicing the facility.

Vehicle data were obtained from the TIS.¹⁶ Data included Project-generated vehicle forecasts on local area roadways, vehicle mix data (cars, trucks), intersection analyses, and hourly variability data.

Using the U.S. EPA's Motor Vehicle Emissions Simulator (MOVES, version 2014b) model to estimate vehicle-generated emissions and the AERMOD model for dispersion, pollutant concentrations from Project-generated traffic in the local area are estimated.

¹⁶ Langan Engineering and Environmental Services, Inc., Traffic Impact Study for Hudson Logistics Center, 43 Steele Road, Hudson, NH., September 2022.

3.3.2.1 Emissions and Source Parameters

The U.S. EPA MOVES2014b¹⁷ computer program was used to estimate motor vehicle emission factors on the roadway network. Emission factors calculated by the MOVES model are based on motor vehicle operations typical of daily periods. New Hampshire’s statewide annual Inspection and Maintenance (I&M) program was included, as well as the county-specific vehicle age registration distribution, meteorology, and other inputs. The inputs for MOVES for 2020 were provided by NHDES. Use of the year 2020 for mobile source emissions is relatively conservative, as vehicle emission rates tend to decrease in future years as vehicle engines become progressively cleaner.

MOVES produces emission rates of a large number of pollutants including both criteria and hazardous air pollutants. For particulates, MOVES calculates emission rates of exhaust, tire wear, brake wear, and road dust separately. Road dust was not considered in the previous air quality analysis but included in this analysis based on reviewer comments. As done previously, in this analysis, DPM is also analyzed separately from total PM₁₀ or PM_{2.5} as the particulate attributable diesel exhaust is of specific health concern. DPM is often comprised of other chemical compounds, in addition to the actual soot particles, to which these compounds adhere. These compounds are analyzed separately as well and compared to their applicable RTAP thresholds.

Section J.3 of Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas – Appendices discusses how to characterize mobile emission sources in AERMOD.¹⁸

Individual roadway link and intersection emissions are presented in Attachment A.

3.3.2.1.1 Roadways

Roadway emissions were broken down by link. The TIS also includes links on which there would be local traffic, but no Project-generated traffic. To identify only traffic impacts associated with the Project, links without Project traffic were removed from the analysis. **Table 3-6** presents the roadway links that have Project-generated traffic and were included in the air quality analysis.

Table 3-6 Modeled Roadway Links

Link Number	Link Description
L1	River Road, S of Dracut/Steele
L2	Dracut Road, (River Rd to Stuart Street)
L3	Lowell Road, Dracut Rd to Rena Ave/Site Drive

¹⁷ 2020 Hillsborough County files for MOVES2014b were obtained from NHDES. NHDES has not updated their databases to be compatible with the most recent MOVES version (MOVES3.0). Therefore, MOVES2014b was used for the analysis.

¹⁸ U.S. EPA, Transportation Conformity Guidance for Quantitative Hot-spot Analyses in PM_{2.5} and PM₁₀ Nonattainment and Maintenance Areas., EPA-420-B-21-037, October 2021

Link Number	Link Description
L4	Site Driveway to split
L5	Lowell Road, Rena/Site to Walmart/Sam's Drive
L6	Sam's Driveway
L7	Lowell Rd, Walmart/Sam's to Sagamore Bridge Rd
L8	Sagamore Bridge Rd WB (Up)
L9	Sagamore Bridge Rd EB (down)
L10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason
L11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire
L12	Lowell Rd, Oblate/Hampshire to Executive Dr
L13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow
L14	Lowell Rd, Fox/Nottingham to Pelham Rd
L15	Lowell Rd, N of Pelham Rd
L16	Main Truck Driveway before split
L17	Truck path to western loading docks
L18	Truck path to northern loading docks
L19	Truck path to eastern loading docks
L20	Main Car Driveway before split
L21	Car path to northern parking lot
L22	Shared car path to middle and western lots
L23	Car path to middle parking lot
L24	Car path to southern parking lot

For each link, the link length, peak hour vehicles, and vehicle speed are inputs in MOVES to estimate total vehicle emissions for various pollutants along the roadway.

In AERMOD, roadway sources were modeled as a series of volume sources. The use of volume sources allows the characterization of vehicular emissions to account for the initial turbulence created by moving vehicles. This initial plume spread is directly input into the AERMOD model.

For the roadway links, initial lateral plume spread is determined by the roadway width and varies by roadway. Road widths were measured in Google Earth and initial lateral spread values were calculated using width / 2.15 as described in the U.S. EPA Hot-Spots analyses guidance referenced above. For roadway links with a mix of vehicles, an initial vertical spread of about 3.6 m was used based on a weighted average of vehicle height of 2.1 m. For roadways with truck traffic only, an initial vertical spread of 6.8 m and release height of 4 m was used.

3.3.2.1.2 Intersections

The TIS included analysis of nine local intersections. All nine contained Project-related traffic and were included in the air quality impact analysis. **Table 3-7** presents the intersections included in the TIS and analyzed for air quality impacts.

Table 3-7 Modeled Intersections

Source ID	Intersection
VOL1	1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road
VOL2	2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue
VOL3	3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway
VOL4	4: Lowell Road (Route 3A) & Sagamore Bridge Road
VOL5	5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road
VOL6	6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive
VOL7	7: Lowell Road (Route 3A) & Executive Drive
VOL8	8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway
VOL9	9: Lowell Road (Route 3A) & Pelham Road

Emissions from vehicles idling at intersections are calculated using 0 mph emission factors obtained from MOVES. These factors, along with the vehicle volumes and average delay times provide the basis of the emissions calculation at each intersection.

For the intersection sources, vehicles are not moving, so no initial mixing and growth of volume sources was assumed. The release height was set to the weighted average of vehicle heights (2.1m). For modeling diesel particulate matter with only trucks, a release height of 4 m was used for the intersections. Intersection initial lateral spreads were based on visual inspections of the intersection size and vary by intersection.

3.3.2.1.3 Property Parking and Truck Areas

The truck idling area and the area with yard tractors (pushers) were modeled as area sources. Emissions were calculated based on projected hourly truck traffic movements in each area. New Hampshire has regulations pertaining to vehicle idling which allow for a certain idling time based on ambient temperature, limited to 5 minutes when the ambient is above 32°F and 15 minutes down to -10°F. It's conservatively assumed that each truck idles for approximately 15 minutes (900 seconds) within a lot, regardless of ambient temperature.

Based on the U.S. EPA's Hot-spots analysis guidance references above, a 4-meter release height and 3.2 meters for the initial vertical spread was assumed for trucks.

Table 3-8 Modeled Parking Lots

Source ID	Description	Lot Area (m ²)	Average Peak Delay time (s/veh)	Peak Traffic Volume (vph)
LOT1	Trucks Idling Lot	171,017	900	52
LOT2	Yard Tractors (Pushers) Idling Lot	1,778	900	22

Mobile sources as represented in the air quality model are shown in **Figure 6**. Specific model inputs for mobile sources can be found in Attachment A.

3.3.2.2 Building Downwash

Volume and area sources are not subject to building downwash in AERMOD. Additionally, the motion of vehicles creating their own turbulent wake precludes the use of point sources (which are the only source type subject to building downwash in AERMOD) in the analysis. Therefore, building influences on mobile source emissions are not included.

3.3.2.3 Temporal Variations

Based on the TIS, it is expected that the peak hour occurs at 4 PM. All roadway traffic is adjusted based on an hourly factor to account for variability from the peak values provided. No monthly variability was assumed.

Onsite lot use data was also provided. Using the same methodology, factors for these sources were also calculated to account for the variability from the peak values. The factors are presented in Attachment A.

4.0 RESULTS AND CONCLUSIONS

Determining the impact of a project on air quality in the area is usually determined by comparing modeled pollutant concentrations to applicable standards.

4.1 Criteria Pollutant Results

The results of the mobile and stationary source modeling using AERMOD are presented in **Table 4-1**.

The results show that the highest modeled concentration (as a percentage of applicable NAAQS) is for 1-hour NO₂ at 63% of the standard, when Project emissions are added to background. The appropriate form of the 1-hour NO₂ standard is the 3-year average of the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations (the highest-eighth-high). US EPA guidance dictates the use of a single 5-year concurrent meteorological file in lieu of using three rolling 3-year files. The highest-eighth-high modeled maximum daily 1-hour concentration averaged over 5 years is added to the highest background concentration over the most recent 3 years to show compliance with the standard.¹⁹

The modeled 1-hour NO₂ value in the required form is 80.0 µg/m³. With a background value of 37.6 µg/m³ added, a total concentration of 117.6 µg/m³ is obtained for the Project, below the 1-hour NO₂ NAAQS of 188 µg/m³.

The second highest concentration (as a percentage of applicable NAAQS) is for annual PM_{2.5} at 58% of the allowable standard when added to background concentrations. The maximum modeled concentration from the Project itself is about 10% of the NAAQS. The appropriate form of the annual PM_{2.5} standard is annual mean averaged over 3 years. US EPA guidance dictates the use of a single 5-year concurrent meteorological file in lieu of using three rolling 3-year files. The highest modeled annual concentration averaged over 5 years is added to the 3-year average of the annual background concentrations.²⁰

The modeled annual PM_{2.5} value in the required form is 1.3 µg/m³. With a background value of 5.7 µg/m³ added, a total concentration of 7.0 µg/m³ is obtained for the Project, well below the annual PM_{2.5} NAAQS of 12 µg/m³ and mostly attributable to the ambient background concentration.

The third highest concentration (as a percentage of applicable NAAQS) is for 24-hour PM_{2.5} at 49% of the allowable standard for the Project. The appropriate form of the 24-hour PM_{2.5} standard is the 3-year average of the 98th percentile 24-hour average concentrations. US EPA

¹⁹ U.S. EPA, 2011; Memorandum - Additional Clarification Regarding Application of Appendix W Modeling Guidance for the NO₂ National Ambient Air Quality Standard. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711. March 1, 2011.

²⁰ U.S. EPA, 2010; Memorandum - Modeling Procedures for Demonstrating Compliance with PM_{2.5} NAAQS. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711. March 23, 2010.

guidance dictates the use of a single 5-year concurrent meteorological file in lieu of using three rolling 3-year files. The highest modeled 24-hour concentration averaged over 5 years is added to the 3-year average of the 98th percentile 24-hour background concentrations.²¹

The modeled 24-hour PM_{2.5} value in the required form is 3.3 µg/m³. With a background value of 14 µg/m³ added, a total concentration of 17.3 µg/m³ is obtained for the Project, which is well below the 24-hour PM_{2.5} NAAQS level of 35 µg/m³. The Project's contribution to this value is only about 9%, whereby over 90% of this value is attributable to the monitored ambient background concentration.

4.2 RTAP Results

The results of the mobile source and stationary source hazardous air pollutant impact analysis using AERMOD are presented in **Table 4-2**.

Since the emergency generator is powered by ULSD, emissions of hazardous air pollutants are well below corresponding standards. Short-term results are based on continuous use of the engine for 24-hours. Annual results are based on the federal operating limit of 500 hours per year.

Outside of emergency use during power loss, the generators are expected to be tested regularly, typically weekly, or monthly, for less than one hour. Therefore, the assumption of continuous use for 24-hours is extremely conservative. Even in area power-loss situations, grid power is typically restored within 24 hours., however 24 hours was modeled.

All RTAP pollutant concentrations are well below their corresponding standards.

US EPA developed the diesel exhaust particulate RfC of 5 µg/m³ to be protective of a lifetime of continuous exposure. The RfC is defined as "an estimate (with uncertainty spanning perhaps an order of magnitude) of a daily inhalation exposure of the human population (including sensitive subgroups) that is likely to be without an appreciable risk of deleterious effects during a lifetime".²²

The maximum predicted annual diesel exhaust concentration of 0.4021 µg/m³ is roughly 8% of the RfC. Therefore, the impacts of diesel exhaust are minimal. Again, the highest concentrations are generally found immediately along the roads and tend to decrease rapidly with distance from the roadways. Thus, concentrations at nearby residential areas are well below the health-based standards.

²¹ U.S. EPA, 2010; Memorandum - Modeling Procedures for Demonstrating Compliance with PM_{2.5} NAAQS. U.S. Environmental Protection Agency, Research Triangle Park, North Carolina 27711. March 23, 2010.

²² U.S. EPA. 2003. "IRIS Chemical Assessment Summary for Diesel engine exhaust (CAS No. N.A.)." 36p., February 28. Accessed on June 15, 2020 at <https://www.epa.gov/iris>

4.3 Mitigation

New Hampshire regulation ENV-A-1100 regulates idling of vehicles to reduce the air pollutants emitted from unnecessary idling. The time vehicles may be idling is a function of the outside temperature:

- At temperatures above 32°F, idling is limited to 5 minutes;
- At temperatures between -10°F and 32°F, idling is limited to 15 minutes;
- At temperatures below -10°F, there is no limit on idling time.

Vehicles in traffic, emergency vehicles, vehicles providing power take-off (PTO) for refrigeration or lift gate pumps, and vehicles supplying heat or air conditioning for passenger comfort during transportation are generally exempt from this regulation.

The facility is expected to enforce the NH vehicle idling regulations and to reduce the occurrence and duration of idling vehicles onsite to ensure compliance with these standards.

Only a single emergency backup engine will be used on the property when needed. To mitigate impacts from the emergency engine, operations for testing and maintenance should be performed during times when the atmosphere is more unstable and has better mixing, leading to better dispersion of pollutants. These hours are typically mid-afternoon when the ground has been effectively heated by the midday sun.

4.4 Air Quality Permits

For the backup power emergency generator, according to ENV-A-610, a General State Permit (GSP) for Internal Combustion Engines – Emergency Generators or Fire Pump Engines may be required. No pollution control equipment is required, provided that the emissions from the unit meet all applicable federal standards for non-road engines. No other air quality permits are expected to be required. There are no air quality permits required for the rooftop HVAC units.

No air quality permits are required for transportation other than the vehicle registration, inspection, and maintenance requirements set forth by the U.S. Department of Transportation and the New Hampshire Department of Transportation.

4.5 Construction

Short-term air quality impacts from fugitive dust may be expected during excavation and the early phases of construction. Plans for controlling fugitive dust during excavation and construction include mechanical street sweeping, wetting and/or misting portions of the site during periods of high wind, and careful removal of debris by covered trucks. The construction contract will provide for several strictly enforced measures to be used by contractors to reduce potential emissions and minimize impacts. These measures are expected to include:

- Using wetting agents on area of exposed soil on a scheduled basis;
- Using covered trucks;

- Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized;
- Minimizing storage of debris on the site; and
- Periodic street and sidewalk cleaning with water to minimize dust accumulations.
- Limit maximum travel speeds on unpaved areas; and
- Provide wheel wash stations to limit trackout of soil during the excavation phase.

New Hampshire regulation ENV-A-1100 requires that vehicles idle for no more than five minutes when temperatures are above 32°F. To reduce engine idling, the selected contractor(s) will be notified of the New Hampshire anti-idling regulations.

Construction equipment engines will comply with requirements for the use of ultra-low sulfur diesel (ULSD) in off-road engines. The construction contractor will be encouraged to use diesel construction equipment with installed exhaust emission controls such as oxidation catalysts or particulate filters on their diesel engines.

In addition to the items listed above, all trucks leaving the site must have all dirt/mud removed from the wheels and undercarriage of the truck prior to leaving the site. In addition, any loads containing soil for off-site disposal will be covered. Construction vehicles and equipment will not be permitted to be washed in the streets outside of the Project site. Excess water from the wheel wash stations will be managed and catch basins in the surrounding street will be protected from potential runoff from the cleaning operations.

The Proponent acknowledges the importance of emission controls and will encourage contractors to use proper emission controls, use of clean fuels, control of truck and equipment idling times, and conducting operations without affect to neighbors' clean air are all important priorities to the Proponent.

Attachment C includes emission calculations that focus on the emissions that result from the use of heavy equipment that is required to perform the demolition and construction. These calculations include tailpipe emissions, paving emissions, and fugitive dust.

The calculations in Attachment B use estimates of equipment necessary for construction and the duration that each piece of equipment will be present on site determined by the Project construction manager. These estimates are assembled into a list of the predicted construction equipment on site, the equipment size in horsepower (HP), and the duration of use on site. Tailpipe emissions calculations use EPA nonroad standards and fuel mass balance calculations, and conservatively assume emission rates as high as allowable. Asphalt paving emissions are estimated using factors from the National Association of Clean Air Agencies, and fugitive dust estimates are calculated using EPA's AP-42 standard emission factors.

4.6 Other Potential Impacts

Concerns over the potential for air quality impacts were raised by the public through the Town's Planning Board review process for the prior Approved Project, and based upon our analysis above, and conclusions described below, we note the following:

4.6.1 *Distance Between Proposed Project Buildings and Existing Residential Dwellings.*

Based upon the air quality analysis above, which demonstrates that both stationary and mobile sources of potential pollutants are expected to be well below applicable federal and state standards, there does not appear to be a need, from an air quality or health and safety or environmental perspective, to provide any specific setback or buffer between the proposed buildings on the Amended Project site and abutting residential dwellings for purposes of air pollution control. We understand, however, that a 200-foot setback from the residential property boundary is required under the Hudson Zoning Ordinance and that the Proponent has provided a much greater setback than what the Hudson Zoning Ordinance requires. Specifically, we understand that the Site Plans illustrate that the closet portion of the proposed distribution building is 1,341 feet from the southerly Property line.

4.6.2 *Diesel Emissions and Particulates.*

Based upon the analysis above which demonstrates that both stationary and mobile sources of potential pollutants are expected to be well below applicable federal and state standards, the Project's diesel emissions including particulates from exhaust, tire wear, and brake wear, are not expected to cause or exacerbate health conditions, such as asthma, for those persons living in nearby residential dwellings.

4.6.3 *Truck Idling.*

As noted above, New Hampshire regulation ENV-A-1100 regulates idling of vehicles to reduce the air pollutants emitted from unnecessary idling, and we have advised the Proponent concerning measures to be undertaken to ensure compliance with these idling requirements both during construction and post-construction operations.

4.7 Conclusions

The NAAQS and RTAP standards are designed to protect public health and welfare. Since all predicted concentrations are below their applicable NAAQS and/or RTAP standards, it can be concluded that the proposed Project will not cause or contribute to a condition of air pollution in the area. Therefore, the Project operations would not subject the nearby properties to "danger or injury to health or safety" as a result of potential impacts to air quality. Moreover, the Project is required to reduce and/or eliminate elements of pollution, such as smoke, soot, particulates, or any other discharge, into the environment, which might prove harmful to persons, structures, or adjacent properties, and as to air quality. This air quality analysis demonstrates compliance with these requirements. Overall, with respect to air quality impacts, the Project meets the requirements laid out in Chapter 275 of the Town of Hudson's Site Plan Review regulations.

4.7.1 *Comparison to Prior Report*

This analysis and Epsilon's 2020 analysis reach the same conclusion – that the evaluation shows that the impacts from mobile and stationary air emissions sources will not cause any condition of unhealthy air. The two analyses provide results generally within the same range, but specific results cannot be compared directly, because the analysis techniques have been updated. Most notably, this current analysis uses an updated version of EPA's AERMOD program. Emission factors also incorporate an updated traffic analysis and reflect current best practices. Each of these changes means that the current analysis uses the best current science and analytical techniques, but it also means that any increases or decreases in presented results from the prior analysis are more likely to be attributable to changes in the analytical methods than to changes in the design or operation of the Project.

Table 4-1 Mobile and Stationary Source NAAQS Results

POLLUTANT	AVERAGING TIME	MAXIMUM MODELED CONC. ($\mu\text{g}/\text{m}^3$)	BACKGROUND CONCENTRATION ($\mu\text{g}/\text{m}^3$)	TOTAL CONCENTRATION ⁶ ($\mu\text{g}/\text{m}^3$)	STANDARD ($\mu\text{g}/\text{m}^3$)	% of Standard
PM ₁₀	24 HOUR ²	14.2	42	56.2	150	37%
PM _{2.5}	24 HOUR ³	3.3	14	17.3	35	49%
	ANNUAL ⁴	1.3	5.7	7.0	12	58%
NO ₂	1 HOUR ⁵	80.0	37.6	117.6	188	63%
	ANNUAL ¹	6.5	5	11.5	100	11%
CO	8 HOUR ⁷	72.3	687.6	759.9	10,000	8%
	1 HOUR ⁷	290.8	687.6	978.4	40,000	2%
SO ₂	1 HOUR ⁹	30.6	7.9	38.5	196	20%
	3 HOUR ⁸	25.0	8	33.0	1300	3%

Notes:

¹ Highest Annual Concentration Over 5 Years

² Highest 6th-High Concentration Over 5 Years

³ Maximum 8th-High 24-Hour Concentration Averaged Over 5 Years

⁴ Maximum Annual Concentration Averaged Over 5 Years

⁵ Maximum 8th-Highest Maximum Daily 1-Hour Concentration Averaged Over 5 Years

⁶ Discrepancies in sums may occur due to rounding.

⁷ Highest 2nd-High Concentration Averaged Over 5 Years and not to be exceeded more than once per year

⁸ Highest 2nd-High 1-Hr Daily Maximum Concentrations, Averaged Over 3 Years.

⁹ Highest 4th-High Concentration Averaged Over 5 Years

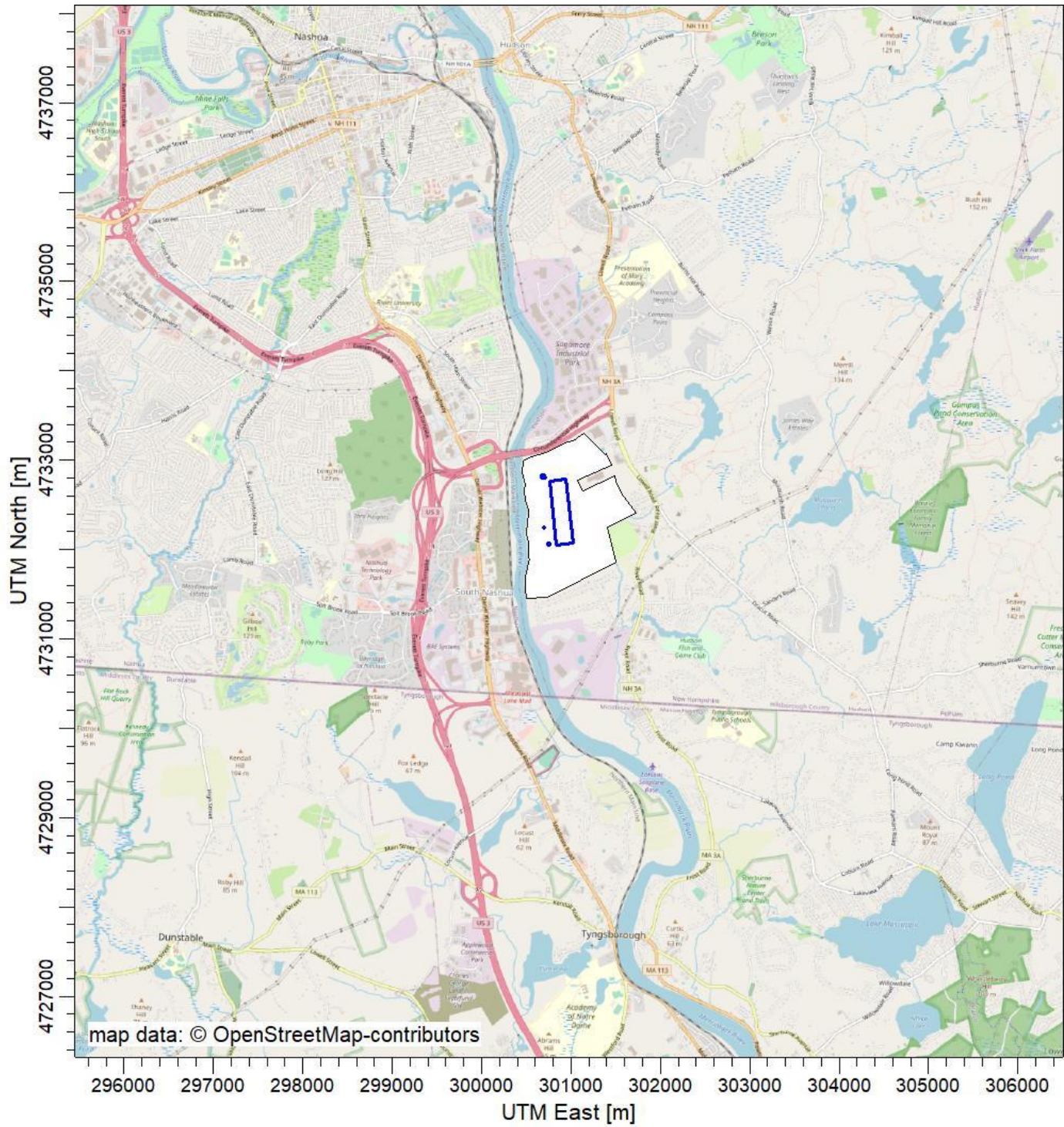
Table 4-2 Mobile and Stationary Source HAP (RTAP) Results

POLLUTANT	AVERAGING TIME	Concentration ($\mu\text{g}/\text{m}^3$)	STANDARD ($\mu\text{g}/\text{m}^3$)	% of Standard	Exceeds Standard?
1,3-Butadiene	24 HOUR	8.07E-03	2	0%	No
	ANNUAL	1.94E-03	2	0%	No
Acetaldehyde	24 HOUR	1.02E-01	161	0%	No
	ANNUAL	1.98E-02	9	0%	No
Acrolein	24 HOUR	1.04E-03	0.82	0%	No
	ANNUAL	6.46E-06	0.02	0%	No
Anthracene	24 HOUR	1.04E-03	0.71	0%	No
	ANNUAL	1.81E-04	0.48	0%	No
Arsenic Compounds	24 HOUR	8.70E-04	0.036	2%	No
	ANNUAL	2.04E-04	0.024	1%	No
Barium	24 HOUR	1.39E-04	2.5	0%	No
	ANNUAL	1.23E-05	1.7	0%	No
Benzene	24 HOUR	6.64E-05	5.7	0%	No
	ANNUAL	5.92E-06	3.8	0%	No
Benz(a)anthracene	24 HOUR	9.25E-04	0.36	0%	No
	ANNUAL	8.92E-05	0.24	0%	No
Benzo(a)pyrene	24 HOUR	3.08E-04	0.002	15%	No
	ANNUAL	2.97E-05	0.002	1%	No
Benzo(b)fluoranthene	24 HOUR	5.67E-08	0.36	0%	No
	ANNUAL	5.06E-09	0.24	0%	No
Beryllium	24 HOUR	3.78E-07	0.00018	0%	No
	ANNUAL	3.37E-08	0.00012	0%	No
Cadmium	24 HOUR	3.47E-05	0.036	0%	No
	ANNUAL	3.09E-06	0.024	0%	No
Chromium 6+	24 HOUR	4.48E-05	0.00071	6%	No
	ANNUAL	4.56E-06	0.00048	1%	No
Chrysene	24 HOUR	5.84E-04	0.36	0%	No
	ANNUAL	9.49E-05	0.24	0%	No
Cobalt	24 HOUR	2.65E-06	0.14	0%	No
	ANNUAL	2.36E-07	0.067	0%	No
Copper	24 HOUR	2.68E-05	0.71	0%	No
	ANNUAL	2.39E-06	0.48	0%	No
Diesel Particulate	ANNUAL	4.21E-01	5	8%	No
Ethyl Benzene	24 HOUR	4.82E-02	1000	0%	No
	ANNUAL	1.12E-02	1000	0%	No
Formaldehyde	24 HOUR	2.37E-03	9.8	0%	No
	ANNUAL	2.11E-04	3.6	0%	No

POLLUTANT	AVERAGING TIME	Concentration ($\mu\text{g}/\text{m}^3$)	STANDARD ($\mu\text{g}/\text{m}^3$)	% of Standard	Exceeds Standard?
Hexane	24 HOUR	6.97E-02	885	0%	No
	ANNUAL	1.62E-02	700	0%	No
Manganese Compounds	24 HOUR	8.79E-04	0.1	1%	No
	ANNUAL	1.60E-04	0.05	0%	No
Molybdenum	24 HOUR	3.47E-05	1.8	0%	No
	ANNUAL	3.09E-06	1.2	0%	No
Naphthalene	24 HOUR	1.92E-05	186	0%	No
	ANNUAL	1.71E-06	3	0%	No
Nickel Compounds	24 HOUR	1.47E-03	0.36	0%	No
	ANNUAL	2.27E-04	0.24	0%	No
Phenanthrene	24 HOUR	3.67E-03	0.71	1%	No
	ANNUAL	6.46E-04	0.48	0%	No
Propionaldehyde	24 HOUR	1.24E-02	239	0%	No
	ANNUAL	2.35E-03	8	0%	No
Pyrene	24 HOUR	3.49E-03	0.71	0%	No
	ANNUAL	5.79E-04	0.48	0%	No
Selenium	24 HOUR	7.60E-07	0.71	0%	No
	ANNUAL	6.77E-08	0.48	0%	No
Styrene	24 HOUR	3.44E-03	1000	0%	No
	ANNUAL	7.04E-04	1000	0%	No
Toluene	24 HOUR	3.22E-01	5000	0%	No
	ANNUAL	7.47E-02	5000	0%	No
Total Mercury Compounds	24 HOUR	3.85E-05	0.3	0%	No
	ANNUAL	9.11E-06	0.3	0%	No
Vanadium	24 HOUR	7.28E-05	0.18	0%	No
	ANNUAL	6.48E-06	0.12	0%	No
Xylene	24 HOUR	1.73E-01	1550	0%	No
	ANNUAL	4.01E-02	100	0%	No
Zinc	24 HOUR	9.13E-04	10	0%	No
	ANNUAL	8.13E-05	6.7	0%	No

FIGURES

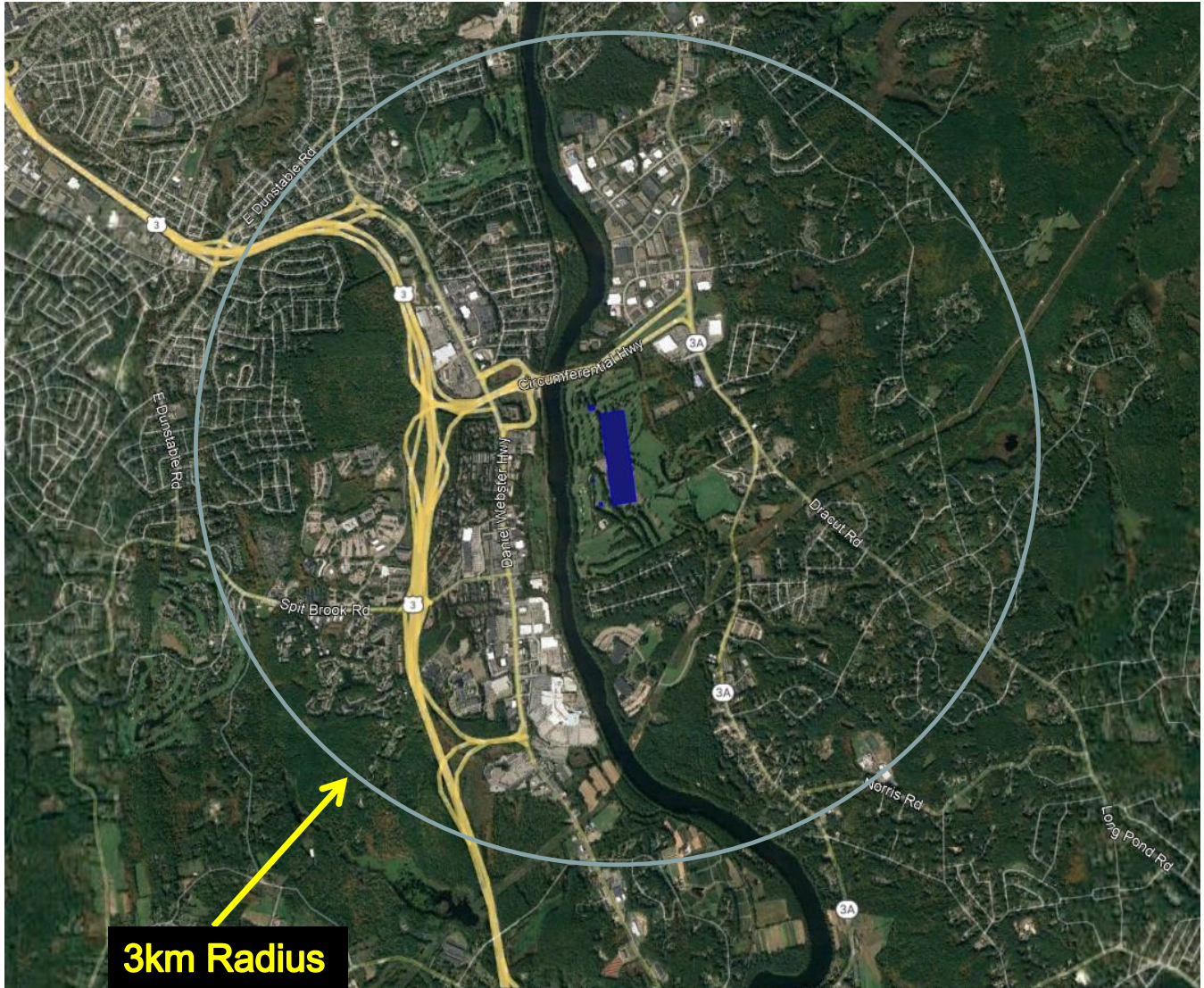
- Figure 1 Site Location**
- Figure 2 Urban/Rural 3km Radius**
- Figure 3 Wind Rose**
- Figure 4 Receptor Locations**
- Figure 5 Stationary Sources and Building Locations**
- Figure 6 Mobile Source Locations**



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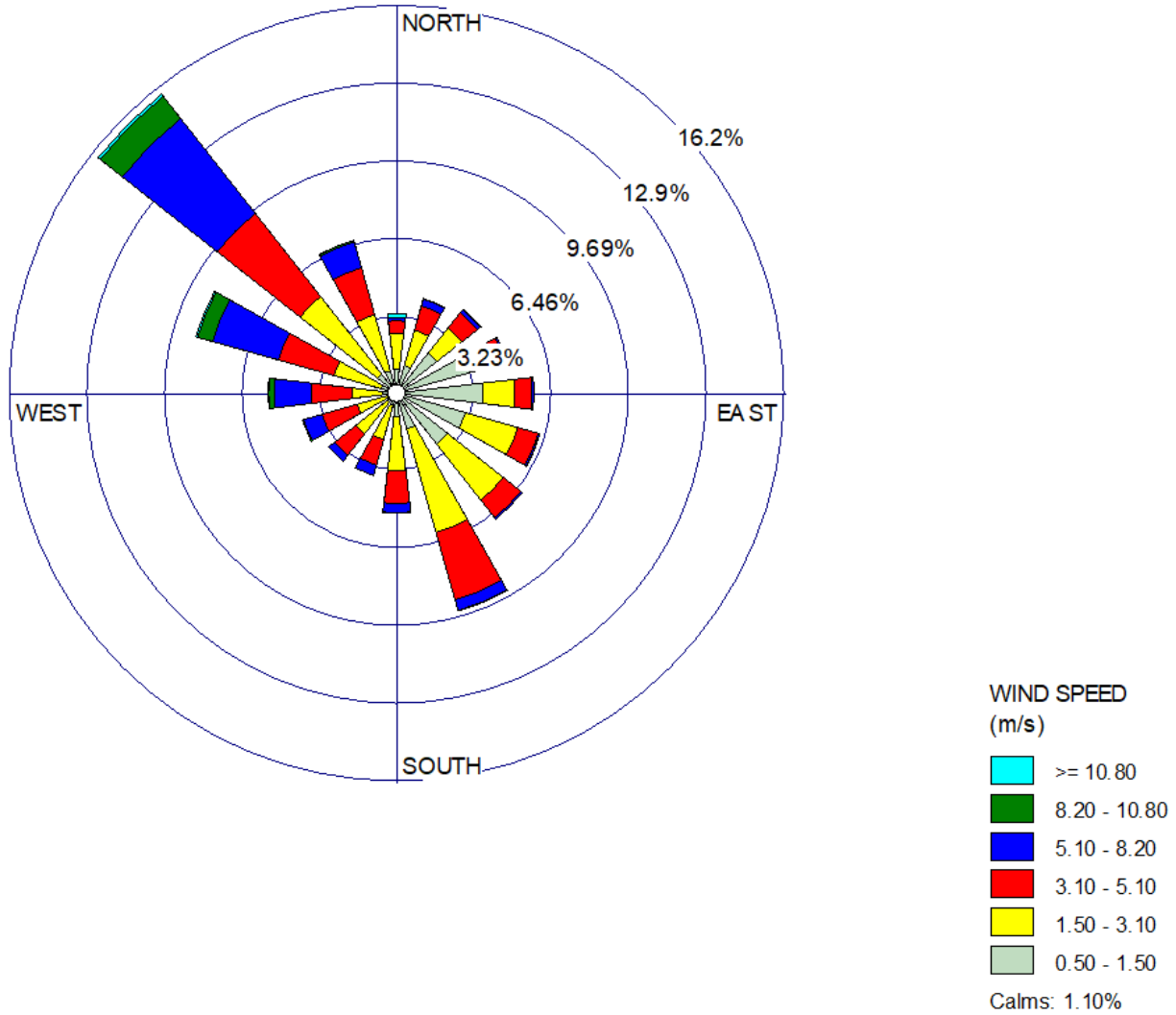
Figure 1
Site Location



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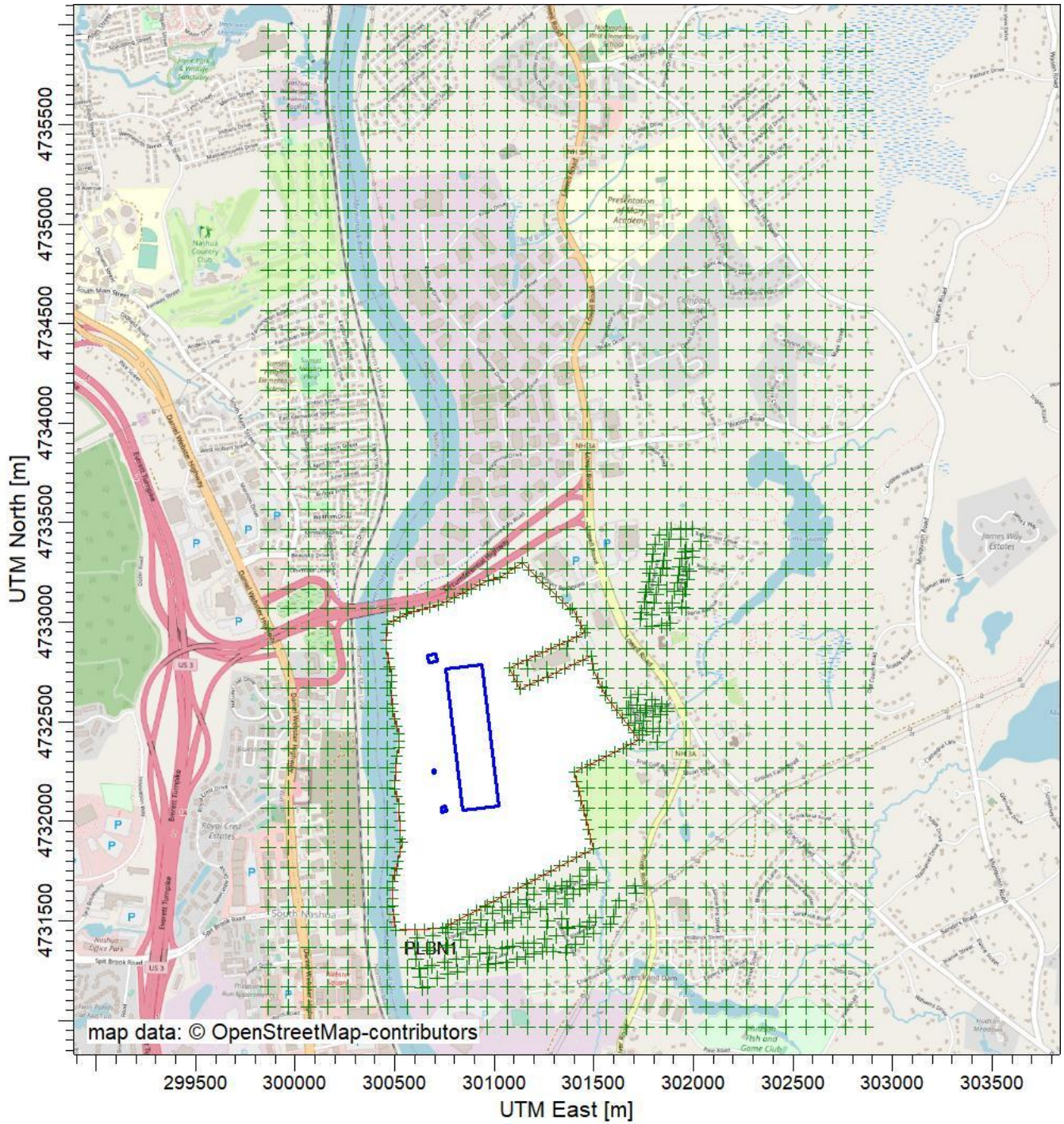
Figure 2
Urban/Rural 3km Radius



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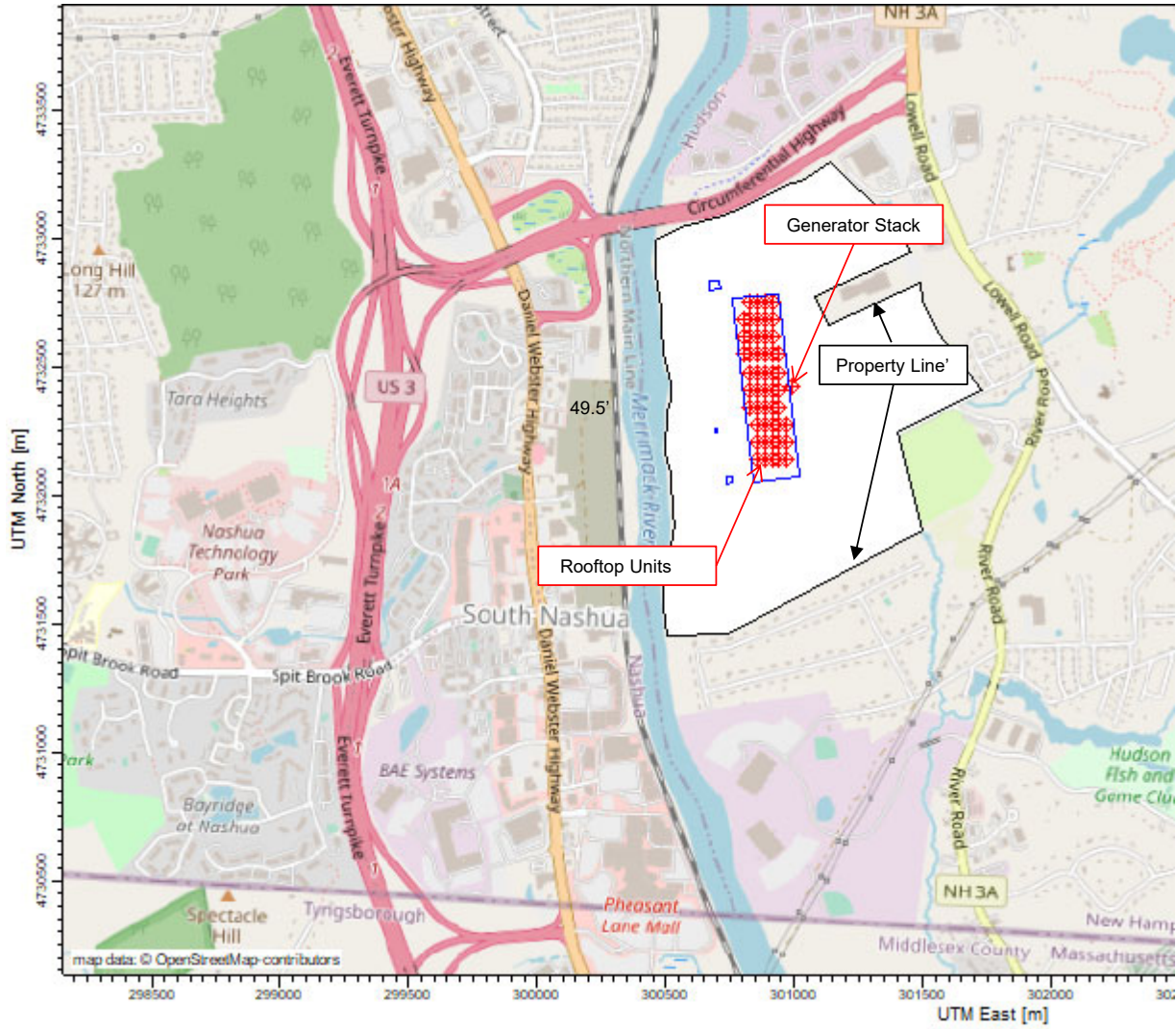
Figure 3
2016-2020 Concord (NH) Municipal Airport Wind Rose



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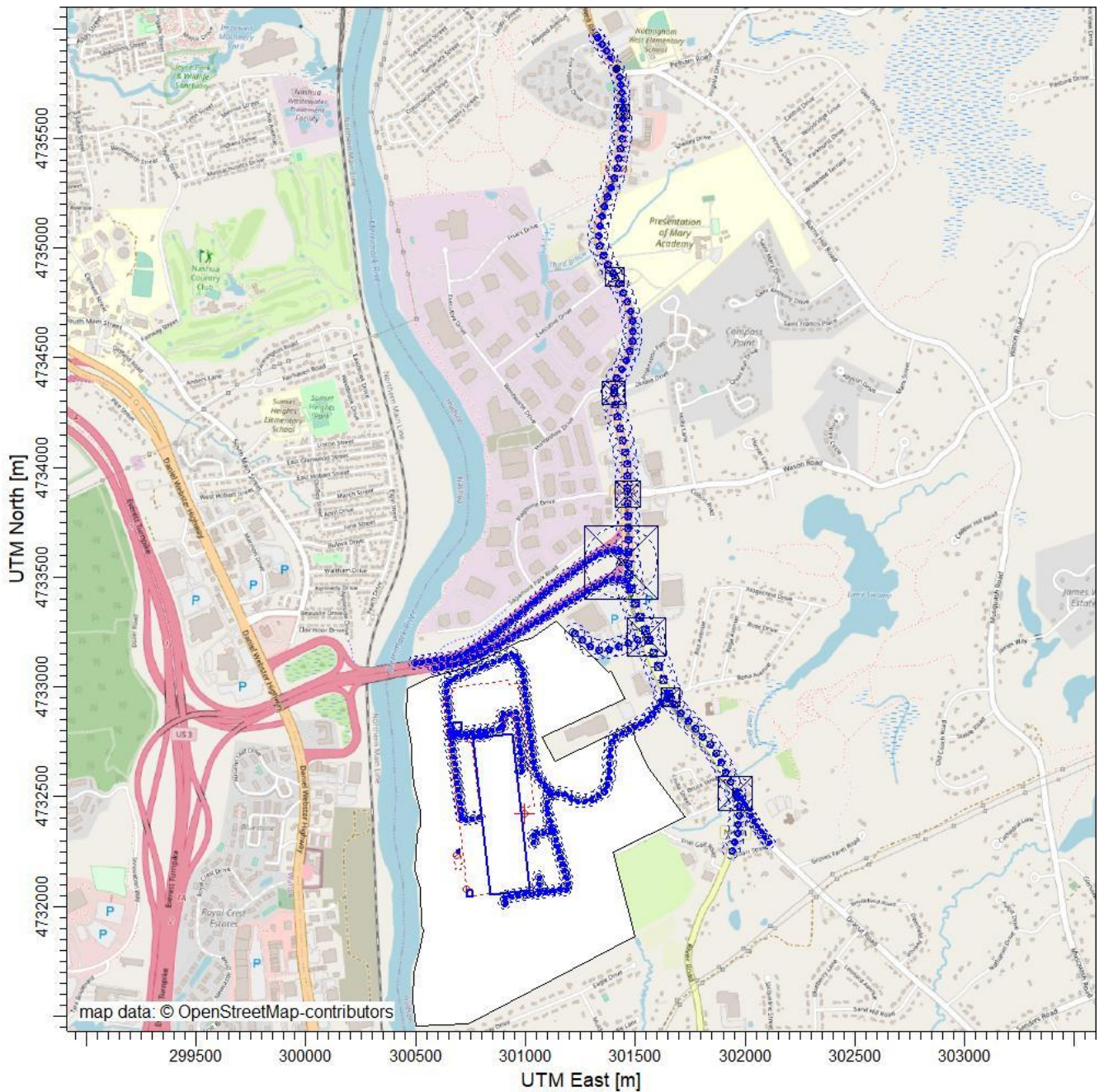
Figure 4
Receptor Locations



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Figure 5
Stationary Sources Building Locations



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Figure 6
Mobile Source Locations

ATTACHMENT A – MOBILE & STATIONARY SOURCE INPUTS

Hudson Logistics

Links

Roadway Link Peak Hour Emission Rates (g/s)

Link Number	MOVES Link ID	Roadway Segment	Roadway Width (meters)	Sigma-Y ¹	Link Distance (meters)	Link Distance (miles)	NOx	Total PM10
L1	1	River Road, S of Dracut/Steele	20.7	19.3	279	0.17336256	1.40E-03	1.24E-03
L2	2	Dracut Road, (River Rd to Stuart Street)	15.2	14.1	266.3	0.16547115	4.52E-03	4.01E-03
L3	3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	24.4	22.7	539.2	0.33504335	1.20E-02	1.07E-02
L4	4	Site Driveway to split	16.5	15.3	838.7	0.52114402	1.50E-01	8.20E-02
L5	5	Lowell Road, Rena/Site to Walmart/Sams Drive	32.3	30.0	299.5	0.18610067	4.09E-02	2.54E-02
L6	6	Sams Driveway	22.9	21.3	374.6	0.23276565	5.40E-03	4.43E-03
L7	7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	33.5	31.2	316.3	0.19653971	4.73E-02	2.45E-02
L8	8	Sagamore Bridge Rd WB (Up)	15.2	14.1	1151.9	0.71575748	6.03E-02	5.96E-02
L9	9	Sagamore Bridge Rd EB (down)	15.2	14.1	1010.9	0.62814414	5.29E-02	5.23E-02
L10	10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	27.4	25.5	338.7	0.21045842	8.72E-03	7.74E-03
L11	11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	27.4	25.5	457.5	0.28427732	1.18E-02	1.05E-02
L12	12	Lowell Rd, Oblate/Hampshire to Executive Dr	22.9	21.3	553.9	0.3441775	1.43E-02	1.27E-02
L13	13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	22.9	21.3	780.8	0.48516663	2.01E-02	1.78E-02
L14	14	Lowell Rd, Fox/Nottingham to Pelham Rd	18.3	17.0	197.1	0.12247226	5.08E-03	4.50E-03
L15	15	Lowell Rd, N of Pelham Rd	18.3	17.0	150.6	0.0935785	3.88E-03	3.44E-03
L16	16	Main Truck Driveway before split	15.2	14.1	1236.9	0.76857403	1.03E-01	6.09E-02
L17	17	Truck path to western loading docks	15.2	14.1	463.5	0.28800555	1.29E-02	7.61E-03
L18	18	Truck path to northern loading docks	15.2	14.1	180.1	0.11190895	5.01E-03	2.96E-03
L19	19	Truck path to eastern loading docks	15.2	14.1	666	0.41383321	1.85E-02	1.09E-02
L20	20	Main Car Driveway before split	15.2	14.1	173.7	0.10793218	6.42E-03	8.61E-03
L21	21	Car path to northern parking lot	15.2	14.1	130	0.08077825	1.58E-03	2.12E-03
L22	22	Shared car path to middle and western lots	15.2	14.1	364.1	0.22624125	8.89E-03	1.19E-02
L23	23	Car path to middle parking lot	15.2	14.1	106.2	0.06598962	8.64E-04	1.16E-03
L24	24	Car path to southern parking lot	15.2	14.1	262.5	0.16310994	4.27E-03	5.73E-03

¹ Sigma Y is determined by multiplying the roadway width by 2, and dividing it by 2.15. See Table 3-2 of the AERMOD User's Guide.

Hudson Logistics

Links

Roadway Link Peak Hour Emission Rates (g/s)

Link Number	MOVES Link ID	Roadway Segment	Roadway Width (meters)	Sigma-Y ¹	Link Distance (meters)	Link Distance (miles)	Total PM2.5	Carbon Monoxide
L1	1	River Road, S of Dracut/Steele	20.7	19.3	279	0.17336256	3.52E-04	2.23E-03
L2	2	Dracut Road, (River Rd to Stuart Street)	15.2	14.1	266.3	0.16547115	1.13E-03	7.20E-03
L3	3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	24.4	22.7	539.2	0.33504335	3.02E-03	1.92E-02
L4	4	Site Driveway to split	16.5	15.3	838.7	0.52114402	2.49E-02	2.70E-01
L5	5	Lowell Road, Rena/Site to Walmart/Sams Drive	32.3	30.0	299.5	0.18610067	7.54E-03	6.52E-02
L6	6	Sams Driveway	22.9	21.3	374.6	0.23276565	1.27E-03	9.77E-03
L7	7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	33.5	31.2	316.3	0.19653971	7.50E-03	7.53E-02
L8	8	Sagamore Bridge Rd WB (Up)	15.2	14.1	1151.9	0.71575748	1.63E-02	8.93E-02
L9	9	Sagamore Bridge Rd EB (down)	15.2	14.1	1010.9	0.62814414	1.43E-02	7.84E-02
L10	10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	27.4	25.5	338.7	0.21045842	2.19E-03	1.39E-02
L11	11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	27.4	25.5	457.5	0.28427732	2.96E-03	1.88E-02
L12	12	Lowell Rd, Oblate/Hampshire to Executive Dr	22.9	21.3	553.9	0.3441775	3.58E-03	2.27E-02
L13	13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	22.9	21.3	780.8	0.48516663	5.05E-03	3.20E-02
L14	14	Lowell Rd, Fox/Nottingham to Pelham Rd	18.3	17.0	197.1	0.12247226	1.27E-03	8.09E-03
L15	15	Lowell Rd, N of Pelham Rd	18.3	17.0	150.6	0.0935785	9.74E-04	6.18E-03
L16	16	Main Truck Driveway before split	15.2	14.1	1236.9	0.76857403	1.84E-02	3.44E-02
L17	17	Truck path to western loading docks	15.2	14.1	463.5	0.28800555	2.30E-03	4.29E-03
L18	18	Truck path to northern loading docks	15.2	14.1	180.1	0.11190895	8.94E-04	1.67E-03
L19	19	Truck path to eastern loading docks	15.2	14.1	666	0.41383321	3.31E-03	6.17E-03
L20	20	Main Car Driveway before split	15.2	14.1	173.7	0.10793218	2.12E-03	6.90E-02
L21	21	Car path to northern parking lot	15.2	14.1	130	0.08077825	5.23E-04	1.70E-02
L22	22	Shared car path to middle and western lots	15.2	14.1	364.1	0.22624125	2.94E-03	9.56E-02
L23	23	Car path to middle parking lot	15.2	14.1	106.2	0.06598962	2.86E-04	9.29E-03
L24	24	Car path to southern parking lot	15.2	14.1	262.5	0.16310994	1.41E-03	4.59E-02

¹ Sigma Y is determined by multiplying the roadway width by 2, and dividing it by 2.15. See Table 3-2 of the AERMOD User's Guide.

Hudson Logistics

Links

Roadway Link Peak Hour Emission Rates (g/s)

Link Number	MOVES Link ID	Roadway Segment	Roadway Width (meters)	Sigma-Y ¹	Link Distance (meters)	Link Distance (miles)	SO2	Diesel Particulate Matter	1,3-Butadiene
L1	1	River Road, S of Dracut/Steele	20.7	19.3	279	0.17336256	3.55E-06	6.10E-05	3.62E-07
L2	2	Dracut Road, (River Rd to Stuart Street)	15.2	14.1	266.3	0.16547115	1.14E-05	1.96E-04	1.17E-06
L3	3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	24.4	22.7	539.2	0.33504335	3.05E-05	5.23E-04	3.11E-06
L4	4	Site Driveway to split	16.5	15.3	838.7	0.52114402	3.94E-04	1.49E-02	4.62E-05
L5	5	Lowell Road, Rena/Site to Walmart/Sams Drive	32.3	30.0	299.5	0.18610067	1.04E-04	1.78E-03	1.06E-05
L6	6	Sams Driveway	22.9	21.3	374.6	0.23276565	1.42E-05	2.44E-04	1.67E-06
L7	7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	33.5	31.2	316.3	0.19653971	1.20E-04	2.06E-03	1.22E-05
L8	8	Sagamore Bridge Rd WB (Up)	15.2	14.1	1151.9	0.71575748	1.50E-04	1.82E-03	1.38E-05
L9	9	Sagamore Bridge Rd EB (down)	15.2	14.1	1010.9	0.62814414	1.31E-04	1.60E-03	1.21E-05
L10	10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	27.4	25.5	338.7	0.21045842	2.21E-05	3.79E-04	2.25E-06
L11	11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	27.4	25.5	457.5	0.28427732	2.99E-05	5.13E-04	3.04E-06
L12	12	Lowell Rd, Oblate/Hampshire to Executive Dr	22.9	21.3	553.9	0.3441775	3.62E-05	6.20E-04	3.68E-06
L13	13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	22.9	21.3	780.8	0.48516663	5.10E-05	8.75E-04	5.19E-06
L14	14	Lowell Rd, Fox/Nottingham to Pelham Rd	18.3	17.0	197.1	0.12247226	1.29E-05	2.21E-04	1.31E-06
L15	15	Lowell Rd, N of Pelham Rd	18.3	17.0	150.6	0.0935785	9.83E-06	1.69E-04	1.00E-06
L16	16	Main Truck Driveway before split	15.2	14.1	1236.9	0.76857403	1.54E-04	5.62E-03	2.35E-05
L17	17	Truck path to western loading docks	15.2	14.1	463.5	0.28800555	1.92E-05	7.02E-04	2.94E-06
L18	18	Truck path to northern loading docks	15.2	14.1	180.1	0.11190895	7.47E-06	2.73E-04	1.14E-06
L19	19	Truck path to eastern loading docks	15.2	14.1	666	0.41383321	2.76E-05	1.01E-03	4.23E-06
L20	20	Main Car Driveway before split	15.2	14.1	173.7	0.10793218	6.60E-05		9.21E-06
L21	21	Car path to northern parking lot	15.2	14.1	130	0.08077825	1.62E-05		2.27E-06
L22	22	Shared car path to middle and western lots	15.2	14.1	364.1	0.22624125	9.13E-05		1.27E-05
L23	23	Car path to middle parking lot	15.2	14.1	106.2	0.06598962	8.88E-06		1.24E-06
L24	24	Car path to southern parking lot	15.2	14.1	262.5	0.16310994	4.39E-05		6.13E-06

¹ Sigma Y is determined by multiplying the roadway width by 2, and dividing it by 2.15. See Table 3-2 of the AERMOD User's Guide.

Hudson Logistics

Links

Roadway Link Peak Hour Emission Rates (g/s)

Link Number	MOVES Link ID	Roadway Segment	Roadway Width (meters)	Sigma-Y ¹	Link Distance (meters)	Link Distance (miles)	2,2,4-Trimethylpentane	Acenaphthene	Acenaphthylene
L1	1	River Road, S of Dracut/Steele	20.7	19.3	279	0.17336256	8.16E-06	1.80E-08	3.57E-08
L2	2	Dracut Road, (River Rd to Stuart Street)	15.2	14.1	266.3	0.16547115	2.73E-05	5.80E-08	1.15E-07
L3	3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	24.4	22.7	539.2	0.33504335	4.32E-05	1.54E-07	3.06E-07
L4	4	Site Driveway to split	16.5	15.3	838.7	0.52114402	4.25E-04	2.31E-06	4.56E-06
L5	5	Lowell Road, Rena/Site to Walmart/Sams Drive	32.3	30.0	299.5	0.18610067	2.25E-04	5.25E-07	1.04E-06
L6	6	Sams Driveway	22.9	21.3	374.6	0.23276565	2.45E-05	8.33E-08	1.65E-07
L7	7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	33.5	31.2	316.3	0.19653971	2.49E-04	6.07E-07	1.21E-06
L8	8	Sagamore Bridge Rd WB (Up)	15.2	14.1	1151.9	0.71575748	1.40E-04	6.98E-07	1.38E-06
L9	9	Sagamore Bridge Rd EB (down)	15.2	14.1	1010.9	0.62814414	1.33E-04	6.13E-07	1.21E-06
L10	10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	27.4	25.5	338.7	0.21045842	4.37E-05	1.12E-07	2.22E-07
L11	11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	27.4	25.5	457.5	0.28427732	4.74E-05	1.51E-07	3.00E-07
L12	12	Lowell Rd, Oblate/Hampshire to Executive Dr	22.9	21.3	553.9	0.3441775	5.04E-05	1.83E-07	3.64E-07
L13	13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	22.9	21.3	780.8	0.48516663	5.74E-05	2.58E-07	5.13E-07
L14	14	Lowell Rd, Fox/Nottingham to Pelham Rd	18.3	17.0	197.1	0.12247226	3.93E-05	6.52E-08	1.29E-07
L15	15	Lowell Rd, N of Pelham Rd	18.3	17.0	150.6	0.0935785	3.78E-05	4.98E-08	9.89E-08
L16	16	Main Truck Driveway before split	15.2	14.1	1236.9	0.76857403	2.16E-05	2.39E-06	4.01E-06
L17	17	Truck path to western loading docks	15.2	14.1	463.5	0.28800555	2.70E-06	2.98E-07	5.01E-07
L18	18	Truck path to northern loading docks	15.2	14.1	180.1	0.11190895	1.05E-06	1.16E-07	1.95E-07
L19	19	Truck path to eastern loading docks	15.2	14.1	666	0.41383321	3.88E-06	4.28E-07	7.20E-07
L20	20	Main Car Driveway before split	15.2	14.1	173.7	0.10793218	3.01E-04	1.01E-07	3.97E-07
L21	21	Car path to northern parking lot	15.2	14.1	130	0.08077825	9.26E-05	2.50E-08	9.79E-08
L22	22	Shared car path to middle and western lots	15.2	14.1	364.1	0.22624125	2.54E-04	1.40E-07	5.50E-07
L23	23	Car path to middle parking lot	15.2	14.1	106.2	0.06598962	5.96E-05	1.37E-08	5.35E-08
L24	24	Car path to southern parking lot	15.2	14.1	262.5	0.16310994	1.50E-04	6.75E-08	2.64E-07

¹ Sigma Y is determined by multiplying the roadway width by 2, and dividing it by 2.15. See Table 3-2 of the AERMOD User's Guide.

Hudson Logistics

Links

Roadway Link Peak Hour Emission Rates (g/s)

Link Number	MOVES Link ID	Roadway Segment	Roadway Width (meters)	Sigma-Y ¹	Link Distance (meters)	Link Distance (miles)	Acetaldehyde	Acrolein	Anthracene	Arsenic Compounds
L1	1	River Road, S of Dracut/Steele	20.7	19.3	279	0.17336256	2.72E-06	4.22E-07	2.07E-08	3.56E-08
L2	2	Dracut Road, (River Rd to Stuart Street)	15.2	14.1	266.3	0.16547115	8.76E-06	1.36E-06	6.68E-08	1.15E-07
L3	3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	24.4	22.7	539.2	0.33504335	2.33E-05	3.62E-06	1.78E-07	3.05E-07
L4	4	Site Driveway to split	16.5	15.3	838.7	0.52114402	3.48E-04	5.43E-05	2.77E-06	5.09E-06
L5	5	Lowell Road, Rena/Site to Walmart/Sams Drive	32.3	30.0	299.5	0.18610067	7.93E-05	1.23E-05	6.05E-07	1.04E-06
L6	6	Sams Driveway	22.9	21.3	374.6	0.23276565	1.26E-05	1.96E-06	1.00E-07	1.84E-07
L7	7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	33.5	31.2	316.3	0.19653971	9.17E-05	1.42E-05	6.99E-07	1.20E-06
L8	8	Sagamore Bridge Rd WB (Up)	15.2	14.1	1151.9	0.71575748	1.04E-04	1.62E-05	7.46E-07	1.09E-06
L9	9	Sagamore Bridge Rd EB (down)	15.2	14.1	1010.9	0.62814414	9.12E-05	1.42E-05	6.54E-07	9.53E-07
L10	10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	27.4	25.5	338.7	0.21045842	1.69E-05	2.63E-06	1.29E-07	2.21E-07
L11	11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	27.4	25.5	457.5	0.28427732	2.28E-05	3.55E-06	1.74E-07	2.99E-07
L12	12	Lowell Rd, Oblate/Hampshire to Executive Dr	22.9	21.3	553.9	0.3441775	2.77E-05	4.30E-06	2.11E-07	3.62E-07
L13	13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	22.9	21.3	780.8	0.48516663	3.90E-05	6.06E-06	2.97E-07	5.10E-07
L14	14	Lowell Rd, Fox/Nottingham to Pelham Rd	18.3	17.0	197.1	0.12247226	9.84E-06	1.53E-06	7.50E-08	1.29E-07
L15	15	Lowell Rd, N of Pelham Rd	18.3	17.0	150.6	0.0935785	7.52E-06	1.17E-06	5.73E-08	9.85E-08
L16	16	Main Truck Driveway before split	15.2	14.1	1236.9	0.76857403	3.22E-04	5.83E-05	3.00E-06	8.88E-07
L17	17	Truck path to western loading docks	15.2	14.1	463.5	0.28800555	4.03E-05	7.28E-06	3.75E-07	1.11E-07
L18	18	Truck path to northern loading docks	15.2	14.1	180.1	0.11190895	1.56E-05	2.83E-06	1.46E-07	4.31E-08
L19	19	Truck path to eastern loading docks	15.2	14.1	666	0.41383321	5.79E-05	1.05E-05	5.39E-07	1.59E-07
L20	20	Main Car Driveway before split	15.2	14.1	173.7	0.10793218	2.70E-05	1.87E-06	9.20E-08	1.98E-06
L21	21	Car path to northern parking lot	15.2	14.1	130	0.08077825	6.64E-06	4.61E-07	2.27E-08	4.88E-07
L22	22	Shared car path to middle and western lots	15.2	14.1	364.1	0.22624125	3.73E-05	2.59E-06	1.27E-07	2.74E-06
L23	23	Car path to middle parking lot	15.2	14.1	106.2	0.06598962	3.63E-06	2.52E-07	1.24E-08	2.67E-07
L24	24	Car path to southern parking lot	15.2	14.1	262.5	0.16310994	1.79E-05	1.24E-06	6.12E-08	1.32E-06

¹ Sigma Y is determined by multiplying the roadway width by 2, and dividing it by 2.15. See Table 3-2 of the AERMOD User's Guide.

Hudson Logistics

Links

Roadway Link Peak Hour Emission Rates (g/s)

Link Number	MOVES Link ID	Roadway Segment	Roadway Width (meters)	Sigma-Y ¹	Link Distance (meters)	Link Distance (miles)	Benzene	Benz(a)anthracene	Benzo(a)pyrene
L1	1	River Road, S of Dracut/Steele	20.7	19.3	279	0.17336256	2.68E-06	1.63E-08	7.90E-09
L2	2	Dracut Road, (River Rd to Stuart Street)	15.2	14.1	266.3	0.16547115	8.72E-06	5.26E-08	2.55E-08
L3	3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	24.4	22.7	539.2	0.33504335	2.10E-05	1.40E-07	6.78E-08
L4	4	Site Driveway to split	16.5	15.3	838.7	0.52114402	2.89E-04	2.33E-06	1.12E-06
L5	5	Lowell Road, Rena/Site to Walmart/Sams Drive	32.3	30.0	299.5	0.18610067	7.74E-05	4.77E-07	2.31E-07
L6	6	Sams Driveway	22.9	21.3	374.6	0.23276565	1.11E-05	8.41E-08	4.03E-08
L7	7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	33.5	31.2	316.3	0.19653971	8.86E-05	5.51E-07	2.67E-07
L8	8	Sagamore Bridge Rd WB (Up)	15.2	14.1	1151.9	0.71575748	8.95E-05	5.28E-07	2.92E-07
L9	9	Sagamore Bridge Rd EB (down)	15.2	14.1	1010.9	0.62814414	7.93E-05	4.63E-07	2.56E-07
L10	10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	27.4	25.5	338.7	0.21045842	1.62E-05	1.02E-07	4.92E-08
L11	11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	27.4	25.5	457.5	0.28427732	2.09E-05	1.37E-07	6.64E-08
L12	12	Lowell Rd, Oblate/Hampshire to Executive Dr	22.9	21.3	553.9	0.3441775	2.48E-05	1.66E-07	8.04E-08
L13	13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	22.9	21.3	780.8	0.48516663	3.39E-05	2.34E-07	1.13E-07
L14	14	Lowell Rd, Fox/Nottingham to Pelham Rd	18.3	17.0	197.1	0.12247226	1.05E-05	5.91E-08	2.86E-08
L15	15	Lowell Rd, N of Pelham Rd	18.3	17.0	150.6	0.0935785	8.60E-06	4.52E-08	2.19E-08
L16	16	Main Truck Driveway before split	15.2	14.1	1236.9	0.76857403	7.08E-05	2.57E-06	8.39E-07
L17	17	Truck path to western loading docks	15.2	14.1	463.5	0.28800555	8.84E-06	3.21E-07	1.05E-07
L18	18	Truck path to northern loading docks	15.2	14.1	180.1	0.11190895	3.44E-06	1.25E-07	4.07E-08
L19	19	Truck path to eastern loading docks	15.2	14.1	666	0.41383321	1.27E-05	4.62E-07	1.51E-07
L20	20	Main Car Driveway before split	15.2	14.1	173.7	0.10793218	8.84E-05	6.58E-08	1.17E-07
L21	21	Car path to northern parking lot	15.2	14.1	130	0.08077825	2.32E-05	1.62E-08	2.88E-08
L22	22	Shared car path to middle and western lots	15.2	14.1	364.1	0.22624125	1.10E-04	9.10E-08	1.62E-07
L23	23	Car path to middle parking lot	15.2	14.1	106.2	0.06598962	1.34E-05	8.85E-09	1.57E-08
L24	24	Car path to southern parking lot	15.2	14.1	262.5	0.16310994	5.49E-05	4.38E-08	7.78E-08

¹ Sigma Y is determined by multiplying the roadway width by 2, and dividing it by 2.15. See Table 3-2 of the AERMOD User's Guide.

Hudson Logistics

Links

Roadway Link Peak Hour Emission Rates (g/s)

Link Number	MOVES Link ID	Roadway Segment	Roadway Width (meters)	Sigma-Y ¹	Link Distance (meters)	Link Distance (miles)	Benzo(b)fluoranthene	Benzo(g,h,i)perylene
L1	1	River Road, S of Dracut/Steele	20.7	19.3	279	0.17336256	3.14E-09	8.91E-09
L2	2	Dracut Road, (River Rd to Stuart Street)	15.2	14.1	266.3	0.16547115	1.01E-08	2.87E-08
L3	3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	24.4	22.7	539.2	0.33504335	2.70E-08	7.64E-08
L4	4	Site Driveway to split	16.5	15.3	838.7	0.52114402	4.36E-07	1.19E-06
L5	5	Lowell Road, Rena/Site to Walmart/Sams Drive	32.3	30.0	299.5	0.18610067	9.17E-08	2.60E-07
L6	6	Sams Driveway	22.9	21.3	374.6	0.23276565	1.58E-08	4.31E-08
L7	7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	33.5	31.2	316.3	0.19653971	1.06E-07	3.00E-07
L8	8	Sagamore Bridge Rd WB (Up)	15.2	14.1	1151.9	0.71575748	1.23E-07	4.24E-07
L9	9	Sagamore Bridge Rd EB (down)	15.2	14.1	1010.9	0.62814414	1.08E-07	3.73E-07
L10	10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	27.4	25.5	338.7	0.21045842	1.96E-08	5.54E-08
L11	11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	27.4	25.5	457.5	0.28427732	2.64E-08	7.48E-08
L12	12	Lowell Rd, Oblate/Hampshire to Executive Dr	22.9	21.3	553.9	0.3441775	3.20E-08	9.06E-08
L13	13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	22.9	21.3	780.8	0.48516663	4.51E-08	1.28E-07
L14	14	Lowell Rd, Fox/Nottingham to Pelham Rd	18.3	17.0	197.1	0.12247226	1.14E-08	3.22E-08
L15	15	Lowell Rd, N of Pelham Rd	18.3	17.0	150.6	0.0935785	8.70E-09	2.46E-08
L16	16	Main Truck Driveway before split	15.2	14.1	1236.9	0.76857403	2.50E-07	4.77E-08
L17	17	Truck path to western loading docks	15.2	14.1	463.5	0.28800555	3.12E-08	5.96E-09
L18	18	Truck path to northern loading docks	15.2	14.1	180.1	0.11190895	1.21E-08	2.32E-09
L19	19	Truck path to eastern loading docks	15.2	14.1	666	0.41383321	4.49E-08	8.57E-09
L20	20	Main Car Driveway before split	15.2	14.1	173.7	0.10793218	6.41E-08	3.09E-07
L21	21	Car path to northern parking lot	15.2	14.1	130	0.08077825	1.58E-08	7.60E-08
L22	22	Shared car path to middle and western lots	15.2	14.1	364.1	0.22624125	8.87E-08	4.27E-07
L23	23	Car path to middle parking lot	15.2	14.1	106.2	0.06598962	8.62E-09	4.15E-08
L24	24	Car path to southern parking lot	15.2	14.1	262.5	0.16310994	4.26E-08	2.05E-07

¹ Sigma Y is determined by multiplying the roadway width by 2, and dividing it by 2.15. See Table 3-2 of the AERMOD User's Guide.

Hudson Logistics

Links

Roadway Link Peak Hour Emission Rates (g/s)

Link Number	MOVES Link ID	Roadway Segment	Roadway Width (meters)	Sigma-Y ¹	Link Distance (meters)	Link Distance (miles)	Benzo(k)fluoranthene	Chromium 6+	Chrysene
L1	1	River Road, S of Dracut/Steele	20.7	19.3	279	0.17336256	1.94E-09	1.85E-10	1.02E-08
L2	2	Dracut Road, (River Rd to Stuart Street)	15.2	14.1	266.3	0.16547115	6.23E-09	5.97E-10	3.27E-08
L3	3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	24.4	22.7	539.2	0.33504335	1.66E-08	1.59E-09	8.71E-08
L4	4	Site Driveway to split	16.5	15.3	838.7	0.52114402	2.59E-07	2.65E-08	1.45E-06
L5	5	Lowell Road, Rena/Site to Walmart/Sams Drive	32.3	30.0	299.5	0.18610067	5.65E-08	5.41E-09	2.97E-07
L6	6	Sams Driveway	22.9	21.3	374.6	0.23276565	9.36E-09	9.57E-10	5.24E-08
L7	7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	33.5	31.2	316.3	0.19653971	6.53E-08	6.25E-09	3.43E-07
L8	8	Sagamore Bridge Rd WB (Up)	15.2	14.1	1151.9	0.71575748	8.77E-08	5.66E-09	3.30E-07
L9	9	Sagamore Bridge Rd EB (down)	15.2	14.1	1010.9	0.62814414	7.70E-08	4.96E-09	2.89E-07
L10	10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	27.4	25.5	338.7	0.21045842	1.20E-08	1.15E-09	6.32E-08
L11	11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	27.4	25.5	457.5	0.28427732	1.63E-08	1.56E-09	8.54E-08
L12	12	Lowell Rd, Oblate/Hampshire to Executive Dr	22.9	21.3	553.9	0.3441775	1.97E-08	1.89E-09	1.03E-07
L13	13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	22.9	21.3	780.8	0.48516663	2.78E-08	2.66E-09	1.46E-07
L14	14	Lowell Rd, Fox/Nottingham to Pelham Rd	18.3	17.0	197.1	0.12247226	7.01E-09	6.71E-10	3.68E-08
L15	15	Lowell Rd, N of Pelham Rd	18.3	17.0	150.6	0.0935785	5.35E-09	5.13E-10	2.81E-08
L16	16	Main Truck Driveway before split	15.2	14.1	1236.9	0.76857403	3.43E-08	4.69E-09	1.54E-06
L17	17	Truck path to western loading docks	15.2	14.1	463.5	0.28800555	4.28E-09	5.86E-10	1.93E-07
L18	18	Truck path to northern loading docks	15.2	14.1	180.1	0.11190895	1.66E-09	2.28E-10	7.49E-08
L19	19	Truck path to eastern loading docks	15.2	14.1	666	0.41383321	6.16E-09	8.42E-10	2.77E-07
L20	20	Main Car Driveway before split	15.2	14.1	173.7	0.10793218	6.34E-08	1.03E-08	5.56E-08
L21	21	Car path to northern parking lot	15.2	14.1	130	0.08077825	1.56E-08	2.54E-09	1.37E-08
L22	22	Shared car path to middle and western lots	15.2	14.1	364.1	0.22624125	8.78E-08	1.43E-08	7.69E-08
L23	23	Car path to middle parking lot	15.2	14.1	106.2	0.06598962	8.54E-09	1.39E-09	7.48E-09
L24	24	Car path to southern parking lot	15.2	14.1	262.5	0.16310994	4.22E-08	6.85E-09	3.70E-08

¹ Sigma Y is determined by multiplying the roadway width by 2, and dividing it by 2.15. See Table 3-2 of the AERMOD User's Guide.

Hudson Logistics

Links

Roadway Link Peak Hour Emission Rates (g/s)

Link Number	MOVES Link ID	Roadway Segment	Roadway Width (meters)	Sigma-Y ¹	Link Distance (meters)	Link Distance (miles)	Dibenz(a,h)anthracene	Indeno(1,2,3,c,d)pyrene
L1	1	River Road, S of Dracut/Steele	20.7	19.3	279	0.17336256	2.21E-08	3.60E-09
L2	2	Dracut Road, (River Rd to Stuart Street)	15.2	14.1	266.3	0.16547115	7.11E-08	1.16E-08
L3	3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	24.4	22.7	539.2	0.33504335	1.89E-07	3.09E-08
L4	4	Site Driveway to split	16.5	15.3	838.7	0.52114402	2.83E-06	4.86E-07
L5	5	Lowell Road, Rena/Site to Walmart/Sams Drive	32.3	30.0	299.5	0.18610067	6.44E-07	1.05E-07
L6	6	Sams Driveway	22.9	21.3	374.6	0.23276565	1.02E-07	1.75E-08
L7	7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	33.5	31.2	316.3	0.19653971	7.44E-07	1.21E-07
L8	8	Sagamore Bridge Rd WB (Up)	15.2	14.1	1151.9	0.71575748	8.55E-07	1.67E-07
L9	9	Sagamore Bridge Rd EB (down)	15.2	14.1	1010.9	0.62814414	7.50E-07	1.46E-07
L10	10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	27.4	25.5	338.7	0.21045842	1.37E-07	2.24E-08
L11	11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	27.4	25.5	457.5	0.28427732	1.85E-07	3.03E-08
L12	12	Lowell Rd, Oblate/Hampshire to Executive Dr	22.9	21.3	553.9	0.3441775	2.25E-07	3.66E-08
L13	13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	22.9	21.3	780.8	0.48516663	3.17E-07	5.16E-08
L14	14	Lowell Rd, Fox/Nottingham to Pelham Rd	18.3	17.0	197.1	0.12247226	7.99E-08	1.30E-08
L15	15	Lowell Rd, N of Pelham Rd	18.3	17.0	150.6	0.0935785	6.11E-08	9.96E-09
L16	16	Main Truck Driveway before split	15.2	14.1	1236.9	0.76857403	2.87E-06	6.37E-08
L17	17	Truck path to western loading docks	15.2	14.1	463.5	0.28800555	3.59E-07	7.96E-09
L18	18	Truck path to northern loading docks	15.2	14.1	180.1	0.11190895	1.39E-07	3.09E-09
L19	19	Truck path to eastern loading docks	15.2	14.1	666	0.41383321	5.15E-07	1.14E-08
L20	20	Main Car Driveway before split	15.2	14.1	173.7	0.10793218	1.40E-07	1.16E-07
L21	21	Car path to northern parking lot	15.2	14.1	130	0.08077825	3.45E-08	2.86E-08
L22	22	Shared car path to middle and western lots	15.2	14.1	364.1	0.22624125	1.94E-07	1.61E-07
L23	23	Car path to middle parking lot	15.2	14.1	106.2	0.06598962	1.88E-08	1.56E-08
L24	24	Car path to southern parking lot	15.2	14.1	262.5	0.16310994	9.31E-08	7.72E-08

¹ Sigma Y is determined by multiplying the roadway width by 2, and dividing it by 2.15. See Table 3-2 of the AERMOD User's Guide.

Hudson Logistics

Links

Roadway Link Peak Hour Emission Rates (g/s)

Link Number	MOVES Link ID	Roadway Segment	Roadway Width (meters)	Sigma-Y ¹	Link Distance (meters)	Link Distance (miles)	Ethyl Benzene	Fluoranthene	Fluorene	Formaldehyde
L1	1	River Road, S of Dracut/Steele	20.7	19.3	279	0.17336256	4.35E-06	4.65E-08	4.14E-08	5.64E-06
L2	2	Dracut Road, (River Rd to Stuart Street)	15.2	14.1	266.3	0.16547115	1.45E-05	1.50E-07	1.33E-07	1.82E-05
L3	3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	24.4	22.7	539.2	0.33504335	2.52E-05	3.99E-07	3.55E-07	4.84E-05
L4	4	Site Driveway to split	16.5	15.3	838.7	0.52114402	2.75E-04	6.40E-06	5.49E-06	7.25E-04
L5	5	Lowell Road, Rena/Site to Walmart/Sams Drive	32.3	30.0	299.5	0.18610067	1.21E-04	1.36E-06	1.21E-06	1.65E-04
L6	6	Sams Driveway	22.9	21.3	374.6	0.23276565	1.41E-05	2.31E-07	1.98E-07	2.62E-05
L7	7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	33.5	31.2	316.3	0.19653971	1.35E-04	1.57E-06	1.39E-06	1.90E-04
L8	8	Sagamore Bridge Rd WB (Up)	15.2	14.1	1151.9	0.71575748	8.83E-05	1.58E-06	1.50E-06	2.15E-04
L9	9	Sagamore Bridge Rd EB (down)	15.2	14.1	1010.9	0.62814414	8.19E-05	1.39E-06	1.32E-06	1.89E-04
L10	10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	27.4	25.5	338.7	0.21045842	2.39E-05	2.89E-07	2.57E-07	3.51E-05
L11	11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	27.4	25.5	457.5	0.28427732	2.70E-05	3.91E-07	3.48E-07	4.74E-05
L12	12	Lowell Rd, Oblate/Hampshire to Executive Dr	22.9	21.3	553.9	0.3441775	2.95E-05	4.73E-07	4.21E-07	5.74E-05
L13	13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	22.9	21.3	780.8	0.48516663	3.54E-05	6.67E-07	5.93E-07	8.09E-05
L14	14	Lowell Rd, Fox/Nottingham to Pelham Rd	18.3	17.0	197.1	0.12247226	2.02E-05	1.68E-07	1.50E-07	2.04E-05
L15	15	Lowell Rd, N of Pelham Rd	18.3	17.0	150.6	0.0935785	1.90E-05	1.29E-07	1.14E-07	1.56E-05
L16	16	Main Truck Driveway before split	15.2	14.1	1236.9	0.76857403	2.56E-05	7.15E-06	5.89E-06	7.48E-04
L17	17	Truck path to western loading docks	15.2	14.1	463.5	0.28800555	3.20E-06	8.93E-07	7.35E-07	9.34E-05
L18	18	Truck path to northern loading docks	15.2	14.1	180.1	0.11190895	1.24E-06	3.47E-07	2.86E-07	3.63E-05
L19	19	Truck path to eastern loading docks	15.2	14.1	666	0.41383321	4.60E-06	1.28E-06	1.06E-06	1.34E-04
L20	20	Main Car Driveway before split	15.2	14.1	173.7	0.10793218	1.60E-04	1.67E-07	2.03E-07	3.44E-05
L21	21	Car path to northern parking lot	15.2	14.1	130	0.08077825	4.78E-05	4.12E-08	4.99E-08	8.47E-06
L22	22	Shared car path to middle and western lots	15.2	14.1	364.1	0.22624125	1.48E-04	2.31E-07	2.80E-07	4.76E-05
L23	23	Car path to middle parking lot	15.2	14.1	106.2	0.06598962	3.02E-05	2.25E-08	2.73E-08	4.63E-06
L24	24	Car path to southern parking lot	15.2	14.1	262.5	0.16310994	8.36E-05	1.11E-07	1.35E-07	2.29E-05

¹ Sigma Y is determined by multiplying the roadway width by 2, and dividing it by 2.15. See Table 3-2 of the AERMOD User's Guide.

Hudson Logistics

Links

Roadway Link Peak Hour Emission Rates (g/s)

Link Number	MOVES Link ID	Roadway Segment	Roadway Width (meters)	Sigma-Y ¹	Link Distance (meters)	Link Distance (miles)	Manganese Compounds	Total Mercury Compounds
L1	1	River Road, S of Dracut/Steele	20.7	19.3	279	0.17336256	2.62E-08	1.61E-09
L2	2	Dracut Road, (River Rd to Stuart Street)	15.2	14.1	266.3	0.16547115	8.46E-08	5.17E-09
L3	3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	24.4	22.7	539.2	0.33504335	2.25E-07	1.38E-08
L4	4	Site Driveway to split	16.5	15.3	838.7	0.52114402	3.75E-06	2.29E-07
L5	5	Lowell Road, Rena/Site to Walmart/Sams Drive	32.3	30.0	299.5	0.18610067	7.66E-07	4.69E-08
L6	6	Sams Driveway	22.9	21.3	374.6	0.23276565	1.35E-07	8.29E-09
L7	7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	33.5	31.2	316.3	0.19653971	8.85E-07	5.41E-08
L8	8	Sagamore Bridge Rd WB (Up)	15.2	14.1	1151.9	0.71575748	8.01E-07	4.90E-08
L9	9	Sagamore Bridge Rd EB (down)	15.2	14.1	1010.9	0.62814414	7.03E-07	4.30E-08
L10	10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	27.4	25.5	338.7	0.21045842	1.63E-07	9.99E-09
L11	11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	27.4	25.5	457.5	0.28427732	2.21E-07	1.35E-08
L12	12	Lowell Rd, Oblate/Hampshire to Executive Dr	22.9	21.3	553.9	0.3441775	2.67E-07	1.63E-08
L13	13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	22.9	21.3	780.8	0.48516663	3.76E-07	2.30E-08
L14	14	Lowell Rd, Fox/Nottingham to Pelham Rd	18.3	17.0	197.1	0.12247226	9.50E-08	5.81E-09
L15	15	Lowell Rd, N of Pelham Rd	18.3	17.0	150.6	0.0935785	7.26E-08	4.44E-09
L16	16	Main Truck Driveway before split	15.2	14.1	1236.9	0.76857403	1.50E-06	4.25E-09
L17	17	Truck path to western loading docks	15.2	14.1	463.5	0.28800555	1.87E-07	5.30E-10
L18	18	Truck path to northern loading docks	15.2	14.1	180.1	0.11190895	7.27E-08	2.06E-10
L19	19	Truck path to eastern loading docks	15.2	14.1	666	0.41383321	2.69E-07	7.62E-10
L20	20	Main Car Driveway before split	15.2	14.1	173.7	0.10793218	1.16E-06	1.02E-07
L21	21	Car path to northern parking lot	15.2	14.1	130	0.08077825	2.85E-07	2.52E-08
L22	22	Shared car path to middle and western lots	15.2	14.1	364.1	0.22624125	1.60E-06	1.42E-07
L23	23	Car path to middle parking lot	15.2	14.1	106.2	0.06598962	1.56E-07	1.38E-08
L24	24	Car path to southern parking lot	15.2	14.1	262.5	0.16310994	7.70E-07	6.80E-08

¹ Sigma Y is determined by multiplying the roadway width by 2, and dividing it by 2.15. See Table 3-2 of the AERMOD User's Guide.

Hudson Logistics

Links

Roadway Link Peak Hour Emission Rates (g/s)

Link Number	MOVES Link ID	Roadway Segment	Roadway Width (meters)	Sigma-Y ¹	Link Distance (meters)	Link Distance (miles)	Naphthalene	Nickel Compounds	Phenanthrene
L1	1	River Road, S of Dracut/Steele	20.7	19.3	279	0.17336256	6.42E-07	3.47E-08	7.72E-08
L2	2	Dracut Road, (River Rd to Stuart Street)	15.2	14.1	266.3	0.16547115	2.07E-06	1.12E-07	2.49E-07
L3	3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	24.4	22.7	539.2	0.33504335	5.51E-06	2.97E-07	6.62E-07
L4	4	Site Driveway to split	16.5	15.3	838.7	0.52114402	8.24E-05	4.95E-06	1.03E-05
L5	5	Lowell Road, Rena/Site to Walmart/Sams Drive	32.3	30.0	299.5	0.18610067	1.87E-05	1.01E-06	2.25E-06
L6	6	Sams Driveway	22.9	21.3	374.6	0.23276565	2.98E-06	1.79E-07	3.73E-07
L7	7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	33.5	31.2	316.3	0.19653971	2.17E-05	1.17E-06	2.61E-06
L8	8	Sagamore Bridge Rd WB (Up)	15.2	14.1	1151.9	0.71575748	2.46E-05	1.06E-06	2.74E-06
L9	9	Sagamore Bridge Rd EB (down)	15.2	14.1	1010.9	0.62814414	2.16E-05	9.28E-07	2.41E-06
L10	10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	27.4	25.5	338.7	0.21045842	4.00E-06	2.16E-07	4.81E-07
L11	11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	27.4	25.5	457.5	0.28427732	5.40E-06	2.91E-07	6.49E-07
L12	12	Lowell Rd, Oblate/Hampshire to Executive Dr	22.9	21.3	553.9	0.3441775	6.54E-06	3.53E-07	7.86E-07
L13	13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	22.9	21.3	780.8	0.48516663	9.21E-06	4.97E-07	1.11E-06
L14	14	Lowell Rd, Fox/Nottingham to Pelham Rd	18.3	17.0	197.1	0.12247226	2.33E-06	1.25E-07	2.80E-07
L15	15	Lowell Rd, N of Pelham Rd	18.3	17.0	150.6	0.0935785	1.78E-06	9.59E-08	2.14E-07
L16	16	Main Truck Driveway before split	15.2	14.1	1236.9	0.76857403	8.12E-05	2.56E-06	1.06E-05
L17	17	Truck path to western loading docks	15.2	14.1	463.5	0.28800555	1.01E-05	3.19E-07	1.33E-06
L18	18	Truck path to northern loading docks	15.2	14.1	180.1	0.11190895	3.94E-06	1.24E-07	5.15E-07
L19	19	Truck path to eastern loading docks	15.2	14.1	666	0.41383321	1.46E-05	4.59E-07	1.90E-06
L20	20	Main Car Driveway before split	15.2	14.1	173.7	0.10793218	4.90E-06	1.32E-06	5.11E-07
L21	21	Car path to northern parking lot	15.2	14.1	130	0.08077825	1.21E-06	3.25E-07	1.26E-07
L22	22	Shared car path to middle and western lots	15.2	14.1	364.1	0.22624125	6.78E-06	1.83E-06	7.08E-07
L23	23	Car path to middle parking lot	15.2	14.1	106.2	0.06598962	6.59E-07	1.78E-07	6.88E-08
L24	24	Car path to southern parking lot	15.2	14.1	262.5	0.16310994	3.26E-06	8.79E-07	3.40E-07

¹ Sigma Y is determined by multiplying the roadway width by 2, and dividing it by 2.15. See Table 3-2 of the AERMOD User's Guide.

Hudson Logistics

Links

Roadway Link Peak Hour Emission Rates (g/s)

Link Number	MOVES Link ID	Roadway Segment	Roadway Width (meters)	Sigma-Y ¹	Link Distance (meters)	Link Distance (miles)	Propionaldehyde	Pyrene	Styrene	Toluene	Xylene
L1	1	River Road, S of Dracut/Steele	20.7	19.3	279	0.17336256	3.00E-07	6.15E-08	1.18E-07	3.46E-05	1.61E-05
L2	2	Dracut Road, (River Rd to Stuart Street)	15.2	14.1	266.3	0.16547115	9.68E-07	1.98E-07	3.80E-07	1.16E-04	5.35E-05
L3	3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	24.4	22.7	539.2	0.33504335	2.58E-06	5.27E-07	1.01E-06	1.84E-04	9.18E-05
L4	4	Site Driveway to split	16.5	15.3	838.7	0.52114402	3.85E-05	8.51E-06	1.50E-05	1.82E-03	9.87E-04
L5	5	Lowell Road, Rena/Site to Walmart/Sams Drive	32.3	30.0	299.5	0.18610067	8.77E-06	1.79E-06	3.44E-06	9.56E-04	4.47E-04
L6	6	Sams Driveway	22.9	21.3	374.6	0.23276565	1.39E-06	3.07E-07	5.40E-07	1.04E-04	5.15E-05
L7	7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	33.5	31.2	316.3	0.19653971	1.01E-05	2.07E-06	3.98E-06	1.06E-03	4.98E-04
L8	8	Sagamore Bridge Rd WB (Up)	15.2	14.1	1151.9	0.71575748	1.16E-05	2.06E-06	4.54E-06	6.00E-04	3.18E-04
L9	9	Sagamore Bridge Rd EB (down)	15.2	14.1	1010.9	0.62814414	1.02E-05	1.81E-06	3.99E-06	5.67E-04	2.96E-04
L10	10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	27.4	25.5	338.7	0.21045842	1.87E-06	3.82E-07	7.34E-07	1.86E-04	8.78E-05
L11	11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	27.4	25.5	457.5	0.28427732	2.52E-06	5.17E-07	9.91E-07	2.01E-04	9.86E-05
L12	12	Lowell Rd, Oblate/Hampshire to Executive Dr	22.9	21.3	553.9	0.3441775	3.06E-06	6.25E-07	1.20E-06	2.14E-04	1.07E-04
L13	13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	22.9	21.3	780.8	0.48516663	4.31E-06	8.82E-07	1.69E-06	2.45E-04	1.28E-04
L14	14	Lowell Rd, Fox/Nottingham to Pelham Rd	18.3	17.0	197.1	0.12247226	1.09E-06	2.23E-07	4.27E-07	1.66E-04	7.50E-05
L15	15	Lowell Rd, N of Pelham Rd	18.3	17.0	150.6	0.0935785	8.31E-07	1.70E-07	3.26E-07	1.60E-04	7.08E-05
L16	16	Main Truck Driveway before split	15.2	14.1	1236.9	0.76857403	3.88E-05	9.63E-06	1.04E-05	5.61E-05	5.59E-05
L17	17	Truck path to western loading docks	15.2	14.1	463.5	0.28800555	4.85E-06	1.20E-06	1.30E-06	7.01E-06	6.99E-06
L18	18	Truck path to northern loading docks	15.2	14.1	180.1	0.11190895	1.89E-06	4.67E-07	5.03E-07	2.73E-06	2.72E-06
L19	19	Truck path to eastern loading docks	15.2	14.1	666	0.41383321	6.97E-06	1.73E-06	1.86E-06	1.01E-05	1.00E-05
L20	20	Main Car Driveway before split	15.2	14.1	173.7	0.10793218	2.01E-06	1.95E-07	2.10E-06	1.29E-03	6.00E-04
L21	21	Car path to northern parking lot	15.2	14.1	130	0.08077825	4.95E-07	4.81E-08	5.16E-07	3.96E-04	1.80E-04
L22	22	Shared car path to middle and western lots	15.2	14.1	364.1	0.22624125	2.78E-06	2.70E-07	2.90E-06	1.10E-03	5.51E-04
L23	23	Car path to middle parking lot	15.2	14.1	106.2	0.06598962	2.71E-07	2.63E-08	2.82E-07	2.54E-04	1.14E-04
L24	24	Car path to southern parking lot	15.2	14.1	262.5	0.16310994	1.34E-06	1.30E-07	1.39E-06	6.44E-04	3.12E-04

¹ Sigma Y is determined by multiplying the roadway width by 2, and dividing it by 2.15. See Table 3-2 of the AERMOD User's Guide.

Calculate PM-10 and PM-2.5 Emissions from Fugitive Dust generated by vehicles on Paved Roads

From EPA AP-42, Section 13.2.1 - Paved Roads

$$E = k (sL)^{0.91} * (W)^{1.02}; \text{ Equation (1) - 13.2.1.3}$$

where:

- E = particulate emission factor (grams/vehicle mile traveled (g/VMT))
- k = particle size multiplier; 1.0 g/VMT for PM-10 (particles less than 10 microns in diameter)
- sL = road surface silt loading (grams per square meter)
- W = average weight (tons) of vehicles traveling the road

According to EPA, this emission factor is valid over a silt (% of particles less than 75 microns dia) loading range of 0.03 - 400 g/m², a mean vehicle weight of 2 - 42 tons, and a mean vehicle speed of 1 - 55 mph.

- sL is from Table 13.2.1-3,
- for low volume roads (ADT < 500), use ubiquitous baseline value of 0.6 g/m²
- for mid volume roads (ADT 500 - 5000), use ubiquitous baseline value of 0.2 g/m² (ASSUMED FOR ALL ROADS)**
- for high volume roads (ADT > 5000), use ubiquitous baseline value of 0.06 g/m²

Vehicle weights on each roadway link are based on the Project vehicle mix and 2 tons per passenger vehicle and 30 tons for long haul trucks.

For PM10, $E = 1.0 \times (0.2)^{0.91} \times (\text{Avg Weight})^{1.02}$

For PM-2.5, the value of k is reduced to 0.25 g/VMT,

For PM2.5, $E = 0.25 \times (0.2)^{0.91} \times (\text{Avg Weight})^{1.02}$

Modeled Emission Rates (add to MOVES3 Exhaust and Brake/Tire wear emissions)

Link Number		Veh Weight (tons)	PM10 g/VMT	PM2.5 g/VMT	Peak Veh vph	Link Length miles	VMT /hr	PM10 g/s	PM2.5 g/s
L1	River Road, S of Dracut/Steele	30.00	7.42	1.86	2	0.173	0.385	0.0008	0.0002
L2	Dracut Road, (River Rd to Stuart Street)	30.00	7.42	1.86	7	0.165	1.240	0.0026	0.0006
L3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	30.00	7.42	1.86	10	0.335	3.301	0.0068	0.0017
L4	Site Driveway to split	30.00	7.42	1.86	30	0.521	15.634	0.0322	0.0081
L5	Lowell Road, Rena/Site to Walmart/Sams Drive	30.00	7.42	1.86	30	0.186	5.583	0.0115	0.0029
L6	Sams Driveway	30.00	7.42	1.86	6	0.233	1.324	0.0027	0.0007
L7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	30.00	7.42	1.86	20	0.197	3.931	0.0081	0.0020
L8	Sagamore Bridge Rd WB (Up)	30.00	7.42	1.86	27	0.716	19.568	0.0404	0.0101
L9	Sagamore Bridge Rd EB (down)	30.00	7.42	1.86	27	0.628	17.173	0.0354	0.0089
L10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	30.00	7.42	1.86	11	0.210	2.395	0.0049	0.0012
L11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	30.00	7.42	1.86	11	0.284	3.235	0.0067	0.0017
L12	Lowell Rd, Oblate/Hampshire to Executive Dr	30.00	7.42	1.86	11	0.344	3.917	0.0081	0.0020
L13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	30.00	7.42	1.86	11	0.485	5.521	0.0114	0.0028
L14	Lowell Rd, Fox/Nottingham to Pelham Rd	30.00	7.42	1.86	11	0.122	1.394	0.0029	0.0007
L15	Lowell Rd, N of Pelham Rd	30.00	7.42	1.86	11	0.094	1.065	0.0022	0.0005
L16	Main Truck Driveway before split	30.00	7.42	1.86	30	0.769	23.057	0.0475	0.0119
L17	Truck path to western loading docks	30.00	7.42	1.86	10	0.288	2.880	0.0059	0.0015
L18	Truck path to northern loading docks	30.00	7.42	1.86	10	0.112	1.119	0.0023	0.0006
L19	Truck path to eastern loading docks	30.00	7.42	1.86	10	0.414	4.138	0.0085	0.0021

Notes

- Heavy-duty trucks assumed to have a weight of 30 tons.
- Light-duty cars assumed to have a weight of 2 tons.
- From PM2.5 Hotspot Conformity Guidance Oct 2021
- No car links included.

Calculate PM-10 and PM-2.5 Emissions from Fugitive Dust generated by vehicles on Paved Roads

From EPA AP-42, Section 13.2.1 - Paved Roads

$E = k (sL)^{0.91} * (W)^{1.02}$; Equation (1) - 13.2.1.3

where:

- E = particulate emission factor (grams/vehicle mile traveled (g/VMT))
- k = particle size multiplier; 1.0 g/VMT for PM-10 (particles less than 10 microns in diameter)
- sL = road surface silt loading (grams per square meter)
- W = average weight (tons) of vehicles traveling the road

According to EPA, this emission factor is valid over a silt (% of particles less than 75 microns dia) loading range of 0.03 - 400 g/m², a mean vehicle weight of 2 - 42 tons, and a mean vehicle speed of 1 - 55 mph.

sL is from Table 13.2.1-3,

for low volume roads (ADT < 500), use ubiquitous baseline value of 0.6 g/m²

for mid volume roads (ADT 500 - 5000), use ubiquitous baseline value of 0.2 g/m² (ASSUMED FOR ALL ROADS)

for high volume roads (ADT > 5000), use ubiquitous baseline value of 0.06 g/m²

Vehicle weights on each roadway link are based on the Project's vehicle mix and 2 tons per passenger vehicle and 30 tons for long haul trucks

For PM10, $E = 1.0 * (0.2)^{0.91} * (Avg\ Weight)^{1.02}$

For PM-2.5, the value of k is reduced to 0.25 g/VMT,

For PM2.5, $E = 0.25 * (0.2)^{0.91} * (Avg\ Weight)^{1.02}$

Modeled Emission Rates (add to MOVES3 Exhaust and Brake/Tire wear emissions)

Link Number	Roadway Segment (Red = no project traffic, not modeled)	Veh Weight (tons)	PM10 g/VMT	PM2.5 g/VMT	Peak Veh vph	Link Length miles	VMT /hr	PM10 g/s	PM2.5 g/s
L1	River Road, S of Dracut/Steele	2.00	0.47	0.12	14	0.173	2.389	0.0003	0.0001
L2	Dracut Road, (River Rd to Stuart Street)	2.00	0.47	0.12	47	0.165	7.695	0.0010	0.0003
L3	Lowell Road, Dracut Rd to Rena Ave/Site Drive	2.00	0.47	0.12	61	0.335	20.487	0.0027	0.0007
L4	Site Driveway to split	2.00	0.47	0.12	477	0.521	248.586	0.0324	0.0081
L5	Lowell Road, Rena/Site to Walmart/Sams Drive	2.00	0.47	0.12	405	0.186	75.371	0.0098	0.0025
L6	Sams Driveway	2.00	0.47	0.12	35	0.233	8.219	0.0011	0.0003
L7	Lowell Rd, Walmart/Sams to Sagamore Bridge Rd	2.00	0.47	0.12	456	0.197	89.622	0.0117	0.0029
L8	Sagamore Bridge Rd WB (Up)	2.00	0.47	0.12	170	0.716	121.436	0.0158	0.0040
L9	Sagamore Bridge Rd EB (down)	2.00	0.47	0.12	170	0.628	106.571	0.0139	0.0035
L10	Lowell Rd, Sagamore Bridge Rd to Flagstone/Wason	2.00	0.47	0.12	71	0.210	14.863	0.0019	0.0005
L11	Lowell Rd, Wason/Flagstone to Oblate/Hampshire	2.00	0.47	0.12	71	0.284	20.076	0.0026	0.0007
L12	Lowell Rd, Oblate/Hampshire to Executive Dr	2.00	0.47	0.12	71	0.344	24.306	0.0032	0.0008
L13	Lowell Rd, Executive to Nottingham Sq, Fox Hollow	2.00	0.47	0.12	71	0.485	34.263	0.0045	0.0011
L14	Lowell Rd, Fox/Nottingham to Pelham Rd	2.00	0.47	0.12	71	0.122	8.649	0.0011	0.0003
L15	Lowell Rd, N of Pelham Rd	2.00	0.47	0.12	71	0.094	6.609	0.0009	0.0002
L16	Main Truck Driveway before split								
L17	Truck path to western loading docks								
L18	Truck path to northern loading docks								
L19	Truck path to eastern loading docks								
L20	Main Car Driveway before split	2.00	0.47	0.12	477	0.108	51.484	0.0067	0.0017
L21	Car path to northern parking lot	2.00	0.47	0.12	157	0.081	12.682	0.0017	0.0004
L22	Shared car path to middle and western lots	2.00	0.47	0.12	315	0.226	71.266	0.0093	0.0023
L23	Car path to middle parking lot	2.00	0.47	0.12	105	0.066	6.929	0.0009	0.0002
L24	Car path to southern parking lot	2.00	0.47	0.12	210	0.163	34.253	0.0045	0.0011

Notes

Heavy-duty trucks assumed to have a weight of 30 tons.

Light-duty cars assumed to have a weight of 2 tons.

From PM2.5 Hotspot Conformity Guidance Oct 2021

No Truck links included.

Hudson Logistics Center

Lots

Onsite Lot Peak Hour Emission Rates (g/s/m2)

Source ID	Lot	Lot Area (m2)	Average Peak Delay time (s/veh)	Peak Truck Traffic Volume (vph)	NOx (g/hr)	PM10 (g/hr)	PM2.5 (g/hr)	Carbon Monoxide (CO) (g/hr)	SO2 (g/hr)
					NOX	PM10	PM2.5	CO	SO2
					(g/s/m2)	(g/s/m2)	(g/s/m2)	(g/s/m2)	(g/s/m2)
				Diesel Trucks	60.2344	4.62057	4.25091	1.79E+01	6.62E-02
LOT1	Trucks Idling Lot	171016	900	52	1.27E-06	9.76E-08	8.98E-08	3.77E-07	1.40E-09
LOT2	Yard Tractors (Pushers) Idling Lot	1778	900	22	5.18E-05	3.97E-06	3.65E-06	1.53E-05	5.69E-08

Hudson Logistics Center

Lots

Onsite Lot Peak Hour Emission Rates (g/s/m2)

Source ID	Lot	Lot Area (m2)	Average Peak Delay time (s/veh)	Peak Truck Traffic Volume (vph)	Diesel Trucks	Diesel Particulate (g/hr)	1,3-Butadiene (g/hr)	2,2,4-Trimethylpentane (g/hr)	Acenaphthene (g/hr)	Acenaphthylene (g/hr)
						Diesel Particulate	1,3Butadiene	2,2,4-Trimethylpentane	Acenaphthene	Acenaphthylene
						(g/s/m2)	(g/s/m2)	(g/s/m2)	(g/s/m2)	(g/s/m2)
LOT1	Trucks Idling Lot	171016	900	52		4.27E-09	4.38E-10	3.57E-10	4.45E-11	7.48E-11
LOT2	Yard Tractors (Pushers) Idling Lot	1778	900	22		1.74E-07	1.78E-08	1.45E-08	1.81E-09	3.04E-09

Hudson Logistics Center

Lots

Onsite Lot Peak Hour Emission Rates (g/s/m2)

Source ID	Lot	Lot Area (m2)	Average Peak Delay time (s/veh)	Peak Truck Traffic Volume (vph)	Acetaldehyde (g/hr)	Acrolein (g/hr)	Anthracene (g/hr)	Arsenic (g/hr)	Benzene (g/hr)	Benz(a)anthracene (g/hr)
					Acetaldehyde (g/s/m2)	Acrolein (g/s/m2)	Anthracene (g/s/m2)	Arsenic Compounds (g/s/m2)	Benzene (g/s/m2)	Benz(a)anthracene (g/s/m2)
					Diesel Trucks	2.76E-01	5.03E-02	2.86E-03	1.39E-03	6.05E-02
LOT1	Trucks Idling Lot	171016	900	52	5.84E-09	1.06E-09	6.04E-11	2.93E-11	1.28E-09	5.67E-11
LOT2	Yard Tractors (Pushers) Idling Lot	1778	900	22	2.38E-07	4.32E-08	2.46E-09	1.19E-09	5.20E-08	2.31E-09

Hudson Logistics Center

Lots

Onsite Lot Peak Hour Emission Rates (g/s/m2)

Source ID	Lot	Lot Area (m2)	Average Peak Delay time (s/veh)	Peak Truck Traffic Volume (vph)	Diesel Trucks	Benzo(k)fluoranthene (g/hr)	Benzo(b)fluoranthene (g/hr)	Benzo(g,h,i)perylene (g/hr)	Benzo(a)pyrene (g/hr)	Chromium 6+ (g/hr)
						Benzo(k)fluoranthene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(a)pyrene	Chromium 6+
						(g/s/m2)	(g/s/m2)	(g/s/m2)	(g/s/m2)	(g/s/m2)
LOT1	Trucks Idling Lot	171016	900	52	3.65E-05	7.71E-13	5.64E-12	4.96E-05	1.05E-12	1.55E-13
LOT2	Yard Tractors (Pushers) Idling Lot	1778	900	22	3.14E-11	3.14E-11	2.29E-10	4.26E-11	7.69E-10	6.29E-12

Hudson Logistics Center

Lots

Onsite Lot Peak Hour Emission Rates (g/s/m2)

Source ID	Lot	Lot Area (m2)	Average Peak Delay time (s/veh)	Peak Truck Traffic Volume (vph)	Chrysene (g/hr)	Dibenz(a,h)anthracene (g/hr)	Ethyl Benzene (g/hr)	Fluoranthene (g/hr)	Fluorene (g/hr)	Formaldehyde (g/hr)
					Diesel Trucks					
					Chrysene (g/s/m2)	Dibenz(a,h)anthracene (g/s/m2)	Ethyl Benzene (g/s/m2)	Fluoranthene (g/s/m2)	Fluorene (g/s/m2)	Formaldehyde (g/s/m2)
LOT1	Trucks Idling Lot	171016	900	52	3.43E-11	7.70E-13	4.53E-10	1.50E-10	1.17E-10	1.34E-08
LOT2	Yard Tractors (Pushers) Idling Lot	1778	900	22	1.39E-09	3.14E-11	1.84E-08	6.11E-09	4.76E-09	5.44E-07

Hudson Logistics Center

Lots

Onsite Lot Peak Hour Emission Rates (g/s/m²)

Source ID	Lot	Lot Area (m ²)	Average Peak Delay time (s/veh)	Peak Truck Traffic Volume (vph)	Hexane (g/hr)	Indeno(1,2,3-cd)pyrene (g/hr)	Manganese (g/hr)	Mercury (g/hr)	Naphthalene (g/hr)	Nickel (g/hr)
					Hexane (g/s/m ²)	Indeno(1,2,3-cd)pyrene (g/s/m ²)	Manganese Compounds (g/s/m ²)	Total Mercury Compounds (g/s/m ²)	Naphthalene (g/s/m ²)	Nickel Compounds (g/s/m ²)
				Diesel Trucks	1.72E-02	6.80E-05	2.34E-03	6.63E-06	6.98E-02	3.99E-03
LOT1	Trucks Idling Lot	171016	900	52	3.63E-10	1.44E-12	4.94E-11	1.40E-13	1.47E-09	8.43E-11
LOT2	Yard Tractors (Pushers) Idling Lot	1778	900	22	1.48E-08	5.84E-11	2.01E-09	5.70E-12	6.00E-08	3.43E-09

Hudson Logistics Center

Lots

Onsite Lot Peak Hour Emission Rates (g/s/m²)

Source ID	Lot	Lot Area (m ²)	Average Peak Delay time (s/veh)	Peak Truck Traffic Volume (vph)	Diesel Trucks	Phenanthrene (g/hr)	Propion-aldehyde (g/hr)	Pyrene (g/hr)	Styrene (g/hr)	Toluene (g/hr)	Xylene (g/hr)	
					Phenanthrene (g/s/m ²)	Propionaldehyde (g/s/m ²)	Pyrene (g/s/m ²)	Styrene (g/s/m ²)	Toluene (g/s/m ²)	Xylene (g/s/m ²)		
LOT1	Trucks Idling Lot	171016	900	52		2.13E-10	7.18E-10	2.04E-10	1.94E-10	9.26E-10	9.07E-10	
LOT2	Yard Tractors (Pushers) Idling Lot	1778	900	22		8.67E-09	2.92E-08	8.30E-09	7.90E-09	3.77E-08	3.69E-08	

Hudson Logistics Center

Inters

Intersection Peak Hour Emission Rates (g/s)

Source ID	Intersection	Average Peak Delay time (s/veh)	Peak Traffic Volume (vph)	Vehicle Mix	NOX (g/hr)	PM10 (g/hr)	PM2.5 (g/hr)
					NOX	PM10	PM2.5
					(g/s)	(g/s)	(g/s)
VOL1	1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road	17.30	58	9.0746	0.70067	0.64297	
VOL2	2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue	13.90	419				
VOL3	3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway	14.70	388				
VOL4	4: Lowell Road (Route 3A) & Sagamore Bridge Road	15.60	348				
VOL5	5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road	47.50	66				
VOL6	6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive	11.30	66				
VOL7	7: Lowell Road (Route 3A) & Executive Drive	31.40	66				
VOL8	8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway	28.30	66				
VOL9	9: Lowell Road (Route 3A) & Pelham Road	54.40	66				

Hudson Logistics Center

Inters

Intersection Peak Hour Emission Rates (g/s)

Intersection	Average Peak Delay time (s/veh)	Peak Traffic Volume (vph)	Vehicle Mix	Carbon Monoxide (g/hr)	SO2 (g/hr)	Diesel Particulate (g/hr)	Anthracene (g/hr)
			Carbon Monoxide	SO2	Diesel Particulate	Anthracene	
				(g/s)	(g/s)	(g/s)	
1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road	17.30	58	10.66470	0.02895	0.20235	0.00043	
2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue	13.90	419	4.79E-03	1.30E-05	9.09E-05	1.92E-07	
3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway	14.70	388	4.69E-03	1.27E-05	8.91E-05	1.88E-07	
4: Lowell Road (Route 3A) & Sagamore Bridge Road	15.60	348	4.47E-03	1.21E-05	8.48E-05	1.79E-07	
5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road	47.50	66	2.58E-03	7.00E-06	4.89E-05	1.04E-07	
6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive	11.30	66	6.14E-04	1.67E-06	1.16E-05	2.46E-08	
7: Lowell Road (Route 3A) & Executive Drive	31.40	66	1.71E-03	4.63E-06	3.24E-05	6.84E-08	
8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway	28.30	66	1.54E-03	4.17E-06	2.92E-05	6.17E-08	
9: Lowell Road (Route 3A) & Pelham Road	54.40	66	2.95E-03	8.02E-06	5.61E-05	1.19E-07	

Hudson Logistics Center

Inters

Intersection Peak Hour Emission Rates (g/s)

Intersection	Average Peak Delay time (s/veh)	Peak Traffic Volume (vph)	Benzo(a)anthracene (g/hr)	Benzo(a)pyrene (g/hr)	Benzo(k)fluoranthene (g/hr)	1,3-Butadiene (g/hr)	
			Vehicle Mix	Benzo(a)anthracene	Benzo(a)pyrene	Benzo(k)fluoranthene	1,3Butadiene
			(g/s)	(g/s)	(g/s)	(g/s)	
1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road	17.30	58	3.02E-08	1.14E-08	1.42E-09	4.71E-07	
2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue	13.90	419	1.75E-07	6.65E-08	8.22E-09	2.74E-06	
3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway	14.70	388	1.72E-07	6.51E-08	8.05E-09	2.68E-06	
4: Lowell Road (Route 3A) & Sagamore Bridge Road	15.60	348	1.63E-07	6.19E-08	7.67E-09	2.55E-06	
5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road	47.50	66	9.44E-08	3.58E-08	4.43E-09	1.47E-06	
6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive	11.30	66	2.24E-08	8.51E-09	1.05E-09	3.50E-07	
7: Lowell Road (Route 3A) & Executive Drive	31.40	66	6.24E-08	2.36E-08	2.93E-09	9.74E-07	
8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway	28.30	66	5.62E-08	2.13E-08	2.64E-09	8.77E-07	
9: Lowell Road (Route 3A) & Pelham Road	54.40	66	1.08E-07	4.10E-08	5.07E-09	1.69E-06	

Hudson Logistics Center

Inters

Intersection Peak Hour Emission Rates (g/s)

Intersection	Average Peak Delay time (s/veh)	Vehicle Mix Peak Traffic Volume (vph)	2,2,4-Trimethylpentane (g/hr)	Acenaphthene (g/hr)	Acenaphthylene (g/hr)	Acet-aldehyde (g/hr)	Acrolein (g/hr)	Arsenic (g/hr)
			2,2,4-Trimethylpentane	Acenaphthene	Acenaphthylene	Acetaldehyde	Acrolein	Arsenic Compounds
			(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road	17.30	58	2.99E-06	2.53E-08	4.81E-08	3.67E-06	5.90E-07	1.07E-07
2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue	13.90	419	1.74E-05	1.47E-07	2.79E-07	2.13E-05	3.43E-06	6.23E-07
3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway	14.70	388	1.70E-05	1.44E-07	2.73E-07	2.09E-05	3.35E-06	6.10E-07
4: Lowell Road (Route 3A) & Sagamore Bridge Road	15.60	348	1.62E-05	1.37E-07	2.60E-07	1.99E-05	3.19E-06	5.80E-07
5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road	47.50	66	9.35E-06	7.90E-08	1.50E-07	1.15E-05	1.84E-06	3.35E-07
6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive	11.30	66	2.22E-06	1.88E-08	3.57E-08	2.73E-06	4.39E-07	7.97E-08
7: Lowell Road (Route 3A) & Executive Drive	31.40	66	6.18E-06	5.22E-08	9.93E-08	7.59E-06	1.22E-06	2.22E-07
8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway	28.30	66	5.57E-06	4.71E-08	8.95E-08	6.84E-06	1.10E-06	2.00E-07
9: Lowell Road (Route 3A) & Pelham Road	54.40	66	1.07E-05	9.05E-08	1.72E-07	1.31E-05	2.11E-06	3.84E-07

Hudson Logistics Center

Inters

Intersection Peak Hour Emission Rates (g/s)

Intersection	Average Peak Delay time (s/veh)	Peak Traffic Volume (vph)	Vehicle Mix	Benzo(b)fluoranthene (g/hr)	Benzo(g,h,i)perylene (g/hr)
			0.03136	0.00005	0.00007
			Benzene (g/hr)	Benzo(b)fluoranthene (g/hr)	Benzo(g,h,i)perylene (g/hr)
			(g/s)	(g/s)	(g/s)
1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road	17.30	58	2.43E-06	3.92E-09	5.13E-09
2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue	13.90	419	1.41E-05	2.28E-08	2.98E-08
3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway	14.70	388	1.38E-05	2.23E-08	2.92E-08
4: Lowell Road (Route 3A) & Sagamore Bridge Road	15.60	348	1.31E-05	2.12E-08	2.78E-08
5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road	47.50	66	7.58E-06	1.23E-08	1.60E-08
6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive	11.30	66	1.80E-06	2.92E-09	3.82E-09
7: Lowell Road (Route 3A) & Executive Drive	31.40	66	5.01E-06	8.10E-09	1.06E-08
8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway	28.30	66	4.52E-06	7.30E-09	9.56E-09
9: Lowell Road (Route 3A) & Pelham Road	54.40	66	8.69E-06	1.40E-08	1.84E-08

Hudson Logistics Center

Inters

Intersection Peak Hour Emission Rates (g/s)

Intersection	Average Peak Delay time (s/veh)	Peak Traffic Volume (vph)	Chromium 6+ (g/hr)	Chrysene (g/hr)	Dibenz(a,h)anthracene (g/hr)	Ethyl Benzene (g/hr)	Fluoranthene (g/hr)	
			Vehicle Mix	Chromium 6+	Chrysene	Dibenz(a,h)anthracene	Ethyl Benzene	Fluoranthene
			(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	
1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road	17.30	58	5.59E-10	1.85E-08	4.36E-10	2.13E-06	8.08E-08	
2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue	13.90	419	3.24E-09	1.08E-07	2.53E-09	1.24E-05	4.69E-07	
3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway	14.70	388	3.18E-09	1.05E-07	2.48E-09	1.21E-05	4.59E-07	
4: Lowell Road (Route 3A) & Sagamore Bridge Road	15.60	348	3.02E-09	1.00E-07	2.36E-09	1.15E-05	4.37E-07	
5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road	47.50	66	1.75E-09	5.79E-08	1.36E-09	6.66E-06	2.53E-07	
6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive	11.30	66	4.16E-10	1.38E-08	3.24E-10	1.58E-06	6.01E-08	
7: Lowell Road (Route 3A) & Executive Drive	31.40	66	1.15E-09	3.83E-08	9.01E-10	4.40E-06	1.67E-07	
8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway	28.30	66	1.04E-09	3.45E-08	8.12E-10	3.97E-06	1.50E-07	
9: Lowell Road (Route 3A) & Pelham Road	54.40	66	2.00E-09	6.63E-08	1.56E-09	7.63E-06	2.89E-07	

Hudson Logistics Center

Inters

Intersection Peak Hour Emission Rates (g/s)

Intersection	Average Peak Delay time (s/veh)	Peak Traffic Volume (vph)	Fluorene (g/hr)	Formal-dehyde (g/hr)	Hexane (g/hr)	Indeno(1,2,3-cd)pyrene (g/hr)	Manganese (g/hr)	
			Vehicle Mix	Fluorene	Formaldehyde	Hexane	Indeno(1,2,3-cd)pyrene	Manganese Compounds
			(g/s)	(g/s)	(g/s)	(g/s)	(g/s)	
1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road	17.30	58	6.49E-08	7.69E-06	2.43E-06	2.46E-09	7.91E-08	
2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue	13.90	419	3.77E-07	4.46E-05	1.41E-05	1.43E-08	4.59E-07	
3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway	14.70	388	3.69E-07	4.37E-05	1.38E-05	1.40E-08	4.50E-07	
4: Lowell Road (Route 3A) & Sagamore Bridge Road	15.60	348	3.51E-07	4.16E-05	1.31E-05	1.33E-08	4.28E-07	
5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road	47.50	66	2.03E-07	2.40E-05	7.58E-06	7.70E-09	2.47E-07	
6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive	11.30	66	4.82E-08	5.71E-06	1.80E-06	1.83E-09	5.88E-08	
7: Lowell Road (Route 3A) & Executive Drive	31.40	66	1.34E-07	1.59E-05	5.01E-06	5.09E-09	1.63E-07	
8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway	28.30	66	1.21E-07	1.43E-05	4.51E-06	4.59E-09	1.47E-07	
9: Lowell Road (Route 3A) & Pelham Road	54.40	66	2.32E-07	2.75E-05	8.68E-06	8.82E-09	2.83E-07	

Hudson Logistics Center

Inters

Intersection Peak Hour Emission Rates (g/s)

Intersection	Average Peak Delay time (s/veh)	Vehicle Mix Peak Traffic Volume (vph)	Mercury (g/hr)	Naph-thalene (g/hr)	Nickel (g/hr)	Phenanthrene (g/hr)	Propion-aldehyde (g/hr)
			Total Mercury Compounds	Naphthalene	Nickel Compounds	Phenanthrene	Propionaldehyde
			(g/s)	(g/s)	(g/s)	(g/s)	(g/s)
			0.00006	0.01131	0.00135	0.00157	0.00540
1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road	17.30	58	4.84E-09	8.76E-07	1.04E-07	1.22E-07	4.18E-07
2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue	13.90	419	2.81E-08	5.08E-06	6.06E-07	7.05E-07	2.43E-06
3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway	14.70	388	2.75E-08	4.98E-06	5.94E-07	6.91E-07	2.38E-06
4: Lowell Road (Route 3A) & Sagamore Bridge Road	15.60	348	2.62E-08	4.74E-06	5.65E-07	6.57E-07	2.26E-06
5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road	47.50	66	1.51E-08	2.74E-06	3.26E-07	3.80E-07	1.31E-06
6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive	11.30	66	3.60E-09	6.51E-07	7.76E-08	9.03E-08	3.11E-07
7: Lowell Road (Route 3A) & Executive Drive	31.40	66	1.00E-08	1.81E-06	2.16E-07	2.51E-07	8.64E-07
8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway	28.30	66	9.01E-09	1.63E-06	1.94E-07	2.26E-07	7.78E-07
9: Lowell Road (Route 3A) & Pelham Road	54.40	66	1.73E-08	3.13E-06	3.74E-07	4.35E-07	1.50E-06

Hudson Logistics Center

Inters

Intersection Peak Hour Emission Rates (g/s)

Intersection	Average Peak Delay time (s/veh)	Peak Traffic Volume (vph)	Vehicle Mix	Pyrene (g/hr)	Styrene (g/hr)	Toluene (g/hr)	Xylene (g/hr)
			Pyrene	Styrene	Toluene	Xylene	
			(g/s)	(g/s)	(g/s)	(g/s)	
1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road	17.30	58	0.00141	0.00196	0.16461	0.09633	
2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue	13.90	419	6.33E-07	8.79E-07	7.40E-05	4.33E-05	
3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway	14.70	388	6.20E-07	8.61E-07	7.24E-05	4.24E-05	
4: Lowell Road (Route 3A) & Sagamore Bridge Road	15.60	348	5.90E-07	8.19E-07	6.90E-05	4.04E-05	
5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road	47.50	66	3.41E-07	4.73E-07	3.98E-05	2.33E-05	
6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive	11.30	66	8.11E-08	1.13E-07	9.47E-06	5.54E-06	
7: Lowell Road (Route 3A) & Executive Drive	31.40	66	2.25E-07	3.13E-07	2.63E-05	1.54E-05	
8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway	28.30	66	2.03E-07	2.82E-07	2.37E-05	1.39E-05	
9: Lowell Road (Route 3A) & Pelham Road	54.40	66	3.90E-07	5.42E-07	4.56E-05	2.67E-05	

LOS-VOLs

Hudson Logistics Center

	Inters			Inters		
	Mitigated Weekday AM Peak			Weekday AM Peak		
	LOS	Delay (Sec)	Traffic Volume	LOS	Delay (Sec)	Traffic Volume
Intersections (Signalized)						
1: River Road (Route 3A)/Lowell Road (Route 3A) & Dracut Road & Steele Road	B	17.3	58	B	19.4	58
2: Lowell Road (Route 3A) & Site Driveway/Rena Avenue	B	13.9	419	A	8.1	419
3: Lowell Road (Route 3A) & Sam's Club Driveway/Walmart Driveway	B	14.7	388	B	16.8	388
4: Lowell Road (Route 3A) & Sagamore Bridge Road	B	15.6	348	C	26.1	348
5: Lowell Road (Route 3A) & Flagstone Drive/Wason Road	D	47.5	66	E	55.6	66
6: Lowell Road (Route 3A) & Hampshire Drive/Oblate Drive	B	11.3	66	B	11.3	66
7: Lowell Road (Route 3A) & Executive Drive	C	31.4	66	C	30.9	66
8: Lowell Road (Route 3A) & Fox Hollow Drive/Nottingham Square Driveway	C	28.3	66	C	26.2	66
9: Lowell Road (Route 3A) & Pelham Road	D	54.4	66	D	54.8	66

Langan Hudson Logistics Center

Stationary Source (ULSD Emergency Generator) Emission Rates

Pollutant	Short Term (g/s)	Annual (g/s)
1,3-Butadiene	1.56E-05	8.90E-07
Acenaphthene	5.66E-07	3.23E-08
Acetaldehyde	3.06E-04	1.75E-05
Acrolein	3.69E-05	2.11E-06
Anthracene	7.46E-07	4.26E-08
Benzene	3.72E-04	2.12E-05
Benzo(b)fluoranthene	3.95E-08	2.26E-09
Benzo(g,h,i)perylene	1.95E-07	1.11E-08
Carbon Monoxide	3.36E-01	1.92E-02
Chrysene	1.41E-07	8.03E-09
Fluoranthene	3.03E-06	1.73E-07
Fluorene	1.16E-05	6.65E-07
Formaldehyde	4.71E-04	2.69E-05
Naphthalene	3.38E-05	1.93E-06
NOx	2.19E-02	2.19E-02
Phenanthrene	1.17E-05	6.69E-07
Pyrene	1.91E-06	1.09E-07
SO2	1.20E-01	6.84E-03
Toluene	1.63E-04	9.31E-06
Total PM10	1.92E-02	1.10E-03
Total PM2.5	1.92E-02	1.10E-03
Xylene	1.14E-04	6.49E-06

Hillwood - Hudson, NH

Rooftop Gas Fired HVACs

Designation			Notes
Number		50	
Heat Input	MMBTU/hr:	0.4	
Stack Parameters			
<i>Exhaust Temperature</i>	°F	200.0	Assumed
<i>Exhaust Temperature</i>	°K	366.5	calculated
<i>Exhaust CFM</i>	Cubic Feet per Minute	4590.0	Spec Sheet Exhaust Fan
Exit Velocity	ft/sec	2.580	Calculated
Exit Velocity	m/s	0.786	calculated
<i>Single Stack Effective Diameter</i>	inches	73.731	Spec Sheet Exhaust Fan
<i>Single Stack Effective Diameter</i>	ft	6.144	
<i>Single Stack Effective Diameter</i>	m	1.873	calculated
Primary Building Height	ft	50.0	Height of Building Roof
<i>Stack Height (above roofline)</i>	ft	4.0	Height of HVAC
Stack height (above ground)	ft	53.98	Height of Building Roof plus HVAC
<i>Stack Height</i>	m	16.45	calculated
Pollutant			
	Emission factor unit	Emission factor	
NOx	lb/mmSCF	100.0	From Table 1.4-1 AP42
CO	lb/mmSCF	84.0	From Table 1.4-1 AP42
PM10	lb/mmSCF	7.6	From Table 1.4-2 AP42
PM2.5	lb/mmSCF	7.6	From Table 1.4-2 AP42
SO2	lb/mmSCF	0.6	From Table 1.4-2 AP42
Conversion Factor			
	1020	BTU/SCF	
Pollutant			
	Emission factor unit	Emission factor	
NOx	lb/MMBTU	9.80E-02	calculated
CO	lb/MMBTU	8.24E-02	calculated
PM10	lb/MMBTU	7.45E-03	calculated
PM2.5	lb/MMBTU	7.45E-03	calculated
SO2	lb/MMBTU	5.88E-04	calculated
Emission Rate (per unit)			
NOx	g/s	4.94E-03	calculated
CO	g/s	4.15E-03	calculated
PM10	g/s	3.76E-04	calculated
PM2.5	g/s	3.76E-04	calculated
SO2	g/s	2.96E-05	calculated
Air Toxics			
	Emission factor unit	Emission factor	
1,3-Butadiene	lb/mmSCF	N/A	No available emission factor
Acetaldehyde	lb/mmSCF	N/A	No available emission factor
Acrolein	lb/mmSCF	N/A	No available emission factor
Benzene	lb/mmSCF	2.10E-03	From Table 1.4-3 AP42
Diesel Particulate Matter	lb/mmSCF	N/A	No available emission factor
Ethylbenzene	lb/mmSCF	N/A	No available emission factor
Formaldehyde	lb/mmSCF	7.5E-02	From Table 1.4-3 AP42
Naphthalene	lb/mmSCF	6.10E-04	From Table 1.4-3 AP42
Acenaphthene	lb/mmSCF	1.80E-06	From Table 1.4-3 AP42
Acenaphthylene	lb/mmSCF	1.80E-06	From Table 1.4-3 AP42
Anthracene	lb/mmSCF	2.40E-06	From Table 1.4-3 AP42
Benz(a)anthracene	lb/mmSCF	1.80E-06	From Table 1.4-3 AP42
Benzo(a)pyrene	lb/mmSCF	1.20E-06	From Table 1.4-3 AP42
Benzo(b)fluoranthene	lb/mmSCF	1.80E-06	From Table 1.4-3 AP42
Benzo(g,h,i)perylene	lb/mmSCF	1.20E-06	From Table 1.4-3 AP42
Benzo(k)fluoranthene	lb/mmSCF	1.80E-06	From Table 1.4-3 AP42
Chrysene	lb/mmSCF	1.80E-06	From Table 1.4-3 AP42
Dibenzo(a,h)anthracene	lb/mmSCF	1.20E-06	From Table 1.4-3 AP42
Fluoranthene	lb/mmSCF	3.00E-06	From Table 1.4-3 AP42
Fluorene	lb/mmSCF	2.80E-06	From Table 1.4-3 AP42
Indeno(1,2,3,c,d)pyrene	lb/mmSCF	1.80E-06	From Table 1.4-3 AP42
Phenanthrene	lb/mmSCF	1.70E-05	From Table 1.4-3 AP42
Pyrene	lb/mmSCF	5.00E-06	From Table 1.4-3 AP42
Polycyclic Organic Matter	lb/mmSCF	3.64E-05	From Table 1.4-3 AP42, summed each individual POM

Arsenic	lb/mmSCF	2.00E-04	From Table 1.4-4 AP42
Barium	lb/mmSCF	4.40E-03	From Table 1.4-4 AP42
Beryllium	lb/mmSCF	1.20E-05	From Table 1.4-4 AP42
Cadmium	lb/mmSCF	1.10E-03	From Table 1.4-4 AP42
Chromium	lb/mmSCF	1.40E-03	From Table 1.4-4 AP42
Cobalt	lb/mmSCF	8.40E-05	From Table 1.4-4 AP42
Copper	lb/mmSCF	8.50E-04	From Table 1.4-4 AP42
Manganese	lb/mmSCF	3.80E-04	From Table 1.4-4 AP42
Mercury	lb/mmSCF	2.60E-04	From Table 1.4-4 AP42
Molybdenum	lb/mmSCF	1.10E-03	From Table 1.4-4 AP42
Nickel	lb/mmSCF	2.10E-03	From Table 1.4-4 AP42
Selenium	lb/mmSCF	2.40E-05	From Table 1.4-4 AP42
Vanadium	lb/mmSCF	2.30E-03	From Table 1.4-4 AP42
Zinc	lb/mmSCF	2.90E-02	From Table 1.4-4 AP42
Heat Input	MMBTU/hr:	0.4	
Conversion Factor	1020	BTU/SCF	
Air Toxics	Emission factor unit	Emission factor	
1,3-Butadiene	lb/MMBTU	N/A	No available emission factor
Acetaldehyde	lb/MMBTU	N/A	No available emission factor
Acrolein	lb/MMBTU	N/A	No available emission factor
Benzene	lb/MMBTU	2.06E-06	calculated
Diesel Particulate Matter	lb/MMBTU	N/A	No available emission factor
Ethylbenzene	lb/MMBTU	N/A	No available emission factor
Formaldehyde	lb/MMBTU	7.35E-05	calculated
Naphthalene	lb/MMBTU	5.98E-07	calculated
Acenaphthene	lb/MMBTU	1.76E-09	calculated
Acenaphthylene	lb/MMBTU	1.76E-09	calculated
Anthracene	lb/MMBTU	2.35E-09	calculated
Benz(a)anthracene	lb/MMBTU	1.76E-09	calculated
Benzo(a)pyrene	lb/MMBTU	1.18E-09	calculated
Benzo(b)fluoranthene	lb/MMBTU	1.76E-09	calculated
Benzo(g,h,i)perylene	lb/MMBTU	1.18E-09	calculated
Benzo(k)fluoranthene	lb/MMBTU	1.76E-09	calculated
Chrysene	lb/MMBTU	1.76E-09	calculated
Dibenzo(a,h)anthracene	lb/MMBTU	1.18E-09	calculated
Fluoranthene	lb/MMBTU	2.94E-09	calculated
Fluorene	lb/MMBTU	2.75E-09	calculated
Indeno(1,2,3,c,d)pyrene	lb/MMBTU	1.76E-09	calculated
Phenanthrene	lb/MMBTU	1.67E-08	calculated
Pyrene	lb/MMBTU	4.90E-09	calculated
Polycyclic Organic Matter	lb/MMBTU	3.57E-08	calculated
Arsenic	lb/MMBTU	1.96E-07	calculated
Barium	lb/MMBTU	4.31E-06	calculated
Beryllium	lb/MMBTU	1.18E-08	calculated
Cadmium	lb/MMBTU	1.08E-06	calculated
Chromium	lb/MMBTU	1.37E-06	calculated
Cobalt	lb/MMBTU	8.24E-08	calculated
Copper	lb/MMBTU	8.33E-07	calculated
Manganese	lb/MMBTU	3.73E-07	calculated
Mercury	lb/MMBTU	2.55E-07	calculated
Molybdenum	lb/MMBTU	1.08E-06	calculated
Nickel	lb/MMBTU	2.06E-06	calculated
Selenium	lb/MMBTU	2.35E-08	calculated
Vanadium	lb/MMBTU	2.25E-06	calculated
Zinc	lb/MMBTU	2.84E-05	calculated

Air Toxics Emission Rate (per unit)	Units		
1,3-Butadiene	g/s	N/A	No available emission factor
Acetaldehyde	g/s	N/A	No available emission factor
Acrolein	g/s	N/A	No available emission factor
Benzene	g/s	1.04E-07	calculated
Diesel Particulate Matter	g/s	N/A	No available emission factor
Ethylbenzene	g/s	N/A	No available emission factor
Formaldehyde	g/s	3.71E-06	calculated
Naphthalene	g/s	3.01E-08	calculated
Acenaphthene	g/s	8.89E-11	calculated
Acenaphthylene	g/s	8.89E-11	calculated
Anthracene	g/s	1.19E-10	calculated
Benz(a)anthracene	g/s	8.89E-11	calculated
Benzo(a)pyrene	g/s	5.93E-11	calculated
Benzo(b)fluoranthene	g/s	8.89E-11	calculated
Benzo(g,h,i)perylene	g/s	5.93E-11	calculated
Benzo(k)fluoranthene	g/s	8.89E-11	calculated
Chrysene	g/s	8.89E-11	calculated
Dibenzo(a,h)anthracene	g/s	5.93E-11	calculated
Fluoranthene	g/s	1.48E-10	calculated
Fluorene	g/s	1.38E-10	calculated
Indeno(1,2,3,c,d)pyrene	g/s	8.89E-11	calculated
Phenanthrene	g/s	8.40E-10	calculated
Pyrene	g/s	2.47E-10	calculated
Polycyclic Organic Matter	g/s	1.80E-09	calculated
Arsenic	g/s	9.88E-09	calculated
Barium	g/s	2.17E-07	calculated
Beryllium	g/s	5.93E-10	calculated
Cadmium	g/s	5.44E-08	calculated
Chromium	g/s	6.92E-08	calculated
Cobalt	g/s	4.15E-09	calculated
Copper	g/s	4.20E-08	calculated
Manganese	g/s	1.88E-08	calculated
Mercury	g/s	1.28E-08	calculated
Molybdenum	g/s	5.44E-08	calculated
Nickel	g/s	1.04E-07	calculated
Selenium	g/s	1.19E-09	calculated
Vanadium	g/s	1.14E-07	calculated
Zinc	g/s	1.43E-06	calculated

Hudson Logistics Center

Mobile Source Temporal Factors

Hour	Vehicle Mix (links & intersections)	Cars	Trucks
0:00	0.24	0	0.24
1:00	0.18	0	0.18
2:00	0.12	0	0.12
3:00	0.50	0.5	0.24
4:00	0.24	0	0.24
5:00	0.29	0	0.29
6:00	0.53	0.5	0.53
7:00	0.47	0	0.47
8:00	0.53	0	0.53
9:00	0.59	0	0.59
10:00	0.76	0	0.76
11:00	0.88	0	0.88
12:00	0.82	0	0.82
13:00	0.71	0	0.71
14:00	0.65	0	0.65
15:00	0.71	0	0.71
16:00	1.00	1	1.00
17:00	0.82	0	0.82
18:00	0.41	0	0.41
19:00	0.35	0	0.35
20:00	0.47	0	0.47
21:00	0.29	0	0.29
22:00	0.24	0	0.24
23:00	0.24	0	0.24

ATTACHMENT B – CONSTRUCTION EMISSIONS

CONSTRUCTION AIR EMISSIONS

This attachment provides emission estimates associated with the construction of the proposed project. In order to determine the emissions associated with the construction of the Project, the first step was to determine what equipment will be on site and how long that equipment will operate while it is on site. The list of what equipment is necessary for the construction and the number of hours that each piece of equipment on that list will operate was estimated and provided by the Project's construction manager. A list of the predicted construction equipment on site, the equipment size in horsepower (HP), and the duration of use on site is presented in Table 1 below.

Table 1 Construction Equipment Size and Use

Equipment	Estimated Engine Size (HP)	Estimated Total Hours of Operation
Excavator	500	2,280
Excavator	400	5,400
Excavator	150	4,400
Bulldozer	200	4,464
Bulldozer	325	5,400
Wheel Loader	320	6,000
Wheel Loader	200	3,360
Skid Steer	100	4,400
Roller	150	8,000
Paver	225	440
Dump Truck	325	12,000
Concrete Truck	400	6,840
Lift Truck	100	14,800

When determining emissions from off-road vehicles used in construction, emissions are directly correlated to the horsepower of the engine. The fleet of construction units of each type will be comprised of a mix of Tier 4 engines and lower tier engines (both based on 40 CFR 1039 factors). Non-Tier 4 emissions factors were determined based on the highest tier off-road engine tier from Tables 1 through 3 in Appendix I of 40 CFR 1039 for tier 1 through tier 3 engines. The emissions associated with the engine tier are also based on engine size. Table 2 below provides each piece of equipment, the associated engine tier from 40 CFR 1039, and the non-tier 4 emission factors from the tier requirement. Table 3 below includes the same pieces of equipment with the corresponding Tier 4 emission factors from 40 CFR 1039. These tier emissions are used for NO_x, CO, VOC, and PM. When the tier guide gives an emission factor for NO_x + NMHC (non-methane hydrocarbons), NO_x is conservatively assumed to be 100% of the NO_x + NMHC value while VOC is based on the ratio of hydrocarbon HC to NO_x+HC for the rows that have both individually. The values in 40 CFR 1039 are in units of g/kwh which are converted to g/HP-hr in the table below based on a ratio of 1 kW = 1.341 HP.

Table 2 Construction Equipment Non-Tier 4 Emission Factors

Equipment	Engine Size (HP)	Engine Tier	Non-Tier 4 Emission factor (g/hp-hr)			
			NO _x	VOC (HC)	CO	PM
Excavator	500	3	2.98	0.37	2.61	0.15
Excavator	400	3	2.98	0.37	2.61	0.15
Excavator	150	3	2.98	0.37	3.73	0.22
Bulldozer	200	3	2.98	0.37	2.61	0.15
Bulldozer	325	3	2.98	0.37	2.61	0.15
Wheel Loader	320	3	2.98	0.37	2.61	0.15
Wheel Loader	200	3	2.98	0.37	2.61	0.15
Skid Steer	100	3	3.50	0.43	3.73	0.30
Roller	150	3	2.98	0.37	3.73	0.22
Paver	225	3	2.98	0.37	2.61	0.15
Dump Truck	325	3	2.98	0.37	2.61	0.15
Concrete Truck	400	3	2.98	0.37	2.61	0.15
Lift Truck	100	3	3.50	0.43	3.73	0.30

Table 3 Construction Equipment Tier 4 Emission Factors

Equipment	Engine Size (HP)	Engine Tier	Non-Tier 4 Emission factor (g/hp-hr)			
			NO _x	VOC (HC)	CO	PM
Excavator	500	3	0.30	0.14	2.61	0.01
Excavator	400	3	0.30	0.14	2.61	0.01
Excavator	150	3	0.30	0.14	3.73	0.01
Bulldozer	200	3	0.30	0.14	2.61	0.01
Bulldozer	325	3	0.30	0.14	2.61	0.01
Wheel Loader	320	3	0.30	0.14	2.61	0.01
Wheel Loader	200	3	0.30	0.14	2.61	0.01
Skid Steer	100	3	0.30	0.14	3.73	0.01
Roller	150	3	0.30	0.14	3.73	0.01
Paver	225	3	0.30	0.14	2.61	0.01
Dump Truck	325	3	0.30	0.14	2.61	0.01
Concrete Truck	400	3	0.30	0.14	2.61	0.01
Lift Truck	100	3	0.30	0.14	3.73	0.01

The emissions factors for non-Tier 4 and Tier 4 engines in Tables 2 and 3 above were then combined into a weighted average emission factor. In order to do this, the average life span in hours of each equipment type (based on engine size) and the average engine activity (in hours per year) were used to generate an average engine lifespan in years. The average life span in hours and the average engine activity both came

from USEPA’s 2010 document titled “Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling.” This average lifespan in years was then compared to the total number of years since Tier 4 limits went into effect (model year 2014) to obtain an approximate percentage of the fleet of that equipment type that is using Tier 4 engines. This percentage Tier 4 was then applied to the emission factors in the following formula. The results of this averaging are presented below in Table 4.

$$\left(\left(\text{Tier 4 Factor} \left(\frac{g}{hp-hr} \right) \right) * (\% \text{ Engines Tier 4}) \right) + \left(\left(\text{Non-Tier 4 Factor} \left(\frac{g}{hp-hr} \right) \right) * (1 - \% \text{ Engines Tier 4}) \right) = \text{Weighted Average Emission Factor} \left(\frac{g}{hp-hr} \right)$$

Table 4 Weighted Average Emission Factors

Equipment	Engine Size (HP)	% Tier 4 Engines	Non-Tier 4 Emission factor (g/hp-hr)			
			NO _x	VOC (HC)	CO	PM
Excavator	500	100%	0.30	0.14	2.61	0.01
Excavator	400	98%	0.36	0.15	2.61	0.02
Excavator	150	82%	0.78	0.18	3.73	0.05
Bulldozer	200	73%	1.03	0.20	2.61	0.05
Bulldozer	325	80%	0.85	0.19	2.61	0.04
Wheel Loader	320	68%	1.16	0.21	2.61	0.06
Wheel Loader	200	62%	1.32	0.23	2.61	0.07
Skid Steer	100	71%	1.22	0.23	3.73	0.10
Roller	150	57%	1.45	0.24	3.73	0.10
Paver	225	67%	1.19	0.22	2.61	0.06
Dump Truck	325	51%	1.63	0.25	2.61	0.08
Concrete Truck	400	25%	2.32	0.31	2.61	0.12
Lift Truck	100	58%	1.66	0.27	3.73	0.13

Emission factors for sulfur dioxide and greenhouse gases (as carbon dioxide equivalent, CO₂e) were determined separately from the engine tier as they are more dependent on the fuel specification. For SO₂ and CO₂e emissions, it was assumed that the fuel used would be ultra-low sulfur diesel (ULSD). ULSD has a fuel sulfur content of no greater than 0.0015% sulfur by weight. As shown in the formula below, using an approximate density of ULSD of 7 lb/gal, a heat content of 140,000 Btu/gal, the molecular weights of sulfur dioxide and elemental sulfur, and an approximate engine efficiency of 10,000 Btu/kW, the sulfur dioxide emission factor was determined to be approximately 0.0051 g/hp-hr.

$$\left(\frac{0.000015 \text{ lb S}}{1 \text{ lb ULSD}} \right) \times \left(\frac{7 \text{ lb}}{1 \text{ gal ULSD}} \right) \times \left(\frac{1 \text{ gal ULSD}}{140,000 \text{ Btu}} \right) \times \left(\frac{10,000 \text{ Btu}}{1 \text{ kW-hr}} \right) \times \left(\frac{64 \frac{\text{lb}}{\text{lbmol}} \text{ SO}_2}{32 \frac{\text{lb}}{\text{lbmol}} \text{ S}} \right) \times \left(\frac{1 \text{ kW}}{1.341 \text{ HP}} \right) \times \left(\frac{453.59 \text{ g}}{1 \text{ lb}} \right) = 0.0051 \frac{\text{g}}{\text{HP-hr}} \text{ SO}_2$$

For greenhouse gases (as CO₂e), the fuel-based emission factors from 40 CFR 98 Tables C-1 and C-2 were used in conjunction with the global warming potentials in Table A-1 of 40 CFR 98 and an approximate engine efficiency of 10,000 Btu/kW to determine the emission factor. The formula below shows the calculation of the CO₂e emission factor of 553.4 g/hp-hr.

$$\left(\left(\frac{73.96 \text{ kg CO}_2}{1 \text{ MMBtu}} \right) \times \left(\frac{1 \text{ kg CO}_2e}{1 \text{ kg CO}_2} \right) \right) + \left(\left(\frac{0.003 \text{ kg CH}_4}{1 \text{ MMBtu}} \right) \times \left(\frac{25 \text{ kg CO}_2e}{1 \text{ kg CH}_4} \right) \right) + \left(\left(\frac{0.0006 \text{ kg N}_2\text{O}}{1 \text{ MMBtu}} \right) \times \left(\frac{298 \text{ kg CO}_2e}{1 \text{ kg N}_2\text{O}} \right) \right) = \left(\frac{74.2 \text{ kg CO}_2e}{1 \text{ MMBtu}} \right) \times \left(\frac{2.204 \text{ lb}}{1 \text{ kg}} \right) \times \left(\frac{10,000 \text{ Btu}}{1 \text{ kW-hr}} \right) \times \left(\frac{1 \text{ kW}}{1.341 \text{ HP}} \right) \times \left(\frac{453.59 \text{ g}}{1 \text{ lb}} \right) = 553.4 \frac{\text{g}}{\text{HP-hr}} \text{ CO}_2e$$

For each pollutant described above, the following equation was used to generate tons of emissions per vehicle type for the construction period. The load factors used in the formula below are based on Appendix A of USEPA’s publication titled “Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling” from July of 2010. Table 5 below shows the results of this calculation.

$$\left(\text{Engine Power (HP)} \right) \times \left(\text{Emission Factor} \left(\frac{\text{g}}{\text{HP-hr}} \right) \right) \times \left(\frac{1 \text{ lb}}{453.59 \text{ g}} \right) \times \left(\text{Load Factor} \right) = \left(\frac{\text{lbs}}{\text{hr}} \text{ of Pollutant} \right) \times \left(\text{Total Hours of Operation} \right) * \left(\frac{1 \text{ Ton}}{2,000 \text{ lb}} \right) = \text{Tons of Pollutant}$$

Table 5 Tons of Pollutant Emitted for Construction Vehicles

Equipment	Engine Size (HP)	Total Emissions (Tons)					
		NO _x	VOC (HC)	CO	PM	SO ₂	CO ₂ e
Excavator	500	0.22	0.11	1.94	0.011	0.0038	410.31
Excavator	400	0.51	0.21	3.67	0.026	0.0071	777.43
Excavator	150	0.34	0.08	1.60	0.023	0.0022	237.55
Bulldozer	200	0.60	0.12	1.52	0.030	0.0029	321.34
Bulldozer	325	0.97	0.21	2.98	0.048	0.0058	631.66
Wheel Loader	320	1.45	0.27	3.26	0.072	0.0063	691.04
Wheel Loader	200	0.58	0.10	1.14	0.029	0.0022	241.87
Skid Steer	100	0.12	0.02	0.38	0.010	0.00052	56.37
Roller	150	1.13	0.19	2.91	0.082	0.0040	431.90
Paver	225	0.08	0.01	0.17	0.0038	0.00033	35.63
Dump Truck	325	1.47	0.23	2.36	0.073	0.0046	499.62
Concrete Truck	400	3.01	0.41	3.38	0.15	0.0066	717.69
Lift Truck	100	1.59	0.26	3.59	0.13	0.0049	532.68
Total		12.06	2.21	28.88	0.69	0.051	5,585.07

Fugitive dust from demolition and excavation activities can be a source of particulate matter. Emissions are estimated using EPA’s Compilation of Air Pollutant Emissions Factors (AP-42). Specific calculations are performed for three activities:

- ◆ Vehicles traveling on unpaved surfaces at industrial sites, using EPA AP-42 Section 13.2.2, Equation 1a, based on the total vehicle-hours for demolition & excavation steps, with dust control based on precipitation and wet suppression;
- ◆ Site grading, using EPA AP-42 Table 11.9-1, and based on the total hours of bulldozing and grading;
- ◆ Material handling & Truck loading, using EPA AP42 Section 13.2.4 Equation 1 and based on the total hours of dump truck operation during demolition and excavation.

The sum of the calculations results in a total PM estimate of 30.08 tons. Less than ten percent of the PM from fugitive dust is fine particulate (that is, 2.5 microns or smaller).

In addition to the emissions from the construction vehicles and fugitive dust, there is also emissions associated with paving from the asphalt. Hot asphalt during paving results in emissions of volatile organic compounds. An emission factor of 0.053 tons of VOC emissions per acre of paved area was obtained from the FAA Aviation Emissions and Air Quality Handbook, Version 3, Update 1 as well as other documents that cite a methodology from the National Association of Clean Air Agencies and a USEPA document titled “Emission Inventory Improvement Program, Asphalt Paving, Chapter 17, Volume III” from April 2001. The Project is anticipated to have approximately 105 acres of paved area. This results in emissions of 5.57 tons of VOCs from paving.

The emissions from fugitive dust and paving are added to the construction vehicles to get total construction emissions in Table 6 below.

Table 6 Total Construction Emissions

Activity	Total Emissions (Tons)					
	NO _x	VOC (HC)	CO	PM	SO ₂	CO ₂ e
Construction Vehicles	12.06	2.21	28.88	0.69	0.05	5,585.07
Fugitive Dust	0.00	0.00	0.00	30.82	0.00	0.00
Paving	0.00	5.57	0.00	0.00	0.00	0.00
Total	12.06	7.77	28.88	31.50	0.05	5,585.07

ATTACHMENT C – COMMENT RESPONSE

No.	Modeling Report Section	TRC Comment	Response
1	1.0 Introduction	None.	None.
2	2.1 National Ambient Air Quality Standards	The summary of the NAAQS is accurate.	None.
3	2.2 Background Air Quality	The concentration data summarized in Table 2-2 were obtained from the EPA AirData website for monitoring station 33-015-0018 (Londonderry, New Hampshire). Data from this station are representative of the background concentrations at the Project site. The annual NO ₂ background concentration should be the highest of the annual concentrations for the past three years, i.e., 5.9 µg/m ³ . Table 2-2 lists 3.8 µg/m ³ .	Table 2-2 has been updated with a revised background value of 5 µg/m ³ . This is based on 2018-2020 data as 2021 did not meet the minimum completeness criteria.
4	2.3 Hazardous Air Pollutants	1. Table 1450-1 in New Hampshire Code of Administrative Rules, Section Env-A 1400 is the correct source for regulated toxic air pollutant (RTAP) ambient air limits (AALs). The Report states that diesel particulate matter (DPM) is not regulated in New Hampshire as a Hazardous Air Pollutant (HAP). The Report lists a DPM reference concentration (developed to protect against non-cancer chronic health effects) of 5 µg/m ³ (annual basis). That value is correct. [See EPA Regional Screening Levels (RSLs) Resident Air (TR=1E-06, THQ=1.0) inhalation reference concentration (RfCi) https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables .]	None.
5	2.3 Hazardous Air Pollutants	2. <i>Delete the following sentence, which is found on page 2-4:</i> <i>There is generally very little data on ambient concentrations of HAPs that can be used as background concentrations like there are for criteria pollutants.</i> Monitoring station 33-015-0018 (Londonderry, New Hampshire) is nearby and the source of the background concentration data for criteria pollutants shown in Table 2-2. It also contains ambient concentration data for numerous HAPS and RTAPs.	Section 2.3 has been revised to include this change.

No.	Modeling Report Section	TRC Comment	Response
6	2.3 Hazardous Air Pollutants	<p>3. The last paragraph on page 2.4 states the following:</p> <p><i>Also, in general, compliance with the other air quality standards, namely NO2 and PM2.5 indicates acceptable levels of DPM from a public health, safety and environmental perspective.</i></p> <p>Provide a reference or rationale to substantiate this assertion.</p>	<p>Review of the EPA Integrated Risk Information System Database for Diesel engine exhaust (Diesel engine exhaust (CASRN N.A.) IRIS US EPA), on page 9 states:</p> <p>“It also should be noted that diesel particles make up a portion of ambient particulate matter (PM). U.S. EPA has established an annual National Ambient Air Quality Standard (NAAQS) for fine particulate matter (PM2.5), to provide protection against adverse health effects associated with both long- and short-term exposures to ambient fine PM. DPM is a typical constituent of ambient fine PM, generally about 6-10% of PM2.5 with some examples up to 36% (U.S. EPA, 1996a, 1996b). Given the similarity of health concerns for respiratory inflammation and pulmonary health effects from both DPM and fine particles, it is reasonable to expect that DPM contributes to some of the health effects associated with PM2.5. Current knowledge is insufficient, however, to describe the relative potencies of DPM and the other components of PM2.5. As long as the percentage of DPM to total ambient PM2.5 remains in similar proportion, protective levels for PM2.5 would be expected to offer a measure of protection from effects associated with DPM.”</p>
7	2.3 Hazardous Air Pollutants	4. The last paragraph on page 2.4 also states the following:	Section 2.3 has been revised to reflect this comment.

No.	Modeling Report Section	TRC Comment	Response
		<p><i>Compliance with the PM NAAQS and levels below the RfC are also indicative that no significant odor or visual impacts would be noticed by residents.</i></p> <p>The DPM RfC is an annual average concentration, and the PM NAAQS are 24-hour and annual average concentrations. Neither is based on visual impact or odor considerations. Adverse visual impact and odor incidents are often episodic and occur for durations shorter than one year or one day. Provide a reference or rationale to substantiate this assertion regarding relevance of the NAAQS and RfC to adverse odor or visual impacts.</p>	
8	3.1 Selected Pollutants	The pollutants selected are appropriate. Nevertheless, for clarity this section should refer to the tables which list the pollutants selected for the analysis.	The modeling report has updated Section 3-1, and added Table 2-3 clearly indicate the air toxics and allowable 24-hour and annual concentrations of RTAPs.
9	3.2 General Methodology	The general methodology is appropriate.	None.
10	3.2.1 Air Quality Model Selection	The use of AERMOD Version 22122 and the Lakes Environmental interface for the analysis are appropriate.	None.
11	3.2.2 Modeling Options	The options used are appropriate.	None.
12	3.2.3 NOx to NO2 Conversion	The use of the ARM2 algorithm is appropriate.	None.
13	3.2.4 Urban/Rural Determination	The use of rural coefficients is appropriate.	None.
14	3.2.5 Meteorological Data	Given the proximity of the site to the Concord Airport and the Merrimack River, the use of Concord surface data and Gray, Maine upper air data are appropriate.	Noted.
15	3.2.6 Receptors	The receptor network used is adequate to define worst case predicted impacts. Note that Section number 3.2.6 is used twice in the Modeling Report)	The section heading for Receptors and RTAP Methodology have been updated.
16	3.2.7 RTAP Methodology	The use of a Lakes Environmental AERMOD interface procedures to calculate predicted impacts for multiple pollutants using single model runs is appropriate.	None.

No.	Modeling Report Section	TRC Comment	Response
17	3.3.1 Stationary Sources	The Modeling Report states an emergency generator is the only stationary source for the project. No mention is made of fuel-burning equipment for building heating or cooling. If such equipment will be used, its emissions should be estimated and these emissions accounted included in the modeling.	Rooftop HVAC units have been added to the modeling analysis.
18	3.3.1.1 Emissions and Source Parameters	1. Emergency generator emissions are based on a Cummins 300 kWe Tier 3 diesel engine. This engine model or an equivalent unit should be installed.	None.
19	3.3.1.1 Emissions and Source Parameters	2. Emergency diesel generator DPM emissions (PM2.5 is used as surrogate) are calculated but emergency diesel generator emissions are not included in the AERMOD input file for the Project's annual DPM impacts.	The DPM modeling has been revised to include the emergency diesel generator.
20	3.3.1.2 Building downwash	Use of the BPIP Prime algorithm for determining wind direction dependent building dimensions is appropriate.	None.
21	3.3.2 Mobile Sources	Although MOVES 2014b is not the latest version of the MOVES model, its use along with the 2020 vehicle emissions fleets is appropriate.	None.
22	3.3.2.1 Emission and Source Parameters	<p>Emissions from vehicles on roadways are modeled as volume sources. The model input for these volume sources defines vertical and horizontal plume dispersion factors, respectively termed sigma-z and sigma-y. Page 3-12 pf the Modeling Report states the following:</p> <p><i>For the roadway links, initial lateral plume spread is determined by the roadway width and varies by roadway. Road widths were measured in Google Earth and initial lateral spread values were calculated using width / 2.15 as described in the U.S. EPA Hot-Spots analyses guidance referenced above.</i></p> <p>The AERMOD input files appear to show the sigma-y values used to model Project-related vehicle emissions are the roadway widths without the (1/2.15) adjustment. This could cause the air quality inputs to be underpredicted. Please clarify.</p>	<p>We checked and confirmed that the model inputs were correct. The sigma-y model inputs for line volume sources are based on Table 3-2 of the AERMOD User's Guide.</p> <p>A description of how sigma-y is calculated has been added to Attachment A.</p>

No.	Modeling Report Section	TRC Comment	Response
23	4.1 Criteria Pollutant Results	1. The results presented show Project's air quality impacts plus the background concentration do not exceed the NAAQS.	None.
24	4.1 Criteria Pollutant Results	2. The background concentration for annual nitrogen dioxide should be corrected to 5.9 $\mu\text{g}/\text{m}^3$	See comment response number 3.
25	4.1 Criteria Pollutant Results	3. If the AERMOD sigma-y input model inputs are incorrect (see the comments for Section 3.3.2.1) the Project's predicted impacts could be larger.	See comment response number 22.
26	4.1 Criteria Pollutant Results	4. If the emissions from any building heating sources were included (see the comments for Section 3.3.2.1) the Project's predicted impacts could be larger.	See comment response number 17.
27	4.2 RTAP Results	The analysis of DPM impacts must account for emissions all Project-related mobile and stationary sources that use diesel fuel.	See comment response number 17.
28	4.3 Mitigation	1. Section 4.3 states, "To mitigate impacts from the emergency engine, operations for testing and maintenance should be performed during times when the atmosphere is more unstable and has better mixing, leading to better dispersion of pollutants. These hours are typically mid-afternoon when the ground has been effectively heated by the midday sun." It is recommended that measures to mitigate emergency diesel engine impacts by restricting the hours of operations for testing and maintenance be a condition of any Project approval.	None.
29	4.3 Mitigation	2. See comment 2 for Section 4.5.	None.
30	4.4 Air Quality Permits	The conclusion that the Project requires no air quality permits is appropriate.	None.
31	4.5 Construction	1. It is not necessary to model Project construction emissions. However, estimated Project construction emission calculations (i.e., equipment exhaust and fugitive dust) should be provided, and the estimated duration of construction discussed.	Construction related emissions are provided in Attachment B.
32	4.5 Construction	2. Several measures to mitigate fugitive dust generation are described, including the following:	None.

No.	Modeling Report Section	TRC Comment	Response
		<ul style="list-style-type: none"> • Using wetting agents on area of exposed soil on a scheduled basis. • Using covered trucks. • Monitoring of actual construction practices to ensure that unnecessary transfers and mechanical disturbances of loose materials are minimized. • Minimizing storage of debris on the site. • Periodic street and sidewalk cleaning with water to minimize dust accumulations. • Limit maximum travel speeds on unpaved areas. • Provide wheel wash stations to limit track-out of soil during the excavation phase <p>It is recommended that measures to mitigate fugitive dust during construction be a condition of any Project approval and incorporated into the Project Plan Set.</p>	
33	4.6 Other Potential Impacts	The discussion of other potential impacts is appropriate.	None.
34	4.7 Conclusions	<p>The Modeling Report concludes that, “Since all predicted concentrations are below their applicable NAAQS and/or RTAP standards, it can be concluded that the proposed Project will not cause or contribute to a condition of air pollution in the area.” TRC’s review noted the following items:</p> <ul style="list-style-type: none"> • The annual NO2 background concentration should be, 5.9 µg/m³. • The DPM modeling did not accounted for the diesel emergency generator emissions. • It is not clear if there are combustion sources for building heat which should have been accounted for. • It appears the “sigma-y” AERMOD inputs for roadway links are not consistent with guidance and not as described in the Modeling Report. • Estimated Project estimated construction emission calculations (i.e., equipment exhaust and fugitive dust) should be provided, and the estimated duration of construction discussed. <p>Addressing these items may affect the predicted air quality impacts. It is anticipated that the effects would be small to moderate and not alter the Modeling Report’s conclusions.</p>	<p>Each of these items have been responded to in the above responses.</p> <p>Epsilon has updated the modeling, the conclusions of the modeling remain the same, that the Project will meet the requirements laid out in Chapter 275 of the Town of Hudson’s Site Plan Review regulations.</p>



*William Cass, P.E.
Commissioner*

THE STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION



*Andre Briere
Deputy Commissioner*

December 14, 2022

John D. Plante, P.E.
LANGAN Engineering & Environmental Services Inc.
100 Cambridge Street, Suite 1310
Boston, MA 02114

Re: Proposed Logistics Center
Route 3A, Hudson

Dear John,

The Department of Transportation (DOT) has reviewed the Traffic Impact Study (TIS) for the revised project and found that the currently proposed highway modifications are appropriate to mitigate the development's traffic impact. Please continue discussions with the Town of Hudson to obtain their agreement to maintain, operate, and inspect the mast arms and signals associated with the project moving forward.

Thank you,

A handwritten signature in black ink, appearing to read "Brian A. Desfosses".

Brian A. Desfosses, P.E.
Assistant District Engineer

Cc: David McNamara, P.E., Stantec Consulting Services Inc.
5 Dartmouth Dr., Suite 200, Auburn, NH 03032-3984
Richard Radwanski, P.E., NHDOT District 5
Julie Mathews, P.E., NHDOT Bureau of Traffic



January 3, 2023

Mr. Elvis Dhima, PE
Town Engineer
Town of Hudson
12 School Street
Hudson, NH 03051

Re: Wason Road Off-Site Improvements Design Review
Acct.# 1315-544
Reference No. 20030249.2200

Dear Mr. Dhima:

In our letter dated December 28, 2022, Fuss & O'Neill, Inc. provided comments related to the review of the third submission of materials for the Wason Road Off-Site Improvements plans, which were received on December 6, 2022. As detailed in our letter, all of our previously outstanding comments were adequately addressed by the applicant with that submission of documents.

Please note that the resolution of two comments will require action by the applicant – they will need to sign the final set of plans (comment 1.b) and will need to provide the Town with a copy of the easement for the Goodwill property once that easement is executed (comment 5.a). A further submission of materials for our review is not required.

Please feel free to call if you have any questions.

Very truly yours,

A handwritten signature in blue ink, appearing to read 'Steve Reichert', is written over a light blue horizontal line.

Steven W. Reichert, PE

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SWR:swr

Enclosure

cc: Town of Hudson Engineering Division – File
Langan Engineering & Environmental Services, Inc. – Frank Holmes
(fholmes@langan.com)

California

Connecticut

Maine

Massachusetts

New Hampshire

Rhode Island

Vermont

From: Beaulier, Ethan <BeaulierE@wseinc.com>
Sent: Tuesday, January 3, 2023 10:47 AM
To: Dhima, Elvis
Cc: fholmes@langan.com; Groth, Brian; Provost, Jeffrey
Subject: RE: Hudson Logistics Center - Water Peer Review
Attachments: Weston Sampson Comment Response- Water Utility Plan Review - 2022-12-22.pdf;
Hudson NH - Logistics Center Hydraulic Review 2_Final_12.30.2022.pdf

EXTERNAL: Do not open attachments or click links unless you recognize and trust the sender.

Elvis –

Following up regarding the Logistics Center review.

Weston & Sampson hereby approves of the Logistics Center peer review comments received within the attached comment response document.

In addition, please also see the *Logistics Center Hydraulic Review* memo which details our hydraulic review of the proposed development. As previously mentioned, we did not see any noticeable differences between this proposed design and the previous design in regard to water supply capabilities from the Hudson system or adverse effects on the system.

Please let us know of any questions or comments related to either document or the general project. We will remain on standby until next steps are determined.

Thank you

Ethan

Ethan Beaulier, E.I.T.

Project Engineer

Office: 603-294-1628

Cell: 207-210-5493



MEMORANDUM

TO: Elvis Dhima, P.E., Town Engineer

FROM: Jeff McClure, P.E., Senior Associate
Jeff Provost, P.E., Team Leader
Ethan Beaulier, Project Engineer

DATE: December 30, 2022

SUBJECT: Hudson Logistics Center – Water System Review - FINAL

This memorandum outlines Weston & Sampson's review of the proposed Hudson Logistics Center to be located at the existing Green Meadow Golf Course in south Hudson, NH. The review was requested by the town to assist in evaluating the Hudson water system's ability to provide domestic water service and supplemental fire flow to the proposed Logistics Center, and to assess if any additional infrastructure is needed within the town's water system to adequately serve the proposed development.

The Hudson water distribution system hydraulic model was utilized to evaluate the ability of the Hudson water system to serve domestic water and supplemental fire supply to the Logistics Center site. Site utility information, fire storage requirements, domestic water supply estimates, and overall water utility infrastructure and operations at the site were provided by Langan Engineering and Environmental Services. Specifically, utility layout was based upon the overall utility plan provided by Langan Engineering, dated 11/18/2022. The proposed development was then incorporated into the hydraulic model to assess the ability of the Hudson water system to meet the water supply needs.

In addition to adding the proposed development to the hydraulic model, hydrant flow testing was conducted by WhiteWater, Inc. on 7/10/2020, in the south Hudson area of the water system on Lowell Road, Winslow Farm Road, and Muldoon Drive, adjacent to the project site. This testing was performed to confirm that this area of the hydraulic model was properly calibrated, meaning the field flow testing results could generally be replicated in the model.

REGULATIONS and EVALUATION CRITERIA

New Hampshire Department of Environmental Services (NHDES) regulations and Ten States Standards were used as the basis for our determination. NHDES regulations require that any public water system must provide 35 pounds per square inch (psi) pressure to all homes, under all normal conditions of flow. Normal conditions include peak hour demands, which usually entail the most severe demand condition that occurs during the hottest summer days.

NHDES and Ten States Standards require that any public water system shall provide 20-psi pressure under fire flow situations. System adequacy is evaluated under a fire flow situation occurring during a maximum day domestic demand condition. For this review, the town requested that we review the water system's ability to furnish supplemental fire flow to the proposed development while maintaining a minimum of 30 psi to the surrounding area.

SERVICE AREA and MODEL DEVELOPMENT

We used the software package InfoWater by Innovyze to model the impact of providing water to the Hudson Logistics Center on Hudson's water distribution system. We currently maintain a hydraulic model of the town's distribution system in this software package, making it possible to add the proposed development demands and model its effects on the town's water system.

The following is a summary of the existing conditions in the model and modifications that were initially incorporated into the model to simulate the expected site conditions and water supply needs;

- The current sources of water for the Hudson water system are the Litchfield wells, the Merrimack River Station in Litchfield and the Taylor Falls interconnection; although the interconnection was modeled as being 'not in service' in the model simulation to represent a worst case scenario;
- Calibration of the model was based on results of hydrant flow testing conducted on 7/10/2020;
- Approximate location and size of water utility piping as shown on drawing CU100 was added to the model accordingly;
- Addition of one (1) – 250,000-gallon fire storage tank with dimensions as shown on drawing CU100 was added to the model;
- Addition of estimated domestic water demand to the proposed building (based on 2,468 employees), as provided by Langan Engineering on 11/11/2022, as follows:
 - Approximately 17 gpm Maximum Day Demand (MDD)
 - Approximately 35 gpm peak hour demand;
- The Hudson Logistics Center will receive its water service from the Hudson Main Service System.

The proponent proposes to connect to the Hudson water system at two locations; at Walmart Boulevard near Sam's Club and adjacent to 267 Lowell Road near Mercury Systems. Each proposed connection would be via 12-inch water main. Upon discussions with the town, we were informed that all connections to the Hudson water system by the proponent would require a master meter and back pressure control valve located in a vault. The control valve would be utilized to protect the existing Hudson water system from pressure drops below 30 psi to the surrounding area of the system when water service is furnished to the Hudson Logistics Center. Based on our initial review, it was determined that a back pressure sustaining valve could be utilized to control pressures in Hudson's system and as such, a back pressure sustaining valve was incorporated in the model to simulate this town requirement. Design of the meter, type of back pressure valve and vault was not included as part of the scope of services for this review. Final review of valve and meter size, as well as necessary valve settings will need to be assessed under a separate contract.

Upon incorporating all proposed infrastructure in the model, the following water service needs of the proponent were analyzed;

1. Ability of the water system to fill one proposed 250,000 gallon on-site fire storage tank within an 8-hour duration (as required by the National Fire Protection Association (NFPA)) and to maintain a minimum of 30 psi in the Hudson water system during the entirety of the refill.
2. Ability of the water system to provide 2,000 gallons per minute (gpm) for two hours for emergency supplemental fire suppression needs (in the event the proposed 250,000 gallon fire

storage tank is unavailable or supplemental fire suppression is desired beyond the 250,000 gallons of on-site fire storage) and to maintain a minimum of 30 psi in the Hudson water system during the entire two-hour event.

3. Ability of the water system to satisfy all domestic water demands at the site at a minimum of 35 psi, under all normal conditions.

Each requirement was analyzed under maximum day demand conditions. For requirement number one, the hydraulic model was used to analyze the ability of the Hudson water system to fill the proposed fire storage tank while ensuring the surrounding Hudson water system pressure was maintained above 30 psi. From the analysis, it was determined that the Hudson water system would be capable of filling the fire storage tank within an 8-hour duration without the surrounding area water pressures falling below the 30 psi pressure limit. Additionally, no other adverse impacts to the existing water system were observed during the analysis of this requirement.

For the second requirement, the hydraulic model was utilized to assess the Hudson water system's ability to provide two hours of emergency, supplemental fire suppression to the Logistics Center site. Per discussions with the proponent, it was determined that the total, continuous, supplemental fire suppression flow desired would be 2,000 gpm for a two-hour duration. From the model analysis, it was determined that the Hudson water system would be capable of providing 2,000 gpm of emergency, supplemental fire flow for two hours to the Hudson Logistic Center buildings while maintaining a minimum 30 psi residual pressure within the surrounding Hudson water system.

For the third requirement assessed, the model was utilized to review the ability of the Hudson water system to furnish the estimated domestic demands to the proposed building during all normal conditions of flow. Per discussions with the proponent, the domestic demand to the Logistics Center Building was estimated to be a MDD of 24,680 gallons per day (gpd) and a peak hour demand of 35 gpm.

From the hydraulic model analysis, it was determined that the Hudson water system would be capable of meeting the total estimated domestic demand for the site, at a minimum of 35 psi, under all normal conditions of flow.

Upon further discussions with the Town Engineer, we were informed that Hudson Logistics Center's connection to the Hudson water distribution system would require a minimum of two (2) 12" water lines connected to the municipal water system at all times. As stated above, the proponent has proposed two connections to the Hudson system with two (2) 12-inch water mains. However, if one of the two water main connections were to fail, the development would only be supported by one connection. At the town's request, we reviewed how the Hudson system would support the proposed development with a third 12-inch water main connection. The third water main would provide redundancy should one of the other 12-inch connections fail.

To establish a third connection, we simulated a new 12-inch water main from the new water main connection near Mercury Systems to the Hudson water system at the intersection of Eagle Drive, Muldoon Street, and Fairway Drive. There is an existing 6-inch water main that extends approximately 350 feet northwest from the edge of pavement at this intersection towards the proposed Logistics Center site through a paper street/easement. We simulated the replacement of 350 feet of 6-inch main with 12-inch water main to complete the proponent's third tie-in with the Hudson distribution system

We ran the model with the third 12-inch connection and observed that the Hudson water system was able to refill the fire suppression storage tank and furnish 2,000 gpm of supplemental fire suppression for two hours to the Logistics Center site at a residual pressure that was approximately 10 psi greater in the Hudson water system as compared to when only two 12-inch connections were present. Establishing a continuous water main loop through the Logistics Center site improved hydraulic conditions in the surrounding area of the Hudson water system too and allowed the Hudson system to better serve the Logistics Center development.

Additionally, it is recommended that the back pressure sustaining valve be installed on the lateral water main that directly feeds the proposed building and corresponding fire suppression tank. Installing the valve and the water mains in this manner results in a continuous water main loop between the three connection points to the Hudson water system. Maintaining a continuous loop benefits the town of Hudson and its water users especially in the south Hudson area because it improves water age which subsequently improves water quality. The continuous 12-inch water main through the Logistics Center area also provides redundant water transmission mains for south Hudson to transmit water from water sources located in the northern part of the water system.

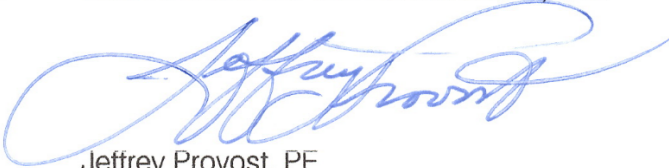
CONCLUSIONS

Based on the findings presented above, it appears that the Hudson water system can support the water demands of the proposed Logistics Center development. Incorporating the third connection to the Hudson water system provides redundancy for service to the Logistics Center and redundancy to the water system in south Hudson and improves water quality in this area of the Hudson water system, enabling Hudson to better serve the proposed development while reducing impacts to the surrounding area.

If you have any questions, please do not hesitate to call Jeff McClure or myself at (603) 431-3937.

Very truly yours,

WESTON & SAMPSON ENGINEERS, INC.



Jeffrey Provost, PE
Team Leader

JCP/JWM

P:\NH\Hudson, NH\General Engineering 2014-2021\Hudson Logistics Center - Langan-Hillwood\Report\Hudson NH - Logistics Center Hydraulic Review 2_Final_12.30.2022.docx



December 15, 2022

Steven Reichert, P.E.
Fuss & O'Neill, Inc.
The Gateway Building
50 Commercial Street, Unit 25
Manchester, NH 03101

Transmitted via email to: SReichert@fando.com

Subject: Follow-up to Peer Review of the Sound Study for the Amended Site Plan for the Hudson Logistics Center in Hudson, New Hampshire

Reference: HMMH Project Number 311730.001

Dear Mr. Reichert,

As requested, HMMH has reviewed Epsilon Associates' letter with responses to the comments we made in our peer review. We have also reviewed Epsilon's November 23, 2022 revised report that reflects the responses to the comments, as required.

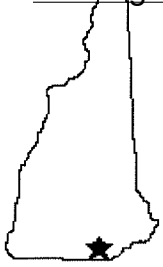
I have concluded that all comments have been adequately addressed in the letter and the revised report.

Thank you for the opportunity to support Fuss & O'Neill on this project.

Please let me know if you have any questions.

Sincerely,
Harris Miller Miller & Hanson Inc.

Christopher Menge, INCE
Sr. Vice President/Principal Consultant



TOWN OF HUDSON

FIRE DEPARTMENT

INSPECTIONAL SERVICES DIVISION



12 SCHOOL STREET, HUDSON, NEW HAMPSHIRE 03051

Emergency 911
Business 603-886-6005
Fax 603-594-1142

Scott Tice
Chief of Department

December 23, 2022

To: Brian Groth
Town Planner

From: Scott Tice
Fire Chief

RE: Hudson Logistic Center

The following is the list of site plan concerns the fire department has for this project and the response we have received from the project engineer and the developer.

1. Please provide the markings for fire access in accordance with NFPA 1.
 - *We discussed this and the engineer will revise the plans to include a fire lane in the front of the building. Access for fire department apparatus will be sufficient around the building as long as all parking is done in approved parking areas.*
2. The project shall have all proposed roadways named and formal addressing approved by the Hudson Fire Department prior to the issuance of building permit.
 - *We are currently working with the developers to determine addressing and street names as appropriate.*
3. The project shall have temporary signage approved by the Hudson Fire Department noting the addressing and associated access points during construction.
 - *The engineer confirms temporary signage will be approved prior to the commencement of construction.*
4. The common driveway shall have a permanent sign approved by the Hudson Fire Department noting the address of the building that is accessed from the driveway. The sign shall be approved and installed before issuance of any building permits.
 - *The engineer acknowledges this requirement.*

5. The Fire Hudson Department will require three copies of the fire hydrant layout for the full site. The hydrant plans shall be signed by the property engineer, Town of Hudson Engineer and the Fire Chief. Water supply for fire protection shall be made available prior to the issuance of building permits. Additionally we would ask the developer to review the Wall Mart Blvd area. It appears that hydrants were not installed on the new section of the access road. This item will need to be addressed.
 - o *We are waiting for these copies for the official review. But we have reviewed the proposed plan and discussed the proposed hydrant layout with the engineer. The proposed plan as discussed will be acceptable to the fire department.*

The following life safety and fire protection concerns provided are for informational purposes to the applicant and Planning Board for this project. Final determination on these issues occur after further review of the project.

The engineer acknowledged A-E and G. They state that there will be no outdoor storage of hazardous materials and Tier II reporting requirements will be followed as stated in F.

- A. The proposed building will require an approved sprinkler system. The Hudson Fire Department upon receipt of the building plans shall conduct this review. This requirement is in accordance with the International Building Code (IBC) and Hudson Town Code (HTC), current revision, Chapter 210, Article VI. Any fire protection system shall be monitored by an approved fire alarm system.
- B. The fire alarm system shall be connected to the Hudson Fire Departments municipal fire alarm system or a substantially equivalent system in accordance with the Hudson Town Code, Chapter 210. A site plan detailing the aerial or underground layout to the municipal fire alarm connection shall be provided before the utilities are completed for this project.
- C. Any required fire alarm system component shall remain accessible at all times.
- D. Due to the size of the building the Hudson Fire Department will require an emergency communication system review by our radio system vendor. The vendor shall review the need for signal amplification for first responder communication signals to be received and transmitted from inside the building; additionally, a review of transmission from the site to the Town of Hudson radio system. As outlined in the Building and Fire Code, the AHJ shall determine the acceptable level of coverage for the site. Any improvements identified shall be at the cost of the developer.
 - o *The developer has acknowledged this requirement and we have discussed the process to complete testing with our vendor. Our vendor will review the building plans once they are provided to develop a*

preliminary plan. They will perform field tests when the building is 80% complete to develop the final plan.

- E. A blasting permit will be required for any blasting on site in accordance with the Hudson Town Code, Chapter 202.
- F. Will there be inside or outside storage above the exempt amounts of hazardous materials, liquids or chemicals presenting a physical or health hazard as listed in the International Building Code, Section 307, 414 or 415? All Tier II reporting requirements shall be followed each year.
- G. All storage either inside or outside of hazardous materials, liquids or chemicals presenting a physical or health hazard as listed in NFPA 1, Section 20.15.2.2 shall be in accordance with the applicable portions of the following:

- NFPA 13, Standard for the installation of Sprinkler Systems
- NFPA 30, Flammable and Combustible Liquids Code
- NFPA 30B, Code for the Manufacture and Storage of Aerosol Products
- NFPA 230, Standard for the Fire Protection of Storage
- NFPA 430, Code for the Storage of Liquids and Solid Oxidizers
- NFPA 432, Code for the Storage of Organic Peroxide Formulations
- NFPA 434, Code for the Storage of Pesticides

Additional Items for Considerations

Openly, this project will be the largest commercial construction project to impact the Town of Hudson in recent times. The Hudson Fire Department has reviewed this project with an open mind utilizing a risk management approach to reviewing impact both short term and long term. We worked through the following process.

1. Identify concerns/problems
2. Develop a list of potential ways to improve safety
3. What are the opportunities to address the concerns
4. What are the benefits

Consideration needs to be given to the following;

- A. Prior to construction starting on this project, the Hudson Fire Department will look to engage site developers to discuss construction practice and programs. The intent is to identify training and equipment short comings of the Hudson Fire Department. With this gap analysis complete, any additional first responder training and equipment needs shall be the cost of the developer.
 - o *The Hudson Fire Department has reviewed the scope of the project and completed the gap analysis. We are developing a plan to address these gaps in our operations. It is my understanding that the developer is still committed to contributing \$1,050,000 to public safety to satisfy these gaps to include rescue, hazardous material,*

and law enforcement. I believe given our gap analysis and discussion with the Hudson Police Department that these funds will be sufficient to accomplish this objective.

- B. During the building construction portion of this project, the Hudson Fire Department believes it will have the need to directly assign a member of the Inspectional Services staff specifically for this project. The developer shall provide a trailer with associated utilities and HVAC support for an onsite work space for members of the Town of Hudson Inspectional Services and Land Use Divisions. Additionally, the impact of having to assign a full time inspector to the site for the duration of this construction project shall be at the cost of the developer. This has been highlighted in the fiscal impact for the project.
 - o *The developer has acknowledged this requirement and we are developing the appropriate plans to accomplish this.*

- C. There is an associated risk with the amount of equipment on the roof of the building. This equipment will lead to the roof being a common response area for the Hudson Fire Department. In an effort to safety and efficiently work in this area, we will need to review the need of a tower truck for the Hudson Fire Department fleet. This need is created by the sheer size of the building as a facility of this size is not currently part of our risk assessment.
 - o *The developer has acknowledged this requirement. We have received several sets of specifications for this truck. We are currently waiting for the quote from one salesman as well as some other information requested by the developer.*

The engineer and the developer have addressed all of our concerns to this point. With their anticipated continued cooperation I see no reason for the Hudson Fire Department to not support this project from a public safety standpoint.

Sincerely,



Scott Tice, Fire Chief



TOWN OF HUDSON

Planning Board

Timothy Malley, Chairman



12 School Street · Hudson, New Hampshire 03051 · Tel: 603-886-6008 · Fax: 603-594-1142

CAP FEE WORKSHEET - 2023

Date: 1-4-23 Zone # 1 Map/Lot: 239/001

43 Steele Road

Project Name: Hudson Logistics Center Amended Site Plan

Proposed ITE Use #1: 155 High-Cube Fulfillment Center Warehouse (Non-Sort)

Proposed Building Area (square footage): 2,222,482* S.F.

**includes: 2,210,403 s.f. warehouse building; 7,427 s.f. maintenance building; 3,538 s.f. transportation building; 1,114 s.f. guard house.*

CAP FEES: (ONE CHECK NEEDED)

1.	(Bank 09) 2070-701	Warehouse (2,222,482 s.f @ \$0.75 per s.f)	\$ <u>1,666,861.50</u>
		Total CAP Fee	\$ <u>1,666,861.50</u>

Check should be made payable to the Town of Hudson.

Thank you,

Brian Groth

Town Planner