Green Seal Environmental, Inc.
ENGINEERING | ENVIRONMENTAL | ENERGY SERVICES
114 State Road, Bldg. B, Sagamore Beach, MA 02562
T: 508.888.6034 **F:** 508.888.1506 www.gseenv.com
MA-SDO Certified D/WBE, D/MBE
MassDOT Certified | DCAMM Certified

November 15, 2019

Executive Office of Energy and Environmental Affairs (EOEEA)
Attn: MEPA Office
100 Cambridge Street, Suite 900
Boston MA 02114

RE: Parallel Products of New England, LLC
100 Duchaine Boulevard, New Bedford, MA
Draft Environmental Impact Report -EOEEA #15990

To Whom It May Concern,

Enclosed for your review, as required by the Massachusetts Environmental Policy Act (MEPA) Regulations, is a copy of the Draft Environmental Impact Report (DEIR) for the above referenced project. This document was filed with the Executive Office of Energy and Environmental Affairs on November 15, 2019. The DEIR, public meeting dates and a project fact sheet can also be accessed and downloaded at www.parallelproductssustainability.com .

Notification of the filing of the DEIR will be published in MEPA's Environmental Monitor on November 22, 2019. Parallel Products of New England has requested an extended public review period and all comments are due by January 23, 2020.

All written comments should be sent to:
Secretary Kathleen Theoharides
Executive Office of Energy and Environmental Affairs (EEA)
Attn: MEPA Office
EEA No. 15990
100 Cambridge Street, Suite 900
Boston, MA 02114

Comments can also be emailed to MEPA@mass.gov . Please reference this project with the designation EEA #l5990.

Comments can also be submitted through the MEPA Public Comment Portal (available at https://www.mass.gov/service-details/submitting-comments)

Informational meeting(s) on the project as described in the DEIR will be held in early January. The date, time and location of the meeting(s) will be posted on the Parallel Products web site www.parallelproductssustainability.com as soon as the arrangements have been finalized.

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A Certificate on the DEIR will be issued by the Secretary of the EEA on January 30, 2020. The Certificate will contain a determination that either 1) the Draft EIR is adequate and include a scope of additional study and analysis for a Final Environmental Impact Report (FEIR), or 2) the Draft EIR is inadequate and include a scope of additional study and analysis for a supplemental Draft EIR.

Should you have any questions or comments, please do not hesitate to contact me at (508) 888-6034 (ex. 16). My e-mail address is greg@gseenv.com.

Sincerely,

GREEN SEAL ENVIRONMENTAL, INC.

Gregory C. Wirsen, MSc.
Executive Vice President

Enclosure

PARALLEL PRODUCTS OF NEW ENGLAND, INC.

Draft Environmental Impact Report
Part 1 of 2

EEA # 15990

100 Duchaine Boulevard
New Bedford, Massachusetts 02745

November 2019

Prepared For:

Parallel Products of New England, Inc.
100 Duchaine Boulevard
New Bedford, Massachusetts 02745

Green Seal Environmental, Inc.

114 State Road, Building B, Sagamore Beach, MA 02562 | Tel: (508) 888-6034 | Fax: (508) 888-1506 | www.gseenv.com

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General

Project Proponent	Green Seal Environmental, Inc. (GSE) prepared an Expanded Environmental Notification Form (EENF) on behalf of Parallel Products of New England, LLC (PPNE) for a proposed project to be constructed at 100 Duchaine Boulevard, New Bedford, Massachusetts. The EENF requested a single Environmental Impact Report (EIR) and a Phase 1 waiver. The EENF was noticed in the Environmental Monitor on February 20, 2019.
Secretaries Certificate	After a review and comment period, on April 12, 2019, a Certificate (EEA# 15990) was issued by the Secretary of the Executive Office of Energy and Environmental Affairs. The Secretary declined the request by PPNE of a single EIR. The Secretary determined that PPNE must prepare a Draft EIR (DEIR) in accordance with the scope outlined in the Certificate. Following the submission and subsequent review of the DEIR, PPNE is required to prepare and submit a Final EIR (FEIR). A copy of the Secretaries Certificate is included as Attachment 1.
Draft Record of Decision	After a review and comment period, on May 15, 2019, a Final Record of Decision (FROD) was issued by the Secretary of the Executive Office of Energy and Environmental Affairs. The FROD granted the Phase 1 waiver request which allows the first phase of the project to proceed prior to the completion of the DEIR and the FEIR. A copy of the FROD is included in Attachment 2.
DEIR Format	The DEIR has been developed in accordance with the format provided in the EENF Certificate. A separate section in the DEIR has been provided for each of the categories identified in the EENF Certificate.

Project Description and Permitting

Existing Site Conditions

Parallel Products of New England (PPNE) is located at 969 Shawmut Avenue, New Bedford. Affiliates of PPNE, SMRE 100 LLC and SMRE SUBLOT 20 LLC own the properties located at 100 Duchaine Boulevard, New Bedford, MA. PPNE is currently in the process of moving its operations from Shawmut Avenue to 100 Duchaine Boulevard, New Bedford.

The proposed project is to be located at 100 Duchaine Boulevard, New Bedford. The site is an approximate 71 acre parcel identified by the New Bedford Tax Assessor as Lot 5 on Assessor's Plat 134. The site is zoned Industrial C. A locus plan of the site is included as Figure 1. The site is located within the New Bedford Business Park. The site was previously owned by Multilayer Coating Technologies and before that by Polaroid Corporation. The site was used by both previous owners to manufacture film. The site as developed by Polaroid included access roads, parking areas, stormwater management features and numerous buildings. An existing conditions plan of the site is included in Attachment 8 [Project Plans]. PPNE intends to utilize the existing infrastructure to the fullest extent possible in developing the proposed project.

Existing site buildings occupy 92,220 square feet of the site. A 27,500 square foot glass handling building is currently under construction and the proposed project will add 150,175 square feet of buildings. Canopy structures built to support solar panels will occupy an additional 75,525 square feet. The site currently has 16 acres of impervious surfaces (22.9% lot coverage) consisting of access roads, buildings, parking lots, drive ways and concrete slabs on grade in areas where buildings were previously demolished. Buildings planned for the proposed project are being constructed in areas of the site that are currently impervious when possible. Project construction will partially remove an existing concrete slab on grade inorder to construct the rail sidetrack reducing the impervious surfaces on site. The net impact of the proposed project is an increase in impervious surfaces of 2 acres. This will increase the impervious surface lot coverage to 25.8%.

Continued on next page

Project Description and Permitting, Continued

Existing Site Conditions, continued

Since acquiring the site on March 10, 2017, PPNE has removed unused buildings and other unused site infrastructure remaining from the site's previous owners. Prior to submitting the EENF for the proposed project, PPNE installed 1.5 MW of roof top and canopy solar power on the site. The existing project site is shown on the Existing Conditions Plan included within Attachment 8.

Based on the historical use of the subject property, a Phase I Environmental Site Assessment and a Limited Subsurface Investigation (LSI) was conducted at the subject site. These investigations concluded that "Based on the results of this LSI, SAGE has not identified the presence of subsurface impacts at the site that would require reporting to MassDEP. As such, SAGE is of the opinion that further actions are not warranted at this time."

Project development will be done in two phases as described in the following sections of this document.

Proposed Phase 1 Project

Phase 1 development consists of building a glass Beneficiation operation at the 100 Duchaine Boulevard site and the construction of approximately 1.9 MW of solar power energy generation. The Phase 1 operation will recycle glass containers that are collected through the Massachusetts bottle deposit system. Phase 1 construction will include the construction of a rail sidetrack onto the site to service the glass processing operation. Bottles collected will be processed such that the glass can be reused to produce new glass containers and other glass products. Processing at the site will include crushing, sizing and separation of the glass by color. The glass cullet produced will subsequently be sold to glass manufacturers for the production of new products including glass containers. The closure of the Ardagh Group glass bottle plant in Milford, MA and the subsequent closing of the Strategic materials Beneficiating plant in Franklin Massachusetts in 2018 has resulted in glass being disposed of in landfills, stored in various location's and shipped to other glass bottle recycling facilities throughout the country.

Continued on next page

Project Description and Permitting, Continued

Proposed Project Phase 1, continued

As a result of the limited options for recycling glass in Massachusetts and the greater distances needed to send processed glass to manufacturers, PPNE will construct a rail sidetrack from the existing rail line adjacent to the 100 Duchaine Boulevard site. This will allow shipment of recycled glass by rail that will significantly increase transportation efficiencies and reduce greenhouse gas emissions.

Phase 1 will include construction of 1.9 MW of solar power. Solar panels will be constructed on a canopy system that will be constructed over part of the proposed rail sidetrack, over existing parking areas and on the building for glass storage. The proposed 1.9 MW solar power installation will be in addition to the existing 1.5 MW solar power already constructed and operational on site.

The Phase 1 proposed project was defined in the EENF and PPNE requested a Phase 1 waiver as part of the EENF submittal. As detailed in the EENF, the proposed Phase 1 project does not trigger any MEPA review thresholds. The Phase 1 activity was included in the EENF as required by 301 CMR 11.01 (c) Segmentation. PPNE requested a Phase 1 Waiver to allow the construction of the Phase 1 infrastructure to begin prior to the acceptance of the Final EIR required for Phase 2 construction.

The Secretary granted a Phase 1 Waiver in a Final Record of Decision issued on May 15, 2019 (Attachment 2). The Phase 1 Waiver allows Phase 1 of the project to proceed prior to the acceptance of the Environmental Impact Report.

Permitting, engineering and construction activities on the Phase 1 project have progressed since the issue of the Final Record of Decision by the Secretary. As the design has developed there have been several changes to the conceptual design presented in the EENF. The project design plans are included within Attachment 8.

In response to concerns raised by the public in the EENF process, PPNE has decided to enclose the area where glass is stored in bunkers prior to processing. The EENF described this area as being under the canopy solar installation but not enclosed. PPNE has decided to construct a building over this area to control noise emissions associated with the glass processing/handling.

Continued on next page

Project Description and Permitting, Continued

Proposed Project Phase1, continued

The solar canopy which was previously proposed to be over the glass operation has been relocated to the area above the proposed rail lines to the west of the location depicted in the plans presented in the EENF. This solar canopy is now adjacent to the location of the proposed solid waste tipping/handling building.

Details of the rail crossing over the drainage swale and rail crossing within the wetlands have been further developed/refined since the submittal of the EENF. Design details of these project features are included in a Notice of Intent (NOI) that was filed with the New Bedford Conservation Commission on July 2, 2019. The NOI is included in this document as Attachment 6. It should be noted that the construction of the glass processing building is currently underway.

Proposed Project Phase 2

Phase 2 of the project includes the construction of a municipal solid waste (MSW) and construction and demolition waste (C&D) processing/handling facility and a biosolids processing facility. Currently, significant quantities of MSW and biosolids are being trucked out of state for treatment and disposal. PPNE will construct a facility to collect and process this material in Massachusetts and then ship the residual waste out of state by rail for disposal. The infrastructure proposed will significantly increase transportation efficiencies and reduce greenhouse gas emissions.

MSW processing and transfer

Phase 2 construction will include the construction of a MSW processing/handling facility. Phase 2 is expected to be constructed approximately two years after the Phase 1 construction. The project is being constructed in two phases due the difference in the expected duration of obtaining the required permits. The Phase 2 construction is depicted on plans included in Attachment 8.

A new waste handling building will be constructed. The building is expected to be approximately 50,000 square feet in gross floor area and will connect with the existing site building. The tipping building will be designed to allow waste delivery trucks to drive into the building to dump/tip their loads of waste material for subsequent processing/handling/transfer. After tipping, front end loaders will stage the material for subsequent processing/handling. If the MSW is delivered baled, an excavator with a grapple will unload the delivery and truck and place the bale on the tipping building floor in the rail car loading area. These bales will then be placed in rail cars for off-site shipment/disposal.

Continued on next page

Project Description and Permitting, Continued

MSW processing and transfer, continued

The existing building on site adjacent to the proposed tipping building will be used for the processing of MSW to extract recyclable commodities prior to disposal. The existing building will be modified as required to house the MSW processing equipment used to extract various recyclable material from MSW. Specifications for the MSW processing equipment are included in Attachment 3. This existing building will also include a baler to bale and shrink wrap (or bag) MSW after processing. Baled and shrink wrapped (or bagged) MSW and Category 2 and 3 C&D will be loaded in rail cars for shipment to disposal sites.

The facility will accept both baled MSW and MSW delivered loose in transfer trailers and packer trucks. Baled MSW will be delivered to the facility from other transfer stations that have baled MSW to meet existing railroad requirements for shipping MSW in rail cars. Baled MSW accepted at the facility will be loaded into rail cars for shipment to out-of-state disposal sites such as a landfill or waste to energy facility. The facility will also accept C&D defined as Category 2 (C&D processing residuals) and Category 3 waste (bulky waste). These materials are generally material that have little or no recyclable value.

In addition to baled MSW, the facility will also accept loose MSW delivered in transfer trailers and packer trucks. Transfer trailers will consist of 100 cy live floor trailers. The average 100 cy transfer trailer capacity is 28 tons. Transfer trailers will originate primarily at transfer stations. Packer trucks such as the trucks that provide curbside pickup of MSW will also deliver MSW to the facility. The average capacity of a packer/smaller trucks is 9 tons.

Transfer trailers arriving at the facility will be weighed on a truck scale at the facility and then the truck will back into the tipping building and will discharge the waste onto the interior tipping floor. It is expected that Category 2 and 3 C&D waste will be delivered in 100 cy live floor trailers.

Continued on next page

Project Description and Permitting, Continued

MSW processing and transfer, continued

Non baled MSW received by the facility will be processed to extract recyclable materials. Processing will consist of a processing line that includes both mechanized separation equipment and a manual picking line. Materials extracted will include metals, cardboard, aluminum, wood, glass, PET, paper and plastic based on market conditions. The facility will include two processing lines with each line capable of processing 40 tons per hour of MSW. The processing lines will operate two to three shifts per day depending on the inbound volume accepted. The processing line flow diagram and equipment specifications are included in Attachment 3. A plan of the processing equipment is included within Attachment 8. The processing line is expected to extract 20%, or more, recyclables from the MSW. After the recycled material has been extracted, the remaining waste will be baled and shrink wrapped for transport to a disposal facility. The primary means of transport for disposal will be by rail. Trucks can also be used to transport waste, if necessary. Recyclable materials extracted from MSW will be sent to recycling markets by either rail or truck depending upon market conditions and outlet locations.

The facility may also accept C&D residual waste and bulky waste. This waste is classified as Category 2 and Category 3 C&D waste by MassDEP. Category 2 waste is C&D waste that has been processed by a C&D processing facility and Category 3 is bulky waste that has little or no recyclable value. The processing facility will have removed waste ban material and other recyclable material from the C&D material as deemed appropriate. The Category 2 or Category 3 material accepted at the facility will be used as cover for baled MSW in the rail cars. It is expected that Category 2 and Category 3 C&D waste will be delivered to the site in live floor trailers. This material will be received within the proposed tipping building.

At the present time, CSX will only allow shipment of MSW in intermodal containers. These containers are typically loaded on flat bed rail cars. PPNE expects that CSX will revise the requirements for MSW shipment to allow baled and shrink wrapped or baled and bagged MSW to be transported in gondola rail cars. As such, PPNE is proposing the installation of a baler. If there is no change in the CSX requirements, PPNE may opt to not install a baler and will load loose MSW in intermodal containers for off-site transport and subsequent disposal.

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Project Description and Permitting, Continued

MSW processing and transfer, continued

Each rail car can carry up to 90 tons of solid waste for disposal. It is expected that at full capacity the facility will produce 1,300 tons per day of residual waste that will be sent for disposal. In addition, up to 50 tons per day of dried biosolids will be produced and sent for disposal. This will be sent for disposal in, on average, 15 rail cars each day. The rail sidetrack will also be used for transportation of processed glass to recycling markets. Up to 250 tons per day of glass will be shipped by rail from the site.

The rail sidetrack will be modified in Phase 2 to allow the storage of more rail cars than can be accommodated by the sidetrack construction in Phase 1. The plans included in Attachment 8 show the extent of the rail sidetrack construction for both Phase 1 and Phase 2. The plans in Attachment 9 show how the facility can logistically receive 18 empty rail cars and ship 18 rail cars outbound per day.

The Facility will be developed using state-of-the-art Best Management Practices (BMPs) to minimize potential impacts to the Site and surrounding environment. A partial list of BMPs that will be incorporated into the Facility are as follows:

- All tipping, handling, and loading will be performed within a fully enclosed processing and handling building.
- The building floor is designed as impervious concrete that will prevent any potential contamination of groundwater, stormwater or the surrounding environment. Any liquids released from the waste will be collected in a floor drain system. The liquid collected in this system will be gravity fed to a wastewater holding tank, which will be periodically trucked off site for disposal at a wastewater treatment plant. Sewer is available on-site and should this discharge be allowed to enter the New Bedford Sanitary Sewer, permits will be sought through the City.
- Use of a fine atomized misting system within the MSW Transfer Building and processing building will effectively control fugitive dust and odor in the building.
- Regular daily cleanup and sweeping will occur on the external paved surfaces.
- Environmental Monitoring and Operation and Maintenance Plans will be developed and staff will be trained on these operational procedures.

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Project Description and Permitting, Continued

Biosolids processing

In Phase 2, the biosolids drying facility will be constructed. The facility will accept and process up to a maximum of 50 dry tons per day of biosolids. The biosolids will originate at various municipal wastewater treatment plants. The biosolids will be delivered to the facility by truck. The biosolids processing will be performed within a new building proposed to be constructed on site. The building is expected to be approximately 30,000 sf. The proposed biosolids processing facility is depicted on the proposed conditions plans included in Attachment 8.

The facility will include the following five major processes:

- Liquid/thickened Sludge Receiving and Storage System
- Dewatering System
- Dewatered Cake Receiving and Storage System
- Cake Mixing System
- Drying System

Attachment 4 includes a Process Flow and Preliminary Basis of Design and Attachment 5 includes Biosolids Preliminary Equipment Sizing.

The facility will accept dewatered biosolids cake with a solids content of between 15% and 30%. The facility will also accept thickened wet slurry biosolids with a solids content of between 5% and 10%. Wet slurry biosolids received by the facility will be stored in tanks on site prior to processing. Delivery tanker trucks will connect to piping outside of the processing building in the area labeled truck bay. Once connected to the piping, the tanker trucks will discharge the liquid sludge to the facility storage tanks.

Biosolids cake will be delivered in covered dump trucks. The delivery trucks will back in to the biosolids processing building and then dump loads in the receiving area of the facility.

Continued on next page

Project Description and Permitting, Continued

Biosolids processing, continued

Liquid biosolids storage tanks will be sized to contain three days of deliveries. Attachment 4 includes a process flow diagram and mass balance for the proposed facility when operated at 45 dry tons per day. The maximum daily processing capability will be 50 dry tons per day. The ratio of thickened wet slurry biosolids to dewatered cake will vary. The process flow diagram identifies the expected ratio of tonnages of wet slurry biosolids to tonnages of dewatered cake biosolids. The actual breakdown of wet slurry and dewatered cake will vary depending on the material being produced by wastewater treatment plants that elect to utilize the proposed facility. PPNE may elect to construct a facility to process less than 50 dry tons per day. This determination will be based on market conditions at the time of facility construction.

Biosolids delivered as a thickened wet slurry will be dewatered by centrifuge or screw press to produce biosolids cake with an expected solids content of 30%. The dewatering system will be designed to process 20 dry tons per day of wet slurry. Wastewater extracted in the dewatering process will be directed to the New Bedford sewer system. The expected discharge to the New Bedford sewer system from the dewatering process is expected to be 52,000 gallons per day. The dewatering system will be designed to have a solids capture rate of 95%. The dewatered slurry biosolids cake and the biosolids cake delivered to the facility will then be blended together. The blending area has capacity/storage for approximately eight hours of production.

The blended cake will then be directed to a thermal dryer that utilizes a natural gas burner. The biosolids will be dried to approximately 90% solids. Moisture evaporated from the biosolids during the drying process will be condensed with the condensate water and discharged to the New Bedford sewer system. It is expected that the daily discharge of condensate to the sewer system will be 30,000 gallons per day. Drying will reduce the weight and volume of the biosolids. The dried biosolids will be sent for disposal in rail cars or beneficially used for purposes such as alternative daily landfill cover if the required Beneficial Use Determination permits are obtained. The facility will have the capability of storing seven days of dried sludge production.

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Project Description and Permitting, Continued

Biosolids processing, continued

The facility will include four dryers configured in a parallel configuration. Three dryers will normally be in use with the fourth as a standby in the event one dryer becomes unavailable. If all dryers become unavailable, biosolids will be stored on site in the liquid storage tanks and cake will be stored in the receiving area of the processing building. Should the biosolids storage areas become filled to capacity, the facility will stop accepting biosolids.

Belt dryers are assumed for preliminary design and will be utilized to produce dried biosolids. The dryer and facilities to house drying process equipment will be designed with built-in safety features to address potential fire risks associated with the following:

- Potential for fire within the dryer during drying operation
- Potential for fire resulting from dust generated from the dried material
- Potential for fire associated with storage of dried biosolids in silos

The National Fire Protection Association (NFPA) 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities, provides guidance for fire protection and electrical classification for wastewater facilities. In accordance with NFPA 820, Table 6.2.2(b), the drying facilities will be equipped with the following:

- Fire protection measures including hydrant protection, fire alarm system, and a fire suppression system (automatic sprinkler, water spray, foam, gaseous, or dry chemical).
- Fire protection measures including hydrant protection and fire alarm system for dried biosolids storage areas.

In addition to the NFPA 820 guidelines for drying facilities summarized above, the drying equipment will be equipped with inherent safety protection measures including heater controls and feedback loops, drying chamber temperature controls and feedback loops, process air temperature controls and feedback loops, and a fire suppression system. These systems and controls provide protection against fire hazard risks due to high temperature and dust:

- The dryer belt conveyor will be designed to minimize pass-through of dust in the process air stream. Finer dust particles that pass through the belt are either carried to the condenser's filter media and removed, or remain in the chamber where wash-out system will routinely clean the system with spray nozzles.

Continued on next page

Project Description and Permitting, Continued

Biosolids processing, continued

- Various sections of the drying equipment that convey dried biosolids and recirculating dryer gas for drying will be equipped with thermocouples. Chamber temperature will be monitored continuously, and a PLC control system will utilize this data to regulate the amount of heat added to the system. For example, a high temperature may indicate that insufficient product is being diverted through the dryer, and the heat supplied may be reduced.
- The dryer will be equipped with a quench spray system. If triggered (at a high temperature set point), the quench system will activate and saturate the dryer as an immediate safety measure.
- The dryer exhaust gas will be recirculated and reused to ensure an oxygen-deficient atmosphere in the dryer.

The dried biosolids product will be cooled prior to storage to reduce the risk of auto-oxidation. Fire hazards during dried biosolids storage in silos will be addressed using inert gas (nitrogen) blanketing systems to maintain an oxygen deficient environment in the silo. In addition, the silo will be equipped with thermal sensors or carbon monoxide sensors to detect any potential rise in temperature.

The Facility will be developed using state-of-the-art Best Management Practices (BMPs) to minimize potential impacts to the Site and surrounding environment. A partial list of BMPs that will be incorporated into the Facility are as follows:

- All handling and processing of biosolids will be within an enclosed building
- Foul air associated with the sludge and cake storage, transfer, dewatering and drying processes will be collected under negative pressure and transferred to a biofilter for odor control. Foul air will be collected from the following plant areas:
    1. Biosolids Receiving Tanks
    2. Cake Receiving Bins
    3. Cake Screw Conveyors
    4. Dewatering Screw Conveyors
    5. Cake Mixing Bin
    6. Dewatered Cake Belt Conveyor
    7. Dried Biosolids Storage Silo
    8. Exhaust from Thermal Dryers
    9. Filtrate/Condensate Wet Well Cake

Continued on next page

Project Description and Permitting, Continued

Biosolids processing, continued

- The low odor, high volume process room air will be provided with an ionization system for odor control. Foul air from the following areas will be treated with the ionization odor control system:
    1. Cake Receiving Room
    2. Dewatering Process Room
    3. Cake Mixing Room
    4. Dryer Process Room

Project Alternatives

The proposed project is being developed to fill a need for in the Commonwealth for processing and economical transfer to out of state disposal sites. Massachusetts solid waste disposal is currently impacted by the closures of in state landfills and the fact that no new landfills are being constructed. The Fall River landfill has recently closed, the Bourne landfill has become an ash landfill for ash generated at SEMASS and Crapo Hill Landfill is largely limited to member towns. The Taunton Landfill will close in 2021, the Southbridge Landfill has closed at the end of 2018, the Chicopee Landfill is closing in 2019 and the Carver Landfill is closing in 2021.

The Massachusetts Solid Waste Master Plan reports that "Massachusetts landfill capacity is expected to decline from just under two million tons in 2010 to about 600,000 tons in 2020 as current landfills close and are not replaced. Without increased source reduction, recycling, composting, or in-state disposal capacity, net export could rise from 1.1 million tons in 2009 to nearly 2.0 million tons per year, or about 18 percent of the projected annual solid waste generation, in 2020.

The situation is similar for biosolids in that most of the biosolids generated in Massachusetts are transported out of state for processing and disposal.

The proposed project is being developed to fill the need for economical out of state disposal of MSW and biosolids. Due to the distances involved, transportation by rail is the only viable option and an option that is better suited from a carbon footprint perspective.

An evaluation of alternative sites for the project was performed. There are limited alternatives for locating a truck to rail solid waste handling facility in Southeastern Massachusetts that would be considered adequate from both a user and regulatory perspective. A necessary factor is that any suitable site must be located adjacent to an existing active rail line. Rail service to the selected site area runs from Taunton to New Bedford. Suitable sites are limited to the lands abutting these rail lines.

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Project Description and Permitting, Continued

Project Alternatives, continued

A suitable site for the proposed use must be zoned industrial with a solid waste handling as an acceptable use. Additionally, a suitable site must comply with the Massachusetts solid waste siting regulations at 310 CMR 16.00. This regulation stipulates restrictive siting criteria that must be met in order to operate a solid waste handling facility that includes:

1. The waste handling area of a transfer station cannot be located within a Zone II of a public water supply, within an Interim Wellhead Protection Area of a public water supply, within a Zone I of a public water supply or within 250 feet of an existing well.
2. The waste handling area of the facility cannot be within 500 feet of an occupied residential dwelling.
3. The waste handling area of a facility cannot be within a Riverfront Area
4. A facility cannot be located on land classified as Prime, Unique or of State and Local Importance
5. A facility cannot be located where traffic impacts will constitute a danger to the public health, safety or the environment
6. A facility cannot be located where siting would have an adverse impact on Endangered, Threatened or Special Concern species, on Ecologically Significant Natural Communities or on any state Wildlife Management Area
7. A facility cannot be located within an Area of Critical Environmental Concern or would fail to protect the outstanding resources of an ACEC
8. A facility cannot be located where the facility would have an adverse impact on state forests or municipal parklands.
9. A facility cannot be located where operation of the facility would result in nuisance conditions which would constitute a danger to the public health, safety or the environment considering noise, litter, vermin, odors, bird hazards to air traffic and other nuisance problems.

Continued on next page

Project Description and Permitting, Continued

Project Alternatives, continued

Three sites have been evaluated as potential sites for use as a solid waste handling facility. These sites are located at 100 Duchaine Boulevard, New Bedford, 1080 Shawmut Avenue, New Bedford and 781 Church Street, New Bedford. All three sites are located adjacent to the rail line. An evaluation of each site follows. The potential to purchase the sites other than the selected site has not been investigated.

Site 1-100 Duchaine Boulevard, New Bedford:

This is the site that was selected for development. The site is approximately 71 acres zoned Industrial C with assessor's parcel ID 133-15. The site meets all of the siting criteria established by the MassDEP for siting a solid waste facility. The site has the space and buffer space necessary to meet the solid waste handling facility permitting requirements and has the space necessary to construct a rail sidetrack of sufficient length to provide the rail service required.

The site is located in the Industrial Park and traffic to the site has good access via Route 140. This is the selected site.

Site 2-1080 Shawmut Avenue, New Bedford:

This is a 3.6 acre site zoned Industrial B with assessor's parcel ID 123-20. A cursory review of this site indicates that the site meets all of the siting criteria established by MassDEP for siting a solid waste facility. The site abuts the existing rail line. It is expected that the project, when operating at full capacity, would fill 15 rail cars per day. Preliminary layouts for the facility at this location indicate that the site size is insufficient to include a 60,000 sf building and a rail sidetrack sufficient to fill 15 rail cars per day. As such, this site is deemed insufficient in size for the project proposed by Parallel Products.

Site 3-781 Church Street, New Bedford:

This site is a 21.86 acre site zoned Industrial C with assessor's parcel ID 129-41. The site abuts the existing rail line. A cursory review of this site indicates that the site meets all of the siting criteria established by MassDEP for siting a solid waste facility. The project is somewhat constrained by wetlands but sufficient land is available for an enclosed handling building and a sidetrack capable of handling and filling 15 rail cars per day.

Continued on next page

Project Description and Permitting, Continued

Project Alternatives, continued

Access to the site requires truck traffic to pass numerous residential homes and the New Bedford Vocational Technical High School. This traffic situation is likely to be considered a nuisance and or public safety condition and as such would not meet the MassDEP criterial for a solid waste facility. As such, this site was not considered a viable site for the proposed project.

The following rationale was taken into consideration while selecting the subject site.

1. The project is being constructed on a previously disturbed and largely abandoned site in an industrial zone.
2. Project is maximizing the use of existing infrastructure, including access roads and buildings.
3. The project is filling a need for recycling of deposit system glass bottles.
4. The project is providing a solution for the lack of landfill disposal options within the state by providing a rail alternative that will provide access to out of state disposal options.
5. Reduction in greenhouse gas emissions based on the use of rail for out bound waste shipment
6. Compliance with Massachusetts Stormwater Management Policy
7. Compliance with Solid Waste Management Regulations including waste ban regulations
8. Provides an in-state solution for biosolids treatment and disposal.
9. Potential nuisance conditions (odor, noise, traffic, emissions) have been evaluated in detail and mitigation measures have been incorporated, as necessary.
10. The site was of sufficient size to allow the development of solar power to offset the proposed project's greenhouse gas emissions.
11. The facility location allowed for development with limited visibility from residential areas.

Continued on next page

Project Description and Permitting, Continued

Planning Consistency

The project is designed to utilize existing site infrastructure to the extent possible. This includes using existing access roads, existing parking areas, existing stormwater management features and existing water and sewer connections. Proposed project elements have been located in areas that are currently impervious, where possible. A site plan depicting existing project features and areas of land alteration is included within Attachment 8.

The proposed project meets the goals of the Massachusetts Solid Waste Master Plan in several ways. The Master Plan states that Massachusetts landfill capacity is declining as landfills are closed and are not replaced. Waste disposal in Massachusetts landfills was approximately two million tons in 2010. This is expected to decrease to approximately 600,000 tons in 2020. The Master Plan identifies increasing export of waste to disposal facilities in other states as a means of making up for the loss of landfill capacity. Construction of a rail component for the MSW/C&D and biosolids processing make out of state disposal a viable option, especially for a state that will rely significantly on out of state exportation as a means to satisfy the Commonwealth's disposal needs.

One of the goals of the Master Plan is to reduce annual solid waste disposal by 30% by the year 2020. It is expected that this reduction will happen through a combination of source reduction, material reuse, recycling, composting and using source separated materials as fuels or other beneficial uses. Construction of a state of the art MSW processing facility will increase recycling by allowing the removal of recyclable material from MSW that would otherwise be sent out for disposal. The biosolids processing facility will also reduce waste disposal by removing water from the biosolids prior to disposal, thus extending landfill capacity or having the material be "beneficially" reused.

The project complies with the New Bedford Master Plan in at least two areas. One of the goals and objectives in the transportation section of the Master Plan is to enhance the city's freight service by utilization of rail infrastructure. The addition of a rail sidetrack off of the existing main rail line allows this rail line to be used for local freight loading and unloading.

Continued on next page

Project Description and Permitting, Continued

Planning Consistency, continued

The New Bedford Master Plan encourages development of business park sites to increase and stabilize the commercial tax base and create jobs.

The Southeast Regional Planning and Economic Development District issued the Regional Land Use: Roles, Policies and Plan Outline for Southeastern Massachusetts in June 1996. New Bedford is within the area included in the report. The document includes a number of policies related to development in the study area. The policy that relates to the proposed project states that "SRPEDD prefers development in areas supported by underutilized infrastructure including land and buildings, transportation facilities, water and sewer and drainage facilities, etc (For example, redevelopment of an existing site for an industrial use is preferred land use to conversion of farmland for industrial use.)" As described in this DEIR, the proposed project is located at the former Polaroid Manufacturing facility and the proposed project is utilizing the existing infrastructure to the maximum extent.

Permitting Requirements

The project will require state and local permits and approvals for construction and operation of the proposed facility. Phase 1 of the proposed project will require an amended site plan approval (or new approval) from the New Bedford Planning Board and will require an Order of Conditions from the New Bedford Conservation Commission.

Phase 2 of the project will require the following permits and approvals:

- Draft Environmental Impact Report - MEPA
- Final Environmental Impact Report - MEPA
- Site Suitability Report Approval - MassDEP
- Site Assignment – New Bedford Board of Health
- Site Plan Approval – New Bedford Planning Board
- Order of Conditions – New Bedford Conservation Commission
- Authorization to Construct – MassDEP
- Authorization to Operate – MassDEP

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Project Description and Permitting, Continued

Permitting Requirement, continued

PPNE and GSE met with the MassDEP on May 14, 2019 to review MassDEP comments on the Draft Site Suitability Application included in an attachment to the EENF. As a result of this meeting, the Water Resources Plan and Land Use Plan that were included in the EENF have been revised. The revised plans are included in the DEIR presented as Attachments 11 and 12 respectively. The Traffic Study that was included in the EENF has been revised to incorporate comments submitted by MassDEP and is presented at Attachment 7 within the DEIR.

A Notice of Intent has been filed on July 2, 1019 with the New Bedford Conservation Commission to address wetlands impacts associated with project construction. A copy of the Notice of Intent application is presented within Attachment 6.

Solid Waste

Introduction

Both the MSW and C&D processing/handling/transfer and the biosolids processing are considered solid waste activities by MassDEP and both of these facilities will require solid waste permits. Site assignment from the New Bedford Board of Health and a solid waste permit from MassDEP will be required for both operations.

The MSW and C&D processing/handling and transfer facility triggers MEPA review as the solid waste threshold at 301 CMR 11.03 (9)(a) is exceeded. The biosolids facility triggers MEPA review as the wastewater threshold at 301 CMR 11.03 (5)(b)(5) is exceeded. A mandatory ENF and EIR is required for both the solid waste and wastewater elements of the proposed project.

Site Suitability Criteria

A Site Suitability Application [BWP SW-01] will be submitted to MassDEP following the acceptance of the FEIR by the Secretary of the EOEEA. A draft of the narrative to be included in the Site Suitability Application was included in the EENF. MassDEP provided comments on the draft site suitability narrative in a letter dated March 22, 2019.

As described above, there are several permitting steps required following the MEPA review before a site can be used for solid waste activities. The first step following MEPA review is the submission of a Site Suitability Application to MassDEP. For a site to be suitable, the site must meet the siting criteria found at 310 CMR 16.00. Both the solid waste handling facility and the biosolids processing facility must meet the siting requirements of 310 CMR 16.00.

The site suitability requirements for a solid waste handling facility at 310 CMR 16.00 include twenty siting criteria to determine site suitability. These twenty criteria are summarized below along with a description of how the proposed project complies with these criteria:

1. **Zone I of a Public Water Supply:** No site shall be suitable or be assigned as a solid waste facility where the waste handling area would be within the Zone I of a public water supply

   The Site is not located within or in close proximity to Zone I of a public water supply. The nearest Public Water Supply Wells are located approximately 2 miles east of the Site off of Peckham Road.

Continued on next page

Solid Waste, Continued

Site Suitability Criteria, continued

2. **IWPA and Zone II of a Public Water Supply:** No site shall be suitable or be assigned as a solid waste facility where the waste handling area would be within an Interim Wellhead Protection Area (IWPA) or a Zone II of an existing public water supply

   The Site is not located within an IWPA or Zone II. The nearest Zone II is approximately 2.5 miles east of the proposed facility. The nearest IWPA is approximately 2 miles east of the proposed facility.

3. **Zone A of a Surface Drinking Water Supply:** No site shall be suitable or be assigned as a solid waste facility where the waste handling area would be within the Zone A of a surface drinking water supply

   The nearest Zone A is located in the corridor for Route 140. This is approximately 1,250 feet from the PPNE property line. The PPNE site is not within a Zone A of a surface water supply.

4. **Private Water Supply Well:** No site shall be suitable or be assigned as a solid waste facility where the waste handling area would be within 500 feet upgradient, and where not upgradient, within 250 feet of an existing or potential private water supply well.

   All waste handling areas are more than 500 feet from residential parcels that could contain a private water supply well.

5. **Setback Distance:** The waste handling area of a facility cannot be within 500 feet of an occupied dwelling, prison, health care facility, elementary school, middle school or high school, children's preschool, licensed day care center, or senior center or youth center.

   No residential dwellings exist within 500 feet of the proposed waste handling area of the proposed project. The waste handling area of the site has been limited to areas that maintain a minimum setback distance of 500 feet from residential dwellings along Phillips Road. There are no health care facilities, schools, day care centers or senior or youth centers within one half mile of the subject site.

Continued on next page

Solid Waste, Continued

Site Suitability Criteria, continued

6. **Riverfront:** The waste handling area of the facility cannot be within a riverfront area

   All waste handling areas of the project are outside of the riverfront areas of the site. The riverfront areas on the site are identified on the Water Resources Plan included as Attachment 11.

7. **Distance to Groundwater:** The waste handling area of the facility cannot be within two feet of maximum high groundwater

   Groundwater levels have been and continue to be monitored periodically on site. Groundwater level measurements have been adjusted using the "Frimpter" method to determine the maximum expected groundwater elevation. The facility has been designed such that all waste handling will be a minimum of 2 feet separation above the maximum groundwater elevation.

8. **Agricultural Lands:** The facility cannot be within 100 feet of agricultural lands that are classified by the USDA as Prime, Unique or of State and Local Importance.

   The site contains areas of soils classified as prime farmlands. The areas of prime farmland are mapped on the Land Use Plan, included as Attachment 12. All waste handling areas have been located to be a minimum of 100 feet from the areas of prime farmland.

9. **Traffic and Access to the Site:** No site shall be determined to be suitable or be assigned as a solid waste management where traffic impacts from the facility operation would constitute a danger to public health, safety or the environment taking into consideration the following factors:
   - Traffic congestion
   - Pedestrian and vehicular safety
   - Road configurations
   - Alternate routes
   - Vehicle Emissions

Continued on next page

Solid Waste, Continued

Site Suitability Criteria, continued

A traffic impact study was prepared to assess the traffic impacts of project development. The traffic impact study is summarized in this document in the Transportation/Traffic section that follows. The full Traffic Impact Study is included in Attachment 7.

The Traffic Impact Study concludes that the proposed project is not expected to have a significant impact on traffic operations throughout the project area.

Vehicle Emissions are evaluated in the Air Quality section that follows.

10. **Wildlife and Wildlife Habitat:** No site shall be determined to be suitable or be assigned as a solid waste management facility where such siting would:

    - have an adverse impact on Endangered, Threatened or Special Concern species listed by the Natural Heritage and Endangered Species Program in its data base
    - have an adverse impact on an Ecologically Significant Natural Community as documented by the Natural Heritage and Endangered Species Program in its data base
    - have an adverse impact of the wildlife of any state Wildlife Management Area

    GSE reviewed the Division of Fisheries and Wildlife website for information regarding Wildlife Management Areas. No Wildlife Management Areas are located within a ½ mile of the Site boundary.

11. **Area of Critical Environmental Concern:** No site shall be determined to be suitable or be assigned as a solid waste facility where such siting would be located within an Area of Critical Environmental Concern (ACEC) or would fail to protect the outstanding resources of an ACEC if the solid waste facility is to be located outside, but adjacent to the ACEC.

    Based on GSE's review of the MassGIS ACEC data layer, no ACECs are located adjacent to the proposed Site.

Solid Waste, Continued

Site Suitability Criteria, continued

12. **Protection of Open Space:** No site shall be determined to be suitable or be assigned as a solid waste management facility where such siting would have an adverse impact on the physical environment of, or on the use and enjoyment of:
    - State Parks
    - State or municipal parklands or conservation land
    - MDC reservations
    - Lands with conservation, preservation, agricultural, or watershed protection restrictions
    - Conservation land owned by private non profit land conservation organizations and open to the public

    GSE reviewed the Department of Conservation and Recreation website for information regarding State forests. The nearest State Forest is the Freetown-Fall River State Forest, which is more than 5 miles from the site.

    The site borders the Acushnet Cedar Swamp State Reservation. The site is separated from the Acushnet Cedar Swamp State Reservation by the rail line at the property's westerly property line. It should be noted that all waste handling will be done within enclosed buildings with impervious concrete floors. The building nearest the Acushnet Cedar Swamp will be over 800 feet away. The primary purpose of the State Reservation is recreation and conservation. The area is shown on the Land Use Plan in Insert 3. Pine Hill Park is located 1,250 feet to the southeast of the site property line. The primary purpose is recreation. The Greater New Bedford Industrial Foundation owns conservation land 1,600 feet to the northwest of the site's property line. The park is shown on the Land Use Plan in Insert 3. The City of New Bedford owns a small parcel of vacant land just east of Route 140. This land is labeled on Insert 3 as Clough Cr. This land is approximately 1,800 feet east of the site property line.

    The MDC is now the Department of Conservation and Recreation (DCR). No DCR parks/reservations were identified within 0.5 miles of the proposed Facility.

Continued on next page

Solid Waste, Continued

Site Suitability Criteria, continued

GSE did not identify any lands with conservation, preservation, agricultural, or watershed protection restrictions approved by the secretary of EOEA within a ½ mile of the Site.

GSE did not identify any privately owned public access conservation lands in close proximity to the subject Site. Based on the proposed location, the subject Site will not have adverse impacts on the physical environment of local conservation lands.

13. **Potential Air Quality Impacts:** No site shall be determined to be suitable or be assigned as a solid waste management facility where the anticipated emissions from the facility would not meet required state and federal air quality standards or criteria that would otherwise constitute a danger to the public health, safety or the environment.

    Air quality impacts are addressed in the section of the DEIR titled Air Impacts and within the full Air and Odor Report presented as Attachment 14. The report concludes that

    - The National Ambient Air Quality Standards (NAAQS) will not be exceeded.

    - The Ambient Air Quality Standards for the Commonwealth of Massachusetts (MAAQS) will not be exceeded. Per 310 CMR 6.00, the MAAQS are identical to the NAAQS.

Continued on next page

Solid Waste, Continued

Site Suitability Criteria, continued

14. **Potential for Creation of Nuisances:** No site shall be determined to be suitable or be assigned as a solid waste management facility where the establishment or operation of the facility would result in nuisance conditions which would constitute a danger to the public health, safety or the environment.

    Potential nuisance conditions include:

    - Noise
    - Dust
    - Litter
    - Vectors such as rodents and insects
    - Odors
    - Bird hazards to air traffic

    Noise controls included in the project design include:

    1. An electric rail car pusher will be used to move railway cars stored on-site.
    2. The exhaust fans on the Biosolids building will be fitted with fan silencer or low noise fans will be utilized.
    3. The scrubber stack located west of the Biosolids building will be fitted with a silencer or a lower noise fan will be utilized.
    4. A 50-foot long 15-foot tall sound barrier wall will be included along the southern edge of the Biosolids building.

    Results of a complete sound level assessment demonstrate that sound levels from the Project with the sound mitigation measures listed above will meet the requirements set forth in the MassDEP Noise Policy at residential locations. The Noise Study is summarized in the Noise section that follows. The complete study is presented within Attachment 13.

Continued on next page

Solid Waste, Continued

Site Suitability Criteria, continued

Litter and Dust

All MSW waste handling activities will occur within the confines of the proposed MSW tipping and MSW processing buildings. All biosolids handling will be within the enclosed biosolids processing building. The buildings will provide for significant protection from the elements, thus significantly reducing the potential for windblown litter nuisance conditions.

All commercial vehicles that will transport materials either to or from the Facility will be required to be covered in order to prevent incidental littering. Additionally, the Facility will provide a phone number for the public to use to report any complaints regarding vehicles traveling on roads without covering on their trucks, and such, drivers violating the requirement will be banned from delivering to the Facility.

Access roads and driveways will be swept to minimize dust

Vectors

PPNE will implement mitigation measures to ensure that vectors do not pose a nuisance condition. The following measures will be incorporated into PPNE's Operation and Maintenance Plan that will be developed as part of the Authorization to Construct phase to further describe and illustrate the processes and procedures for the control of nuisance conditions. Proposed measures include, but are not limited to, the following, subject to revision as operations are finalized and during subsequent operational permitting with MassDEP:

1. Contracting with a vector control management firm.
2. Installing rodent traps within and around the interior and exterior of the building.
3. Minimizing door openings within the proposed building.
4. Conducting all waste handling activities indoors.
5. Maintaining equipment on-site that will remove the materials from the tipping floor for subsequent handling.

Continued on next page

Solid Waste, Continued

Site Suitability Criteria, continued

6. Covering the containers and trailers prior to leaving the waste handling building.
7. Sweeping the paved areas and the interior of the building (as needed) at regular intervals.
8. Instituting a daily inspection program for vectors following the Operations and Maintenance Plan that will be prepared for the proposed Facility.

Odor

Proposed policies and procedure with respect to nuisance odor conditions include the following measures, subject to revision as operations are finalized and during subsequent operational permitting with MassDEP:

MSW handling and processing

- Confining all waste handling to within the building only.
- Having the ability to entirely enclose/secure the Facility.
- Covering the trailers and containers.
- Shrink wrapping, bagging or utilizing intermodal cars to containerize residual waste materials.
- Using a fine water mist and odor agents to reduce odor adhering particulate matter from escaping the building.

Biosolids processing

- Confining all waste handling to within the building only.
- Providing a biofilter for the control of odor from biosolids storage, transfer, dewatering, and drying
- Providing an ionization system for the processing building

Note that PPNE has created a log to address any odor, noise or dust complaints from the proposed facility. The template for recording and addressing these issues is included in Attachment 19

Continued on next page

Solid Waste, Continued

Site Suitability Criteria, continued

Bird Hazards to Air Traffic

The closest airport identified is the New Bedford Municipal Airport located approximately 2.2 miles (south) from the Site. Based on the distance to the nearest airport and the design considerations noted below, birds will not be a hazard to air traffic.

15. **Size of the Facility:** No site shall be determined to be suitable or be assigned as a solid waste management facility if the size of the proposed site is insufficient to properly operate and maintain the proposed facility. The minimum distance from waste handling areas and the property boundary must be a minimum of 100 feet.

    The size of the proposed Site is exceptionally suitable to properly operate and maintain the Facility. The proposed Facility consists of the construction of an approximately 50,000-square foot tipping building as well as a rail yard, scales, scale house, associated driveway and parking areas, underground utilities, site grading, and stormwater controls. An existing building will be used for processing MSW to extract recyclable materials. The biosolids processing building has been sized to accommodate the proposed dryers and ancillary equipment. The proposed Facility will be located on 71 acres of land. The area to be site assigned within these parcels will be 63.7 acres. The area proposed to be site assigned includes the total site area with the exception of areas designated as prime farmland or farmland of statewide importance. The area proposed to be designated as waste handling areas is 38.4 acres. The waste handling area excludes area within the site assigned limits that are within 100 feet of the property line, areas that are within 100 feet of prime farmlands and areas within 500 feet of residential dwellings. Attachments 11 and 12 depict the proposed limits of site assignment and limits of waste handling areas.

    The proposed Facility is designed to accept MSW and C&D delivered by truck for processing/handling and transfer primarily onto rail cars and secondarily, as conditions dictate, larger trucks for transport to various off-site locations. The solid waste handling building (solid waste handling area) has been sized so that all unloading, handling, and loading onto rail cars and/or trucks will occur within the building interior.

Continued on next page

Solid Waste, Continued

Site Suitability Criteria, continued

The biosolids processing facility has been sized such that all processing is within the enclosed building. The building has been sized for the currently proposed drying facility and has included sufficient indoor space to accommodate the addition of biosolids gasification equipment in the future.

The proposed MSW tipping building is 50,000 square feet in size (note this includes tipping area for Category 2 and 3 C&D). The building's footprint allows for two coupled railcars to be in the MSW tipping building at one time. The building is sized to include the following areas within the building

1. The waste tipping, inspection and areas (11,250 sf)
2. Temporary waste storage area (1,500 tons/15,000 sf)
3. Baled waste storage area (1,500 tons/4,700 sf)
4. The rail car loading area (7,750 sf)
5. The MSW processing feed hopper loading area (6,000 sf)

The MSW processing building is an existing 103,000 square foot building. Approximately 37,000 square feet of this building will be used for MSW processing. Processing will consist of extracting recyclable material from the MSW and then the remaining residual waste will be baled for out bound transport. The facility will utilize a series of conveyors, magnets, eddy current separators, air classifiers, and picking lines to remove recyclable materials. The system layout and equipment list has been provided within Attachments 3 and 8.

Continued on next page

Solid Waste, Continued

Site Suitability Criteria, continued

The proposed biosolids processing facility is located in a 30,000 square foot building to be constructed on site as shown on the plans presented within Attachment 8. The facility has been properly sized for the proposed drying process.

The proposed biosolids processing will consist of the following elements:

1. Liquid/thickened biosolids receiving and storage area
2. Liquid biosolids dewatering area
3. Cake biosolids receiving and storage area
4. Biosolids cake mixing area
5. Cake buffer storage area
6. Biosolids drying area

The above processes will require the following equipment and systems:

1. Biofilter odor control system
2. Ionization odor control system
3. Cooling tower

Continued on next page

Solid Waste, Continued

Site Suitability Criteria, continued

16. **Areas Previously Used For Solid Waste Deposition:** Where an area adjacent to the site of a proposed facility has been previously used for solid waste disposal, the following factors shall be considered by MassDEP in determining whether a site is suitable and by the board of health in determining whether to assign a site:

    - The nature and extent to which the prior solid waste activities on the adjacent site currently impact or threaten to adversely impact the proposed site:
    - The nature and extent to which the proposed site may impact the site previously used for solid waste disposal
    - The nature and extent to which the combined impacts of the proposed site and the previously used adjacent site adversely impact on the public health safety and the environment.

    Based on GSE's research, no former solid waste landfill disposal activities were identified on abutting properties. No portion of the Site has been previously used for solid waste disposal as listed on the MassDEP Solid Waste Facilities Master List.

17. **Existing Facilities:** MassDEP and the local Board of Health shall give preferential consideration to sites located in municipalities in which no existing landfill or solid waste combustion facilities are located, a preference that will be applied only to new facilities that will not be for the exclusive use of the municipality in which the Site is located.

    The Crapo Hill landfill is located in Dartmouth and is used for disposal by the City of New Bedford and the Town of Dartmouth. At this point in time, City of New Bedford and the Town of Dartmouth are not expected to utilize the proposed facility for MSW disposal.

    New Bedford does not have any facilities for processing biosolids. The proposed facility will be available to accept biosolids from the City of New Bedford should the City wish to use the facility.

Continued on next page

Solid Waste, Continued

Site Suitability Criteria, continued

18. **Consideration of Other Sources of Contamination:** The determination of whether a site is suitable and should be assigned as a solid waste management facility shall consider whether the projected impacts of the proposed facility pose a threat to public health, safety or the environment, taking into consideration the impacts of existing sources of pollution or contamination as defined by MassDEP, and whether the proposed facility will mitigate or reduce those sources of pollution or contamination.

    The Facility, as proposed, will create an overall reduction in CO_2 emissions annually. It is documented by CSX that moving freight (waste) by rail is approximately 4 times more fuel efficient than moving freight on the highway. Trains can move a ton of freight over 470 miles on a single gallon of fuel whereas a truck can move a ton of freight only approximately 134 miles per gallon of fuel.

    Consolidating waste and incorporating rail efficiencies can result in significant reductions to CO_2 emissions, which follows the goals and initiatives of the Massachusetts Environmental Policy Act (MEPA), M.G.L. c. 30, ss. 61-621 and within 301 CMR 11.00.

19. **Regional Participation:** MassDEP and the Board of Health shall give preferential consideration to sites located in municipalities not already participating in a regional disposal Facility

    New Bedford is currently participating in a regional disposal facility (Crapo Hill) and as such the proposed project is not entitled to preferential consideration.

Continued on next page

Solid Waste, Continued

Site Suitability Criteria, continued

20. Promotion of Integrated Solid Waste Management: This criteria is applicable only to landfills and combustion facilities. The proposed project is not a landfill or a combustion facility.

The MassDEP review of the Draft Site Suitability narrative determined that the waste handling area(s) depicted in the figures included in the Draft Site Suitability narrative was within a riverfront area. The proposed waste handling area is defined in the Land Use Plan and the Water Resources Plan. The waste handling area has been reduced such that the waste handling area is not within riverfront area. Also, the waste handling area has been revised such that all residential property lines, including property lines associated with the new house lots on the west side of Phillips Road, south of the project site are a minimum of 500 feet from the waste handling area. This revision in waste handling area does not impact either the MSW tipping and processing buildings or the biosolids processing building. The revised plans comply with the requirements of 310 CMR 16.40(3)(d)(6). The revised Water Resources Plan and Land Use Plan are included in the DEIR as Attachments 11 and 12 respectively.

MassDEP commented that the Draft Site Suitability narrative did not provide an explanation or mitigating factors demonstrating why "the facility will not have an adverse impact of the physical environment of, or on the use and enjoyment of, state or municipal parklands or conservation land, or other open space held for natural resource purposes".

Continued on next page

Solid Waste, Continued

Site Suitability Criteria, continued

The following site features and proposed facility features will ensure that the Acushnet Cedar Swamp is not adversely impacted by the proposed project:

1. The 100 Duchaine Boulevard site is separated from the Acushnet Cedar Swamp by the existing rail line and existing on-site drainage swale that parallels the western border of the site.
2. The impacts of stormwater drainage have been minimized by utilizing existing access roads and buildings and by constructing new buildings on surfaces that are currently impervious. The project will include a stormwater management plan that complies with the Massachusetts Stormwater Policy.
3. All waste handling will be done within enclosed buildings with concrete floors. The building nearest the Acushnet Cedar Swamp will be over 800 feet away.
4. Stormwater runoff from the site enters the existing manmade drainage swale that parallels the north and west property line. Stormwater then travels through a stream/wetland system for over 4,000 feet past the southern property line before entering a wetland that is hydraulically connected to the Acushnet Cedar Swamp.

Rail Service of Site

As discussed in the Project Description section above, at full permitted capacity the project will require 15 rail cars per day to ship dried biosolids and the non recyclable fraction of MSW/C&D received by the facility. In addition, up to 3 rail cars per day may be required to transport processed glass to recycling markets. The rail sidetrack has been designed such that 18 empty rail cars can be delivered and then the locomotive that delivered 18 empty rail cars can then remove 18 rail cars filled with material to be shipped off site. Attachment 9 consists of a series of plans that depicts the logistics of how rail cars will be received, how the cars will be loaded and how the cars will be removed once they are filled. The site will require the delivery of empty cars once per day and the removal of filled rail cars once per day. It should be noted that this will ensure consistent movement/removal of the waste from the subject facility.

An additional rail line is provided adjacent to and parallel to the drainage swale along the western property line. This line will provide rail car storage in addition to the track required for day to day operation as depicted on the plans in Attachment 9.

Environmental Justice

Introduction

The Environmental Justice (EJ) component of the Draft Environmental Impact Report (DEIR) provides an overview of the measures used to avoid, minimize and reduce potential air-related impacts on EJ populations within one-mile of the proposed solid waste facility and how the project is implementing the enhanced public participation requirements under the Massachusetts Environmental Policy Act (MEPA).

The proposed PPNE facility exceeds the Massachusetts Environmental Policy Act (MEPA) threshold for new solid waste processing capacity of 150 or more tons per day (TPD), and the wastewater mandatory threshold of 150 or more TPD of sewage sludge (on a wet, not dry basis), triggering the requirement for filing of an Environmental Notification Form (ENF) and a mandatory Environmental Impact Report (EIR). Any project that exceeds the ENF thresholds for solid waste or wastewater and involves a project site located within one mile of an EJ population is be required to implement enhanced public participation under MEPA.

The project submitted an Expanded Environmental Notification Form (EENF) on February 20th, 2019 and was granted a Phase 1 Waiver for the Glass Processing operation in the EENF Certificate on April 12th, 2019. Phases 2 of the Project are required to submit a Draft Environmental Impact Report (DEIR). As part of the EENF Certificate the Project must continue to provide enhanced public outreach of the DEIR to EJ populations in New Bedford. The enhanced public participation requirements as described in the EENF certificate are listed below and PPNE's implementation of each requirement is discussed.

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Environmental Justice, Continued

Enhanced Public Participation

Enhanced Public Participation As directed By MEPA:

1. *Preparation and Distribution of a fact sheet that provides a summary of the project, environmental impacts (including air quality), and public comment opportunities. The fact sheet should include photos of similar facilities (or direct individuals to a website to view renderings).*

   The project fact sheet includes a summary of the project, environmental impacts (including air quality) and a description of the public comment opportunities. Once finalized the Project fact sheet will be provided to the public library, City Hall as well as included on the Project website; and provided upon request by residents. The project website also includes renderings of the proposed project.

2. *Prior to submitting the DEIR, the Project should contact the Toxics Action Center, EJ groups identified above (Coalition for Social Justice, Alternatives for Community & Environment, Hands Across the River Coalition, and Old Bedford Village), and the City's Planning Department for input on alternative media outlets and information repositories in which to provide notice of the DEIR.*

   The Proponent contacted the identified groups for input on alternative media outlets and information repositories on July 15th 2019. The DEIR includes a response to all comments received on the EENF. Each commenter and EJ groups will be notified of the publication of the DEIR and will be advised of a web site that includes the entire DEIR.

3. *The Proponent should consult with the MassDEP and/or EEA's Environmental Justice Director during preparation of the DEIR regarding the proposed circulation and participation plan to ensure compliance with the EJ Policy.*

   As part of the EENF review process the Project Team consulted with MassDEP and the MEPA Office regarding the enhanced outreach requirements. The Project is intending to provide the following organizations with a copy of the DEIR: Coalition for Social Justice, Alternatives for Community & Environment, Hands Across the River, Toxics Action Center, and Old Bedford Village as well as publish Spanish and Portuguese language versions of the MEPA Public Notice in El Planeta and the Portuguese Times in addition to the New Bedford Standard Times.

Continued on next page

Environmental Justice, Continued

Enhanced Public Participation, continued

4. *The DEIR should provide a detailed update that describes all of the proponent's enhanced public outreach efforts and meetings that have occurred since the EENF was submitted.*

   The Proponent held a public meeting on April 29th, 2019 at Pulaski School.

5. *Translation of materials or interpretation services prior to and during public meetings:*

   The project will continue to provide translators at the public hearing in Portuguese and Spanish

6. *Consider that when scheduling public meetings that the time of day, availability of public transportation and whether the location is child-friendly and culturally appropriate:*

   The project will consider these details when scheduling future public meetings.

Any project that exceeds the mandatory EIR threshold for solid waste and involves a project site located within one mile of an EJ population will be required conduct an enhanced analysis of impacts and mitigation under MEPA.

Enhanced Analysis of Impacts

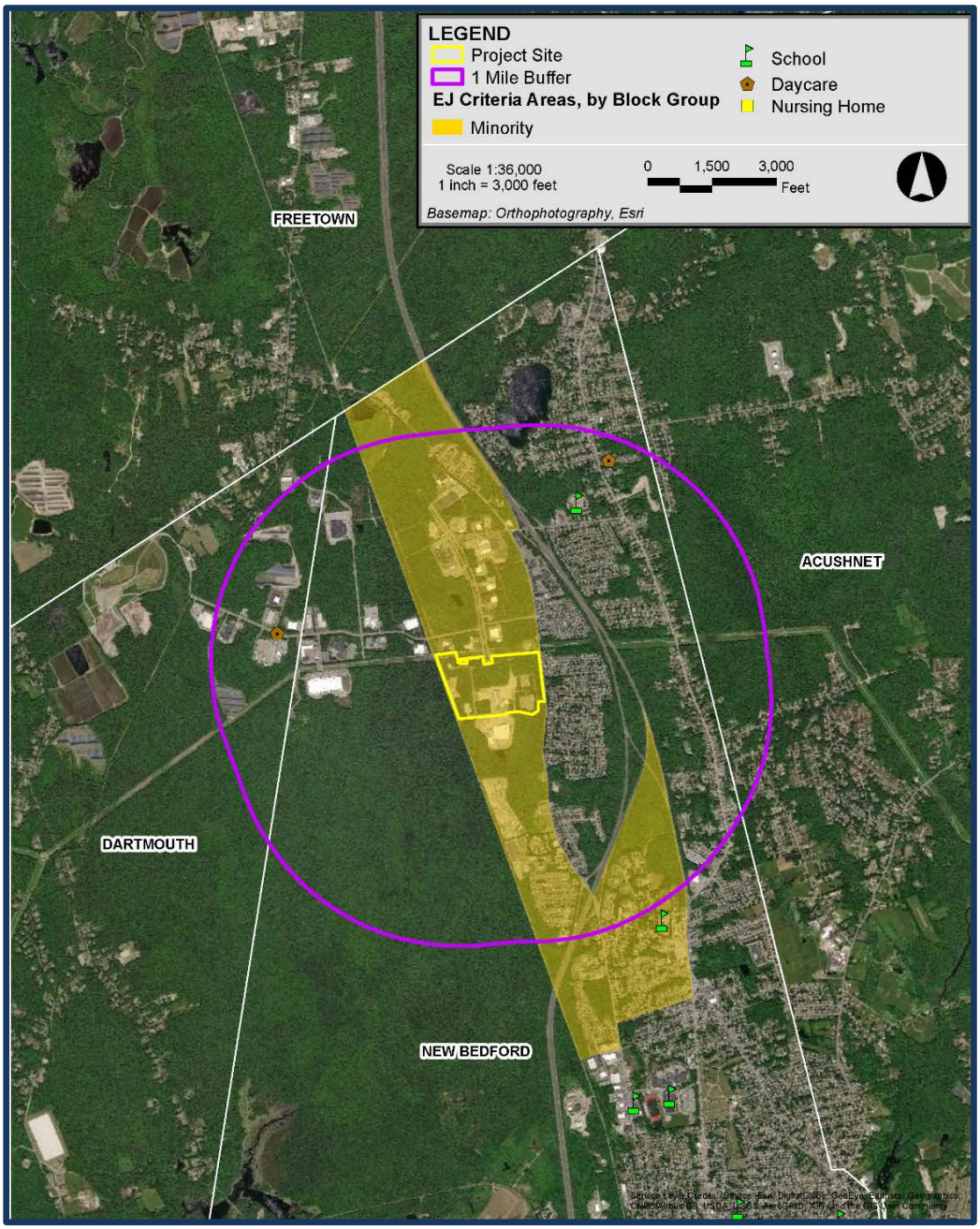
As described in the 2017 Environmental Justice (EJ) Policy, a project exceeding a mandatory EIR threshold for solid waste or wastewater must conduct an enhanced analysis of impacts:

An enhanced analysis of impacts and mitigation may include analysis of multiple air impacts; data on baseline public health conditions within the affected EJ population; analysis of technological, site planning, and operational alternatives to reduce impacts; and proposed on-site and off-site mitigation measures to reduce multiple impacts and increase environmental and energy benefits for the affected EJ population.

Continued on next page

Environmental Justice, Continued

Figure 2
EJ Areas



Environmental Justice, Continued

Environmental Justice Populations

EJ populations are those segments of the population that the Executive Office of Environmental Affairs (EEA) has determined to be most at risk of being unaware of or unable to participate in environmental decision-making or to gain access to state environmental resources, or are especially vulnerable. They are defined as neighborhoods (U.S. Census Bureau census block group data for minority criteria, and American Community Survey (ACS) data for state median income and English isolation criteria) that meet *one or more* of the following:

- 25 percent of households within the census block group have a median annual household income at or below 65 percent of the statewide median income for Massachusetts; or
- 25 percent or more of the residents are minority; or
- 25 percent or more of the residents have English isolation.

EEA has designated specific areas of the state that meet one or more of the criteria above as EJ areas. Within one mile of the proposed site, there is an area designated as an EJ area for minority populations (in other words, 25 percent or more of the residents that reside in this are minority). The location of the site and areas designated as EJ areas are shown in Figure 2.

Baseline Health

This section describes the baseline health of the areas within one-mile of the proposed site which includes the communities of Acushnet, Dartmouth and New Bedford. The baseline health background is based on the data contained within the Massachusetts Environmental Public Health Tracking (MA EPHT) website. This website summarizes health outcomes based on data collected by the Massachusetts Division of Health Care Finance and data collected from the Massachusetts Department of Public Health (MassDPH) disease surveillance programs.

Continued on next page

Environmental Justice, Continued

Baseline Health, continued

The MA EPHT website[1] contains data on a number of different health outcomes, including information on asthma hospitalizations and emergency room visits, the prevalence of asthma among school aged children, the hospitalization rate of acute myocardial infarctions, hospitalization and emergency room visits for Chronic Obstructive Pulmonary Disease (COPD), and incidence of various cancers. Each of these datasets are available at different geographies and data availability for recent years is limited. Table 1 describes the data reviewed for this project, the years available for review, and the geographic resolution of the health outcomes of interest. Each of these health outcomes is described further in the EJ Report which resides in Attachment 15.

Table 1

Health Outcome	Indicator Description	Years Available	Geographic Resolution
Asthma Hospitalizations	Age-Adjusted Rate of Asthma Hospitalizations	2000-2015	Community
Asthma Emergency Department Visits	Age-Adjusted Rate of Emergency Department Visits for Asthma	2000-2015	Community
Cancer	Standardized Incidence Ratio Summarized by Cancer Type	2000-2013 (results reported in 5-year blocks due to small numbers)	Census Tracts by Community
COPD Hospitalizations	Age Adjusted COPD Hospitalization Admission Rate	2000-2015	Community
COPD Emergency Department Visits	Age Adjusted COPD Emergency Department Visit Rate	2000-2015	Community
Acute Myocardial Infarction (AMI) Hospitalizations	Age-Adjusted Rate of AMI Hospitalizations	2000-2015	Community
Pediatric Asthma Prevalence	Prevalence of Asthma	2009-2017	By School

Continued on next page

[1] https://matracking.ehs.state.ma.us/

Environmental Justice, Continued

Baseline Health, continued

Asthma Baseline Health

As described on the MA EPHT website[2], asthma is an illness that impacts the respiratory tract and airways that carry oxygen into and out of the lungs. During an asthma attack, the airways constrict resulting in wheezing and difficulty breathing. Causes of asthma are unknown. However, episodes of asthma (asthma attacks) can be triggered by certain environmental factors such as air pollution, mold, pets/pet dander, and dust mites. Asthma is a common chronic disease that continues to increase in prevalence. It is the most common chronic disease in children. Massachusetts has an elevated rate of asthma compared to the national prevalence rate. (a condition is "elevated" if its prevalence is higher in a way that is unlikely to be caused by chance).

MassDPH tracks asthma in several different ways: asthma hospitalizations, emergency room visits and school health records. A statewide surveillance program for elementary and middle-aged school children administered is through school health records.

Asthma Hospitalizations

Rates of asthma hospitalizations are reported several ways, for this analysis the age-adjusted asthma hospitalization rate was compared to the statewide age-adjusted hospitalization rate in order to determine if the rate of asthma hospitalizations in the communities of Acushnet, Dartmouth and New Bedford were statistically elevated compared to the statewide rate of asthma hospitalizations. The age-adjusted rate allows for comparisons to be made between populations with different age structures. The 5-year period of 2011-2015 (the most recent data available) was examined for this analysis. The age-adjusted asthma hospitalization rates for Acushnet and Dartmouth are similar to the statewide rate of asthma hospitalizations. New Bedford's asthma hospitalization rates are statistically elevated when compared to the statewide rate of asthma, but the rate of asthma hospitalization has been declining over time.

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[2] https://matracking.ehs.state.ma.us/Health-Data/Asthma/index.html

Environmental Justice, Continued

Baseline Health, continued

Asthma Emergency Department (ED) Visits

Rates of asthma-related ED visits are reported several ways, for this analysis the age-adjusted rate was used as it allows for a comparison to be made to the statewide ED rate for asthma. The age-adjusted rate allows for comparisons to be made between populations with different age structures. The 5-year period of 2011-2015 (the most recent data available) was examined for this analysis. The age-adjusted asthma ED rates for Acushnet and Dartmouth are lower than the statewide rate of ED visits. New Bedford's asthma ED visits are statistically elevated when compared to the statewide rate of asthma and have remained relatively unchanged in recent years.

Pediatric Asthma

Prevalence of pediatric asthma is reported several ways, for this analysis public schools serving populations within one-mile of the project site were compared to the statewide prevalence for asthma. The 5-year period of 2012-2017 (the most recent data available) was examined for this analysis. The prevalence of pediatric asthma at the elementary schools is generally statistically lower than the statewide prevalence. The pediatric prevalence at the middle school is generally statistically higher than the statewide prevalence.

Cancer Baseline Health

Although MA EPHT data is typically reported at the census tract (i.e. neighborhood geography), the entire community of New Bedford was selected for this analysis for several reasons. The proposed facility is located in New Bedford, and, due to the limited number of observed cases of cancer, information at the census tract level was suppressed (i.e. not calculated due to patient confidentiality concerns). In general, the rates of most types of cancer in New Bedford were similar or statistically lower than the rates of cancer on a statewide basis. However, the rates of five types of cancer are statistically elevated compared to the statewide rates. These five cancer types are: laryngeal, liver and bile duct, lung and bronchus, pancreatic, and stomach.

Continued on next page

Environmental Justice, Continued

Baseline Health, continued

Chronic Obstructive Pulmonary Disease (COPD) Baseline Health

As described on the MA EPHT website[3], chronic obstructive pulmonary disease (COPD) refers to a group of diseases including emphysema and chronic bronchitis, which block airflow and can cause difficulty breathing. COPD is considered a chronic health condition that typically worsens over time. Risk factors for COPD include smoking, and long-term exposure to air pollution, secondhand smoke, dust, fumes or chemicals.

MassDPH tracks COPD in two different ways: COPD hospitalizations and emergency room visits.

COPD Hospitalizations

Rates of COPD hospitalizations are reported several ways, for this analysis the age-adjusted COPD hospitalization rate was compared to the statewide age-adjusted hospitalization rate in order to determine if the rate of COPD hospitalizations in the communities of Acushnet, Dartmouth and New Bedford were statistically elevated compared to the statewide rate of COPD hospitalizations. The age-adjusted rate allows for comparisons to be made between populations with different age structures. The 5-year period of 2011-2015 (the most recent data available) was examined for this analysis. The age-adjusted COPD hospitalization rates for Acushnet and Dartmouth are generally similar to the statewide rate of COPD hospitalizations. The age-adjusted rate allows for comparisons to be made between populations with different age structures. The 5-year period of 2011-2015 (the most recent data available) was examined for this analysis. The age-adjusted COPD hospitalization rates for Acushnet and Dartmouth are generally similar to the statewide rate of COPD hospitalizations. New Bedford's COPD hospitalization rates are statistically elevated when compared to the statewide rate of COPD, but this rate has been declining over time.

Continued on next page

[3] https://matracking.ehs.state.ma.us/Health-Data/copd.html

Environmental Justice, Continued

Baseline Health, continued

COPD Emergency Department (ED) Visits

Rates of COPD-related ED visits are reported several ways, for this analysis the age-adjusted rate was used as it allows for a comparison to be made to the statewide ED rate for COPD. The age-adjusted rate allows for comparisons to be made between populations with different age structures. The 5-year period of 2011-2015 (the most recent data available) was examined for this analysis. The age-adjusted COPD ED rates for Acushnet and Dartmouth are lower than the statewide rate of ED visits. New Bedford's COPD ED visits are statistically elevated when compared to the statewide rate of COPD and the rate of COPD ED visits has remained relatively unchanged over the 5-year period examined.

Acute Myocardial Infarction (AMI) Baseline Health

As described on the MA EPHT website[4], an acute myocardial infarction (AMI) is also known as a heart attack. AMI, along with stroke, and other heart and blood vessel diseases are responsible for approximately 35% of all deaths in Massachusetts. There are a number of risk factors associated with AMI, including health, life style and environmental factors. Environmental factors include exposure to certain air pollutants.

MassDPH tracks AMI through hospitalizations, as nearly every AMI results in an inpatient admission.

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[4] https://matracking.ehs.state.ma.us/Health-Data/Heart_Attack_Hospitalization.html

Environmental Justice, Continued

Baseline Health, continued

AMI Hospitalizations

Rates of AMI hospitalizations are reported several ways, for this analysis the age-adjusted AMI hospitalization rate was compared to the statewide age-adjusted hospitalization rate in order to determine if the rate of AMI hospitalizations in the communities of Acushnet, Dartmouth and New Bedford were statistically- elevated compared to the statewide rate of AMI hospitalizations. The age-adjusted rate for AMI considers individuals 35 years of age and older and allows for comparisons to be made between populations with different age structures. The 5-year period of 2011-2015 (the most recent data available) was examined for this analysis. The age-adjusted AMI hospitalization rates for Acushnet and Dartmouth are generally similar to the statewide rate of AMI hospitalizations for most years. New Bedford's MI hospitalization rates are statistically elevated when compared to the statewide rate of MI and have remained relatively flat over the 5-year period.

Baseline Health Considerations

As indicated on the MassEPHT website[5] chronic diseases are the leading cause of illness and death both nationally and in Massachusetts. Many of these diseases are believed to result from the interaction of both genes and environmental factors. Environmental factors include infectious agents (i.e. viruses and bacteria), environmental contaminants, and diet and lifestyle choices. However, the extent at which each of these individual factors contribute to the development of chronic disease is not known. The health data presented are intended to provide a basic level of understanding of the disease burden in Massachusetts communities.

Continued on next page

[5] https://matracking.ehs.state.ma.us/Health-Data/index.html

Environmental Justice, Continued

Multi-Pollutant Analysis

As described in the air and odor analysis report, an analysis was conducted that accounted for the air emissions from the proposed facility. The air emissions were modeled using an air dispersion model to determine ambient air concentration impacts from the facility. The air modeling performed included evaluation of criteria pollutants and air toxics, terrain features, local meteorology and buildings. The air modeling has been described previously in the air and odor analysis report and was relied upon for this EJ analysis. Other pathways of exposure (i.e. water, soil) were not evaluated based on the design of the facility (enclosed operations) as the dominant exposure pathway is expected to be the air pathway and the MEPA EJ policy specifically requires evaluation of the air-related impacts of the facility.

Emissions

Emission units at the proposed facility are categorized as stationary and mobile sources and include the following broad categories: Biosolids Dryers and Building Heat Boiler, Biosolids Process Sources, Biosolids Cooling Tower, Municipal Solid Waste (MSW) Solid Waste Tipping and Processing, Glass Processing (including Building Space Heaters), Paved Roads, and Onsite and Off-site Mobile Sources. Mass emission rates from each of these categories of sources were conservatively modeled assuming they generally occur simultaneously at the maximum anticipated rate. The air emissions considered and the methodologies used for calculating the emission rates are described further in the air and odor analysis report.

Air Dispersion Modeling

As described in the air and odor analysis report, the AERMOD model [the United States Environmental Protection Agency (USEPA) preferred model] was utilized to generate concentrations of air pollutants outside the property boundary of the proposed project. AERMOD incorporates information including emissions, local meteorological data, and orientation of buildings, stack configurations, and terrain data in order to predict concentrations of air pollutants outside the property boundary of the proposed project. Four "sensitive" receptor locations were also included. A

Continued on next page

Environmental Justice, Continued

Multi-Pollutant Analysis, continued

Criteria air pollutants are regulated by the USEPA through National Ambient Air Quality Standards (NAAQS). The EPA has established NAAQS standards for pollutants considered to be harmful to the public health and the environment. These standards can be further broken down into primary and secondary standards. Primary standards are intended to protect human health, including the health of "sensitive" populations such as asthmatics, children and the elderly. The secondary standards are intended to provide public welfare protection, including protection against decreased visibility and damage to animals, crops, vegetation, and buildings.

USEPA has established NAAQS for the following pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), coarse particulate matter (PM_{10}), fine particulate matter ($PM_{2.5}$), sulfur dioxide (SO_2), ozone (O_3), and lead (Pb). Air pollutants included in the air and odor analysis, for which NAAQS are published, are CO, NO_2 , PM_{10}, $PM_{2.5}$, and SO_2. Lead is included in the air toxics analysis, and MassDEP air toxics criteria for lead are more stringent than the NAAQS for lead.

To address the NAAQS, mass emission rates for each of the included criteria air pollutants were estimated for both stationary and mobile sources at the proposed facility, ambient concentrations from all sources were modeled, and the maximum modeled concentrations were compared to the NAAQS to ensure there are no off-site exceedances.

Air Toxics

Air toxic compounds, including lead, were selected for emissions estimation based on the MassDEP Ambient Air Toxics Guidelines. In general, chemicals for which MassDEP has published allowable ambient limits (AALs) and threshold effect exposure limits (TELs), and for which specific emission factors were available, were included in the analysis.

MassDEP determines the AALs and TELS through an analysis of health effects. The first step in developing an AAL and TEL is to review the carcinogenic and non-carcinogenic health effects of the chemicals.

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Environmental Justice, Continued

Multi-Pollutant Analysis, continued

Known or suspected carcinogenic health effects make up the basis of the Non-Threshold Effects Exposure Limits (NTELs) which are associated with a one in a million excess cancer risk over a lifetime of continuous exposure to the chemical.

The TEL addresses the non-cancer health effects and is intended to protect the general population from adverse health effects over a lifetime of exposure to the chemical. The TEL includes impacts on sensitive populations such as children and takes into account other pathways for exposure to the chemical than just ambient air. These other pathways that are evaluated in the TEL determination include indoor air, food, soil, and water.

MassDEP then compares the NTEL and TEL and assigns whichever concentration is lower as the AAL to make sure both cancer and non-cancer health impacts are mitigated to the fullest extent possible. For most carcinogenic compounds, AALs are typically based on the NTELs since the NTEL tends to be lower than the TEL for these compounds. For non-carcinogenic compounds, the AAL will be based on the TEL which results in the published AAL and TEL values being identical. It is important to note that exposure above an AAL or TEL does not necessarily mean there will be adverse health impacts, but rather that the risk of these adverse effects increases with the frequency of exposure above these levels.

In some cases, MassDEP did not have an AAL or TEL for a particular chemical. In these cases, the USEPA Integrated Risk Information System was reviewed for that chemical to determine if a reference concentration (RFC) existed. The reference concentration is derived in a similar manner as the AAL and TEL concentrations and represents a concentration protective of the general population and sensitive subpopulations.

To address the air toxics guidelines, air toxic mass emission rates were estimated for both stationary and mobile sources at the proposed facility, ambient concentrations from all sources were modeled, and the maximum modeled concentrations were compared to the AAL (on an annual average basis) and TEL (on a short-term basis) or RFC to ensure there are no exceedances offsite.

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Environmental Justice, Continued

Multi-Pollutant Analysis, continued

Ambient Air Analysis Conclusions

As described above, an ambient air impacts analysis was conducted to understand the impacts from the proposed facility from multiple air pollutants (two important criteria pollutants and a number of air toxics). Impacts for all pollutants were below health protective levels of concern at all offsite locations based on the peak predicted level of operation of the proposed facility. Operation of this facility will not cause or contribute to any health-protective exceedances of air quality concentrations. Results are reported in the air and odor report, along with the location of the predicted maximum concentration. Concentrations at the sensitive receptors are reported in the air and odor report presented within Attachment 15.

Mitigation

As part of the enhanced environmental justice analysis, mitigation of on-site and off-site activities must be considered. This section describes the mitigation steps that will be taken to minimize impacts on the surrounding residences.

The analysis shows that, under maximum expected operating conditions which include the stationary sources as well as the mobile on-site and off-site (i.e. traffic) sources and using conservative assumptions, that the project's air impacts will comply with all applicable health-protective standards. Specifically:

- The National Ambient Air Quality Standards (NAAQS) will not be exceeded. Per EPA, these standards "provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.[6]"
- MassDEP has developed "health- and science-based air guidelines - known as Ambient Air Limits (AALs) and Threshold Effect Exposure Limits (TELs) - to evaluate potential human health risks from exposures to chemicals in air.[7]" The Massachusetts AALs and TELs will not be exceeded offsite.

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[6] https://www.epa.gov/criteria-air-pollutants/naaqs-table

[7] https://www.mass.gov/service-details/massdep-ambient-air-toxics-guidelines

Environmental Justice, Continued

Mitigation, continued

- If MassDEP had not developed a specific AAL or TEL for a given chemical, the EPA Integrated Risk Information System was reviewed to determine if the EPA had developed a Reference Concentration.[8]

In Massachusetts, odor is regulated under 310 CMR 7.09 such that operations that emit odors shall not permit their emissions to "cause a condition of air pollution". To determine that the project is not a nuisance source of odors, the study evaluated for maximum 5-minute-averaged odor concentrations and determined that, for all locations on-site and off-site and given evaluated weather conditions, the odor concentration to be at or below 5 dilution-to-threshold (D/T). Thus, the project meets the criterion published in the MassDEP's policy for odor from composting facilities.

Mitigation Opportunities

Vegetative Buffers and Other Plantings

As described in the air and odor modeling report, emissions from the proposed project are relatively minor in magnitude and may not require an air permit from MassDEP. Existing design plans for the site leave much of the existing tree line located along the property lines intact. This will serve as a visual buffer to the site during non-winter months and act as a vegetative and physical barrier which may reduce concentrations (vegetative barriers are not accounted for in the air dispersion modeling). The effectiveness of a barrier on reducing air pollution is a function of the spacing of the barrier, thickness of the barrier, and height of the barrier.

One of the mitigation measures implemented will be to restrict truck traffic from traveling north and south on Phillips Road; the majority of truck traffic will be routed through a predominantly industrialized area. This project change effectively creates a buffer for the residences on Phillips Road from the majority of the truck traffic traveling to and from the Project site.

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[8] https://www.epa.gov/iris/basic-information-about-integrated-risk-information-system

Environmental Justice, Continued

Mitigation, continued

Climate Change

The impacts from Climate Change on the northeast were recently captured in the Fourth National Climate Assessment.[9] The impacts in urban areas are anticipated to include: extreme temperature events, episodes of poor air quality, recurrent waterfront and coastal flooding, and intense precipitation events that can lead to increased flooding; however the report acknowledges that our understanding of the extent of impacts from climate change is incomplete.

In order to better understand the severity of the impacts of extreme temperature events, the Massachusetts EPHT[10] database was examined in order to determine if the rate of heat related illness hospitalizations and emergency department visits was statistically elevated when compared statewide levels (from 2011-2015). Heat related illness hospitalizations were not elevated either at the community or county levels and heat related emergency department visits were not elevated at the community level. Heat related illness emergency departments were only elevated at the county level for 2012 with the rest of the years being statistically similar to the statewide rate.

In terms of episodes of poor air quality, the number of air stagnation watches or warnings issued by the National Weather Service (NWS), the weather forecasting agency for the National Oceanic and Atmospheric Administration (NOAA); was examined in order to determine if watches/warnings were being issued at a higher rate more recently. Data on watches and warnings were retrieved from 1986 to 2018 for Bristol County, MA.[11] Review of the data did not find a single instance where the NWS issued a watch or warning for an air stagnation event.

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9 https://nca2018.globalchange.gov/chapter/18/

10 http://matracking.ehs.state.ma.us/Health-Data/heat-stress-hospitalization.html#MyPopup

11 https://mesonet.agron.iastate.edu/vtec/search.php

Environmental Justice, Continued

Mitigation, continued

Air Quality

It is anticipated that the facility will need to monitor emissions on a monthly basis (primarily associated with the biosolids facility), per MassDEP requirements, for the purpose of documenting its de minimis status relative to air permitting, or, if a plan approval is required, for the purpose of documenting compliance with the permitted air emission limits. In addition, the Project has begun preparation of a system to log and track odor, noise and dust complaints and will share this system with MassDEP and the City's Health Agent once finalized.

Conclusions

Parallel Products proposes a facility that will avoid, minimize, and mitigate potential EJ air-related impacts as follows:

Avoided impacts: Parallel Products has selected an industrially-zoned setting to avoid impacts to the public and is re-using significant existing infrastructure to avoid impacts associated with new construction. Material handling in enclosed areas and using best management practices, avoids off-site impacts of air emissions and odors. Because the proposed facility will serve existing needs for material handling at a location that is closer to the sources of the materials, the project avoids transportation-related impacts currently associated with sending the materials to distant locations by truck. The project has revised truck traffic routes to avoid impacts to residences on Phillips Road, which will be a condition of development.

Minimized impacts: The project team evaluated and modeled dozens of potential equipment and exhaust vent/stack configurations to identify the proposed conceptual design which minimizes off-site air and odor concentrations. The proposed design optimizes the flow of material through the site, and the reuse of existing facilities, while minimizing offsite impacts in general and residential area offsite impacts in particular. Material handling loaders will be USEPA Tier 4 certified to minimize emissions. The project will track air emissions on a monthly basis and has developed a system to log and track odor, noise and dust complaints.

Mitigated impacts: Parallel Products is selecting to control odors from biosolids handling processes using either a biofilter with carbon polishing, or a regenerative thermal oxidizer, or equal, coupled with ionization. These odor and air pollution control devices provide an enhanced degree of mitigation and protection.

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Wetlands/Stormwater

Introduction

The proposed project development utilizes existing infrastructure to the maximum extent possible. The project will use existing access roads and paved surfaces and will use existing buildings to the extent feasible. The project development includes the construction of a new rail sidetrack to service the site. Construction of the rail sidetrack will impact wetlands on site. The rail sidetrack will be constructed in Phase 1 of the project and expanded in Phase 2. All of the associated impacts to wetlands will occur in Phase 1

The "Final Record of Decision of the Secretary of the EOEEA" dated May 15, 2019 allowed the Phase 1 project to proceed prior to the completion of the Environmental Impact Report. Phase 1 engineering, permitting and construction are currently in progress.

Phase 1 wetland and stormwater impacts

The proposed rail sidetrack must cross a drainage swale and a bordering vegetated wetland to access the site. The variations on rail alignment are limited by the design restrictions (radius of curves, slope, etc) associated with rail development. The design of the rail sidetrack has been designed to minimize the impacts to wetlands to the greatest extent feasible.

At the crossing of the drainage swale, the crossing point selected is an area where the track is approximately perpendicular to the swale, minimizing the area of the swale and riverfront area that is impacted. Also, the crossing point selected is the location of and existing abandoned bridge over the swale. The bridge will be removed and replaced with a box culvert crossing.

Alternatives evaluated included a three side box culvert, a four sided box culvert and a bridge. The bridge alternative was eliminated due to costs and because it would require extensive pile driving and would impact a larger area than the box culvert. The three sided box culvert alternative was selected. This design maintains a natural bottom substrate to match the upstream and downstream substrates and meets the Massachusetts Stream Crossing Standards.

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Wetlands/Stormwater, Continued

Phase 1 wetland and stormwater impacts, continued

The project is not located within an Estimated Habitats of Rare Wildlife Area and will therefore have no adverse effects on rare species.

The selected stream crossing concept impacts 2,110 square feet of Riverfront area. The stream crossing location and design have been selected to minimize the impacts to the Riverfront area. The project is proposing to add 4,425 square feet of restoration (2.1:1) as a mitigation measure.

The route chosen for the rail sidetrack was selected to minimize the impact to bordering vegetated wetlands. The size of the area impacted was further minimized by using block retaining walls on each side of the track to minimize the width of the sidetrack cross section, thereby minimizing the extent of wetland impacts. Use of a bridge over the bordering vegetated wetlands was considered but the concept was rejected due to cost and the fact that the numerous piles would result in greater area of wetlands impacted than the retaining wall and fill design.

The design selected results in alteration of 4,936 square feet of bordering vegetated wetlands. The project is proposing to add 8,208 square feet of wetlands replication. This is a replication ratio of 1.66:1 which exceeds the New Bedford required replication ratio of 1.5:1 and the required MassDEP replication ratio of 1:1.

The developer filed a Notice of Intent, dated October 2, 2019, with the New Bedford Conservation Commission. The Notice of Intent is included in the DEIR as Attachment 6. This Notice of Intent includes all construction proposed in Phase 1 of the project and includes a stormwater management plan that complies with the Massachusetts Stormwater Policy.

Phase 2 wetland and stormwater impacts.

Phase 2 construction will consist of construction of the proposed biosolids processing facility as well as the MSW processing facility. MSW processing will be done within an existing building on site. A new MSW tipping building will be constructed for tipping MSW and for loading rail cars with residual waste after processing.

The proposed biosolids facility will include construction of a 30,000 square foot building.

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Wetlands/Stormwater, Continued

Phase 2 wetland and stormwater impacts., continued	Phase 2 will also include the expansion of the rail sidetrack to include additional lines for the storage of full and empty rail cars. No wetlands will be impacted by Phase 2 construction. Some construction will be done within the buffer zone, so a Notice of Intent will be filed prior to Phase 2 construction. The notice of intent will also include a stormwater management plan as the building construction will increase the impervious area of the site.

Transportation/Traffic

Introduction

The transportation component of the Draft Environmental Impact Report (DEIR) provides an overview of the analysis completed to document the traffic impacts, site circulation, and safety concerns associates with the proposed transfer station development. A Traffic Impact Study (TIS) was conducted for the proposed development by McMahon Associates, Inc. (McMahon) dated July 2018. Since that time, the trucking facility that had occupied the site has relocated, and PPNE is in the process of moving operations from Shawmut Avenue to the project site on Duchaine Boulevard. An updated traffic analysis was prepared based on the interim progress of the project, and incorporating comments received on the Expanded Environmental Notification Form (EENF). This section of the DEIR provides a summary of the updated traffic analysis, addressing potential traffic impacts associated with the proposed transfer station as well as a response to the transportation related comments provided as part of the EENF certificate. A Traffic Impact Study reflecting the analysis presented in the DEIR is provided in Attachment 7.

Existing Conditions

To effectively evaluate the potential traffic impacts associated with the proposed development, an assessment of existing conditions including an inventory of the roadway and intersection geometries and traffic control devices, collection of peak-period traffic volumes, and a review of recent crash history was completed. A discussion of this information is presented below.

Study Area and Roadway Network

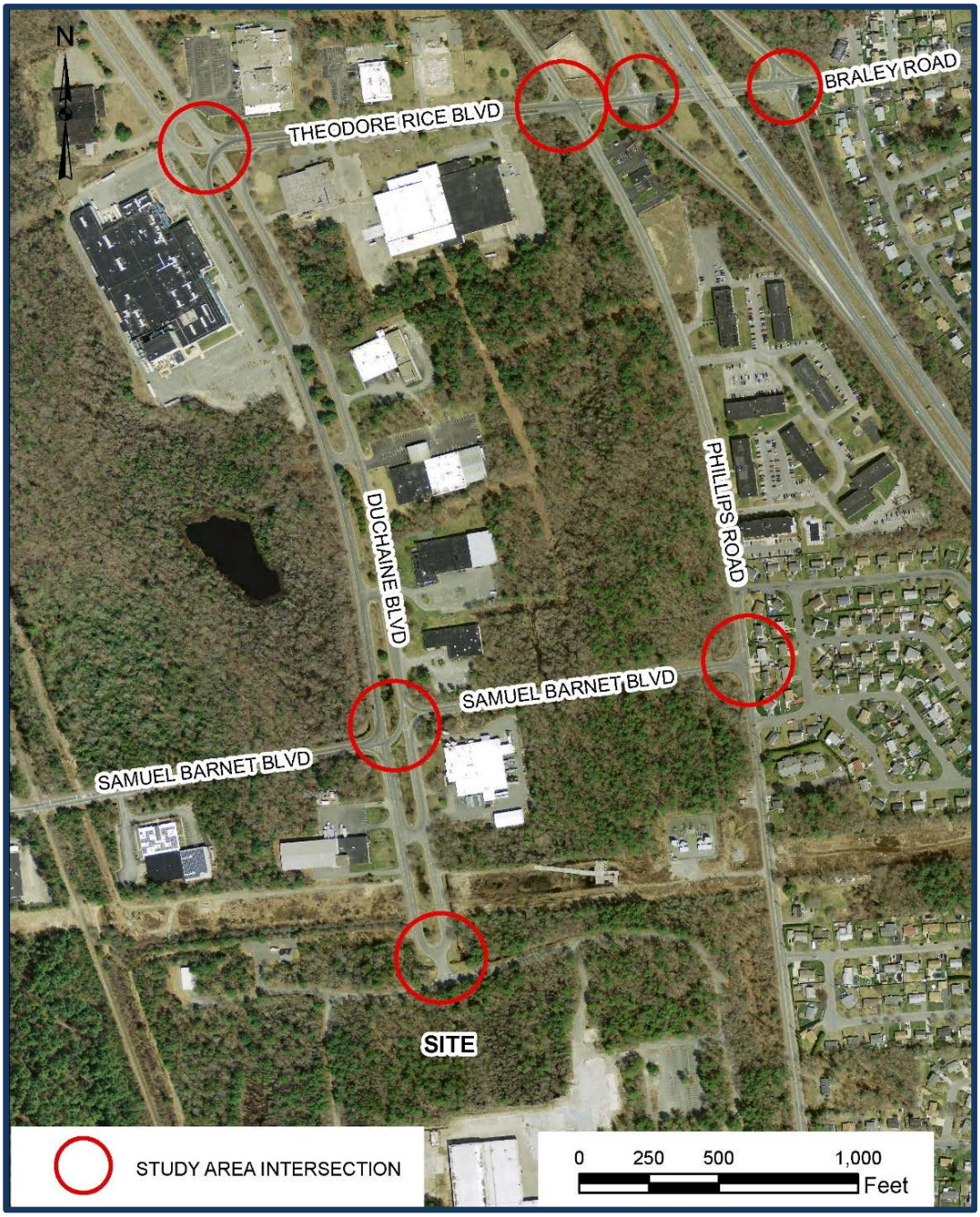
The area identified for detailed analysis in the study was determined based on a review of the surrounding roadway network serving the project site. The study area intersections are listed below and are also identified in Figure 3.

- Route 140 Northbound on/off-ramp at Braley Road
- Route 140 Southbound on/off-ramp at Braley Road
- Braley Road/Theodore Rice Boulevard at Phillips Road
- Theodore Rice Boulevard at Duchaine Boulevard
- Duchaine Boulevard at Samuel Barnet Boulevard
- Phillips Road at Samuel Barnet Boulevard
- Duchaine Boulevard at Site Driveway

Continued on next page

Transportation/Traffic, Continued

Figure 3
Study Area Intersections



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Transportation/Traffic, Continued

Existing Conditions, continued

The expected route for vehicles accessing the site is via Exit 7 off of Route 140, taking Braley Road/Theodore Rice Boulevard to Duchaine Boulevard.

Braley Road is classified as an urban minor arterial under MassDOT jurisdiction within the study area running in the east-west direction. Braley Road provides a single, 11-foot wide travel lane in each direction.

Duchaine Boulevard is classified as a local roadway under City of New Bedford jurisdiction and provides access to industrial lane uses within the New Bedford Industrial Park. Duchaine Boulevard runs in the north-south direction and provides two 14-foot wide travel lanes in each direction separated by a grass median in which there are multiple U-turns locations along the corridor.

Public Transportation

The Southeastern Regional Transit Authority (SRTA) provides service to the New Bedford Industrial Park and surrounding roadways within the study area. The SRTA Route 4 and North End Shuttle bus lines provide multiple stops throughout the study area including stops along Phillips Road, Braley Road, and Duchaine Boulevard. No other public transportation currently exists in the vicinity of the project site.

Pedestrian and Bicycle Facilities

There is a sidewalk measuring approximately 4 feet in width along the eastern side of Phillips Road, which continues along the southern side of Braley Road east of Phillips Road. A recently constructed convenience store/gas station at the northwest corner of the Phillips Road/Theodore Rice Boulevard intersection has a sidewalk measuring approximately 5 feet in width along its site frontage on Phillips Road and Theodore Rice Boulevard. Otherwise, there are no sidewalks provided throughout the New Bedford Industrial Park or along Theodore Rice Boulevard west of Phillips Road.

Continued on next page

Transportation/Traffic, Continued

Existing Conditions, continued

Marked bike lanes are provided along Phillips Road, and along Braley Road east of Phillips Road. Although there are no marked bike lanes along Duchaine Boulevard within the New Bedford Industrial Park. There are 11-foot wide bikeable shoulders along either side of the roadway. There are no marked bike lanes along Theodore Rice Boulevard west of Philips Road, and the existing shoulder widths are not conducive to biking.

Existing Traffic Volumes

To assess peak hour traffic conditions, manual turning movement counts were conducted at the study area intersections during the weekday morning (7:00 AM to 9:00 AM) and weekday afternoon (3:00 PM to 6:00 PM) peak periods on Wednesday, June 13, 2018. The four highest consecutive 15-minute intervals during each of these count periods constitute the peak hours that are the basis of the traffic analysis provided in the 2018 McMahon TIS and updated in this DEIR. Based on the peak period traffic counts, the weekday morning peak hour occurs between 7:30 AM and 8:30 AM and the weekday afternoon peak hour occurs between 3:00 PM and 4:00 PM. The traffic counts are summarized in Appendix A of the Traffic Impact Study (Attachment 7).

Automated traffic recorder (ATR) data was collected on Duchaine Boulevard for a 48-hour period in June of 2018. The ATRs collected traffic volume data on along the southern end of Duchaine Boulevard near the proposed site. In the vicinity of the project site, the overall average daily traffic volume on Duchaine Boulevard was recorded to be approximately 4,150 vehicles for both directions with approximately 2,000 vehicles traveling northbound and approximately 2,150 vehicles traveling southbound. Based on the ATR data, approximately 25% of the daily traffic was classified as heavy vehicles. The ATR data is provided in Appendix B of the Traffic Impact Study (Attachment 7).

Continued on next page

Transportation/Traffic, Continued

Existing Conditions, continued

In order to determine seasonal variation in the area of the project, traffic count data from the Massachusetts Department of Transportation (MassDOT) continuous count station 617 on Route 140 just north of the project site was reviewed. Based on this data, traffic volumes in the month of June are higher than an average month. Therefore, to present a conservative analysis, traffic volumes were not adjusted downward to present an average month.

Based on the current status of the project, the 2018 Existing volumes, as presented in the 2018 McMahon TIS, were adjusted to take into account the removal of the trips associated with the previous trucking facility located on site, and the addition of the trips associated with the glass facility that will occur when all operations have relocated from Shawmut Avenue. These calculated volumes represent the 2019 Existing volumes that are used as a baseline for the updated traffic analysis presented in this report. The 2019 Existing peak hourly traffic flows are depicted in Figures 4 and 5 for the weekday morning, and weekday afternoon peak hours, respectively.

Crash Summary

Crash data for the study area intersections was obtained from MassDOT for the most recent five-year period available. This data includes complete yearly crash summaries for 2011, 2012, 2013, 2014 and 2015. The MassDOT Crash Rate Worksheet was used to determine whether the crash frequencies at the study area intersections were unusually high given the travel demands at each location and calculates a crash rate expressed in crashes per million entering vehicles. A complete summary of the reported crashes for each study area intersection over the five-year period analysed is provided in Appendix C of the Traffic Impact Study (Attachment 7).

Based on a review of the crash data, the study area intersection of Braley Road/Theodore Rice Boulevard at Phillips Road had a calculated crash rate of 0.62 crashes per million entering vehicles, and the intersection of Theodore Rice Boulevard at Duchaine Boulevard had a calculated crash rate of 1.12 crashes per million entering vehicles. Both of these calculated crash rates are higher than the MassDOT District 5 and statewide average of 0.57 crashes per million entering vehicles for unsignalized intersections. The other study area intersections had calculated crash rates under the District 5 and statewide averages.

Continued on next page

Transportation/Traffic, Continued

Existing Conditions, continued

The intersection of Braley Road/Theodore Rice Boulevard at Phillips Road had a total of 18 crashes reported over the five-year period analyzed. A majority of these reported crashes were angle, rear-end, and single vehicle collisions. Angle and read-end collisions are considered to be typical of stop-controlled intersections. A total of seven of the reported crashes resulted in personal injury, while the remaining eleven crashes resulted in property damage only.

The intersection of Theodore Rice Boulevard at Duchaine Boulevard has a total of eleven reported crashes over the five-year period analysed. A high number of the reported crashes were single vehicle collisions, one of which, in 2014, resulted in a fatality. Based on local news reports from an article dated Sunday, October 12, 2014, speed was a prominent factor in this fatal crash and it is suspected that the operator of the vehicle was street racing.

McMahon has concluded that the traffic generated by the proposed site will not significantly impact the safety at the study area intersections.

Future Conditions

To determine future traffic demands on the study area roadways, the 2019 Existing traffic volumes were projected to a future-year 2026 set of volumes, in accordance with MassDOT guidelines. Independent of the proposed project, traffic volumes on the roadways in 2026 are assumed to include all existing traffic, as well as new traffic resulting from general growth in the study area and from other planned development projects. The potential background traffic growth unrelated to the proposed project was considered in the development of the 2026 No Build (without project) peak hour traffic volume networks. The anticipated traffic increases associated with the proposed development were then added to the 2026 No Build volumes to reflect the 2026 Build (with project) traffic condition.

Future Background Growth and Improvements

To predict a rate at which traffic on the roadways in the vicinity of the site can be expected to grow during the seven-year forecast period (2019 to 2026), both planned area developments and historic traffic growth were examined. In 2008, the subject property was listed as Chapter 43D site, which allows for expedited permitting

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Transportation/Traffic, Continued

Figure 4 - 2019 Existing Weekday AM

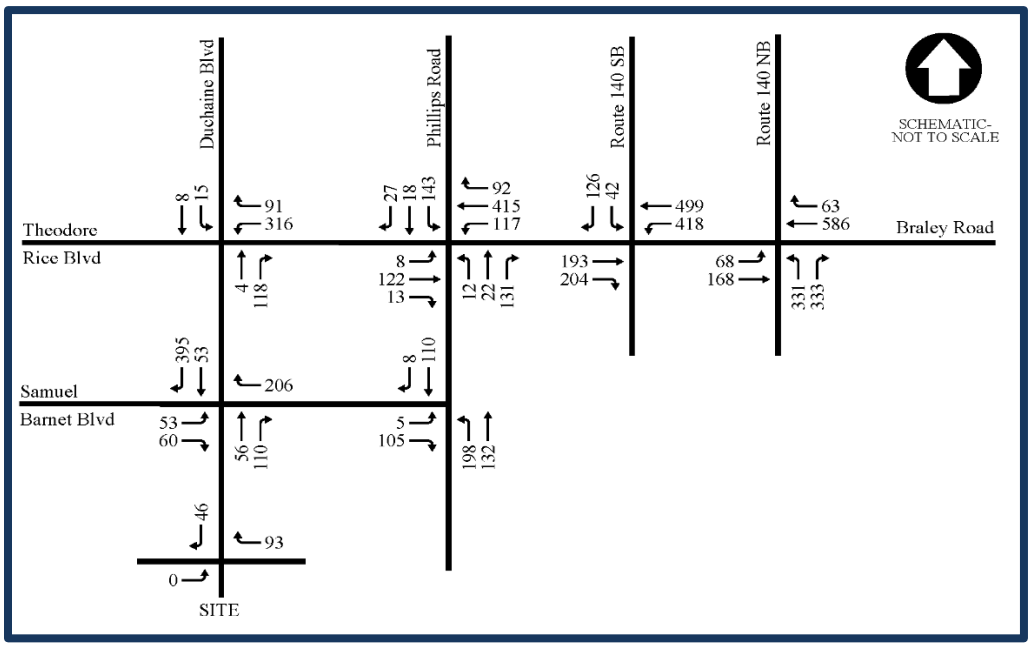
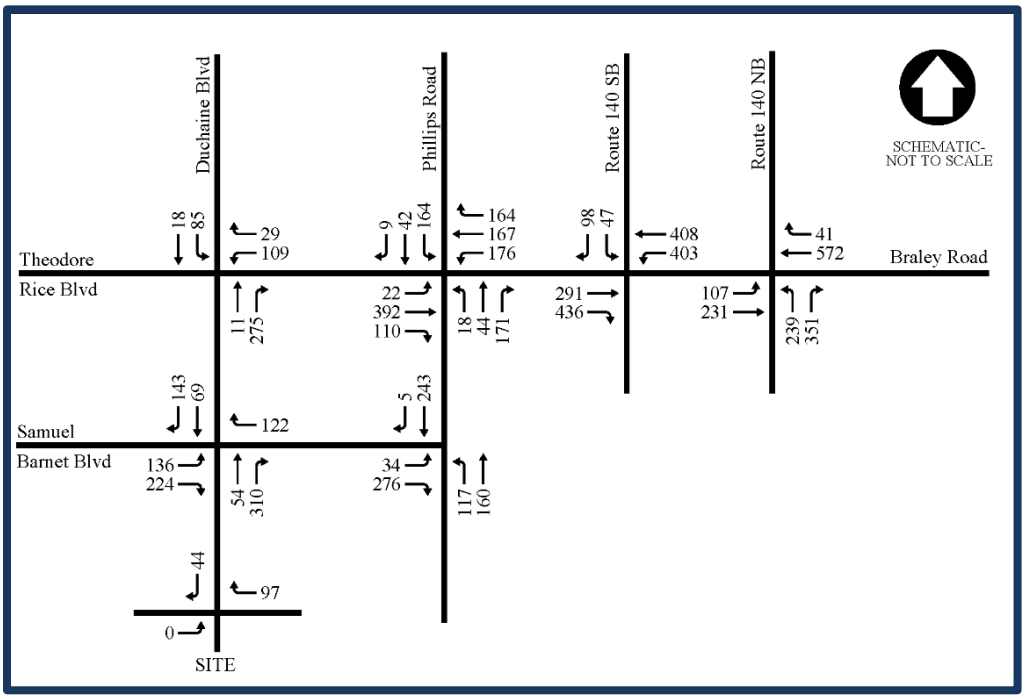


Figure 5- 2019 Existing Weekday AM



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Transportation/Traffic, Continued

Future Conditions, continued

The Southeastern Regional Planning and Economic Development District (SPREDD) recommended an annual growth rate of one percent per year in order to forecast increases in general traffic volumes on the study area roadways and intersections for our future analysis. This rate captures growth associated with general changes in population and accounts for other small developments in the vicinity of the study area.

At the time of the 2018 McMahon TIS, no proposed development or roadway improvement projects were planned in the vicinity of the study area that would be expected to influence future traffic patterns or volumes. A gas station development was recently constructed on the parcel located on the northwest corner of the intersection of Theodore Rice Boulevard and Phillips Road. The development also includes a Dunkin', convenience store, and deli. Based on information provided in the Institute of Transportation Engineers' (ITE) publication, *Trip Generation Manual, 10th Edition,* a majority of the trips attracted to these land uses are considered "pass-by" trips. Pass-by trips are classified as trips generated by a land use that are already on the adjacent roadways, and are thus not adding additional traffic to those roadways; therefore, the gas station development is expected to have minimal impact on the traffic volumes along the surrounding roadways, and new trips generated by this site are assumed to be included in the annual growth rate for future volumes described below.

2026 No Build Traffic Volumes

The 2019 Existing peak hour traffic volumes were grown by one percent per year over the seven year study horizon (2019 to 2026) to establish the 2026 No Build weekday morning and weekday afternoon peak hour traffic volumes. The 2026 No Build weekday morning and weekday afternoon peak hour traffic volume networks are illustrated in Figures 6 and 7, respectively, and are documented in the traffic projection model presented in Appendix D of the Traffic Impact Study (Attachment 7).

Continued on next page

Transportation/Traffic, Continued

Future Conditions, continued

Site Generated Traffic

The site proposes to receive solid waste (MSW and C&D), biosolids, and recyclable glass. As the site is currently processing the recyclable glass under the Phase 1 waiver granted by MEPA, the trip generation estimates to establish the 2026 Build traffic volumes were based on expected trips associates with the MSW, C&D, and bio solid processing at the site. To estimate the trip generation for the proposed site, estimated trips were calculated based on the maximum approved tonnage for the site and the capacity of the trucks that will be utilizing the site. The proposed facility is expected to generate approximately 300 new truck trips per day (150 truck trips entering, 150 truck trips exiting) for the solid waste operations. In addition, there are approximately 150 additional employee trips per day (75 trips entering, 75 trips exiting) estimated for the facility, for a total estimated 450 vehicle trips accessing the site daily.

The site is proposed to accept truck deliveries between 5:00 AM and 9:00 PM. Data from a comparable site in Rochester, MA was used to estimate the hourly distribution of truck traffic entering the site. Outbound materials were conservatively estimated to be transported from the proposed site by trailers (28 tons per load) in trucks that are assumed to be empty entering the site and full exiting the site, to present a conservative traffic analysis scenario. However, it is expected that the majority of outbound transportation of materials from the site will be done via rail, which would, in practice, reduce the number of trips generated by the site.

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Transportation/Traffic, Continued

Figure 6– 2026 No Build Weekday Traffic AM

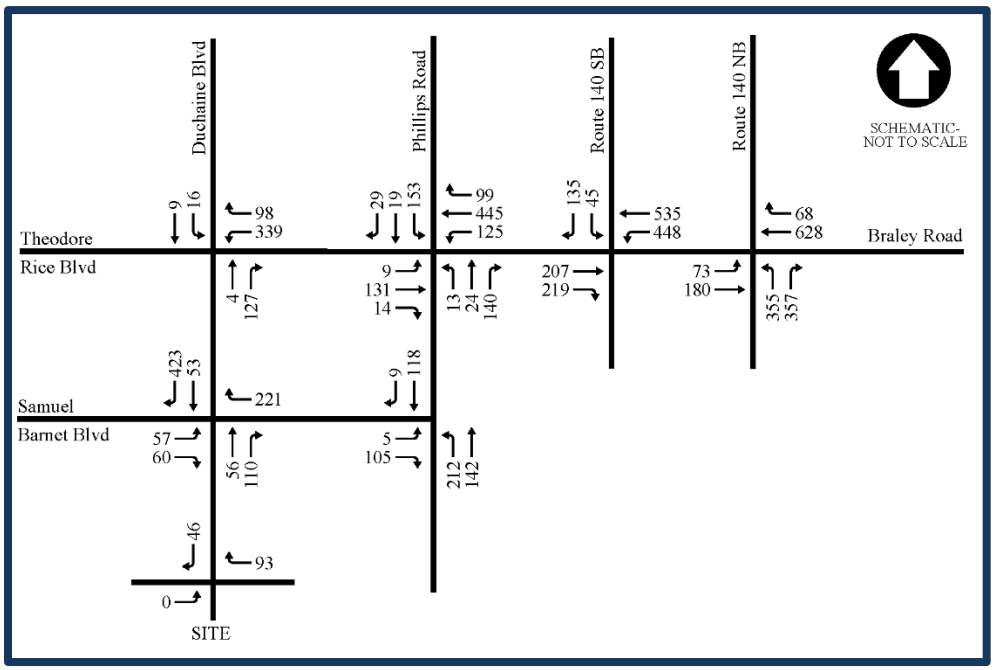
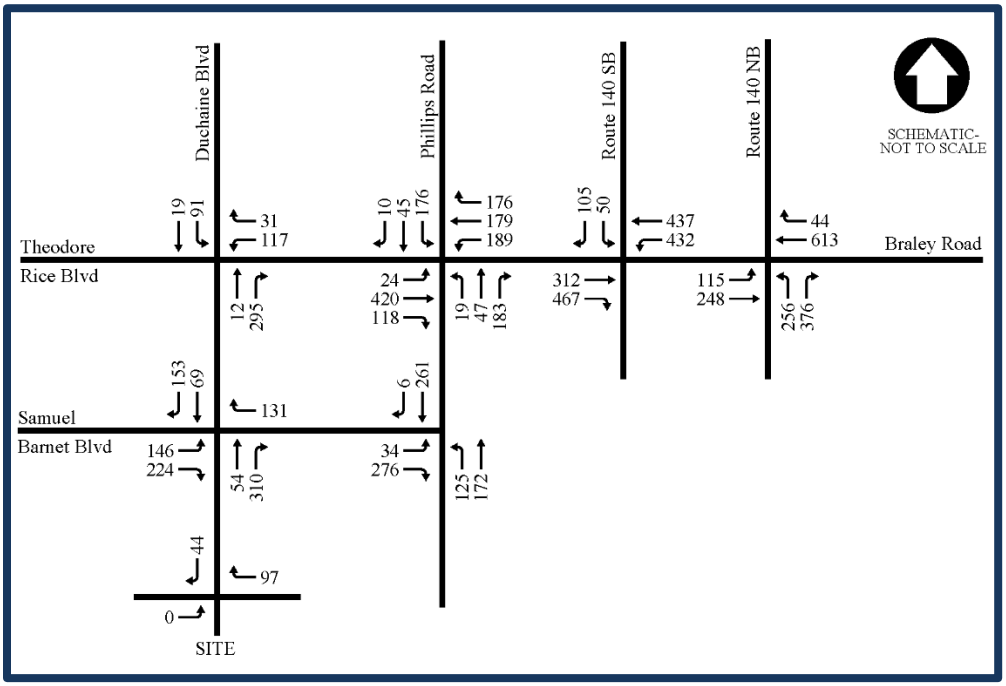


Figure 7– 2026 No Build Weekday Traffic PM



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Transportation/Traffic, Continued

Future Conditions, continued

The employee trips were distributed based on three, 8.5-hour shifts each consisting of 25 employees. These shifts are scheduled to run from 6:00 AM to 2:30 PM, 2:00 PM to 10:30PM, and 10:00PM to 6:30AM. Based on these shifts, it is expected that all employees will be leaving the site outside of the peak hours.

A detailed breakdown of the trips is provided in the 2018 McMahon TIS, which also included glass processing trips now accounted for in the 2019 Existing conditions scenario. An updated summary of the expected peak hour trip generation is shown in Table 2 below and is shown in detail in Appendix E of the Traffic Impact Study (Attachment 7).

As shown in Table 2 below, the peak hour trip generation of the proposed transfer station is estimated to result in an increase of approximately 30 vehicle trips (16 entering and 14 exiting) during the weekday morning and weekday afternoon peak hours. Over the course of an average weekday, the proposed project is estimated to generate approximately 225 daily vehicles to the study area roadways.

Table 2

Description	Weekday			Weekday AM Peak Hour(2)			Weekday PM Peak Hour(2)		
	In	Out	Total	In	Out	Total	In	Out	Total
MSW/C&D Trips(1)									
Packer	27	27	54	3	2	5	3	2	5
Roll-Off Container	4	4	8	1	0	1	0	1	1
Roll-Off	2	2	4	0	0	0	0	0	0
MSW Transfer Trailer	38	38	76	4	4	8	4	4	8
C&D Transfer Trailer	5	5	10	0	1	1	1	0	1
Outbound Trailers	54	54	108	6	5	11	6	5	11
Biosolid Trips	20	20	40	2	2	4	2	2	4
Truck Trip Total	**150**	**150**	**300**	**16**	**14**	**30**	**16**	**14**	**30**
Proposed Project Employees	75	75	150	0	0	0	0	0	0
TOTAL	**225**	**225**	**450**	**16**	**14**	**30**	**16**	**14**	**30**

(1) Based on the volume of trucks delivering solid waste to Covanta in Rochester as determined from MassDEP Records for 2015

(2) Based on the daily distribution of trucks delivering waste to Covanta in Rochester as determined from MassDEP records for 2015.

Continued on next page

Transportation/Traffic, Continued

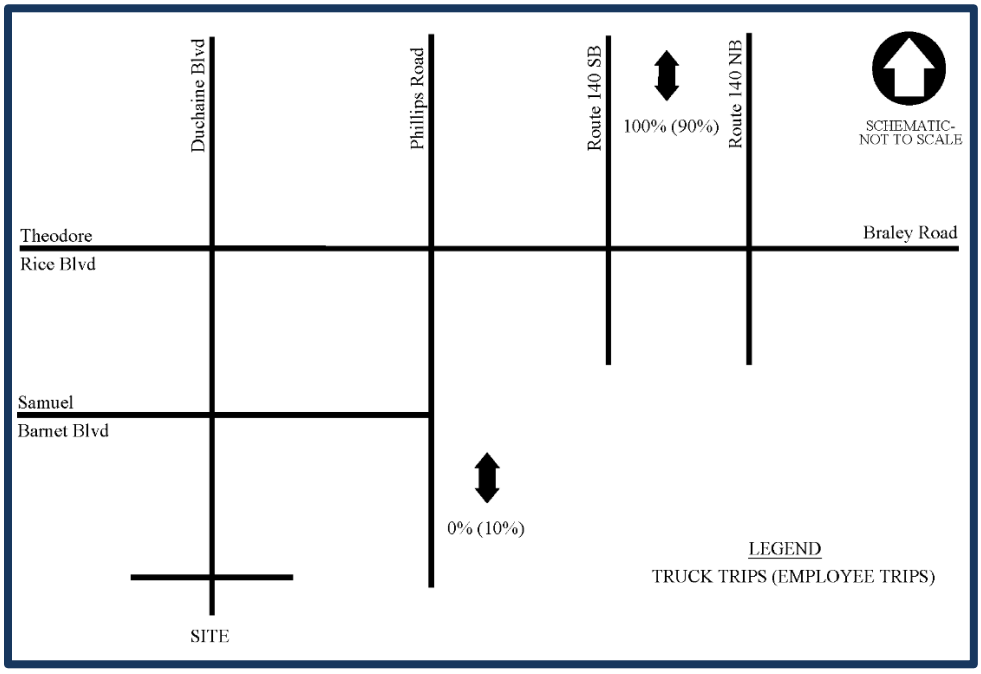
Future Conditions, continued

2026 Build Traffic Volumes

To establish the 2026 Build peak hour traffic volumes, the project-related traffic was assigned to the surrounding study area roadways and intersections based on expected access to/from Route 140. It was assumed that all of the truck traffic entering the site will utilize Route 140 to Braley Road. A small portion of the employee trips were assumed to access the site from the south, utilizing Phillips Road. The resulting arrival and departure patterns for both truck and employee trips are presented in Figure 8 and documented in the traffic projection model.

The project-related traffic was assigned to the surrounding roadway network based on the project trip distribution patterns presented in Figure 8. The resulting distributed new truck are shown in Figures 9 for the weekday morning and weekday afternoon peak hours. Since the peak volumes of the site do not coincide with commuter peak hour periods, and to present a conservative analysis, the peak hour volumes of the site-generated traffic were calculated and added to the existing commuter peak hour traffic volumes of the surrounding roadways. The resulting 2026 Build traffic volumes are presented in Figures 10 and 11 for the weekday morning and weekday afternoon peak hours, respectively.

Figure 8 – 2026 Arrival and Departure Pattern



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Transportation/Traffic, Continued

Figure 9– 2026 New Truck Trips Weekday AM/PM

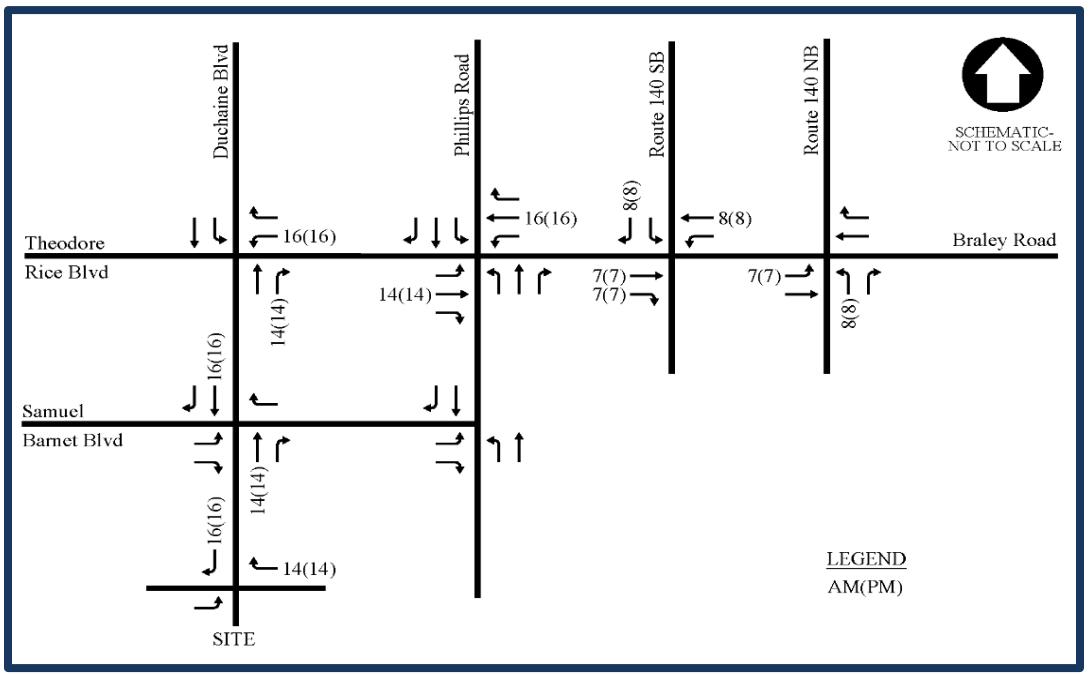
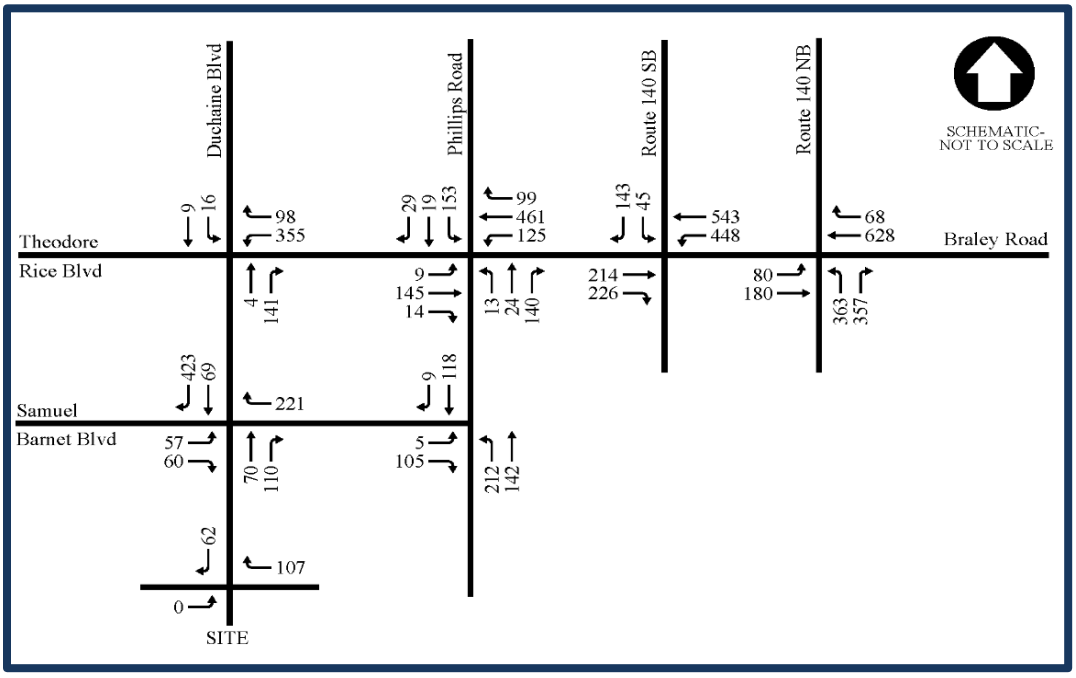


Figure 10– 2026 Build Weekday AM



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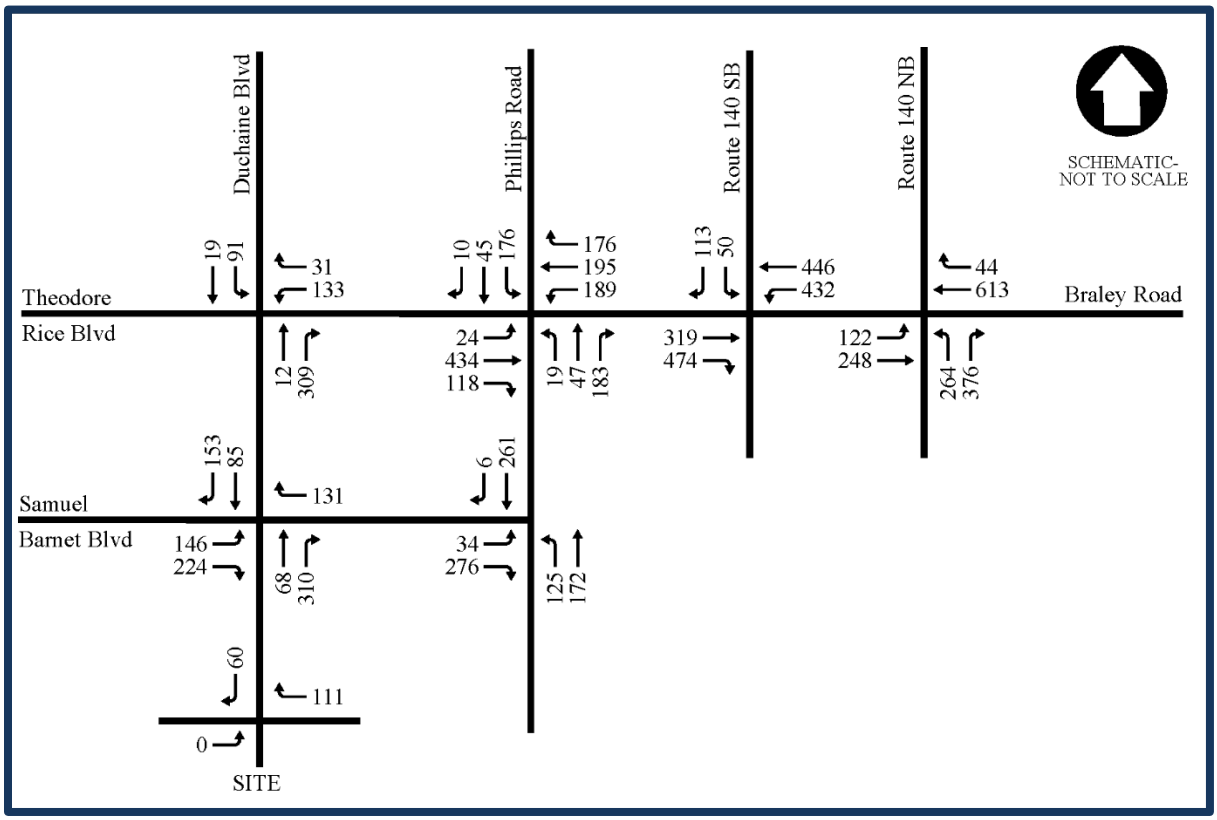
Transportation/Traffic, Continued

Figure 11 – 2026 Build Weekday PM



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Transportation/Traffic, Continued

Traffic Operations Analysis

The following section describes the quality of traffic flow at the study area intersections for the given travel demands. Intersection capacity analyses were conducted using Synchro capacity analysis software for the study area intersections under the 2019 Existing, 2026 No Build, and 2026 Build peak hour traffic conditions. This analysis is based on procedures contained in the latest edition of the Highway Capacity Manual (HCM) presented in Appendix F of the updated TIS. Operating levels of service (LOS) are reported on a scale of A to F with A representing the best conditions (with little or no delay) and F representing the worst operating conditions (long delays).

Capacity Analysis Results

The capacity analysis results for the 2019 Existing, 2026 No Build, and 2026 Build conditions are presented in Appendices G, H, and I, respectively, of the Traffic Impact Study (Attachment 7). The results of the signalized and unsignalized intersection capacity analyses are presented in Table 3 below and a more detailed summary of the capacity analysis results for each study area intersection is provided in Appendix J of the Traffic Impact Study.

As shown in Table 3 on the proceeding page, the proposed project is not expected to have a significant impact on traffic operations throughout the study area. The specific capacity analysis results of the study area intersections are discussed below.

Route 140 Northbound on/off-ramp at Braley Road

The critical stop-controlled northbound approach at the Route 140 Northbound off-ramp currently operates at a LOS B for right turning vehicles, and LOS F for left turning vehicles during both the weekday morning and weekday afternoon peak hours. Under the 2026 No Build conditions, the right turn movement is expected to drop from LOS B to LOS C during the weekday afternoon peak hour, while continuing to operate at LOS B during the weekday morning peak hour. The left turn movement is expected to continue to operate at LOS F. Under the 2026 Build conditions, the capacity analysis indicates that there are not expected to be any changes in LOS for the northbound approach. All movements on Braley Road are shown to operate at LOS A during all peak hours analyzed.

Continued on next page

Transportation/Traffic, Continued

Table 3:
Peak Hour Intersection Capacity Analysis Results

Intersection	Movement		2019 Existing						2026 No Build						2026 Build					
			Weekday AM			Weekday PM			Weekday AM			Weekday PM			Weekday AM			Weekday PM		
			LOS[1]	Delay[2]	V/C[3]	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
Route 140 Northbound Ramps at Braley Road	EB	LT	A	2.9	0.10	A	3.1	0.14	A	3.0	0.11	A	3.2	0.16	A	3.2	0.12	A	3.4	0.17
	WB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	NB	L	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00
		R	B	12.3	0.42	B	14.4	0.51	B	12.9	0.46	C	15.7	0.56	B	12.9	0.46	C	15.7	0.56
Route 140 Southbound Ramps at Braley Road	EB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	WB	LT	A	4.8	0.42	A	7.7	0.56	A	5.1	0.46	A	9.0	0.63	A	5.1	0.47	A	9.2	0.64
	SB	L	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00
		R	B	14.6	0.28	B	12.2	0.19	C	15.6	0.32	B	12.7	0.21	C	16.1	0.34	B	13.0	0.23
Braley Road/ Theodore Rice Boulevard at Phillips Road	EB	LT	B	13.6	0.33	F	>50.0	>1.00	B	14.7	0.67	F	>50.0	>1.00	C	15.4	0.41	F	>50.0	>1.00
		R	A	9.7	0.03	B	13.3	0.29	B	10.1	0.03	B	14.4	0.33	B	10.2	0.03	B	14.5	0.33
	WB	LTR	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00
	NB	LTR	B	13.6	0.38	D	26.3	0.70	B	14.8	0.43	D	31.7	0.80	C	15.1	0.44	D	31.6	0.81
	SB	LTR	B	14.3	0.39	C	24.0	0.60	C	15.5	0.43	D	27.9	0.69	C	15.8	0.44	D	28.0	0.70
Theodore Rice Boulevard at Duchaine Boulevard	WB	LR	A	8.0	0.25	A	7.6	0.08	A	8.1	0.26	A	7.6	0.09	A	8.1	0.28	A	7.7	0.10
	NB	TR	C	21.0	0.01	B	11.5	0.01	C	22.8	0.01	B	11.6	0.01	C	24.1	0.01	B	12.1	0.02
	SB	L	C	21.5	0.08	B	12.0	0.19	C	23.8	0.10	B	12.4	0.21	D	25.4	0.11	B	13.1	0.22
		T	A	0.0	0.00	A	0.0	0.02	A	0.0	0.00	A	0.0	0.02	A	0.0	0.00	A	0.0	0.00
Duchaine Boulevard at Samuel Barnet Boulevard	EB	LR	B	12.7	0.12	B	11.7	0.24	B	13.0	0.14	B	11.9	0.26	B	13.5	0.15	B	12.4	0.27
	WB	R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	NB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Phillips Road at Samuel Barney Boulevard	EB	LR	B	10.6	0.18	C	18.8	0.61	B	10.7	0.18	C	20.4	0.63	B	10.7	0.18	C	20.4	0.63
	NB	LT	A	4.8	0.17	A	3.5	0.12	A	4.9	0.19	A	3.6	0.13	A	4.9	0.19	A	3.6	0.13
	SB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Duchaine Boulevard at Site Boulevard	EB	L	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	WB	R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00

(1) Level-of-Service
(2) Average vehicle delay in seconds
(3) Volume to capacity ratio

Transportation/Traffic, Continued

Traffic Operations Analysis, continued

Route 140 Southbound on/off-ramp at Braley Road

The capacity analysis results show the stop-controlled southbound approach at the Route 140 southbound off-ramp currently operating at LOS F for left turning vehicles and LOS B for right turning vehicles. Under the 2026 No Build conditions the southbound approach is expected to drop from LOS B to LOC C for right turning vehicles, while continuing to operate at LOS F for left turning vehicles during the weekday morning peak hour. Under the 2026 Build conditions, the southbound approach is not expected to experience any changes in LOS. All movements on Braley Road are shown to operate at LOS A during all peak hours analyzed.

Braley Road/Theodore Rice Boulevard at Phillips Road

Under the 2019 Existing conditions, the stop-controlled northbound approach is shown to operate at a LOS B during the weekday morning peak hour and LOS D during the weekday afternoon peak hour. The stop-controlled southbound approach is shown to operate at LOS B during the weekday morning peak hour, and LOS C during the weekday afternoon peak hour. The stop-controlled eastbound approach is shown to operate at LOS B for the left and through movement and LOS A for the right turn movement during the weekday morning peak hour, and LOS F and LOS B for the left and through movement and right turn movements, respectively, during the weekday afternoon peak hour. The stop-controlled westbound approach is shown to operate at LOS F during both the weekday morning and weekday afternoon peak hours.

Under the 2026 No Build conditions, the southbound approach is expected to drop from LOS B to LOS C during the weekday morning peak hour, and from LOS C to LOS D during the afternoon peak hour. The eastbound right turn movement is expected to drop from LOS A to LOS B during the weekday morning peak hour. All other approaches are not expected to experience changes in LOS under the 2026 No Build conditions.

Under the 2026 Build conditions, the eastbound left turn and through movement is expected to drop from LOS B to LOS C, and the northbound approach is expected to drop from LOS B to LOS C during the weekday morning peak hour. All other approaches are expected to continue to operate at the same LOS under all future conditions analyzed.

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Transportation/Traffic, Continued

Traffic Operations Analysis, continued

Theodore Rice Boulevard at Duchaine Boulevard

The stop-controlled northbound approach at the intersection of Theodore Rice Boulevard at Duchaine Boulevard is shown to currently operate at a LOS C during the weekday morning peak hour and LOS B during the weekday afternoon peak hour. The southbound left turn approach is also shown to operate at a LOS C during the weekday morning peak hour and LOS B during the weekday afternoon peak hour while the southbound through movement operates at a LOS A during both peak hours. The capacity analysis indicates that under the 2026 No Build conditions, there is not expected to be any changes in LOS at either approach.

Under the 2026 Build conditions, the southbound left turn movement is expected to drop from LOS C to LOS D while all other movements continue to operate with the same LOS. The westbound movement is shown to operate at LOS A under all conditions analyzed.

Duchaine Boulevard at Samuel Barnet Boulevard

The stop-controlled eastbound movement at the intersection of Duchaine Boulevard at Samuel Barnet Boulevard currently operates at a LOS B during both the weekday morning and weekday afternoon peak hours. Based on the capacity analysis results, it is expected that the eastbound approach will continue to operate at LOS B under all future conditions (2026 No Build and 2026 Build). The westbound, northbound and southbound free movements are shown to operate at LOS A during all peak hours analyzed.

Phillips Road at Samuel Barnet Boulevard

The critical eastbound approach on Samuel Barnet Boulevard at the intersection of Phillips Road at Samuel Barnet Boulevard currently operates at a LOS B during the weekday morning peak hour and LOS C during the weekday afternoon peak hour. The capacity analysis indicates that under the 2026 No Build and 2026 Build conditions, there are not expected to be any changes in LOS at this approach. All movements on Phillips Road are shown to operate at LOS A during all peak hours analyzed.

Overall, traffic operations within the study area are not expected to be significantly impacted by the proposed project.

Continued on next page

Transportation/Traffic, Continued

Proposed Project Site

Site Access/Circulation

Under the proposed plan, the site is proposed to be accessed via the existing site driveway on Duchaine Boulevard, which leads to an internal one-way loop roadway surrounding the proposed facility.

It is expected that the majority of traffic entering the site (including all heavy vehicle traffic) will utilize Route 140 to Braley Road, but a small portion of employee traffic from the south may utilize Phillips Road to access the proposed site. To minimize the amount of traffic accessing the site from the south, a truck exclusion will be implemented along Phillips Road between Braley Road and Route 140.

Parking

The proposed project includes a total of 428 on-site parking spaces, which will be utilized by both trucks and employees. Although the latest version of the ITE *Parking Generation Manual, 4th Edition,* doesn't include information for a transfer station, comparable land uses that are included in the manual were reviewed. These include Land Use Code (LUC) 110 (General Light Industrial), LUC 140 (Manufacturing), and LUC 150 (Warehousing). These references establish parking rates (expressed in spaces per 1,000 square feet) based on actual sites at similar existing land uses. Based on the proposed 183,000 square foot transfer station facility, the 428 proposed parking spaces are shown to exceed the expected demand based on the available ITE parking generation data for the land uses cited above.

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Transportation/Traffic, Continued

Transportation Demand Management

As part of the proposed project's commitment to supporting Transportation Demand management (TDM) measures to reduce single occupancy vehicle (SOV) trips among employees, and to encourage the use of alternative modes of transportation to the site, the client is proposing to apply the following TDM measures:

- Providing opportunities for employees to participate in transit subsidy or reimbursement programs.
- Informing employees of nearby transit stops and bicycle and pedestrian amenities.
- Coordinate with SRTA to consider revising existing transit service to better service the project site.
- Implementing a carpool system among employees.
- Direct deposit offered to employees.
- Providing preferential parking for carpools and vanpools.
- Providing incentives to encourage bicycle ridership to the site, such as bike racks and other storage facilities on site.
- Providing striped bicycle lanes along Duchaine Boulevard and shared bicycle markings along Theodore Rice Boulevard to provide connectivity to the existing bicycle amenities along Braley Road. This is contingent upon City approval.

Greenhouse Gas Emissions

Introduction

An initial GHG analysis was presented in the EENF. This analysis addressed the GHG emissions that would be generated by operation of the Project and associated traffic, and options that may reduce those emissions in accordance with the MEPA GHG Policy. The GHG analysis focused on emissions of carbon dioxide (CO_2). As noted in the GHG Policy, although there are other GHGs, CO_2 is the predominant contributor to global warming. Furthermore, CO_2 is by far the predominant GHG emitted from the types of sources related to this Project, and CO_2 emissions can be calculated for these source types with readily available data.

GHG emissions sources can be categorized into two groups: (1) stationary sources, or emissions related to structures and equipment that are stationary on the site; and (2) mobile sources, or emissions related to transportation. Stationary sources can be further broken down into direct sources and indirect sources; direct sources include GHG emissions from on-site fuel combustion, and indirect sources include GHG emissions associated with electricity and other forms of energy that are imported from off-site power plants via the regional electrical grid for use on-site.

The GHG analysis presented in the EENF detailed building energy modeling for the planned Project. The EENF Certificate included comments from the Department of Energy Resources (DOER). As the building designs have advanced somewhat since the filing of the EENF, design decisions have been informed through careful modeling and cost analysis. In this continuation of the GHG analysis, Project details are updated, and DOER and MEPA comments are addressed.

Project Update

As detailed in the EENF, the proposed overall project includes a solar PV initiative and is a combination of three industrial processes: recycled glass handling, municipal solid waste (MSW) processing and construction and demolition (C&D) handling, and biosolids processing. The project will be implemented in sequential phases. The glass handling is being implemented as Phase 1, the MSW and biosolids processing will be implemented as Phase 2.

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Greenhouse Gas Emissions, Continued

Project Update, continued

Since the submittal of the EENF, the glass handling building design has been added as a conditioned space. Like the biosolids building, the glass handling building will be minimally heated in the winter to maintain 50 degrees Fahrenheit. The glass handling building received a Phase 1 waver and is under construction.

Additionally, mobile source emissions have been updated to reflect operational changes that have been determined.

DOER Comments

The majority of the DEIR scope centers on the comments and recommendation made by DOER in their comment letter on the EENF. They are:

- Clarification of the planned code pathway;
- Building construction of biosolids building;
- Envelope information for both roof and walls of biosolids building;
- Space heating output per area for biosolids building;
- Evaluation of reduced lighting power density to 20%;
- Evaluation of using cold-climate heat pumps for space heating; and
- Schedule for installation of solar PV system.

Clarification of Code Pathway

The planned code pathway was clarified and presented in a memorandum to DOER from WSP on August 29, 2019, included in Attachment 16. The key points of the clarifications in that memo are discussed below.

Three buildings will be heated and are considered "conditioned spaces". They are:

- The Glass Processing Building, Glass Processing Section
- The Glass Processing Building, Bunker Building Section
- Bio-solids Building

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Greenhouse Gas Emissions, Continued

DOER Comments, continued

The Project will follow ASHRAE 90.1-2013 with Massachusetts Amendments per Chapter 13 of 780 CMR code compliant pathway. As such, the project will comply with the mandatory and prescriptive requirements of ASHRAE 90.1-2013 and all conditioned buildings will comply with two of the six C406.1 measures. These two measures are reduced lighting power density by a minimum of 10% and the use of on-site renewable energy supply in the form of an approximately 1.9 MW photovoltaic (PV) array installed on adjacent canopies within the site. Because of their size, the buildings are not subject to stretch code.

The conditioned buildings will meet the mandatory and prescriptive requirements of the energy code. These three buildings will comply with Sections 5.1, 5.4, 5.8, as well as Section 5.5 – Prescriptive Building Envelope Option (which is allowed when fenestration area does not exceed the maximum allowed by Section 5.5.4.2.").

Note that roof of the Glass Handling Building (under construction) is designed with the R=19 insulation but without the R=11 liner system prescribed by ASHRAE 90.1-2013. PPNE is evaluating final design options; the FEIR will commit to retrofit the R=11 liner system or will provide documentation that the additional heating energy consumption (and incremental GHG impact) due to the code deviation does not warrant the retrofit.

Otherwise, these buildings will have insulation that meets the requirements of Sections 5.8.1.1 through 5.8.1.10. The conditioned spaces will meet the Section 5.4.3.1 requirements for a continuous air barrier.

Conditioned Space-Glass Handling Building

The glass handling building (glass processing and bunker sections) will be a pre-engineered metal building with an eave height of 24'-0" and a peak height of 50'-0". The use is for the processing and sorting glass products for recycling. The exterior sides of the building will be 26 gage corrugated metal panel. The roof panels are standard "Double-Lok" metal roof panels. The envelope will be designed with R=19 roof and wall insulation.

The expected space heating output per area for the glass handling building is expected to be approximately 15 to 16 Btu/hr/sf.

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Greenhouse Gas Emissions, Continued

DOER Comments, continued

Conditioned Space-Biosolids Building

The biosolids building will be a pre-engineered metal building with a roof low point of 52'-3" and a high point of 57'-2". The use is for processing bio-solids. The base of the exterior walls of the building will have 15' of exposed concrete with added inboard insulation to reach R-19 below the 26 gage corrugated metal panels. The roof panels are standard "Double-Lok" metal roof panels. There will be a small office & restroom in the building. The Bio-Solids building will have roof insulation of R=19 + R=11 Ls (linear system) & R=19 wall insulation.

The space heating output per area for the biosolids building is expected to be approximately 144 Btu/hr/sf.

Reduced Lighting Power Density Evaluation

LED lighting will be employed throughout the project. After careful consideration, the lighting power density of the Project buildings can be reduced to at least 20% below code. Please refer to the GHG report in Attachment 16 preliminary lighting calculations.

Cold-Climate Heat Pump Evaluation for Space Heating

Heat Pumps were evaluated as an alternative system to the proposed design of gas heating. Please refer to the GHG report in Attachment 16 for a detailed heat pump analysis performed by WSP.

The analysis indicates that a heat pump system could reduce building GHG emissions by approximately 39% to 42%. This reduction is significant and warranted a detailed cost analysis. The cost analysis indicated that the incremental first cost minus MassSave incentives ranged between $23,800 to $255,600. In all cases, the heat pump systems cost more to operate, from $4,600 to $48,700 annually. Please refer to the GHG Report for analysis details.

While heat pump systems would reduce building GHG emissions, heat pumps would also increase both first costs and operating costs. For this reason, the use of heat pumps is financially infeasible to the project.

Continued on next page

Greenhouse Gas Emissions, Continued

DOER Comments, continued

Solar PV Installation Schedule

The Proponent anticipates receiving the Order of Conditions for the canopy PV construction in January, 2020. Construction will begin following receipt of order of conditions. Construction will continue until completion, with a August 1st 2020 target completion date.

MEPA Comments

VFDs and Advanced Vacuum Technology

The Proponent will incorporate variable frequency drives (VFDs) into the biosolids building ventilation. VFDs allow the building's ventilation system to operate at optimum efficiency, saving energy. The process equipment has not yet been designed. It is anticipated that the process equipment will incorporate VFDs, but process loads are unknown at this time.

Specific biosolids process equipment has yet to be designed. The decision to employ advanced vacuum technology will be made further along in the design process, after market conditions have been evaluated.

The addition of advanced (vacuum) drying technology to the biosolids process could further reduce biosolids process natural gas usage by 30%, according to vendor representations. However, PPNE cannot guarantee these savings due to lack of a vendor guarantee and/or supporting data.

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Greenhouse Gas Emissions, Continued

GHG Calculations

MSW Building

As detailed in the EENF, GHG impacts of the MSW handling process were limited to the energy use associated with the building. Specifically, the lighting demands for the building were quantified and the associated GHG emissions was included in project totals. While VFDs are proposed to be incorporated in to the project, their energy reduction impacts are unknown at this time. For this reason, proposed case ventilation demands presently do not differ from the baseline, so this aspect is not quantified. There will be no heat supplied in the tipping or processing areas. The building will be an unconditioned space.

Please refer to Table 4 for an estimate of MSW tipping and processing and C&D handling emissions.

Table 4
GHG Comparison of Rail Haul vs On Road Haul

	Solid Waste/Biosolids		Glass	
	Truck	Rail	Truck	Rail
GHG (lb/day)	154,426	63,247	19,289	7,441
GHG (tpy)	28,183	11,543	3,520	1,358
Difference (tpy)	-	-16,640	-	-2,162
Difference (%)	-	-59%	-	-61%

Glass Handling Building

As detailed in the EENF, the GHG impacts of the glass handling building were quantified and the process energy loads have been estimated. This process is industry standard and does not have a GHG reduction associated with it. Therefore, GHG reduction opportunities are presently limited to the energy use associated with the building. Specifically, the lighting, ventilation, and heating demands for the building have been quantified and the associated GHG emissions reductions have been included in project totals. See the Appendix to Attachment 16 of this report for design. Please refer to Table 5 in the GHG Report (Attachment 16) for an estimate of glass handling emissions.

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Greenhouse Gas Emissions, Continued

GHG Calculations, continued

Biosolids Building

As detailed in the GHG Report, the GHG impacts of the biosolids processing facility were quantified and the process energy loads have been estimated. This process is industry standard and does not have a GHG reduction associated with it. Therefore, GHG reduction opportunities are presently limited to the energy use associated with the building. Specifically, the lighting, ventilation, and heating demands for the building have been quantified and the associated GHG emissions reductions have been included in project totals. See the Appendix to Attachment 16 of this report for the basis of design.

Please refer to Table 6 within the GHG Report (Attachment 16) for an estimate of biosolids processing emissions.

Mobile Source Update

Mobile Source emissions revisions

Several changes have been made to the mobile source emission calculation following the EENF. Initially, vehicle emissions while in motion assumed 90% of site traffic would travel 3.0 miles round-trip north to Route 140 via Theodore Rice Boulevard and Braley Road while the other 10% would travel 4.5 miles round-trip south to Route 140 via Samuel Barnet Boulevard and Phillips Road. It has been clarified that all truck traffic will go north via Theodore Rice Boulevard and Braley Road.

Front end loader rates have been adjusted slightly to reflect operational refinement. Additionally, a load factor from the EPA has been included. The revised mobile source emissions summary is detailed in Table 7 of the GHG Report (Attachment 16).

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Greenhouse Gas Emissions, Continued

Mobile Source Update, continued

Rail versus Truck Comparison

The project is expected to reduce GHG by using freight rail to haul residuals from the processing of MSW, C&D waste, dried biosolids, and glass to various facilities in the Eastern and Midwestern United States. The MSW residuals, C&D waste, and dried biosolids will be moved by rail to landfills in Ohio (New Lexington or Fostoria locations). Alternative trucked locations for these wastes include the same landfills in Ohio and nearer landfills in New York State and New Hampshire. The processed glass materials will be sent to one or more of the following three locations: Henderson, North Carolina, Winchester, Indiana, and Toano, Virginia.

As requested by MEPA, the following analysis compares rail versus trucking using the most common landfill for the wastes and the closest destination for the glass. This analysis is based on the assumption that the wastes destination will be in the Midwest and the glass destination will be located in the midatlantic states.

Trucks

Emissions from on-road long haul trucks were calculated using the U.S. EPA's Motor Vehicle Emissions Simulator (MOVES2014b). The vehicle mix was set to output emission factors for vehicle "type 62" which corresponds to "combination long-haul trucks". Emission factors for "rural restricted" roadways at speeds from 0 mph to 80 mph were requested. "Rural restricted" roads are the best classification resembling the majority of the highway roads along the selected routes. Other MOVES inputs (age distribution, inspection and maintenance program information, etc.) were obtained from the MassDEP for Bristol County year 2025. It was assumed that trucks have local registrations are subject to local motor vehicle regulations.

Moving vehicle emissions were calculated by multiplying the number of daily trucks by the route distance (in miles) and the 65 mph emission factor (in grams per vehicle-mile traveled) to get mass emissions per day from moving vehicles.

Continued on next page

Greenhouse Gas Emissions, Continued

Mobile Source Update, continued

For idling emissions from these trucks, it was estimated that the trips from New Bedford to Virginia and Ohio would take roughly 10 to 12 hours, respectively. Since the trip times exceeded 8 hours, a mandatory 30 minute break for the driver was required. It was also assumed that 5% of the entire travel time was spent idling for various reasons (traffic, tolls, refueling, etc). Idling emissions were calculated by multiplying the number of daily trucks by the estimated idling time (in hours) and the 0 mph emission factor (in grams per hour) to get mass emissions per day from idling vehicles.

For MSW/C&D/Biosolids that are hauled by truck from the New Bedford area to Ohio, the truck trip is roughly 723 miles and the time spent idling is estimated at just over an hour. It is estimated that 58 trucks per day will take this haul route. This translates to about 154,426 lb/day of CO2e or 28,183 tpy (assuming 365 days of operation).

For glass that is hauled by truck from New Bedford to Virgina, the truck trip is roughly 584 miles and the time spent idling is estimated at an hour. It is estimated that 9 trucks per day will take this haul route. This translates to about 19,289 lb/day of CO2e or 3,520 tpy (assuming 365 days of operation).

Comparison Results

Overall, transport via rail results in a reduction of approximately 60% of GHG versus using on-road long haul trucks. A summary of the results is shown in Table 4.

Continued on next page

Greenhouse Gas Emissions, Continued

Mobile Source Update, continued

Summary and Mitigation Commitments

Project GHG Summary

Table 5 below presents a composite of project GHG emissions profiles of the Baseline and Proposed cases.

Proponent's Commitments to GHG Reduction

PPNE has detailed their commitments to mitigate project GHG emissions. Additional mitigation measures have not been quantified, primarily because the degree of accuracy or the reliability of the quantification method is uncertain.

PPNE is committed to environmental stewardship. As design develops further, the company expects that additional technologies described previously, or possibly new technologies developed in the interim period, may be adopted that will further decrease GHG emissions, but these options/technologies cannot be committed to for selection at this point in time. The proponent will encourage the continued evaluation of energy efficiency and renewable energy measures throughout the life of the project.

Table 5
Project GHG Emissions Summary

	Baseline	Proposed	Difference	
	Tons Per Year			%
Glass Handling	339	285	54	-15.9
MSW	333	266	66	-20.0
Biosolids	10,722	10,690	32	-0.3
Mobile Sources	1,721	1,721	-	-
On-site Renewable Energy	0	-1,649	1,649	-

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Greenhouse Gas Emissions, Continued

Mobile Source Update, continued

PPNE is committed to the following mitigation elements for the project:

- The installation of 1.9 MW of canopy solar PV to increase the site's overall PV capacity to 3.5 MW.
- A 20% reduction over Code in lighting installation electrical use in the new buildings (glass handling, MSW tipping, and biosolids processing) and in the MSW processing area of the existing building
- High-efficiency mechanical equipment;
- VFDs where appropriate;
- High-performance building envelopes;
- PV-Ready new construction;
- Construction waste recycling.
- Large scale recycling overall as this is the primary function of the facility

Large scale recycling overall as this is the intent of the facility.

The proponent has included in the design of the project, all feasible GHG emissions mitigation to avoid, reduce, minimize, or mitigate damage to the environment.

The proponent is committed to implementing the energy efficiency and GHG emission reduction measures presented in this analysis but must retain an amount of design flexibility to allow for changes that will inevitably occur as design progresses. If, during project design, a specific combination of design strategies proves more advantageous from an engineering, economic, or space utilization perspective, the design of the project may vary from what has been described herein. Energy performance minima and associated GHG emission reductions will be adhered to.

Upon completion of the project, PPNE will submit a self-certification to the MEPA Office, prepared in accordance with the GHG Policy. This certification will identify the GHG mitigation measures incorporated into the project and will illustrate the degree of GHG reductions from a baseline case, as baseline is defined herein, and how such reductions are achieved.

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Noise Impacts

Noise Impacts Introduction

The noise component of the Draft Environmental Impact Report (DEIR) provides an overview of the analysis completed to document the sound level impacts associated with the proposed facility development. A Sound Level Impact Assessment was conducted for the proposed development by Epsilon Associates, Inc. (Epsilon) dated February 2019. An updated sound level analysis was prepared based on the Project design updates and improvements, and incorporating comments received on the Expanded Environmental Notification Form (EENF). This section of the DEIR provides a summary of the updated sound level analysis, addressing potential noise impacts associated with the proposed solid waste facility as well as a response to the noise-related comments provided as part of the EENF certificate.

The proposed Project is designed to avoid noise impacts to residences, and PPNE has proposed mitigation measures to minimize sound levels at residences to the extent practicable. With the noise mitigation measures described in this DEIR, or equivalent design changes, the proposed Project will achieve lower impacts than required by the MassDEP Noise Policy at residential locations. Traffic noise modeling of existing and proposed future on-site trucking activity demonstrates predicted sound levels at all residential receptors are below Federal Highway Administration (FHWA) and Massachusetts Department of Transportation (MassDOT) criteria.

Terminology and Regulations

Terminology

As described in the Sound Level Assessment report, sound levels are measured and quantified using the logarithmic decibel (dB) scale. Frequencies are adjusted based on the A-weighting network because it most closely approximates how the human ear responds to sound at various frequencies. Because the sounds in our environment vary with time, the analysis uses two sound level metrics commonly used in community sound monitoring.

L_{90} is the sound level exceeded 90 percent of the time during the measurement period. It is essentially the same as the residual sound level, which is the sound level observed when there are no obvious nearby intermittent sound sources. The L_{90} level is used to establish the “ambient” or “background” sound level as part of the MassDEP Noise Policy.

Continued on next page

Noise Impacts, Continued

Terminology and Regulations, continued

L_{eq}, the equivalent level, is the level of a hypothetical steady sound that would have the same energy (*i.e.*, the same time-averaged mean square sound pressure) as the actual fluctuating sound observed.

Regulations

The Massachusetts Department of Environmental Protection (MassDEP) has the authority to regulate noise under 310 CMR 7.10, which prohibits "unnecessary emissions" of noise.

The MassDEP administers this regulation through its Noise Policy DAQC 90-001, dated February 1, 1990. The Noise Policy limits a source to a 10-dBA increase above the ambient sound measured (the L_{90} sound level) at the property line for the site and at the nearest residences. According to the MassDEP, "Noise levels that exceed the criteria at the source's property line by themselves do not necessarily result in a violation or a condition of air pollution under MassDEP regulations (see 310 CMR 7.10). The agency also considers the effect of noise on the nearest occupied residence and/or building housing sensitive receptors" (Energy and Environmental Affairs. *Noise Pollution Policy Interpretation | MassDEP*. http://www.mass.gov/eea/agencies/massdep/air/programs/noise-pollution-policy-interpretation.html. October 2016).. In addition, "…[a] new noise source that would be located in an area in which housing or buildings containing other sensitive receptors could be developed in the future may be required to mitigate its noise impact in these areas.[12]"

MassDEP's Noise Policy further prohibits "pure tone" conditions where the sound pressure level in one octave band is 3 dB or more than the sound levels in each of the two adjacent octave bands. A qualitative example of a source emitting a "pure tone" is a fan with a bad bearing that is producing an objectionable squealing sound.

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[12] Energy and Environmental Affairs. *Noise Pollution Policy Interpretation | MassDEP*. http://www.mass.gov/eea/agencies/massdep/air/programs/noise-pollution-policy-interpretation.html. Accessed October 2016.

Noise Impacts, Continued

Existing Conditions

An existing sound level survey was conducted during the daytime and nighttime hours to characterize the existing "baseline" acoustical environment in the vicinity of the site.

Sound Level Measurement Locations

The selection of the sound level measurement locations was based upon a review of aerial photography and online resources. Nearby residences were accounted for in selecting proposed monitoring locations. The measurement locations are representative of the ambient baseline sound level environment around the Project, and are described below.

- **Location CM1** is near the property line immediately southeast of the Project, and is representative of the newly built residences located next to the property line and immediately west of Phillips Road.
- **Location CM2** is near the property line immediately northwest of the Project, and is representative of the industrial properties to the north, west and south of the Project.
- **Location RML3** is northeast of the Project at the intersection of Industrial Park Road and Phillips Road. This location is representative of all the residences to the northeast of the Project, that are east of Phillips Road and back nearby Heritage Drive.
- **Location RML4** is southeast of the Project at the entrance to the City of New Bedford Pine Hill Park on Phillips Road. This location is representative of the park and all the residences to the southeast of the Project, that are to the west and east of Phillips Road.

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Noise Impacts, Continued

Sound Level Measurement Methodology

Continuous measurements (24 hours/day) were made concurrently at Locations CM1 and CM2. Meteorological data was collected concurrently nearby, only three miles to the south at the New Bedford Regional Airport National Weather Service (NWS) station. Periods of precipitation totaling approximately 16 hours were excluded from the dataset.

Short-term (20-minute) sound level measurements occurred at locations RML3 and RML4. Daytime measurements were conducted between 2 PM and 3 PM to avoid influence from local commuter traffic. Nighttime measurements occurred between 12 AM and 1:30 AM to capture the quietest portion of the night.

All sound monitoring instrumentation met the "Type 1 - Precision" requirements set forth in ANSI S1.4-1983 as specified in the ANSI S12.18-1994 methodology as well as those in ANSI S1.11-2004 (octave filter standard) for acoustical measuring devices.

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Noise Impacts, Continued

Baseline Ambient Sound Levels

The ambient sound level environment consists primarily of nearby vehicle traffic from Phillips Road, traffic on Route 140 and other roadways, nearby industrial work/construction noise during the daytime, children playing at the park, rustling vegetation, occasional aircraft, birds, and insects. Some MassDEP-defined "pure tones" were measured as part of the existing ambient environment, likely due to insects.

Measured sound levels were affected by insect noise. To more closely replicate sound levels at the same monitoring locations during insect-free periods, a high-frequency natural sound (HFNS) filter was applied to the measured one-third octave-band data from which a new broadband sound level was calculated (using the methodology specified in ANSI/ASA S12.100-2014).

At Locations CM1 and CM2 the daily lowest daytime and nighttime L_{90} sound levels were averaged to determine the representative background sound level at each location. These representative background levels were used to evaluate sound level increases at each location.

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Noise Impacts, Continued

Baseline Ambient Sound Levels, continued

Epsilon reviewed the short-term sound level monitoring results and determined that those sound levels were higher than the representative average lowest background levels from the long-term locations. Therefore, the representative average ANS-weighted L_{90} sound levels measured at the long-term locations were conservatively used at all locations to evaluate sound level increases.

Table 6

Summary of Average Daytime[1] & Nighttime[2] Ambient L_{90} Sound Level Measurements

Period	Location	Date	Start Time	Representative Sound Level[3] (L_{90} dBA)
Day	CM1	6/30/18	2:00 PM	41
	CM2	6/30/18	10:00	35
Night	CM1	7/3/18	4:00 AM	34
	CM2	7/2/18	1:00	33

Notes:

1. 'Daytime' defined to be between the hours of 7AM and 10PM.
2. 'Nighttime' defined to be between the operational hours of 10PM and 7AM.
3. Representative broadband ANS-weighted L_{90} (dBA) is the average of the daily lowest ANS-weighted daytime and lowest ANS-weighted nighttime L_{90} sound levels.
4. Measured existing "pure tone," at 4000-hertz octave band, likely due to insects.

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Noise Impacts, Continued

Project Stationary Sound Sources

Overview of Proposed Project Sound Sources

The primary sources of sound from the Project include MSW and C&D tipping and handling, general ventilation equipment, process ventilation equipment at the Biosolids Building, and four cooling towers.

MSW Building

Three front-end loaders will be located inside the new MSW Building (the tipping area) and will move MSW into a feed hopper for transfer to the existing building which will be used for processing of the MSW. The tipping/dumping of materials onto the new MSW Building floor and subsequent scooping and movement of the materials by the front-end loader will produce sound through three open garage door bays. For the purpose of conservative modeling, the doors are considered to be open at all times, although this is not the case in practice.

Based on the current conceptual design, the new and existing MSW Buildings will also have seven (7) exhaust fans located on the rooftop.

Glass Processing Building

The Glass Processing Building, which is currently under construction, was assumed to have eight (8) sidewall inlet/exhaust fans for general ventilation, based on the current conceptual design.

Biosolids Building

Sound sources associated with the Biosolids Building include two dewatering process exhaust fans, a makeup air fan located at ground level, a biofilter exhaust stack equipped with an induced draft (ID) fan located at ground level, and four cooling towers. The dewatering process exhaust fans are located on the building rooftop, and all other equipment is located on the western side of the building, in order to shield this equipment from the residential neighborhood to the east.

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Noise Impacts, Continued

Summary of Noise Controls

In order to keep site sound levels at a minimum, the Project plans to make use of an electric rail car pusher to move railway cars staged on-site.

The sidewall inlet/exhaust fans on the Glass Processing Building, the exhaust fans on the Biosolids building, and the induced draft fan at the biofilter stack located west of the Biosolids building will be fitted with fan silencers. Alternatively, low noise fans capable of achieving the same resulting sound level may be utilized.

The ground mounted makeup air handling unit located on the ground level of the west side of the Biosolids building will be a low noise unit.

A 100-foot long 24-foot tall "L-shaped" sound barrier wall will be included along the southwestern corner of the Biosolids building to shield the residential area to the southeast of the site from sound generated by the cooling towers and other ground level equipment located on the west side of the biosolids building.

In addition to compliance with MassDEP policy, evaluation of all practicable avoidance, minimization, and mitigation is required by MEPA as part of this process/assessment. The project has evaluated such measures. Further controls were considered but not deemed either available or practicable. During this sound assessment, PPNE had already identified and mitigated a number of sources that had "stand-out" contributions to overall modeled sound levels at nearby receptors. The resulting sound impacts are now from a combination of many sources. Because sound source contributions are added logarithmically and not arithmetically, reducing total sound impacts any further to achieve an overall net reduction would require a significant reduction in the sound impacts of *each and every* contributing source. Therefore, with the proposed noise controls, the Project has mitigated impacts to the extent practicable.

As the design of project equipment progresses, specifications of mechanical equipment may change, and compliance with the sound limits may be achieved through different methods (i.e. in lieu of a sound barrier wall, quieter cooling towers may be utilized).

Continued on next page

Noise Impacts, Continued

Evaluation of Stationary Source Sound Levels

Modeling Methodology: The noise impacts associated with the proposed Project were predicted using the CadnaA noise calculation software developed by DataKustik GmbH. This software uses the ISO 9613-2 international standard for sound propagation (Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation). The benefits of this software are a refined set of computations due to the inclusion of topography, ground attenuation, multiple building reflections, drop-off with distance, and atmospheric absorption. The CadnaA software allows for octave-band calculation of sound from multiple sources as well as computation of diffraction.
Inputs and significant parameters employed in the model are described below:

Site Plan: The Project Site Plan included in Attachment 8, provides the locations and dimensions of key inputs into the model.

Modeling Locations: Sound level modeling was conducted at four residential locations RES-1 through RES-4. Residential modeling locations 1 through 4 are representative of the closest residential property lines to the northeast, east, and southeast of the Project. Parallel Products has purchased two of the newly built houses located on the west side of Phillips Road to the southeast of the site, and therefore Receptor RES-4 has been placed at the closest residential property line not owned by the Project. The four residential modeling locations are shown in Figure 13. All receptors were modeled with a height of 5 feet above ground level (AGL) to mimic the ears of a typical standing observer.

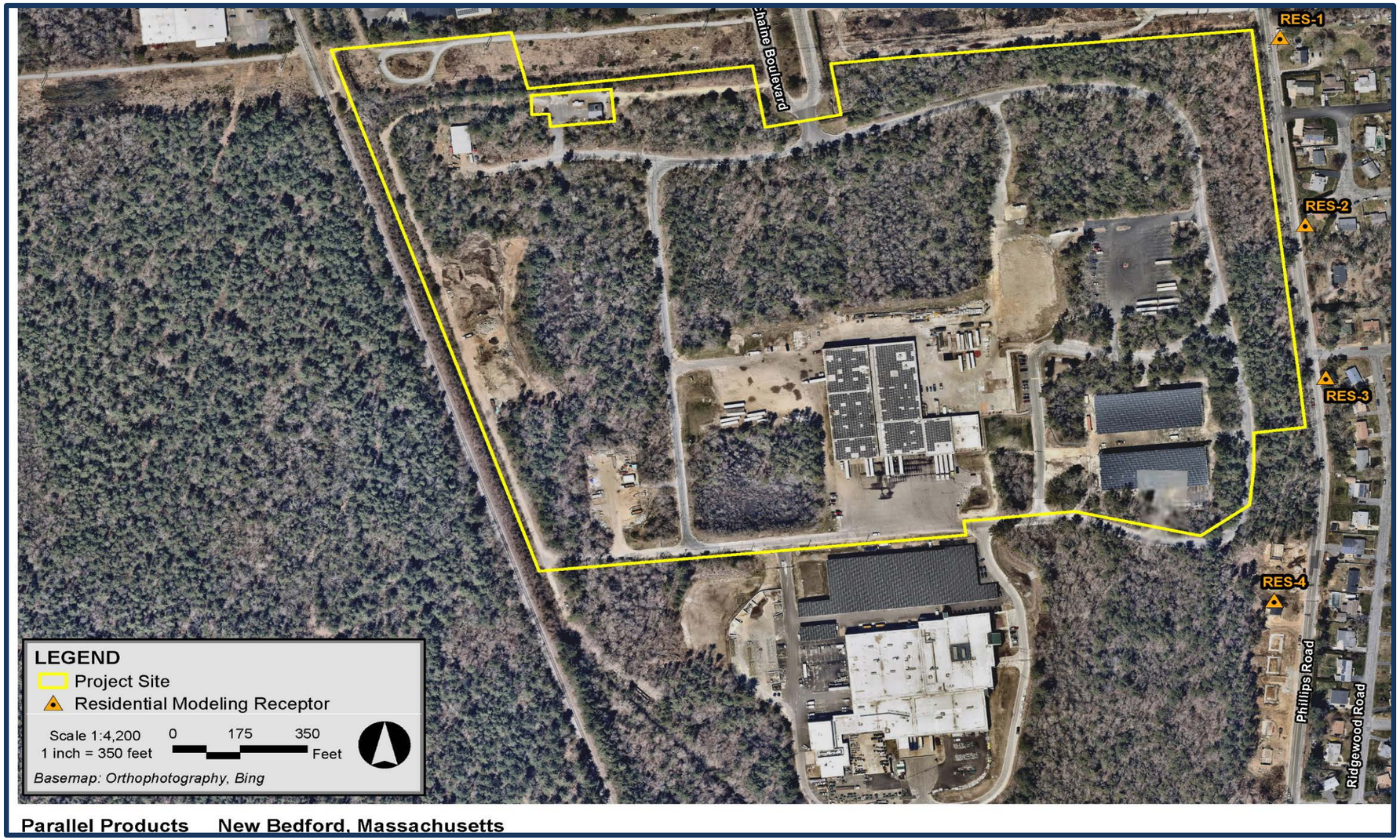
Terrain Elevation: Elevation contours for the modeling domain were directly imported into CadnaA which allowed for consideration of terrain shielding where appropriate.

Source Sound Levels: Broadband and octave-band sound power levels (when available) for the potential noise sources for the Project were input in the model. Although there will be variation in operations between daytime and nighttime, the modeling has conservatively assumed full daytime operations for both scenarios.

Continued on next page

Noise Impacts, Continued

Figure 12 – Residential Sound Modeling Locations



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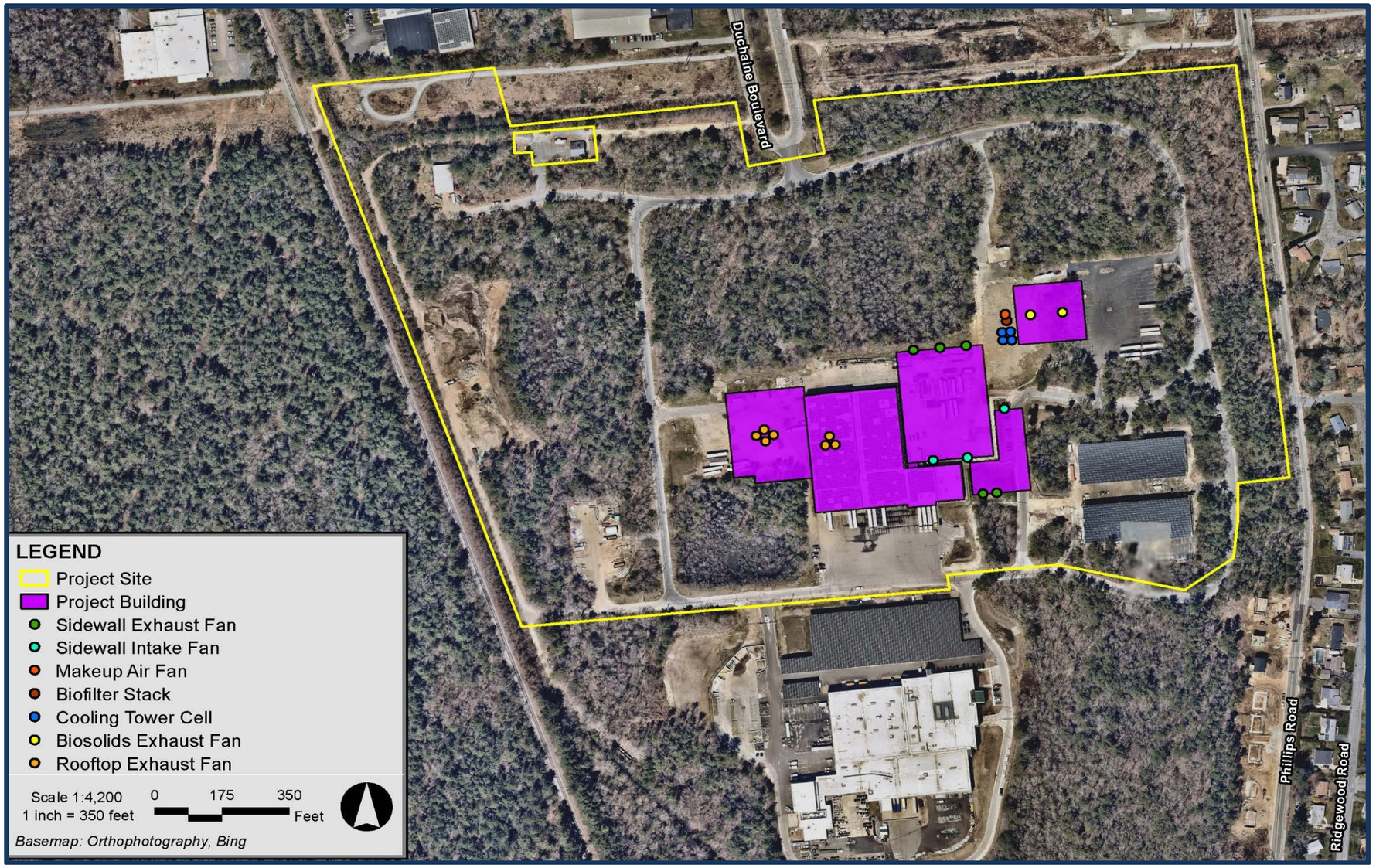
Noise Impacts, Continued

Figure 13 – Sound Source Locations and Building Configurations



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Noise Impacts, Continued

Evaluation of Stationary Source Sound Levels, continued

Meteorological Conditions: A temperature of 10°C (50°F) and a relative humidity of 70% was assumed in the model.

Ground Attenuation: Spectral ground absorption was calculated using a G-factor of 0 for the Project site which corresponds to "hard ground". For all other offsite areas, a G-factor of 0.5 was used which corresponds to "mixed ground".

Directivity: A directivity correction was applied to the biofilter exhaust stack.

Sound pressure levels due to the operation of all equipment operating simultaneously at full load were modeled. This is a conservative modeling assumption which will result in higher predicted sound levels relative to various actual part-load and intermittent operation of some of the sources.

Several modeling assumptions inherent in the ISO 9613-2 calculation methodology, or selected as conditional inputs by the user, were implemented in the CadnaA model to ensure conservative results (i.e., higher sound levels), and are described below:

As per ISO 9613-2, the model assumed favorable conditions for sound propagation, corresponding to a moderate, well-developed ground-based temperature inversion, as might occur on a calm, clear night or equivalently downwind propagation.

Meteorological conditions assumed in the model (T=10°C and RH=70%) were selected to minimize atmospheric attenuation in the 500 Hz and 1 kHz octave-bands where the human ear is most sensitive.

No additional attenuation due to tree shielding, air turbulence, or wind shadow effects was considered in the model.

The following Figure 14 illustrates the sound source locations and the building configurations that were used as model inputs for this analysis.

Continued on next page

Noise Impacts, Continued

Modeling Results

A daytime broadband sound level evaluation at the residences is presented in Table 7, and a nighttime broadband sound level evaluation at the residences is presented in Table8. These are exterior sound levels. Sound levels inside any receiving structure will be lower than shown in the tables. The ambient sound level for modeling locations RES-1 through RES-4 are estimated based on the 7-day average of the lowest daytime and nighttime hourly L_{90} levels measured at CM-1.

The predicted future total sound levels (Project + Background) are at or below the MassDEP criterion of 10 dBA over the measured ambient (L_{90}) sound levels at the four (4) modeled residential receptors.

The Project is not predicted to create a "pure tone" per the MassDEP Noise Policy when combined with existing background sound levels at any of the four residential modeling locations. Octave band modeling results showing the absence of MassDEP-defined "pure tones" is shown in Tables 9 and 10.

Table 7
Residential Daytime Broadband Sound Level Evaluation of the MassDEP Noise Policy

Modeling Location ID	Description	Existing Daytime Sound Level[1] [L_{90}] (dBA)	Project Only Sound Level[1] (dBA)	Future L_{90} Total Sound Level[1] (dBA)	Increase Over Background (dBA)	Meets MassDEP Noise Policy?[2]
RES-1	Residential property line immediately northeast of the Project	41	39	43	2	Yes
RES-2	Residential property line immediately east of the Project	41	41	44	3	Yes
RES-3	Residential property line immediately east of the Project	41	41	44	3	Yes
RES-4	Residential property line immediately southeast of the Project	41	42	44	3	Yes

Notes:
1. Only whole numbers are shown; calculations performed using values with additional precision.
2. Refers to MassDEP A-weighted criteria of 10 dBA over background.

Continued on next page

Noise Impacts, Continued

Table 8
Residential Nighttime Broadband Sound Level Evaluation of the MassDEP Noise Policy

Modeling Location ID	Description	Existing Nighttime Sound Level[1] [L_{90}] (dBA)	Project Only Sound Level[1] (dBA)	Future L_{90} Total Sound Level[1] (dBA)	Increase Over Background (dBA)	Meets MassDEP Noise Policy?[2]
RES-1	Residential property line immediately northeast of the Project	34	39	40	6	Yes
RES-2	Residential property line immediately east of the Project	34	41	42	8	Yes
RES-3	Residential property line immediately east of the Project	34	41	42	8	Yes
RES-4	Residential property line immediately southeast of the Project	34	42	42	8	Yes

Notes:
1. Only whole numbers are shown; calculations performed using values with additional precision.
2. Refers to MassDEP A-weighted criteria of 10 dBA over background.

Noise Impacts, Continued

Table 9
Residential Daytime "Pure Tone" Evaluation of the MassDEP Noise Policy

Modeling Location ID	Description	Sound Level (dB) per Octave-Band Center Frequency (Hz)								
		31.5	63	125	250	500	1k	2k	4k	8k
RES-1	Residential property line immediately northeast of the Project	59	58	47	42	39	38	32	25	21
RES-2	Residential property line immediately east of the Project	59	59	48	43	40	39	33	26	21
RES-3	Residential property line immediately east of the Project	61	60	49	43	40	39	33	26	21
RES-4	Residential property line southeast of the Project	62	61	49	42	41	39	34	26	21

Notes:

- Sound pressure levels are rounded to the nearest whole decibel.
- No "pure tone" is predicted because the sound pressure level in each octave band is not 3 dB or more higher than the sound levels in each of the two adjacent octave bands.

Table 10
Residential Nighttime "Pure Tone" Evaluation of the MassDEP Noise Policy

Modeling Location ID	Description	Sound Level (dB) per Octave-Band Center Frequency (Hz)								
		31.5	63	125	250	500	1k	2k	4k	8k
RES-1	Residential property line immediately northeast of the Project	58	57	46	42	38	34	27	20	19
RES-2	Residential property line immediately east of the Project	58	58	48	43	39	36	29	21	19
RES-3	Residential property line immediately east of the Project	60	59	48	43	39	36	29	20	19
RES-4	Residential property line immediately southeast of the Project	61	61	49	42	39	36	30	22	19

Notes:

- Sound pressure levels are rounded to the nearest whole decibel.
- No "pure tone" is predicted because the sound pressure level in each octave band is not 3 dB or more higher than the sound levels in each of the two adjacent octave bands.

Continued on next page

Noise Impacts, Continued

Evaluation of Onsite Trucking Sound

Overview of Proposed Project Trucking Activity

The proposed Project is expected to accept truck deliveries from 5 AM until 9 PM. For conservatism of traffic noise analysis, outbound materials were assumed to be transported from the proposed Project by trailers and trucks which enter the site empty and exit the site full. However, it is expected that the majority of outbound transportation of materials from the site will be done via rail, which would reduce the number of truck trips generated by the Project.

Truck Activity Modeling Methodology and Criteria

The noise impacts associated with on-site truck activity of the proposed Project were predicted using the Federal Highway Administration (FHWA) Traffic Noise Model (TNM), Version 2.5. TNM is the required software calculation and noise evaluation tool for projects receiving funding from FHWA or the Massachusetts Department of Transportation (MassDOT). Although this project is not required to comply with FHWA or MassDOT noise limits, for comparative purposes, on-site trucking activity has been evaluated against both the FHWA residential noise abatement criterion of 66 dBA[13] (absolute limit) and the MassDOT significance threshold of an increase over existing sound levels of 10 dBA or more[14]

The peak traffic hour (worst-case) of proposed on-site trucking activity was compared to the existing peak traffic hour sound level due to current trucking activity at the Project Site. The existing and future truck traffic volumes were based upon the Project's site traffic studies, which resulted in 48 peak total truck trips per hour (future) compared to 27 peak total truck trips per hour (existing). The existing trucking activity on the site includes Eversource vehicles, which operate 24 hours per day, as well as NWD Trucking, and glass trips.

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[13] Federal Highway Administration (FHWA) Code of Federal Regulations 23 CFR 772. Check numbering of footnoteshttps://www.fhwa.dot.gov/environMent/noise/regulations_and_guidance/polguide/polguide03.cfm, accessed August 2019. Limit on an Leq basis to avoid approaching or exceeding the noise abatement criteria for "Picnic areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals."

[14] MassDOT, Type I and Type II Noise Abatement Policy.

Noise Impacts, Continued

Evaluation of Onsite Trucking Sound, continued

On-Site Truck Traffic Modeling Results

Table 11 below presents a comparison of the predicted on-site truck sound levels to the FHWA NAC and the MassDOT significance increase threshold. All predicted sound levels are below the 66 dBA FHWA criteria for residences at the four residential receptors. Incremental increases at all receptors are all below the MassDOT 10-dBA significance threshold.

Table 11
Predicted Existing and Future Truck Traffic Sound Levels at Residential Receptors

Modeling Location ID	Existing Peak-Hour Sound Level (dBA)	Future Peak-Hour Sound Level (dBA)	Incremental Increase Over Existing (dBA)	FHWA Residential Noise Abatement Criterion (dBA)
RES-1	46	48	2	66
RES-2	49	52	3	66
RES-3	50	52	2	66
RES-4	49	52	3	66

Conclusions

A comprehensive sound level modeling assessment was conducted for the Parallel Products of New England Project. In addition, ambient sound levels were measured to characterize the existing background sound levels within the area. Results of a complete sound level assessment demonstrate that sound levels from the Project with the sound mitigation measures described in this report will meet the requirements set forth in the MassDEP Noise Policy at residential locations.

Sound pressure levels due to the operation of all equipment operating simultaneously at full load were modeled at the four residential sound level modeling locations. This is a conservative modeling assumption which will result in higher predicted sound levels relative to various actual part-load and intermittent operation of some of the sources.

Continued on next page

Noise Impacts, Continued

Noise Impacts Conclusions, continued

Traffic noise modeling of existing and proposed future on-site trucking activity was conducted and compared to FHWA and MassDOT criteria. Resulting sound levels at all residential receptors were predicted to be below these criteria.

Given the predicted achievement of lower impacts than required by MassDEP, FHWA, and MassDOT criteria, the proposed Project has demonstrated that best practices and control technologies have been implemented considering the potential sources of noise from the facility.

PPNE provided initial conceptual design elements during the sound assessment process. Initial noise impacts, based on the original project design, were modeled and opportunities were identified to implement of a variety of avoidance, minimization, and mitigation measures. PPNE has committed to avoid, minimize and mitigate noise impacts to the maximum extent practicable by taking the following measures:

- Selection of an industrially-zoned parcel
- Siting of noise generating equipment and material handling routes away from residences
- Specification of an electric, rather than diesel powered, rail car pusher
- Selection of a combination of low noise equipment, silencing equipment, and/or noise reducing insulated walls to achieve lower impacts than required by MassDEP policy for stationary sources
- Use of a speed limit and location of weigh scales on the west side of the property to minimize sound from trucking operations

As detailed design progresses, PPNE will review all specified equipment for sound characteristics and ensure the resulting combined impacts from stationary sources will not exceed the currently modeled, best-practices impacts.

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Air and Odor Impacts

Introduction

The air and odor component of the Draft Environmental Impact Report (DEIR) provides an overview of the analysis completed to document the air and odor impacts associated with the proposed solid waste facility development. An Air and Odor Analysis was conducted for the proposed development by Epsilon Associates, Inc. (Epsilon) dated February 2019. An updated analysis was prepared based on the Project design updates and improvements, and incorporating comments received during the Expanded Environmental Notification Form (EENF) process. This section of the DEIR provides a summary of the updated air and odor analysis, addressing potential impacts associated with the proposed transfer station as well as a response to the air and odor-related comments provided as part of the EENF certificate.

As detailed in Attachment 14 (Air Quality Impacts), the Project will implement all feasible measures to avoid, minimize, and mitigate potential air-related impacts, and that the facility will not create conditions of unhealthy air or nuisance odors. The study documents this through a three-step process for each relevant concern:

1. **Emissions estimates:** The project team has assembled information on the proposed activities, and used United States Environmental Protection Agency (USEPA) emission limits, emission factors, industry data, and information for other projects to generate emission rates. The analysis generally uses expected maximum operating rates to generate conservative estimates.

2. **Computer air dispersion modeling:** The model generates estimates of pollutant concentrations using stack data, terrain data, and building dimensions. Epsilon created a grid of thousands of receptor locations, with the most receptors nearest the facility. The model uses emission rates, exhaust parameters (release height, velocity, and temperature) and five years of hourly weather data to predict ambient air concentrations under a large comprehensive sample of weather conditions.

3. **Comparison to standards:** Model results are compared to USEPA and Massachusetts Department of Environmental Protection (MassDEP) health-protective criteria. Odor impacts are subjective and individualized; for odor, model results are compared to a dilution threshold that is unlikely to cause a nuisance condition, and the results are assessed based on both the frequency and intensity of the modeled concentration.

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Air and Odor Impacts, Continued

Introduction, continued

The predicted air pollutant and odor concentrations are shown to comply with the applicable national and Massachusetts standards, and protective odor concentration criterion at residences, using the USEPA AERMOD model. Therefore, it can be concluded that the proposed project, as designed, meets the criteria for minimization of odor impacts.

Sources of Air Emissions

Stationary sources at the facility will be subject to regulation by MassDEP, either through the Limited Plan Approval process or by regulation of de minimis sources. This study reviews stationary sources but also diesel mobile equipment sources, and truck traffic both on-site and off-site. This more inclusive analysis allows the project to be designed holistically to minimize environmental impacts and give a more complete picture of any project related air impacts.

Broadly the emissions sources are in the following categories:

1. **Stationary combustion sources;** There are boiler and dryers which will provide freeze protection and heat energy for the biosolids drying process. Additionally, space heaters will provide heat to the glass processing building. These units combust natural gas and are below MassDEP permitting thresholds. The space heaters are generally of the size found providing heat to commercial buildings.
2. **Mobile diesel equipment:** Parallel Products will use standard commercial equipment (trucks and front-end loaders) common to on-road and off-road traffic.
3. **Dust from material handling:** Emissions are estimated based on material solid waste facility operations, and road dust. A cooling tower can also be a dust source (as mist droplets evaporate, salts in the water can remain in the air); the cooling tower is an insignificant source per MassDEP standards and is similar in size to towers serving commercial buildings.
4. **Potential odor sources:** Biosolids and municipal solid waste (MSW) can be sources of odor.

Table 12 on the proceeding pages present a summary of the analysed emission sources.

Continued on next page

Air and Odor Impacts, Continued

Table 12
Summary of Analyzed Emission Sources

Emission Sources	Release Height (ft)	Emission Types
Point Sources		
Biosolids Ionization Stacks (2)	40	odor, process emissions (controlled)
Biosolids Handling Processes Stack	40	odor, process emissions (controlled)
Biosolids Dryers Stacks	40	natural gas combustion, process emissions (controlled)
Biosolids Boiler Stack	40	natural gas combustion
Glass Processing Boiler Stack	40	natural gas combustion
Transfer Building Vents (4)	70	odor, dust from material handling, diesel combustion from handling equipment
Processing Building Vents	70	odor, dust from material handling, diesel combustion from handling equipment
Cooling Tower Cells (4)	12.8	dust from dissolved solids in mist droplets ("drift")
Non-point Sources		
Transfer Building Door	14	odor, dust from material handling, diesel combustion from handling equipment
Glass Processing North Bunker Area	25.4	dust from material handling, diesel combustion from handling equipment
Glass Processing South Area	25.4	dust from material handling, diesel combustion from handling equipment
Truck Exhaust Inbound Scale	11.9	diesel combustion
Truck Exhaust Pause Areas (2)	11.9	diesel combustion
Truck Exhaust Outbound Scale	11.9	diesel combustion
Route 140 NB Off Ramp/Route 140 NB On Ramp & Braley Road	11.9	diesel combustion
Route 140 SB Off Ramp/Route 140 SB On Ramp & Braley Road	11.9	diesel combustion
Phillips Road & Theodore Rice Boulevard/Braley Road	11.9	diesel combustion

Continued on next page

Air and Odor Impacts, Continued

Table 12, continued
Summary of Analyzed Emission Sources

Emission Sources	Release Height (ft)	Emission Types
Duchaine Boulevard & Theodore Rice Boulevard	11.9	diesel combustion
Duchaine Boulevard & Samuel Barnet Boulevard	11.9	diesel combustion
Line (area) Sources (roadway segments)		
Onsite - Entry to 1st Scale	11.9	diesel combustion
Onsite - 1st Scale to Tipping	11.9	diesel combustion
Onsite - Tipping to 2nd Scale	11.9	diesel combustion
Onsite - 2nd Scale to Exit	11.9	diesel combustion
Duchaine Blvd to Barnet (100% NB)	11.9	diesel combustion
Duchaine Blvd Barnet to Rice (100% NB)	11.9	diesel combustion
Rice Blvd to Rte 140 (100% NB)	11.9	diesel combustion
Route 140 NB On-Ramp (100% NB)	11.9	diesel combustion
Route 140 SB Off-Ramp (100% NB)	11.9	diesel combustion

Continued on next page

Air and Odor Impacts, Continued

Analysis

Impacts

Parallel Products proposes a facility that avoids, minimizes, and mitigates potential air-related impacts as follows:

Avoided impacts: Parallel Products has selected an industrially-zoned setting to avoid impacts to the public and is re-using significant existing infrastructure to avoid impacts associated with new construction. Material handling in enclosed areas and using best industry/management practices, minimizes off-site impacts of air emissions and odors. Because the proposed facility will serve existing needs for material handling at a location that is closer to the sources and/or outlet of the materials, the project avoids transportation-related impacts currently associated with sending the materials farther by truck.

Minimized impacts*:* The project team evaluated and modeled dozens of potential equipment and exhaust vent/stack configurations to identify the proposed conceptual design which minimizes off-site air and odor concentrations. The proposed design optimizes the flow of material through the site, and the reuse of existing facilities, while minimizing offsite impacts in general and residential area offsite impacts in particular. Material handling loaders will be USEPA Tier 4 certified to minimize emissions.

Mitigated impacts: Parallel Products is selecting to control odors from biosolids handling processes using biofiltration with carbon/zeolite polishing, or equal, and ionization. Specific controls for the biosolids processing operations, including the dryer exhausts, are currently conceptually designed. As project design advances, the specific odor control technology will be selected.

Continued on next page

Air and Odor Impacts, Continued

Analysis, continued

Comparison to Standards

The analysis shows that, under maximum expected operating conditions and using conservative assumptions, the project's impacts will comply with all applicable standards. Specifically:

1. The National Ambient Air Quality Standards (NAAQS) will not be exceeded. Per USEPA, these standards "provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly.[15]"
2. The Ambient Air Quality Standards for the Commonwealth of Massachusetts (MAAQS) will not be exceeded. Per 310 CMR 6.00, the MAAQS are identical to the NAAQS.
3. MassDEP has developed "health- and science-based air guidelines - known as Ambient Air Limits (AALs) and Threshold Effect Exposure Limits (TELs) - to evaluate potential human health risks from exposures to chemicals in air.[16]" In some cases, MassDEP had not developed an AAL or TEL for a particular chemical. In these cases, the USEPA Integrated Risk Information System (IRIS) was reviewed for that chemical to determine if a reference concentration (RFC) existed. The reference concentration is derived in a similar manner as the AAL and TEL concentrations and represents a concentration protective of the general population and sensitive subpopulations. Please refer to Table 13 on the proceeding pages for a summary of compliance with NAAQS & MAAQS.

In Massachusetts, odor is regulated under 310 CMR 7.09 such that operations that emit odors shall not permit their emissions to "cause a condition of air pollution". To determine that the project is not a nuisance source of odors, the study evaluated for maximum 5-minute-averaged odor concentrations and determined that, for all locations on-site and off-site and given evaluated weather conditions, the odor concentration to be at or below 5 dilution-to-threshold (D/T). Thus, the project meets the criterion published in the MassDEP draft policy for odor from composting facilities. Please refer to Table 14 for a summary of predicted odor impacts.

Continued on next page

[15] https://www.epa.gov/criteria-air-pollutants/naaqs-table

[16] https://www.mass.gov/service-details/massdep-ambient-air-toxics-guidelines

https://www.mass.gov/service-details/massdep-ambient-air-toxics-guidelines

Air and Odor Impacts, Continued

Table 13
Summary of Compliance with NAAQS & MAAQS

POLLUTANT	AVERAGING TIME	MAXIMUM MODELED CONCEN-TRATION (µg/m^3) (Note 1)	BACKGROUND CONCEN-TRATION (µg/m^3) (Note 2)	TOTAL CONCEN-TRATION (µg/m^3)	STANDARD (µg/m^3) (Note 3)	STANDARD MET?
Sulfur dioxide	1 HOUR	0.7	24.5	25.2	195	Yes
	3 HOUR	0.4	23.3	23.8	1300	Yes
Particulate matter <10 microns	24 HOUR	38.0	33.0	71.0	150	Yes
Particulate matter <2.5 microns	24 HOUR	7.4	17.5	24.9	35	Yes
	ANNUAL	2.8	6.4	9.2	15	Yes
Nitrogen dioxide	1 HOUR	For NO2 facility & background concentrations are modeled together		176	188	Yes
	ANNUAL			46	100	Yes
Carbon monoxide	1 HOUR	156	2006	2162	40000	Yes
	8 HOUR	97	1261	1357	10000	Yes

Notes:

(1) Modeled concentration is the applicable predicted concentration in ambient air at any of 6500 receptors, over 5 years of weather conditions. Concentrations are in micrograms per cubic meter. Results are in the form of the standard; see Air & Odor Report Attachment 14 for details.

(2) Applicable measured concentrations from nearest & most representative MassDEP and EPA monitoring stations, in the form of the standard. See Air & Odor Report Section 6.1.4 for details.

(3) Ambient air standards set by EPA and MassDEP to provide public health protection, including protecting sensitive populations.

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Air and Odor Impacts, Continued

Table 13, continued
Summary of Compliance with Air Toxics Standards

Chemical	Averaging Period	Max Concentration (µg/m^3) (Note 1)	Standard (Note 2)		Standard met?
			TEL (24-hour) (µg/m^3)	AAL (Annual) (µg/m^3)	
1,2,4-Trimethylbenezene	24-Hour	3.17E-04	200.0		Yes
	Annual	4.00E-05		60.00	Yes
1,3-Butadiene	24-Hour	5.66E-03	1.20		Yes
	Annual	7.20E-04		3.00E-03	Yes
2-Methylnaphythalene	24-Hour	6.53E-06	14.25		Yes
	Annual	7.79E-07		14.25	Yes
Acetaldehyde	24-Hour	1.05E-01	30.00		Yes
	Annual	1.49E-02		0.40	Yes
Acetone	24-Hour	9.32E-02	160.54		Yes
	Annual	1.29E-02		160.54	Yes
Acrolein	24-Hour	2.86E-02	0.07		Yes
	Annual	4.75E-03		0.07	Yes
Ammonia	24-Hour	2.12E+00	100.00		Yes
	Annual	2.84E-01		100.00	Yes
Arsenic	24-Hour	6.90E-04	3.00E-03		Yes
	Annual	8.00E-05		3.00E-04	Yes
Benzene	24-Hour	4.88E-02	0.60		Yes
	Annual	7.83E-03		0.10	Yes
Beryllium	24-Hour	3.27E-06	1.00E-03		Yes
	Annual	3.89E-07		4.00E-04	Yes
Bromomethane	24-Hour	1.57E-01	5.28		Yes
	Annual	2.04E-02		2.64	Yes
Cadmium	24-Hour	2.99E-04	2.00E-03		Yes
	Annual	4.00E-05		2.00E-04	Yes
Carbon Disulfide	24-Hour	7.59E-02	0.10		Yes
	Annual	9.92E-03		0.10	Yes
Carbonyl Sulfide	24-Hour	2.99E-02	0.10		Yes
	Annual	3.93E-03		0.04	Yes

Continued on next page

Air and Odor Impacts, Continued

Table 13, continued
Summary of Compliance with Air Toxics Standards

Chemical	Averaging Period	Max Concentration (µg/m^3) (Note 1)	Standard (Note 2)		Standard met?
			TEL (24 hr) (µg/m^3)	TEL (24 hr) (µg/m^3)	
Chloride	24-Hour	5.73E-03	7.00		Yes
	Annual	6.90E-04		4.69	Yes
Chlorobenzene	24-Hour	1.50E-04	93.88		Yes
	Annual	2.00E-05		6.26	Yes
Chloroethane	24-Hour	1.74E-03	717.55		Yes
	Annual	2.30E-04		358.78	Yes
Chloroform	24-Hour	2.03E-01	132.76		Yes
	Annual	2.64E-02		0.04	Yes
Chloromethane	24-Hour	2.71E-01	92.0		Yes
	Annual	3.53E-02		90.0	Yes
Chromium	24-Hour	3.81E-04	1.36		Yes
	Annual	5.00E-05		1.36	Yes
Copper	24-Hour	2.31E-04	0.54		Yes
	Annual	3.00E-05		0.54	Yes
Dichlorobenzene	24-Hour	3.27E-04	81.74		Yes
	Annual	4.00E-05		0.18	Yes
Dioxins	24-Hour	3.03E-09	4.50E-08		Yes
	Annual	3.69E-10		4.50E-08	Yes
Ethanol	24-Hour	2.56E-03	51.24		Yes
	Annual	3.30E-04		51.24	Yes
Ethyl Benzene	24-Hour	8.89E-03	300.0		Yes
	Annual	1.33E-03		300.00	Yes
Formaldehyde	24-Hour	2.10E-01	2.0		Yes
	Annual	2.62E-02		0.08	Yes
Furans	24-Hour	1.85E-09	0.40		Yes
	Annual	2.25E-10		0.02	Yes
Hexane	24-Hour	4.90E-01	95.24		Yes

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Air and Odor Impacts, Continued

Table 13, continued
Summary of Compliance with Air Toxics Standards

Chemical	Averaging Period	Max Concentration (µg/m^3) (Note 1)	Standard (Note 2)		Standard met?
			TEL (24 hr) (µg/m^3)	TEL (24 hr) (µg/m^3)	
	Annual	5.90E-02		47.62	Yes
Hydrogen Sulfide	24-Hour	2.76E-01	0.90		Yes
	Annual	3.66E-02		0.90	Yes
Lead	24-Hour	1.36E-04	0.14		Yes
	Annual	2.00E-05		0.07	Yes
Mercury	24-Hour	7.08E-05	3.00E-03		Yes
	Annual	1.00E-05		1.40E-03	Yes
Methyl Etyl Ketone	24-Hour	1.11E-02	200.0		Yes
	Annual	1.60E-03		10.0	Yes
Naphthalene	24-Hour	2.16E-02	14.25		Yes
	Annual	2.67E-03		14.25	Yes
Nickel	24-Hour	1.10E-03	0.27		Yes
	Annual	1.40E-04		0.18	Yes
Primary Exhaust PM2.5	24-Hour	1.37E+00	5.0		Yes
	Annual	2.02E-01		5.0	Yes
Selenium	24-Hour	6.53E-06	0.54		Yes
	Annual	7.79E-07		0.54	Yes
Styrene	24-Hour	2.31E-03	200.0		Yes
	Annual	3.40E-04		2.00	Yes
Toluene	24-Hour	4.42E-02	80.0		Yes
	Annual	8.01E-03		20.00	Yes
Vanadium	24-Hour	6.26E-04	0.27		Yes
	Annual	7.00E-05		0.27	Yes
Xylene	24-Hour	3.73E-02	11.80		Yes
	Annual	7.71E-03		11.80	Yes

Notes:

(1) Modeled concentration is the highest predicted concentration in ambient air at any of 6500 receptors, over 5 years of weather conditions. Concentrations are in micrograms per cubic meter.

(2) Health- and science-based air guidelines developed by MassDEP to evaluate potential human health risks. Where MassDEP guidelines are not established, EPA data are evaluated using the same procedure.

Continued on next page

Air and Odor Impacts, Continued

Table 14
Summary of Predicted Odor Impacts

Source	Criterion (Note 1)	Receptor	Number of Predicted Events over 5 years of modeled weather data (Note 2)
Biosolids process	Concentration over 5 D/T, 5-minute average	Anywhere offsite	0
Biosolids process	Concentration over 1 D/T, 1-minute average	Any residential neighborhood	0
MSW process	Concentration over 5 D/T, 5-minute average	Anywhere offsite	0
MSW process	Concentration over 1 D/T, 1-minute average	Any residential neighborhood	0

Notes:

(1) D/T is a dimensionless ratio defined as the volume of dilution air divided by the volume of odorous air, or commonly described as the number of equivalent volumes of clean air which must be added to an odorous volume such that the odor is undetectable to the average person. The 5 D/T criterion is from a draft MassDEP policy for composting, and the 1 D/T criterion is a design benchmark that is more conservative than the draft MassDEP policy.

(2) Modeled concentration is the highest predicted concentration in ambient air at any of 6500 receptors, over 5 years of weather conditions.

Water/Wastewater

Introduction

The site is currently connected to the New Bedford water and sewer system. These connections were completed by the previous site owner. PPNE has recently been upgrading and rehabilitating the onsite infrastructure for the site, including the site sewer system. PPNE has been coordinating the project needs for water and sewer with the city of New Bedford.

Water and Sewer requirements

The project, when developed, will utilize City services for the supply of water and removal of wastewater. PPNE expects to have 150 employees at the site. This includes the relocation of 75 employees currently working at PPNE's Shawmut Avenue site. Water use for employees is estimated at 15 gallons per day per employee based on 310 CMR 15.00 (2,250 gpd). Water will also be required for the misting system proposed for the MSW tipping building. Water use for the misting system is estimated to be 10 gpm or 14,400 gpd. Hose bibs will be provided in the tipping building, MSW processing building and in the biosolids processing building to be used for washdown as part of facility cleanup activity. Washdown water use is estimated at 3,000 gallons per day. Makeup water will also be required for the cooling towers to be utilized by the biosolids drying process. The makeup water will replace water loss through evaporation and tower blowdown. Cooling tower makeup is expected to be 50,500 gpd. Total water use is expected to be 70,150 gpd.

The City sewer system will be used for disposal of wastewater generated by the facility. The City system has existing sewer manholes near the proposed facility. The project will tie into these manholes for wastewater disposal. Wastewater from employee sanitary and washing use is estimated at 15 gpd per employee per 310 CMR 15.00 (2,250 gpd). In addition to the employee generated wastewater, the biosolids processing facility will generate wastewater. The process flow diagram in Attachment 4 shows the various processes and the water use associated with biosolids processing. Dewatering of liquid biosolids by belt press or screw press will generate an estimated volume of 52,000 gallons per day of wastewater. Drying biosolids will create water vapor which will then be condensed to water which must be disposed as wastewater. The drying process will create an estimated daily wastewater volume of 53,000 gpd. The cooling tower required by the biosolids processing will have some blowdown water that will need to be disposed as wastewater. Blowdown water is expected to be 9,500 gpd. Total wastewater to the City system is expected to be 113,750 gpd.

Construction Period Impacts

Introduction

As previously discussed in this document, construction of the proposed facility will be done in two phases as follows:

Phase 1

- Construction of glass processing building and adjacent glass handling building
- Construction of photovoltaic solar power installation on the glass handling building and on canopies adjacent to the glass handling buildings.
- Construction of a rail sidetrack from the existing rail line at the western property line to the proposed glass handling area.
- Construction of inbound and outbound truck scales on the existing site access roads

Phase 2

- Construction of a solid waste handling building
- Addition of MSW processing equipment and baler within an existing building on the site
- Construction of a biosolids processing facility
- Expansion of the rail sidetrack constructed in phase 1 to allow the facility to handle additional rail cars

Site Selection

The project site is the location of a former high intensity industrial use. The site was developed by Polaroid Corporation for the manufacture of film. The original site development included extensive construction of infrastructure which has been incorporated into the proposed facility's design. Reuse of this infrastructure minimizes the construction required to implement the proposed project. A summary of the infrastructure available for use with the proposed project follows:

- Paved access roads to the proposed facilities
- Paved parking areas for employees and required truck use
- All utilities required by the project are currently in place, including water, sewer and electricity
- Stormwater management facilities
- Site lighting

Continued on next page

Construction Period Impacts, Continued

Phase 1 Construction

As detailed in the Final Record of Decision (Attachment 2), Phase 1 construction is authorized to proceed prior to the submission of the DEIR. As such, Phase 1 construction is in progress with the construction of the glass processing building. Construction of this building received planning board approval previously. PPNE plans to submit for site plan approval for construction of the other Phase 1 construction (rail side track, solar, etc) in November 2019. A Notice of Intent has been filed with the New Bedford Conservation Commission regarding wetlands impacts associated with the construction of the rail sidetrack.

The glass processing buildings have been located in areas that are currently impervious as result of construction by the previous site development (Polaroid). Buildings and canopies used for solar installation are pre-engineered metal buildings which are fabricated at offsite locations to the extent possible, thereby minimizing on site construction time and impacts.

Impacts to wetlands are necessary for the construction of the rail sidetrack. The sidetrack must cross a drainage ditch and a bordering vegetated wetland area in order to access the proposed project. The Notice of Intent (NOI) filed with the New Bedford Conservation Commission is included in Attachment 6. The NOI details how construction impacts to wetlands are minimized, as itemized below:

- Alternative design concepts for the rail crossing of the drainage ditch have been evaluated to select the concept with the least environmental impacts.
- Impacts to bordering vegetated wetlands as a result of rail sidetrack construction have been minimized by constructing a retaining wall on both sides of the rail line in the wetland areas, thereby minimizing the footprint of the rail bed.
- The project will provide wetlands replication to replace wetlands lost as a result of rail line construction. Wetlands replication will be at a ratio of 1.66:1 which exceeds the New Bedford requirements of 1.5:1.

Phase 2 Construction

Phase 2 project development will utilize the existing buildings to the extent possible. The solid waste processing equipment (MSW processing and MSW & C&D baling) will use and existing building on site. Two new buildings will be required for Phase 2. This includes the MSW/C&D tipping building and the biosolids processing building. As with the glass processing buildings, the Phase 2 buildings will be pre-engineered metal buildings. These buildings are fabricated off site to the extent possible to minimize onsite construction time and impacts.

Continued on next page

Construction Period Impacts, Continued

Phase 2 Construction, continued

Phase 2 construction has been planned largely for areas previously disturbed by the previous industrial uses at the site. There are no impacts to wetlands with only minor impacts to wetland buffer areas

Expansion of the rail sidetrack to provide for additional rail car storage is planned for previously disturbed areas most of which is currently impervious due to previous uses at the site.

The site currently has paved access roads necessary to support the deliveries of materials and has adequate parking space for construction workers. Existing paved areas on site are adequate for the laydown and staging area required to support the planned Phase 2 construction activities.

PPNE commits to the use of Tier 4 compliant engines. Tier 4 compliant engines include all required emissions controls. PPNE and its contractors will utilize the best available technology for reducing the emission of PM and NO_x for diesel-powered non-road vehicles. To minimize air emissions from equipment operation, PPNE will direct its contractors to retrofit any diesel-powered, non-road construction equipment rated 50 horsepower or above, whose engine is not certified to United States Environmental Protection Agency (USEPA) Tier 4 standards and that will be used for 30 days or more over the course of the Project, with USEPA-verified (or equivalent) emission control devices (e.g., oxidation catalysts or other comparable technologies). Permanent signs will be erected limiting idling to minutes or less.

Particulate matter will be controlled during construction by sweeping paved surfaces regularly and by the application of water to paved as necessary to control dust.

Sediment and erosion protection devices (silt socks, catch basin inserts, etc) will be utilized to control sediments and erosion during construction. Details will be developed and submitted to the New Bedford Conservation Commission for approval prior to construction activities. A Storm Water Pollution Prevention Plan (SWPPP) will be prepared prior to the start of construction.

PPNE will comply with all City regulations for hours of construction and noise limitations.

Mitigation and Draft Section 61 Findings

Section 61 Findings

As required in the EENF Certificate, *"The DEIR should include a separate chapter summarizing proposed mitigation measures. This chapter should also include draft Section 61 Findings for each State Agency that will issue Permits for the project. The DEIR should contain clear commitments to implement mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation (either funding design and construction or performing actual construction), and contain a schedule for implementation. To ensure that all GHG emissions reduction measures adopted by the Proponent in the Preferred Alternative are actually constructed or performed by the Proponent, I require Proponents to provide a self-certification to the MEPA Office indicating that all of the required mitigation measures, or their equivalent, have been completed. The commitment to provide this self-certification in the manner outlined above should be incorporated into the draft Section 61 Findings."*

Please refer to Attachment 18 for a copy of the Draft Section 61 Findings.

Response to Comments

Introduction

This section provides responses to comment letters submitted during the comment period for the EENF. Comment letters from individuals and regulatory agencies were attached to the Secretaries Certificate. Other comment letters submitted to the MEPA Office after the Secretaries Certificate was issued are also addressed in this section.

The DEIR is divided into sections as defined in the Scope section of the Secretaries Certificate. Each section of the DEIR addresses the issues detailed in the Secretaries Certificate. A response to each issue in the Secretaries Certificate is not repeated in this section.

This section includes a brief synopsis of the comment, followed by a response and identification of the location within the DEIR that the comment is addressed. Comments that are addressed are identified by a letter/number designation in the margin of the comment letter or document. The Secretaries Certificate with the comment letters with the comment identification in the margin is included in Attachment 17. Copies of letters received after the issue of the Secretaries Certificate with comment identification in the margin are also included Attachment 17. (A large number of form letters were received commenting on the project. Only one sample copy of this letter has been included in Attachment 17, as all of the form letters are identical).

The following is a list of the agencies and individuals or organizations that submitted comments on the EENF. The letter code used for identification of the commenter is noted in parentheses. The letter code is followed by a dash and the comment number assigned to identify the specific comment.

- Carol Strupczewski (CS2)
- Cheryl Souza (CS1)
- Jonathan F. Mitchell, Mayor of New Bedford (NB) and (NB1)
- Claudia Ostiguy (CO)
- Department of Energy Resources (DOER)
- Marlene Pollock (MP)
- MassDEP (DEP)
- Massachusetts Department of Transportation (DOT)
- Robert Ladino (RL)
- Roger Cabral (RC1), (RC2) and (RC3)
- Toxics Action Center (TAC)
- Tracy Wallace (TW)

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Response to Comments, Continued

Introduction, continued

- Vincent Carolan (VC)
- Robert Charon (RC4)
- New Bedford City Clerk (CCC)
- New Bedford City Council (CC)
- Donna Poyant (DP)
- Michelle Roza (MR)
- Senatory Mark Montigny (MM)
- Wendy Garcia (WG)
- Donna Poyant (DP)
- Form Letter (FL)
- MEPA (MEPA)

After reviewing the comments submitted, it was determined that many of the comments addressed the same issues. As such, rather than responding to each individual comment, a general response to each of the issues raised in comments has been prepared.

In the following section a summary of each of the topics addressed in comment letters is provided. A response to the comments follows the summary of each topic. The right margin indicates where the response to a specific comment is addressed. The comment numbers in the index use the numbering system defined above.

Traffic

Comment Summary:

Numerous comments were received regarding truck traffic to the proposed facility. The comments received are summarized below:

- Heavy truck traffic on Phillips Road will cause road damage
- Insufficient traffic studies have been performed
- The estimated number of biosolids trucks used in the traffic study appear low
- Transportation Demand Management Program should be developed
- Braley road is currently impassable when school opens and closes
- Multi modal accommodations to access the site should be provided
- 7 AM traffic problem at Braley Road

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Response to Comments, Continued

Traffic

- Nursing homes and fire station will be impacted by the large number of trucks
- Problem at 140 and Braley Road with trucks
- Phillips Road will be used due to congestion at Braley Road
- Fatalities will occur due to number of garbage trucks
- Truck noise lowers property values
- Proponent should discuss mitigation with MassDOT or New Bedford for intersections impacted by the proposed project.

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TW-3
TW-9
VC-1
CC-3
MM-3
DEP-18
MEPA-6

Response to Comments:

As presented in Figure 8 of the DEIR, trucks accessing the site are not expected to utilize Phillips Road, as they will likely be accessing the site from Route 140. Any trips to the site via Phillips Road are expected to be site employees, which would be accessing the site outside of the peak hour, and would likely be traveling in a passenger vehicle. This will be imposed through the recommended truck exclusion route along Phillips Road between Braley Road and Route 140.

A Traffic Impact Study has been prepared (provided in Attachment 7 of the DEIR) for the proposed site, reviewing the existing traffic operations and potential traffic impacts associated with the proposed site along the surrounding roadway network and key intersections providing access to the site.

The proposed site is expected to receive approximately 500 tons per day (tpd) of biosolids in trucks with a 24-ton capacity, equating to approximately 40 trips per day (20 entering, 20 exiting). As stated in the Transportation/Traffic - Future Conditions section of the DEIR, data from a comparable site in Rochester, MA was used to estimate the hourly distribution of truck traffic entering the site. The hourly trip generation for the biosolids was determined based on these distributions when generating the 2026 Build peak hour traffic volumes.

Continued on next page

Response to Comments, Continued

Traffic, continued

Transportation Demand Management measures are presented in the Transportation/Traffic – Transportation Demand Management section of the DEIR, as part of the Applicant's commitment to promote the reduction of single occupancy vehicles (SOV) trips by employees to the site.

The Casimir Pulaski Elementary School, located just east of Route 140 off of Braley Road starts at 8:45 AM and school dismissal is at 3:00 PM. Based on typical school arrival and departure patterns, these times coincide with the weekday morning (7:30 AM to 8:30 AM) and weekday afternoon (3:00 PM to 4:00 PM) peak hours analyzed as part of the capacity analysis presented in Transportation/Traffic – Traffic Operations Analysis section of the DEIR. Therefore, the 2026 Build conditions, as presented in the capacity analysis, reflect school related traffic and the peak hour volumes of the site-generated traffic, presenting a wort case scenario. The 2026 Build capacity analysis results indicate that the proposed project is not expected to have a significant impact on traffic operations at these intersections.

Approaches to minimize the number of SOV trips to the site by employees are presented in the Transportation/Traffic – Transportation Demand Management section of the DEIR. These include encouraging employees to utilize the transit system in the area, and providing amenities for bicycles accessing the site.

The traffic operations analysis presented in the Transportation/Traffic – Traffic Operations Analysis section of the DEIR reflects the weekday morning (7:30 AM to 8:30 AM) and weekday afternoon (3:00 PM to 4:00 PM) peak hour traffic conditions, based on turning movement counts collected at the study area intersections. The capacity analysis results indicate that movements along Braley Road operate over capacity during the peak hours under the 2019 Existing conditions. However, based on the 2026 Build capacity analysis results, the traffic that is expected to be generated by the proposed site is not expected to have a significant impact on these current operations.

Based on the capacity analysis results presented in the Transportation/Traffic – Traffic Operations Analysis section of the DEIR, the site generated traffic is not expected to greatly impact the operations at the intersections of Braley Road at the Route 140 ramps.

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Response to Comments, Continued

Traffic, continued

Trucks accessing the site are expected to be directed to remain on Route 140 to take Braley Road to the site. Due to the recommended truck exclusion route along Phillips Road between Braley Road and Route 140, the only site generated traffic expected to utilize Phillips Road would be from employees accessing the site.

Based on the safety analysis presented in the Transportation/Traffic – Existing Conditions section of the DEIR, it is not expected that the traffic generated by the proposed site will significantly impact safety at the study area intersections. The majority of the reported crashes over the five-year period analyzed (2011 to 2015) were single vehicle collisions, unrelated to trucks or other vehicles on the roadways. One of the single vehicle collisions, reported in 2014, resulted in a fatality. Based on local news reports, this crash was speed related.

As presented in Figure 8 of the DEIR, trucks accessing the site are not expected to travel along local roadways within the vicinity of the site. Trucks will utilize Route 140, as a truck exclusion route is recommended along Phillips Road between Braley Road and Route 140.

The applicant is intending to support the reduction of SOV trips among employees through the Transportation Demand management (TDM) measures presented in the Transportation/Traffic – Transportation Demand Management section of the DEIR. Additional mitigation measures are contingent upon approval from MassDOT and/or the City of New Bedford.

There are two New Bedford fire stations located within a five-mile radius of the proposed site (Station 5 and Station 9), both of which are located on Acushnet Avenue (Route 18), east of Route 140. Similarly, there are two nursing homes located within a five-mile radius of the site. These include Family Service Association, located south of the site off of Phillips Road, and CareOne at New Bedford, located east of Route 18. Based on the distribution of site generated traffic (as presented in Figure 8 of the DEIR), traffic associated with the proposed site is not expected to travel along these roadways; therefore, trucks associated with the proposed site are expected to have a negligible impact on nearby fire stations and nursing homes.

Continued on next page

Response to Comments, Continued

Permitting

Comment Summary

- Updated plans should be provided
- Description of statutory and regulatory requirements

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MEPA-1

Comment Response

The project plans have been updated since the publication of the EENF. The current plans are included in Attachment 8. The plans include both Phase 1 and Phase 2. Construction depicted on these plans are labeled to indicate if the work is Phase 1 or Phase 2. A summary of changes to the plans since the EENF is included in the Project Description and Permitting section of the DEIR.

Phase 2 of the project requires the following permits

- Draft Environmental Impact Report - MEPA
- Final Environmental Impact Report - MEPA
- Site Suitability Report Approval - MassDEP
- Site Assignment – New Bedford Board of Health
- Site Plan Approval – New Bedford Planning Board
- Order of Conditions – New Bedford Conservation Commission
- Authorization to Construct – MassDEP
- Authorization to Operate – MassDEP

Permitting requirements is discussed in the DEIR in the section titled Project Description and Permitting.

The DEIR has been prepared as a self contained description and analysis of the project. In addition, the DEIR has attachments which provide additional detail on the proposed project, project impacts and mitigation.

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Response to Comments, Continued

Glass Processing

Comment Summary

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RL-8
CO-3
RL-7
RL-11
TW-10
DP-2
NB1-3

A number of comments were received regarding the existing and future glass processing facilities. Comments received are summarized in the listing below:

- Glass storage is less than 500 feet from residences and is causing odor, noise and lighting issues
- The vegetative buffer between the glass storage area and residences has been removed.
- The operation has resulted in visual impacts to residences
- Trucks and machines are visible
- Glass pile contains 9000 tons of glass
- Glass on site is used as pressure to approve the Phase1 waiver. The glass pile is due to poor planning
- Noise is an issue now
- The glass facility is not enclosed
- Do not grant Phase 1 waiver

Comment Response

Glass recycling in Massachusetts has historically relied on the Ardagh Group glass bottle manufacturing facility in Milford as an outlet for recycled glass. Glass recycling operations have been disrupted by the closure of the Ardagh Group bottle manufacturing facility in 2018. As a result, stockpiles of glass at PPNE facilities increased. PPNE stored glass on an existing asphalt parking lot at 100 Duchaine Boulevard as a temporary measure while alternative outlets for glass were being sought. Subsequent to the issue of the EENF, all of the glass that was being stockpiled at 100 Duchaine Boulevard has been transported off site to recycling outlets.

Continued on next page

Response to Comments, Continued

Glass Processing, continued

PPNE notes that there were concerns expressed regarding the existing operations of glass processing (e.g. CS1-1), it is unclear from the comments whether the impacts noted are from the PPNE facility or adjacent industrial parcels. PPNE notes that other industrial activities adjacent to this site include 24-hour operation and that PPNE does not have control over those operations. PPNE will minimize its own noise impacts.

Regarding enclosure of the glass processing (e.g. DP-2), PPNE now intends to enclose the glass processing facility including the loading operations. As noted in the noise section of the DEIR, predicted sound level impacts for the enclosed operations are well within MassDEP guidelines. The efforts to enclose the glass processing operation will minimize and mitigate noise impacts to the extent feasible.

Regarding glass processing odors (e.g. CO-3), PPNE intends to enclose the operation which will minimize any offsite odor impacts. PPNE glass processing includes mechanical material processing and handling only, and has no processing steps involving any heating or odor generating activities.

The location of the temporary glass storage was less than 500 feet from residences. Some commenters on the project reported that operations on the temporary storage pad have resulted in impacts to the residences near the storage pad. Reported issues include visual impacts, noise impacts, and light impacts.

As a result of the issues reported in comments on the EENF, PPNE has removed all glass from the temporary storage area on the parking lot. PPNE will not store glass in this area going forward. In addition, PPNE has altered the design of the glass handling operation to fully enclose the operation. All handling and processing will be done within an enclosed building that is located more than 500 feet from residences. This will eliminate the potential for impacts of glass recycling due to noise, visual impacts, and light impacts.

One commenter reported that the vegetative buffer has been removed. In fact there has been no change to the buffer between the facility and the residences. There will be no changes to the vegetative buffer between the facility and the residences as a result of facility construction.

Continued on next page

Response to Comments, Continued

Gasification	**Comment Summary** Two comments were received indicating that PPNE has not been truthful about the use of gasification for the proposed project. **Comment Response** The proposed project does not include gasification. Gasification is a technology which could potentially be utilized to reduce the volume of dried biosolids, and create an alternative energy source for the drying of biosolids. for the drying of biosolids. PPNE evaluated this technology for this application and determined that it was not a viable alternative at this time.	**Index** CS2-1 TW-2
Inadequate Public Outreach, Environmental Justice	**Comment Summary:** Numerous comments were received regarding public notification and Environmental Justice. The comments received are summarized below: • Increase comment period for review of the EENF • Anonymous website presents inaccurate project information • Enhanced public participation is required for Environmental Justice communities • No notification of MEPA meeting • Additional meetings are requested • A Fact Sheet should be provided to the Public Library and City Hall • Toxics Action Center and EJ groups should be contacted on alternative media outlets **Comment Response:** Based on requests from commenters on the project, PPNE agreed to extend the comment period twice. The first extension to the comment period extended the comment period to March 29 and later the comment period was further extended to April 5.	**Index** CS2-2, NB-1 WG-1 CS2-3 CO-1 MP-1 RC1-1 TAC-1 TAC-2 TAC-3 MR-4 MR-5 TW-4 RC3-1 RC3-3

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Response to Comments, Continued

Inadequate Public Outreach, Environmental Justice, continued

PPNE disagrees with the comments submitted on the anonymous website. It is not known who initiated this website. The information presented in this website is not accurate.

Enhanced public participation was provided to Environmental Justice (EJ) Groups. The EENF was distributed to EJ groups identified by MassDEP and the MEPA office. Notice of the site meeting was provided to the identified EJ groups. Newspaper advertisement on the EENF were published in Spanish and Portuguese publications. A translator was provided at public meetings.

On July 15, 2019, GSE sent an email on behalf of PPNE to all EJ groups identified by MassDEP. This email provided a brief description of the project and requested that each EJ group provide any other alternative media outlets or other information repositories that should receive the DEIR when it becomes available. GSE did not receive any responses to this request.

The MEPA meeting was advertised per the requirements of the MEPA regulations. Notice was provided in the Standard Times newspaper as well as Spanish and Portuguese publications. EJ groups were notified by email.

PPNE held an additional public meeting at the Pulaski School on April 29. This meeting was advertised on radio, Facebook, as well as multiple publication dates in the Standard Times. Additionally, a Project Fact Sheet has been prepared and sent to the public library and City Hall

Additional nformational meeting(s) on the project will be held in early January. The date, time and location of the meeting(s) will be posted on the Parallel Products web site www.parallelproductssustainability.com as soon as the arrangements have been finalized. Please see Attachment 21 for further detail on public outreach.

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Response to Comments, Continued

Project Need

Comment Summary:

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RL-9
FL-2

- A comment was received indicating that the proposed project currently has no signed contracts and the need for the project has not been demonstrated.
- Crapo Hill Landfill is not located in New Bedford as stated in the EENF
- There may be a benefit for the Refuse District member communities to extend the life of the Crapo Hill Landfill by utilizing the proposed facility,
- The relationship between the proposed glass processing and existing PPNE operations is not clear.

Comment Response:

Development of solid waste transfer stations and processing facilities typically take years to progress from project initiation to completion. Because of this, projects generally do not have signed contracts until the project is nearly completed. PPNE may entertain long terming public section contracts for waste deliveries, however, this type of contract would be secured at a much later date once the client could ensure that this site is a viable outlet.

The proposed project is being developed to fill a need for in state processing and economical transfer to out of state disposal sites. Massachusetts solid waste disposal is currently impacted by the closures of in state landfills and the fact that no new landfills are being constructed. The Massachusetts Solid Waste Master Plan reports that "Massachusetts landfill capacity is expected to decline from just under two million tons in 2010 to about 600,000 tons in 2020 as current landfills close and are not replaced. Without increased source reduction, recycling, composting, or in-state disposal capacity, net export could rise from 1.1 million tons in 2009 to nearly 2.0 million tons per year, or about 18 percent of the projected annual solid waste generation, in 2020.

Continued on next page

Response to Comments, Continued

Project Need, continued

The EENF was incorrect in that the Crapo Hill Landfill is located in Dartmouth. PPNE will be open to accepting solid waste from Refuse District Members.

PPNE is currently constructing the glass processing facility as defined as Phase 1 of the proposed project. PPNE is also relocating its operations located at 969 Shawmut Avenue to 100 Duchaine Boulevard.

Odor, noise, emissions

Comment Summary:

- Odor, Noise and Air Emission studies done to date are inadequate
- Air quality impacts at facility itself have not been considered
- Peer review of studies should be conducted during planning board review
- Tier 4 engines are required for all off road engines during construction
- Idling restrictions
- Setback distances to residences are less than 500 feet
- Noise from facility operations will impact residences
- Dust from facility operations will impact residences
- Odor from facility operations will impact residences
- Higher incidences of COPD have been experienced in the area of the proposed facility
- Health risk of proximity to waste and biosolids
- Not all potential noise sources from facility operation have been considered
- Do not want to be dumping ground of Southeastern Massachusetts

Comment Response:

Regarding the adequacy of studies (e.g. NB-2), PPNE stands by the methods used and the results, documenting impacts in compliance with applicable standards.

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RL-6
TW-8
CC-1
CC-2
MR-3
DEP-15
FL-1
MEPA-3
MEPA-8
MEPA-10
MEPA-11

Continued on next page

Response to Comments, Continued

Odor, noise, emissions, continued

Project updates presented in this DEIR show improvements identified and implemented by PPNE, including opportunities for improvement identified through the MEPA process and other public outreach.

PPNE acknowledges several comments regarding noise, dust, and odor. Regarding impacts to residences (e.g. MM-2), the air, odor, and noise sections demonstrate that the air, odor, and noise impacts to the nearby receptors have been considered in the design of the project. Regarding nighttime operations (e.g. MR-2), PPNE does not intend to have significant nighttime operational activity and will limit the receipt of material to daytime operations (5 am to 9 pm). Regarding impacts from trucks (e.g. CC-2), PPNE has established a speed limit on the road to minimize truck noise, and there is no idling or queuing on the east side of the property. Regarding dust generation (e.g. RL-4) PPNE notes that the glass and MSW processing occurs inside an enclosed building and that material transfers will be dense bulk materials will not become airborne as dust. PPNE does not anticipate significant dust generation from the processes on site. Regarding odor (e.g. RL-5), as stated in odor section of the DEIR, the odor analysis includes layers of conservatism and the proposed odor control technology is best available, will mitigate odors to the extent feasible and the study has shown that odors will be below all regulatory limits.

Regarding air quality impacts at facility itself (e.g. NB-19), the onsite worker health and safety is protected through occupational standards enforced by the federal Occupational Safety and Health Administration (OSHA) and the Massachusetts Department of Labor Standards (DLS); those processes are separate from this MEPA review. Impacts to the public are described in the air quality analysis which shows that that the project's air impacts will comply with all applicable health protective standards at residential neighborhoods, including proximate neighborhoods to the east of the site (e.g. RL-8).

Regarding setback distances (e.g. RL-2), the analyses of potential impacts regarding odor, noise, and emissions all use georeferenced site plans and terrain data to provide conservative estimates of impacts. The project meets all MassDEP required setback distances to residences.

Regarding the ability of the City to peer review the analyses (e.g. NB-19), such review would be part of the Site Plan modification process or the Site Assignment process

Continued on next page

Response to Comments, Continued

Odor, noise, emissions, continued

Contrary to inaccurate statements, websites, and certain other statements, the proposed project does not include a "dumping ground". All waste material delivered to the site will be on site for a short duration and will be processed and then sent to out of state disposal sites or to recycling markets.

Regarding the inclusion of noise sources in the analysis (e.g. RL-3), PPNE met with MassDEP on June 19, 2019, to discuss noise analysis details. The revised analysis in the Noise Impacts section of this DEIR reflects the approach agreed to in that discussion. As noted in the Noise Impacts section, noise impacts are minimized to the extent feasible.

Regarding nearby incidences of COPD (e.g. RL-6), and health risk of proximity to waste and biosolids (e.g. CC-1), per the Environmental Justice section, impacts for all pollutants were below health protective levels of concern at all residential locations based on the peak predicted level of operation of the proposed facility. Operation of this facility will not cause or contribute to any exceedances of health-protective air quality standards.

Regarding the use of Tier 4 engines (e.g. DEP-8), as described in Environmental Justice section, PPNE commits to the use of Tier 4 compliant engines. Tier 4 compliant engines include all required emissions controls. PPNE and its contractors will utilize the best available technology for reducing the emission of PM and NO_x for diesel-powered non-road vehicles. To minimize air emissions from equipment operation, PPNE will direct its contractors to retrofit any diesel-powered, non-road construction equipment rated 50 horsepower or above, whose engine is not certified to United States Environmental Protection Agency (USEPA) Tier 4 standards and that will be used for 30 days or more over the course of the Project, with USEPA-verified (or equivalent) emission control devices (e.g., oxidation catalysts or other comparable technologies).

Regarding idling restrictions (e.g. DEP-9), as described in Environmental Justice section of the DEIR PPNE will post signs reminding operators of the laws limiting vehicle idling time.

Continued on next page

Response to Comments, Continued

Planning, Site Studies

Comment Summary:

Comments received regarding planning and site studies are as follows:

- Land area for the various project uses should be quantified.
- Conformance to the City Master Plan and Regional Policy Plan should be detailed.
- Information on the history of spills at the site should be detailed.
- The proposed project will entail a significant investment which would bring a positive return to the City in increased tax revenue and water usage fees.

Index
NB-4
NB-5
NB-6
MEPA-2

Comment Response:
Areas of land alteration for buildings, roadways, parking, wastewater, water and stormwater infrastructure is shown on the included in Attachment 8. The plans label project construction activities as Phase 1 or Phase 2.

The project complies with the New Bedford Master Plan in at least two areas. One of the goals and objectives in the transportation section of the Master Plan is to enhance the city's freight service by utilization of rail infrastructure. Addition of a rail sidetrack off of the existing main rail line allows this rail line to be used for local freight loading and unloading. The New Bedford Master Plan encourages development of business park sites to increase and stabilize the commercial tax base and create jobs.

Regarding spills, based on the historical use of the subject property, a Phase I Environmental Site Assessment and a Limited Subsurface Investigation (LSI) was conducted at the subject site. These investigations concluded that "Based on the results of this LSI, SAGE has not identified the presence of subsurface impacts at the site that would require reporting to MassDEP. As such, SAGE is of the opinion that further actions are not warranted at this time."

Continued on next page

Response to Comments, Continued

Planning, Site Studies, continued

The Southeast Regional Planning and Economic Development District issued the Regional Land Use: Roles, Policies and Plan Outline for Southeastern Massachusetts in June 1996. New Bedford is within the area included in the report. The document includes a number of policies related to development in the study area. The policy that relates to the proposed project states that "SRPEDD prefers development in areassupported by underutilized infrastructure including land and buildings, transportation facilities, water and sewer and drainage facilities, etc. (For example, redevelopment of an existing site for an industrial use is preferred land use to conversion of farmland for industrial use.)" As described in this DEIR, the proposed project is located at the former Polaroid Manufacturing facility and the proposed project is utilizing the existing infrastructure to the maximum extent possible.

Wetlands, Water Resources and Stormwater

Comment Summary:

Comments were received regarding wetlands, water resources and stormwater. The issues included in the comments are summarized below:

- Rail siding wetlands impacts
- Replication, tree cutting, no touch zone will need Conservation Commission approval
- Rail siding crosses high yield aquifer, spill prevention plans required
- No COC for existing order of conditions
- The use of a bridge to span wetlands has not been addressed
- Wildlife Habitat Analysis related to the proposed stream crossing needs to be evaluated
- Stormwater management is subject to the MassDEP Underground Injection Control (UIC) Program
- Industrial stormwater permit may be required
- Sediment and erosion BMP's must be utilized
- Spill prevention plan must be developed for construction activities
- LSP notified if oil discovered in ground
- Impacts to riverfront area at rail crossing of drainage swale

Index
NB-7
NB-21
NB-22
NB-24
DEP-1
DEP-2
DEP-4
DEP-5
DEP-6
DEP-10
DEP-7
DEP-21
MEPA-5

Continued on next page

Response to Comments, Continued

Wetlands, Water Resources and Stormwater, continued

Comment Response:

Phase 1 of the project received a waiver allowing Phase 1 to proceed prior to the completion of a Final EIR. The glass processing facility is currently under construction. Permitting is in progress for the rail sidetrack construction. Wetlands and riverfront disturbance is limited to Phase 1 of the project. A NOI has been submitted for the construction of the rail sidetrack. The NOI is currently under review by the New Bedford Conservation Commission. The NOI includes an evaluation of alternative stream crossings, wetland replication and an evaluation of impacts to the riverfront area and to wetlands. The NOI is included in the DEIR as Attachment 6.

The NOI includes a Stormwater Report. PPNE acknowledges that the stormwater management is subject to the UIC program. Additionally, a draft "spill contingency plan" has been developed and is presented within Attachment 20.

Rail Transportation

Comment Summary:

Index
NB-8
NB-9
RC3-2
DEP-17

Several comments were received regarding the proposed rail service to the site and regarding rail operations as follows:

- The project proposes to use gondola rail cars. CSX will only service flat cars with intermodal containers
- Project has no contingency if DOT financing is not available
- A commenter questioned why a state grant would go to a private company.
- Detailed description of rail car movement should be provided

Comment Response:

At the present time, CSX will only allow shipment of MSW in intermodal containers. These containers are typically loaded on flat bed rail cars. PPNE expects that CSX will revise the requirements for MSW shipment to allow baled and shrink wrapped or baled and bagged MSW, in combination with C&D waste, to be transported in gondola rail cars. As such, PPNE is proposing the installation of a baler.

Continued on next page

Response to Comments, Continued

Rail Transportation, continued

If there is no change in the CSX requirements, PPNE may opt to not install a baler and will load loose MSW in intermodal containers for transport per the current CSX shipment requirements. . Local rail service will be provided by MassCoastal Railroad. MassCoastal will deliver rail cars to CSX for long haul service to out of state landfills. A letter from MassCoastal indicating that the sidetrack and service plan required by PPNE is adequate is included in Attachment 9.

The plan for handling rail car delivery and removal from site is depicted on a series of plans titled Rail Car Movements and included in Attachment 9.

Biosolids facility

Comment Summary:

Index
NB-14
NB-23
DEP-3
TW-8
WG-2
MEPA -9

Comments received related to the Biosolids facility design are as follows:

- Building size may be inadequate for the proposed processing
- Potential for explosion or combustion of dryed biosolids is not addressed
- No standby dryer if the dryer is not available
- Potential for groundwater impacts or levels, potential for contamination and wetlands impacts.
- Water use discrepancy
- Design details lacking
- Little known about cutting edge technology
- Consultation with City on pretreatment requirements
- Is existing municipal infrastructure adequate to treat the addition in flow
- Draft spill contingency plan

Comment Response:

The biosolids building has been sized based on a preliminary equipment sizing study. PPNE believes that sufficient engineering has been completed to demonstrate that the building size shown on the plans is adequate.

Continued on next page

Response to Comments, Continued

Biosolids facility, continued

It is possible that some building size adjustment may be required once the design is finalized. If there is a change in building size, the change is would likely be minor and the revised design must comply with all permitting and siting conditions that have been established through the permitting process.

PPNE has reached out the City with respect to their pretreatment needs and on adequacy of existing municipal infrastructure to handle wastewater flows. Presently CDM has been retained by the City to assess this PPNE's request. Once a response is received, it will be forwarded to MEPA.

A draft spill contingency plan is provided within Attachment 20.

Belt dryers are assumed for preliminary design and will be utilized to produce dried biosolids. The dryer and facilities to house drying process equipment will be designed with built-in safety features to address potential fire risks associated with the following:

- Potential for fire within the dryer during drying operation
- Potential for fire resulting from dust generated from the dried material
- Potential for fire associated with storage of dried biosolids in silos

The National Fire Protection Association (NFPA) 820, Standard for Fire Protection in Wastewater Treatment and Collection Facilities, provides guidance for fire protection and electrical classification for wastewater facilities. In accordance with NFPA 820, Table 6.2.2(b), the drying facilities will be equipped with the following:

- Fire protection measures including hydrant protection, fire alarm system, and a fire suppression system (automatic sprinkler, water spray, foam, gaseous, or dry chemical).
- Fire protection measures including hydrant protection and fire alarm system for dried biosolids storage areas.

Continued on next page

Response to Comments, Continued

Biosolids facility, continued

In addition to the NFPA 820 guidelines for drying facilities summarized above, the drying equipment will be equipped with inherent safety protection measures including heater controls and feedback loops, drying chamber temperature controls and feedback loops, process air temperature controls and feedback loops, and a fire suppression system. These systems and controls provide protection against fire hazard risks due to high temperature and dust:

- The dryer belt conveyor will be designed to minimize pass-through of dust in the process air stream. Finer dust particles that pass through the belt are either carried to the condenser's filter media and removed, or remain in the chamber where wash-out system will routinely clean the system with spray nozzles.
- Various sections of the drying equipment that convey dried biosolids and recirculating dryer gas for drying will be equipped with thermocouples. Chamber temperature will be monitored continuously, and a PLC control system will utilize this data to regulate the amount of heat added to the system. For example, a high temperature may indicate that insufficient product is being diverted through the dryer, and the heat supplied may be reduced.
- The dryer will be equipped with a quench spray system. If triggered (at a high temperature set point), the quench system will activate and saturate the dryer as an immediate safety measure.
- The dryer exhaust gas will be recirculated and reused to ensure an oxygen-deficient atmosphere in the dryer.

The dried biosolids product will be cooled prior to storage to reduce the risk of auto-oxidation. Fire hazards during dried biosolids storage in silos will be addressed using inert gas (nitrogen) blanketing systems to maintain an oxygen deficient environment in the silo. In addition, the silo will be equipped with thermal sensors or carbon monoxide sensors to detect any potential rise in temperature.

The preliminary design assumes the dryer facility to be equipped with four (4) dryer trains, three operational and one standby during normal operating conditions. The project will have limited space available to store liquid biosolids in tanks and limited space for storage of biosolids cake within the building. In the event that multiple dryers were unavailable, the facility would need to stop accepting biosolids in the event that there was no space available to store biosolids.

Continued on next page

Response to Comments, Continued

Biosolids facility, continued

Liquid biosolids will be stored in tanks and biosolids cake will be stored inside the building within a bunker on a concrete floor. The storage of this material, both liquid and cake, must be a minimum of 2 feet above maximum high groundwater per MassDEP regulations.

A comment was received referring to a water use discrepancy. We believe that this comment refers to the difference in water volume and wastewater volume. The wastewater volume is much larger than the water use. The bulk of the wastewater disposed of is from the biosolids processing. Wastewater generated includes water removed from the liquid biosolids through the use of screw presses and water that that is condensed from the water vapor removed during the heated sludge drying. In addition, wastewater is generated from cooling tower blowdown.

Heated drying of biosolids is a well established method for reducing the volume and weight of wet biosolids and is a method for creating Class A biosolids. The design basis including a flow diagram is included in Attachments 4 and 5 of the DEIR.

Continued on next page

Response to Comments, Continued

MSW Processing

Comment Summary:

Index
NB-13
TW-6
TW-7

Comments received regarding the proposed MSW processing facility are as follows:

- The proposed project is a "dirty MRF" which is out of favor, is labor intensive and has safety issues
- Facility may be too small for MSW processing
- Site Plans submitted in 2017 for the proposed site did not identify the site as a waste site
- Site Plans submitted in 2017 did not indicate that the existing PPNE operations would move from Shawmut Ave to the proposed site.

Comment Response:

The equipment currently being produced for MSW processing has advanced considerably in recent years, and enables economic recovery of a significant percentage of recyclables from material that would have otherwise ended up in a landfill. Separation equipment includes optical sorters, physical density screens, and multiple other material conversion technologies that have progressed dramatically in recent years.

Although the generators of waste will have likely separated some recyclable material before disposing of the waste, additional recyclable can be extracted by state of the art separation equipment.

A layout of the MSW processing equipment is provided in Attachment 10. This layout has been developed to fit the available space in the existing building.

Plans for the site have evolved since the plans submitted in 2017. Site plans will require review by the Planning Board as well as the Conservation Commission as a result in changes to the proposed project.

Continued on next page

Response to Comments, Continued

Solar Power	**Comment Summary:** A comment was received stating that the project makes no mention of a contingency if project support through the Solar Massachusetts Renewable Target (SMART) Program is not received. **Comment Response:** All interconnections to build are presently approved by the utility (EverSource). Therefore, no contingency is presently necessary.	**Index** NB-15
Building Energy	**Comment Summary:** The Department of Energy Resources requested clarification and included recommendations in a comment letter on the EENF. **Comment Response:** Specifically, DOER requested clarification of the planned code pathway and construction/heating load for the conditioned buildings. The code pathway and construction/heating load are documented in detail in memoranda attached to the Greenhouse Gas Report which resides in Attachment 16. DOER also recommended further lighting power density reductions to 20%, use of cold-climate heat pumps for space heating, and provision of a schedule for installation of the planned 1.9-MW solar PV system. The project will incorporate the recommended further lighting power density reductions to 20%, but will not use cold-climate heat pumps for space heating (as justified in this DEIR documentation). The target completion date for the 1.9-MW solar PV system is August 1st, 2020. The recommendations, and associated evaluations, are also addressed in the Greenhouse Gas Emissions section of this DEIR, and in more detail in the Greenhouse Gas Report which resides in Attachment 16.	**Index** DOER-1 DOER-2

Continued on next page

Response to Comments, Continued

Solid Waste Permitting

Comment Summary:

A number of comments were received regarding the permitting requirements for a solid waste facility. Comment summary follows:

- A General Recycling Permit is required for the glass processing
- Solid waste will require Site Suitability, Authorization to Construct and Authorization to Operate permits
- Demolitions associated with project construction must comply with Waste Ban Requirements
- Asbestos survey required prior to demolition.
- Waste handling area is shown as being in the Riverfront area
- New dwellings may be within 500 ft of waste handling areas
- Will project have adverse impact of Acushnet Swamp
- Rail car movement needs to be defined
- Revisions to Traffic Impact Study are required
- Solid waste MEPA thresholds trigger enhanced Environmental Justice outreach
- Proponent must prepare Section 61 Findings
- Stream crossing alternatives
- Additional detail of MSW and biosolids handling should be provided
- Plans should show wetland areas in relation to waste handling areas
- Address the projects ability to comply with site suitability criteria

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DEP-11
DEP-12
DEP-13
DEP-14
DEP-15
RL-1
RL-10
TW-11
RL-12
DEP-16
DEP-17
DEP-18
DEP-19
DEP-20

Comment Response:

PPNE has obtained a General Permit from MassDEP for the glass processing operation at the 100 Duchaine Boulevard site.

PPNE will submit a Site Suitability Application upon completion of the Environmental Impact Review process. The Authorization to Construct Permit Application will be submitted upon approval of Site Suitability by MassDEP and upon receipt of Site Assignment by the New Bedford Board of Health.

Building demolition material will be sent to a permitted C&D processor. PPNE will have an asbestos survey done prior to any building demolition.

Continued on next page

Response to Comments, Continued

Solid Waste Permitting, continued

MassDEP commented that the project plans indicated that waste handling areas were within the Riverfront Area. As a result of this comment the waste handling area of the site has been revised such that the waste handling area is not within the Riverfront Area. The Water Resources Plan has been revised to reflect this change. The Water Resources Plan is included as Attachment 11.

MassDEP commented that the new dwellings bordering the site may be within 500 feet of the waste handling area of the site. The Land Use Plan and Water Resource Plan have been revised to show the parcel property lines for the parcels with recent home construction. As shown on these plans the waste handling area is more than 500 feet from the property lines for these parcels. The Water Resources Plan and Land Use Plan are included as Attachments 11 and 12.

A comment was received questioning the project impacts to the Acushnet Cedar Swamp. The following site features and proposed facility features will ensure that the Acushnet Cedar Swamp is not adversely impacted by the proposed project:

1. The 100 Duchaine Boulevard site is separated from the Acushnet Cedar Swamp by the existing rail line and existing on site drainage swale that parallels the western border of the site.
2. The impacts of stormwater drainage have been minimized by utilizing existing access roads and buildings and by constructing new buildings on surfaces that are currently impervious. The project will include a stormwater management plan that complies with the Massachusetts Stormwater Policy.
3. All waste handling will be done within enclosed buildings with concrete floors. The building nearest the Acushnet Cedar Swamp will be over 800 feet away.
4. Stormwater runoff from the site enter the existing manmade drainage swale that parallels the north and west property line. Stormwater then travels through a stream/wetland system for over 4,000 feet past the southern property line before entering a wetland that is hydraulically connected to the Acushnet Cedar Swamp.

Rail movement plans have been developed to show how the facility will receive 18 rail cars, how the rail cars will be moved for loading with waste, and then removed from the site. The Rail Movement Plans are included as Attachment 9.

Continued on next page

Response to Comments, Continued

Solid Waste Permitting, continued

Because solid waste MEPA review thresholds have been triggered, the project requires enhanced Environmental Justice outreach. PPNE provided enhanced Environmental Justice outreach during the EENF process. Public notice of the filing of the EENF was provided in Portuguese and Spanish newspapers. Interpreter services were provided at public meetings. The Secretaries Certificate on the EENF includes a detailed scope for the preparation of the DEIR. This scope includes specific requirements for enhanced outreach regarding the proposed project. This DEIR has addressed these requirements.

Section 61 findings are included as an attachment within the DEIR.

Phase 1 of the project includes the construction of the rail sidetrack. The rail sidetrack must cross the existing drainage swale near the west property line of the site. This crossing requires the submission of a Notice of Intent (NOI) to the New Bedford Conservation Commission. The NOI must include an evaluation of alternative designs for the swale crossing. The NOI has been filed with the New Bedford Conservation Commission. Alternatives evaluated for the rail crossing include a bridge and box culvert. The box culvert alternative was selected for cost and environmental benefits. The bridge alternative included numerous deep piles resulting in impacts to a larger area than the box culvert alternative. The selected alternative complies with the Massachusetts Stream Crossing Standards. The NOI is currently being reviewed by the New Bedford Conservation Commission.

The DEIR includes updated plans for the project which depict wetlands relative to waste handling areas, and compliance with site suitability criteria.

Additional detail on the handling and baling of MSW and the handling of biosolids has been provided in the Project Description Section of the DEIR.

Continued on next page

Response to Comments, Continued

Vectors

Comment Summary:

Index
RC2-6

Comments were received suggesting that rats and seagulls will be present in the neighborhoods as a result of the proposed project.

Comment Response:

All solid waste facilities must address vectors as part of the solid waste permitting process. The following actions will be included in the design/operation of the facility:

1. Contracting with a vector control management firm.
2. Installing rodent traps within and around the interior and exterior of the building.
3. Minimizing door openings within the proposed building.
4. Conducting all waste handling activities indoors.
5. Maintaining equipment on-site that will remove the materials from the tipping floor for subsequent handling.
6. Covering the containers and trailers prior to leaving the waste handling building.
7. Sweeping the paved areas and the interior of the building (as needed) at regular intervals.
8. Instituting a daily inspection program for vectors following the Operations and Maintenance Plan that will be prepared for the proposed Facility.

The vector controls listed above have been successfully used at other solid waste facilities and have been found to be effective in the control of vectors.

Continued on next page

Response to Comments, Continued

Alternate Sites

Comment Summary:

Index
RC2-7

One commenter suggested alternate locations for the proposed facility.

Comment Response:

Several alternate sites were evaluated during the EENF process. A suitable site must have access to rail, be zoned industrial be of sufficient size to accommodate the proposed facility and rail service and meet all of the site suitability criteria required by MassDEP. The selected site meets all of the siting requirements.

Zoning/siting

Comment Summary:

Index
TW-1
CCC-1
DP-2
NB1-2
RC4-1
MM-1

A number of comments were received related to the site zoning and siting of the proposed facility within the Business Park. Comments received are summarized as follows:

- The site is partially zoned residential as well as industrial
- The EENF was deceiving as it did not reflect single family homes
- PPNE must demonstrate that the project is not a threat to the quality of life in neighborhoods adjacent to the proposed project
- There is no reason to site this facility within the community
- New Bedford Business Park is not intended for waste processing

Comment Response:

The project site includes both industrial and residential zoning designations. The majority of the site is zoned industrial with only the area bordering Phillips road zoned residential. The entire proposed project is located in the industrial zoned portion of the site.

Continued on next page

Response to Comments, Continued

Zoning/siting, continued

The project layout has been shown as an overlay on an aerial photograph of the site. The aerial photography available predated the construction of several new homes on the west side of Phillips Road. The Land Use Plan and the Water Resources Plan included in the EENF have been revised for inclusion into the DEIR. The property lines of the parcels where new houses have been constructed are shown on the revised plans. The revised plans are included as Attachments 11 and 12.

The impacts on neighborhoods adjacent to the proposed project are evaluated in several permits required by the project. This issue is being addressed in the DEIR and FEIR through the MEPA process. This issue will also be addressed by MassDEP in the Site Suitability and Authorization to Construct Applications. This issue will also be addressed by the New Bedford Board of Health during the Site Assignment process.

The following studies have been done to evaluate the impacts of the project on residences in the project area.

- Odor Study
- Traffic Study
- Air Quality Study
- Noise Study
- Environmental Justice Study

All of the above referenced studies have been included in the DEIR.

The project is being developed to fill a need for waste disposal created by the closing of landfills in Massachusetts and the fact that no new landfills are being constructed.

Site use is dictated by zoning bylaws. The zoning of the site is industrial and as such waste processing is an allowed use.

Continued on next page

Response to Comments, Continued

Section 61 Findings	**Comment Summary:** Draft Section 61 Findings are required for each state agency that will issue permit for the project. DEIR should contain commitments to implement mitigation measures Self certification is required to ensure that all GHG emission reduction measures are adopted. **Comment Response:** MassDEP is the state agency that will issue permits for the project. Draft Section 61 Findings are included in Attachment 18. The Section 61 findings include a commitment to self certification to the MEPA Office to certify that all GHG commitments have been incorporated into the project.	**Index** MEPA-11

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ATTACHMENT 1

CERTIFICATE OF THE SECRETARY OF THE EOEEA

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Matthew A. Beaton
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1081
http://www.mass.gov/eea

April 12, 2019

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
EXPANDED ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME	: Parallel Products of New England
PROJECT MUNICIPALITY	: New Bedford
PROJECT WATERSHED	: Buzzards Bay
EEA NUMBER	: 15990
PROJECT PROPONENT	: Parallel Products of New England, LLC
DATE NOTICED IN MONITOR	: February 20, 2019

Pursuant to the Massachusetts Environmental Policy Act (MEPA; G. L. c. 30, ss. 61-62I) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) and hereby determine that this project **requires** an Environmental Impact Report (EIR). I am declining to allow a Single EIR as requested by the Proponent. The Proponent must submit a Draft EIR (DEIR) in accordance with the Scope provided in this Certificate. In a separate Draft Record of Decision (DROD), also issued today, I **propose to grant** a Waiver that will allow the proponent to proceed with Phase 1 of the project prior to completing the MEPA process for the entire project.

Project Description

As described in the ENF, the project includes the phased construction of a glass recycling/processing facility; a solid waste handling and processing facility that will accept 1,500 tons per day (tpd) of municipal solid waste (MSW) and construction & demolition (C&D) waste; and a biosolids drying facility that will accept 50 dry tpd of biosolids. Phase 1 includes construction of a glass recycling/processing facility within a 27,500-square foot (sf) building,

construction of a railroad (RR) sidetrack from the main RR line to the glass processing facility, and installation of a 1.9 megawatt (MW) solar photovoltaic (PV) array. The glass recycling/processing facility will recycle glass collected through the Massachusetts bottle deposit system. Glass processing will include crushing, sizing and separation of the glass by color. Processed glass will be stored in bunkers until it is loaded into rail cars or trucks to shipment for bottle manufacturers. Phase 1 is proposed to meet an immediate regional need for glass processing in the region by providing an alternative market for glass that would otherwise be disposed.

Phase 2 includes construction of the MSW and C&D transfer station and the biosolids drying facility and extension of the RR sidetrack to service these facilities. Phase 2 will construct a 50,000-sf waste handling building which will be connected to an existing 103,000-sf building. The larger building will house processing equipment which will remove waste ban items and separate out recyclable materials. It also includes construction of a stand-alone 30,000-sf building to house the biosolids processing equipment. Biosolids processing will consist of drying the biosolids to reduce the volume and tonnage of the material prior to off-site disposal. Shipment of all outbound material will primarily occur via rail car.

Project Site

The 71-acre project site is located within the New Bedford Industrial Park at 100 Duchaine Boulevard in New Bedford. The site is generally bounded by industrial properties and Samuel Barnet Boulevard to the north, Phillips Road to the east, undeveloped land to the south, and a rail line and the Acushnet Cedar Swamp State Reservation to the west. The site was previously developed by the Polaroid Corporation and contains access roads, parking areas, stormwater management infrastructure and numerous buildings. The Proponent purchased the site in 2016 and has relocated a portion of its processing and recycling operations from 969 Shawmut Avenue to the project site. The site also contains 1.5 MW of solar PV mounted on a series of carport canopies. Access to the site is provided from Duchaine Boulevard, via an internal one-way loop roadway surrounding the proposed facility. The site has adequate area to support truck movement and access and is easily accessible from Route 140 (Alfred M Bessette Memorial Highway) via Braley Road or Phillips Road.

Wetland resource areas in the vicinity of the project include Bank, Bordering Vegetated Wetlands (BVW), Land under Water (LUW), and Riverfront Area. The project site is not located in Priority and/or Estimated Habitat as mapped by the Division of Fisheries and Wildlife's (DFW) Natural Heritage and Endangered Species Program (NHESP) or an Area of Critical Environmental Concern (ACEC). The site does not contain any structures listed in the State Register of Historic Places or the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth.

Environmental Impacts and Mitigation

According to the EENF, potential environmental impacts of Phase 1 include alteration of 4.6 acres of land, creation of 21,780 sf of impervious area, generation of 108 new average daily vehicle trips (adt), consumption of 150 gallons per day (gpd) of potable water, and generation of

150 gpd of wastewater. Phase 1 will impact BVW (4,087 sf), Bank (36 linear feet (lf), and Riverfront Area (900 sf). The EENF describes commitments to avoid, minimize and mitigate environmental impacts associated with Phase 1 including: limiting all glass processing to an enclosed building; designing the RR crossing to reduce impacts to BVW and RFA; wetland replication; constructing the project on a previously altered site; use of rail to ship glass off-site; construction period erosion and sedimentation control measures; and generating renewable energy with solar PV systems.

Potential environmental impacts associated with full-build of the project include alteration of 8.8 acres of land; creation of 3.5 acres of impervious area; generation of 568 new adt (including employee trips), an increase in water demand of 13,000 gpd of potable water, and an increase in wastewater flow of 82,975 gpd of wastewater. The project will also generate GHG emissions associated with the project's energy use and trip generation. Measures to avoid minimize, and mitigate project impacts include constructing the project on a previously altered site; limiting all discharge and handling of solid waste to the enclosed tipping floor; limiting all biosolids processing to an enclosed building; use of rail to transport the majority of material from the site; installation of a floor drain collection system that drains to a holding tank to prevent groundwater contamination; erosion and sedimentation controls; stormwater management controls and implementation of Best Management Practices (BMPs) to minimize odor, dust, noise, and litter impacts.

Jurisdiction and Permitting

The project is undergoing MEPA review and requires the preparation of a mandatory EIR pursuant to Sections 11.03(5)(a)(6) and 11.03(9)(a) of the MEPA regulations because it requires State Agency Actions and will result in: New Capacity for storage, treatment, processing, combustion or disposal of 150 or more wet tpd of sewage sludge and New Capacity of 150 or more tpd for storage, treatment, processing, or disposal of solid waste (respectively). Because it requires an EIR, the project is subject to review in accordance with the MEPA Greenhouse Gas (GHG) Emissions Policy and Protocol. The project is also subject to the Executive Office of Energy and Environmental Affairs' Environmental Justice (EJ) Policy.

Phase 1 of the project will receive Financial Assistance from the Massachusetts Department of Transportation (MassDOT) Industrial Rail Access Program (IRAP) in the amount of $500,000. Phase 1 will require an Order of Conditions from the New Bedford Conservation Commission (or in the case of an appeal, a Superseding Order of Conditions from MassDEP) and a new or amended Site Plan Approval from the New Bedford Planning Board.

The remainder of the project will require a Determination of Site Suitability, Authorization to Construct, and Authorization to Operate and may require a Limited Plan Approval (LPA) from MassDEP and a NPDES General Permit (GP) for Construction and/or Multi-Sector General Permit (MSGP) for Stormwater Discharges Associated with Industrial Activity from the U.S. Environmental Protection Agency (EPA). The project will also require a number of local permits from the City of New Bedford, including: Site Assignment from the Board of Health, a new and/or Amended Order of Conditions from the Conservation Commission, and a new and/or amended.Site Plan Approval from the Planning Board.

Because the Proponent is seeking Financial Assistance, MEPA jurisdiction is broad in scope and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations.

Phase 1 Waiver Request

The Proponent submitted an EENF in support of its request for a Phase 1 Waiver, which would allow Phase 1 of the project to proceed prior to completion of the EIR for the entire project. Consistent with this request, the EENF was subject to an extended 30-day public comment period. At the Proponent's request, the comment period was extended for an additional two-weeks and closed on April 12, 2019.

The MEPA regulations at 301 CMR 11.11(1) state that I may waive any provision or requirement in 301 CMR 11.00 not specifically required by MEPA and may impose appropriate and relevant conditions or restrictions, provided that I find that strict compliance with the provision or requirement would:

(a) result in an undue hardship for the Proponent, unless based on delay in compliance by the Proponent; and
(b) not serve to avoid or minimize Damage to the Environment.

The MEPA regulations at 301 CMR 11.11(4) state that, in the case of a partial waiver of a mandatory EIR review threshold that will allow the Proponent to proceed with Phase 1 of the project prior to preparing an EIR, I shall base the finding required in accordance with 301 CMR 11.11(1)(b) on a determination that:

(a) the potential environmental impacts of Phase 1, taken alone, are insignificant;
(b) ample and unconstrained infrastructure facilities and services exist to support Phase 1;
(c) the project is severable, such that Phase 1 does not require the implementation of any other future phase of the project or restrict the means by which potential environmental impacts from any other phase of the project may be avoided, minimized or mitigated; and
(d) the agency action(s) on Phase 1 will contain terms such as a condition or restriction, so as to ensure due compliance with MEPA and 301 CMR 11.00 prior to commencement of any other phase of the project.

Single EIR Request

The Proponent submitted an EENF and requested that I permit the filing of Single EIR, rather than a Draft and Final EIR. A Single EIR may be allowed, provided I find that the EENF: a) describes and analyzes all aspects of the project and all feasible alternatives, regardless of any jurisdictional or other limitation that may apply to the Scope; b) provides a detailed baseline in relation to which potential environmental impacts and mitigation measures can be assessed; and, c) demonstrates that the planning and design of the Project use all feasible means to avoid potential environmental impacts.

Review of the EENF

The EENF included a detailed project description, an alternatives analysis, existing and proposed conditions plans, and information regarding traffic impacts, noise impacts, air and odor impacts, and GHG emissions. The Proponent provided supplemental information to the MEPA Office regarding Phase 1, existing operations at the project site, and wetland impacts to facilitate MEPA review.[1] For purposes of clarity, references to the EENF in this Certificate include this supplemental information. The comment period was extended for two-weeks at the Proponent's request to provide additional time to review and comment on the EENF.

The project exceeds solid waste and wastewater threshold and is located within one mile of a designated Environmental Justice (EJ) community. The Proponent consulted with MassDEP and the MEPA Office regarding the enhanced outreach requirements of the EJ Policy. The Proponent published Spanish and Portuguese language versions of the MEPA Public Notice in El Planeta and the Portuguese Times (respectively) in addition to the New Bedford Times. The Proponent also notified the following organizations of the project and MEPA scoping session and provided them with a copy of the EENF: Coalition for Social Justice, Alternatives for Community & Environment, Hands Across the River Coalition, and Old Bedford Village. These were identified as EJ leaders based on consultation with MassDEP. The comment period was extended for two-weeks at the Proponent's request to provide additional time to review and comment on the EENF. The comment period commenced on February 20, 2019 and concluded on April 5, 2019. I accepted all late comments as allowed in accordance with 301 CMR 11.06(3). A MEPA site visit and scoping session was held on March 7, 2019. Spanish and Portuguese translation services were provided at the MEPA scoping session. As noted above, the Proponent will hold a public meeting in early May which will provide another opportunity for public participation and outreach.

I have received numerous comment letters that identify concerns regarding the project and public outreach. During the MEPA review period, the Proponent also agreed to hold a public meeting which will provide the community with an additional opportunity to learn about and comment on the project. The meeting is proposed to be held during the evening at the Pulaski School in the north end neighborhood of New Bedford. It is proposed to be held in early May although a final date has not been selected. Once scheduled, the Proponent will publish notice of the meeting in the Standard Times and will notify the above referenced EJ groups. The Proponent has also created a website (http://parallelproductssustainability.com) which provides information on the project and will be updated to include renderings of the proposed project.

Comments from State Agencies generally support the Phase 1 waiver request. In addition, comments from MassDEP note the important role that the Phase 1 project plays in supporting the alternative market for collecting and diverting glass from disposal. I have also received numerous comment letters from the City, abutters, and other stakeholders that express concerns regarding noise, odor, and traffic and identify the need for additional public engagement. I note that MassDEP's Site Assignment Regulations for Solid Waste Facilities (310 CMR 16.00) and Solid Waste Regulations (310 CMR 19.00) require that facilities be designed and constructed to prevent pollution of land, air and water, and to prevent the creation of nuisance conditions. The

[1] Emails from Whitney Hall (Green Seal Environmental Inc.) to Page Czepiga (MEPA Office) sent 3/5/19, 3/11/19, and 4/2/19.

Scope for the DEIR requires additional public outreach and analysis of project impacts to demonstrate that the project will not disproportionately affect EJ communities. It also requires that the Proponent provide information that addresses the applicable Site Assignment and Solid Waste regulatory approval criteria to support MassDEP permitting.

Alternatives Analysis

The EENF identified the criteria the Proponent used to evaluate the following potential sites in New Bedford: Site A- 100 Duchaine Boulevard (71 acres), Site B – 1080 Shawmut Avenue (3.6 acres), and Site C – 781 Church Street. According to the EENF, all three sites are located in industrial zoned areas, are located adjacent to a rail line, and would comply with MassDEP siting criteria established for the waste handling area of solid waste handling facilities. According to the EENF, Site B was not large enough to accommodate a waste handling building and a rail side track of sufficient length necessary for the required rail service. The EENF indicated that Site C could accommodate a waste handling building and sufficient rail side track. According to the EENF, Site C was eliminated as it would require trucks accessing the site to pass numerous residences and the New Bedford Vocation Technical High School. According to the EENF, Site A was selected as the Preferred Alternative as it is located in an existing industrial park, has adequate space to accommodate a waste handling building and rail side track of sufficient length, has good access to high-capacity roads and highways, and will avoid routing trucks through residential areas or past schools.

Solid Waste

The Proponent has been operating a glass, aluminum, and plastics container recycling operation at 969 Shawmut Avenue in New Bedford since 2008. The Proponent intends to relocate all recycling operations from 969 Shawmut Avenue to the project site as part of Phase 1. Comments from MassDEP indicate the Proponent holds a General Permit for its recycling operations and submitted Annual Certification on May 11, 2018, as required by 310 CMR 16.04. I refer the Proponent to MassDEP's comments which provide guidance on the annual certification requirements. Phase 2 will be regulated in accordance with MassDEP Site Assignment Regulations for Solid Waste Facilities (310 CMR 16.00) and Solid Waste Facility Regulations (310 CMR 19.00). The EENF included a detailed description of project operations and a preliminary site suitability application (BWP SW 01) which addresses how the project will meet MassDEP Site Suitability Criteria. The criteria include avoiding handling of waste in areas contributing to ground or surface water supplies or in the Riverfront Area, setbacks from residential areas, minimizing impacts to traffic and air quality and avoiding, or minimizing impacts to other sensitive resources including agricultural land, rare species habitat, Areas of Critical Environmental Concern (ACEC) and open space. According to the draft Site Suitability Application included in the EENF, the project design and location conform with the criteria. I refer the Proponent to comments from MassDEP which identify additional information necessary to demonstrate consistency with the criteria.

As described in the EENF, MSW, C&D, glass, and biosolids will be delivered to the facility by truck between 6:00 AM and 6:00 PM, Monday through Saturday. Biosolids delivery may also occur on Sunday between 6:00 AM and 6:00 PM. The facility will receive C&D, baled

MSW, and loose MSW in live floor trailers, transfer trailers, and packer trucks (respectively). Trucks will be weighed on a truck scale and backed into the 50,000-sf waste handling building to tip their load. Processing equipment and manual picking lines will remove waste ban items from the mixed waste and separate other recyclable materials for recycling or diversionary uses. Extracted recyclables will be sent to recycling markets by rail or truck and residual waste will be baled, shrink-wrapped, and transported via rail to off-site disposal. All biosolids processing will be done within a separate enclosed building with two odor control systems. The facility will accept both dewatered cake biosolids and thickened wet slurry biosolids. Wet slurry biosolids will be stored in tanks until they are dewatered via centrifuge or screw press. The dewatered biosolids cake will be blended with other biosolids cakes and directed to a thermal dryer that utilizes a natural gas burner. The biosolids will be dried to approximately 90% solids and sent for disposal via railcar or truck.

The following BMPs were incorporated into the project design to minimize potential impacts to the site and surrounding environment:

- All tipping, handling, and loading of MSW/C&D and all biosolids processing will occur within fully enclosed buildings;
- Tipping floor will be constructed of impervious concrete and include a floor drain collection system that drains to a holding tank to prevent contamination of groundwater;
- Use of a fine atomized misting system within the MSW handing and processing buildings to control fugitive dust and odor;
- Regular daily clean-up and sweeping to control fugitive dust on external paved surfaces;
- Use of a negative pressure air collection system, wet scrubber, and ionization system to reduce odors from the biosolids facility; and
- Designing building stacks with adequate heights and exit velocities to facilitate air dispersion.

Demolition of existing buildings will generate C&D waste, portions of which may contain asbestos. Removal or abatement of regulated asbestos-containing material must be completed consistent with the requirements of 310 CMR 7.00. I encourage the Proponent to incorporate C&D recycling activities into project plans and refer the Proponent to MassDEP's comment letter which provides regulatory guidance on Asphalt, Brick, and Concrete (ABC) recycling and processing.

Environmental Justice

Because the project exceeds MEPA EIR thresholds for wastewater and solid waste and is located within one mile of an EJ Community, it is subject to the EEA EJ Policy and requirements for enhanced public participation and enhanced analysis of impacts and mitigation. The EJ Policy was designed to improve protection of minority and low income communities from environmental pollution as well as promote community involvement in planning and environmental decision-making to maintain and/or enhance the environmental quality of their neighborhoods. The Proponent's outreach efforts and the enhanced outreach requirements of the

EJ Policy were identified earlier in this Certificate. The EENF identified one census block group designated as an EJ community (i.e. 25% or more of the residents area are minority) that is located within one mile of the project. The EENF included an "Environmental Justice Analysis" (Appendix J) which provided an assessment of baseline public health conditions, analysis of potential air impacts, and measures to avoid, minimize, and mitigate said impacts. It included an evaluation of the baseline health of the EJ communities in the broader area surrounding the project site using data from the Department of Public Health's (DPH) Environmental Public Health Tracking website. The analysis reviewed cancer data (from 2000 to 2013), the incidences of asthma (from 2000 to 2014), acute myocardial infarctions (AMI) (from 2000 to 2014), and Chronic Obstructive Pulmonary Disease (COPD) (from 2000 to 2014).

The analysis found that occurrences of these issues vary in the surrounding area with New Bedford having rates above the statewide average and Acushnet and Dartmouth having rates similar to or lower than the statewide average. Based on the results of the air quality dispersion model, the EENF concluded that the project will comply with all health-protective standards and will not cause or contribute to any health-protective exceedances of air quality concentrations. Specifically, the project will not exceed NAAQS/MAAQS which were established to "provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly" or MassDEP's AALs and TELs which were developed to evaluate potential human health risks from exposures to airborne chemicals. Comments from MassDEP identify concerns regarding adverse impacts to proximate sensitive receptors (two schools and a daycare) and request an expanded discussion of potential project-related impacts to these sensitive receptors.

Wetlands/Stormwater

The Proponent provided supplemental information to the MEPA Office to clarify a slight reduction in wetland impacts based on plan refinements that occurred after the EENF was submitted.[2] According to this supplemental information, Phase 1 will impact BVW (4,087 sf), Bank (36 lf), and Riverfront Area (900 sf). Remaining development, which will be addressed in the DEIR, will not impact wetland resource areas. The New Bedford Conservation Commission will review Phase 1 to determine its consistency with the Wetlands Protection Act (WPA), the Wetlands Regulations (310 CMR 10.00), and associated performance standards, including the Stormwater Management Standards (SMS). According to the EENF, all wetland impacts are associated with construction of the rail spur over a drainage swale and a BVW crossing. The EENF indicated the Proponent will provide wetlands replication to mitigate impacts to BVW. Comments from the City indicate they will require mitigation at a 1.5:1 ratio of mitigation to impacts. I anticipate that the Proponent will coordinate closely with the City Conservation Agent to provide appropriate wetland replication while reducing tree clearing. I refer the Proponent to comments from the City that note an outstanding compliance issue that must be remedied prior to the commencement of site work.

The following measures were incorporated to reduce wetland impacts: crossing perpendicular to the swale and BVW to minimize the impacted area, installation of a box culvert

[2] Emails from Whitney Hall (Green Seal Environmental Inc.) and Christian Farland (Farland Corp.) to Page Czepiga (MEPA Office) sent 4/2/19 and 4/8/19, respectively.

within the alignment of an abandoned bridge to cross the swale, locating the swale crossing within previously disturbed soils, aligning the BVW crossing so a portion of the crossing can be constructed on an isolated area of uplands within the wetland, and use of retaining walls (in-lieu of sloped embankments) to construct the BVW crossing to reduce wetland impacts. Comments from MassDEP request additional consideration of alternative designs that will further reduce impacts to wetland resource areas. In an email dated March 29, 2019, the Proponent prepared a response to MassDEP's comments which elaborated on crossing structures considered for the site and confirmed that the crossings will comply with MA Stream Crossing Standards. Supplemental comments from MassDEP identify additional information that should be provided during permitting, including an expanded analysis to address the applicable Riverfront Area performance standards and information to demonstrate the project's compliance with the MA Stream Crossing Standards and support its designation as a Redevelopment Project per at 310 CMR 10.58(5).

The existing stormwater management system includes a series of catch basins, detention ponds, and subsurface infiltration systems. According to the ENF, the existing stormwater management system will continue to serve the site as the project will not significantly increase impervious area or result in significant changes to site drainage or topography. Comments from MassDEP note that components of the stormwater management system may be subject to the *Underground Injection Control* (UIC) program and provide guidance on NPDES permitting.

Transportation/Traffic

The EENF included a Traffic Impact and Assessment Study (TIAS) which was performed in general conformance with MassDOT/EEA's Guidelines for *EIR/EIS Traffic Impact Assessments.* Comments from MassDOT indicate the study area is adequate for capturing the traffic impacts of the project. The TIAS concluded that Phase 1 of the project will generate approximately 108 new trips per day (54 vehicles entering and 54 vehicles exiting). Full-build of the project will generate 418 new truck trips per day (209 truck trips entering, 209 truck trips existing). In addition, employees will contribute approximately 150 vehicle trips (75 entering, 75 exiting) for a total of 568 vehicle trips accessing the site on an average weekday. Trip generation was calculated based on empirical data collected from a similar solid waste facility in Rochester, MA. The Proponent anticipates shipping all outbound material by rail. To provide a conservative analysis, the trip generation calculations assumed all outbound material would be transported by truck. The planned use of rail for outbound shipment would reduce trip generation by approximately 110 trips per day. I refer the Proponent to comments from MassDOT and the City which request the Proponent commit to and implement a Transportation Demand Management (TDM) program to reduce trip generation. Comments from MassDOT also identify bus stops located in close proximity to the site and encourage the Proponent to design access roads in accordance with Complete Street standards to facilitate opportunities to walk and bike to the site and proximate transit connections.

The TIAS included a summary of study area crash rate data for the five year period of 2011-2015 which identified two unsignalized intersections[3] that exceed the MassDOT-District 5

[3] The two intersection locations are: 1) Braley Road/Theodore Rice Boulevard at Phillips Road and 2) Theodore Rice Boulevard at Duchaine Boulevard.

and state-wide average rates. Comments from MassDOT indicate that the additional traffic volume generated by the project is not expected to significantly impact safety at these intersections. According to the TIAS, there are no Highway Safety Improvement Program (HSIP) high crash cluster intersections within the study area. The TIAS included capacity analyses at study area intersections for the weekday morning (AM) and evening (PM) peak hours for 2018 Existing, 2025 No-Build, and 2025 Build conditions. The addition of project-generated traffic will cause certain turn movements to experience slightly increased delays compared to the 2025 No-Build conditions. The TIAS indicated the delays are generally not significant to impact the LOS and noted that the impacted locations will continue to operate under capacity in 2025 Build Conditions.

Greenhouse Gas Emissions

The EENF included a GHG analysis consistent with the MEPA GHG Policy (the Policy). The Policy requires projects to quantify carbon dioxide (CO_2) emissions and identify measures to avoid, minimize, or mitigate such emissions. The analysis quantified the direct and indirect CO_2 emissions associated with the project's energy use (stationary sources) and transportation-related emissions (mobile sources). I note the City of New Bedford is a designated Green Community under the provisions of the Green Communities Act of 2008. As such, the City has adopted the Commonwealth of Massachusetts' Stretch Code (SC).The project will be required to meet the applicable version of the SC in effect at the time of construction. The SC requires at least a 10-percent reduction in energy use compared to the base Building Code requirements. Stationary sources were evaluated using equipment assumptions and and excel spreadsheets. Mobile GHG emissions were estimated using information from the TIAS, MOVES CO_2 emission factors, and followed the standard methodology outlined in MassDEP's *Guidelines for Performing Mesoscale Analysis of Indirect Sources* (May 1991). Mobile source emissions were calculated for local on-road process truck deliveries, employee vehicle trips, onsite and offsite idling, and the use of front-end loaders for glass and MSW/C&D handling.

The GHG analysis evaluated CO_2 emissions for two alternatives as required by the Policy including: 1) a Base Case compliant with the 9th Edition of the Massachusetts Building Code , and 2) a Preferred Alternative (Mitigation Alternative) that incorporates additional energy saving measures. The 9th Edition of the Building Code references the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) 90.1-2013 and the International Energy Conservation Code (IECC) 2015. The EENF indicated that the equipment for processing the glass and MSW/C&D is industry standard and would not differ from the base case scenario. It also indicated that the glass recycling and MSW/C&D processing buildings will be unconditioned spaces. Based on this, the GHG analysis for the glass recycling and MSW/C&D processing facilities was limited to the energy use associated with their buildings, specifically the lighting demands. Similarly, the GHG analysis for the biosolids processing facility was limited to the energy use associated with lighting, ventilation, and heating demands. The EENF identified those measures that will be incorporated into the project design, measures that were dismissed as infeasible or inappropriate, and measures that will be studied further during advanced design stages.

The Proponent has committed to incorporate the following measures to reduce GHG emissions:

- Installation of 1.9 MW of solar PV via canopy (carport and shed) and rooftop arrays during Phase 1 (in addition to existing 1.5 MW on-site PV array);
- Reduced Lighting Power Densities (LPD) to achieve a 10% reduction over Code requirements in all buildings;
- Construction of all new buildings as solar PV-ready with appropriate structural capacity and space allocations for solar PV arrays;
- Energy-Efficient condensing boiler for heating the biosolids processing building; and
- Construction waste recycling.

Because the project is at a conceptual design level, the Proponent has an opportunity to consider incorporation of additional GHG reduction measures. As recommended by DOER, the Proponent should consider a further reduction in LPD and the use of cold-climate heat pumps to provide space heating in the biosolids processing building. I acknowledge and appreciate the Proponent's commitment to renewable energy which will assist the Commonwealth in meeting its overall GHG reduction goals stated in the Global Warming Solutions Act of 2008. The Proponent has installed 1.5 MW of solar PV at the site and will install an additional 1.9 MW of solar PV in Phase 1. Installation of the 1.9 MW solar PV array will generate 2,499 MWh/year and result in a GHG reduction of 907 tpy. The combined 3.5 MW array will generate 4,543 MWh/year for a total GHG reduction of 1,647 tpy.

The EENF evaluated and quantified the GHG reductions that could be achieved by implementing the following measures in the biosolids processing facility: advanced vacuum drying technology (2,393 tpy) and variable frequency drives (VFDs) in the ventilation system (36 tpy) and process motors (211 tpy). The EENF indicated the Proponent cannot guarantee these GHG reductions as they were based on conceptual engineering estimates and/or vendor representations. Based on this, these additional measures were not included as GHG mitigation commitments. It is unclear whether they will be incorporated into the project. This should be addressed in the DEIR. The EENF also indicated that the Proponent is evaluating gasification of dried biosolids for a later stage of the project. Gasification is not proposed at this time. If the Proponent intends to incorporate gasification into the project at a later date, it would be subject to a Notice of Project Change (NPC) to the MEPA Office and additional review, permitting and air quality analysis.

Phase 1 stationary source CO_2 emissions were estimated at 102 tpy in the Base Case. Adoption of energy efficient lighting will reduce stationary source CO_2 emissions by 10 tpy, for a total of 92 tpy or a 10% decrease. Installation of the 1.9 MW solar PV array will reduce GHG emissions by 907 tpy. The EENF indicated the estimated number of new trips associated with the Phase 1 project (108 new trips) is not anticipated to generate a significant level of mobile source GHG emissions. To be conservative, the EENF did not take credit for the reduction in mobile source emissions associated with shipping outbound materials by rail instead of trucks or the reduced travel from trucks transferring materials from their point of origin within the greater New Bedford area to more distant facilities. The GHG emissions (Table 7 of Appendix C) for full-build of the project are summarized below.

	BASECASE	PROPOSED	DIFFERENCE	
			TPY	%
MOBILE SOURCE EMISSIONS	**3,377**	**3,377**	**0**	**0**
STATIONARY SOURCE EMISSIONS	**10,898**	**10,835**	**63**	**-0.58%**
Glass Recycling	*102*	*92*	-	-
MSW/C&D Processing	*314*	*282*	-	-
Biosolids Processing	*10,482*	*10,461*	-	-
1.9 MW SOLAR PV		-907	-	-
TOTAL	**14,275**	**13,305**	**970**	**-6.80%**

Air Quality

The project will require a Limited Plan Approval (LPA) from MassDEP to ensure that the project, and the facility as a whole, conforms to National Ambient Air Quality Standards (NAAQS) and the Massachusetts Ambient Air Quality Standards (MAAQS). MassDEP's permitting process may include a review to demonstrate compliance with the Best Available Control Technology (BACT) review. The EENF included an Air and Odor Analysis (Appendix D) which evaluated emissions associated with stationary combustion sources, mobile diesel equipment, dust from material handling, and potential odor sources. The analysis used the U.S. EPA's AERMOD air dispersion model to determine potential air quality impacts associated with the above emissions on proximate residential receptors. To be conservative, the analysis assumed all outbound shipment of material will occur via truck. The analysis quantified potential emissions from the project for nitrogen dioxide (NO_2), particulate matter up to 2.5 micrometers in size ($PM_{2.5}$), and MassDEP air toxics and compared them to the NAAQS and MassDEP's Ambient Air Levels (AALs) and Threshold Effect Exposure Limits (TELs).

The analysis also evaluated potential odors from MSW tipping and processing and biosolids processing. These were compared against the recommended odor concentration limit in MassDEP's "Draft Odor Policy for Component Facilities". The analysis identified the following measures to reduce air quality and odor impacts: wet scrubbing for air emanating from the biosolids dryers; ionization for oxidation of the air constituents emanating from the biosolids dewatering operations; and designing building stacks to facilitate air dispersion. Based on the results of the air dispersion modeling, predicted air pollutant, and odor concentrations are shown to be below the applicable NAAQS/MAAQS, MassDEP AALs and TELs at residences, and protective odor concentration criterion at residences. Based on this, the analysis concluded that the project as designed, will not cause or contribute to a condition of air pollution in the area.

Noise

The EENF included a Sound Level Assessment Report (Appendix D) which provided a description of the applicable noise regulatory requirements, a brief explanation of noise terminology, a summary of the results of the complete ambient sound level monitoring program, and a discussion of the sound level modeling analysis for the proposed project. The EENF also discussed the project's consistency with the MassDEP Noise Policy. The primary noise sources

of the project include MSW/C&D tipping and handling, ventilation equipment, outdoor front-end loader at the glass handling building, process ventilation equipment at the biosolids building, and four cooling towers. The project and majority of on-site equipment will operate 24 hours/day and 7 days per week, with the exception of the outdoor front-end loader at the glass processing building which will operate from 7:00 AM to 10:00 PM. I refer the Proponent to comments from MassDEP which identify additional sound sources that should be incorporated into the analysis.

The MassDEP Noise Policy limits new noise-generating equipment to a 10-dBA (A-weighted decibel) increase in the ambient sound measured at the property line and at the nearest residences. The EENF provided a summary of the results from sound level modeling measured at four representative locations around the facility and within the community. The locations were selected to represent the closest sensitive receptors (primarily residential) surrounding the project site. The analysis identified the following measures that were incorporated into the project to reduce noise impacts: electric rail car pusher to move rail cars within the site, fan silencers or low noise exhaust fans on the biosolids building, silencer or low noise unit in the scrubber stack and quiet cooling towers or construction of a sound barrier wall (50-ft long by 15-ft tall) along the southern edge of the biosolids building to shield the residential area from the sound generated by cooling towers. With implementation of the proposed mitigation, modeled future daytime and nighttime sound levels from the project are predicted to increase the measured background sound levels by 3 to 8 dBA at all modeled residential receptor locations, thereby demonstrating consistency with the MassDEP Noise Policy limit. Modeling also indicates that the proposed project is not expected to create any "pure tone" conditions, as defined by MassDEP, when combined with existing background sound levels at any modeled receptor locations.

Water/Wastewater

According to the EENF, the project will increase water demand by 13,000 gpd and will increase wastewater flows from the site by 82,975 gpd. Wastewater generation is primarily associated with water removed from biosolids either by dewatering or by drying/condensing. The project will be served by municipal water and sewer infrastructure. Comments from MassDEP indicate the City has an EPA approved Industrial Wastewater Pretreatment Program (IPP). The Proponent should consult with the City to determine measures necessary to comply with the City's IPP. I refer the Proponent to comments from the City which requests analysis to determine whether existing infrastructure can accommodate and treat the wastewater flows. Comments from MassDEP encourage the Proponent to implement measures to reduce water consumption.

Conclusion

Based on review of the EENF, consultation with State Agencies, and a review of comment letters, I hereby require the Proponent to file a Draft EIR and Final EIR. The Scope below identifies additional information and analysis that should be provided in the DEIR to demonstrate that environmental impacts have been minimized, avoided and mitigated to the maximum extent feasible; to demonstrate that the project will not disproportionately an EJ community; and to provide information and analysis for permitting agencies to evaluate consistency with regulatory standards and to make associated Section 61 Findings.

In a separate DROD, also issued today, I propose to grant a Waiver that will allow the Proponent to proceed with Phase 1 of the project prior to completing the MEPA process for the entire project. The Phase 1 waiver is limited to the construction of a glass recycling/processing facility, a RR sidetrack from the main RR line to the glass processing facility, and a 1.9 MW solar PV array. The DROD addresses the project's consistency with the criteria for a Phase 1 Waiver and related conditions.

SCOPE

General

The EIR should follow Section 11.07 of the MEPA regulations for outline and content, as modified by this Scope. The majority of the EENF was comprised of the preliminary site suitability application with appended technical studies. This provided information for review by State Agencies and the public; however, the DEIR must contain a full and self-contained description and analysis of the project. It should provide additional narrative to explain and support the analysis of the project's impacts and mitigation, and extract relevant documentation and tables from technical appendices to supplement the narrative. The DEIR should include a comprehensive narrative with a separate chapter for each of the categories identified herein.

Project Description and Permitting

The DEIR should include a detailed description of the existing and proposed conditions, describe any changes to the project since the filing of the EENF, and should provide an update on Phase 1. The DEIR should include updated site plans for existing and post-development conditions at a legible scale. It should provide a brief description and analysis of applicable statutory and regulatory standards and requirements, and a description of how the project will meet those standards and provide an update on the state, federal, and local permitting process. The DEIR should provide an update that describes all of the enhanced public outreach efforts and meetings that have occurred since the EENF was submitted in accordance with the EJ Policy.

The DEIR should show areas of land alteration for buildings, roadways, parking, wastewater, water and stormwater infrastructure, lawns and landscaping, and other project components. The DEIR should describe the project's consistency with the City's current Master Plan and the Southeast Regional Planning and Economic Development District's (SRPEDD) current Regional Policy Plan. It should also include a discussion of the facility's role in achieving the Commonwealth's goals as outlined in MassDEP's Solid Waste Master Plan.

Solid Waste

The DEIR should include a narrative summary that describes how C&D, baled and loose MSW, and dewatered cake and thickened wet slurry biosolids, will be delivered, transferred from vehicles, processed, and shipped-off site. The DEIR should address the issues identified in the "Suitability Criteria" section of MassDEP's comment letter (dated March 22, 2019). The DEIR

should include a narrative description and supporting figures that describes the movement of empty and full railcars on the site, including the new rail spurs and extended sidetrack. It should provide plans that show the waste handling area and associated 500-foot setback from residential properties, including the newer residences referenced in MassDEP's comments. Plans should also depict wetland resource areas in relation to the proposed waste handling area. The DEIR should address the project's consistency with applicable site suitability criteria. Comments from the City identify concerns regarding the explosion/combustion potential of dried biosolids. The DEIR should address this issue and identify associated mitigation measures, as appropriate. It should also describe contingency plans for processing biosolids if one or more dryer becomes unavailable.

Environmental Justice

In accordance with the EJ Policy, the Proponent must provide enhanced public outreach of the DEIR to EJ populations in New Bedford. Enhanced public outreach should include preparation and distribution of a fact sheet that provides a summary of the project, environmental impacts (including air quality), and public comment opportunities. The fact sheet should include photos of similar facilities (or direct individuals to a website to view renderings). The project fact sheet should be provided to the public library and City Hall; included on the project website; and provided upon request by residents. Prior to submitting the DEIR, the Proponent should contact the Toxics Action Center, EJ groups identified above, and the City's Planning Department for input on alternative media outlets and information repositories in which to provide notice of the DEIR. The Proponent should consult with the MassDEP's and/or EEA's Environmental Justice Director during preparation of the DEIR regarding the proposed circulation and participation plan to ensure compliance with the EJ Policy.

I have received numerous comment letters that identify concerns regarding the project and public outreach. As noted above, the Proponent will be holding a public meeting to discuss the project, its potential environmental impacts, and mitigation measures. The DEIR should provide a detailed update that describes all of the proponent's enhanced public outreach efforts and meetings that have occurred since the EENF was submitted.

Comments from MassDEP identify concerns regarding adverse impacts to proximate sensitive receptors (two schools and a daycare) that are generally located within a one-mile radius of the project. Other comments identify concerns with potential mobile source emissions, air quality, noise, and odor impacts on vulnerable populations (children and the elderly). Because the project is sited within one mile of a designated EJ population, the DEIR should expand on the discussion of air dispersion modeling results provided in the EENF to identify the direction and extent of potential impacts and to inform development of effective mitigation measures. The DEIR should evaluate increased buffers between property lines and sources of noise/air emissions, increased plantings and vegetated buffers or other barriers to reduce potential impacts.

The EENF indicated that New Bedford has statistically higher rates of environmentally-related health outcomes, including asthma and COPD. The DEIR should discuss the current and future impacts that climate change (including extended periods of drought, and extreme temperatures) will have on air quality within the EJ populations. The DEIR should evaluate

development of a plan to reduce air emission and odor impacts that will be implemented on days when the National Oceanic and Atmospheric Administration (NOAA) issues air quality alerts. In addition, the Proponent should consider implementing an air emissions monitoring plan to track the project's air emissions and identify thresholds which would trigger an evaluation of the need to implement additional mitigation to reduce air quality and odor impacts. The Proponent should also consult with MassDEP and the City's Health Agent to develop a system to log and track odor, noise, and dust complaints during the construction and operational phases of the project. The DEIR should describe the plan and how the community will be notified of the system.

Wetlands/Stormwater

During MEPA review of the EENF, the Proponent indicated project plans were refined to eliminate all wetland impacts associated with the remaining development. The DEIR should provide project plans and a supporting narrative that describes how the project was designed to avoid, minimize, and mitigate impacts to wetland resource areas. This narrative should also provide an update on Phase 1, including any design revisions that further reduced wetland impacts and the location and size (sf) of the wetland replication area. The DEIR should also provide plans that clearly identify new impervious areas and should evaluate all feasible methods to reduce impervious surfaces, including reduced parking ratios, narrow driveway widths, etc. The DEIR should describe the project's stormwater management system and provide conceptual plans identifying existing and proposed stormwater infrastructure. It should discuss how the project will comply with the requirements of applicable stormwater programs, including but not limited to MassDEP's SMS and NPDES GP and/or MSGP (as applicable). The DEIR should consider retrofitting the existing stormwater management system and incorporating additional low impact development (LID) measures to improve water quality.

Transportation/Traffic

Traffic accessing the site will travel through the Theodore Rice Boulevard/Braley Road at Phillips Road intersection in the easterly and westerly directions. This intersection operates as a 4-way stop sign-controlled location. The DEIR should provide revised traffic modeling to reflect this condition. It should provide information to demonstrate that vehicle queues will not block the proximate Route 140 off-ramps. Comments from MassDEP note that the Proponent must commit to limiting the maximum number of vehicles utilizing the site to that presented in the traffic study, or revise the traffic study to reflect the maximum proposed site traffic flow rate. The DEIR should address this and provide a revised traffic study, as necessary.

The DEIR should include a thorough evaluation of TDM measures to reduce site trip generation, including the measures identified in comments from MassDOT and the City. All feasible measures should be incorporated into a TDM plan for the project. The DEIR should include the draft TDM plan and a commitment by the Proponent to implement said plan. I encourage the Proponent to improve bicycle and pedestrian connectivity between the site and adjacent land uses, including proximate bus stops.

Greenhouse Gas Emissions

The FEIR should include a revised GHG analysis that includes the additional information and analyses requested in DOER's comment letter. The DEIR should clarify whether VFDs (for ventilation and process motors) and advanced vacuum technology will be incorporated into the biosolids processing building. If not included as mitigation commitments, the DEIR should provide supporting financial analysis or data to support the dismissal of these measures. The DEIR should clarify the planned code pathway and which two measures have been incorporated into the "Base Case" Scenario as required by Section C406.1 of the Building Code and/or should revise the GHG analysis accordingly. The DEIR should provide additional information on the construction type, building envelope, and space heating output of the biosolids processing building. As recommended by DOER, the revised GHG analysis should evaluate reducing LPD to achieve a 20% reduction over Code requirements in all buildings (vs 10% currently proposed) and the use of cold-climate heat pumps to provide space heating in the biosolids buildings. The DEIR should present the results of calculations used to establish the existing/baseline condition(s), the build condition(s), and the impact of proposed emissions-reduction mitigation. If the project does not incorporate additional reductions in LPD or cold-climate heat pumps, the DEIR should explain, in reasonable detail, why the use of these measures which could provide significant GHG reductions, were not selected. The Proponent should consult with DOER to confirm the approach of the GHG analysis prior to preparing the DEIR. The DEIR should also include a mobile source GHG analysis which has been updated to reflect any changes since the DEIR (as appropriate). The mobile source analysis should quantify the GHG reduction that could be achieved by shipping outbound material by rail instead of trucks.

Air Quality/Noise

The DEIR should include a revised sound analysis that incorporates the additional sound sources identified in MassDEP's comment letter. Prior to filing the DEIR, the Proponent should consult with DPH to identify additional measures that can be incorporated into the project to further reduce impacts to air quality and noise. The DEIR should provide an update on this consultation, including a thorough evaluation of the feasibility and benefits of the identified measures. The Proponent should commit to implementing any measures which are determined to be feasible. The DEIR should confirm the air permitting required by the project and provide an update on the air permitting process, including any BACT analysis.

Water/Wastewater

The DEIR should provide an update on consultations with the City regarding monitoring, metering, and pretreatment necessary to comply with the City's IPP. The DEIR should clarify whether the municipal wastewater infrastructure (including piping and pump stations) is adequate to accept and treat the additional flows from the project and/or should identify any necessary improvements. I refer the Proponent to the City's comment letter for additional guidance. The DEIR should include a draft spills contingency plan to address prevention and management of potential releases of oil and/or hazardous material. At a minimum, the spills contingency plan should address refueling of machinery, storage of fuels, and accidental

releases. The DEIR should also identify measures incorporated into the project design to reduce the project's water demand.

Construction Period Impacts

The DEIR should describe construction methodology and sequencing, potential construction period impacts (including but not limited to traffic management, materials management, parking, air quality and noise impacts, and other items as they related to the construction period), and identify feasible measures that can be implemented to eliminate or minimize these impacts. This discussion may be prepared and presented in the DEIR as a draft Construction Management Plan (CMP). The draft CMP should include appropriate erosion and sedimentation control BMPs consistent with applicable NPDES Permit requirements. The project must comply with MassDEP's Solid Waste and Air Pollution Control regulations, pursuant to M.G.L. c.40, §54. The DEIR should discuss the solid waste and air quality regulatory requirements identified in MassDEP's comment letter and identify the specific and aggressive construction recycling and source reduction goals the Proponent will adopt.

Because this project is located in close proximity to a designated EJ population, the Proponent should mitigate the construction period impacts of diesel emissions to the maximum extent feasible. This mitigation may be achieved through the installation of after-engine emission controls such as diesel oxidation catalysts (DOCs) or diesel particulate filters (DPFs), or the use of equipment that meets Tier 3 or Tier 4 emission standards for non-road construction equipment. The DEIR should address how the project will support compliance with the Massachusetts Idling regulation at 310 CMR 7.11.

Mitigation and Draft Section 61 Findings

The DEIR should include a separate chapter summarizing proposed mitigation measures. This chapter should also include draft Section 61 Findings for each State Agency that will issue Permits for the project. The DEIR should contain clear commitments to implement mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation (either funding design and construction or performing actual construction), and contain a schedule for implementation. To ensure that all GHG emissions reduction measures adopted by the Proponent in the Preferred Alternative are actually constructed or performed by the Proponent, I require Proponents to provide a self-certification to the MEPA Office indicating that all of the required mitigation measures, or their equivalent, have been completed. The commitment to provide this self-certification in the manner outlined above should be incorporated into the draft Section 61 Findings.

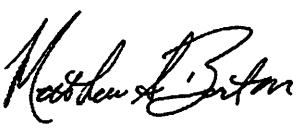
Response to Comments

The DEIR should contain a copy of this Certificate, and a copy of each comment letter received. Based on the large volume of form letters received, copies of form letters may be provided electronically. To ensure that the issues raised by commenters are addressed, the DEIR should include direct responses to comments to the extent that they are within MEPA jurisdiction. A single response to form letters can be provided. This directive is not intended, and

shall not be construed, to enlarge the scope of the DEIR beyond what has been expressly identified in this certificate. I recommend that the Proponent use either an indexed response to comments format, or a direct narrative response. Responses must specifically address each comment letter on the EENF; references to a chapter or extensive section of the DEIR are not adequate.

Circulation

The Proponent should circulate a hard copy of the DEIR to any State and City Agencies from which the Proponent will seek permits or approvals, and to any parties specified in Section 11.16 of the MEPA regulations. The Proponent must circulate a copy of the DEIR to all other parties that submitted individual written comments. In accordance with 301 CMR 11.16(5), the Proponent may circulate copies of the DEIR to these other parties in CD-ROM format or by directing commenters to a project website address. However, the Proponent should make available a reasonable number of hard copies to accommodate those without convenient access to a computer and distribute these upon request on a first-come, first-served basis. The Proponent should send correspondence accompanying the CD-ROM or website address indicating that hard copies are available upon request, noting relevant comment deadlines, and appropriate addresses for submission of comments. In addition, a hard copy of the DEIR should be made available for review at the New Bedford Public Library. The DEIR submitted to the MEPA office should include a digital copy (e.g., CD-ROM, USB drive) of the complete document.



April 12, 2019
Date

Matthew A. Beaton

Comments received:

Form letters beginning "I am strongly opposed to the..." (1,013 received)
Form letters beginning "I strongly support the..." (two received)
03/08/2019 Tracy Wallace (1 of 2)
03/18/2019 Robert Ladino
03/22/2019 Massachusetts Department of Environmental Protection (MassDEP) (1 of 2)
03/26/2019 Roger Cabral
03/26/2019 Cheryl Souza
03/27/2019 Marlene Pollock
03/27/2019 Tracy Wallace (2 of 2)
03/27/2019 Wendy Graca
03/28/2019 Claire B.W. Miller, Toxics Action Center
03/29/2019 Massachusetts Department of Transportation (MassDOT)
03/29/2019 Jonathan F. Mitchell, Mayor, City of New Bedford
03/29/2019 Department of Energy Resources (DOER)
03/29/2019 Vincent Carolan

03/31/2019 Claudia Ostiguy
04/02/2019 Ron Cabral
04/02/2019 Carol Strupczewski
04/05/2019 MassDEP (2 of 2)

MAB/PRC/prc

Czepiga, Page (EEA)

From: cstrupczewski@verizon.net
Sent: Tuesday, April 02, 2019 9:33 AM
To: Czepiga, Page (EEA)
Cc: RRCRT@aol.com; cbostiguy@gmail.com; ritalapre@gmail.com; brad.markey@newbedford-ma.gov
Subject: EEA15990 Paralles Products

Paige Czepiga
Environmental Analyst
MEPA Office

First of all I want to thank and Secretary Matthew Beaton for the extension to April 5 for allowing residents to write their opposition for Parallel Products of New England plans for its expansion in the New Bedford Business Park with the future possibility of having a wastewater sludge facility.

My immediate concern is Phase I and its final step. If granted this will be devastating to the entire development of Pine Hill Acres more than 350 home, Heritage Estates, Long Built Homes, and Briarwood quality of life for more than a thousand residents. Presently, residents in Pine Hill Acres less than 500 feet for the facility are being awaken with loud noise at night, during the daytime, detection of odors in the neighborhood, and can clearly see the well-lighted outside holding stalls with materials in them from Phillips Road. Abutting the property, there are newly built homes.

As I drove on Phillips Road past the Parallel site at 10 p.m., I could clearly see down from the road the lighted open holding stalls which are less than 200 feet from the street. There are no trees, shrubs, privacy fence around the stalls.

The quality of life in this densely popular area is quickly changing for all of the residents from air to noise to traffic. Phillips Road is a two-lane street and can't take the traffic of heavy vehicles on it multiple times a day which will most likely happen as some trucks will take Exit 5 off of Route 140 to enter the southern area of the Business Park which is closer to the Parallel Products factory.

Please do not grant the Phase I step.

Carol Strupczewski
1075 Braley Road
New Bedford, MA 02745

508-995-6135

Czepiga, Page (EEA)

From: Cheryl Souza <clsouza@comcast.net>
Sent: Tuesday, March 26, 2019 8:06 PM
To: Czepiga, Page (EEA)
Subject: Parallel Products of New England

Ms Czepiga,

I have just learned about a project proposed for a location close to my home. I live at 80 Keene Road, in Acushnet, not far from the New Bedford Industrial Park. It has just been brought to my attention that Parallel Products of New England is proposing to bring a biosolid facility to the Industrial Park. I am a strong proponent of environmental cleanliness, and the company does present itself as an environmentaly concious company, however, there has definitely not been enough community outreach regarding the effects on neighbors and the environment they live in.

Parallel Products is also not being truly forthcoming, by denying their plan to implement the "gasification" of biosolids which is in their own words "cutting edge technology". Generally, cutting edge technology really means "we are making this up as we go along."

Please postpone the upcoming deadline for the public comment period, the company has not advertised their public forums, nor have they offered them at times the average working class person would be able to attend.

In addition, there is an annonymous campaign reaching out to the community with poorly written, blatantly false and repetitive flyers. The website for this campaign is http://stoptheparalleldump.com. It is not uncommon, in today's world, that corporations employ many ways to get their projects completed regardless of community interest. I believe the owner of that website should be brought to light, it could be Parallel Products themselves.

thank you for your time,

Cheryl Souza

80 Keene Road

Acushnet, Ma 02743

508-685-0330

CITY OF NEW BEDFORD
JONATHAN F. MITCHELL, MAYOR

March 29, 2019

Executive Office of Energy and Environmental Affairs (EEA)
Attention: MEPA Office
Paige Czepiga: EEA No. 15990
100 Cambridge St, Suite 900
Boston MA 02114

RE: EEA 15990: Parallel Products

Dear Ms. Czepiga,

I write to present the response of the City of New Bedford regarding Parallel Products of New England's (PPNE) proposed facility expansion project at 100 Duchaine Blvd. in our business park.

Given the facility's proximity to a densely populated residential neighborhood, I am troubled by the paucity of PPNE's outreach to public, and particularly to the abutting Pine Hill neighborhood. I believe strongly that there needs to be a much more robust public engagement effort that has been undertaken to date.

Moreover, I am not convinced that the preliminary impact analysis regarding potential noise, odor, and traffic is adequate given the stakes, and I would encourage MEPA to exercise its oversight authority to ensure that further study is pursued so that the decision-makers and the public alike can have greater confidence in the findings. In sum, unless and until PPNE is able to satisfactorily address reasonable neighborhood concerns in the areas of noise, odor, and traffic, I am not prepared to lend my support to the project.

In addition to my concerns regarding public engagement and neighborhood impacts, municipal departments have identified a number of specific operational/environmental issues with the proposed facility. These are enumerated below, and are based upon departmental reviews of the EENF submitted to the City of New Bedford in February 2019.

1) ***Land Use Impacts***

The project site is in the City's Business Park, a location established to accommodate most industrial uses. As such, the project site is meant to be buffered from the surrounding neighborhood which is residential to the east. If MEPA should allow the project to proceed, PPNE must be required to ensure that all impacts to this neighborhood are satisfactorily mitigated. This would include all potential noise, odor, or additional traffic impacts. It should be noted that the Land Section of the ENF Form was not completed. As the project is a redevelopment of a previously used industrial site, the responses in this section are not likely to have revealed any otherwise unidentified potential impacts.

However, responses would have quantified the amount of land occupied for certain uses (buildings, parking areas, etc.) and would have identified the project's consistency with current City Master Plan and the current Regional Policy Plan of the Southeast Regional Planning and Economic Development District (the regional planning agency whose territory includes New Bedford). Previous environmental studies at the site included a Phase 1 Environmental Assessment and a Limited Subsurface Investigation, by SAGE Environmental. These reports are not included in the EENF, but a table of reported releases to the environment from the Phase 1 Environmental Assessment is provided, showing three releases reported to MassDEP between 1994 and 2008. All three were assigned Release Tracking Numbers (RTNs), and all three either had the RTN retracted or had audits completed. Six previous spills or releases were also identified, between 1978 and 1994, with minimal information on remedial actions.

2) ***Economic Development***

It is recognized that this project would entail a significant economic investment, which would bring a positive return to the City in increased tax revenue and water usage fees.

3) **Rail Infrastructure, Waste, and Energy Efficiency**

a) **Rail Infrastructure:** PPNE is proposing to add a rail stub in order to utilize rail as an option for shipping out waste materials after processing. This is an important component of the project and is seen as a benefit as it mitigates truck traffic which is already increased significantly.

This rail siding requires the crossing of a Bordering Vegetated Wetland (BVW) and a perennial stream with associated Riverfront area. The ENF states that less than 5000 s.f. of BVW will be impacted by the rail crossing. The plans show that retaining walls will be utilized to minimize wetland impacts from the rail crossing. The wetland boundaries in the vicinity of the crossings have not yet been verified by the Conservation Commission and therefore the square footage of Resource Area impacts cannot be confirmed. This should be provided.

Rail transport of outgoing material is identified as beneficial for many aspects of the project, including greenhouse gas emissions, other air pollutant emissions, efficient energy usage, and traffic considerations. However, rail transport is faced with uncertainties: The owner of the rail line is not identified; no mention is made of discussions with the railroad owner about installing the proposed rail spur; and MSW is proposed to be baled, wrapped, and shipped in gondola (open-topped) rail cars. At present, CSX, the largest railroad network in the eastern US, will only haul MSW in sealed intermodal containers on flat-bed rail cars. If this policy does not change, the facility must either pack MSW in sealed intermodal containers or ship it off site in trucks.

The project will be supported by a grant of $500,000 from the Massachusetts Department of Transportation's Industrial Rail Access Program. There is no mention of contingency if this financing does not come through.

b) **Waste:** The EENF states (erroneously) that the Crapo Hill Landfill is located in New Bedford, and that District member communities "*are not expected to utilize the proposed facility for MSW disposal.*" However, there may be an advantage to some dialog between the District (and/or its member communities) and the project's proponent, to consider some use of the proposed facility to prolong the life of Crapo Hill, and/or to address long range planning for when the Crapo Hill Landfill does close.

The proposed facility consists of three primary components: A glass bottle processing facility, to accept 200 tons per day (tpd) of glass bottles for crushing and shipment to end-users; A municipal

solid waste (MSW) processing facility, that will accept 1,500 tpd for processing and transfer. The proponents expect to extract up to 20%, or 300 tpd, of material for recycling, and ship 1,200 tpd of waste for out-of-state disposal; A wastewater biosolids (sludge) processing facility that will accept 50 tpd dry weight (or up to 600 tpd wet weight), and ship dried product for end use or disposal. Inbound material will arrive by truck. Outbound material will be transported by rail, with some truck shipment as necessary. The waste shed area and waste sources are not identified, although District member communities are specifically noted as "not expected to use the proposed facility for MSW disposal" (Draft Site Suitability Application, pg 58).

i) Glass Facility: The glass processing facility is alternately described as replacing the proponent's existing glass "beneficiation" operation from their facility at 969 Shawmut Ave, New Bedford, but is also identified as "the relocation and upgrade of the glass recycling operation that Strategic Materials previously operated in Franklin, MA to the 100 Duchaine Boulevard site. The new glass recycling facility will be owned by PPNE and will be operated in conjunction with Strategic Materials" (Draft Site Suitability Application Narrative, p. 10.). The facility is proposed to receive 200 tpd of glass bottles collected through the Massachusetts bottle deposit system for crushing, sizing and separation by color, and shipment off site for re-use or disposal. The proponent's parent company is experienced in various aspects of product destruction and container processing.

ii) MSW Facility: As described in the EENF, the MSW facility is essentially a "Dirty Material Recovery Facility (MRF)", or a mixed waste processing facility, with a goal of extracting 20% of incoming material for recycling from raw waste. Such facilities are labor-intensive and face substantial worker safety challenges. They do not require any consumer or waste hauler separation of recyclable materials from waste and have largely fallen out of favor within the waste industry, displaced by single-stream recyclables collection and processing in a "Clean MRF". Massachusetts has devoted considerable effort into educating consumers and the waste industry about recycling and has for many years tried to encourage separation and recycling at all stages of the waste generation-collection-handling-disposal processes. Waste entering a "Dirty MRF" that has already been stripped of recyclable material will likely have a very low recyclables recovery rate. Operation of the MSW facility as described does not appear consistent with the general consensus of what the future of waste handling in Massachusetts should be. The MSW tipping (or receiving) building is 50,000 square feet, which appears adequate for the proposed tonnage; the tipping floor appears best configured for direct load of waste into intermodal rail cars. It appears likely the operation will target loads specific for processing and then move those loads into the processing facility, which appears to be insufficient at 103,000 square feet, for handling 1,500 tpd of mixed waste. For comparison, the E. L. Harvey Materials Recycling Facility in Hopkinton, Massachusetts, which is permitted for 600 tpd of single-stream recyclables or mixed waste, is 80,000 square feet in size.

iii) Biosolids Processing Facility: The biosolids processing facility is expected to receive and process 50 tpd dry weight of biosolids. At the low end of the range of solids content presented in the EENF, this will actually be 600 tpd of raw material. The proposed receiving and storage facilities for the thickened and dewatered biosolids appear to be adequately sized with appropriate redundancy. The building size of 30,000 square feet may be insufficient, unless an additional upper level is included. Very little detail is provided on the design for the railcar loadout system. Additionally, there is no mention of combustion and explosion mitigation measures associated with the dried biosolids. Dried biosolids are a known explosion hazard, especially during storage. Also, the dryer does not have a standby unit, and there is no mention of the impacts to the process if one or more driers become unavailable.

c) **Energy Efficiency:** PPNE is proposing to add an additional 1.9 MW of solar power in the form of PV panels to the already 1.5 MW generated onsite. This is a net Greenhouse Gas mitigation for the project and is a good use of the sites non-programmable rooftops.

The solar power component will need to be supported through the Solar Massachusetts Renewable Target (SMART) Program, and the requested Phase 1 MEPA waiver is "*imperative*" for SMART Program support. There is no mention of contingency if SMART program support does not come through.

4) **Traffic and Trip Generation**

a) ***Traffic/Trip Generation:*** PPNE has included a traffic impact study which states that the facility will generate 418 new truck trips per day (209 in/out) and 150 employee trips per day (75in/out). This is a significant increase over the existing conditions of 76 vehicle trips per day. To be conservative, this includes the contingency that all outgoing material will be by truck instead of by rail. Truck traffic in tons per load and in distribution throughout the day is estimated based on data from the SEMASS facility in Rochester, Massachusetts. Traffic from the existing NWD Trucking facility on the site is deducted, as this facility is expected to relocate.

Truck estimates appear to be accurate, except that the fraction from the biosolids component appears to be somewhat low (at the low range of solids content of the incoming material, each truck as presented would carry 30 tons, which is high). Facility traffic will be present from 6:00 am to 6:00 pm Mondays through Saturdays, with the biosolids component also creating traffic on Sundays. Only a small portion of the traffic is expected to occur during peak hours (7:30 am – 8:30 am, and 3:00 pm – 4:00 pm). Seven local intersections were studied, including Philips Road, Braley Road, the Route 140 exit ramps, and intersections within the Business Park. A 2025 "Build" scenario was projected to result in only two minor reductions in Level of Service at intersections.

It is recommended that PPNE describe Transportation Demand Management (TDM) strategies in effort to reduce the impacts associated with these trips, such as carpool and vanpool preferential parking designation, working with SRTA to locate transit service accommodations, shuttle services, bicycle parking accommodations, and other options. It would further be recommended that along with a traffic analysis the proponent should provide a report on how the added vehicle traffic would impact the road conditions and add to their maintenance.

5) ***Emissions, Odor, Sound***

a) ***Emissions, Odor:*** PPNE analyzed emissions associated with stationary onsite combustion sources, mobile diesel equipment, dust from materials handling, and potential odor sources (biosolids, MSW). Their plan proposes to avoid, minimize, and mitigate impacts to air quality and smell through the use of best industry practices, wet scrubbing and ionization. It goes on to state that National and State Ambient Air quality standards and standards for Air Toxics will not be exceeded 'in residential areas.'

As this project is located in an industrial area, we ask that PPNE clarify air quality impacts at the facility itself, particularly for the benefit of employees of PPNE who will be exposed to this air every day as well as the nearby neighborhood. The City should be able to peer review the air quality report at the time when PPNE returns to the planning board for a Site Plan modification in order to ensure the plant employees and residential neighborhood to the east of the site is

protected from any toxics in the air.

b) ***Sound:*** PPNE analyzed sound levels associated with the proposed plant operations, taking into account sounds generated from tipping activities, fans and exhaust towers, and both indoor and outdoor activities. The project will be subject to Massachusetts State laws as administered by the DEP, which regulate noise under air pollution. The controls/mitigation include using an electric yard engine for moving rail cars within the site, employing low-noise air quality control and ventilation mechanisms such as fans and stacks, and a noise barrier wall between the biosolids cooling towers and residential area to the south. It would be recommended that the City peer review the sound assessment report at the time when PPNE returns to the planning board for a Site Plan modification in order to ensure the residential neighborhood to the east of the site is protected from excessive decibels or pure tone sounds.

6) ***Wetlands, Water Resources***

a) ***Wetlands:*** Wetland replication has not been shown on the plans. The Conservation Commission has a policy of requesting a 1 ½ to 1 ratio of wetland mitigation to wetland impacts. The wetland replication area should be constructed in an area that is currently developed or grassland such that mature upland trees in the 100' Buffer Zone do not need to be cut to facilitate the replication area. The Conservation Commission also has a policy of maintaining a 25' setback of undisturbed land between wetland resource areas and proposed development (with the exception of wetland crossings). Incursions into the 25' setback have been noted in several locations and it is hoped the plans can be redesigned to maintain an undisturbed setback.

b) **Water Resources:** It appears a portion of the new rail spur would cross through the high yield aquifer while the remaining rail siding, recycling, MSW and biosolids facilities would be within the medium yield aquifer. Long Term Pollution Prevention Plans shall be requested for each component of the facility. Spill control plans shall also be requested with respect to the diesel fuel for the rail cars and other on-site fuel facilities. The proponent should prepare a Pollution Prevention and Emergency Response plan for both the construction phase and normal operations that identifies potential contamination sources, threats of Hazardous Material and Hazardous Waste releases to the environment, describes material storage and handling details, containment and contingency plans for spill response, and documents regular inspection and employee education opportunities. Areas used for vehicle maintenance and loading docks should install a mechanical shut-off valve or other flow-arresting device between the catch basin or other stormwater-capture structure draining this area and the leaching structures.

7) **Wastewater and Stormwater**

a) ***Wastewater:*** PPNE is expected to use 13,150 GPD of water and will generate 83,125 Gallons Per Day (GPD) of wastewater (biosolids drying will be extracting water from the product). It is recommended that the proponent demonstrate through a groundwater study that the project will not have adverse impacts on groundwater levels or adjacent surface waters and wetlands. It has also recommended an infrastructure analysis be done that the proponent demonstrate the current piping and pump station is sufficient to handle the proposed new water and wastewater use. This would include the new loads impact to the wastewater treatment facility. This would determine if a pre treatment facility would be needed either on site or at the Industrial Park Pump station. The plant loadings should include nitrogen loads.

b) ***Stormwater:*** The rail siding also crosses a stormwater detention facility which was constructed under SE49-0738 to capture runoff from a construction stockpiling facility. This Order of

Conditions has expired and does not have a Certificate of Compliance. The applicant/owner shall be required to obtain a Certificate of Compliance prior to any other work commencing on site. Following this, the Notice of Intent for Phase I will have to modify the design of the stormwater facilities and stockpile area to accommodate the rail siding. Additionally, runoff from the idling MSW trucks and recycling trucks may contain trash which will enter into the stormwater system.

A plan for keeping the pavement clean and preventing the clogging of the stormwater facilities is needed. It is also of concern to the city that the plans seem to show removal of existing catch basins as well as serious increase in impervious areas. Also noted would be an explanation of how any contaminated run off from the waste areas will be dealt with.

In conclusion, in the course of the City's review it has become evident that many environmental considerations should be understood much better than they are at present and will require significant attention going forward. It is in this context that I encourage MEPA to require the proponent to issue an Environmental Impact Report. Only a continued robust program of impact analysis will put MEPA, the public, and state and local officials, in a position to decide if this particular project, at this particular location, makes sense for New Bedford, our region, and the Commonwealth. Thank you for your consideration.

Sincerely,

Jon Mitchell

CC: Energy and Environmental Affairs Secretary Matthew Beaton
Senator Mark Montigny
Representative Paul Schmid
Representative Christopher Hendricks
New Bedford Planning Board

Czepiga, Page (EEA)

From: Claudia Ostiguy <cbostiguy@gmail.com>
Sent: Sunday, March 31, 2019 2:18 PM
To: Czepiga, Page (EEA)
Subject: Additional Comment Period Extension

EEA No. 15990 Parallel Products of New England, New Bedford

Page Czepiga
Environmental Analyst
MEPA Office

Ms Czepaga,
I appreciate and thank you and Secretary Matthew Beaton, for the extension to accept comments expressing thoughts and concerns regarding the establishing of Parallel Products of New England in the North End of New Bedford.

It is my understanding that MEPA, establishes regulations and reviews thresholds for projects that are of a nature, size or location, likely to cause damage to the environment, directly or indirectly.

Residents from many housing developments, 2 Elementary Schools and businesses in the actual Business Park that Parallel is joining, were stunned to learn of this invasive industry popping up, seemingly overnight, in our area.

New Bedford, has struggled for decades in its attempt to be a clean city. We are well aware of environmental challenges that impact health, and quality of life issues.

At this time, our concern is Phase I, and the final step, the Environmental Impact Report. Should this certification be granted Phaze II, which would be an even greater challenge, would begin.

Parallel's site is in the south end of the Business Park, directly across from a residential housing development with over 300

homes. (NOTE: there are many other residential sites impacted as well.)
Since Parallel has established their facility at this site, the landscape that blocked view and access to the previous businesses has been severely altered. With the recent building of new homes that abut the Parallel property, the dense tree line and vegetation that once buffered the park and the main Street (Phillips Rd) and the housing development (Pine Hill Acres) has been reduced to a few trees.
You can see the plant.
You can see stalls filled with recyclables. You can see dozens of vehicles including front end loaders.
You can hear the disruptive noises.
There's a faint odor detected, which will most probably get worse as the warmer weather arrives and the work load increases.

We are informed that this industry will be processing six days a week from 6 AM - 6PM and possibly some Sundays.
This brings up not only the din from the plant, but brings up the issue of trucks, 18 wheelers in fact, which will be delivering 1,500 TONS of recyclables/MSW daily. This fleet will be taking Rte 140 South and Exit 7, Braley Road Exit, which leads into the Business Park. What you may not be aware of is that this exit, with 4 ramps, 2 on and 2 off is just West of an Elementary Magnet School. This area is already a huge logistical problem. Braley Road is impassible twice a day when the Pulaski School opens and closes. Buses, private vehicles, block the way so that Emergency Vehicles, should they be activated, have a difficult time getting through either to the Business Park or residential areas. There's also the Business Park traffic as well that adds to this frustrating problem. These tractor trailers may in all likelihood avoid Exit 7 and take Exit 5 which will have them take Phillips Road. This two lane street is not designed or able to take the load of heavy trucks and would directly travel by residential homes. Once at the plant, these trucks will sound back

up bell noises, powerful engine noises and the actual sound of dumping products.

Even before this project is completed, we have lost our peace of mind. We feel disrespected and neglected. Many of us have bought homes in this bedroom community with the thought of enjoying our homes inside and outdoors. Many are retired elderly. All our hard work and sacrifices to sustain and enjoy our homes will literally be erased with noise, air pollution and traffic jams. This is just the tip of the iceberg.

We were here first! We are being invaded and taken over.
It's disheartening to learn that the powers that be are supporting 50 jobs over the welfare of thousands of taxpaying citizens.

I respectfully request that at this time, you do not give EIR Certification to Parallel Products of New England in New Bedford.

Parallel must inform our community directly of their plans. Give us this time to get educated before anything else moves ahead.

Sincerely,
Claudia Ostiguy
426 Valley Road
New Bedford, MA 02745
cbostiguy@gmail.com
508-995-7613

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF
ENERGY AND ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENERGY RESOURCES
100 CAMBRIDGE ST., SUITE 1020
BOSTON, MA 02114
Telephone: 617-626-7300
Facsimile: 617-727-0030

Charles D. Baker
Governor

Karyn E. Polito
Lt. Governor

Matthew A. Beaton
Secretary

Judith F. Judson
Commissioner

29 March 2018

Matthew Beaton, Secretary
Executive Office of Energy & Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02114
Attn: MEPA Unit

RE: Parallel Products, New Bedford, Massachusetts, EENF #15990

Cc: Maggie McCarey, Director of Efficiency Programs, Department of Energy Resources
Judith Judson, Commissioner, Department of Energy Resources

Dear Secretary Beaton:

We've reviewed the Expanded Environmental Notification Form (EENF) for the above project. The proposed project consists of the following:

- 115,000-sf of lighted buildings for MSW tipping and glass processing;
- 30,000-sf of semi-heated, lighted, and ventilated building for biosolids processing.

The proponent is proposing the following improvements for GHG mitigation:

- Lighting power density reduction of 10% for all buildings;
- Heating efficiency improvement (from 85% to 90%) for biosolids processing building;
- Installation of 1.9-MW of additional solar PV.

The following requires clarification in the next submission:

- For all buildings, clarify the planned code pathway and which two of the six C406.1 measures are being included;

- For the semi-heated biosolids processing building, provide the following:
    - Information about building construction (metal building, metal-framed, etc);
    - Envelope information (both roof and walls): R-value for insulation between studs, stud spacing, and R-value of continuous insulation;
    - Space heating output per area (btu/hr-ft^2).

Our recommendations are as follows:

1. Evaluate reducing lighting power density to 20%.
2. Evaluate using cold-climate heat pumps for space heating for the biosolids buildings.
3. Provide a schedule for installation of the planned 1.9-MW solar PV system.

Sincerely,

Paul F. Ormond, P.E.
Energy Efficiency Engineer
Massachusetts Department of Energy Resources

Czepiga, Page (EEA)

From: Marlene Pollock <marlenepollock929@gmail.com>
Sent: Wednesday, March 27, 2019 8:32 AM
To: Czepiga, Page (EEA)
Subject: Parallel Products Project

Ms. Czepiga,
I am writing to ask you to delay any approval of this project, since it is a significant undertaking, yet there has been almost very little notice to people in New Bedford about it. I just found out about it and I am very active in the community, especially around environmental issues.

In addition, I understand that any meetings that have been held about this project have not been well publicized, nor at times to allow people to attend. There needs to be public hearings, with effective publicity through newspapers, radio, social media, etc. to let people know about these hearings, and to schedule them with enough notice at times that people can attend.

Please delay any procedures moving toward approval of this project until the public can fully find out about it and weigh in on it, especially those whose homes abut the project directly.

Sincerely,

Marlene Pollock

--
Marlene Pollock
Organizer
Coalition for Social Justice
New Bedford & Cape Cod
508-982-8751

Learn more about CSJ's work:
https://youtu.be/scwkT1Ic6ZY?list=PLkDkZsSMuETz_2Whez0pX8R-Q0tz102x7

Commonwealth of Massachusetts
Executive Office of Energy & Environmental Affairs

Department of Environmental Protection

Southeast Regional Office • 20 Riverside Drive, Lakeville MA 02347 • 508-946-2700

Charles D. Baker
Governor

Karyn E. Polito
Lieutenant Governor

Matthew A. Beaton
Secretary

Martin Suuberg
Commissioner

March 22, 2019

Mathew A. Beaton,
Secretary of Environment and Energy
Executive Office of Energy &
Environmental Affairs
100 Cambridge Street, Suite 900,
ATTN: MEPA Office,
Boston, MA 02114

RE: ENF Review EOEEA #15990
NEW BEDFORD.Parallel Products of New England (PPNE) at 100 Duchaine Boulevard

Dear Secretary Beaton,

The Southeast Regional Office of the Department of Environmental Protection (MassDEP) has reviewed the Environmental Notification Form (ENF) for the Parallel Products of New England (PPNE) Project at 100 Duchaine Boulevard, New Bedford, Massachusetts (EOEEA # 15990). The Project Proponent provides the following information for the Project:

The Site is an industrially zoned, approximately 71-acre parcel, located within the New Bedford Business Park. The Site location and property boundaries are shown in Figure 1 using an aerial view. The Site was previously developed by Polaroid and already includes access roads, parking areas, and various buildings. Much of the existing infrastructure will be used in developing the proposed Project. New buildings will be constructed for glass processing, municipal solid waste (MSW) and construction and demolition (C&D) waste tipping, and biosolids drying.

PPNE is proposing to develop the Site in two phases. Phase 1 construction will consist of the construction of a glass processing building and equipment and construction of a rail sidetrack from the main line rail to the 100 Duchaine Boulevard Site. The glass processing area will consist of a 27,500 sf building to house the processing equipment.

Phase 2 of the Project includes the construction of a municipal solid waste (MSW) processing/handling facility and the biosolids processing facility. Currently, significant quantities of MSW and biosolids are being trucked out of state for treatment and disposal. PPNE will construct a facility to collect and process this material in Massachusetts and then ship the residual waste out of state by rail for disposal.

The processing proposed will also significantly increase transportation efficiencies and reduce greenhouse gas emissions. The proposed solid waste handling facility will accept up to 1,500 tons per

day of MSW delivered to the facility by truck. The proposed facility will process the MSW to extract recyclable material from the MSW. PPNE expects to recover and recycle approximately 20% of the MSW received, which is supports the Massachusetts solid Waste Master Plan and is state-of-the-art for the Commonwealth. The non-recyclable fraction of the MSW along with the C&D residuals/bulky waste will be then loaded in rail cars for transport to out of state disposal sites, primarily landfills.

Bureau of Water Resources Comments

Wetlands Comments: The Wetlands Program has reviewed the Parallel Products LLC EENF (EEA# 15990) and offers the following comments. The Project Proponent acknowledges that work will occur within Areas Subject to Protection under M.G.L. c. 131, § 40; and that a Notice of Intent (NOI) will be filed with the New Bedford Conservation Commission and the Department. The EENF indicates that the Project will alter 4,436 square feet of Bordering Vegetated Wetland (BVW), 350 square feet of Land under Waterbodies & Waterways (LUWW), 1500 square feet of Riverfront Area, and 60 linear feet of inland Bank. The EENF states that the resource area alterations are associated with the construction of a proposed railroad spur, and that replication will be provided for the impacted BVW. The EENF also states that the impacts to BVW have been reduced by incorporating retaining walls into the crossing design to reduce the culvert length and minimize the amount of fill. The EENF does not address the potential use of a span or bridge design to further reduce or eliminate impacts to BVW, inland Bank and LUWW. The EENF does not indicate whether the proposed railroad spur crossing meets the stream crossing standards. The NOI should include a discussion of alternative designs for the proposed railroad spur crossing and address the stream crossing standards. The NOI should also include the Riverfront Area alternatives analysis required by 310 CMR 10.58(4)(c).

The Wetlands Protection Act Regulations for Inland Bank (310 CMR 10.54(4)(a)5.) state that a Project or Projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 50 feet (whichever is less) of the length of the bank found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. The Project proposes to alter 60 linear feet of inland Bank and therefore is required to undertake a Wildlife Habitat Analysis as part of the NOI submission. Please be aware, however, that in accordance with 310 CMR 10.54(4)(a)(6), the impact on bank caused by the installation of a stream crossing in compliance with the Massachusetts Stream Crossing Standards is exempt from the requirement to perform a wildlife habitat evaluation.

Water Management Comments. According to the ENF, it is expected that the New Bedford Water Department will supply 13,150 gallons per day (gpd) of water for this Project. New Bedford has the capacity to provide the requested volume for this Project based on its recent water use. However, MassDEP noticed that there was a discrepancy between the water use and wastewater generation volume presented in the ENF. MassDEP expects that the water being supplied by the New Bedford Water Department may change but New Bedford still has the ability to supply up to 83,125 gpd of water. MassDEP suggests the Proponent evaluate and implement conservation efforts that incorporate Best Management Practices (BMPs) at the Project Site. MassDEP also encourages Project Proponents that add additional demand to the public water system (PWS) to work with the PWS to mitigate the additional demands proposed by the Project.

Wastewater Comments: The City of New Bedford has an EPA approved Industrial Wastewater Pretreatment Program (IPP). The Proponent has had initial discussions with the City regarding the

wastewater generated by the Project. The City and the Proponent will determine the proper monitoring, metering and pretreatment necessary to comply with the City's IPP.

Underground Injection Control Comments. The Proponent details the uses of a comprehensive stormwater management system to collect, convey, treat and control stormwater discharges associated with the Project. The Proponent should be aware that the conveyances of stormwater through underground stormwater infiltration structures are subject to the jurisdiction of the MassDEP *Underground Injection Control (UIC)* program. These structures must be registered with MassDEP UIC program through the submittal of a BRP WS-06 UIC Registration application through MassDEP's electronic filing system, eDEP. The statewide UIC program contact is Joe Cerutti, who can be reached at (617) 292-5859 or at joseph.cerutti@state.ma.us . All information regarding on-line (eDEP) UIC registration applications may be obtained at the following web page under the category "Applications & Forms": https://www.mass.gov/underground-injection-control-uic.

Industrial Stormwater, Sector N - Recycling Facilities. Under the 2015 Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity (MSGP), Sector N (SIC code 5093) recycling centers, commonly referred to as material recovery facilities (MRF), that accept waste for sorting and distribution, including material recovery facilities that receive paper, glass, plastic, and aluminum from non-industrial sources are required to apply for industrial stormwater permit coverage.

Common requirements for coverage under an industrial stormwater permit include development of a written stormwater pollution prevention plan (SWPPP), implementation of control measures, and submittal of a request for permit coverage, usually referred to as the Notice of Intent or NOI.

Good housekeeping is a practical, cost-effective way to maintain a clean and orderly facility to prevent potential pollution sources from coming into contact with stormwater. It includes establishing protocols to reduce the possibility of mishandling materials or equipment and training employees in good housekeeping techniques. Where feasible, minimizing exposure of potential pollutant sources to precipitation is an important control option. Minimizing exposure prevents pollutants, including debris, from coming into contact with precipitation and can reduce the need for BMPs to treat contaminated stormwater runoff. It can also prevent debris from being picked up by stormwater and carried into drains and surface waters.

BMPs must be selected and implemented to limit erosion on areas of your Site that, due to topography, activities, soils, cover, materials, or other factors are likely to experience erosion. Erosion control BMPs such as seeding, mulching, and sodding prevent soil from becoming dislodged and should be considered first. Sediment control BMPs such as silt fences, sediment ponds, and stabilized entrances trap sediment after it has eroded. Sediment control BMPs should be used to back-up erosion control BMPs.

For additional information on Sector N of the industrial stormwater program see https://www.epa.gov/sites/production/files/2015-10/documents/sector_n_scraprecycling.pdf

Bureau of Waste Site Cleanup Comments

Based upon the information provided, the Bureau of Waste Site Cleanup (BWSC) searched its databases for disposal sites and release notifications that have occurred at or might impact the proposed Project area. A disposal site is a location where there has been a release to the

environment of oil and/or hazardous material that is regulated under M.G.L. c. 21E, and the Massachusetts Contingency Plan [MCP – 310 CMR 40.0000].

There are no listed MCP disposal sites located at or in the vicinity of the site that would appear to impact the proposed Project area. Interested parties may view a map showing the location of BWSC disposal sites using the MassGIS data viewer (Oliver) at: http://maps.massgis.state.ma.us/map_ol/oliver.php Under "Available Data Layers" select "Regulated Areas", and then "DEP Tier Classified 21E Sites". MCP reports and the compliance status of specific disposal sites may be viewed using the BWSC Waste Sites/Reportable Release Lookup at: https://eeaonline.eea.state.ma.us/portal#!/search/wastesite

The Project Proponent is advised that if oil and/or hazardous material are identified during the implementation of this Project, notification pursuant to the Massachusetts Contingency Plan (310 CMR 40.0000) must be made to MassDEP, if necessary. A Licensed Site Professional (LSP) should be retained to determine if notification is required and, if need be, to render appropriate opinions. The LSP may evaluate whether risk reduction measures are necessary if contamination is present. The BWSC may be contacted for guidance if questions arise regarding cleanup.

Bureau of Air and Waste Comments:

Air Quality Comments. Construction and operation activities shall not cause or contribute to a condition of air pollution due to dust, odor or noise. To determine the appropriate requirements please refer to:

- 310 CMR 7.09 Dust, Odor, Construction, and Demolition
- 310 CMR 7.10 Noise

Construction-Related Measures. MassDEP requests that all non-road diesel equipment rated 50 horsepower or greater meet EPA's Tier 4 emission limits, which are the most stringent emission standards currently available for off-road engines. If a piece of equipment is not available in the Tier 4 configuration, then the Proponent should use construction equipment that has been retrofitted with appropriate emissions reduction equipment. Emission reduction equipment includes EPA-verified, CARB-verified, or MassDEP-approved diesel oxidation catalysts (DOCs) or Diesel Particulate Filters (DPFs). The Proponent should maintain a list of the engines, their emission tiers, and, if applicable, the best available control technology installed on each piece of equipment on file for Departmental review.

Massachusetts Idling Regulation. MassDEP reminds the Proponent that unnecessary idling (i.e., in excess of five minutes), with limited exception, is not permitted during the construction and operations phase of the Project (310 CMR 7.11). With regard to construction period activity, typical methods of reducing idling include driver training, periodic inspections by site supervisors, and posting signage. In addition, to ensure compliance with this regulation once the Project is occupied, MassDEP requests that the Proponent install permanent signs limiting idling to five minutes or less *on-site.*

Spills Prevention. A spills contingency plan addressing prevention and management of potential releases of oil and/or hazardous materials from pre- and post-construction activities should be presented to workers at the site and enforced. The plan should include but not be limited to, refueling of machinery, storage of fuels, and potential on-site activity releases.

Solid Waste Comments. As a result of its review of the Expanded Environmental Notification Form ("EENF") for the Parallel Products of New England Project at 100 Duchaine Blvd New Bedford ("Project" or "Site" or "facility") EEA No. 15990, the Massachusetts Department of Environmental Protection (MassDEP) Solid Waste Management Section (Solid Waste) is providing the following comments regarding solid waste permitting and the management of solid waste/recyclable and asbestos materials generated from the Project pursuant to Massachusetts Solid Waste Regulations 310 CMR 16.00: *Site Assignment Regulations For Solid Waste Facilities* and 310 CMR 19.000: *Solid Waste Management* and Asbestos Regulations 310 CMR 7.15.

EENF Project Information:

The EENF denotes Parallel Products of New England (PPNE or Proponent) is proposing to develop the site in two phases. Phase 1 development consists of building a glass beneficiation operation and the construction of approximately 1.9 MW of solar power energy generation. This operation will recycle the glass containers that are collected through the Massachusetts bottle deposit system. Phase 1 construction does not trigger any MEPA review thresholds. The Phase 1 activity is included in this EENF as required by 301 CMR 11.01 (c) Segmentation.

PPNE is requesting a Phase 1 Waiver to allow the construction of the Phase 1 infrastructure to begin prior to the acceptance of the Single EIR required for Phase 2 construction.

PPNE has been operating a recycling operation at 969 Shawmut Avenue, New Bedford for the past 11 years. Since purchasing the 100 Duchaine Blvd Site in 2016, PPNE has been repairing the infrastructure at the Site to accommodate future company operations. In addition to the operations detailed in the EENF, PPNE will be moving all of its recycling operations currently located at 969 Shawmut Avenue to the 100 Duchaine Boulevard site which, in addition to glass recycling, includes aluminum and plastics container recycling. The relocation of the Shawmut Avenue operations is currently in progress and as a result operations are currently split between the two facilities. PPNE has submitted a Solid Waste permit (i.e., General Permit) for the proposed recycling operations at the Duchaine Blvd facility and is currently conducting plastics recycling at the Site.

Phase 2 of the Project includes the construction of a 1,500 ton per day municipal solid waste (MSW) processing/handling facility and a 50 dry tons per day biosolids processing facility. The proposed facility will process the MSW to extract recyclable material from the MSW. A processing facility will be built to dry biosolids into a Class A biosolid.

Additionally, the EENF states that "Demolition and construction activity at the Site will result in the generation of solid waste. The construction and demolition waste generated by the Project will be sent to licensed construction and demolition waste processers to maximize recycling of the waste materials." During the MEPA scoping session, PPNE clarified that existing structures may be renovated or demolished as part of the site development.

Solid Waste Comments:
PPNE identified the following Solid Waste permits required for each phase of the proposed Project:

Phase I:

1. General Permit for Recycling Operations

Phase II:

1. Site Suitability (BWP SW-01)
2. Authorization to Construct a Large Handling Facility (BWP SW-05)
3. Authorization to Operate a Large Handling Facility (BWP SW-06)

A. Solid Waste Permitting:

PPNE submitted a **General Permit Certification** on May 11, 2018 for its glass, paper cardboard, metal and plastics recycling operations at the Site and is required to submit an "Annual Certification Statement for the General Permit pursuant to 310 CMR 16.06(1)(a)3. Refer to webpage link: https://www.mass.gov/how-to/general-permit-initial-annual-certification-recycling-composting-digestion.

The **Site Suitability Permit Application (BWP SW-01)** requires submittal of the EEA Secretary's Certificate on the ENF or EIR as appropriate. Refer to weblink: https://www.mass.gov/how-to/sw-01-38-site-suitability-report.

An **Authorization to Construct a Large handling Facility Permit Application (BWP SW-05)** may only be submitted if MassDEP issues a Decision on the Site Suitability application finding that the proposed Site is suitable for the proposed Project and the New Bedford Board of Health issues a Site Assignment for the Project property pursuant to the requirements of 310 CMR 16.00, Site Assignment Regulations for Solid Waste Facilities. Refer to weblink: https://www.mass.gov/files/documents/2016/08/uw/sw0529ap.pdf?_ga=2.260746381.1049696916.1553003081-1847519295.1541521730.

PPNE will be required to submit an **Authorization to Operate a Large Handling Facility Application (BWP SW-06)** pursuant to 310 CMR 19.029, Applicable Permit and Certification Procedures for Operation, Construction, Modification or Expansion of a Solid Waste Facility. Refer to weblink: https://www.mass.gov/how-to/sw-06-10-20-operate-an-existing-facility

B. Management of Solid Waste and Asbestos Materials from Demolition and Construction Activities

- Waste materials that are determined to be solid waste (*e.g.,* construction and demolition waste) and/or recyclable material (*e.g.,* metal, asphalt, brick, and concrete) shall be disposed, recycled, and/or otherwise handled in accordance with the Solid Waste Regulations including 310 CMR 19.017: *Waste Bans.*

  Asphalt, brick and concrete (ABC) rubble, such as the rubble generated by the demolition of buildings or other structures must be handled in accordance with the Solid Waste regulations. These regulations allow, and MassDEP encourages, the recycling/reuse of ABC rubble. The Proponent should refer to MassDEP's Information Sheet, entitled *" Using or Processing Asphalt Pavement, Brick and Concrete Rubble, Updated February 27, 2017 ",* that answers commonly asked questions about ABC rubble and identifies the provisions of the solid waste regulations that pertain to recycling/reusing ABC rubble. This policy can be found on-line at the MassDEP website: https://www.mass.gov/files/documents/2018/03/19/abc-rubble.pdf

- Demolition and Asbestos Containing Waste Material: The proposed Project includes the demolition of structures which may contain asbestos. The Project Proponent is advised that demolition activity must comply with both Solid Waste and Air Quality Control regulations.

Please note that MassDEP promulgated revised Asbestos Regulations (310 CMR 7.15) that became effective on June 20, 2014. The new regulations contain requirements to conduct a pre-demolition/renovation asbestos survey by a licensed asbestos inspector and post abatement visual inspections by a licensed asbestos Project monitor. The Massachusetts Department of Labor and Work Force Development, Division of Labor Standards (DLS) is the agency responsible for licensing and regulating all asbestos abatement contractors, designers, Project monitors, inspectors and analytical laboratories in the state of Massachusetts.

In accordance with the revised Asbestos Regulations at **310 CMR 7.15(4),** any owner or operator of a facility or facility component that contains suspect asbestos containing material (ACM) shall, prior to conducting any demolition or renovation, employ a DLS licensed asbestos inspector to thoroughly inspect the facility or facility component, to identify the presence, location and quantity of any ACM or suspect ACM and to prepare a written asbestos survey report. As part of the asbestos survey, samples must be taken of all suspect asbestos containing building materials and sent to a DLS certified laboratory for analysis, using USEPA approved analytical methods.

If ACM is identified in the asbestos survey, the Proponent must hire a DLS licensed asbestos abatement contractor to remove and dispose of any asbestos containing material(s) from the facility or facility component in accordance with **310 CMR 7.15,** prior to conducting any demolition or renovation activities. The removal and handling of asbestos from the facility or facility components must adhere to the Specific Asbestos Abatement Work Practice Standards required at **310 CMR 7.15(7).** The Proponent and asbestos contractor will be responsible for submitting an ***Asbestos Notification Form ANF-001*** to MassDEP at least ten (10) working days prior to beginning any removal of the asbestos containing materials as specified at **310 CMR 7.15(6).**

The Proponent shall ensure that all asbestos containing waste material from any asbestos abatement activity is properly stored and disposed of at a landfill approved to accept such material in accordance with **310 CMR 7.15 (17).** The Solid Waste Regulations at **310 CMR 19.061(3)** lists the requirements for any solid waste facility handling or disposing of asbestos waste. Pursuant to **310 CMR 19.061(3) (b) 1,** no asbestos containing material; including VAT, asphaltic-asbestos felts or shingles; may be disposed at a solid waste combustion facility.

C. Suitability Criteria:

- The Water Resources Map submitted within the Draft Site Suitability Report appears to indicate that riverfront area lies within the proposed waste handling area. The Proponent should review the requirements of 310 CMR 16.40(3)(d)(6) and consider modifying the proposed waste handling area.

- Figure 6-1 of the Sound Level Assessment Report depicts new residential dwellings southeast of the Site on the western side of Phillips Road. The new residential dwellings are not identified in Appendix A Insert 3 Land Use Plan. It is unclear if these dwellings are located within 500 feet of the waste handling area.

  It appears that the Proponent's Sound Level Assessment Report has not considered all potential sound sources from proposed facility operations. Pursuant to 310 CMR 7.00 Air Pollution Control Section 7.10: U Noise, MassDEP regulates all sounds emanating from a solid waste facility operation including the operation of: waste handling equipment inside and outside the

building; waste delivery vehicles on-Site inside and outside the building; and fixed mechanical equipment. Potential sound sources include both the movement of waste handling equipment and the sound produced during materials loading, unloading and transfer.

- The Site borders the Acushnet Cedar Swamp State Reservation. The EENF states "the siting of the Facility will not have an adverse impact on the physical environment of, or on the use and enjoyment of, state or municipal parklands or conservation land, or other open space held for natural resource purposes" however they did not offer any explanation or mitigating factors to support their claim.

- Proponent should provide a detailed description of the movement of empty and full railcars for the Site including the five new rail spurs within the proposed Site assigned area and the extended sidetrack along the western property boundary adjacent to the existing rail line. The Department recommends that the Proponent provide this information in the SEIR.

- Traffic Impact Study. The Traffic Impact Study performed by McMahon Associates indicates that two study intersections will operate at a traffic volume greater than their capacity for some turning movements and that one intersection has a crash ratio higher than the statewide and District 5 average. The Proponent has not proposed or recommended any mitigation. The Proponent should discuss these intersections with the roadway overseeing agency, MassDOT or the City of New Bedford as appropriate, regarding the necessity for and development of mitigation measures.

  The Proponent presented assumptions regarding the distribution incoming waste volume by vehicle capacity, which directly affected the predicted Project related traffic volume. The Proponent is advised that, during MassDEP permitting, the Proponent must commit to limiting the maximum number of vehicles utilizing the site to that presented in the traffic study, or the Proponent must revise the traffic study to reflect the maximum proposed Site traffic flow rate.

If you have any questions regarding the Solid Waste Management Program comments above, please contact Mark Dakers at (508) 946-2847 or Cynthia Baran at (508) 946-2887.

BAW Business Compliance and Recycling Comments: Massachusetts and the New England Region have had a difficult time finding outlets for recycling container glass after the Ardagh Glass plant (Milford, MA) closed in early 2018. The result has been a significant price swing driving costs up for municipal recycling programs. MassDEP has been actively trying to identify and support new markets for container glass working with municipalities and recycling businesses. The Parallel Products of New England, Inc. Phase I project will enhance glass processing in the region offering alternative markets for those collecting and diverting container glass from disposal. Parallel Products extensive background in handling, processing and marketing recycled container glass will increase competition in a currently oversupplied market resulting in lower costs for those entities looking to recycle the material.

Environmental Justice Comments:
After reviewing relevant Environmental Justice analyses presented in the Expanded ENF, MassDEP offers the following comments.

As stated in the report the city of New Bedford is an environmental justice community meeting all three criteria (M/I/E) with 69.6% or 66,180 residents residing in an EJ block group. The total population of the city of New Bedford based on the 2010 U.S. Census is 95,072.[1]

The Expanded ENF states that the proposed PPNE Project exceeds the MEPA threshold for new solid waste processing capacity of 150 or more tons per day, and the wastewater mandatory threshold of 150 or more of sewage sludge, triggering the requirement for filing an Environmental Notification Form and a mandatory Environmental Impact Report. Pursuant to the 2017 EEA EJ Policy any Project that exceeds the ENF thresholds for solid waste or wastewater and involves a Project Site located within one mile of an EJ population will be required to implement enhanced public participation under MEPA. The proposed outreach as written in the report meets some of the requirements in the EJ Policy. However MassDEP recommends the following additional outreach tools listed below:

- Non-Traditional Information Repositories (houses of worship, community centers, along with the traditional repositories – libraries, government offices)
- Contact EJ Community Leaders
- Ensure notice to the community prior to and during the public meeting and permitting process to ensure the community has opportunities to get involved.

Many EJ populations are located in densely populated urban neighborhoods, in and around the state's oldest industrial sites (i.e., New Bedford) while some are located in suburban and rural communities. These high –minority, low income neighborhoods are host to or are in close proximity to many of the states contaminated and abandoned sites, regulated facilities and sources of pollution.

The Environmental Justice Areas Criteria by Block Group map (Figure 3 in the Expanded ENF) indicates that there are two daycares and one school located within the one-mile buffer zone of the Site and another school located just outside of the one-mile buffer zone. It is noted in the report using MassDPH's Environmental Public Health Tracker that New Bedford has statistically higher rates of environmentally-related health outcomes including but not limited to pediatric asthma, COPD, asthma related ED visits. The close proximity of the school and daycares to the Project site and the Project's potential increase in truck traffic, air pollution (emissions) and potential noise and odor pollution raises a concern of the potential impact, to these vulnerable populations (children and the elderly). Potential Project-related impacts to these populations should be discussed in the EIR and addressed during this permitting process.

Additionally, MassDEP recommends that Project-related air pollution and environmental impact information be shared with EJ communities in alternative format (translation, interpreter services) if applicable. This information should be provided using terms that are easily understood in an effort to ensure the community understands the Project, its potential impacts, and can provide meaningful input.

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[1] Data provided by the 2010 Unites States Census – American Fact Finder at https://factfinder.census.gov/faces/nav/jsf/pages/community_factsxhtml.

Proposed s.61 Findings

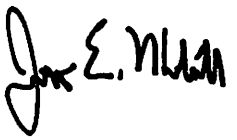
The "Certificate of the Secretary of Energy and Environmental Affairs on the Environmental Notification Form" may indicate that this Project requires further MEPA review and the preparation of an Environmental Impact Report. Pursuant to MEPA Regulations 301 CMR 11.12(5)(d), the Proponent will prepare Proposed Section 61 Findings to be included in the EIR in a separate chapter updating and summarizing proposed mitigation measures. In accordance with 301 CMR 11.07(6)(k), this chapter should also include separate updated draft Section 61 Findings for each State agency that will issue permits for the Project. The draft Section 61 Findings should contain clear commitments to implement mitigation measures, estimate the individual costs of each proposed measure, identify the parties responsible for implementation, and contain a schedule for implementation.

Other Comments/Guidance

MassDEP supports the Proponents request for the Secretary to grant a Phase I waiver.

The MassDEP Southeast Regional Office appreciates the opportunity to comment on this proposed Project. If you have any questions regarding these comments, please contact George Zoto at (508) 946-2820.

Very truly yours,



Jonathan E. Hobill,
Regional Engineer,
Bureau of Water Resources

JH/GZ

Cc: DEP/SERO

ATTN: Millie Garcia-Serrano, Regional Director and Acting BAW Deputy Regional Director
David Johnston, Deputy Regional Director, BWR
Gerard Martin, Deputy Regional Director, BWSC
Jennifer Viveiros, Deputy Regional Director, ADMIN
Jim Mahala, Chief, Wetlands and Waterways, BWR
Holly Johnson, Assistant Director for Operations and Special Projects/Boston
Deneen M. Simpson, Environmental Justice Director & Program Manager/Boston
Greg Cooper, Deputy Director - Consumer Programs/Boston
Daniel Gilmore, Wetlands and Waterways, BWR
Mark Dakers, Chief, Solid Waste, BAW
Alison Cochrane, Solid Waste, BAW
Douglas Coppi, Solid Waste, BAW
Daniel Connick, Solid Waste, BAW
Duane LeVangie, Chief, Water Management Act, BWR/Boston
Shi Chen, Water Management Act, BWR/Boston
Joseph Cerutti, Underground Injection Control Program, BWR/Boston
Allen Hemberger, Site Management, BWSC

Czepiga, Page (EEA)

From: Gilmore, Daniel (DEP)
Sent: Friday, April 05, 2019 9:42 AM
To: Czepiga, Page (EEA); Mahala, Jim (DEP)
Cc: Zoto, George (DEP); Hobill, Jonathan (DEP)
Subject: RE: Response to MassDEP comments

Hi Page,

The response letter addresses the alternative designs for the proposed crossing. That information should be clearly and concisely included in the NOI. The response states the stream crossing will be designed in accordance with the Stream Crossing Standards. The NOI plans should clearly demonstrate the design meets the standards. The response letter states that the Riverfront Area in New Bedford is only 25 feet which is accurate. However, I believe that the alternatives analysis should be augmented when the NOI is filed. If the proponent is contending that the site is previously developed or degraded and that the project is a Redevelopment Project, then the NOI should include information on how the proposal will meet the requirements of 310 CMR 10.58(5).

Dan

Daniel F. Gilmore
MassDEP Wetlands & Waterways Program
Southeast Regional Office
20 Riverside Drive
Lakeville, Massachusetts 02347

Telephone: 508-946-2808
FAX: 508-947-6557

Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Stephanie Pollack, MassDOT Secretary & CEO

massDOT
Massachusetts Department of Transportation

March 29, 2019

Matthew Beaton, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114-2150

RE: New Bedford – Parallel Products of New England, Inc. - EENF
(EEA #15990)

ATTN: MEPA Unit
Page Czepiga

Dear Secretary Beaton:

On behalf of the Massachusetts Department of Transportation, I am submitting comments regarding the proposed Parallel Products of New England, Inc project in New Bedford, as prepared by the Office of Transportation Planning. If you have any questions regarding these comments, please contact J. Lionel Lucien, P.E., Manager of the Public/Private Development Unit, at (857) 368-8862.

Sincerely,

FOR

David J. Mohler
Executive Director
Office of Transportation Planning

DJM/jll

Ten Park Plaza, Suite 4150, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
www.mass.gov/massdot

cc: Jonathan Gulliver, Administrator, Highway Division
Astrid Glynn, Administrator, Rail and Transit
Patricia Leavenworth, P.E., Chief Engineer, Highway Division
Mary-Joe Perry, District 5 Highway Director
Neil Boudreau, Assistant Administrator of Traffic and Safety Engineering
Planning Department, City of New Bedford
Southeastern Regional Transit Authority
Southeast Regional Planning and Economic Development District
PPDU Files

Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Stephanie Pollack, MassDOT Secretary & CEO

massDOT
Massachusetts Department of Transportation

MEMORANDUM

TO: David Mohler, Executive Director
Office of Transportation Planning

FROM: J. Lionel Lucien, P.E, Manager
Public/Private Development Unit

DATE: March 29, 2019

RE: New Bedford: Parallel Products of New England – EENF
(EEA #15990)

The Public/Private Development Unit (PPDU) has reviewed the Expanded Environmental Notification Form (EENF) for the Parallel Products of New England, Inc. project in New Bedford. The project entails the construction of a solid waste facility to process municipal solid waste (MSW) and construction and demolition (C&D) of materials. The existing site consists of the NWD Trucking facility located at 100 Duchaine Boulevard and is bounded by a CSX rail line to the east, Phillips Road to the west, industrial properties to the north and undeveloped land to the south. The project is expected to be built over time in two phases. Phase I development consists of building a glass Beneficiation operation and the construction of approximately 1.9 MW of solar power energy generation. Phase II entails the construction of a MSW transfer station and biosolids drying facility. Phase II is expected to be constructed approximately two years after the construction of Phase I.

The project is expected to generate approximately 418 new truck trips per day (209 truck trips entering, 209 truck trips existing) based on empirical data collected from a similar solid waste facility operations. In addition, employees will contribute approximately 150 vehicle trips (75 entering, 75 exiting) for a total of 568 vehicle trips accessing the site on an average weekday.

The project does not exceed any transportation thresholds but exceeds MEPA thresholds for wastewater and solid waste and therefore is required to prepare an Environment Impact Report (EIR). The Proponent has requested a waiver to proceed with the construction of Phase I, pending the completion of the Environment Impact Report (EIR) for the project.

The project does not require a Vehicular Access Permit from MassDOT but has applied for an Industrial Rail Access Program (IRAP) grant in the amount of $500,000. The grant will be used for the construction of a rail side track along the CSX Transportation line to meet the needs of the glass processing facilities as part of Phase I. The rail side will be expanded in Phase II to meet the needs for transport of solid waste. The Proponent will use the rail side for the outbound shipment of MSW, glass and dried biosolids.

Ten Park Plaza, Suite 4150, Boston, MA 02116
Tel: 857-368-4636, TTY: 857-368-0655
www.mass.gov/massdot

The facility, when at full capacity, expects to ship 1200 tons per day (tpd) of MSW residuals, 50 tpd of dried biosolids and 250 tpd of glass. The rail side track at full operations could reduce by up to 110 the number of truck trips in and out of the site.

The EENF includes a Transportation Impact Assessment (TIA) that includes an evaluation of the study area transportation network and presents an analysis of existing and future build conditions for each intersection. The TIA is in general conformance with MassDOT/EOEEA Guidelines for *EIR/EIS Traffic Impact Assessment.*

Study Area

The study locations for which traffic analyses were conducted are as follows:

- Route 140 Northbound on/off Ramps/Braley Road intersection;
- Route 140 Southbound on/off Ramps/Braley Road intersection;
- Braley Road/Theodore Rice Boulevard at Phillip Road intersection;
- Theodore Rice Boulevard/Duchaine Road intersection;
- Duchaine Boulevard/Samuel Barner Boulevard intersection;
- Phillips Road/Samuel Barner Boulevard intersection; and
- Duchaine Boulevard/Site Driveway intersection.

The study area is adequate for capturing the traffic impacts of this development.

Trip Distribution

The project trip distribution on the study area network was based on expected access to/from Route 140. The majority of traffic entering the site is expected to use Route 140 to Braley Road with a small portion of traffic coming from the site expected to use Phillips Road to access the proposed site.

Safety

Crash rates for the study area intersection were calculated using MassDOT data for the five-year period from 2011-2015. Based on the data, the crash rates for all study area intersections are below the state and district averages for signalized intersection. Two unsignalized intersections are experienced crash rates slightly higher than the state and district averages. The additional traffic volumes associated with the project is not expected to significantly impact safety at these intersections. There are no Highway Safety Improvement Program (HSIP) high crash cluster intersections in the study area.

Traffic Operations

Capacity analyses were conducted for the weekday AM and PM peak hours for 2018 Existing, 2025 No-Build, and 2025 Build (full build) conditions, for the study area intersections.

In the 2025 No-Build, traffic operating conditions at most intersections are expected to experience no significant changes, except for one approach movement where level of service will worsen from B to C. Likewise, 2025 Build conditions experience slightly increased delays compared to the 2025 No-Build conditions, but the delays were not significant enough to impact LOS in most cases.

Parking

The project will provide 428 parking spaces to accommodate both trucks and employees on site. The proposed number of parking spaces is a reduction from the current number of existing parking spaces.

Multimodal Access and Facilities

Despite the proposed land use primarily oriented towards truck traffic, the Proponent should seek the opportunity to provide multimodal accommodations to access the site. The roadway network in the vicinity of the site provide sufficient shoulder widths to encourage bicycle travel. We note that the Southeastern Regional Transit Authority (SRTA) provides bus service along Duchaine Boulevard and Phillips Road, with bus stops located within walking distance to the site along Duchaine Boulevard and at the intersection of Phillips Road with Heritage Court. Pedestrian accommodations exist along Phillips Boulevard. We encourage the Proponent to design their site drive in accordance to Complete Streets standards to facilitate opportunities to walk and bike to the site.

Transportation Demand Management Program

The Proponent should develop a Transportation Demand Management (TDM) program aimed at reducing site trip generation. MassDOT understands that the project primarily generate truck traffic; nevertheless, the following TDM measures are recommended with the goal of reducing vehicle trips by employees of the development:

- Offer direct deposit for payroll transactions;
- Implement off-peak shift start/end times for employees;
- Provide preferential parking for carpools and vanpools;
- Offer onsite employee services such as a cafeteria.
- Provide information on transit options as a mean of travel to the site.

MassDOT does not object to the Proponent's request for a Phase I waiver for the project. The proponent should address the details of the above comments in the SEIR and submit a copy of the MEPA Certificate for this project as part of their grant application for the IRAP funding. If you have any questions regarding these comments, please contact me at (857) 368-8862.

Secretary of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston Ma.02114
Attn: Page Czepiga, MEPA

Parallel Products of New England, LLC
file No. 15990

Dear MEPA Officials, my wife and I are 52 yr residents of a residential area that is located within a few hundred feet of the property of the proposed project. I have read the Expanded Environmental Notification report submitted by Green Seal Environmental Inc. on behalf of the petitioner.

I understand that the petitioner is requesting 1. waiver to begin immediate construction on a portion of the Phase1, glass recycling facility before submittal or receipt of permits of approval, 2. approval of the environmental permit for the complete construction and operation of Phase 1., and 3. the approval and permits for future construction and operation of a regional Municipal Solid Waste Plant and Bio-solids Drying facility. Some construction has already begun on Phase 1 as noted in the report and is readily observable at the site today.

It appears to me that the report is incomplete as it does not present enough information For MEPA to evaluate the requirements for site suitability as stated in 310CMR 16.40 which requires a 500 Foot clearance for the proposed facility from occupied residences. The map shown on report insert 3A obtained from the city of New Bedford published in 2015 shows that 500 Foot clearance from the facility property boundary encompasses 44 houses east of Phillips Rd. and another 6 that have been built since, on the west side of Phillips Rd. south of the facility. While some may argue that the operation of the facility will not occur on the facility boundary line, the access roads into the glass delivery area of the site are close enough to the eastern edge of the property boundary to still encompass at least half of the houses identified above.

These issues are affected by the infringement of the 500 foot clearance requirement. One is noise. Second is dust. Third is odor.

NOISE

In Phase 1., noise will be generated by truck traffic at the glass handling facility, and by the front end loaders that move the open dumping of glass into the glass crushing and classification building, as well as the unloading of the processed glass to trucks, and the movement of rail cars (future). The traffic study projected 108 trucks per day for the glass plant which drops to 54 once the rail is operational shown Appendix E of the Trip Generation study.
A noise analysis and evaluation was conducted. It included baseline measurements in 4 receptor locations: at the southeast property line and three locations east and north east at or near the residences. Modeling was used to project upon the baseline noise the additive effect of the proposed facility operation. Results showed a 3 to 8 Db rise in noise at some of the receptor locations. Equipment similar to that proposed for the facility were used together with noise studies done in other waste handling sites together with assumptions, stated that the10 Db criteria will be met.

Now, the nature of the noisiest part of the proposed plant occurs in the receipt and handling in the glass in Phase 1. which is located on the east side of the property, the area closest to the residences. Noise is generated by trucks dumping on the pavement, followed by the scraping of a front end loader bucket. This operation occurs in an open area covered only with a roof canopy to house the solar panels.

Two operating issues arise; 1. the sporadic and frequent nature of the 'bang and clank' equipment that may continue as late as 10Pm, 2. the probable magnification and echo effect of this noise generated in the canyon where this unloading operation takes place, which is about 30' below the residences east of Phillips Rd. AND inside the 500' clearance requirement.

When these two issue are taken into account, it is questionable that the modeling predictions of noise at the residences affected are within the 10Db requirements. Additionally the unloading operation noise is not steady but sporadic; composed of frequently variable sound changing in pitch and frequency, which increases its annoyance to the human ear. It is easier to fall asleep to a quiet bedroom fan than to a noisy party outside your bedroom window.

DUST

Dust will be generated by all phases of the proposed facility, dust that is now not present in our neighborhood. About 50% of the winds in our area blow from the southwestern to the western sector, which will carry dust and aerosols north and mostly east into the nearby residences. Mitigation strategies have been proposed that include housing the Phase 2 operations inside buildings. However, the Phase 1. truck unloading and reloading of glass and front end loading does not take place inside a building.

It is probable that some of this dust will be blown into the nearby residences as a nuisance, falling on parked automobiles, drying clothes, open decks, swimming pools, and outdoor play equipment. Even if the analysis show that no air quality requirements are breached, other mitigation efforts should be done to minimize this nuisance. Likely, spillage from glass carrying dump trucks along the eastern boundary access and egress roadway will generate unmitigated additional dust.

ODOR

An analysis of odor was submitted with the report which stated that odor is mostly a subjective measure. One human's nose may be more sensitive than another nose, and as such, a proxy metric has been used to evaluated the impact of odor. Dilution of the odorous air with equal or multiple volumes of air are the criteria used. Highly odorous emissions need up to 5 volumes of air as opposed to only one volume for slightly odorous emissions, according to the science presented, to reach an acceptable level. Some mitigation is offered for the emissions of the proposed bio-solids drying plant with a scrubber.

Questions arise about whether this strategy, or analysis is adequate, given that the noxious odors travel the same ambient wind currents that move the dust from the site to the residences. Will the bio_solids drying plant shut down when the scrubber is not in service? As a frequent user of the recycle facility at Shawmut Ave. in New Bedford, I can personally attest to the noxious and pungent odor emanating from the simple off loading of sludge waste water trailers discharging into underground tanks. This odor permeates the entire recycle area.

Keeping in mind that the proposed bio-solids facility is on the property that is not 500 ' from the residences and that it is proposed as a regional facility to operate 24 hours a day, it is questionable that the nearby residences will avoid receiving objectionable odors.

ENVIRONMENTAL JUSTICE

In order to protect the minority and under served population, an analysis of environmental justice is presented in the report . It focused on the health statistics of the New Bedford population as compared to the surrounding towns. The results showed that New Bedford has statistically higher incidences of cancer, heart disease, COPD and asthma than do either the state average or the surrounding towns. Both environmental and lifestyle factors are postulated as the reason for New Bedford's higher than average disease rate.

When an additional burden of noise, dust and odor is imposed on a community with compromised health to begin with, it is questionable that the minor benefit of a few new jobs of the proposed regional facility outweighs the health costs borne by its citizens. As shown in the preceding discussion, the 500' clearance requirement, has approximately 100 homes whose occupants are exposed to the environmental impacts of the proposed facility.

SITE HISTORY AND COURT CHALLENGE

Although not included in the report, it is instructional to know about the history of the site and adjacent areas. Thee building directly west of the site now owned by Eversource, was formally a film winding facility. Originally it was owned by the bankrupt Polaroid Corp. until the late 90"s. Later owned by another firm for the same purpose.

In 1990 a developer proposed to locate a 250Mw coal fired power plant about ½ mile west of the present Eversource building to serve the Polaroid plant and to sell the extra capacity to the electric utility. A construction permit was issued by MEPA over the objections of the local GNB-NO-COAL group of citizens and the Massachusetts Attorney Generals Office.

The Massachusetts Supreme Court rescinded the permit based on lack of need. The developer appealed the Court decision and reapplied for the permit. Again both GNB-NO-COAL, and the Attorney Generals Office objected to the issuance of the permit for the same reason. About 4 years passed since the permit was first requested. While preparing for another trip to the Supreme Court, the developer withdrew his application for the permit. As it turned out, the Polaroid Corporation went bankrupt and the electric utility was able to meet the electrical system demand without the unneeded Coal Fired power plant.

PRESENT SITE ACTUAL CONDITIONS

On March 17, 2019 I walked around most of the Eastern portions of the site in order to compare the maps presented in the report to the actual existing conditions. A large pile of crushed glass has already been stored under the north open canopy at the south eastern corner of the site. The pile occupies the entire area of the 100' by 275'area with heights from 6' to 12' in height. Using conservative estimates of 75lb/ft3 and a median height of 9',the pile contains approximately 9000 tons

of crushed glass. A photo is attached. Solar panels are in operation on the roof of this canopy as well as the identical south canopy about 70' away. No glass is currently stored under the south canopy.

The open space between the canopy storage areas is not shown on the maps C1, C2 and C2A but appear as parking lots. In order to move the pile to another facility or through the future proposed glass processing facility over 750,12 yd trucks are needed or an even greater number of front end loader trips . These operations are not described in the report. Additionally, the need to provide glass storage in the future is likely due to outages that interrupt operations in the processing building. This adds noise and dust beyond what is reported.

Presently there is some demolition and other activity around the area of the proposed glass processing building during the week which I can hear from the outside of my house. Has approval been given for this storage and construction before the public comment period is over?

RECOMMENDATIONS

1. All MEPA officials responsible for approving this proposed regional waste handling project need to visit the site and the surrounding residential areas. This licensing process is more about minimizing the impact on the community than on protecting the environment. Since 100 residences are within 500', as shown in the report, of the site boundary and are 30' above the site, residents have visual impact in addition to the environmental ones reported using projections, modeling and assumptions. When at the site, ask yourself honestly, would you buy any of the houses presently for sale on the west side of Phillips Rd. south of the site? I would appreciate being invited for any planned site visit.

2. Phase 1 is separable and distinct from Phase 2. Set aside the permitting process for Phase2. Delay MSW and Bio-solids drying portion, which have Air quality requirements of Phase2, until there is a demonstrated need. Does Parallel Products have signed contracts for the waste deliveries ? The report states that the city of New Bedford does not plan to use this proposed regional MSW & Bio-solids facility. The need for the proposed regional MSW and Bio-solids waste handling facility is questionable since the petitioner does not have a firm construction schedule. As was the case in the history of the proposed unneeded Coal-fired power plant, a large capacity regional facility is proposed to enhance economic viability for owners at odds with residence concerns.

3. Delay the waiver to construct the regional glass processing facility. Address the site suitability requirements which were stated to be preliminary until the air quality permit was received. No waiver was requested for relief from the 500' clearance required between the site and occupied houses by Massachusetts law.310CMR16.40

Early construction before permit receipt was requested so that the petitioner could receive approval to construct solar power qualified under the new SMART incentive program. According to the list of applicants to this program dated March 15, 2019, application nos. 65 and 68 for a total of 1.346Mw have already been approved. My site visit confirmed that the largest part of the solar power associated with Phase 1 is in service. The Solar Power is no longer an issue when Phase 1, is separated from Phase 2.

Closure of existing glass processing facilities in Massachusetts that received glass from recycling centers was stated as another reason that immediate construction approval was requested to avoid the longer haul to other facilities much further away. It is evident considerable storage of crushed glass now exists on the proposed site and should not be used as pressure for MEPA to approve the facility. The petitioner has other options that may be costly, but it is not the responsibility of MEPA to protect the petitioner's profit, poor planning or business model

FINALLY

In closing, I pray that MEPA would not place proposed large regional projects higher in value than local concerns which impacts its citizens. I see the purpose of respecting the environment, codified in numerous laws and requirements, as important to protect the humans living on the planet from harmful competing interests. A peaceful and pleasant residential neighborhood environment is a treasure. Unfortunately there are no scientific metrics to establish its worth when only the environment is measured.

It is interesting to note that Massachusetts has the oldest State Constitution. Together with the National Constitution, these documents stem from the individual rights of the people to life, liberty and the pursuit of happiness and authorize the Government to protect these rights by establishing just laws. Our Judiciary system is established not only to judge if laws are breached but to test that the laws are just.

MEPA, as an executive agency, can and should take a reasoned approach in this instance to judge the merit of this petition before you; and to exercise its authority to benefit the citizens of Massachusetts.

ATTACHMENTS

1. Older satellite image of proposed site showing adjacent residential area east of Phillips Rd. Note the blue 500'scale at the lower right of the image and the houses along Ridgewood Road. The south eastern part of the site appears as a parking lot, which it is today, with a canopy over the lots and solar panels on the roof. Not shown in this image are the 8 houses built on the west side of Phillips rd. One house is less than 100 feet from the south east bend on the access road, which remains unsold nearly one year after completion.

2. 9000 ton crushed glass pile taken 3-17-2019, located under the northern part of the southern lot.

Respectfully,

Robert H. Ladino 3-18-19

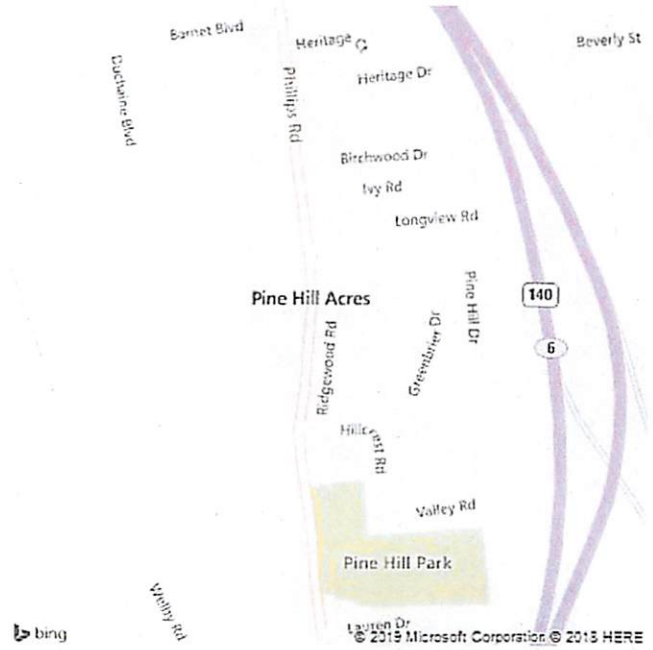
Robert H. Ladino
bobladino@comcast.net
508-269-9120

bing maps

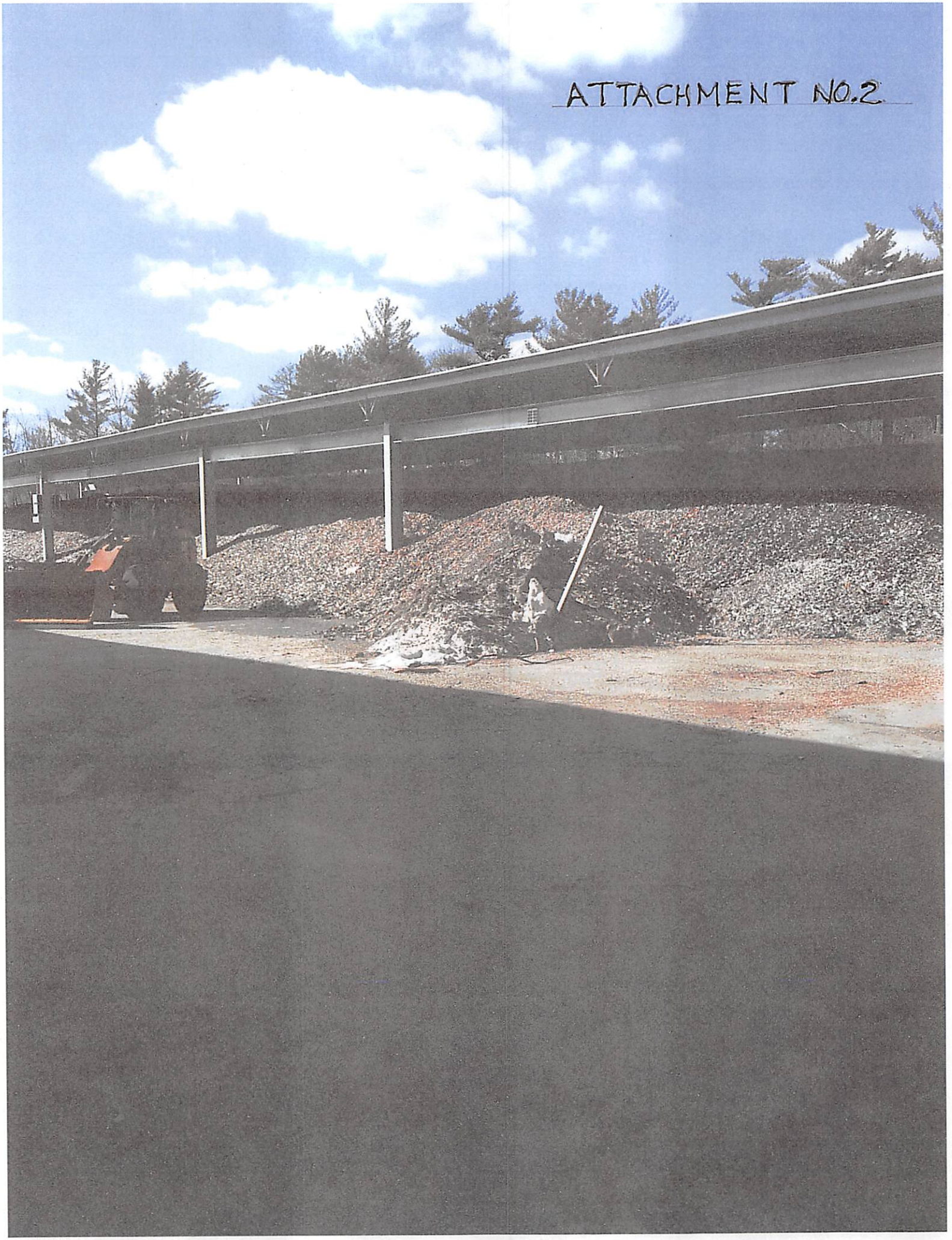
ATTACHMENT NO. 1

Notes

old satellite image



ATTACHMENT NO.2



Czepiga, Page (EEA)

From: Roger A. Cabral <rogercabral@comcast.net>
Sent: Tuesday, March 26, 2019 7:05 PM
To: Czepiga, Page (EEA)
Subject: Parallel Products / New Bedford industrial Park

I just learned of this project which is proposed for the New Bedford Industrial Park. I'm very concerned by the fact that this project has not received a lot of attention and that many of the neighbors are unaware of what is proposed. Given the nature of this proposed project I think that a WELL PUBLICIZED public meeting is appropriate. I also think that all neighbors within a mile of the site should be notified by mail about the meeting. I believe that the New Bedford Industrial Park is the wrong place for a business of this nature.

Roger A. Cabral
9 Bow Drive
Acushnet, MA
508-642-9173

Czepiga, Page (EEA)

From: Ron <rrcrt@aol.com>
Sent: Tuesday, April 02, 2019 6:09 PM
To: cstrupczewski@verizon.net; Czepiga, Page (EEA)
Cc: cbostiguy@gmail.com; ritalapre@gmail.com; brad.markey@newbedford-ma.gov; desk@wpri.com; kjohnston@abc6.com; 5investigates@wcvb.com; antonio.cabral@mahouse.gov; chris.hendricks@mahouse.gov; christopher.markey@mahouse.gov; paul.schmid@mahouse.gov; william.straus@mahouse.gov; Ian.Abreu@newbedford-ma.gov; Naomi.Carney@newbedford-ma.gov; Debora.Coelho@newbedford-ma.gov; Hugh.Dunn@newbedford-ma.gov; Brian.Gomes@newbedford-ma.gov; Dana.Rebeiro@newbedford-ma.gov; Linda.Morad@newbedford-ma.gov; Joseph.Lopes@newbedford-ma.gov; Maria.Giesta@newbedford-ma.gov; Scott.Lima@newbedford-ma.gov; Jon.Mitchell@newbedford-ma.gov
Subject: Re: EEA15990 Paralles Products - New Bedford Business Park

It is my understanding that Secretary Matthew Beaton has allowed residents till April 05, 2019 to write their opposition for Parallel Products, Inc. of New England for its expansion in the New Bedford Business Park and also their considering of adding a Wastewater Sludge Facility.

I reside in the Briarwood development which there are approximately 300 homes, there are two entrances from Braley Road into Briarwood and two exits from Briarwood onto Braley Road, Braley Road is a highly used thoroughfare going to and from Route 140, Acushnet Avenue and Phillips Road.

In the mornings starting at 7 AM we have a traffic problem on Braley Road with school buses, vehicles, parents dropping their children off for school at the Pulaski School, vehicles parked on both sides of Braley Road. It is a problem exiting from Briarwood onto Braley Road.

We have two large nursing homes and the VIBRA Hospital of S.E. MA in the Sassaquin area throughout the day ambulances are going back and forth, we have a Fire Station on Acushnet Avenue south of Braley Road. These emergency vehicles are always using Braley Road because of Route 140.

There will be a problem at Parallel Products, Inc we will have with garbage trucks and trailer trucks coming off of route 140 North and South bound it will be a nightmare, traffic will be backed up on Rt 140 North and South bound exit 7 as vehicles, garbage trucks, and 18 wheeler's are trying to exit off the highway onto Braley Road on the way to the Parallel Products Inc property, then they will be returning back to Route 140.

There will be Garbage trucks and 18 wheeler's to avoid the traffic jam off of exit 7 North bound they will use exit 5, they will proceed north on Phillips Road to enter the unnamed road of the New Bedford Business Park, south of Braley Road entrance closer to the Parallel Products, Inc property, this will now cause another traffic jam.

The study evaluated traffic impacts based on 284 inbound trips and 284 outbound trips (trucks carrying material and employee trips traveling to and from work). This is on Route 140 North and South as well as our streets leading to the Industrial Park.

I would not be surprise if fatalities could occur because of the numerous amount of garbage trucks and trailer trucks coming off of Rt 140 North and South bound onto Braley Road from 6 AM to 6 PM Monday to Saturday, and possibly on Sunday's going to Parallel Products, Inc.

As it is the New Bedford Business Park is a busy area with numerous businesses such as the large Service Center, Dunkin Donuts, Titleist Golf Ball, MA Registry of Motor Vehicles, Acushnet Co., American Circuit Breaker, Alberox Corp, N.E. Plastics, Milhench, AFC Cable, Epec, ete, etc.

Here in Briarwood we pay high house taxes, as does Pine Hill Acres and other housing developments off of Phillips Road, and other homes in the area, imagine the smell of garbage, imagine the rats we will have. Yes they will invade the businesses in the New Bedford Business Park, Briarwood, Pine Hill Acres, homes off of Phillips Road, homes in Freetown, Sassaquin, Acushnet Ave here in the far North End, lets not forget the Seagulls flying over dropping their poop on our homes and back yards where children will be playing, a child possibly being bitten by a rat.

There is the old N-Star building and property at the waterfront, garbage can come in by boats, barges, Trucks off of I-195 to Rt 18, and by Rail. There is the Building 19 property that trucks can come in, there is the railroad tracks next to the property, and the property is across the street from Parallel Products, Inc property at 969 Shawmut Avenue on Hathaway Road. These are one of two excellent locations for Parallel to be located.

Please stop Parallel from coming into the New Bedford Business Park.

Ron R. Cabral
67 Blaze Road
New Bedford, MA 02745
E-mail: RRCRT@aol.com

Page Czepiga
Environmental Analyst
(617) 626-1021
page.czepiga@mass.gov

MEPA Office
100 Cambridge St., Suite 900, Boston, MA 02114

TOXICS ACTION CENTER

Re: Parallel Products

Dear Ms. Czepiga

My name is Claire B.W. Miller and I am the lead community organizer for Toxics Action Center. We are a 32-year old public health and environmental non-profit. We work in all six north-eastern states side by side with communities to clean up and prevent pollution. I am writing in concern about construction of glass processing, a MSW processing and handling facility, biosolids drying & gasification facility, and railside track in a designated Environmental Justice neighborhood. This facility plans to process 1,500 tons per day of municipal solid waste, recieve construction and demolition, and process biosolids 24 hours a day, with an expected 418 new truck trips- all next to a residential neighborhood.

We firmly believe that community involvement in decisions is key. **Please consider granting a significant and fair extension to the deadline for public comments.**

As I'm sure you know, this location is a designated Environmental Justice neighborhood. As part of the Environmental Justice Policy of 2017, MEPA has obligations. These are screenshots from the EJ Policy:

Enhancing the Review of New MEPA Projects in EJ Populations

17. **Enhanced Analysis of Impacts and Mitigation Under MEPA.**[3] In addition to the enhanced public participation requirements specified in section 16 above, enhanced analysis will be required as part of the Environmental Impact Report (EIR) scope for projects that:

- (1) Exceed a mandatory EIR threshold for air, solid and hazardous waste (other than remediation projects), or wastewater and sewage sludge treatment and disposal; *and*
- (2) Are located within one mile of an EJ Population (or in the case of projects exceeding a mandatory EIR threshold for air, within five miles of an EJ Population) [4]. The project proponent may submit actual air modeling data on the project's area of potential air impacts in its EIR scope to modify the presumed five-mile impact area referred to in condition (2) above.

Enhanced analysis of impacts and mitigation may include analysis of multiple air impacts; data on baseline public health conditions within the affected EJ population; analysis of technological, site planning, and operational alternatives to reduce impacts; and proposed on-site and off-site mitigation measures to reduce multiple impacts and increase environmental and energy benefits for the affected EJ Population.

18. **Review of Thresholds.** As required by Executive Order 552, MEPA shall seek and consider stakeholder input on which thresholds are appropriate for enhanced participation and/or enhanced analysis.

19. **Collaboration with the Director of EJ.** For any projects triggering the MEPA EJ thresholds, as defined by this Policy, the MEPA Office shall collaborate with the Director of Environmental Justice to

ensure that appropriate measures are taken by project proponents to address any potential environmental impacts the project may have on the existing EJ population. This will include, but not be limited to

16. Enhanced Public Participation Under MEPA.[1] As part of the Secretary's commitment to Environmental Justice, enhanced public participation will be required for the following projects as they undergo review in accordance with MEPA:

- **(1) Any project that exceeds an Environmental Notification Form (ENF) threshold for air, solid and hazardous waste (other than remediation projects), or wastewater and sewage sludge treatment and disposal[2]; and**
- **(2) The project site is located within one mile of an EJ Population (or in the case of projects exceeding an ENF threshold for air, within five miles of an EJ Population).**

Enhanced public participation may include use of alternative media outlets such as community or ethnic newspapers, use of alternative information repositories, and translation of materials or interpretation services prior to and during public meetings where the relevant EJ Population uses a primary language other than English in the home.

When scheduling public meetings, EEA shall recommend that project proponents consider the time of the meeting, availability of public transportation to locations, and whether locations are child-friendly and culturally appropriate. To the extent feasible, meetings should be held in places that community members already routinely use and feel comfortable visiting. Additionally, EEA shall recommend that project proponents consider whether outreach efforts need to include an educational component to ensure that community members have the information necessary to evaluate a project's potential impacts.

I would appreciate a phone call to discuss the way that these measure- particularly the public meetings have been/will be met- especially given that the EJ Director Position is currently vacant. Thank you for your consideration of these comments and for your service to all the residents of the Commonwealth.

Respectfully,

Claire B.W. Miller
Lead Community Organizer
Toxics Action Center

Czepiga, Page (EEA)

From: Tracy Wallace <wallacetracy99@gmail.com>
Sent: Wednesday, March 27, 2019 8:41 AM
To: Czepiga, Page (EEA)
Subject: Re: Parallel Products proposed project

Hello Page,

Thank you very much for this information. I would like to add some additional comments in regards to the MEPA EENF complete report. Within the project description, it states that the site is zoned Industrial C, page 67 (page 28). That is not entirely true, the site is also zoned residential and zoned mixed business. There is no mention of the residential zoning of abutting properties, of which Parallel Products purchased two newly built homes. The full site is not zoned industrial C when consulting the site plan presented to the planning board of New Bedford in January 2017. During the presentation on March 7th the presenter indicted no production of Methane gas, however on page 13 of the complete report states the PPNE may decide to add gasification in the future to the site. The gasification process creates syn gas. Syn gas composition is known to be 7% Methane, when Methane mixes with other gases hydrogen sulfide is created, which is the rotten egg odor. Due to the location of several residential neighborhoods being within meters of the facility, this would have a dramatic impact on the community and its quality of life. This is fairly new technology and its effects on the surrounding communities are unknown. I would also like to call your attention to the Waste to Energy Project in Stamford, CT that was voted down by the Waste Pollution Control Authority in early 2010 after losing faith in its technical and economic feasibility, finding the drier itself produces significant emissions and there would be negligible economic benefit. The supervising engineer of Stamford's Water Pollution Control Authority stated that the overwhelmingly unpleasant smell that wafted in the air was due to the trucks that were parked carrying the waste. He stated in winter months, it's bad. In summer months, it'll be even more exaggerated. The complete report states that odor from the MSW and bio solids site will be minimized with ionization and wet scrubbing and by stacks ten feet above the bio solids facility and stacks from the MSW building. The study within the report mentions odor is subjective. There is no real way to know if the odor will be a nuisance or not. It also appears the stacks will be visible from the surrounding residential neighborhoods, this can decrease a property value of up to 13%. A collection of property value impacts is available from the Center for Health, Environment and Justice. The noise from heavy truck traffic lowers property value at a rate of 30 to 50 times greater than cars. This is because at 50 feet heavy trucks emit noise 16 times louder than car traffic. With regard to accidents, a fatality is twice as likely when a car is involved in a crash with a truck vs. another car. The studies included in the complete report regarding traffic, noise, odor and air quality impacts were done using conservative assumptions and computer modeling, which often does not translate to reality. The creation of waste sites tends to be around lower socio-economic communities and it seems this is of no exception. Environmental racism is environmental injustice that occurs in practice and in policy within a racialized context, exposing neighborhoods that are economically and racially disadvantaged to hazardous waste. This facility would never be put next to residents of a wealthier community. I ask you this, would you want to live within 500m or 1000m of a MSW and Bio Solids facility?

Sincerely,
Tracy L. Wallace M.Ed
Resident of New Bedford

On Mon, Mar 11, 2019 at 5:00 PM Czepiga, Page (ENV) <page.czepiga@state.ma.us> wrote:

> Tracy,

Czepiga, Page (EEA)

From: Tracy Wallace <wallacetracy99@gmail.com>
Sent: Friday, March 08, 2019 12:43 PM
To: Czepiga, Page (EEA)
Subject: Parallel Products proposed project

Hello Page,

I would like to take this opportunity to thank you and everyone who attended the meeting yesterday March 7, 2019. Everyone was very nice and welcoming. I would also like to take this opportunity to express my concern with Phase 2 of the proposed project by Parallel Products at the Industrial Park in the City of New Bedford. I would first like to bring your attention to the original site plan proposed by Parallel Products in January 2017, and approved on March 21, 2017 with conditions. Mr. Cusson, of Parallel Products, stated in the meeting yesterday that the intention of the site was always to have been a waste site. That is not indicated in the original site plan. The site plan is for cooler storage/warehouse and additional parking, etc.... The original proposed plan also brings attention to the inadequacy of the storm drains and the undersized stormwater basins that were to be addressed when the Certificate of Compliance was applied for. There is no statement within the site plan that indicates Parallel Products intent to move their entire operation from the Shawmut Ave location to the proposed Duchaine Blvd location. I find this to be in direct contrast to the statement made by Mr. Cusson. Regarding the MSW transfer location being moved to Duchaine Blvd, there is cause for concern due to the proximity of the residential developments in the area. The Shawmut Ave location is not in as close proximity to residential areas as the proposed Duchaine location would be. I also encourage you to visit the Shawmut Ave location. If you drive down Shawmut Ave toward the airport, there is a distinct amount of trash deposited over the roads as well as an odor. There are also concerns regarding health risks when living in close proximity to a transfer station, those include, asthma, shortness of breath, respiratory disease, cardiac disease, stroke, allergies, etc.... The proposed bio solids facility that is also part of the Phase 2 portion of the project is cause for concern as well. When researching bio solids, there appears to be much debate over their efficacy. Bio solids could contain heavy metals, hormones, antibiotics, steroids, etc... all that would be reentered into the environment if used. When describing the project the presenter indicated that there would be no methane gas production, it would not be anaerobic, nor would it use flocculants or bugs. It does not appear to be drying beds or an incinerator either, so how is this going to be done? Would there be a way to obtain more information about the process? The presenter also indicated that a chemical scrub would be used to clean the facility and control for odor. Where would these chemicals go after scrubbing the facility? Into the municipal water system? If a cleaning agent is needed, then there is going to be an odor. The presenter also mentioned studies conducted regarding traffic, noise, and odor, all not having a significant impact on the surrounding community. He pointed out that there would be an impact at the stop sign/intersection of Braley Rd. and Phillips Rd. I would like to mention that there is an older condominium complex at that intersection that would be impacted by the increased noise of the addition of 584 trips to the area. Is there a way to obtain copies of the studies which were conducted? A young man attended the meeting yesterday as well, he is a resident of the area. He stated he lives across the street from the current Duchaine location, and indicated that there is already a noise issue. Truck noises that go well past 10pm. Recently, several new homes have been built along Phillips Rd on the same side as the proposed site. Mr. Cusson indicated that Parallel Products bought the two homes closest to the site. Why did they buy the homes? They did not buy the other homes next to those two. Are they going to tell those home owners that their backyards will soon be abutting a waste site? The presenter indicated that the glass plant (part of Phase 1) would be round the clock, but was not sure the hours of operation of the MSW transfer station or bio solids facility. He thought it would be 7am to 6pm, however there seemed to be no confirmation of that. Would there be consequences in place for violations of those hours, if those are in fact the hours? The meeting was absolutely fascinating. It definitely brings to light the amount of waste we as a society produce, and the need for effective waste management. However, it would

be a shame if that need comes at the detriment of the community. I appreciate your time and consideration of my concerns.
Sincerely,

Tracy L Wallace, M.Ed
Resident of New Bedford

Czepiga, Page (EEA)

From: Vincent Carolan <vincent.h.carolan3@gmail.com>
Sent: Friday, March 29, 2019 2:59 PM
To: Czepiga, Page (EEA)
Subject: Industrial Park New Bedford

Greetings,

My name is Vincent Carolan and I am a long time resident of New Bedford and I have major concerns regarding the MSW plant and biosolids facility being built less than a mile from my house off of Exit 7 on route 140 affiliated with Parallel Products in the large Industrial Park on Duchaine Boulevard. It has the potential to effect the quality of life via traffic, odor, noise, and pollutants and there is no upside to having this facility stationed at this location within a residential neighborhood. I strongly urge you to find alternatives. Please consider.
Sincerely,
Vincent H. Carolan III
Resident of New Bedford

Czepiga, Page (EEA)

From: Wendy Graca <wendygraca@aol.com>
Sent: Wednesday, March 27, 2019 10:05 AM
To: Czepiga, Page (EEA)
Subject: Parallel Products NE Project in NB Industrial Park

Hello Page,

I am submitting the following comments regarding the Parallel Products Project, proposed for the New Bedford Industrial Park in the North End of New Bedford. I have just recently learned of this project, and after speaking with a few local residents have found that most people are in the same uninformed "boat" as I.

Please consider granting a significant and fair extension to the deadline for public comments. Residents in the area have little to no knowledge of this project, due to poor outreach and advertisement of public meetings by the company. Also, the one public meeting I was made aware of just a few days prior (due to my making inquiring phone calls), was held at 10:00 AM on a weekday. This is a community of working class citizens. Meetings that are intended to be informative to residents regarding something that could impact their daily lives and homes should be conducted at a time when they would not need to take time off of work to attend. That is not acceptable "outreach" and does not send a message that the company is working in "good faith" and "transparency". For that reason to start, this project does not make me comfortable.

The nature and scope of this project is not to be taken lightly. Little is known about the so-called "cutting edge" technology of this facility, since there are so few of these plants in the US. It is unfair and burdensome to expect the citizens of New Bedford to take on yet another industrial project in their community without giving them all of the information, as well as the opportunity to ask questions and time to submit informed comments.

Sincerely,

Wendy M. Graca
(508) 254-6333

ATTACHMENT 2

FINAL RECORD OF DECISION OF THE SECRETARY OF THE EOEEA

The Commonwealth of Massachusetts
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114

Charles D. Baker
GOVERNOR

Karyn E. Polito
LIEUTENANT GOVERNOR

Kathleen A. Theoharides
SECRETARY

Tel: (617) 626-1000
Fax: (617) 626-1081
http://www.mass.gov/eea

May 15, 2019

FINAL RECORD OF DECISION

PROJECT NAME	: Parallel Products of New England
PROJECT MUNICIPALITY	: New Bedford
PROJECT WATERSHED	: Buzzards Bay
EEA NUMBER	: 15990
PROJECT PROPONENT	: Parallel Products of New England, LLC
DATE NOTICED IN MONITOR	: April 24, 2019

Pursuant to the Massachusetts Environmental Policy Act (MEPA, M.G.L.c.30, ss. 61-62I) and Section 11.11 of the MEPA regulations (301 CMR 11.00), I have reviewed the Expanded Environmental Notification Form (EENF) and hereby **grant** a Phase 1 Waiver that will allow the first phase of development, as described in the EENF, to proceed to permitting prior to completion of the Draft Environmental Impact Report (Draft EIR) and Final EIR (FEIR) for the remaining development.

I received comment letters on the Draft Record of Decision from the City of New Bedford (City) and residents which identify concerns with the project. Comments from the City and City Councilor Brad Markey identify concerns with the noise, odor, traffic, and other cumulative impacts associated with full-build of the project. Comments from the City also request that I deny the Phase 1 Waiver request. I have weighed these concerns and considered the environmental impacts of Phase 1. I note that Phase 1, on its own, would not require MEPA review as it does not meet or exceed any MEPA review thresholds. Additionally, Phase 1 is an allowed use under the Proponent's existing General Permit for recycling operations. The Proponent will prepare Draft and Final EIRs which will provide additional opportunities for public review of the cumulative environmental impacts of the full-build project. Subsequent state and local permitting processes will also include additional meaningful opportunities for

review and refinement of potential environmental impacts and measures to avoid, minimize, and mitigate environmental impacts.

Project Description

As described in the EENF, the project includes the phased construction of a glass recycling/processing facility; a solid waste handling and processing facility that will accept 1,500 tons per day (tpd) of municipal solid waste (MSW) and construction & demolition (C&D) waste; and a biosolids drying facility that will accept 50 dry tpd of biosolids.

Phase 1 includes construction of a glass recycling/processing facility within a 27,500-square foot (sf) building, construction of a railroad (RR) sidetrack from the main RR line to the glass processing facility, and installation of a 1.9 megawatt (MW) solar photovoltaic (PV) array. The glass recycling/processing facility will recycle glass collected through the Massachusetts bottle deposit system. Glass processing will include crushing, sizing and separation of the glass by color. Processed glass will be stored in bunkers until it is loaded into rail cars or trucks to shipment for bottle manufacturers. Phase 1 is proposed to meet an immediate regional need for glass processing in the region by providing an alternative market for glass that would otherwise be disposed.

Phase 2 includes construction of the MSW and C&D transfer station and the biosolids drying facility and extension of the RR sidetrack to service these facilities. Phase 2 will construct a 50,000-sf waste handling building which will be connected to an existing 103,000-sf building. The larger building will house processing equipment which will remove waste ban items and separate out recyclable materials. It also includes construction of a stand-alone 30,000-sf building to house the biosolids processing equipment. Biosolids processing will consist of drying the biosolids to reduce the volume and tonnage of the material prior to off-site disposal. Shipment of all outbound material will primarily occur via rail car.

Project Site

The 71-acre project site is located within the New Bedford Industrial Park at 100 Duchaine Boulevard in New Bedford. The site is generally bounded by industrial properties and Samuel Barnet Boulevard to the north, Phillips Road to the east, undeveloped land to the south, and a rail line and the Acushnet Cedar Swamp State Reservation to the west. The site was previously developed by the Polaroid Corporation and contains access roads, parking areas, stormwater management infrastructure and numerous buildings. The Proponent purchased the site in 2016 and has relocated a portion of its processing and recycling operations from 969 Shawmut Avenue to the project site. The site also contains 1.5 MW of solar PV mounted on a series of carport canopies. Access to the site is provided from Duchaine Boulevard, via an internal one-way loop roadway surrounding the proposed facility. The site has adequate area to support truck movement and access and is easily accessible from Route 140 (Alfred M Bessette Memorial Highway) via Braley Road or Phillips Road.

Wetland resource areas in the vicinity of the project include Bank, Bordering Vegetated Wetlands (BVW), Land under Water (LUW), and Riverfront Area. The project site is not located in Priority and/or Estimated Habitat as mapped by the Division of Fisheries and Wildlife's (DFW) Natural Heritage and Endangered Species Program (NHESP) or an Area of Critical Environmental Concern

(ACEC). The site does not contain any structures listed in the State Register of Historic Places or the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth.

Environmental Impacts and Mitigation

According to the EENF, potential environmental impacts of Phase 1 include alteration of 4.6 acres of land, creation of 21,780 sf of impervious area, generation of 108 new average daily trips (adt), consumption of 150 gallons per day (gpd) of potable water, and generation of 150 gpd of wastewater. Phase 1 will impact BVW (4,087 sf), Bank (36 linear feet (lf), and Riverfront Area (900 sf).

The following commitments are proposed to avoid, minimize and mitigate environmental impacts associated with Phase 1 including: limiting all glass processing to an enclosed building; designing the RR crossing to reduce impacts to BVW and RFA; wetland replication; constructing the project on a previously altered site; use of rail to ship glass off-site; construction period erosion and sedimentation control measures; and generating renewable energy with solar PV systems.

Jurisdiction and Permitting

The project is undergoing MEPA review and requires the preparation of a mandatory EIR pursuant to Sections 11.03(5)(a)(6) and 11.03(9)(a) of the MEPA regulations because it requires State Agency Actions and will result in: New Capacity for storage, treatment, processing, combustion or disposal of 150 or more wet tpd of sewage sludge and New Capacity of 150 or more tpd for storage, treatment, processing, or disposal of solid waste (respectively). Because it requires an EIR, the project is subject to review in accordance with the MEPA Greenhouse Gas (GHG) Emissions Policy and Protocol. The project is also subject to the Executive Office of Energy and Environmental Affairs' Environmental Justice (EJ) Policy.

The Proponent consulted with the Massachusetts Department of Environmental Protection (MassDEP) and the MEPA Office regarding the enhanced outreach requirements of the EJ Policy. The Proponent published Spanish and Portuguese language versions of the MEPA Public Notice in El Planeta and the Portuguese Times (respectively) in addition to the New Bedford Times. The Proponent also notified the following organizations of the project and MEPA scoping session and provided them with a copy of the EENF: Coalition for Social Justice, Alternatives for Community & Environment, Hands Across the River Coalition, and Old Bedford Village. These were identified as EJ leaders based on consultation with MassDEP. The comment period was extended for two-weeks at the Proponent's request to provide additional time to review and comment on the EENF. The comment period commenced on February 20, 2019 and concluded on April 5, 2019. I accepted all late comments as allowed in accordance with 301 CMR 11.06(3). A MEPA site visit and scoping session was held on March 7, 2019. Spanish and Portuguese translation services were provided at the MEPA scoping session.

Phase 1 of the project will receive Financial Assistance from the Massachusetts Department of Transportation (MassDOT) Industrial Rail Access Program (IRAP) in the amount of $500,000. Phase 1 will require an Order of Conditions from the New Bedford Conservation Commission (or in the case of

an appeal, a Superseding Order of Conditions from MassDEP). It may require an amended Site Plan Approval from the New Bedford Planning Board.

Because the Proponent is seeking Financial Assistance, MEPA jurisdiction is broad in scope and extends to all aspects of the project that may cause Damage to the Environment, as defined in the MEPA regulations.

Phase 1 Waiver Request

The Proponent submitted an EENF in support of its request for a Phase 1 Waiver. Consistent with this request, the EENF was subject to an extended 30-day public comment period. At the Proponent's request, the comment period was extended for an additional two-weeks and closed on April 12, 2019.

On April 12, 2019, I issued a Draft Record of Decision (DROD) proposing to grant a Phase 1 Waiver, provided that the Proponent hold a public meeting prior to the close of the comment period on the DROD. This provided the community with an additional opportunity to learn about and comment on the project. The DROD was published in the Environmental Monitor on April 24, 2019, commencing the 14-day public comment period, which concluded on May 8, 2019. The Proponent held a public meeting on the project on April 29, 2019 at 6:00 PM in the auditorium of the Pulaski Elementary School in New Bedford. The Proponent created and distributed a fact sheet for the project which provided a summary of the project and identified required permits and opportunities for public comment. Spanish and Portuguese translation services were also provided at the public meeting. The Proponent notified the following organizations of the meeting: Coalition for Social Justice, Alternatives for Community & Environment, Hands Across the River Coalition, Old Bedford Village, Conservation Law Foundation, and Toxics Action Center. Notice of the public meeting was also provided on the radio (1420 WBSM), through a Facebook campaign via New Bedford Guide, and published in the Standard Times on April 24th and 26-28th. The Proponent has committed to hold additional public meetings approximately every 30 days. I acknowledge the Proponent's outreach efforts and encourage the Proponent to continue this productive dialogue with stakeholders.

Standards for All Waivers

The MEPA regulations at 301 CMR 11.11(1) state that I may waive any provision or requirement in 301 CMR 11.00 not specifically required by MEPA and may impose appropriate and relevant conditions or restrictions, provided that I find that strict compliance with the provision or requirement would:

(a) result in an undue hardship for the Proponent, unless based on delay in compliance by the Proponent; and
(b) not serve to avoid or minimize Damage to the Environment.

Determinations for a Phase 1 Waiver

The MEPA regulations at 301 CMR 11.11(4) state that, in the case of a partial waiver of a mandatory EIR review threshold that will allow the proponent to proceed with Phase 1 of the project

prior to preparing an EIR, I shall base the finding required in accordance with 301 CMR 11.11(1)(b) on a determination that:

(a) the potential environmental impacts of Phase 1, taken alone, are insignificant;
(b) ample and unconstrained infrastructure facilities and services exist to support Phase 1;
(c) the project is severable, such that Phase 1 does not require the implementation of any other future phase of the project or restrict the means by which potential environmental impacts from any other phase of the project may be avoided, minimized or mitigated; and
(d) the agency action on Phase 1 will contain terms such as a condition or restriction, so as to ensure due compliance with MEPA and 301 CMR 11.00 prior to commencement of any other phase of the project.

Findings

Based upon review of the EENF, consultation with State Agencies, and review of public comments, I find that the Waiver Request has merit and that the Proponent has demonstrated that Phase 1 meets the standards for all waivers at 301 CMR 11.11(1). The EENF provided sufficient information regarding potential impacts for the purpose of MEPA review, it demonstrated that environmental impacts associated with Phase 1 are not significant and it identified measures to avoid, minimize, and mitigate potential impacts.

As noted in the EENF and confirmed by MassDEP's comments on the EENF, there are limited outlets for recycling container glass within the Commonwealth and New England since the last glass bottle production facility in the region closed in 2018. This has resulted in increased shipping distances to bottle production facilities, which combined with a nationwide trucking shortage, has increased costs for recycling programs. Phase 1 will provide a new outlet for processing of glass bottles and will facilitate reliable and economical shipment of the glass to recycling markets and bottle manufacturers via rail car. Comments from MassDEP on the EENF confirm that Phase 1 will enhance glass processing in the region by offering alternative markets for those collecting and diverting container glass from landfills. Phase 1 includes construction of a building and installation of solar PV within previously altered and impervious areas and extension of a RR line using funds from MassDOT's IRAP grant program.

In light of the regional benefits and limited impacts associated with Phase 1, strict compliance with the requirement to prepare a Mandatory EIR for the project prior to Phase 1 would result in undue hardship and would delay the regional benefits to the glass recycling market identified in MassDEP's comment letter on the EENF. The Proponent will redevelop a previously altered site within an industrial park, which has adequate vehicular access and is easily accessible from Route 140 (Alfred M Bessette Memorial Highway). In addition, the Proponent has committed to implement adequate measures to avoid, minimize, and mitigate Phase 1 impacts. Comments from MassDEP and MassDOT on the EENF indicate support for the Waiver. I find that strict compliance with the requirement to submit an EIR prior to completion of Phase 1 of the project would result in an undue hardship and would not serve to avoid or minimize Damage to the Environment.

In accordance with 301 CMR 11.11(4), the latter finding is based on my determination that:

1. The potential environmental impacts of Phase 1, taken alone, are insignificant.

Potential impacts associated with Phase 1 do not exceed ENF thresholds. The majority of development is located within previously altered and impervious areas. Potential environmental impacts of Phase 1 are primarily associated with construction of the RR side track which will alter wetland resource areas. The New Bedford Conservation Commission will review Phase 1 to determine its consistency with the Wetlands Protection Act (WPA), the Wetlands Regulations (310 CMR 10.00), and associated performance standards, including the Stormwater Management Standards (SMS). The Proponent will provide wetland replication and design the crossing to comply with MassDEP's Stream Crossing Standards.

2. Ample and unconstrained infrastructure facilities and services exist to support Phase 1.

The site provides infrastructure necessary to support Phase 1, including access roads, water and sewer, and electricity. Phase 1 will construct a RR extension to facilitate shipment of outbound material via rail car. Existing roadway infrastructure can accommodate traffic generation associated with the project. Based on the foregoing, I find that ample and unconstrained infrastructure exists to support Phase 1.

3. The project is severable, such that Phase 1 does not require the implementation of any other future phase of the project or restrict the means by which potential environmental impacts from any other phase of the project may be avoided, minimized or mitigated.

The Phase 1 project can function independently without the remaining development. Phase 1 does not require the implementation of remaining development phases or restrict the means by which potential environmental impacts from remaining development may be avoided, minimized, or mitigated.

4. The Agency Action(s) on Phase 1 will contain terms such as a condition or restriction, so as to ensure due compliance with MEPA and 301 CMR 11.00 prior to commencement of any other phase of the project.

The Proponent is seeking Financial Assistance from MassDOT for Phase 1. I hereby direct MassDOT to include a condition in their funding agreement that requires compliance with MEPA and 301 CMR 11.00 prior to commencement of Phase 2. Based on the foregoing, I find that Phase 1 of the project can commence prior to the completion of the MEPA review process.

Given the foregoing, and subject to the conditions included herein, I find that a requirement to complete MEPA review prior to Phase 1 is not necessary to demonstrate that it will avoid, minimize, and mitigate potential Damage to the Environment to the maximum extent practicable, and that a requirement to do so would therefore cause undue hardship and would not serve to minimize Damage to the Environment.

Conclusion

Based on these findings, I have determined that this waiver request has merit. A DROD was issued on April 12, 2019 and was published in the Environmental Monitor on April 24, 2019 in accordance with 301 CMR 11.15(2), which began the public comment period. The public comment

period lasted for 14 days and concluded on May 8, 2019. Accordingly, I hereby **grant** a Phase 1 Waiver to allow the Proponent to proceed with Phase 1 of the project prior to completing the EIR process.

May 15, 2019
Date

K. Theoharides
Kathleen A. Theoharides

Comments received on the DROD:

05/02/2019 City Councilor Brad Markey
05/05/2019 Ron Cabral
05/10/2019 Jonathan F. Mitchell, Mayor, City of New Bedford
05/15/2019 Donna Poyant
Form letter beginning "I am strongly opposed to the…" (1 received)

KAT/PRC/prc

City of New Bedford

Office of City Council
133 William Street • New Bedford, Massachusetts 02740
(508) 979-1455 • Fax: 508-979-1451

Brad Markey
Councillor Ward One

RECEIVED
MAY 10 2019
MEPA

May 2, 2019

RE: EEA 15990 Parallel Products

Dear Ms. Czepiga

I am writing you regarding my concerns and the concerns of the residents in the surrounding areas on the Parallel Products project which is a proposed expansion at 100 Duchaine Blvd. in the New Bedford Industrial Park. The Industrial Park as well as the proposed expansion abuts heavily populated neighborhoods and we are concerned that this expansion can have a detrimental effect on these neighborhoods.

There are many concerns with the processing at this facility, health concerns of toxins being emitted into the air, odor, as well as issues with the proximity to wet lands.

Other issues effecting the quality of life in the area from this project would be noise, air pollution from the processing and, with the increase of truck traffic going into this facility every day, air quality from the diesel emissions.

While air quality is a major concern there is also traffic issues. With the many trucks making their way into the facility this is adding more traffic congestion into an already high traffic area.

I ask you to carefully review this project and to consider the neighborhood's concerns which are stated above and to their quality of living.

Sincerely,

Brad Markey

Brad Markey

City Councilor Ward 1

Residence: 1520 Morton Avenue • New Bedford, Massachusetts 02745 • Tel.: (508) 998-8377
Brad.Markey@newbedford-ma.gov

CITY OF NEW BEDFORD
JONATHAN F. MITCHELL, MAYOR

May 10, 2012

Executive Office of Energy and Environmental Affairs (EEA)
Attention: MEPA Office
Paige Czepiga: EEA No. 15990
100 Cambridge St, Suite 900
Boston MA 02114

RE: EEA 15990: Parallel Products

Dear Ms. Czepiga,

I write in strong opposition to the establishment of a glass/solid waste/biosolids processing facility to be operated by Parallel Products at 100 Duchaine Boulevard in New Bedford. In addition, I strongly urge MEPA to deny a Phase I Waiver to allow Parallel Products to proceed with the first phase of development as described in the April 12, 2019 Draft Record of Decision.

The company has operated a glass bottle recycling operation at the location for some time in compliance with local zoning, site plan conditions, and conservation restrictions. However, the site as newly conceived, would be an entirely different creature--especially with the inclusion of a biosolids processing facility as detailed in the company's MEPA filing in February.

On March 29 I submitted comments to MEPA regarding the proposed project. The concerns and objections I raised on behalf of the City all remain valid. (I refer you to items 1-7 contained in the letter.) Most important, I made clear then, as well as in several subsequent public remarks, that the burden was on the company to demonstrate that its project would not pose a threat to the quality of life in surrounding neighborhoods.

Since that time, concerns regarding the potential odor, noise, and traffic impacts of the Parallel Products proposal have grown significantly among both neighborhood residents and municipal departments. Based on what we have learned in recent weeks regarding potential odor, noise, and traffic impacts, there is ample evidence to conclude that this project is wrong for New Bedford.

With respect to the company's Waiver request, I believe it important for MEPA to consider the request in the full context of the development proposed at the site. The first development phase is now a part of a much larger, more impactful, multi-faceted project. It is therefore imperative that permitting authorities revise their approach accordingly. For example, at least one component in the first phase (rail access) now also has a direct connection to uses (including biosolid processing) that are being contemplated in future phases. In this broader context, it does not make sense to treat <u>any</u> Phase I component in isolation.

It is therefore wrong and irresponsible to provide a Waiver for certain aspects of the proposed expansion and allow the facility to be effectively approved piecemeal by the state, without adequate analysis and an understanding of the cumulative impact of the project as a whole. On behalf of local residents and businesses, I urge MEPA to refrain from approving any Waivers and instead mandate a full Environmental Impact Report be completed before any state decisions are made on any aspect of development at the site.

Thank you for this opportunity to express my opposition to the Waiver and the project more generally.

Sincerely,

Jon Mitchell

CC: Energy & Environmental Affairs Secretary Kathleen Theoharides
MassDEP Commissioner Martin Suuberg
Senator Mark Montigny
Representative Paul Schmid
Representative Christopher Hendricks
New Bedford City Council
New Bedford Planning Board

Czepiga, Page (EEA)

From: Buckley, Deirdre (EEA)
Sent: Wednesday, May 15, 2019 1:05 PM
To: Czepiga, Page (EEA)
Subject: FW: Parallel products of New Bedford

-----Original Message-----
From: Schwalbert, Nick (EEA) <nick.schwalbert@mass.gov> On Behalf Of internet, env (EEA)
Sent: Wednesday, May 15, 2019 1:01 PM
To: Buckley, Deirdre (EEA) <deirdre.buckley@mass.gov>
Subject: FW: Parallel products of New Bedford

Sending your way per Sarah's request.

Nicholas Schwalbert
617-626-1022

-----Original Message-----
From: Donna [mailto:dmpeko@comcast.net]
Sent: Wednesday, May 15, 2019 11:07 AM
To: internet, env (EEA)
Subject: Parallel products of New Bedford

I am writing as I believe the site description in EEA #15990 is deceiving. It does not reflect the hundreds of single family home east of Phillips road. It describes a site surrounded by industrial sites.
It also states that glass processing is limited to enclosed building. Glass processing is occurring under a canopy and residents whose home are only a few hundred feet away are already noting odors and noise issues.
I am writing to request your agency review this decision as well as deny phase 2 which would have a great affect on the adjacent neighborhoods.
Donna Poyant
39 Ridgewood Rd New Bedford MA 02745

Sent from my iPhone

Secretary of Energy & Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114
Attn: MEPA Office

RECEIVED
MAY 02 2019
MEPA

RE: Parallel Products of New England, LLC

I am **strongly opposed** to the Parallel Products of New England, LLC Waste Transfer Station project at 100 Duchaine Boulevard, New Bedford, MA. We do not need this horrendous project in our neighborhood.

There is no good reason to impose a facility like this on a community that has plenty of capacity for the disposal of waste. We do not want to be the dumping ground of Southeastern Massachusetts. As a group we will use whatever means necessary to make sure our neighborhood is not dumped on!!

Sincerely,

Signature Robert E Charron

Name ROBERT E CHARON

Address 3913 ACUSHNET AVE
NEW BEDFORD MA

Czepiga, Page (EEA)

From: Ron <rrcrt@aol.com>
Sent: Sunday, May 05, 2019 11:55 PM
To: antonio.cabral@mahouse.gov; chris.hendricks@mahouse.gov; christopher.markey@mahouse.gov; paul.schmid@mahouse.gov; william.straus@mahouse.gov; michael.moynihan@masenate.gov; mark.montigny@masenate.gov; Ian.Abreu@newbedford-ma.gov; Naomi.Carney@newbedford-ma.gov; Debora.Coelho@newbedford-ma.gov; Hugh.Dunn@newbedford-ma.gov; Brian.Gomes@newbedford-ma.gov; Dana.Rebeiro@newbedford-ma.gov; Linda.Morad@newbedford-ma.gov; Joseph.Lopes@newbedford-ma.gov; Brad.Markey@newbedford-ma.gov; Maria.Giesta@newbedford-ma.gov; Scott.Lima@newbedford-ma.gov; Jon.Mitchell@newbedford-ma.gov; kristine.arsenault@newbedfordma.gov
Cc: Buckley, Deirdre (EEA); Schluter, Eve (EEA); Wixon, Josephine (EEA); Canaday, Anne (EEA); Patel, Purvi (EEA); Czepiga, Page (EEA); Strysky, Alexander (EEA); Flaherty, Erin (EEA); MEPA (ENV); TimC@parallelproducts.com; newbedford@parallelproducts.com
Subject: Fwd: Attached letter ref Parallel Products, Inc.
Attachments: Draft-Record-of-Decision-April-12-2019.pdf

Follow Up Flag: Follow up
Flag Status: Completed

Good morning

Please read the attached letter regarding Parallel Products and the Commonwealth of Massachusetts Environment and Energy. I was quite surprised when I read the letter in particular Page 3 Paragraph 2 which is copied below.

The Proponent consulted with MassDEP and the MEPA Office regarding the enhanced outreach requirements of the EJ Policy. The Proponent published Spanish and Portuguese language versions of the MEPA Public Notice in El Planeta and the Portuguese Times (respectively) in addition to the New Bedford Standard Times. The Proponent also notified the following organizations of the project and MEPA scoping session and provided them with a copy of the EENF: Coalition for Social Justice, Alternatives for Community & Environment, Hands Across the River Coalition, and Old Bedford Village. These were identified as EJ leaders based on consultation with MassDEP. The comment period was extended for two-weeks at the Proponent's request to provide additional time to review and comment on the EENF. The comment period commenced on February 20, 2019 and concluded on April 5, 2019. I accepted all late comments as allowed in accordance with 301 CMR 11.06(3). A MEPA site visit and scoping session was held on March 7, 2019. Spanish and Portuguese translation services were provided at the MEPA scoping session.

Just wondering if any of the City and State Officials knew about this meeting? If so, why wasn't the residents in the area invited or made aware of this meeting?

Why were the Coalition for Social Justice, Alternatives of Community & Environment, Hands Across the River Coalition, and Old Bedford Village invited?

Also read that the company wants the state to give $500,000 for a side rail line to the property. This company is privately owned, why should we the taxpayers pay for a side rail line for the Parallel Products, Inc.? We are unable to get a commuter rail line from New Bedford to Boston although the state is working on it, lol.

We the residents/taxpayers, which I have been in contact with many, in the area deserve another meeting to be held at the Pulaski School, Parallel Products, Inc. should post at their expense in all news media a notice of such meeting, and being in large print. Hopefully Mayor Mitchel would be able to attend this meeting, sadly he was unable to attend the April 29th meeting.

Again, I would like to know if anyone of the City Officials, or State Officials knew about this meeting, I would like to hear from City and State Officials, that is if anyone is willing to respond.

My E-mail address is: RRCRT@aol.com

Respectfully,

Ron R. Cabral
67 Blaze Road
New Bedford, MA 02745

ATTACHMENT 3

MSW PROCESSING SPECIFICATIONS


Parallel Products
New Bedford MA

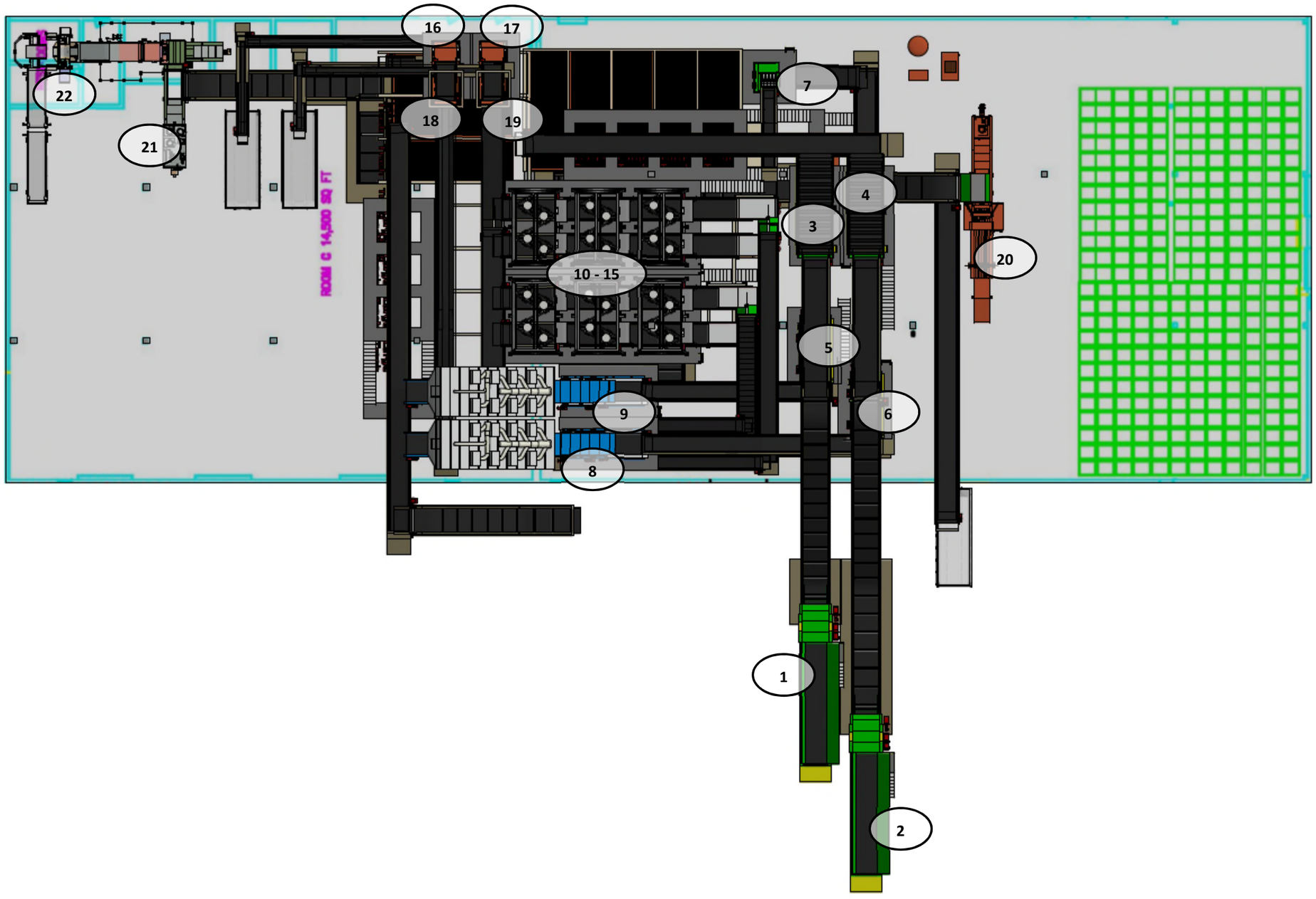
MSW Processing System

Equipment Detail

Confidential Proposal # 17-0289 DV2
17 July 2018

BHS
What's next.

Equipment Detail Diagram



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BHS Bag Breaker®	BB-48	*7*	11
Nihot Double Drum Separator	DDS1600	*8, 9*	14
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Magnet	UME 115 150 R	*18, 19*	21
Paal Baler - Commodity Baler	KONTI 425-H	*20*	23
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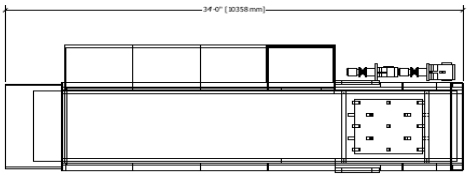
Cross Wrap - Bale Wrapper	CW 2200-SW-750-1-5	*22*	27

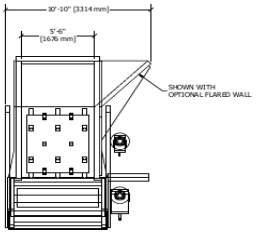
Equipment Detail

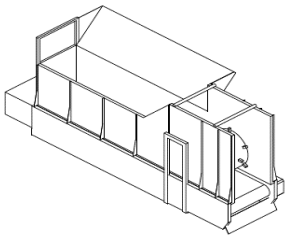
17 July 2018

BHS Metering Bin: Liberator Class

Application:	Liberator Class Metering Bin provides regulated flow of material to the system equiped with ripper teeth to open large bags
Manufacturer:	BHS
Model:	MB-50 L







Width:	Approximately 2.9m [9' 8"]
Length:	Approximately 13.4m [44']
Installed Weight:	Approximately 23,000 kg [51,000 lbs]
Infeed Lip:	10’-4-1/8" (3150 mm) high, sti ened with 8" (203 mm) structural channel
Wall Construction:	Front and rear wall construction is 3/8 formed channel shaped pans
Bearings:	CRS 1045 Dodge S-2000 roller bearing pillow blocks with triple lip seal
Drive Shaft:	CRS 1045 4-7/16" (113 mm) diameter with reducer
Tail Shaft:	CRS 1045 2-7/16" (62 mm) diameter with Dodge S-2000 bearings and take-ups
Chain:	Webster Chain, 9" (229 mm) pitch, RS 932F
Access:	Includes rear door, side door, maintenance platform, flared back wall
Motors:	SEW-EURODRIVE Premium Efficiency Motor: 45 kW [60HP] Drum Drive
Design Speed:	64 RPM, 5.2 FPM
Ship Method	20' HC & 40' HC
Conveyor Type	Steel Chainbelt
Teeth:	36 replaceable tungsten carbide-tipped teeth - Optional ripper teeth to open bags included

BHS Paint Specification

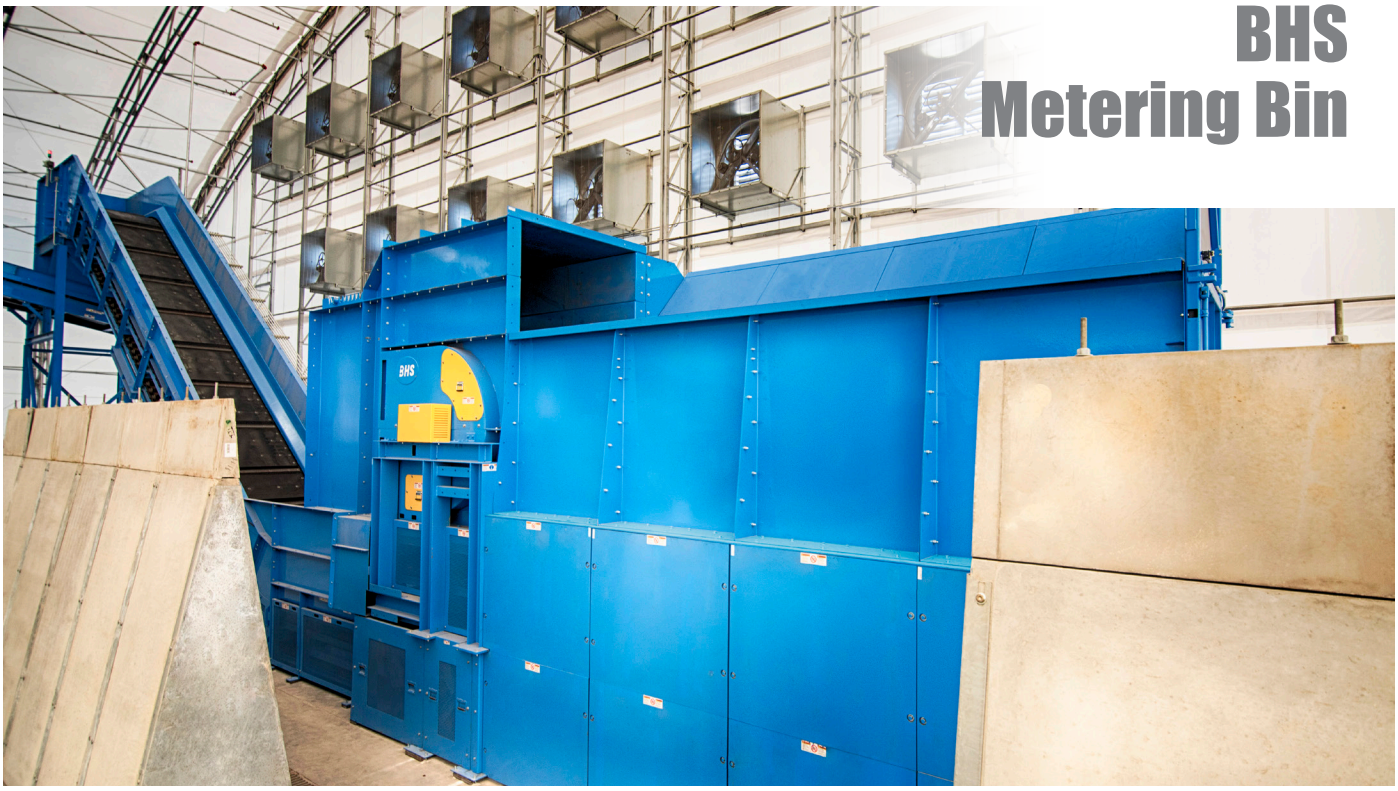
Our standard BHS paint system will meet ISO 12944-5: 1998, corrosivity categories C2 and C3.

Our paint system consists of the following steps:

- Surface Preparation: ISO ST-2 thorough hand and power tool cleaning to remove unwanted and/or foreign matter.
- Primer: One coat of Rodda 733823x Low HAP Metal Primer II
- Topcoat: Two coats Rodda 758001x Quick Drying Equipment Enamel

The total paint system as described above will achieve 120 microns NDFT, 4.7 mils.

BHS Metering Bin



The new **BHS Metering Bin** and **Metering Bin Liberator Class** provide numerous features that increase performance and decrease maintenance requirements. BHS has developed a strong platform to precisely regulate material flow through the combination of a variable speed conveyor and a counter-rotating drum at the discharge end, eliminating black-belt and keeping your system operating at peak levels. The new design's hallmark is its modularity: the design allows a wide range of mix-and match features which can transform the Metering Bin to match your own operational demands. From base features such as extra thick walls to the steel belt and bag-ripping teeth of the Liberator Class, BHS offers a bin without equal in the market.

FEATURES & BENEFITS

- Increases throughput and system capacity up to 20%
- Eliminates need for costly pits and additional civil work
- Quick, easy retrofit into existing facilities
- Rear door allows for easy removal of bulky items from bin
- New seal design provides protection from material interference
- Available with 60-HP driven drum to power through the toughest loads
- Reinforced load side and flared back walls for ease of loading and durability with minimal spillage

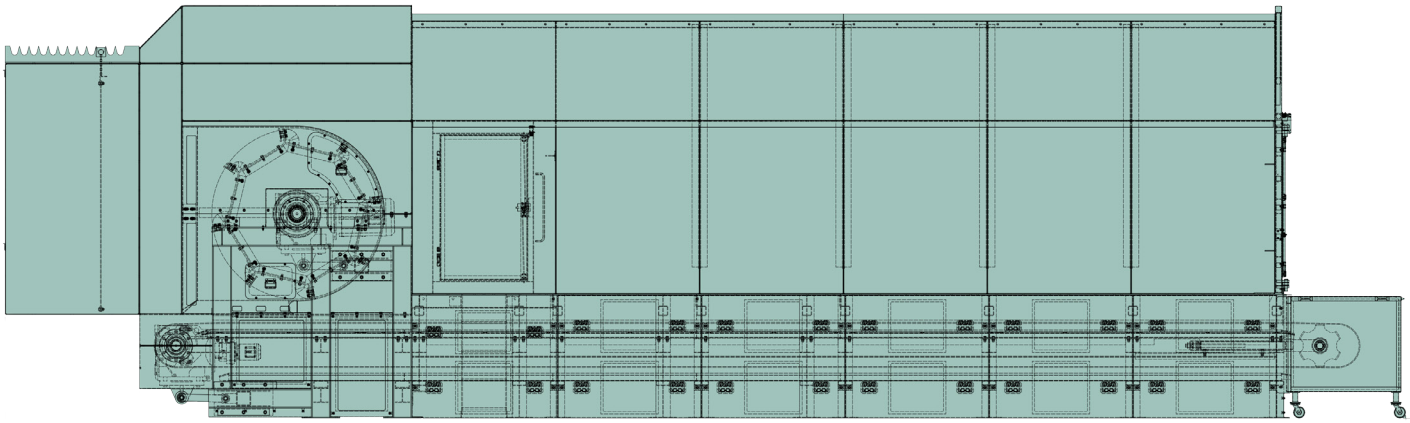
THE MODULAR ADVANTAGE

- Four-week typical lead time on standard design
- Ambidextrous load side and rear door allows for variable loading and access
- Interchangeable belts, drums & teeth
- Reinforced side wall panels
- Can be easily retrofitted to increase capacity
- AR-plated octagonal drum agitates material, opens bags and is easier to clean & repair
- 36 replaceable tungsten carbide-tipped teeth and optional ripper teeth to open bags

BHS

What's next.

BHS Metering Bin



Technical Specifications

Model	MB 30	MB 40	MB 50	MB 60
Capacity	30 yd.3 (23 m3)	40 yd.3 (31 m3)	50 yd.3 (38 m3)	60 yd.3 (46 m3)
Dimensions	W 9'- 8" (2.9 m) L 34'-0" (10.4 m) H 14'- 4" (4.3 m)	W 9'- 8" (2.9 m) L 39'-0" (11.9 m) H 14'- 4" (4.3 m)	W 9'- 8" (2.9 m) L 44'-0" (13.4 m) H 14'- 4" (4.3 m)	W 9'- 8" (2.9 m) L 49'-0" (14.9 m) H 14'- 4"(4.3 m)
Installed weight	43,682 lbs (19,814 kg)	44,096 lbs (20,002 kg)	45,842 lbs (20,794 kg)	47,588 lbs (21,586 kg)
Installed weight (Liberator Class)	47,284 lbs (21,448 kg)	48,479 lbs (21,990 kg)	51,006 lbs (23,136 kg)	53,533 lbs (24,282 kg)

Infeed Lip	10'-4-1/8" (3150 mm) high, stiffened with 8" (203 mm) structural channel
Wall Construction	Front and rear wall construction is 3/8 formed channel shaped pans
Teeth	36 tungsten carbide tipped
Drum	Heavy Duty Abrasion Resistant (AR) plates, replaceable
Bearings	CRS 1045 Dodge S-2000 roller bearing pillow blocks with triple lip seal
Drum Drive	SEW-EURODRIVE Premium Efficiency Motor Horsepower: 25 HP, 40HP, 60HP
Drive Shaft	CRS 1045 4-7/16" (113 mm) diameter with reducer
Tail Shaft	CRS 1045 2-7/16" (62 mm) diameter with Dodge S-2000 bearings and take-ups
Chain	Webster Chain, 9" (229 mm) pitch, RS 932F
Belt	PVC 350, with angle iron flights 3" tall (76 mm) Steel belting also available
Oil	Standard Synthetic
Liberator Package	Steel belt; ripper teeth; 60 HP drum drive

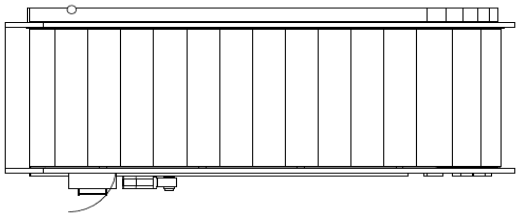
Bulk Handling Systems | 3592 West 5th Avenue | Eugene, OR 97402 USA | 1.866.688.2066 | bulkhandlingsystems.com

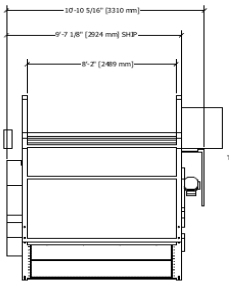
Equipment Detail

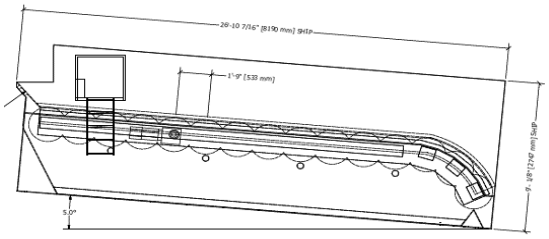
17 July 2018

BHS Scalping Screen

Application:	Separate lerge material from waste stream
Manufacturer:	Bulk Handling Systems
Model:	DRS98-15-762







Screen width:	2500mm [98”] wide screening surface
Screen Length:	Approximately 8.19m [26' - 11"] long
Shipping Weight:	Approximately 11,340 kg [25,000 lbs]
Discs:	Patented rubber tri-disc A1-762 on fifteen shafts
IFO:	Variable by fixed increments, suggested openings of 178mm x 254mm [7” x 10”]
Shafts:	Fifteen (15) total shafts on one (1) deck on 533 mm [21”] shaft centers
Bearings:	Pillow block bearings
Sprockets:	Hardened double-single timed sprockets with split taper bushings
Drive Chain:	RC 80
Motors:	One (1) 7.5 kW [10 HP] SEW energy efficient motor directly coupled to gear reducer
Noise:	<85 dB(a)
Reducers:	Shaft mounted reducer
VFD:	Variable frequency drives for operating flexibility are recommended
Drive Guards:	Drive system is enclosed in a solid guard with lift off door for easy removal and replacement. Grease fittings are plumbed to a common point outside guard for convenient bearing maintenance
Angle:	Fixed 5 degree decline
Auto-lube:	Automatic oiler system for the drive chain, which includes: reservoir, solenoid, distribution manifold, flexible tubing and adjustable brush applicators
Chutes	Included

BHS Paint Specification

Our standard BHS paint system will meet ISO 12944-5: 1998, corrosivity categories C2 and C3.

Our paint system consists of the following steps:

- Surface Preparation: ISO ST-2 thorough hand and power tool cleaning to remove unwanted and/or foreign matter.
- Primer: One coat of Rodda 733823x Low HAP Metal Primer II
- Topcoat: Two coats Rodda 758001x Quick Drying Equipment Enamel

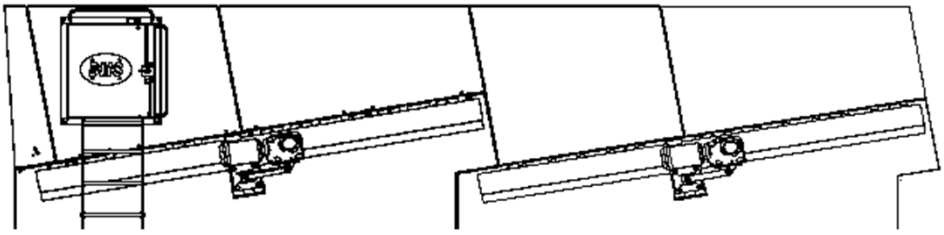
The total paint system as described above will achieve 120 microns NDFT, 4.7 mils.

Equipment Detail

17 July 2018

BHS Debris Roll Screen®

Application:	The Inter-Face Opening (IFO) of the DRS is specifically designed to maximize the removal of fines without the loss of valuable single serve containers.
Manufacturer:	Bulk Handling Systems
Model:	DRS84-11-11-236



Screen width:	2130mm [84”] wide screening surface
Screen Length:	Approximately 5.4m [17' 9"] long
Shipping Weight:	Approximately 4000 kg [9000 lbs]
Discs:	BHS patented in-line compound tri-disc design with BHS disc 2-233 / 2-236 on all shafts. Discs hardened to 400+ Brinell for long wear life
IFO:	2-233 / 2-236 with openings of 32mm x 57mm [1 ¼” x 2 ¼”]
Shafts:	Thirty (30) total shafts on two (2) decks with two (2) rollover shafts at the tail section on 222 mm [8 ¾”] shaft centers
Bearings:	Pillow block bearings
Sprockets:	Hardened double-single timed sprockets with split taper bushings
Drive Chain:	RC 80
Motors:	Two (2) 5.5 kW [7.5 HP] SEW energy efficient motor directly coupled to gear reducer
Noise:	<85 dB(a)
Reducers:	Shaft mounted reducer
VFD:	Not Included - Variable frequency drives for operating flexibility are recommended *(By Customer)*
Drive Guards:	Drive system is enclosed in a solid guard with lift off door for easy removal and replacement. Grease fittings are plumbed to a common point outside guard for convenient bearing maintenance
Angle:	Fixed 0 degree incline
Auto-lube:	Automatic oiler system for the drive chain, which includes: reservoir, solenoid, distribution manifold, flexible tubing and adjustable brush applicators
Chutes	Included

BHS Paint Specification

Our standard BHS paint system will meet ISO 12944-5: 1998, corrosivity categories C2 and C3.

Our paint system consists of the following steps:

- Surface Preparation: ISO ST-2 thorough hand and power tool cleaning to remove unwanted and/or foreign matter.
- Primer: One coat of Rodda 733823x Low HAP Metal Primer II
- Topcoat: Two coats Rodda 758001x Quick Drying Equipment Enamel

The total paint system as described above will achieve 120 microns NDFT, 4.7 mils.

BHS
Debris Roll Screen®

The **BHS Debris Roll Screen®** is the industry's flagship disc screen. This proven, patented technology is the premiere sizing tool for Single Stream, Municipal Solid Waste (MSW), Construction and Demolition (C&D) waste, wood waste, compost, green waste, plastics, glass, tires and various other materials.

The unique Tri-Discs™ are in-line from shaft-to-shaft, creating a precise opening for highly-accurate material sizing. Their hardened steel, triangular shape provides superior material agitation and true sizing in a small footprint.

The compound disc design provides precise sizing far superior to other disc or "star" screens. Patented gear timing paired with variable speed drives allows for fine tuning for varying material conditions.

Excellent material agitation and separation

Patented in-line discs provide accurate sizing of material, reducing product loss

Disc and shaft design reduces material wrap, increasing uptime

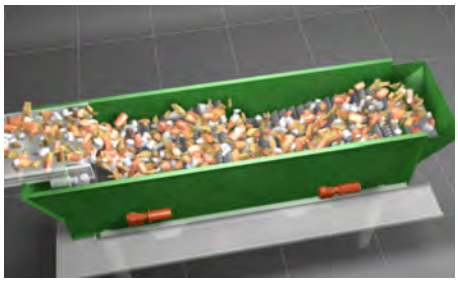
Heavy-duty discs ensure long disc life and reduced maintenance

BHS
What's next.

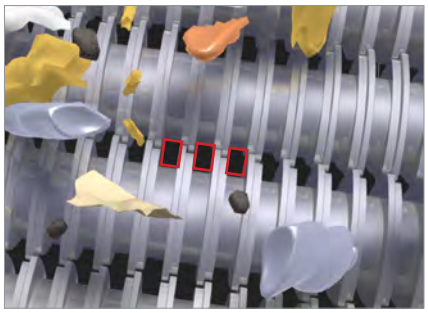
BHS Debris Roll Screen®

The Difference is the Discs

Our patented discs deliver superior sorting efficiency, material quality and throughput rates versus other screens. The BHS Debris Roll Screen® is unmatched in its ability to accurately sort a wide range of material from a variety of applications. The BHS' Tri Disc™ imparts a wavelike action into the material stream, efficiently and precisely sizing material and minimizing wrapping and jamming. Typical disc screens have uneven openings, allowing for inexact sizing and material wrapping and jamming.

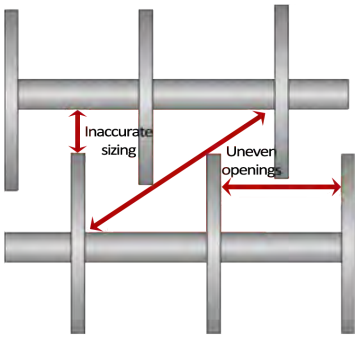


BHS DRS Screen



Precise openings

Conventional Disc Screen



General Specifications

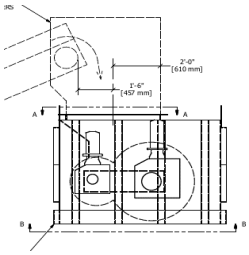
Screen width	Varies according to application
Inter-Face Openings	Varies according to application
Screen Angles	Varies according to application
Motors	SEW-EURODRIVE high efficiency gear motors
Reducers	Shaft mounted
Drive Guards	Drive system is enclosed in a solid guard with lift off door for easy removal and replacement. Grease fittings are plumbed to a common point outside guard for easy bearing maintenance.
Bearings	Dodge SC Tapped Base
Sprockets	80Q17 hardened double-single timed sprockets with split taper bushing.
Drives	RC 80 Chain-driven. Variable frequency drives recommended for operating flexibility, included with controls system.
Auto Lube	Automatic oiler system for the drive chain including reservoir, solenoid, distribution manifold, copper plumbing and adjustable brush applicators; easy sprocket, chain and bearing maintenance.

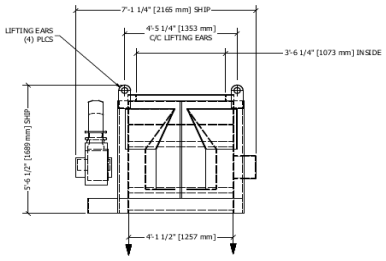
Equipment Detail

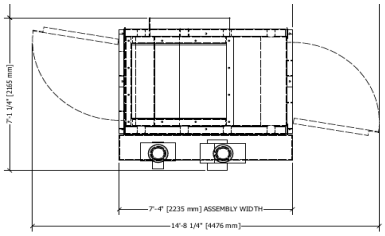
17 July 2018

BHS Bag Breaker®

Application:	The BHS Bag Breaker® is designed to minimize shredding of the bags to allow efficient recovery of film. The majority of the empty bags remain in one to three elongated pieces. The bags exit the machine with the released material.
Manufacturer:	Bulk Handling Systems
Model:	BB48







Width:	1220 mm [48"] wide
Length:	Approximately 2.11m [83"] long
Shipping Weight:	Approximately 3600 kg [8000 lbs]
Shafts:	Two (2) counter-rotating shafts with heavy-duty double row spherical roller bearings
Motors:	One (1) 7.5 kW [10 HP] and one (1) 1.5 kW [1 HP] SEW motor with Class II reducers
Noise:	<85 dB(a)
Controls:	Integrated into BHS System Controls
Access doors:	Two (2) large access doors reinforced with steel bracing with Signal latches
VFD:	Variable frequency drives for operating flexibility
Chutes	Included

BHS Paint Specification

Our standard BHS paint system will meet ISO 12944-5: 1998, corrosivity categories C2 and C3.

Our paint system consists of the following steps:

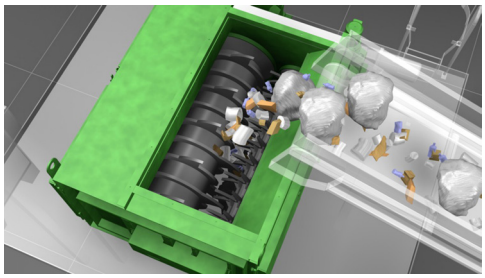
- Surface Preparation: ISO ST-2 thorough hand and power tool cleaning to remove unwanted and/or foreign matter.
- Primer: One coat of Rodda 733823x Low HAP Metal Primer II
- Topcoat: Two coats Rodda 758001x Quick Drying Equipment Enamel

The total paint system as described above will achieve 120 microns NDFT, 4.7 mils.

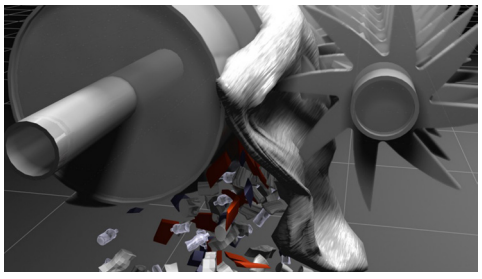
BHS Bag Breaker®

The **BHS Bag Breaker®** opens bags at high volumes without damaging content, ensuring maximum recovery of valuable recyclables. The patented Bag Breaker® uses large, counter-rotating drums to efficiently open the bags and release the contents, discharging them from the bottom of the machine. Bags are torn into large pieces for easy removal.

Bagged material can be fed directly into the BHS Bag Breaker® with an infeed conveyor to achieve an evenly-metered flow rate.



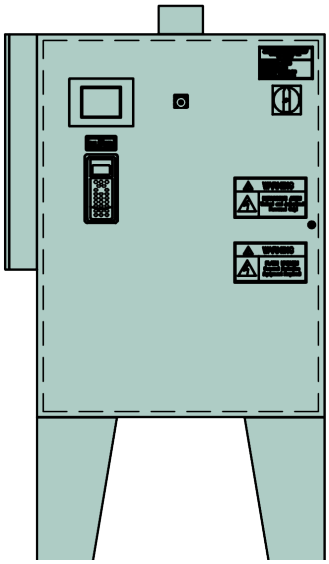
- Clean-out doors on two sides for easy access and maintenance
- Easy to retrofit into existing facility
- Opens bags without damaging valuable recyclables
- Bags are torn to large pieces rather than shredded for easy removal
- Heavy-duty construction for decreased downtime and long-operating life

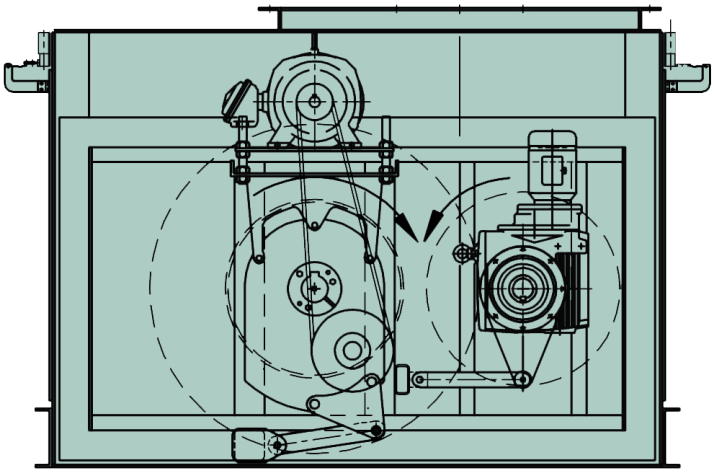


BHS

What's next.

BHS Bag Breaker®

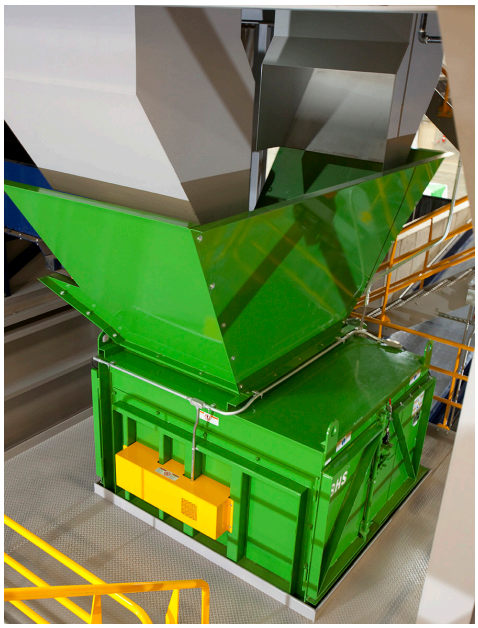




Technical Specifications

Model	BB-60	BB-72	BB-90
Capacity	up to 22 tph	up to 30 tph	up to 35 tph
Motors	10 hp , 1 hp (7.5 kW, 0.75 kW)	20 hp , 3 hp (15 kW, 2.2 kW)	20 hp , 3 hp (15 kW, 2.2 kW)
Access Doors	43"x 36" (1090 mm x 910 mm)	43"x 43" (1090 mm x 1090 mm)	43" x 52" (1090 mm x 1320 mm)
Dimensions	W 7'-7" (2.3 m) L 8'-1" (2.5 m) H 5'-2" (1.6 M)	W 8'- 1" (2.5 m) L 10'- 4" (3.1 m) H 5'-2" (1.6 m)	W 8'- 1" (2.5 m) L 11'-10" (3.6 m) H 5'-2" (1.6 m)
Shipping weight	7,900 lbs. (3,600 kg.)	10,100 lbs. (4,600 kg.)	13,100 lbs. (5,950 kg.)

Motors	Energy efficient motor with Class II gear reducer
Shafts	Two (2) counter-rotating shafts with heavy-duty double row spherical roller bearings; 3-15/16" (100mm)
Drum	Constructed of heavy-duty rolled plate with 3-15/16"(100mm) diameter, C1045 head shaft
Bearings	Dodge Type E
Controls	Control panel in NEMA 12 enclosure
Access Doors	Two (2) large access doors reinforced with steel bracing with signal latches



Equipment Detail

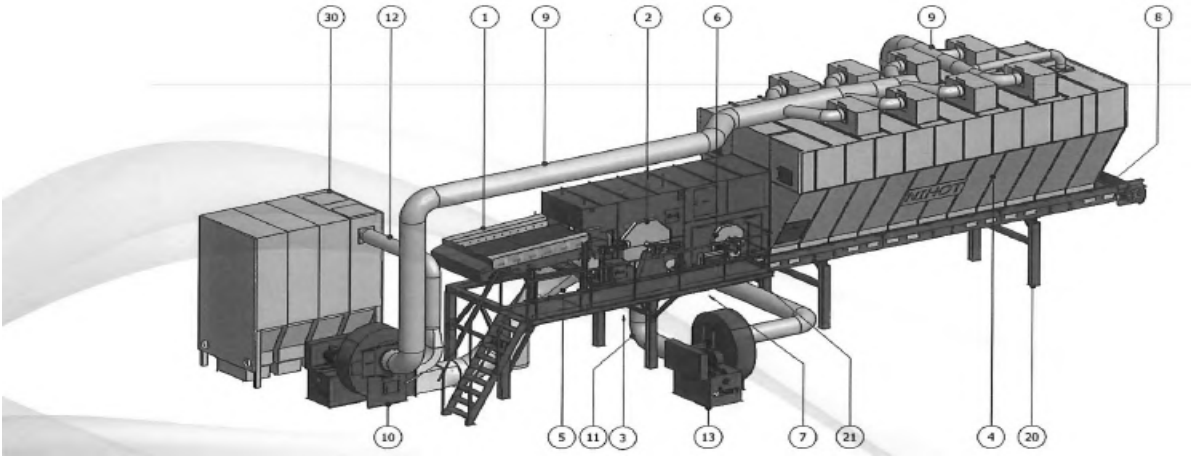
17 July 2018

Nihot Double Drum Separator

Application: Input material is separated into a heavy, mid-heavy and light fraction due to an installed second rotating splitter drum and second fan with blow nozzle.

Manufacturer: Nihot

Model: DDS1600



			Installed Power
1.	Product Input Conveyor (PIC)	1600x 2750mm	5.5 kW
2.	First splitter drum		2.2 kW
3.	Discharge heavy fraction		
4.	Expansion Room	3600x 9000mm	
5.	First air inlet		
6.	Second splitter drum		2.2 kW
7.	Discharge mid fraction		
8.	Light Fraction Discharge Conveyor	1600x 11,250mm	9.2 kW
9.	Air return duct		
10.	First recirculation fan	2x RF(I) 60	2x 30 kW
11.	Second air inlet		
12.	Dust duct		
13.	Second recirculation fan	RF 50	18.5 kW
14.	Support construction		
15.	Stairs and maintenance platform		
30.	Filter unit	Included	

Nihot Coating Specification

Nihot equipment is built using blank-stained and galvanized plates. Blank-stained steel plates are degreased with Sigma Thinner 91-80. The layer is treated with Sigma Steel QD which consists of a zinc phosphate primer (1x 40µm).

The finishing layer is 1x Sigma Steel QD Finish and can be applied in any RAL color according to customer specification (1x 40µm).

Drum Separators

Besides the superior separation efficiency, the Nihot Drum Separators are well known for their ability of handling large volumes of light fractions. The robust construction and foolproof functionality guarantee a long lasting and trouble free operation.

SDS: Single Drum Separators

The Single Drum Separator is a highly versatile separator that processes a large variety of waste streams into two fractions; heavy and light. This high capacity separator system is capable of processing e.g.:

- Bad shredded materials
- Waste containing large materials
- A high volume percentage of light materials
- Hard and bulky soft materials

DDS: Double Drum Separators

When a three-way separation is desired or a volume separation is required, the Nihot Double Drum Separator is a good solution. The input material is separated into a heavy, mid-heavy and light fraction due to an installed second rotating splitter drum and second fan with blow nozzle.

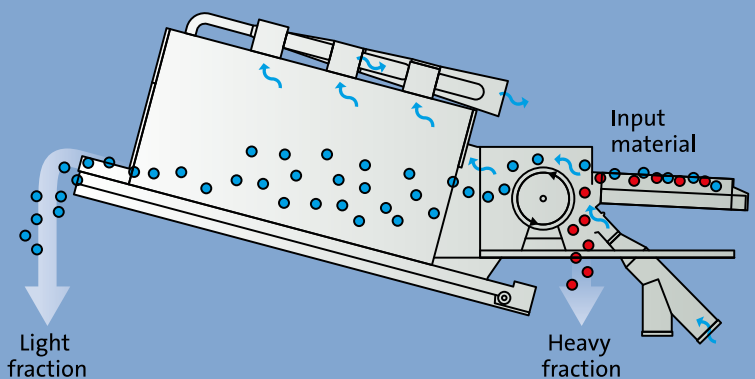
Advantages SDS & DDS

- Versatile – processes many different waste streams, including high moisture content input
- Gives control of the caloric value of the output
- Removes interferants from input, thus protecting the granulators in RDF refinement
- Low maintenance and few wear parts i.e. reduced downtime
- Can handle large fraction sizes (plastics and film)
- Low dust emission

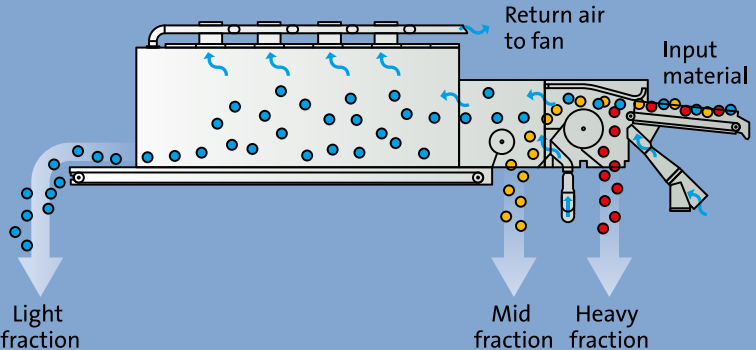
These benefits result in fast return on investment, low operating costs and superior reliability.

The operating principles

SDS: Single Drum Separator



DDS: Double Drum Separator

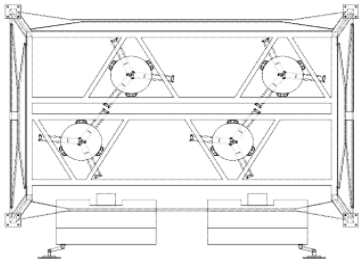


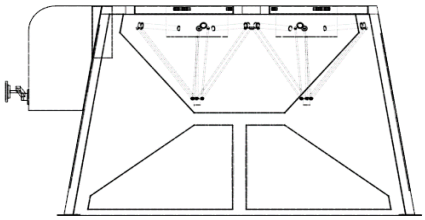
Equipment Detail

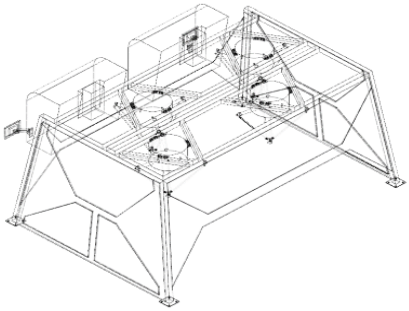
17 July 2018

Max-AI™ Autonomous QC

Application:	Identification and sorting of recyclable containers for recovery. Dual-frame, quad-robot configuration for sorting from two parallel conveyors with common chutes in between.
Manufacturer:	NRT
Model:	AQC-4







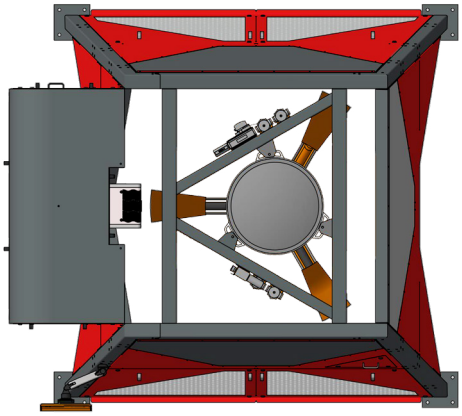
Approx. Dimensions (L x W x H)	10' x 20' x 9' (2.9m x 5.8m x 2.6m)
Machine Weight	Approx. 14,000 lbs. (6,400 kg)
Picking Rate	up to 240 picks/minute
Max Object Weight	1 lb. (0.5 kg)
Coating	powder coated with a textured finish
Structure Color	RAL 7012 (dark gray)
Conveyor Speed	180 ft./min (55 m/min)
Air Supply	160 scfm @100psig (4.5 m^3/min @ 6.9 BAR) per arm
Power Supply (By Customer)	40A 230V 50/60Hz
Delta bot robotic sorter	4x Included
UL or CE Certification	Included
Vision system and enclosure	Included
Max-AI™ neural network license	Included
Suction based grasping system	Included

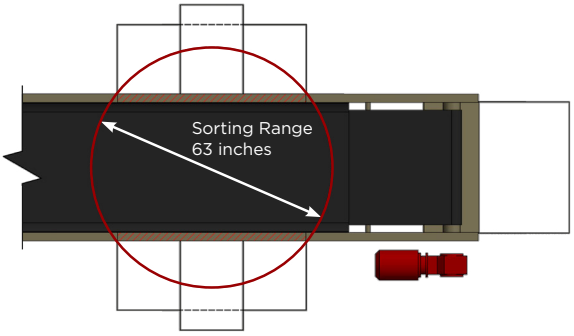
MAX·AI® AUTONOMOUS QC

Max-AI® Autonomous Quality Control (AQC) sorters are the ultimate in post-sort automation. When combined with NRT optical sorters, the container sorting process is 100% autonomous and the need for human contact with waste is eliminated.

The AQC makes multiple sorting decisions autonomously; for example separating thermoform trays, aluminum, 3D fiber and residue from a stream of optically-sorted PET bottles. All of this is done at rates exceeding human capabilities and each pick is prioritized for profitability.

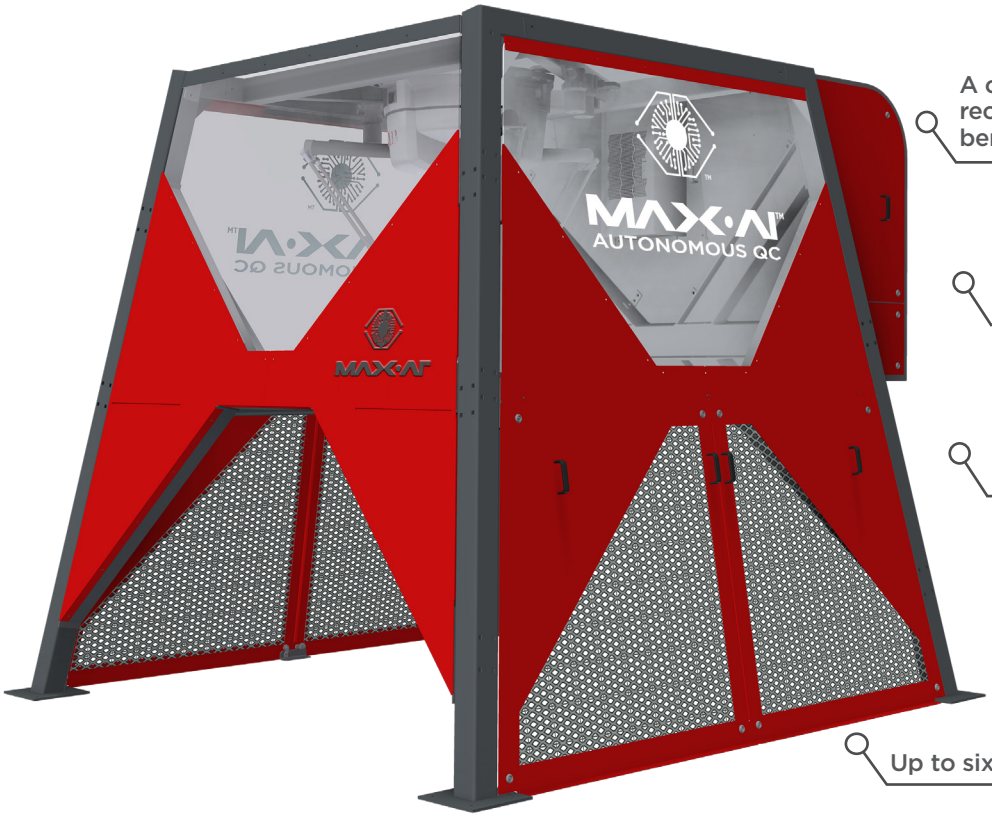
This advanced technology uses a machine vision system to see the material, specialized artificial intelligence to think and identify each item, and a robot to pick targeted items or contamination. Max-AI AQC sorters provide MRF operators with sustained and consistent sorting performance while improving MRF safety, recovery, product quality and operational expenses.





Max Autonomous QC

The Max AQC automates QC positions and positively recovers recyclables



A completely autonomous high-volume recovery solution. Provides additional benefit when paired with NRT sorters.

Advanced neural networks can be retrained to identify new materials as waste streams change.

Exceeds human capabilities in every metric including pick rate, accuracy, & uptime; and sustains those capabilities every minute of the day.

Picks are prioritized by value, weight, or other operator specifications. Priorities are easily adjusted when market conditions change.

Up to six discrete sorts from a single unit.

CONTAINER LINE SORTS

- PET BOTTLES
- PET TRAYS
- HDPE-N
- HDPE-C
- MIXED PLASTICS
- CARDBOARD
- ASEPTICS/ CARTONS
- ALUMINUM
- MIXED PAPER
- BLACK PLASTICS

FIBER LINE SORTS AVAILABLE SOON

- CONTAINERS
- CARDBOARD
- RESIDUE

I am Max. I was created to do this job.

"I don't get sick. I don't need breaks, lunches or days off. I work harder, longer and better than anyone else. I'm more accurate and more efficient than anyone could be. Thanks to my intelligent neural network, I'm capable of learning on the job so I can adapt to changing conditions and variables. I was created to do this job and I look forward every day to fulfilling my promise while lowering costs, improving productivity and delivering higher profits for my employers."

max-ai.com

BULK HANDLING SYSTEMS | Eugene, Oregon USA | 866.688.2066 | bulkhandlingsystems.com

BHS NIHOT® nrt ZeroWaste™

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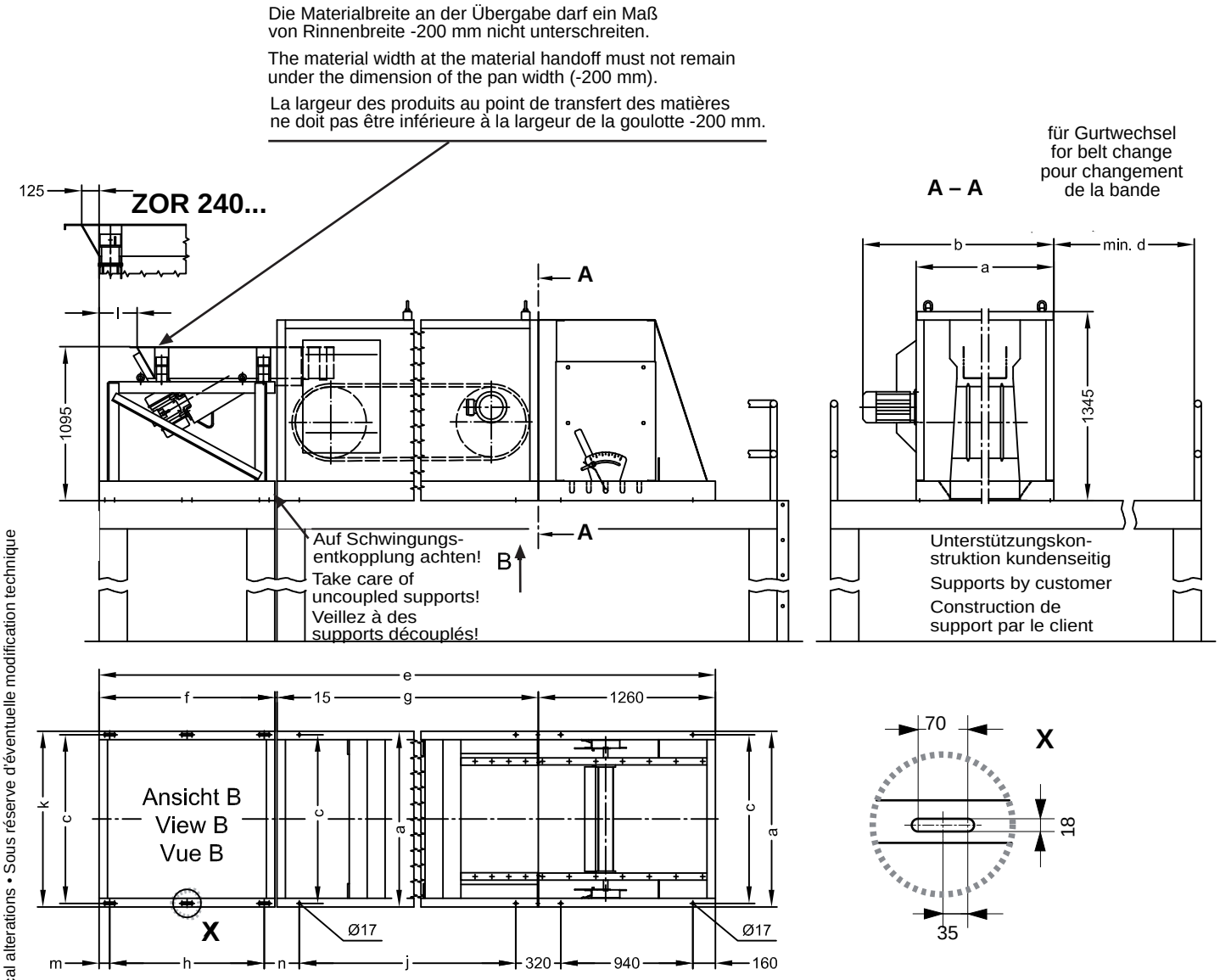
Einbauvorschlag für Nichteisenmetallscheider
Mounting-Proposal for Non-Ferrous Metals Separator
Proposition de montage pour séparateur de métaux non-ferreux

STEINERT Elektromagnetbau GmbH • Widdersdorfer Str. 329-331, D-50933 Köln • Tel.+49 (0) 221 49 84 0 • Fax +49 (0) 221 49 84 102 • sales@steinert.de

Mitgeltende Datenblätter / See additional Technical Data / Voir aussi fiches techniques: **TD ZOR • TD NES • TD ALK**



Typ Type Type	Abmessungen Dimensions Dimensions															Antriebe Drives Entraînement				
		E 36...	E 50...	E 61...												Vibr. Rinne Vibr. feeder couloir vibrant	Band belt courroie	Polsystem Pole system système polaire		
	a	b	b	b	c	d	e	f	g	h	j	k	l	m	n			E 36...	E 50...	E 61...
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kW	kW	kW	kW	kW
NES 50 1.0 E...	1250	-	1560	1622	1200	1000	4625	1250	2100	2x550	2x890	1250				2 x 0,4	2,2	-	4,0	5,5
NES 75 1.0 E...	1380	-	1695	1766	1330	1250						1380				2 x 0,6	2,2	-	4,0	7,5
NES 100 2.0 E...	1630	2083	1944	2078	1580	1500						1630	270	75	250	2 x 0,8	2,2	5,5	4,0	9,2
NES 125 2.0 E...	1880	2333	2060	2328	1830	1750	5675	1500	2900	2x675	3x860	1880				2 x 1,2	2,2	5,5	5,5	9,2
NES 150 2.0 E...	2130	2583	2510	2578	2080	2000						2130				2 x 1,2	3,0	5,5	5,5	9,2
NES 200 2.0 E...	2630	-	3010	3078	2580	2500	6375	2200		3x680		2650	120	80	255	2 x 1,6	3,0	-	5,5	9,2
NES 250 300 E...	3130	-	-	3610	3080	3000	7630	2455	3900	3X765	5X720	3150	-	80	245	2 x 3,0	3,0	-	-	7,5

Technische Änderungen vorbehalten • Subject to technical alterations • Sous réserve d'éventuelle modification technique

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Überbandmagnetscheider UME…R
Overband Magnetic Separator UME…R
Séparateur magnétique de type „Overband“ UME…R

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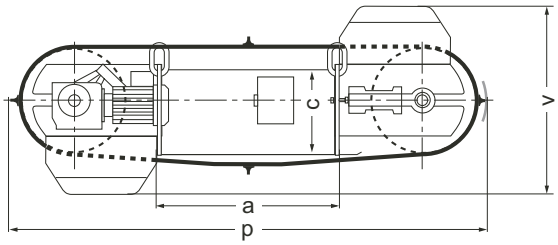

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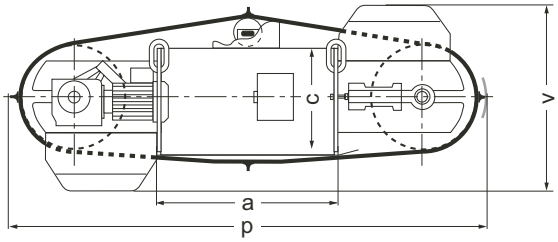

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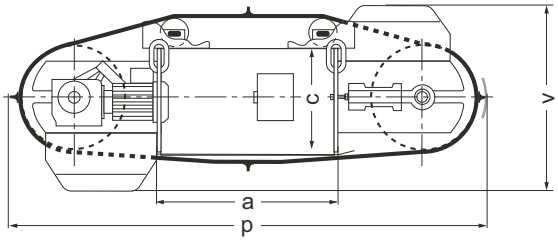

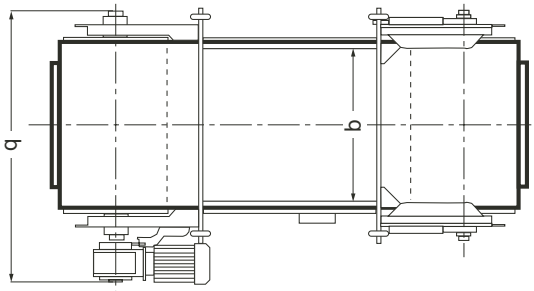

Typ Type Type	Nenn-leistungs-aufnahme Rated power input Puissance nominale	Anschluß-spannung Operating voltage Tension de service	Abstand max. Maximum clearance Distance max. re-comandée**	Anordnung über Förderband* Arrangement over belt width * Disposition au-dessus de la largeur de la bande*		Abmessungen Dimensions Dimensions						Bild picture vue	Motor-leistung Motor capacity Puissance du moteur	Austrags-band-geschwin-digkeit Speed of discharge belt Vitesse de la bande de debit	Gewicht ca. Weight approx. Poids env.
				quer across trans-versale	längs in-line longitu-dinale	a	b	c	p	q	v				
	kW	Volt	mm	mm	mm	mm	mm	mm	mm	mm	mm		kW	ca. m/s	kg
UME 75 90 RF	2,7		330	1000	800	915	760	430	2295	1327		A			1550
UME 90 105 RF	3,2	80	360	1200	1000	1060	910	400	2440	1507	910		3	2,1	1850
UME 125 140 RF	5,2		470	1400	1200	1370	1220	435	2744	1807		B			3150
UME 75 90 R	3,1	63	350	1000	800	880	740	415	2290	1322					1600
UME 75 110 R	3,5	75		1200		1080			2490			A			1850
UME 95 110 R	4,1	95	420		1000		940	425		1522	910		3		2250
UME 95 130 R	4,3	105		1400		1280			2690			B		2,1	2700
UME 115 130 R	6,1	95	490		1200		1140	500		1722					3550
UME 115 150 R	6,9	108		1600		1480			2890						4200
UME 135 150 R	7,8	126	560		1400	1500	1350	510	3170	2046	1000				6300
UME 135 170 R	8,3	138		1800		1700			3370		1000	C	4		6900
UME 160 175 R	12,3	208	680		1700	1725	1600	666	3395	2300	1150		5,5	1,7	10 000
UME 180 195 R	14,7	192	730	2000	2000	1950	1800	786	3620	2500	1270				15 500

* Gemuldetes Band nach DIN 22101. / * Belt with throughing angle acc. DIN 22101. / *Bande en auge selon DIN 22101.

Abst. zwischen Polfläche und Oberkante Förderband / **Clear. between pole surface and conveyour belt /Dist. entre surface de pôle et courroie du convoyeur

Technische Änderungen vorbehalten • Subject to technical alterations • Sous réserve d'éventuelle modification technique

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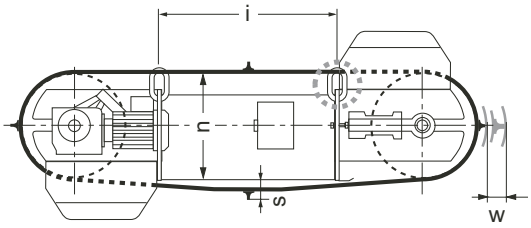

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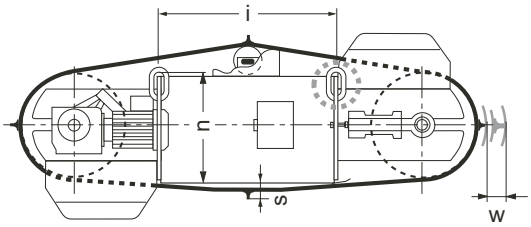

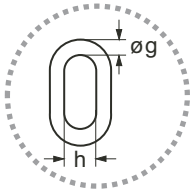

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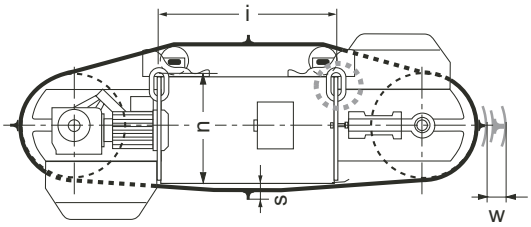
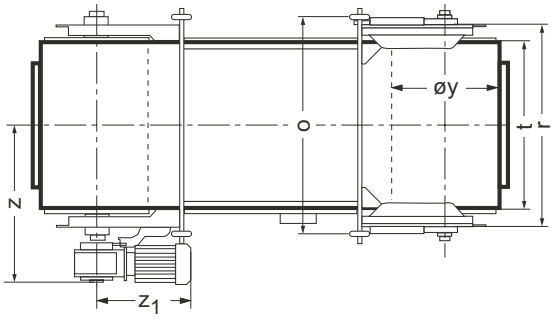


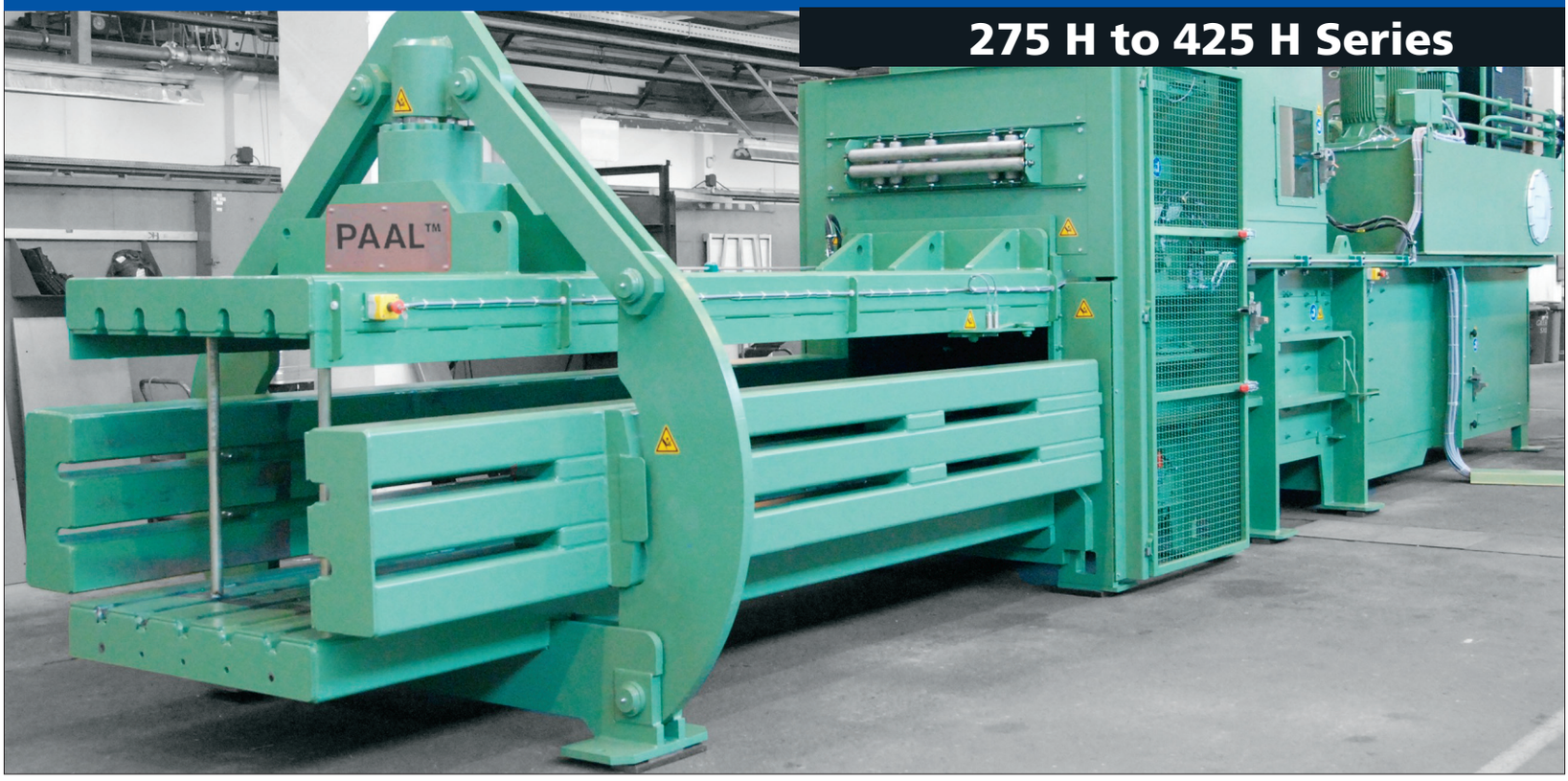


Typ Type Type	Abmessungen Dimensions Dimensions												Bild picture vue
	g	h	i	n	o	r	s	t	w	y	z	z_1	
	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	
UME 75 90 RF			900		1100	970	84	800			753		A
UME 90 105 RF	22	50	1045	520	1280	1150		950	50	506	843	454	
UME 125 140 RF			1350		1530	1450	124	1250			993		B
UME 75 90 R			860		1050	970	80	800			764		
UME 75 110 R			1060				85		50				A
UME 95 110 R	22	50		524	1250	1170		1000			864	454	
UME 95 130 R			1260				95						B
UME 115 130 R					1450	1370		1200		506	964		
UME 115 150 R			1460	639			100						
UME 135 150 R	22	50	1480	524	1760	1630		1400	80		1139	509	
UME 135 170 R			1680										C
UME 160 175 R	26	100	1685	814	2000	1880	110	1600			1266		
UME 180 195 R			1910	934	2200	2080		1800			1366		

Technische Änderungen vorbehalten • Subject to technical alterations • Sous réserve d'éventuelle modification technique

PAAL Konti™ Baler

275 H to 425 H Series



Kadant PAAL's Konti H channel baler features high throughput and bale weights with low energy consumption.

Features of the PAAL Konti H channel baler

- Optimized knife, stamper, and channel design
- Modern axial piston pumps with low drive power
- Advanced positional ram measurement system
- Large door at rear section of baler
- PLC offering remote access and service as well as high resolution operator panel

Benefits of the PAAL Konti H channel baler

- High throughput and bale weights
- Low energy consumption
- Easy access to tying unit via optional ladder to three-sided platform
- Simple operation and maintenance
- Low total cost of ownership

Kadant PAAL was founded in 1854 in Osnabrück, Germany. Since its introduction of the first continuously operated horizontal baler in 1960, PAAL has delivered more than 30,000 machines and today is the #1 channel baler manufacturer in Europe.

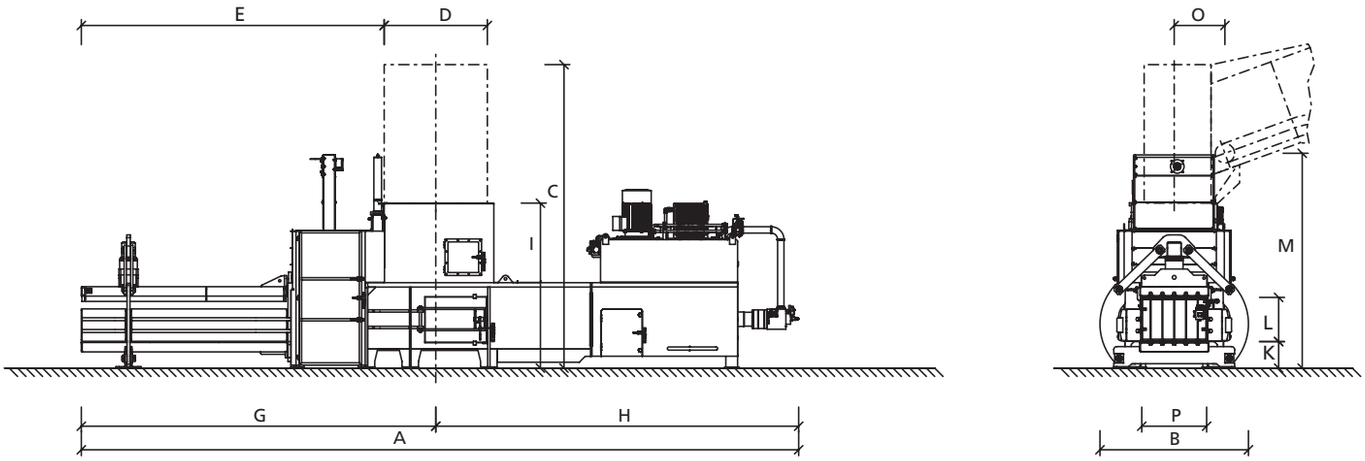
KADANT

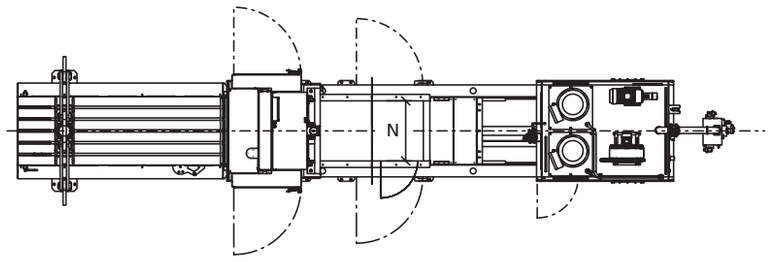
PAAL KONTI BALER 275 H TO 425 H SERIES

Technical data and measurements

PAAL KONTI H SERIES		275 H			325 H				425 H				
Pressing force	US tons	90			111				134				
Spec. pressing force	psi	141			174				210				
Tunnel cross section	inch	30 x 44			30 x 44				30 x 44				
Hopper opening	inch	63 x 41			69 x 41				79 x 41				
Feeding volume	yd³	2.62			2.81				3.10				
Number of wires	pieces	5			5				5				
Driving power	HP	50	74	2x 50	50	74	2x 50	2x 74	60	74	2x 50	2x 74	3x 74
Press output (ideal)	max. yd³/h	543	798	942	458	680	811	1,151	386	589	706	1,027	1,373
Press output (under load)	max. yd³/h	327	477	589	275	405	504	713	262	360	451	647	876
Press capacity (weight)													
• 59 lb/yd³ (e.g., flattened OCC)	US t/h	9.4	13.8	17.1	8.3	12.1	14.9	20.9	7.7	10.5	13.2	18.7	25.9
• 101 lb/yd³ (e.g., mixed paper)	US t/h	16.0	23.1	28.1	13.2	19.8	24.3	33.6	12.7	17.6	21.5	30.9	41.9
• 169 lb/yd³ (e.g., newspaper, magazines)	US t/h	23.7	33.6	40.8	19.8	28.7	35.3	48.0	19.8	25.9	32.5	44.6	58.4
Baler weight	US tons	28			31				39				

Dimensions are in inches.





	A*	B	C	D	E	G	H*	I	K	L	M	N	O	P
KONTI 275 H	433.5	87.8	202.8	63.0	174.7	206.2	227.3	110.2	17.7	29.5	144.5	40.2	33.9	43.3
KONTI 325 H	476.0	99.6	202.8	68.9	202.2	236.7	239.3	110.2	17.7	29.5	144.5	40.2	33.9	43.3
KONTI 425 H	523.4	104.3	202.8	78.7	225.9	265.2	258.2	110.2	17.7	29.5	144.5	40.2	33.9	43.3

**Maximum length for specified hopper opening*

Dimensions are in inches.

BULK HANDLING SYSTEMS | 866-688-2066 | SALES@BHSEQUIP.COM
EXCLUSIVE DISTRIBUTOR OF PAAL BALERS TO MRFs IN THE U.S. & CANADA

PAAL Konti Baler 275 H to 425 H Series-1000 (BHS US) 04/2017
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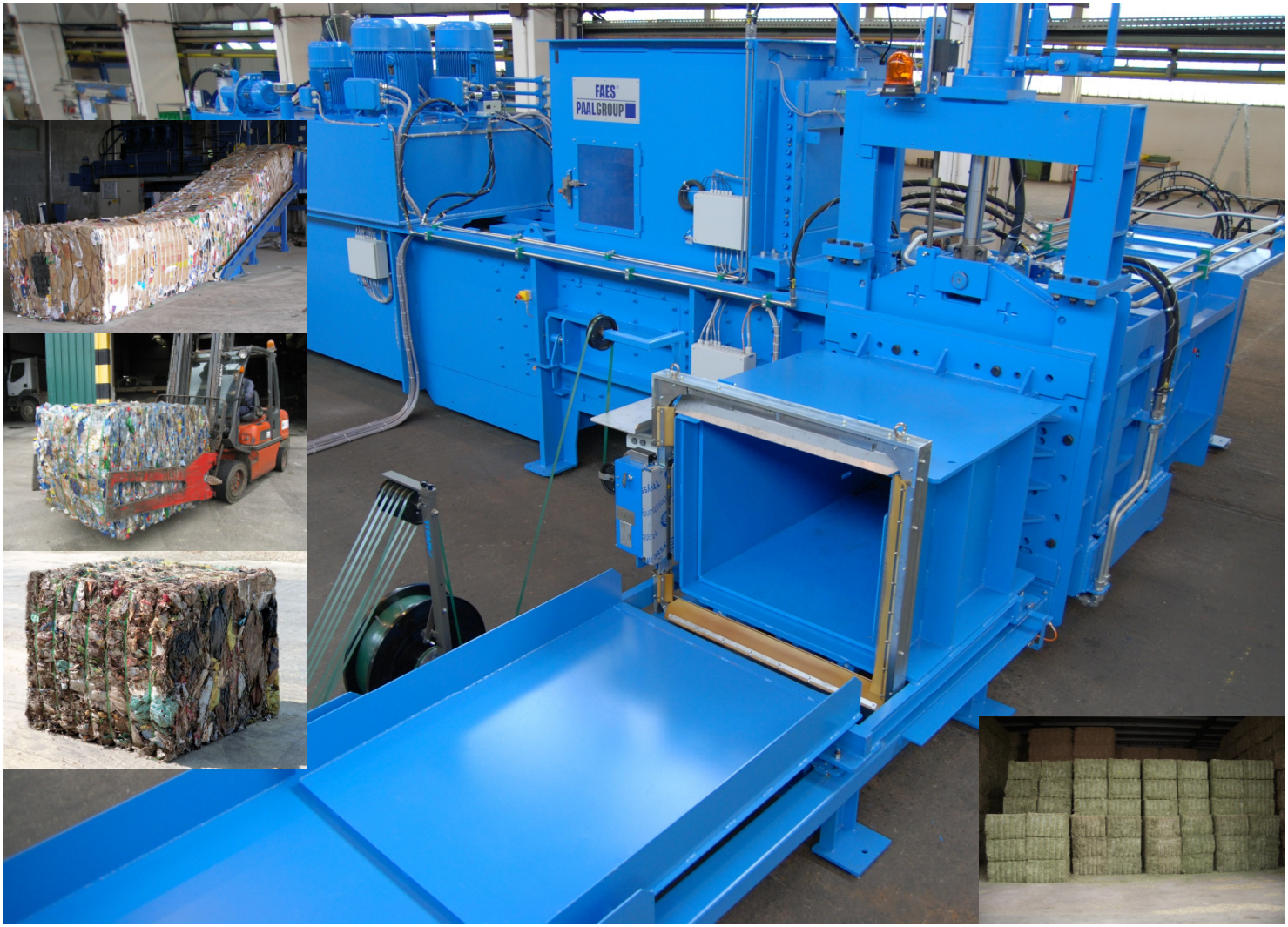


HTR-B

NEW

HIGH COMPRESSION TWO-RAM BALER WITH PLASTIC TYING SYSTEM

KÄDANT

PAAL®

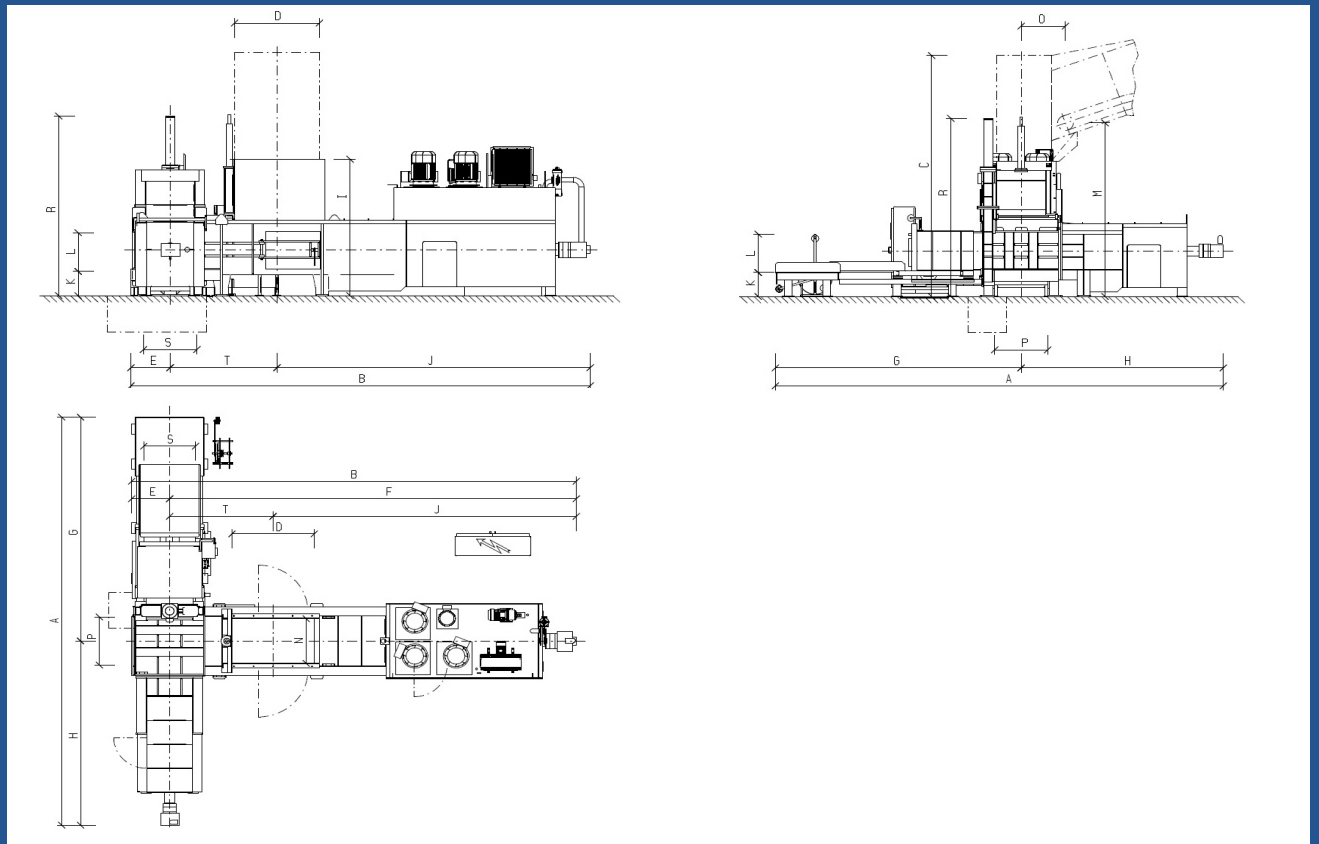
Technical data and measurements

HTR		425			700	
pressing force	t (kN)	122 (1197)			198 (1940)	
spec. pressing force	N/cm²	136			160	
press box dimension	cm	80 x 110 x 94			110 x 110 x 94	
hopper opening	cm	175 x 102			200 x 102	
number of tyings	pieces	6 or more			6 or more	
driving power	kW	55	2x 55	3x 55	2x 55	3x 55
press output (at input density of 80 kg/m³)	max. m³/h	170	255	295	280	345
press output (at input density of 150 kg/m³)	max. m³/h	145	225	270	235	300
press output (at input density of 200 kg/m³)	max. m³/h	135	205	245	220	275
press capacity (weight)						
• 80 kg/m³ e.g. alfalfa or grass	ca. t/h	14	20	24	22	27
• 150 kg/m³ e.g. RDF	ca. t/h	22	34	40	35	45
• 200 kg/m³ e.g. MSW	ca. t/h	27	41	49	44	55
baler weight (according to equipment)	ca. t	40			50	

Dimenssions in mm	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	R	S	T
HTR 425	9239	9459	5360	1750	808	8651	5100	4139	3010	6451	535	800	3835	1020	920	1100	3963	940	2200
HTR 700	9423	10211	5640	2000	908	9303	5205	4218	3290	6813	535	1080	4115	1020	920	1100	4908	940	2490

Special FEATURES of the new HTR two-ram baler:

- Multipurpose baler for compacting municipal solid waste (MSW), refuse derived fuel (RDF), recyclable material like plastic, carton, paper, etc. and agriculture material like alfalfa, grass, straw, etc. into high density bales
- Automatic binding with polyester straps incorporated on the telescopic tunnel
- Reduces operating cost: lower transportation (high bale density) and lower consumables (binding with polyester straps)
- Bales tied with polyester straps are ideal for incineration because plastic does not damage the incineration equipment as it is burned during the process
- Binding process is carried out during compaction process of next bale
- Easy operation by a new multi-functional 9” Touch-Panel with recipe management and comprehensive display of functions and data including data transfer

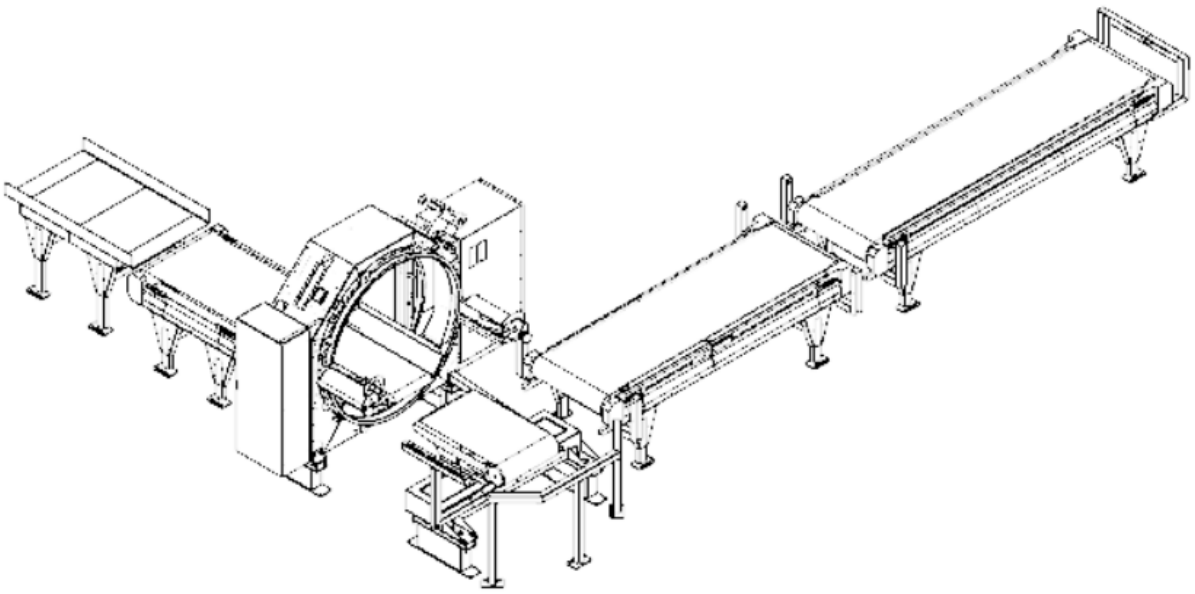


www.kadantpaal.com

Stand 12/16

CW 2200-SW-750-1-5 wrapping line

Front conveyor (L=1900 mm)	1 pc
Wrapping unit	1 pc
Rear conveyor (L=4900 mm)	1 pc
Standard safety fences	1 set
Remote access device for a 3G/4G/network cable/WLAN connection	1 pc
Hydraulic system	1 pc
Electric system	1 pc
Control system	1 pc
Oil cooler	1 pc
Operation manual in English	2 pc on paper, 1 CD



TECHNICAL INFORMATION

Features

Capacity

Wrapping cycle speed is ca. 60 seconds per bale

Baler	HTR 700
Bale dimensions	
Width:	1200 mm
Height:	1200 mm
Lengths (min-max):	1300 mm
Weight max:	2000 kg
Weight min:	400 kg
Baled material:	RDF/MSW

Wrapping film

Cross Wrap recommends stretch film 25 micron, width 750 mm, max Ø 240 mm, weight max 25 kg.

Wrapping process description

* The wrapping line recognises a bale when it is coming to the first conveyor after the baler.
* The wrapping line measures the length of the bales and starts wrapping them automatically.
* After wrapping, the wrapped bale waits for the next bale on the rotation table. When the new bale has reached a certain place, the wrapped bale moves forward to the store conveyor and the new bale is wrapped vertically at the same time. Wrapping film is transferred to the next bale automatically, no manual operations are needed.
* The automatic wrapping process is optimized so that extra film is only wrapped where strongest protection is needed. The number of layers can be modified.
* When the bale has been wrapped, it can be lifted from the store conveyor with a forklift equipped with a bale clamp.
* Wrapping cycle speed is approximately 60 seconds per bale when using 5 layers of film per bale (does not include film roll change or downtime).
* The machine is designed to handle bales consisting of waste material.
* If the shape of the waste bale is not optimal, the system needs an operator to control the wrapping process.

What's next.

BHS WORLD HEADQUARTERS | **Eugene, Oregon USA** | **866-688-2066** | **sales@bhsequip.eu** | bulkhandlingsystems.com

BHS EUROPE | **Amsterdam, The Netherlands** | **+31 (0) 20 58 220 30** | **info@bhsequip.eu** | bulkhandlingsystems.com

ATTACHMENT 4

BIOSOLIDS PROCESS FLOW DIAGRAM

Appendix A: Process Flow and Preliminary Basis of Design

The Facility will include the following five major processes:

- Liquid/Thickened Sludge Receiving and Storage System
- Dewatering System
- Dewatered Cake Receiving and Storage System
- Cake Mixing System
- Drying System

Sources of Solids

The facility will receive both thickened sludge and dewatered cake. The thickened sludge will be generated from New Bedford. The dewatered cake will be generated from Brockton and Fall River. Refer to **Table 1**.

Table 1: Solid Generation

Type	Source	Total Solids (%)	Solids Load (DTPD)	Mass (DTPY)	Comments
Thickened Sludge	New Bedford	7	19.5	7,132	Annual Average (2017)
Dewatered Cake	Brockton	28.5	11.9	4,328	Average (2015-2017)
Dewatered Cake	Fall River	20	13.7	5,000	Annual Average (2016)
TOTAL		-	**45.1**	**16,460**	

Table 2: Peaking Factor Assumptions

Condition	Peaking Factor (PF)
Annual Average: Max Week	1.8
Annual Average: Max Month	1.5

Refer to **Figure 1** for a preliminary process flow diagram and mass balance.

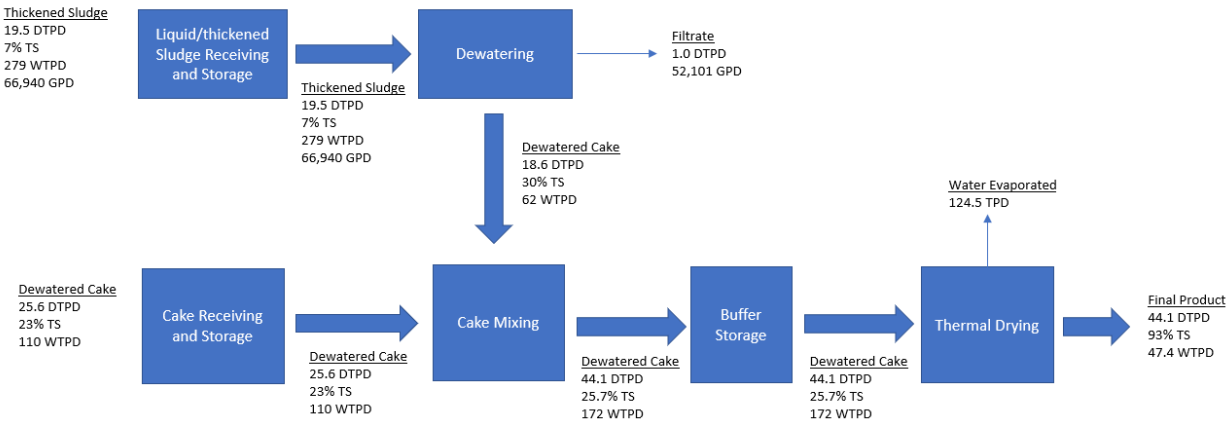


Figure 1: Preliminary Process Flow Diagram and Mass Balance

The following describes sizing assumptions regarding the various processes used to develop information included in this memorandum:

- **Liquid/Thickened Sludge Receiving and Storage System:** The system will be designed to receive approximately 20 DTPD, at an assumed total solids percent (TS%) of 7%. This is the equivalent of approximately 67,000 gallons per day (GPD). The system will include the following:
  - Three days of storage capacity via buried concrete tanks
  - Tank mixing system
  - Rotary lobe pumps to transfer sludge to the dewatering system
  - Odorous air take-offs from tank headspace

- **Dewatering System:** Dewatering system will produce cake with a minimum TS% of 30% (based on input received from TCR). The dewatering system will be required to have a minimum solid capture rate of 95%. The filtrate/centrate produced from the dewatering system will be conveyed to the municipal sewer. A polymer system will be provided and include polymer blending systems and polymer storage. Overall, the system will include the following:
  - 2 dewatering units (duty/standby)
  - 2 polymer storage tanks and recirculation pumps
  - 2 polymer make-up units
  - Odorous air take-offs from dewatering equipment headspace near the discharge chute
  - Constructed in a building with odor control provided

- **Dewatered Cake Receiving and Storage System:** The system will receive approximately 25 DTPD and have a storage capacity of approximately 3 days. The system will include the following components:

- 2 receiving silo/hoppers
- Conveyance equipment
- Odorous air take-offs from hopper headspace
- Constructed in a building with odor control provided

- **Cake Mixing System:** The cake mixing system will receive cake from the dewatering system as well as the dewatered cake from the Dewatered Cake Receiving and Storage Facility and have a design capacity of up to 50 DTPD. The cake mixing system will provide mixing of the various cake sources and provide buffer storage to the drying unit.

- **Drying System:** A thermal dryer system will be provided with a capacity of 50 DTPD, with an influent cake TS% ranging from 25% to 30%. The final product will have a TS% greater than 90%. The drying facility will include the following:
  - Belt dryers
  - Constructed in building with odor control provided
  - Upstream buffer storage of 8 hours provided
  - Final product storage silos to provide 7 days of storage

ATTACHMENT 5

BIOSOLIDS EQUIPMENT SIZING

Appendix B: Preliminary Equipment Sizing

Liquid Receiving and Storage

Parameter	Annual Average Conditions	Max Month Conditions	Max Week Conditions
Received Volume, gal/day	66,940	100,410	120,492
Received Mass, lbs (dry)/day	39,079	58,619	70,343
TS%	7%	7%	7%

Parameter	Assumption	Note
Tank Type	Buried	
Tank Material	concrete	
Tank Mixing Provided	Yes	Chopper Pumps
No of Tanks	Two	
Required Storage, days	3	Sized for Max month
Volume per Tank, gal	190,000	Assuming 80% usable volume
Transfer pump type to Dewatering	Rotary Lobe Pump	Duty/Standby at MW condition
Odor Control	Yes, for headspace	Sized for two tanks, half-full
Total Electrical usage per year, kwH	587,910	Assume 24 hour per day operation

Dewatering

Parameter	Annual Average Conditions	Max Week Conditions	Max Month Conditions
Received Volume, gal/day	66,940	120,492	100,410
Received Mass, lbs (dry)/day	39,079	70,343	58,619
TS%	7%	7%	7%

Parameter	Assumption	Note
Min. solids capture	95%	
Manufacturer and Model	Schwing Model 11.03 Screw Press	
Duty Units	1	
Standby Units	1	
Location	Inside Building	
Min. TS%	30%	Based on input provided by TCR. TCR conducted dewatered pilot tests using the

		Schwing dewatering screw press.
Filtrate/centrate	Gravity to sewer	
Washwater	Potable Water	Assumed washwater booster pumps not required
Odor Control Provided	Yes	
HVAC required	Yes	Per NFPA 820 Requirements
Operating time	168 hours/week	7 days/week,24 hours/day
Total Electrical usage per year, kwH	192,175	

Cake Receiving and Storage

Parameter	Annual Average Conditions	Max Week Conditions	Max Month Conditions
Received Mass, lbs (dry)/day	51,112	92,002	76,668
TS%	23%	23%	23%

Parameter	Assumption	Note
Manufacturer	Schwing	
Required Storage, days	3	At AA conditions
Location	Inside	For freezing and odor considerations
No of Silos	2	
Volume per silo, CF	2,450	
Transfer type to cake mixing	Screw conveyor	
Odor Control	Yes	
Building	enclosed	
Total electrical usage per year, kwH	422,425	Assume 24 hour per day operation

Cake Mixing

Parameter	Annual Average Conditions	Max Week Conditions	Max Month Conditions
Cake Mass, lbs (dry)/day	88,238	158,828	132,357
Cake Volume, CY	196	352	294

Parameter	Assumption	Note
Manufacturer and Model	Schwing 350 mm mixer	
Transfer type to buffer storage/Drying	Screw conveyor	Sized for MW condition
Odor Control	Yes	
Total Electrical usage per year, kwH	424,600	Assume 24 hour per day operation

Drying

Parameter	Annual Average Conditions	Max Week Conditions	Max Month Conditions
Cake Mass, lbs (dry)/day	88,238	158,828	132,357
Cake Volume, CY	196	353	294

Parameter	Assumption	Note
Upstream Buffer Storage, hours	8	
Buffer Storage Silo Volume, CY	30	At MW conditions
Dryer Manufacturer and Model	Gryphon Model 1060U	
Duty Units required	4	
Location	Inside Building	
Min. TS%	93%	
Condensate	Gravity to sewer	
Final conveyance	Belt conveyor	
Building	Yes	Shared with other unit processes (dewatering, cake receiving, etc)
HVAC required	Yes	Per NFPA 820 requirements
Final Product storage	7 days	At MW conditions
Final Product storage silo Volume, CY	1,110	At MW conditions
Operating time	168 hours/week	7 days/week, 24 hours/day
Total Electrical usage per year, kwH	3,409,125	

ATTACHMENT 6

NOTICE OF INTENT

CITY OF NEW BEDFORD
MASSACHUSETTS

CONSERVATION COMMISSION
2018 FILING FEE CALCULATION WORKSHEET*

PROJECT LOCATION:

100 Duchaine Boulevard - New Bedford, MA 02745 **MAP** 134 **LOT(S)** 5

APPLICANT: Tim Cusson - Parallel Products of New England

CONSERVATION COMMISSION FEES (check all that apply):

( ) REQUEST FOR DETERMINATION OF APPLICABILITY
(✔) NOTICE OF INTENT
( ) AMENDED ORDER OF CONDITIONS
( ) EXTENSION PERMIT
( ) CERTIFICATE OF COMPLIANCE
( ) AFTER THE FACT FILING

(A.) ALTERATION FEES:
Application and field review of a project proposed in a Wetland Resource Area or its Buffer Zone is $200.00 plus the applicable alteration fee as follows

	AMOUNT DUE
• Application and Field Review Fee ($200.00)	$200.00
• $0.50 X 4,910 SF Wetland Resource Area Fee shall not exceed $2,000.00 per project	/$ 2,000 (N.T.E.)
• $0.05 X _____ SF Land Subject Coastal Flooding Fee shall not exceed $500.00	$
• $0.50 X 2,110 SF Developed Riverfront Area Fee shall not exceed $1,500.00	$ 1,055
• $1.00 X _____ SF Undeveloped Riverfront Area Fee shall not exceed $2,000.00	$
• $5.00 X 60 LF Coastal or Inland Bank Fee shall not exceed $750.00	$ 300
• $0.10 X 207,270 SF Buffer Zone Fee shall not exceed $6,500.00	$ 6,500 (N.T.E.)

(B.) EXTENSION of an Order of Conditions:

- Single Family Dwelling or minor project (house addition, in ground pool etc) $300.00 $_____
- Subdivision/Commercial 600.00 $_____

(C.) AMENDING AN ORDER OF CONDITIONS:

- Single family dwelling or minor project (house, in ground pool etc)

  $300.00 plus new alteration fee – refer to (A) above $_____

- Subdivision/Commercial $1,000.00 plus new alteration fee – refer to (A) above

  $_____

(D.) WETLAND DELINEATION VERIFICATION (WITH OR WITHOUT A PROPOSED ALTERTATION)

- ½ acre or less $250.00 $_____
- ½ acre to 2 acres $500.00 ($100.00/acre thereafter) not to exceed $3,500.00 $_____

(E.) DOCKS:

- $100.00 + $10.00 X _____ LF of dock $_____

(F.) CERTIFICATES OF COMPLIANCE

- One new house $250.00 $_____
- One activity at an existing house $200.00 $_____
- Commercial & Industrial Facilities $1,500.00 $_____
- New Roadways 1,500.00 $_____

Partial Certificates of Compliance are the same fee as a Certificate of Compliance

(G.) AFTER THE FACT FILING FEE

- $500.00 for a Notice of Intent or Amended Order of Conditions $_____
- $250.00 for a Request for Determination of Applicability $_____

TOTAL AMOUNT DUE (including after-the-fact fee if applicable): $10,055

Notes:

* Please refer to the Conservation Commission Fee Schedule – dated 8/2018

Please make check or Money Order payable to: THE CITY OF NEW BEDFORD.
Cash is not accepted.

FARLAND CORP.

ENGINEERING A BETTER TOMORROW

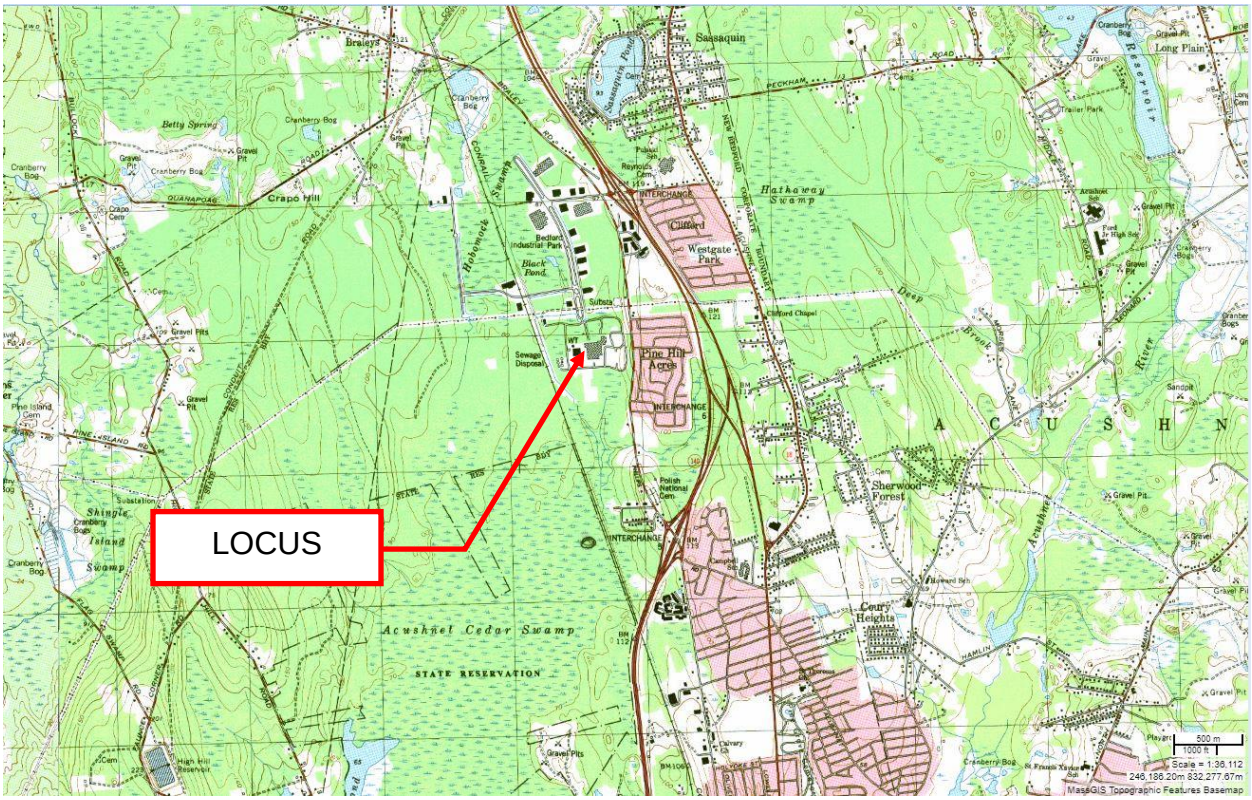
ENGINEERING | SITE WORK | LAND SURVEYING

NOTICE OF INTENT

October 2, 2019

SITE PLAN

ASSESSORS MAP 134 LOT 5
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745



PREPARED FOR:

TIM CUSSON
PARALLEL PRODUCTS OF NEW ENGLAND
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

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6. ABUTTER NOTIFICATION
7. AFFADAVIT OF SERVICE
8. STORMWATER REPORT
9. SITE PLAN

NOTICE OF INTENT NARRATIVE

Project Site

The 71-acre project site is located within the New Bedford Industrial Park at 100 Duchaine Boulevard in New Bedford. The site is generally bounded by industrial properties and Samuel Barnet Boulevard to the north, Phillips Road to the east, undeveloped land to the south and a rail line and the Acushnet Cedar Swamp State Reservation to the west. The site was previously developed by the Polaroid Corporation and contains access roads, parking areas, stormwater management infrastructure and numerous buildings. The applicant purchased the site in 2016 and has relocated a portion of its processing and recycling operations from 969 Shawmut Avenue to the project site. The site also contains 1.5 MW of solar PV mounted on a series of carport canopies. Access to the site is provided from Duchaine Boulevard, via an internal one-way loop roadway surrounding the proposed facility. The site has adequate area to support truck movement and access and is easily accessible from Route 140 (Alfred M Bessette Memorial Highway) via Braley Road or Phillips Road.

Wetland resource areas in the vicinity of the project include Bank, Bordering Vegetated Wetlands (BVW), Land under Water (LUW), and Riverfront Area. The project site is not located in Priority and/or Estimated Habitat as mapped by the Division of Fisheries and Wildlife's (DFW) Natural Heritage and Endangered Species Program (NHESP) or an Area of Critical Environmental Concern (ACEC). The site does not contain any structures listed in the State Register of Historic Places or the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth.

Project Description

In accordance with 310 CMR 10.54, 10.55 and10.58

The applicant is seeking approval for the construction of a rail sidetrack from the existing rail line to the glass processing facility, open box culvert stream crossing, wetland crossing, bunker buildings for glass recycling, photovoltaic canopies, stormwater improvements and necessary site grading and utilities.

As indicated on the site plans included, the project development area is separated from the existing rail line by large wetland area that extends from the north property line to the south property line. The variations on rail alignment are limited by the design restrictions (radius of curves, slope, etc) associated with rail development. The design of the rail sidetrack has been designed to minimize the impacts to wetlands to the extent possible.

Our recommendation for the stream crossing, based in part on recommendations made to us by Green Seal and TEC Associates, is a three-sided open box culvert that would comply with the Massachusetts Stream Crossing Guidelines. This option provides an unmitigated natural floor but requires the impingement of two large concrete strip footing

foundations, due to the nature of the existing soil conditions. Preliminary designs require an excavation profile of roughly 2,115 square feet of bank and stream area in order to install these footings and culverts, with an ultimate impact of roughly 360 square feet to the land under water and 1,015 to the riverbank area. The initial estimate for furnishing and installing a three-sided box culvert is $230,000.

An alternate structure to be considered is a four-sided box culvert. Installation impact on the wetlands could be reduced to approximately 500 square feet and be installed in less than one week, with ultimate impact of less than 300 square feet. A sufficiently deep section of box culvert could be buried to provide a natural floor of 2'-0" or more, which would satisfy the conditions outlined in the Massachusetts Stream Crossing Guidelines. The cost of furnishing and installing a four-sided box culvert, based on our initial estimates, is $150,000.

Unfeasible alternative structures considered include a through-plate ballasted-deck bridge. This structure would require driving numerous piles to bedrock, the installation of two concrete abutments, and a long steel span. Initial impact to the wetlands could be as much as 2,000 square feet, would take months to install, and overall costs could exceed $500,000.

This construction activity will require us to utilize a dam and pump crossing method which involves constructing temporary sand or pea gravel bag dams upstream and downstream of the proposed crossing site and using a high capacity pump to divert water around the construction area. An energy dissipation riprap area will be placed at the discharge point on the downstream side to reduce the velocity of water reentering the brook. A portable pump will be used, as necessary, to remove any standing water with the construction area. Following completion of the construction activities, the pumps will be removed, and normal flow is re-established.

For the second part of this project, which includes the crossing of a bordering vegetated wetland area, we recommend a raised track section between the Redi-Rock walls. Gravity block walls can be installed on a minimal footprint across this section, with two box culverts located at the point of lowest elevation to hydraulically connect the wetlands. Total length of this section would span approximately 215 feet and be no more than 20 feet in width.

Alternate structures deemed unfeasible including steel and timber bridge spans. A steel structure would require numerous driven piles or concrete piers and abutments, would have both an initial impact and ultimate impact much larger than a raised track section, and cost upwards of $2,000,000. A timber structure would involve chemically treated timber embedded in the wetland and cost upwards of $3,000,000.

Construction of the stream and wetland crossing will consist of a new Redi-Rock headwall and 14'Wx9'Hx24'L (12'Wx8'H Interior Dimensions) box concrete culvert. Redi-Rock was the first and continues to be the leading innovator in the large block retaining wall industry in North America. With more than 130 manufacturers, Redi-Rock

offers solutions for retaining walls, freestanding walls, steps, and columns with the "Essence of Natural Rock" look.

We have chosen to use Redi-Rock due to the product's ability to build walls that minimize the need for geogrid reinforcement while withstanding the constant forces of moving water. Naturally textured Redi-Rock retaining wall blocks are made from architectural grade precast concrete which creates durable retaining walls that will stand the test of time. Each massive Redi-Rock block weighs more than one ton each, which means you can build tall retaining walls with minimal excavation and often no geogrid reinforcement. Also, Redi-Rock's massive block size allows construction to progress quickly without creating additional erosion problems.

Section 310 CMR 10.58 (4) of the Wetland Protection Act states:

"the applicant shall prove by a preponderance of the evidence that there are no practicable and substantially equivalent economic alternatives to the proposed project with less adverse effects on the interests identified in M.G.L. c.131 § 40 and that the work, including proposed mitigation, will have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. c.131 § 40."

As previously stated, we have demonstrated that we have designed all components of the project to minimize the impacts to the riverfront area and other resource areas and more importantly to assure there is no significant adverse impacts.

(4)(a) - Protection of Other Resource Areas

We have demonstrated that the proposed scope of work meets other resource areas performance standards 10.54 (Bank) and 10.55 (Bordering Vegetated Wetlands).

We have approximately 60' of alteration to the Bank due to the stream crossing for the rail sidetrack. Although this is slightly over 50', we meet the performance standards of 10.54 as the crossing has been designed in accordance with the Massachusetts Stream Crossing Guidelines and by using best practical measures so as to minimize adverse effects on the characteristics and functions of the resource areas.

We have approximately 4,936 S.F. of alteration to the Bordering Vegetated Wetlands due to the wetland crossing for the rail sidetrack. In order to meet the performance standards of 10.55 we have proposed a replication area of 8,208 S.F. which is a 1.66:1 ratio exceeding the required DEP 1:1 and New Bedford's 1.5:1 ratio.

(4)(b) - Protection of Rare Species

This standard is met as the project isn't located within an Estimated Habitats of Rare Wildlife Area, therefore will have no adverse effects on such rare species within the area.

(4)(c) – No Significant Adverse Impact

We have approximately 2,110 S.F. of alteration to the riverfront area. The proposed work in this area has been designed in accordance with the Massachusetts Stream

Guidelines and will have no significant adverse impact by limiting alteration to the maximum extent feasible, and at a minimum, preserving or establishing a corridor of undisturbed vegetation of a maximum feasible width.

The improvements to the stream crossing result in 2,110 S.F. of alteration to the Riverfront Area, therefore we have provided 4,425 S.F. of restoration (2.1:1 ratio). The restoration will consist of proposed native plantings along the riverfront and alteration area.

LEC WETLANDS WILDLIFE WATERWAYS

October 3, 2019

Email (sarahp@newbedford-ma.gov)

Ms. Sarah Porter, Conservation Agent
New Bedford Conservation Commission
133 William Street, #312
New Bedford, MA 02740

RE: Wetland Resource Area Analysis Report [LEC File # FCo\19-282.01]
Parallel Products Rail Project
100 Duchaine Boulevard
Assessors Map 134, Lot 5
New Bedford, Massachusetts
MassDEP File No: 049-0831

Dear Members of the Commission:

On behalf of the Applicant, Parallel Products of New England, LEC Environmental Consultants, Inc., (LEC) conducted a review of the Parallel Products Rail Project, including field review of the Wetland Resource Area boundaries and the project footprint, technical review of the Notice of Intent (NOI) Application and site plans, and review of comments from the New Bedford Conservation Commission Agent. LEC has prepared this Report to accompany the new NOI Application (refiled on October 3, 2019) and revised site plans to address comments from the Conservation Commission Agent, summarize revisions to the site plans, and provide a detailed analysis of the project in the context of the *Massachusetts Wetlands Protection Act* (*Act*; M.G.L. c. 131, § 40) and its implementing *Regulations* (310 CMR 10.00). The revised site plans are entitled *Site Plan*, prepared by Farland Corp., dated July 3, 2019, revised September 13, 2019.

Background

The project described herein was initially filed with the Conservation Commission through an NOI submitted on July 3, 2019. Based on the Conservation Commission Agent's initial review, the NOI Application was withdrawn with the understanding that the NOI Application would be refiled with plan revisions and supplemental information to address the Agents comments.

LEC was retained after the agent's initial comments, and subsequently conducted a site evaluation on August 5, 2019 and attended a site visit with Farland Corp. and the agent on August 15, 2019 to review and discuss the proposed project and revisions. Based on our review and discussions with Farland Corp.

and the agent, the site plans have been revised to provide additional detail describing wetland disturbances and restoration, a new location for the wetland replication area, and a new graphic depiction of the project to clarify the location and scope of the project. Revisions also include changes which address comments from the Planning Board based on their ongoing review of the project.

Prior to the NOI filing, the Applicant submitted an Expanded Environmental Notification Form (EENF) to the Executive Office of Energy and Environmental Affairs (EOEEA) for Phase 1 and Phase 2 site improvements, which was published in the Environmental Monitor on April 24, 2019. On May 15, 2019, the Secretary issued a Certificate for a Phase 1 Waiver to allow the work to continue prior to the completion of a Draft Environmental Impact Report (EIR) and Final EIR for Phase 2 activities. Phase 1 activities that are the subject of this NOI are focused on improvements associated with the glass recycling facility, including the railroad sidetrack, two bunker buildings with roof-mounted solar arrays, two additional solar canopies behind the existing building and associated infrastructure work. Two existing solar arrays located southeast of the building have been constructed under an Order of Conditions (OOC) issued by the Conservation Commission and are technically part of Phase 1. Phase 2 activities, which are not part of this NOI but were described in the MEPA filing, include construction of a Municipal Solid Waste (MSW) facility and Construction and Demolition (C&D) transfer station adjacent to the glass recycling facility. These features would also utilize the proposed railroad sidetrack.

Wetland Resource Areas associated with the entire 70-acre property were delineated by Tunison Environmental Consultants, LLC on January 28, 2018; February 27, 2018; March 1, 10, 11, 12, 27, 28, 29, 2018; April 7, 2018; and April 8, 2018. LEC reviewed the boundaries in the vicinity of the project footprint and found them to be accurately delineated.

The following report provides a description of the General Site Conditions, Wetland Resource Areas, Proposed Project and Mitigation Planting Plan, and Regulatory Compliance associated with the project.

General Site Description

The Applicant, Parallel Products of New England, owns and operates a recycling facility at the 70-acre site, located in the New Bedford Industrial Park at 100 Duchaine Boulevard (Assessor's Map 134, Parcel 5). The central portion of the site contains a large glass recycling building surrounded by a concrete foundation slab, with paved parking areas to the east and west of the building. The building and parking areas are accessed by a paved loop driveway extending south from Duchaine Boulevard around the perimeter of the property with an additional dirt driveway extending along westerly property line. Extensive undeveloped areas dominated by forested wetlands, with scattered fringing forested uplands, manicured grass and landscaping are located on the remainder of the property. Several stormwater basins are located within the loop driveway, including a large basic located just south of the point where the proposed sidetrack crosses the driveway.

Industrial properties within the New Bedford Industrial Park are located on properties to the north and south, while properties to the east are dominated by dense residential development. The property to the west is part of the Acushnet Cedar Swamp State Reservation, dominated by undeveloped forested

wetlands and uplands. An unnamed perennial stream extends along the westerly property line roughly parallel to an existing railroad line and the above-referenced dirt access driveway.

The proposed rail sidetrack footprint extends in a southeasterly direction from the existing rail line beginning at the northwestern corner of the parcel, eventually turning east and terminating at the existing recycling building located centrally within the parcel. The sidetrack extends from the existing rail line and crosses the aforementioned perennial stream in the location of an existing, dilapidated steel bridge. The sidetrack continues south within an existing dirt driveway, eventually turning east as it crosses a material stockpile yard, an existing stormwater basin associated with the stockpile yard, and the A-series BVW. After the sidetrack crosses the A-series BVW, it extends across the loop driveway and paved parking area west of the existing building and immediately south of the G-series BVW. The sidetrack terminates immediately north of the existing building within the central portion of the property where two (2) additional bunker buildings are proposed. The two (2) proposed bunker buildings include roof-mounted solar arrays, and another solar canopy will be located within the existing concrete foundation pad adjacent to the north and east of the existing building, immediately south of the G-series BVW, as depicted on the *Plans*. Two additional solar canopies will be located in a paved area south of the existing building.

Topography throughout the project footprint is generally flat, sloping downgradient into the BVW crossings and stream.

Vegetation within the forested upland portions of the site includes a canopy layer consisting of red maple (*Acer rubrum*), red oak (*Quercus rubra*), white oak (*Quercus alba*), black cherry (*Prunus serotina*), white pine (*Pinus strobus*), american beech (*Fagus grandifolia*), gray birch (*Betula populifolia*), and black birch (*Betula lenta*). The understory contains saplings from the canopy layer and a shrub layer of sweet pepperbush (*Clethra alnifolia*), highbush blueberry (*Vaccinium corymbosum*), american holly (*Ilex opaca*), glossy buckthorn (*Rhamnus frangula*), mountain laurel (*Kalmia latifolia*), and multiflora rose (*Rosa multiflora*). Groundcover contains seedlings from the overstory and understory, little bluestem (*Schizachyrium scoparium*), poison ivy (*Toxicodendron radicans*), and Virginia creeper (*Parthenocissus quinquefolia*). Developed portions of the site include areas of manicured lawn and landscaped planting beds.

Floodplain Designation

According to the July 7, 2009 FEMA FIRM for the City of New Bedford, Massachusetts (Community Panel Number *25005 C 0379F*), the entire project footprint is located in Zone X [unshaded] - *Areas determined to be outside of the 0.2% annual chance floodplain*.

Natural Heritage and Endangered Species Program (NHESP) Designation

According to the 14th Edition of the *Massachusetts Natural Heritage Atlas* (effective August 1, 2017) published by the Natural Heritage Endangered Species Program (NHESP), the project footprint is not located within *Priority Habitats of Rare Species* and/or *Estimated Habitats of Rare Wildlife*. There are no

mapped Certified or Potential Vernal Pools (PVP) in proximity to the site.

Wetland Resource Areas

The jurisdictional Wetland Resource Areas located within the vicinity of the project footprint include Bordering Vegetated Wetland (BVW), Bank/Mean Annual High Water (MAHW), Land Under Waterbodies and Waterways (LUW), and Riverfront Area. A brief description of each Wetland Resource Area is provided below.

Bordering Vegetated Wetland (BVW)

BVW is defined in 310 CMR 10.55(2) as *freshwater wetlands which border on creeks, rivers, streams, ponds, and lakes. In these areas soils are saturated and/or inundated such that they support a predominance of wetland indicator plants. The boundary of BVW is the line within which 50% or more of the vegetational community consists of wetland indicator plants and saturated or inundated conditions exist.*

The BVWs located within or in proximity to the project footprint include portions of the A-series BVW (along with the AA-series which demarcates the boundary of an isolated upland area) and the G-series BVW. The two forested BVWs are further detailed below.

A-Series BVW (wetland flags A8 through A11, A83 through A130) and AA-Series (AA1 through AA33)

The A-series BVW flags demarcate the boundary of a forested BVW which borders on intermittent streams located beyond 100 feet of the project footprint. The AA-series flagging is situated within the A-series BVW, demarcating the boundary of an isolated upland as depicted on the *Site Plans*. The project footprint is located within the 100-foot Buffer Zone to wetland flags A85 through A128, A8 through A10, and AA33 through AA13. The rail sidetrack wetland crossing extends into the A-series BVW at wetland flags A125 through A126, AA33 through AA1, AA11 through AA12, and A8 through A9.

The generally flat forested BVW slopes gently downgradient in a southeasterly direction and contains pit and mound microtopography throughout. While no standing water was observed within the BVW at the time of LEC's site evaluation, evidence of standing water (i.e. leaf staining) was noted in small isolated depressions. No potential Vernal Pools were identified within or adjacent to the project footprint.

Vegetation within the A-series BVW includes a moderately dense layer of mature and sapling red maple (*Acer rubrum*), red oak (*Quercus rubra*), eastern white pine (*Pinus strobus*), and pitch pine (*Pinus rigida*); a shrub layer dominated by sweet pepperbush (*Clethra alnifolia*), with patches of highbush blueberry (*Vaccinium corymbosum*), fetterbush (*Leucothoe racemosa*), and inkberry (*Ilex glabra*); and a groundcover layer dominated by seedlings from the overstory and patches of cinnamon fern (*Osmunda cinnamomea*), Canada mayflower (*Maianthemum capensis*), sheep-laurel (*Kalmia angustifolia*), and royal fern (*Osmunda regalis*). Entanglements of common greenbrier (*Smilax rotundifolia*) are common throughout.

G-Series BVW (wetland flags G1 through G60)

The G-series BVW is situated within the northern central portion of the property and located immediately north of the rail sidetrack as it approaches the existing building from the wetland and access driveway crossings. The proposed bunker buildings are situated immediately south of the sidetrack footprint. The forested G-series BVW is also associated with an intermittent stream that is located beyond 100 feet from the project footprint, in addition to a connection to the A-series BVW via a culvert beneath the paved entrance roadway. Topography within the BVW is similar to the A-series BVW, as it is generally flat throughout with pit and mound microtopography.

Vegetation within the G-series BVW is similar to the A-series vegetation referenced above.

Bank/Mean Annual High Water (MAHW)

Bank is defined at 310 CMR 10.54(2)(a) as *the portion of land surface which normally abuts and confines a water body. The upper boundary of a bank is the first observable break in the slope or the mean annual flood level, whichever is lower. The lower boundary of a bank is the mean annual low flow level.*

Additionally, Mean Annual High Water (MAHW) is defined at 310 CMR 10.58(2)(a)(2) as *the line that is apparent from visible markings or changes in the character of soils or vegetation due to the prolonged presence of water and that distinguishes between predominantly aquatic and predominantly terrestrial land. Field indicators of bankfull conditions shall be used to determine the mean annual high-water line. Bankfull field indicators include but are not limited to: changes in slope, changes in vegetation, stain lines, top of pointbars, changes in bank materials, or bank undercuts.*

Wetland flagging identifying the boundary to Bank/MAHW associated with the perennial stream located in the vicinity of the proposed bridge crossing includes flags B102 through B106 and B300 through B309.

Bank is associated with the unnamed perennial stream located in proximity to the northwestern portion of the project footprint. The stream flows in a westerly/southerly direction within a linear, manmade channel reaching up to approximately 20 feet wide. At the time of LEC's August site evaluation, water levels were observed to be close to the Mean Annual Low Water level, with depths up to approximately 6 inches within an approximately 5-foot-wide low-flow channel. Topography slopes steeply downgradient towards the stream channel from the adjacent upland and is vegetated with upland vegetation referenced in the General Site Description. The embankments to the stream channel are more moderately sloped and vegetated with wetland vegetation including red maple saplings, highbush blueberry, sweet pepperbush, fetterbush, cinnamon fern, royal fern, and various grasses (*Gramineae* spp.).

Land Under Waterbodies and Waterways (LUW)

According to 310 CMR 10.56(2), LUW is defined as *the land beneath any creek, river, stream, pond or lake. Said land may be composed of organic muck or peat, fine sediments, rocks or bedrock…the boundary of Land under Water Bodies and Waterways is the mean annual low water level.*

LUW is associated with the aforementioned perennial stream within the Mean Annual Low Water lines, as observed by LEC during the August 5, 2019 site evaluation. The substrate is primarily comprised of a mixture of mucky silt and coarse sands, with patches of cobbles and stone, and scattered boulders throughout.

Riverfront Area

Riverfront Area is defined at 310 CMR 10.58(2)(a)(3) as *the area of land between a river's mean annual high-water line measured horizontally outward from the river and a parallel line located 200 feet away, except that the parallel line is located: 25 feet away in Boston, Brockton, Cambridge, Chelsea, Everett, Fall River, Lawrence, Lowell, Malden, **New Bedford**, Somerville, Springfield, Winthrop, and Worcester.*

The 25-foot Riverfront Area extends from the Bank/MAHW boundary of the aforementioned perennial stream into the northwestern portion of the project footprint. The Riverfront Area includes steep, vegetated slopes, forested upland, and a portion of the dirt driveway.

Proposed Project

The proposed project involves the construction of a rail sidetrack extending from an existing rail line to an existing glass processing facility, and includes construction of two new bunker buildings with roof-mounted solar arrays, and three additional solar array canopies to be constructed adjacent to the existing building. The project activities include clearing and grading, replacing an existing bridge with a new open bottom box culvert, construction of two retaining walls, repaving parking areas, removing an existing concrete slab foundation, rerouting a 12" water line, construction of a wetland replication area, and installation of a stormwater management system.

The proposed project will result in temporary and permanent impacts to Bank/MAHW and LUW to the aforementioned perennial stream, BVW and its associated 100-foot Buffer Zone, and the 25-foot Riverfront Area. Portions of the proposed project are also located within the municipal 25-foot setback to BVW. The temporary and permanent impacts to Wetland Resource Areas are summarized in Table 1 below and on the NOI Form.

Wetland Resource Area	Total Disturbance (SF)	Temporary Disturbance (SF)
BVW	4,936±	843±
Bank	60±	10±
LUW	504±	
Riverfront Area	2,110±	1,100±

The proposed project activities are described separately below as follows: the rail sidetrack stream crossing, the rail sidetrack BVW crossings, the wetland replication area and Riverfront Area restoration, the proposed bunker buildings and solar canopies, the stormwater management system.

Rail Sidetrack Stream Crossing

The proposed stream crossing is located within the footprint of an existing, dilapidated steel bridge spanning wetland flags B306 through B308 and B103 through B105. The Wetland Resource Area impacts associated with the stream crossing includes 60 linear feet of Bank, 504 square feet of LUW, and 2,110 square feet of the 25-foot Riverfront Area. The proposed culvert includes installing four (4) 16-foot wide by 8-foot deep by 6-foot long reinforced concrete box sections on the footings. A 10-inch deep compacted railroad sub ballast will be placed over the culvert with 8-inch minimum of compacted railroad ballast on top of the sub ballast. The rails will be installed on top of the compacted ballast.

The proposed crossing design meets the Massachusetts Stream Crossing Standards as dimensions of the crossing structure meet the openness ratio requirements, the design includes a natural bottom substrate to match the upstream and downstream substrates, and the culvert spans the existing channel (over 1.2 times the bankfull width). Details of the stream crossing are depicted on the Rail Crossing (Detail "A") on Sheet 14, and the Stream Crossing section and profile on Sheet 22 of the *Plans*.

Work will begin with the installation of erosion and sedimentation controls along the Limit of Work (LOW) followed by clearing and grubbing existing vegetation within the construction footprint. A stream bypass system will be installed to temporarily block off and divert water from the stream channel upstream of the work area. Water will be pumped to a designated area within the project footprint on the northwest side of the bridge, where the water will be pumped into a silt sack surrounded by hay bales to filter any sediment before sheet flowing down the slope back into the downstream channel. This work will be done during low-flow conditions within the stream channel, presumably during July and August 2020.

After installation of erosion controls and vegetation clearing, the existing bridge will be removed by a specialized bridge demolition subcontractor. The existing stream substrate and adjacent slopes will be excavated to facilitate installation of a 24-inch bedding of stone wrapped in Mirafi 180N geotextile fabric to support the concrete strip footings. The proposed bridge crossing, including the open box culvert and Redi-Rock block retaining wall, will be installed and the stream bed re-established as detailed on Sheet 22 of the Plans. A 4-foot-wide low-flow channel will be restored in the culvert with loosely placed bedding and the adjacent banks restored with compacted material of a similar size and type as the existing soils in this area.

The re-graded slopes adjacent to the culvert will be stabilized with erosion control netting and seeded immediately with a rapidly germinating grass mix. The entire temporarily disturbed portions of the Riverfront Area will be restored per the Riverfront Area Restoration detailed on Sheet 17 and further described below.

Rail Sidetrack Wetland Crossing

As previously noted, the sidetrack construction involves two (2) BVW crossings which will result in total disturbance of 4,936 square feet of BVW, 843 square feet of which will be temporary disturbance for

construction access necessary to install the rail bed and retaining walls, as depicted on the Wetland Crossing detail on Sheet 17. The project includes 8,208 square feet of wetland replication to mitigate the permanent impacts to BVW and the temporary disturbance will be restored with wetland soil and seedmix as noted on Sheet 17.

The location and configuration of the sidetrack has been designed to minimize impacts to wetlands in the context of site constraints and engineering considerations. Site constraints include the existing configuration of wetlands, the existing bridge over the stream and the location of the building to be served by the sidetrack. The route selected utilizes the existing bridge footprint, thereby avoiding increased disturbances that would be associated with a new stream crossing, and crosses the BVW in the narrowest location feasible, while maintaining engineering considerations. The primary design constraint from an engineering perspective is the turning radius limitations. Railroads cannot make sharp turns; therefore, a slowly curving rail design as proposed is a strict design requirement. Given the location of the destination building and the turning radius limitations, alternative configurations for the rail sidetrack that may reduce BVW disturbance were deemed impractical. Utilizing an elevated bridge crossing in the wetlands was also considered. This alternative would reduce the disturbances to BVW but was dismissed due to the significant increase in construction cost that would be incurred.

Construction of the two proposed BVW crossings will also begin with the installation of erosion and sedimentation controls along the LOW followed by clearing and grubbing the existing vegetation within the construction footprint. Fill will be placed within the crossing footprint in order to elevate the rail bed to el. 83 from the existing el. 76 – 77 within the BVW. Redi-Rock retaining walls are proposed along the rail bed throughout the BVW in order to minimize the permanent alteration to the Wetland Resource Area that would otherwise occur with graded side slopes. Typically, rail bed widths are designed to be approximately 24 feet wide; however, within the BVW the proposed rail bed width with retaining walls is approximately 20 feet wide, as recommended by the Applicants Engineer who specializes in rail construction. Prior to installation of the retaining walls, excavation will occur beneath the proposed walls to facilitate installation of 12" of stone to support the bottom stone. No additional footings are necessary. An open box culvert measuring 2 x 4 x 22 feet is proposed beneath each BVW crossing at the lowest elevation in order to retain the hydrologic connection on each side of the crossing. As previously noted, the BVW is a terrestrial wetland and does not appear to hold large amounts of surface water within the project footprint; however, dewatering during construction may be necessary.

Proposed Buildings and Rail Connection

The remainder of the rail sidetrack construction is located within the upland, the 100-foot Buffer Zone to BVW, and/or the 25-foot Riverfront Area. The proposed grade throughout the project footprint is between el. 82 and 83 and will require limited fill to be placed throughout. Generally, the rail bed width will be 24 feet wide with sloped embankments on each side to meet the existing grade within upland areas. However, retaining walls are proposed within the BVW crossings, as described above, and within a portion of the work footprint that is adjacent to the G-series BVW boundary in order to minimize the amount of permanent disturbance to the BVW and Buffer Zone.

The proposed bunker buildings are both within previously developed areas adjacent to the existing building and the building under construction. Likewise, the tow proposed solar canopies are within previously developed areas. No naturally vegetated Buffer Zones or other areas will be disturbed by these activities.

Stormwater Management System

The engineer has designed the stormwater features in accordance with the MassDEP Stormwater Handbook, as detailed in the *Stormwater Management Report and Hydrologic Analysis* which includes a summary of the Stormwater Checklist. The proposed stormwater features have been designed to utilize and upgrade the existing drainage infrastructure which treats runoff from the existing development. In areas where existing impervious is redeveloped, the existing drainage patterns will remain connected to existing drainage systems throughout the site. The remaining stormwater associated with proposed impervious areas (all roof runoff from the proposed bunker buildings) will be directed towards the proposed pocket wetland, as further detailed below.

Stormwater treatment for the two building is provided within a proposed pocket wetland to be constructed within an upland peninsula located within the G-series BVW, as detailed on the *Plans*. The proposed stormwater pocket wetland includes a sediment forebay, a low marsh zone and high marsh zone to be planted with wetland vegetation. A serpentine swale will be constructed to direct water through the pocket wetland. Plantings will be installed within the entire stormwater pocket wetland, except the sediment forebay which requires regular maintenance to remove accumulated sediment. Plantings include 13 red maple saplings, 12 gray birch saplings, 27 sweet pepperbush, 21 highbush blueberry, 27 winterberry, 28 sensitive fern, and 28 cinnamon fern. While the pocket wetland is a stormwater feature, it will provide functions and values similar to the adjacent wetland. Hydrology in the pocket wetland will be influenced by seasonal high groundwater, along with the project roof runoff, it will contain wetland soils and will be planted with wetland vegetation.

Wetland Replication Area/Mitigation Plantings

As mitigation for the 4,936 square feet of permanent alteration to BVW, the Applicant is proposing to construct an approximately 8,208 square foot Wetland Replication Area (WRA). The proposed Wetland Replication Area (WRA) location was redesigned in order to minimize direct impact to the adjacent BVW for construction access, limit disturbance to natural vegetation, and improve upon existing conditions. As previously designed, the WRA was proposed within the northern portion of the upland island located in the A-series BVW. Comments from the Conservation Commission Agent suggested that the upland island may provide valuable wildlife habitat and that construction access would result in increased and unnecessary impacts to an undisturbed forested Buffer Zone. As a result, the project team worked with the agent to identify a more appropriate location for the WRA which would still comply with the applicable Performance Standards and result in minimal disturbance to naturally vegetated Buffer Zone areas.

The revised location for the WRA is located immediately adjacent to the A-series BVW; specifically spanning from wetland flags A113 through A117, as depicted on Sheets 14, 16, and 17 of the attached *Plans.* The WRA is located within the 25-foot Buffer Zone to the A-series BVW and includes fringing forested upland, portions of the soil stockpile area, and portions of an existing stormwater basin which will be reconfigured.

Prior to the commencement of work, erosion controls shall be installed around the LOW, and shall remain in place until the work footprint has been stabilized by vegetation, as shown on the *Plans*. The replication will begin by clearing and stump removal of existing vegetation, followed by the excavation of between 12 and 36 inches of soil to a depth approximately 8 to 12 inches below the seasonal high groundwater elevation. Approximately 8 to 12 inches of clean, organic rich topsoil will then be spread throughout the WRA to establish the finish elevation, following by planting including native saplings, shrubs, and seed mix. The proposed plantings include eight red maple saplings, five gray birch saplings, 15 sweet pepperbush, 12 highbush blueberry, 12 winterberry, 16 sensitive fern, and 16 cinnamon fern. Groundcover shall be established within the WRA by spreading a *New England Wetmix* following the installation of plantings.

Additional mitigation plantings are proposed within the 25-foot Riverfront Area. Erosion controls shall be installed around the LOW, and shall remain in place until the work footprint has been stabilized by vegetation, as shown on Sheet 17 of the *Plans*. Mitigation plantings within the 25-foot Riverfront Area include three red maple saplings, two gray birch saplings, 15 sweet pepperbush, 18 highbush blueberry, and nine winterberry and the distribution of a native seed mix.

LEC will provide construction oversight during creation of the wetland replication, Riverfront Area Restoration, and pocket wetland. Oversight will include post-construction monitoring to ensure the Wetland Replication Area meets the performance standard of 75% cover by wetland indicator species within two growing seasons. These services will include oversight of grading to subgrade and determining the appropriate finish elevations that will intercept groundwater. LEC will also imported soil is suitable and spread to the correct depth and with microtopography. LEC will oversee the plantings to ensure the correct species are planted in the correct locations. Post-construction monitoring will consist of a post-construction monitoring report and then a monitoring report at the end of subsequent growing seasons until the area achieves compliance with the performance standard.

Regulatory Compliance

As previously noted, portions of the project footprint will result in disturbance to 4,936 square feet of BVW, 60 linear feet of Bank, 504 square feet of LUW, and 2,110 square feet of Riverfront Area. The *Act* has specific Performance Standards for work within all of the aforementioned Wetland Resource Areas. The following summarizes the proposed projects compliance with the applicable Performance Standards within the *Act.*

BVW

310 CMR 10.55(4)(b) states that *Notwithstanding the provisions of 310 CMR 10.55(4)(a), the issuing authority may issue an Order of Conditions permitting work which results in the loss of up to 5000 square feet of Bordering Vegetated Wetland when said area is replaced in accordance with the following general conditions and any additional, specific conditions the issuing authority deems necessary to ensure that the replacement area will function in a manner similar to the area that will be lost:*

1. the surface of the replacement area to be created ("the replacement area") shall be equal to that of the area that will be lost ("the lost area");

The proposed alteration to BVW is approximately 4,936 square feet and the proposed WRA is approximately 8,208 square feet, resulting in a greater than 2:1 ratio of replication for the "lost area". The 843 square feet of temporary BVW alteration will be restored in place.

2. the ground water and surface elevation of the replacement area shall be approximately equal to that of the lost area;

Successful establishment of the appropriate surficial wetland hydrology is proposed to be achieved by reducing existing surficial elevations and intercepting ground water from within the adjacent wetland. This will be accomplished by reducing elevations within the replacement area by approximately one foot (depending on existing topography), to mimic conditions of the area lost.

3. The overall horizontal configuration and location of the replacement area with respect to the bank shall be similar to that of the lost area;

The proposed WRA is proposed with a similar horizontal configuration and location with respect to Bank.

4. the replacement area shall have an unrestricted hydraulic connection to the same water body or waterway associated with the lost area;

The WRA will be excavated to an appropriate depth to ensure an unrestricted hydraulic connection to the adjacent BVW.

5. the replacement area shall be located within the same general area of the water body or reach of the waterway as the lost area;

The proposed WRA is located immediately adjacent to and contiguous with the existing wetland, and located within several hundred feet northwest of the lost wetland areas, within the same reach of the water body as the lost areas.

6. at least 75% of the surface of the replacement area shall be reestablished with indigenous wetland plant species within two growing seasons, and prior to said vegetative reestablishment any exposed soil in the replacement area shall be temporarily stabilized to prevent erosion in accordance with standard U.S. Soil Conservation Service methods; and

The success of the proposed wetland replacement activities will be monitored biannually for two years by a qualified field biologist to ensure that at least 75% of the replacement area has been re-established with indigenous wetland plant species. Exposed soil within the WRA will be seeded with a wetland seed mix immediately following completion of the wetland replacement area construction.

7. the replacement area shall be provided in a manner which is consistent with all other General Performance Standards for each resource area in Part III of 310 CMR 10.00.

The Wetland Replication Area complies with all other General Performance Standards for resource areas located on the site.

Bank

310 CMR 10.54(4)(a) states that *any proposed work on a Bank shall not impair the following:*

1. the physical stability of the Bank;

The proposed open-bottom box culvert will result in conversion of the earthen embankments along the stream to concrete embankments. The physical stability will be increased by this change and will not be adversely affected.

2. the water carrying capacity of the existing channel within the Bank;

The proposed culvert will span 1.2 times the bankfull width and therefore will maintain the existing width of the channel. As a result, the new culvert will not impede the water carrying capacity of the existing stream channel.

3. ground water and surface water quality;

Proper construction methodologies will be employed during demolition of the existing crossing structure and during construction to protect groundwater and surface water quality during construction including a stream bypass system. Post-construction, stream flow will pass through the culvert in a manner that mimics existing conditions. No adverse effects to ground or surface water quality are anticipated.

4. the capacity of the Bank to provide breeding habitat, escape cover and food for fisheries;

The existence of local fish populations in this stream is unknown, but should they exist, the proposed culvert will disturb a relatively small segment of the stream, leaving extensive breeding habitat, escape cover and food sources for fisheries elsewhere in the stream.

5. the capacity of the Bank to provide important wildlife habitat functions. A project or projects on a single lot, for which Notice(s) of Intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 50 feet (whichever is less) of the length of the bank found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide important wildlife habitat functions. In the case of a bank of a river or an intermittent stream, the impact shall be measured on each side of the stream or river. Additional alterations beyond the above threshold may

be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures contained in 310 CMR 10.60.

As stipulated below, provided the project complies with the Massachusetts Stream Crossing Standards, it is presumed to avoid any adverse effects on wildlife habitat. This stream crossing design complies with the Standards; therefore, no wildlife habitat evaluation is required.

6. Work on a stream crossing shall be presumed to meet the performance standard set forth in 310 CMR 10.54(4)(a) provided the work is performed in compliance with the Massachusetts Stream Crossing Standards by consisting of a span or embedded culvert in which, at a minimum, the bottom of a span structure or the upper surface of an embedded culvert is above the elevation of the top of the bank, and the structure spans the channel width by a minimum of 1.2 times the bankfull width. This presumption is rebuttable and may be overcome by the submittal of credible evidence from a competent source. Notwithstanding the requirement of 310 CMR 10.54(4)(a)5., the impact on bank caused by the installation of a stream crossing is exempt from the requirement to perform a habitat evaluation in accordance with the procedures contained in 310 CMR 10.60.

As previously noted, the proposed open box culvert meets the Standards and therefore is exempt from the requirement to perform a habitat evaluation.

LUW

310 CMR 10.56(4)(a) states that *where the presumption set forth in 310 CMR 10.56(3) is not overcome, any proposed work within Land under Water Bodies and Waterways shall not impair the following:*

1. The water carrying capacity within the defined channel, which is provided by said land in conjunction with the banks;

As previously noted, the proposed box culvert will span 1.2 times the bankfull width and will not impede the water carrying capacity of the existing stream channel.

2. Ground and surface water quality;

As previously noted, proper construction methodologies will be employed during demolition of the existing crossing structure and during construction to protect groundwater and surface water quality.

3. The capacity of said land to provide breeding habitat, escape cover and food for fisheries; and

As noted above, the existence of local fish populations in this stream is unknown, but should they exist, the proposed culvert will disturb a relatively small segment of the stream, leaving extensive breeding habitat, escape cover and food sources for fisheries elsewhere in the stream.

4. The capacity of said land to provide important wildlife habitat functions. A project or projects on a single lot, for which Notice(s) of intent is filed on or after November 1, 1987, that (cumulatively) alter(s) up to 10% or 5,000 square feet (whichever is less) of land in this resource area found to be significant to the protection of wildlife habitat, shall not be deemed to impair its capacity to provide

important wildlife habitat functions. Additional alterations beyond the above threshold may be permitted if they will have no adverse effects on wildlife habitat, as determined by procedures established under 310 CMR 10.60.

The project does not exceed the thresholds for requiring a wildlife habitat analysis, and is exempt from the requirements for a wildlife habitat evaluation because the crossing complies with the Stream Crossing Standards.

5. Work on a stream crossing shall be presumed to meet the performance standard set forth in 310 CMR 10.56(4)(a) provided the work is performed in compliance with the Massachusetts Stream Crossing Standards by consisting of a span or embedded culvert in which, at a minimum, the bottom of a span structure or the upper surface of an embedded culvert is above the elevation of the top of the bank, and the structure spans the channel width by a minimum of 1.2 times the bankfull width. This presumption is rebuttable and may be overcome by the submittal of credible evidence from a competent source. Notwithstanding the requirements of 310 CMR 10.56(4)(a)4., the impact on Land under Water Bodies and Waterways caused by the installation of a stream crossing is exempt from the requirement to perform a habitat evaluation in accordance with the procedures established under 310 CMR 10.60.

As previously noted, the proposed open box culvert meets the Standards as is therefore exempt from the requirement to perform a habitat evaluation.

Riverfront Area

310 CMR 10.58(4) states that *where the presumption set forth in 310 CMR 10.58(3) is not overcome, the applicant shall prove by a preponderance of the evidence that there are no practicable and substantially equivalent economic alternatives to the proposed project with less adverse effects on the interests identified in M.G.L. c.131 § 40 and that the work, including proposed mitigation, will have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. c. 131 § 40.*

(a) Protection of Other Resource Areas. The work shall meet the performance standards for all other resource areas within the riverfront area, as identified in 310 CMR 10.30 (Coastal Bank), 10.32 (Salt Marsh), 10.55 (Bordering Vegetated Wetland), and 10.57 (Land Subject to Flooding). When work in the riverfront area is also within the buffer zone to another resource area, the performance standards for the riverfront area shall contribute to the protection of the interests of M.G.L. c. 131, § 40 in lieu of any additional requirements that might otherwise be imposed on work in the buffer zone within the riverfront area.

Additional resource areas altered in association with the proposed project includes BVW, Bank, and LUW. As previously detailed, the proposed project is in full compliance with the performance standards associated with the aforementioned wetland resource areas.

(b) Protection of Rare Species. No project may be permitted within the riverfront area which will have any adverse effect on specified habitat sites of rare wetland or upland, vertebrate or invertebrate species, as identified by the procedures established under 310 CMR 10.59 or 10.37, or

which will have any adverse effect on vernal pool habitat certified prior to the filing of the Notice of Intent.

The project footprint is not located within Rare Species Habitat according to NHESP, as previously detailed.

(c) Practicable and Substantially Equivalent Economic Alternatives. There must be no practicable and substantially equivalent economic alternative to the proposed project with less adverse effects on the interests identified in M.G.L. c. 131 § 40.

As noted in the NOI, two other site locations were considered at 1080 Shawmut Avenue and 781 Church Street. The two alternatives were eventually dismissed as they were either not large enough to accommodate the operation or would result in a negative impact to the community resulting from truck traffic through residential neighborhoods. Furthermore, the proposed project utilizes an existing dirt roadway within the 25-foot Riverfront Area and will remove a degraded existing crossing and improve the crossing in accordance with the applicable performance standards. Other locations for extending the sidetrack would involve a new crossing and greater wetland impacts. Utilizing a bridge over the stream would reduce disturbances somewhat but was determine to be cost-prohibitive, essentially doubling the cost of the crossing.

(d) No Significant Adverse Impact. The work, including proposed mitigation measures, must have no significant adverse impact on the riverfront area to protect the interests identified in M.G.L. c. 131, § 40.

(d)(2) Within 25 foot riverfront areas, any proposed work shall cause no significant adverse impact by:

a. Limiting alteration to the maximum extent feasible, and at a minimum, preserving or establishing a corridor of undisturbed vegetation of a maximum feasible width. Replication and compensatory storage required to meet other resource area performance standards are allowed within this area; structural stormwater management measures shall be allowed only when there is no practicable alternative;

The proposed project has been designed to limit the Riverfront Area alteration to the maximum extent feasible by utilizing an existing crossing and an existing dirt access road and by minimizing the width of disturbance with retaining walls and restoration of temporarily disturbed areas as depicted on Sheet 17.

b. Providing stormwater management according to standards established by the Department;

The proposed project complies with the MassDEP Stormwater Standards to the extent practicable considering site constraints, as detailed on the *Plans* and the *Stormwater Report*.

c. Preserving the capacity of the riverfront area to provide important wildlife habitat functions. Work shall not result in an impairment of the capacity to provide vernal pool habitat when identified by evidence from a competent source but not yet certified; and

The proposed stream crossing in the Riverfront Area has been designed in accordance with the Stream Crossing Standards which include accommodations for wildlife. Given the small footprint of Riverfront Area disturbance and the extensive Riverfront Area on the property and on adjacent properties, no disturbance to important habitat functions is anticipated. Temporarily disturbed areas will also be restored by planting native vegetation, as detailed on the attached *Plans*. Lastly, as previously stated, no Vernal Pools are located within or in proximity to the project footprint.

d. Proposed work shall not impair groundwater or surface water quality by incorporating erosion and sedimentation controls and other measures to attenuate nonpoint source pollution.

Erosion and sedimentation controls, including a stream bypass system, will be installed and maintained during construction to protect groundwater and surface water quality.

Summary

LEC has prepared this report to summarize the Parallel Products Rail Sidetrack project at 100 Duchaine Boulevard in the context of proposed disturbances to Wetland Resource Areas and Buffer Zones protected under the *Massachusetts Wetlands Protection Act* (*Act*; M.G.L. c. 131, § 40) and its implementing *Regulations* (310 CMR 10.00). The proposed project consists of temporary and permanent disturbances to BVW, Bank, LUW and Riverfront Area; however, disturbances have been avoided, minimized, and mitigated to the extent practical in accordance with the applicable performance standards set forth in the *Act Regulations*.

Thank you for the opportunity to provide you with these services. If you should have any questions or require additional information, please do not hesitate to contact Mark Manganello at (508) 746-9491 or at mmanganello@lecenvironmental.com.

Sincerely,

LEC Environmental Consultants, Inc.

Mark L. Manganello
Assistant Director of Ecological Services

Claire A. Hoogeboom
Wetland Scientist

cc: Farland Corp.
Parallel Products of New England

Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00 & 310 CMR 10.58 (2) (a) 1.d.), www.state.ma.us/dep

Massachusetts Wetlands Protection Act (M.G.L. c. 131, §. 40), www.state.ma.us/dep

Massachusetts Department of Environmental Protection, Division of Wetlands and Waterways 1995. *Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act, A Handbook*. 89 pp.

City of New Bedford Wetlands Ordinance, http://www.newbedford-ma.gov/environmental-stewardship/wp-content/uploads/sites/39/City-of-New-Bedford-Wetlands-Ordinance.pdf

National Flood Insurance Program, Federal Emergency Management Agency Flood Insurance Rate Map, Bristol County, Massachusetts. July 7, 2009 (Community Panel Number *25005 C 0379F*).

New England Hydric Soils Technical Committee, *Field Indicators for Identifying Hydric Soils in New England*, Version 4, 2017, New England Interstate Water Pollution Control Commission, Wilmington, MA. P. 76

NRCS Web Soil Survey. http://websoilsurvey.nrcs.usda.gov/app/websoilsurvey.aspx

U.S. Army Corps of Engineers, *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region, Version 2.0*, U.S. Army Engineer Research and Development Center, 3909 Halls Ferry Road, Vicksburg, MS 39180-6199, January 2012, ERDC/EL TR-12-1

NOTICE OF INTENT
(WPA FORM 3)

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

WPA Form 3 – Notice of Intent

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

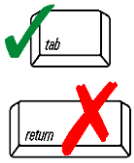
Provided by MassDEP:

MassDEP File Number

Document Transaction Number

New Bedford
City/Town

Important:
When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



Note:
Before completing this form consult your local Conservation Commission regarding any municipal bylaw or ordinance.

A. General Information

1. Project Location (**Note:** electronic filers will click on button to locate project site):

100 Duchaine Boulevard — a. Street Address
New Bedford — b. City/Town
02745 — c. Zip Code

Latitude and Longitude:
41.425695 — d. Latitude
-70.570619 — e. Longitude

134 — f. Assessors Map/Plat Number
5 — g. Parcel /Lot Number

2. Applicant:

Tim — a. First Name
Cusson — b. Last Name
Parallel Products of New England — c. Organization
100 Duchaine Boulevard — d. Street Address
New Bedford — e. City/Town
MA — f. State
02745 — g. Zip Code
(617) 908-0825 — h. Phone Number
i. Fax Number
timc@parallelproducts.com — j. Email Address

3. Property owner (required if different from applicant): ☐ Check if more than one owner

a. First Name
b. Last Name
SMRE 100, LLC — c. Organization
255 State Street, 7th Floor — d. Street Address
Boston — e. City/Town
MA — f. State
02109 — g. Zip Code
h. Phone Number
i. Fax Number
j. Email address

4. Representative (if any):

Christian — a. First Name
Farland — b. Last Name
Farland Corp. — c. Company
401 County Street — d. Street Address
New Bedford — e. City/Town
MA — f. State
02740 — g. Zip Code
(508) 717-3479 — h. Phone Number
i. Fax Number
cfarland@farlandcorp.com — j. Email address

5. Total WPA Fee Paid (from NOI Wetland Fee Transmittal Form):

$4,125.00 — a. Total Fee Paid
$2,050.00 — b. State Fee Paid
$2,075.00 — c. City/Town Fee Paid

A. General Information (continued)

6. General Project Description:

Construction of a railroad spur from an existing track. Construction of two building additions and three solar canopies. Associated grading and utility work to service proposed additions and track.

7a. Project Type Checklist: (Limited Project Types see Section A. 7b.)

1. ☐ Single Family Home
2. ☐ Residential Subdivision
3. ☒ Commercial/Industrial
4. ☐ Dock/Pier
5. ☐ Utilities
6. ☐ Coastal engineering Structure
7. ☐ Agriculture (e.g., cranberries, forestry)
8. ☐ Transportation
9. ☐ Other

7b. Is any portion of the proposed activity eligible to be treated as a limited project (including Ecological Restoration Limited Project) subject to 310 CMR 10.24 (coastal) or 310 CMR 10.53 (inland)?

1. ☐ Yes ☒ No

If yes, describe which limited project applies to this project. (See 310 CMR 10.24 and 10.53 for a complete list and description of limited project types)

2. Limited Project Type

If the proposed activity is eligible to be treated as an Ecological Restoration Limited Project (310 CMR10.24(8), 310 CMR 10.53(4)), complete and attach Appendix A: Ecological Restoration Limited Project Checklist and Signed Certification.

8. Property recorded at the Registry of Deeds for:

a. County	b. Certificate # (if registered land)
Bristol (S.D)	24201
c. Book	d. Page Number

B. Buffer Zone & Resource Area Impacts (temporary & permanent)

1. ☐ Buffer Zone Only – Check if the project is located only in the Buffer Zone of a Bordering Vegetated Wetland, Inland Bank, or Coastal Resource Area.
2. ☒ Inland Resource Areas (see 310 CMR 10.54-10.58; if not applicable, go to Section B.3, Coastal Resource Areas).

Check all that apply below. Attach narrative and any supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

B. Buffer Zone & Resource Area Impacts (temporary & permanent) (cont'd)

For all projects affecting other Resource Areas, please attach a narrative explaining how the resource area was delineated.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☒ Bank	60 (1. linear feet)	(2. linear feet)
b. ☒ Bordering Vegetated Wetland	4,936 (1. square feet)	8,208 (2. square feet)
c. ☒ Land Under Waterbodies and Waterways	504 (1. square feet)	144 (2. square feet)
	(3. cubic yards dredged)	

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
d. ☐ Bordering Land Subject to Flooding	(1. square feet)	(2. square feet)
	(3. cubic feet of flood storage lost)	(4. cubic feet replaced)
e. ☐ Isolated Land Subject to Flooding	(1. square feet)	
	(2. cubic feet of flood storage lost)	(3. cubic feet replaced)
f. ☒ Riverfront Area	Unnamed Inland Stream (1. Name of Waterway (if available) - **specify coastal or inland**)	

2. Width of Riverfront Area (check one):

☒ 25 ft. - Designated Densely Developed Areas only

☐ 100 ft. - New agricultural projects only

☐ 200 ft. - All other projects

3. Total area of Riverfront Area on the site of the proposed project: 39,950 square feet

4. Proposed alteration of the Riverfront Area:

a. total square feet	b. square feet within 100 ft.	c. square feet between 100 ft. and 200 ft.
2,110	2,110	0

5. Has an alternatives analysis been done and is it attached to this NOI? ☒ Yes ☐ No

6. Was the lot where the activity is proposed created prior to August 1, 1996? ☒ Yes ☐ No

3. ☐ Coastal Resource Areas: (See 310 CMR 10.25-10.35)

Note: for coastal riverfront areas, please complete **Section B.2.f**. above.

B. Buffer Zone & Resource Area Impacts **(temporary & permanent)** (cont'd)

Check all that apply below. Attach narrative and supporting documentation describing how the project will meet all performance standards for each of the resource areas altered, including standards requiring consideration of alternative project design or location.

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
a. ☐ Designated Port Areas	Indicate size under Land Under the Ocean, below	
b. ☐ Land Under the Ocean	1. square feet 2. cubic yards dredged	
c. ☐ Barrier Beach	Indicate size under Coastal Beaches and/or Coastal Dunes below	
d. ☐ Coastal Beaches	1. square feet	2. cubic yards beach nourishment
e. ☐ Coastal Dunes	1. square feet	2. cubic yards dune nourishment

Resource Area	Size of Proposed Alteration	Proposed Replacement (if any)
f. ☐ Coastal Banks	1. linear feet	
g. ☐ Rocky Intertidal Shores	1. square feet	
h. ☐ Salt Marshes	1. square feet	2. sq ft restoration, rehab., creation
i. ☐ Land Under Salt Ponds	1. square feet 2. cubic yards dredged	
j. ☐ Land Containing Shellfish	1. square feet	
k. ☐ Fish Runs	Indicate size under Coastal Banks, inland Bank, Land Under the Ocean, and/or inland Land Under Waterbodies and Waterways, above 1. cubic yards dredged	
l. ☐ Land Subject to Coastal Storm Flowage	1. square feet	

4. ☐ Restoration/Enhancement

If the project is for the purpose of restoring or enhancing a wetland resource area in addition to the square footage that has been entered in Section B.2.b or B.3.h above, please enter the additional amount here.

a. square feet of BVW

b. square feet of Salt Marsh

5. ☒ Project Involves Stream Crossings

0
a. number of new stream crossings

1
b. number of replacement stream crossings

C. Other Applicable Standards and Requirements

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section C and complete Appendix A: Ecological Restoration Limited Project Checklists – Required Actions (310 CMR 10.11).

Streamlined Massachusetts Endangered Species Act/Wetlands Protection Act Review

1. Is any portion of the proposed project located in **Estimated Habitat of Rare Wildlife** as indicated on the most recent Estimated Habitat Map of State-Listed Rare Wetland Wildlife published by the Natural Heritage and Endangered Species Program (NHESP)? To view habitat maps, see the *Massachusetts Natural Heritage Atlas* or go to http://maps.massgis.state.ma.us/PRI_EST_HAB/viewer.htm.

   a. ☐ Yes ☒ No

   If yes, include proof of mailing or hand delivery of NOI to:

   Natural Heritage and Endangered Species Program
   Division of Fisheries and Wildlife
   1 Rabbit Hill Road
   Westborough, MA 01581

   August 2017
   b. Date of map

   If *yes*, the project is also subject to Massachusetts Endangered Species Act (MESA) review (321 CMR 10.18). To qualify for a streamlined, 30-day, MESA/Wetlands Protection Act review, please complete Section C.1.c, and include requested materials with this Notice of Intent (NOI); *OR* complete Section C.2.f, if applicable. *If MESA supplemental information is not included with the NOI, by completing Section 1 of this form, the NHESP will require a separate MESA filing which may take up to 90 days to review (unless noted exceptions in Section 2 apply, see below).*

   c. Submit Supplemental Information for Endangered Species Review*

      1. ☐ Percentage/acreage of property to be altered:

         (a) within wetland Resource Area _____ percentage/acreage

         (b) outside Resource Area _____ percentage/acreage

      2. ☐ Assessor's Map or right-of-way plan of site

2. ☒ Project plans for entire project site, including wetland resource areas and areas outside of wetlands jurisdiction, showing existing and proposed conditions, existing and proposed tree/vegetation clearing line, and clearly demarcated limits of work **

   (a) ☒ Project description (including description of impacts outside of wetland resource area & buffer zone)

   (b) ☐ Photographs representative of the site

* Some projects **not** in Estimated Habitat may be located in Priority Habitat, and require NHESP review (see http://www.mass.gov/eea/agencies/dfg/dfw/natural-heritage/regulatory-review/). Priority Habitat includes habitat for state-listed plants and strictly upland species not protected by the Wetlands Protection Act.

** MESA projects may not be segmented (321 CMR 10.16). The applicant must disclose full development plans even if such plans are not required as part of the Notice of Intent process.

C. Other Applicable Standards and Requirements (cont'd)

(c) ☐ MESA filing fee (fee information available at http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_fee_schedule.htm). Make check payable to "Commonwealth of Massachusetts - NHESP" and ***mail to NHESP*** at above address

*Projects altering **10 or more acres** of land, also submit:*

(d) ☐ Vegetation cover type map of site

(e) ☐ Project plans showing Priority & Estimated Habitat boundaries

(f) OR Check One of the Following

1. ☐ Project is exempt from MESA review.
Attach applicant letter indicating which MESA exemption applies. (See 321 CMR 10.14, http://www.mass.gov/dfwele/dfw/nhesp/regulatory_review/mesa/mesa_exemptions.htm; the NOI must still be sent to NHESP if the project is within estimated habitat pursuant to 310 CMR 10.37 and 10.59.)

2. ☐ Separate MESA review ongoing. a. NHESP Tracking # b. Date submitted to NHESP

3. ☐ Separate MESA review completed.
Include copy of NHESP "no Take" determination or valid Conservation & Management Permit with approved plan.

3. For coastal projects only, is any portion of the proposed project located below the mean high water line or in a fish run?

a. ☒ Not applicable – project is in inland resource area only b. ☐ Yes ☐ No

If yes, include proof of mailing, hand delivery, or electronic delivery of NOI to either:

South Shore - Cohasset to Rhode Island border, and the Cape & Islands:

Division of Marine Fisheries -
Southeast Marine Fisheries Station
Attn: Environmental Reviewer
1213 Purchase Street – 3rd Floor
New Bedford, MA 02740-6694
Email: DMF.EnvReview-South@state.ma.us

North Shore - Hull to New Hampshire border:

Division of Marine Fisheries -
North Shore Office
Attn: Environmental Reviewer
30 Emerson Avenue
Gloucester, MA 01930
Email: DMF.EnvReview-North@state.ma.us

Also if yes, the project may require a Chapter 91 license. For coastal towns in the Northeast Region, please contact MassDEP's Boston Office. For coastal towns in the Southeast Region, please contact MassDEP's Southeast Regional Office.

C. Other Applicable Standards and Requirements (cont'd)

4. Is any portion of the proposed project within an Area of Critical Environmental Concern (ACEC)?

a. ☐ Yes ☒ No If yes, provide name of ACEC (see instructions to WPA Form 3 or MassDEP Website for ACEC locations). **Note:** electronic filers click on Website.

b. ACEC

Online Users: Include your document transaction number (provided on your receipt page) with all supplementary information you submit to the Department.

5. Is any portion of the proposed project within an area designated as an Outstanding Resource Water (ORW) as designated in the Massachusetts Surface Water Quality Standards, 314 CMR 4.00?

a. ☐ Yes ☒ No

6. Is any portion of the site subject to a Wetlands Restriction Order under the Inland Wetlands Restriction Act (M.G.L. c. 131, § 40A) or the Coastal Wetlands Restriction Act (M.G.L. c. 130, § 105)?

a. ☐ Yes ☒ No

7. Is this project subject to provisions of the MassDEP Stormwater Management Standards?

a. ☒ Yes. Attach a copy of the Stormwater Report as required by the Stormwater Management Standards per 310 CMR 10.05(6)(k)-(q) and check if:

1. ☐ Applying for Low Impact Development (LID) site design credits (as described in Stormwater Management Handbook Vol. 2, Chapter 3)

2. ☒ A portion of the site constitutes redevelopment

3. ☒ Proprietary BMPs are included in the Stormwater Management System.

b. ☐ No. Check why the project is exempt:

1. ☐ Single-family house

2. ☐ Emergency road repair

3. ☐ Small Residential Subdivision (less than or equal to 4 single-family houses or less than or equal to 4 units in multi-family housing project) with no discharge to Critical Areas.

D. Additional Information

☐ This is a proposal for an Ecological Restoration Limited Project. Skip Section D and complete Appendix A: Ecological Restoration Notice of Intent – Minimum Required Documents (310 CMR 10.12).

Applicants must include the following with this Notice of Intent (NOI). See instructions for details.

Online Users: Attach the document transaction number (provided on your receipt page) for any of the following information you submit to the Department.

1. ☒ USGS or other map of the area (along with a narrative description, if necessary) containing sufficient information for the Conservation Commission and the Department to locate the site. (Electronic filers may omit this item.)

2. ☒ Plans identifying the location of proposed activities (including activities proposed to serve as a Bordering Vegetated Wetland [BVW] replication area or other mitigating measure) relative to the boundaries of each affected resource area.

D. Additional Information (cont'd)

3. ☒ Identify the method for BVW and other resource area boundary delineations (MassDEP BVW Field Data Form(s), Determination of Applicability, Order of Resource Area Delineation, etc.), and attach documentation of the methodology.

4. ☒ List the titles and dates for all plans and other materials submitted with this NOI.

Site Plan - 100 Duchaine Boulevard (Assessors Map 134 Lot 5 - New Bedford, MA)
a. Plan Title

Farland Corp.
b. Prepared By

Christian A. Farland
c. Signed and Stamped by

9/13/19
d. Final Revision Date

1" = 50'
e. Scale

Stormwater Report
f. Additional Plan or Document Title

9/13//19
g. Date

5. ☐ If there is more than one property owner, please attach a list of these property owners not listed on this form.

6. ☐ Attach proof of mailing for Natural Heritage and Endangered Species Program, if needed.

7. ☐ Attach proof of mailing for Massachusetts Division of Marine Fisheries, if needed.

8. ☒ Attach NOI Wetland Fee Transmittal Form

9. ☒ Attach Stormwater Report, if needed.

E. Fees

1. ☐ Fee Exempt: No filing fee shall be assessed for projects of any city, town, county, or district of the Commonwealth, federally recognized Indian tribe housing authority, municipal housing authority, or the Massachusetts Bay Transportation Authority.

Applicants must submit the following information (in addition to pages 1 and 2 of the NOI Wetland Fee Transmittal Form) to confirm fee payment:

8347
2. Municipal Check Number

10/2/19
3. Check date

8348
4. State Check Number

10/2/19
5. Check date

Farland Corporation Inc.
6. Payor name on check: First Name

7. Payor name on check: Last Name

F. Signatures and Submittal Requirements

I hereby certify under the penalties of perjury that the foregoing Notice of Intent and accompanying plans, documents, and supporting data are true and complete to the best of my knowledge. I understand that the Conservation Commission will place notification of this Notice in a local newspaper at the expense of the applicant in accordance with the wetlands regulations, 310 CMR 10.05(5)(a).

I further certify under penalties of perjury that all abutters were notified of this application, pursuant to the requirements of M.G.L. c. 131, § 40. Notice must be made by Certificate of Mailing or in writing by hand delivery or certified mail (return receipt requested) to all abutters within 100 feet of the property line of the project location.

1. Signature of Applicant	2. Date: 10/2/19
3. Signature of Property Owner (if different)	4. Date
5. Signature of Representative (if any)	6. Date: 10-2-19

For Conservation Commission:
Two copies of the completed Notice of Intent (Form 3), including supporting plans and documents, two copies of the NOI Wetland Fee Transmittal Form, and the city/town fee payment, to the Conservation Commission by certified mail or hand delivery.

For MassDEP:
One copy of the completed Notice of Intent (Form 3), including supporting plans and documents, one copy of the NOI Wetland Fee Transmittal Form, and a **copy** of the state fee payment to the MassDEP Regional Office (see Instructions) by certified mail or hand delivery.

Other:
If the applicant has checked the "yes" box in any part of Section C, Item 3, above, refer to that section and the Instructions for additional submittal requirements.

The original and copies must be sent simultaneously. Failure by the applicant to send copies in a timely manner may result in dismissal of the Notice of Intent.

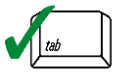
NOI FEE TRANSMITTAL FORM

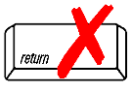
Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.





A. Applicant Information

1. Location of Project:

100 Duchaine Boulevard	New Bedford
a. Street Address	b. City/Town
8348	$2,050.00
c. Check number	d. Fee amount

2. Applicant Mailing Address:

Tim		Cusson
a. First Name		b. Last Name
Parallel Products of New England		
c. Organization		
100 Duchaine Boulevard		
d. Mailing Address		
New Bedford	MA	02745
e. City/Town	f. State	g. Zip Code
(617) 508-0825		timc@parallelproducts.com
h. Phone Number	i. Fax Number	j. Email Address

3. Property Owner (if different):

a. First Name		b. Last Name
SMRE 100, LLC		
c. Organization		
255 State Street, 7th Floor		
d. Mailing Address		
Boston	MA	02109
e. City/Town	f. State	g. Zip Code
h. Phone Number	i. Fax Number	j. Email Address

B. Fees

To calculate filing fees, refer to the category fee list and examples in the instructions for filling out WPA Form 3 (Notice of Intent).

Fee should be calculated using the following process & worksheet. ***Please see Instructions before filling out worksheet.***

Step 1/Type of Activity: Describe each type of activity that will occur in wetland resource area and buffer zone.

Step 2/Number of Activities: Identify the number of each type of activity.

Step 3/Individual Activity Fee: Identify each activity fee from the six project categories listed in the instructions.

Step 4/Subtotal Activity Fee: Multiply the number of activities (identified in Step 2) times the fee per category (identified in Step 3) to reach a subtotal fee amount. Note: If any of these activities are in a Riverfront Area in addition to another Resource Area or the Buffer Zone, the fee per activity should be multiplied by 1.5 and then added to the subtotal amount.

Step 5/Total Project Fee: Determine the total project fee by adding the subtotal amounts from Step 4.

Step 6/Fee Payments: To calculate the state share of the fee, divide the total fee in half and subtract $12.50. To calculate the city/town share of the fee, divide the total fee in half and add $12.50.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands

NOI Wetland Fee Transmittal Form

Massachusetts Wetlands Protection Act M.G.L. c. 131, §40

B. Fees (continued)

Step 1/Type of Activity	Step 2/Number of Activities	Step 3/Individual Activity Fee	Step 4/Subtotal Activity Fee
Category 2j.) Commercial Addition	1	$500.00	$500.00
Category 4e.) Railroad Construction	1	$1,450.00	$1,450.00
category 4f.) Bridge (Riverfront)	1	$1,450.00	$2,175.00

Step 5/Total Project Fee: $4,125.00

Step 6/Fee Payments:

Total Project Fee:	$4,125.00 (a. Total Fee from Step 5)
State share of filing Fee:	$2,050.00 (b. 1/2 Total Fee **less $**12.50)
City/Town share of filling Fee:	$2,075.00 (c. 1/2 Total Fee **plus** $12.50)

C. Submittal Requirements

a.) Complete pages 1 and 2 and send with a check or money order for the state share of the fee, payable to the Commonwealth of Massachusetts.

Department of Environmental Protection
Box 4062
Boston, MA 02211

b.) **To the Conservation Commission:** Send the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and the city/town fee payment.

To MassDEP Regional Office (see Instructions): Send a copy of the Notice of Intent or Abbreviated Notice of Intent; a **copy** of this form; and a **copy** of the state fee payment. (E-filers of Notices of Intent may submit these electronically.)

2017 00122427
Cert: 24417 Doc: DEED BS
Registered: 11/03/2017 02:55 PM

Property Address:
Re:100 Duchaine Boulevard
Lot 7, Plan No. 36318-D
New Bedford, MA 02745

MASSACHUSETTS QUITCLAIM DEED
BY LIMITED LIABILITY COMPANY
REGISTERED LAND

LOGAL, LLC, a Massachusetts limited liability company, of New Bedford, Massachusetts, For consideration paid, and in full consideration of ONE and 00/100 ($1.00) DOLLAR Grants to SMRE Sublot 20, LLC, a Delaware limited liability company, having a principal office address of 401 Industry Road, Suite 100, Louisville, Kentucky 40208,

with **Quitclaim Covenants**

the land with any buildings and improvements thereon located in New Bedford, Bristol County, Massachusetts, described as follows:

SEE EXHIBIT "A" ATTACHED HERETO
AND
INCORPORATED HEREIN BY REFERENCE

Grantor hereby certifies that it is not classified as a corporation for federal income tax purposes for the current taxable year.

BEING a portion of the property conveyed to the Grantor by deed dated March 20, 2014 and filed on March 27, 2014 in the Bristol County (S.D.) Registry of Deeds, Land Court Department as Document No. 114700 as Certificate of Title No. 23339.

[The remainder of this page has been intentionally left blank.]

SIGNED as a sealed instrument this 1st day of November, 2017.

LOGAL, LLC

By: _____
Eric R. DeCosta, Manager and Authorized Signatory

COMMONWEALTH OF MASSACHUSETTS
Bristol, SS.

On this 1st day of Novemb, 2017, before me, the undersigned notary public, Eric R. DeCosta, Manager and Authorized Signatory of Logal, LLC, personally appeared, proved to me through satisfactory evidence of identification, which were MA License, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose as Manager and Authorized Signatory of Logal, LLC.

_____
Print Name of Notary Public:
My Commission Expires: 3/4/22

THOMAS J. MATHIEU
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
March 4, 2022

EXHIBIT "A"

RE: 100 Duchaine Boulevard, New Bedford, MA 02745

That certain parcel of land, with the buildings and improvements thereon, situated in New Bedford, Bristol County, Massachusetts, containing 7.26 +/- acres and being shown as Lot 7 on Land Court Plan No. **36318-D** (Sheet 1 of 1) entitled "Approval Not Required Plan of Land Duchaine Boulevard and Phillips Road, New Bedford, Massachusetts", prepared by Farland Corp., dated January 25, 2017 and filed in the Land Registration Office at Boston and filed with the Bristol County (S.D.) Registry of Deeds, Land Court Department in Plan Book 140, Plan 22.

LAND COURT, BOSTON. The land herein ~~described~~ will be shown on our approved plan to follow as
REFERRED TO
NOV 03 2017
Plan 36318D Lot 7
(EXAMINED AS DESCRIPTION ONLY)
T.C. PONTBRIAND
~~ACTING~~ CHIEF ENGINEER
JAV

EXHIBIT "A"

RE: 100 Duchaine Boulevard, New Bedford, MA 02745

That certain parcel of land, with the buildings and improvements thereon, situated in New Bedford, Bristol County, Massachusetts, containing 7.26 +/- acres and being shown as Lot 7 on Land Court Plan No. 36318-D (Sheet 1 of 1) entitled "Approval Not Required Plan of Land Duchaine Boulevard and Phillips Road, New Bedford, Massachusetts", prepared by Farland Corp., dated January 25, 2017 and filed in the Land Registration Office at Boston and filed with the Bristol County (S.D.) Registry of Deeds, Land Court Department in Plan Book 140, Plan 22.

LAND COURT, BOSTON. The land herein ~~described~~ will be shown on our approved plan to follow as
REFERRED TO
NOV 03 2017
Plan 36318 D Lot 7
(EXAMINED AS DESCRIPTION ONLY)
T.C. PONTBRIAND
~~ACTING~~ CHIEF ENGINEER
JAV

The Commonwealth of Massachusetts

Secretary of the Commonwealth

State House, Boston, Massachusetts 02133

William Francis Galvin
Secretary of the Commonwealth

October 23, 2017

TO WHOM IT MAY CONCERN:

I hereby certify that a certificate of organization of a Limited Liability Company was filed in this office by

LOGAL, LLC

in accordance with the provisions of Massachusetts General Laws Chapter 156C on **February 10, 2014.**

I further certify that said Limited Liability Company has filed all annual reports due and paid all fees with respect to such reports; that said Limited Liability Company has not filed a certificate of cancellation or withdrawal; and that, said Limited Liability Company is in good standing with this office.

I also certify that the names of all managers listed in the most recent filing are: **ERIC R. DECOSTA**

I further certify, the names of all persons authorized to execute documents filed with this office and listed in the most recent filing are: **ERIC R. DECOSTA**

The names of all persons authorized to act with respect to real property listed in the most recent filing are: **ERIC R. DECOSTA**

In testimony of which,
I have hereunto affixed the
Great Seal of the Commonwealth
on the date first above written.

William Francis Galvin

Secretary of the Commonwealth

Processed By:IKochman

Doc 00122427

Bristol South LAND COURT
Registry District

RECEIVED FOR REGISTRATION

On: Nov 03,2017 at 02:55P

Document Fee 125.00

Receipt Total: $125.00

~~NOTED ON:~~ New CERT 24417 BK 00141 PG 88

ALSO NOTED ON: CERT 23339 BK 134 PG 60

N.B. - Phillips Rd (w)
Lot 7 Apr. 36318

(6)

2017 00120924
Cert: 24201 Doc: DEED BS
Registered: 03/10/2017 03:00 PM

RE: 100 Duchaine Boulevard
Lot 8, Plan No. 36318-D
New Bedford, MA 02745

MASSACHUSETTS QUITCLAIM DEED BY LIMITED LIABILITY COMPANY REGISTERED LAND

LOGAL, LLC, a Massachusetts limited liability company, of New Bedford, Massachusetts,

for consideration paid, and in full consideration of SIX MILLION ONE HUNDRED FIFTY THOUSAND and 00/100 ($6,150,000.00) DOLLARS

grants to SMRE 100, LLC, a Massachusetts limited liability company, having a principal office address of C/O Ruberto, Israel & Weiner, P.C., 255 State Street, 7th Floor, Boston, Massachusetts 02109,

with **Quitclaim Covenants**

the land with any buildings and improvements thereon located in New Bedford, Bristol County, Massachusetts, described as follows:

SEE EXHIBIT "A" ATTACHED HERETO
AND
INCORPORATED HEREIN BY REFERENCE

Grantor hereby certifies that it is not classified as a corporation for federal income tax purposes for the current taxable year.

BEING a portion of the property conveyed to the Grantor by deed dated March 20, 2014 and filed on March 27, 2014 in the Bristol County (S.D.) Registry of Deeds, Land Court Department as Document No. 114700 as Certificate of Title No. 23339.

SEE NEXT PAGE FOR SIGNATURES

MASSACHUSETTS EXCISE TAX
Bristol ROD South 001
Date: 03/10/2017 03:00 PM
Ctrl# 021554 13994 Doc# 00120924

WITNESS my hand and seal as of the 10th day of ~~February~~ March 2017.

~~**BORROWER:**~~
LOGAL, LLC

Witness

Eric R. DeCosta, Manager and
Authorized Signatory

COMMONWEALTH OF MASSACHUSETTS

Bristol, ss

~~February~~ March 10, 2017

Then personally appeared the above-named Eric R. DeCosta, Manager and Authorized Signatory, proved to me through satisfactory evidence of identification, which was a Massachusetts Drivers License, to be the person whose name is signed on the within document, and acknowledged the foregoing Instrument to be his free act and deed, on behalf of Logal, LLC, before me

Notary Public

My Commission Expires:

MICHAEL DANA ROSEN
Notary Public
Commonwealth of Massachusetts
My Commission Expires August 27, 2021

LAND COURT, BOSTON. The land herein described will be shown on our approved plan to follow as

MAR 07 2017

Plan 36318D Lot 8
(EXAMINED AS DESCRIPTION ONLY)
CHIEF SURVEYOR

EXHIBIT "A"

RE: 100 Duchaine Boulevard, New Bedford, MA 02745

That certain parcel of land, with the buildings and improvements thereon, situated in New Bedford, Bristol County, Massachusetts, containing 61.52 +/- acres and being shown as **Lot 8** on Land Court Plan No. **36318-D** (Sheet 1 of 1) entitled "Approval Not Required Plan of Land-Duchaine Boulvard and Phillips Road-Being a Division of Lot 6, L.C. Plan 36318-C, Creating 2 Lots, Owned by Logal, LLC", drawn by Farland Corp., dated January 25, 2017 and filed in the Land Registration Office at Boston, a copy of which is to be filed in the Bristol County (Southern District) Registry of District of the Land Court.

The Commonwealth of Massachusetts

Secretary of the Commonwealth

State House, Boston, Massachusetts 02133

William Francis Galvin
Secretary of the Commonwealth

March 7, 2017

TO WHOM IT MAY CONCERN:

I hereby certify that a certificate of organization of a Limited Liability Company was filed in this office by

LOGAL, LLC

in accordance with the provisions of Massachusetts General Laws Chapter 156C on **February 10, 2014.**

I further certify that said Limited Liability Company has filed all annual reports due and paid all fees with respect to such reports; that said Limited Liability Company has not filed a certificate of cancellation or withdrawal; and that, said Limited Liability Company is in good standing with this office.

I also certify that the names of all managers listed in the most recent filing are: **ERIC R. DECOSTA**

I further certify, the names of all persons authorized to execute documents filed with this office and listed in the most recent filing are: **ERIC R. DECOSTA**

The names of all persons authorized to act with respect to real property listed in the most recent filing are: **ERIC R. DECOSTA**

In testimony of which,
I have hereunto affixed the
Great Seal of the Commonwealth
on the date first above written.

William Francis Galvin

Secretary of the Commonwealth

Processed By:IKochman

Doc 00120924

Bristol South LAND COURT
Registry District

RECEIVED FOR REGISTRATION

On: Mar 10,2017 at 03:00P

Document Fee 125.00

Receipt Total: $28,309.00

~~NOTED ON: CERT 24201~~ New BK 00140 PG 22

ALSO NOTED ON: CERT 23339 BK 134 PG 60

N.B. - Phillipston Rd.(a) Dunbarton Blvd (s.w. & n.e.) Lot 8 M. 363/85

(5)

4

2018 00004720
Bk: 12378 Pg: 314 Pg: 1 of 4 BS
Doc: DEED 03/08/2018 12:42 PM

RE: Vacant Land-Parcel B
Rear Samuel Barnet Boulevard
New Bedford, MA 02745

MASSACHUSETTS EXCISE TAX
Bristol ROD South 001
Date: 03/08/2018 12:42 PM
Ctrl# 024447 22617 Doc# 00004720
Fee: $127.68 Cons: $28,000.00

MASSACHUSETTS QUITCLAIM DEED BY TRUST

The Greater New Bedford Industrial Foundation, a charitable trust duly established under the Laws of the Commonwealth of Massachusetts, and having its usual place of business in New Bedford, Bristol County, Massachusetts

for consideration paid, and in full consideration of TWENTY-EIGHT THOUSAND and 00/100 ($28,000.00) DOLLARS

grant to SMRE 100, LLC, a Massachusetts limited liability company, having an office address of 50 Duchaine Boulevard, New Bedford, Massachusetts 02745

with **Quitclaim Covenants**

the vacant land located in New Bedford, Bristol County, Massachusetts, described as follows:

SEE EXHIBIT "A" ATTACHED HERETO
AND
INCORPORATED HEREIN BY REFERENCE

TITLE NOT EXAMINED BY THE PREPARER OF THIS DEED.

SEE NEXT PAGE FOR SIGNATURES

Return to: Partridge Snow + Hahn LLP Union St SF-5220 WB02710

UNOFFICIAL COPY

EXECUTED as an instrument under seal this 5th day of March 2018.

Witness

Greater New Bedford Industrial Foundation

By: Elizabeth Isherwood, President
Elizabeth Isherwood, President

COMMONWEALTH OF MASSACHUSETTS

Bristol, ss. March 5, 2018

Before me, the undersigned notary public, personally appeared Elizabeth Isherwood, President, proved to me through satisfactory evidence of identification, which was a Massachusetts Driver's License, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that she signed it voluntarily for its stated purpose, on behalf of The Greater New Bedford Industrial Foundation.

Deborah A. Trombly
Notary Public

My Commission Expires: 6-29-2023

DEBORAH A. TROMBLY
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
June 29, 2023

EXECUTED as an instrument under seal this 5th day of March 2018.

UNOFFICIAL COPY

Witness

Greater New Bedford Industrial Foundation

By: _____
Jeff Vancura, Treasurer

COMMONWEALTH OF MASSACHUSETTS

Bristol, ss. March 5, 2018

Before me, the undersigned notary public, personally appeared Jeff Vancura, Treasurer, proved to me through satisfactory evidence of identification, which was a Massachusetts Driver's License, to be the person whose name is signed on the preceding or attached document, and acknowledged to me that he signed it voluntarily for its stated purpose, on behalf of The Greater New Bedford Industrial Foundation.

Deborah A. Trombly
Notary Public

My Commission Expires: 6-29-2023

DEBORAH A. TROMBLY
Notary Public
COMMONWEALTH OF MASSACHUSETTS
My Commission Expires
June 29, 2023

UNOFFICIAL COPY

UNOFFICIAL COPY

EXHIBIT "A"

RE: Vacant Land, Parcel B, Rear Samuel Barnet Boulevard, New Bedford, MA 02745

the vacant land, in New Bedford, Bristol County, Massachusetts, described as follows:

Being shown as **PARCEL B, containing 76,859 +/- S.F. (1.764 Acres)**, being shown on a plan of land entitled: "Approval Not Required Plan, Greater New Bedford Industrial Foundation, Duchaine Boulevard, New Bedford, Massachusetts", dated April 2017, Scale: 1" = 80', by Field Engineering Co., Inc., recorded herewith.

BEING a portion of the property described in a deed dated March 15, 1967 and recorded on April 3, 1967 in the Bristol County (S.D.) Registry of Deeds in Book 1544, Page 357

Said Parcel B is not to be considered a buildable lot and is to be combined with abutting land of the Grantee.

Doc 00126377

Bristol South LAND COURT
Registry District

RECEIVED FOR REGISTRATION

On: Sep 18,2019 at 08:24A

Document Fee 125.00

Receipt Total: $125.00

NOTED ON: CERT 25024 BK 00145 PG 95

ALSO NOTED ON: CERT 24417 BK 141 PG 88

MASSACHUSETTS QUITCLAIM DEED
BY LIMITED LIABILITY COMPANY
REGISTERED LAND

SMRE Sublot 20, LLC, a Delaware limited liability company, having a principal office address of 401 Industry Road, Suite 100, Louisville, Kentucky 40208, for consideration paid, and in full consideration of ONE and 00/100 ($1.00) DOLLAR, grants to SMRE 100, LLC, a Massachusetts limited liability company, having a principal office address of c/o Ruberto, Israel & Weiner, P.C., 255 State Street, 7th Floor, Boston, Massachusetts 02109,

With Quitclaim Covenants

the land with any buildings and improvements thereon located in New Bedford, Bristol County, Massachusetts, described as follows:

SEE EXHIBIT "A" ATTACHED HERETO
AND
INCORPORATED HEREIN BY REFERENCE

Grantor certifies that it is not classified as a corporation for federal income tax purposes for the current taxable year.

Being the property conveyed to the Grantor by deed dated November 1, 2017 and filed on November 3, 2017 in the Bristol County (S.D.) Registry of Deeds, Land Court Department as Document No. 122427 on Certificate of Title No. 24417.

[The remainder of this page has been intentionally left blank.]

COPY

Signed as a sealed instrument this 10th day of JULY, 2019.

SMRE Sublot 20, LLC

Witness

By: _____
Jason Stein, Manager

STATE OF UTAH
COUNTY OF SUMMIT

On this 10th day of JULY, 2019, before me, the undersigned notary public, personally appeared Janson Stein, Manager and Authorized Signatory of SMRE Sublot 20, LLC, to me known and known by me or proved to me through satisfactory evidence of identification, which was Drivers License, to be the person whose name is signed on the preceding document and acknowledged to me that he signed it voluntarily for its stated purpose as Manager and Authorized Signatory of SMRE Sublot 20, LLC.

_____ (SEAL)
Notary Public
My Commission Expires: 3/10/21

GREG FLINT
NOTARY PUBLIC-STATE OF UTAH
COMMISSION EXP. 03/10/2021
COMMISSION NO. 694617

EXHIBIT "A"

RE: 200 Duchaine Boulvard, New Bedford, MA 02745

That certain parcel of land, with the buildings and improvements thereon, situated in New Bedford, Bristol County, Massachusetts, containing 7.26 +/- acres and being shown as Lot 7 on Land Court Plan No. 36318-D (Sheet 1 of 1) entitled "Approval Not Required Plan of Land Duchaine Boulevard and Phillips Road, New Bedford, Massachusetts", prepared by Farland Corp., dated January 25, 2017 and filed in the Land Registration Office at Boston and filed with the Bristol County (S.D.) Registry of Deeds, Land Court Department in Plan Book 140, Plan 22.

The Commonwealth of Massachusetts

Secretary of the Commonwealth

State House, Boston, Massachusetts 02133

William Francis Galvin
Secretary of the
Commonwealth

September 10, 2019

TO WHOM IT MAY CONCERN:

I hereby certify that a certificate of registration of a Foreign Limited Liability Company was filed in this office by

SMRE SUBLOT 20, LLC

in accordance with the provisions of Massachusetts General Laws Chapter 156C on **September 15, 2017**.

I further certify that said Limited Liability Company has filed all annual reports due and paid all fees with respect to such reports; that said Limited Liability Company has not filed a certificate of cancellation or withdrawal; and that, said Limited Liability Company is in good standing with this office.

I also certify that the names of all managers listed in the most recent filing are: **JASON STEIN, EUGENE KIESEL, TIM CUSSON**

I further certify that the name of persons authorized to act with respect to real property instruments listed in the most recent filings are: **JASON STEIN, EUGENE KIESEL, TIM CUSSON**

In testimony of which,
I have hereunto affixed the
Great Seal of the Commonwealth
on the date first above written.

William Francis Galvin

Secretary of the Commonwealth

Processed By:KMT

COPY

WETLAND REPORT & DATA FORMS

Tunison Environmental Consultants, LLC

Wetland Resource Area Delineation Report for 100 Duchaine Boulevard in New Bedford, Massachusetts

Prepared for:

Parallel Products, Inc.
401 Industry Road
Louisville, KY 40208

Prepared by:

Tunison Environmental Consultants, LLC
P.O. Box 992, 11 South Park Avenue
Plymouth, Massachusetts 02362

July 9, 2019

TEC #: 1801-002

Tunison Environmental Consultants, LLC

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1.0 Introduction

This document presents the methodologies that were used to delineate and identify wetland resources at the property located 100 Duchaine Boulevard (Assessor's Map/Plat Number: 134, Parcel/Lot Number: 5) in New Bedford, Massachusetts (refer to Figure 1, Site Locus). On January 28; February 27; March 1, 10, 11, 12, 27, 28, and 29; and April 7 and 8, 2018, Garrett M. Tunison, of Tunison Environmental Consultants, LLC applied the methodologies described below.

2.0 Wetland Resource Areas

Under the Massachusetts Wetlands Protection Act (MWPA) (M.G.L. Ch. 131, S.40) and its implementing regulations (310 CMR 10.00), five freshwater resource area categories are defined. These categories are: (1) Bank, (2) Bordering Vegetated Wetlands (BVW), (3) Land Under Water Bodies and Waterways, (4) Land Subject to Flooding (Bordering and Isolated), and (5) Riverfront Area.

Bank, BVW, and Riverfront Area can be delineated in the field. The boundaries of Land Under Water Bodies and Waterways and Land Subject to Flooding are typically not physically delineated on a site for the following reasons. 310 CMR 10.56(2)(c) states: "The boundary of Land Under Water Bodies and Waterways is the mean annual low water level." As a result, this resource is not present within intermittent streams and is below bank resources in perennial streams. 310 CMR 10.57(2)(a)3 states: "The boundary of Bordering Land Subject to Flooding is the estimated maximum lateral extent of flood water which will theoretically result from statistical 100-year frequency storm." As such, this boundary is normally

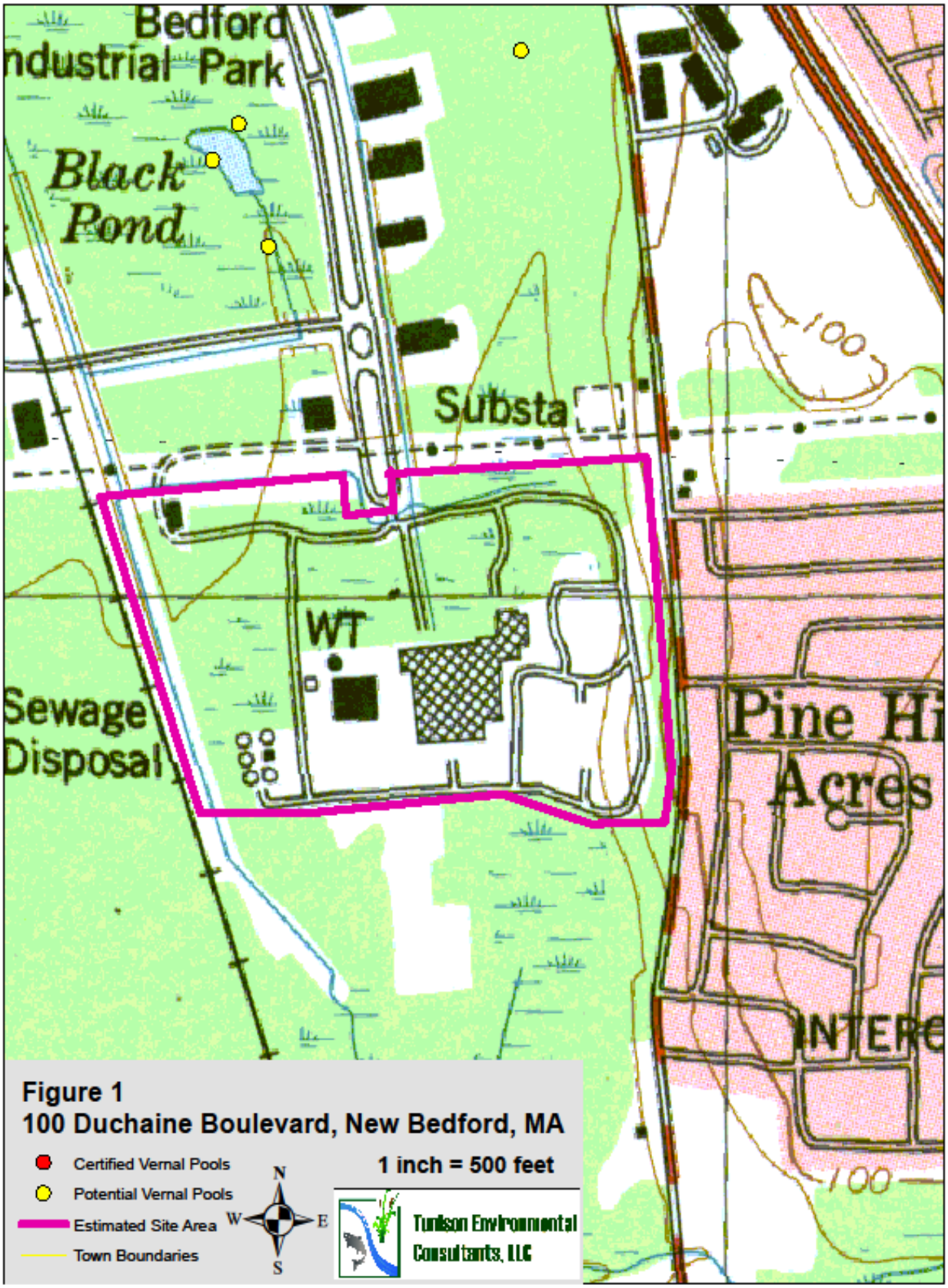
Bedford
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Figure 1
100 Duchaine Boulevard, New Bedford, MA
Certified Vernal Pools
Potential Vernal Pools
Estimated Site Area
Town Boundaries
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1 inch = 500 feet
Tunison Environmental
Consultants, LLC

obtained from NFIP Profile data or by calculation and is represented on a site plan based upon elevation. The boundary of Isolated Land Subject to Flooding is based upon the "Perimeter of the largest observed or recorded volume of water confined in said area." (310 CMR 10.57(2)(b)). Often historical data is lacking and the boundary is determined by calculation using the extent of flood water which will result from the statistical 100-year frequency storm.

3.0 Definitions of Wetland Resource Areas Normally Delineated in the Field

BVW is defined 310 CMR 10.55(2) as:

> "…freshwater wetlands which border on creeks, rivers, streams, ponds and lakes. The types of freshwater wetlands are wet meadows, marshes, swamps and bogs. Bordering Vegetated Wetlands are areas where the soils are saturated and/or inundated such that they support a predominance of wetland indicator plants…" The boundary of BVW is defined in 310 CMR 10.55(2)(c) as "…the line within which 50% or more of the vegetated community consists of wetland indicator plants and saturated or inundated conditions exist."

Bank is defined in 310 CMR 10.54(2)(a) as:

> "…the portion of the land surface which normally abuts and confines a water body. It occurs between a water body and a vegetated bordering wetland and adjacent flood plain, or, in the absence of these, it occurs between a water body and an upland." The boundary of the Bank is defined in 310 CMR 10.54(2)(c) as "the upper boundary of the Bank is the first observable break in slope or the mean annual flood level, whichever

is lower. The lower boundary of a Bank is the mean annual low flow level."

River is defined in 310.CMR 10.58(2)(a) as:

"…any natural flowing body of water that empties to any ocean, lake, pond or other river and which flows throughout the year."

Riverfront is defined in 310 CMR 10.58(2)(a)3 as:

"…the area between a river's mean annual high-water line measured horizontally outward from the river and a parallel line located 200 feet[1] away…" 310 CMR 10.58(2)(a)2 states: "Mean Annual High-Water Line of a river is the line that is apparent from visible markings or changes in the character of soils or vegetation due to the prolonged presence of water and that distinguishes between predominantly aquatic and predominately terrestrial land."

4.0 Methodologies for Delineation of BVW

Bordering Vegetated Wetlands were delineated in accordance with the methodology set forth in the document entitled "Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetlands Protection Act: A Handbook," dated March 1995, produced by the Massachusetts Department of Environmental Protection, Division of Wetlands and Waterways. Vegetated wetlands are defined by the presence of 50% or more of wetland indicator plants and saturated or inundated conditions.

[1]In some instances, the riverfront area may extend outward less than 200 feet.

4.1 Description of Criteria

4.1.1 Wetland Indicator Plants

Wetland indicator plants are defined in the MWPA regulations as any of the following:

1. Plant species listed in the Wetlands Protection Act
2. Plants listed in the National List of Plant Species That Occur in Wetlands, published by the U.S. Army Corps of Engineers, 2012, with an indicator category of: OBL, FACW, and FAC.
3. Individual plants that exhibit morphological or physiological adaptations of life in saturated or inundated conditions.

Wetland indicator species categories are defined as:

OBL: Obligate Wetland. Occur almost always (estimated probability >99%) under natural conditions in wetlands.

FACW: Facultative Wetland. Usually occur in wetlands (estimated probability 67%-99%) but occasionally found in non-wetlands.

FAC: Facultative. Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).

Morphological adaptations are evident in the form or shape of a plant. Two examples of a morphological adaptation are a shallow root system and a flared or buttress tree trunk.

4.1.2 Indicators of Hydrology

While wetlands must have saturated or inundated conditions, these conditions do not have to be present throughout the year. Saturation or inundation can be as short as two weeks if it occurs in the right type of soil during the growing season. As a result, indicators of hydrology can be used to satisfy the hydrology criterion when no flooding or saturation is observed.

The presence of hydric soil is an indicator of hydrology. Hydric soil is defined in Appendix D of "Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetland Protection Act: A Handbook," as "…a soil that is saturated, ponded, or flooded long enough during the growing season to cause anaerobic conditions at or near the surface." Soils with at least 8 inches of organic material measured from the ground surface are hydric soils. Anaerobic conditions create physical and chemical changes in hydric mineral soils that are observable primarily by color mottling.

Other evidence of hydrology includes "groundwater, including the capillary fringe, within a major portion of the root zone;" and "observation of prolonged or frequent flowing or standing surface water" (310 CMR 10.55(2)(c)2). Examples of evidence for surface water are watermarks on trees and rocks, water-stained leaves, or drainage patterns. Examples of soil saturation include free water in the test hole and saturated soil within 12 inches of the ground surface.

4.2 Field Methodology

When conducting delineations, it is important to know if the wetland is isolated or borders on a creek, river, stream, pond or lake. This information is used to classify the resource area as either an Isolated Wetland of Bordering Vegetated Wetland. 310 CMR 10.04 states: "Bordering means touching. An area listed in 310 CMR 10.02(1)(a) is bordering on a water body listed in 310 CMR 10.02(1)(a) if some portion of the area is touching the water body or if some portion of the area is touching another area listed in 310 CMR 10.02(1)(a) some portion of which is in turn touching the water body." In practice, the "bordering" test is passed if the wetland somehow extends without a break to the bank of a creek, river, stream, pond or lake.

4.2.1 Boundary Flagging

A search for wetlands is made on a site by walking throughout the site with special attention paid to low lying areas and areas along streams, ponds and lakes. Visual inspection of vegetation allows for a preliminary determination as to the presence of a wetland[2]. Once an area is suspected of being a wetland, detailed observations of vegetation and hydrology indicators are made to confirm that the area qualifies as a vegetated wetland. Once confirmed, observations are made along a transect that extends into adjacent uplands. When the composition of the vegetation changes such that less than 50% of the vegetation is composed of wetland indicator plants, or when indicators of wetland hydrology are lost, the wetland boundary is marked (usually with numbered flagging). This procedure is repeated along the wetland boundary frequently enough so that, when the flag locations are mapped, the resulting line accurately reflects the wetland boundary.

4.2.2 Boundary Documentation

At representative boundary locations data is collected sufficient to complete Department of Environmental Protection Agency (DEP) delineation field data forms. These data support the accurate placement of boundary flags. At a representative boundary location data are collected concerning vegetation, soils and other hydrology indicators from each of two sets of plots. One plot set is located just down gradient of the boundary while the second plot set is located just up gradient of the boundary.

[2]Disturbed situations require special procedures that are not discussed in this document.

4.2.2.1 Vegetation

Vegetation is evaluated on a layer by layer basis. Vegetation layers consist of ground cover (non-woody vegetation and all woody vegetation less than three feet in height), shrubs (woody vegetation greater than or equal to 3 feet, but less than 20 feet in height), saplings (woody vegetation over 20 feet in height with a diameter at breast height (dbh) greater than or equal to 0.4 inches to less than 5 inches), climbing woody vines, and trees (woody plants with a dbh of 5 inches or greater and a height of 20 feet of more). To be included in the analysis, a layer must contain at least 5 percent plant coverage.

The abundance of each species in a layer is evaluated by estimating percent coverage over a standard plot size. To be included in this analysis, a species must provide over 2 percent coverage within a plot. Generally, circular plots are established for each layer. Ground cover is evaluated using a 5' radius plot. Shrubs and saplings are evaluated using a 15' radius plot. Climbing woody vines and trees are evaluated utilizing a 30' radius plot. The size and shape of the plots may vary based on field conditions.

The dominance of each plant species within each layer is then calculated. This calculation is made by dividing the abundance of a species within a layer by the total plant abundance within that layer and multiplying by 100 to obtain a percent dominance. Those species that individually provide at least 20 percent dominance to the layer are always designated as "dominated species". The species within a layer are arranged by percent dominance in descending order. Those species that cumulatively provide 50% of the percent dominance for the layer, regardless as to whether or not they provide a minimum of 20 percent are designated "dominant species". This is often referred to as the "20/50" rule. Once the dominant species within each layer are determined, the number of dominant wetland indicator species are compared with the number of dominant

non-wetland indicator species. The vegetative criterion is met if at least half of the dominant species are wetland indicator species.

4.2.2.2 Hydrology

The presence of hydric soil is commonly used to indicate the presence of wetland hydrology. To identify whether hydric soils are present, the soil horizons within a test pit are evaluated. Hydric soil indicators as identified in "Delineating Bordering Vegetated Wetlands Under the Massachusetts Wetland Protection Act: A Handbook," include:

- Histosols (organic soils). Histosols are soils with at least 16 inches of organic material measured from the soil surface.
- Histic epipedons. These are soils with 8 to 16 inches of organic material measured from the soil surface.
- Sulfidic material. A strong 'rotten egg' smell generally is noticed immediately after the soil test hold is a dug.
- Gleyed soils. Soils that are predominately neutral gray, or occasionally greenish or bluish gray in color within 12 inches from the bottom O-horizon. (The Munsell Soil color charts have special pages for gleyed soils.)
- Soils with a matrix chroma of 0 or 1 and values of 4 or higher within 12 inches from the bottom of O-horizon.
- Within 12 inches from the bottom of the O-horizon, soils with a chroma of 2 or less and values of 4 or higher in the matrix, and mottles with a chroma of 3 or higher.
- Within 12 inches from the bottom of the O-horizon, soils with a matrix chroma of 3 and values of 4 or higher, with 10 percent or more low-chroma mottles, as well as indicators of saturation (i.e. mottles, oxidized rhizospheres, concretions, nodules) within 6 inches of the soil surface."

Other indicators of wetland hydrology include the presence of surface water flooding, groundwater (including the capillary fringe) within a major portion of the root zone in the test pit, water marks on trees, water-stained leaves, sediment deposits, drift lines, scoured areas, and/or drainage patterns.

5.0 Site Description and Wetland Delineation

The site is approximately 61.53 +/- acres in size and is located at 100 Duchaine Boulevard (Assessor's Map/Plat Number: 134, Parcel/Lot Number: 5) in New Bedford, Massachusetts (refer to Figure 1, Site Locus). The property is bound by the New Bedford Industrial Park, and a power line easement, a perennial and intermittent stream, and a strip of mixed forested upland and wetland to the north; a large residential development (Pine Hill Acres) Philips Road, and a strip of mixed forested upland and forested wetland to the east; a large commercial facility (Eversource), a strip of forested upland, and a Red Maple Swamp with a stream that connects to the Acushnet Cedar Swamp to the south; and a perennial stream, a strip of forested upland, a Conrail rail line that runs north to south, and a forested swamp to the west.

The site consists of a large active warehouse facility and a truck maintenance facility. A large Eversource office and truck facility exists to the south of the site. The site is highly disturbed and active with industrial uses and construction activity. A constant movement of utility trucks and big rigs come into and out of the sites facilities. Several existing parking areas are currently under construction where solar roofs are being installed and existing stormwater systems are being upgraded. The majority of the New Bedford Industrial Park is north of the site and it is also very active with employee vehicles, delivery trucks, and other vehicles.

The main portion of the site is highly disturbed and consists of a large warehouse building with truck docks and a maintenance facility. Three warehouse buildings use to exist on the site. A warehouse building existed to the west of the current building, the largest of these buildings was east-northeast of the existing building and another building further to the northeast. These three warehouse buildings that were torn down appear to have been

removed around 2012 through 2014. The locations of the buildings that were torn down consist of large gravel, crushed asphalt, and concrete pads. There are trucks, trailers, snow plows, a pontoon boat, concrete posts, lumber, concrete blocks, wooden pallets, wooden cable spools, scrap metal, front-end loaders, metal, wooden, and plastic signs, sections of the building, power screens/trammels, fuel tanks, electrical boxes, stormwater basins, and employee vehicles. There are truck parking and staging areas to the east, west and south of the site. Two of these areas are paved and the third is gravel where one of the warehouse buildings once stood to the west of the existing building. There are three employee vehicle parking areas east of the site that are all paved. A maintenance and parking facility exists in the northwestern corner of the site. Just north of the site, is a city owned water facility. In the southwestern portion of the site is a contractor's yard/construction staging area. North of the construction staging area in the western portion of the site, work is being done for stormwater drainage under (DEP File #: SE49-0738). There is one main loop road with four external offshoots that go to the construction areas, the site workshop, or the Eversource facility and several internal access drives to the main warehouse building and the adjacent parking areas. The remainder of the disturbed areas of the site consists of lawn areas or the sites stormwater drainage system.

The site contains many invasive plant species, such as Common Reed (*Phragmites australis*), Purple Loosestrife (*Lythrum salicaria*), Canary Reed Grass (*Phalaris arundinacea*), Japanese Honeysuckle (*Lonicera japonica*), Japanese Barberry (*Berberis thunbergii*), Multiflora Rose (*Rosa multiflora*), Oriental Bittersweet (*Celastrus orbiculatus*), Eastern Burning Bush (*Euonymus atropurpureus*), Tartarian Honeysuckle (*Lonicera tatarica*), Glossy Buckthorn (*Frangula alnus*), Common Buckthorn (*Rhamnus cathartica*), Japanese Knotweed (*Reynoutria japonica*), Autumn Olive (*Elaeagnus umbellata*), Black Locust

(*Robinia pseudoacacia*), and Black Swallowart (*Cynanchum louiseae*) were observed on the property (refer to Attachment 1, Plant List).

There are numerous stormwater basins, vegetated swales, or areas of stormwater drainage on the site. The area of the site slopes from north to south so most of the stormwater drainage also drains to the south. The stormwater drainage system appears to be maintained several times a year to ensure they continue to function properly. The sites wetlands are highly disturbed since they have been utilized to receive the sites stormwater for decades. Some of these wet areas were designed to discharge stormwater to and have become wetland over time. Other areas appear to have been wetlands historically because of the poorly drained soils in certain areas of the site and because of the high groundwater table. The majority of the sites wetlands are connected by stormwater pipes to ensure the wetlands don't flood over onto the active areas of the site.

5.1 Wetland Resources Delineated on the Site

Twenty-three wetland resource areas have been delineated on and adjacent to the site which consists of BVW to bank of intermittent streams and a perennial stream, the bank of the perennial stream, bank of intermittent streams, and several isolated wetlands.

5.1.1 Wetland A

Flagging series A-1 through A-190 and AA-1 through AA-33 delineates BVW to bank of an intermittent stream in the western portion of the site. Wetland A gently slopes from north to south where it drains to Wetland D and Wetland R through culverts. Dominant wetland vegetation includes

Cinnamon Fern (*Osmundastrum cinnamomeum*), Sweet Pepperbush (*Clethra alnifolia*), and Inkberry (*Ilex glabra*) in the herbaceous layer; Common Greenbrier (*Smilax rotundifolia*) in the vine layer; and Highbush Blueberry (*Vaccinium corymbosum*) and Sweet Pepperbush in the shrub layer; and Red Maple (*Acer Rubrum*) in the sapling and tree layers. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms). Wetland A is connected to Wetlands D and R through drainage culverts.

5.1.2 Wetland B

Flagging series B-1 through B-107, B-119 through B-127, B-200 through B-247, and B-300 through B-355 delineates bank to a perennial stream. Flags B-400 through B-409, and B-500 through B-510 delineates an intermittent tributary stream to the perennial stream. The banks of the streams were delineated by first break in slope and also by rack lines. The perennial stream is approximately 5 to 40 ft. wide and 6 to 26 inches deep with a substrate consisting of mostly gravel and stone in the northern extent of the stream and sand and silt in the portion along the site and south of the site. A substantial amount of garbage was observed within the stream with bottles, cans, coffee cups, plastic bags and tires in the northern portion of the stream and a large amount of tires, bath tubs, and two empty and rusted 55 gallon drums. There is a substantial amount of dumping that occurs under the electrical transmission line easement to the north and along the dirt access drive in the western portion of the site. The stream boundaries delineated by Series B flags were evaluated with the USGS StreamStats and the areas identified as perennial above had a "Probability of Stream Flowing Perennially" of 91.4% to 95.5%.

5.1.3 Wetland C

Flagging series C-1 through C-6 delineates an isolated wetland located in the northwestern portion of the site adjacent to Wetland A. This wetland's topography consists of a relatively circular depression. No water was observed during on our site visits during the wettest portion of late winter and early spring of 2018. Dominant wetland vegetation includes Common Greenbrier in the vine layer; Highbush Blueberry in the shrub layer; and Black Tupelo (Nyssa sylvatica) and Red Maple in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.4 Wetland D

Flagging series D-1 through D-14 delineates BVW to bank of an intermittent stream. Wetland D is a slope wetland located south of Wetland A in the western portion of the site. Wetland A and Wetland D are connected through a culvert and a culvert connects Wetland D to Wetland R. Wetland R drains into Wetland B, the perennial stream, through a culvert. Dominant wetland vegetation includes Sweet Pepperbush in the herbaceous layer; Common Greenbrier in the vine layer; Sweet Pepperbush and Common Winterberry (*Ilex verticillata*) in the shrub layer; and Black Willow (*Salix nigra*) and Red Maple in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.5 Wetland E

Flagging series E-1 through E-23 delineates an isolated wetland in the northwestern portion of the site. Dominant wetland vegetation includes

Sweet Pepperbush in the herbaceous layer; Common Greenbrier in the vine layer; Highbush Blueberry in the shrub layer; and Red Maple in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.6 Wetland F

Flagging series F-1 through F-21 delineates BVW to bank of an intermittent stream. Wetland F is located in the northern portion of the site adjacent to the entrance drive to the site and the intermittent stream that is located along the northern boundary of the site. Dominant wetland vegetation includes Sweet Pepperbush in the herbaceous layer; Common Greenbrier in the vine layer; Highbush Blueberry in the shrub layer; and Red Maple in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.7 Wetland G

Flagging series G-1 through G-109 delineates BVW to bank of an intermittent stream and is located in the northern half of the site between the warehouse building and the entrance roadway to the site. Wetland G is connected to Wetlands A and I by culverts. Dominant wetland vegetation includes Sweet Pepperbush in the herbaceous layer; Common Greenbrier in the vine layer; Sweet Pepperbush and White Meadowsweet (*Spirea betulifolia*) in the shrub layer; and Red Maple and Black Tupelo. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.8 Wetland H

Flagging series H-1 through H-6 delineates an isolated wetland just north of Wetland G. Dominant wetland vegetation includes Sweet Pepperbush in the herbaceous layer and shrub layers; Yellow Birch (*Betula alleghaniensis*) in the sapling layer and Yellow Birch and Red Maple in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.9 Wetland I

Flagging series I-1 through I-61, I-100 through I-111, and I-200 through I-214 delineates BVW to bank of an intermittent stream. This wetland is located in the northeastern portion of the site between the site access road and the northern most parking lot. Dominant wetland vegetation includes Highbush Blueberry and Sweet Pepperbush in the herbaceous layer; Common Greenbrier in the vine layer; Sweet Pepperbush in the shrub layer; Yellow Birch in the sapling; and Red Maple in tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.10 Wetland J

Flagging series J-1 through J-4 delineates isolated wetland. This wetland is located in the northeastern portion of the site between the northern most parking lot and the disturbed area where several buildings once stood west of the existing main warehouse facility. Dominant wetland vegetation includes Poison Ivy (*Toxicodendron radicans*) in the herbaceous layer; Edge Blackberry (*Rubus ascendens*) and Highbush

Blueberry in the shrub layer; and Yellow Birch and Red Maple in tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.11 Wetland K

Flagging series K-1 through K-21 delineates BVW to bank of an intermittent stream. Wetland K is located in the central portion of the site in the eastern half of the site between two parking lots. Wetland K drains to Wetland #8. Dominant wetland vegetation includes Sweet Pepperbush and Highbush Blueberry in the herbaceous layer; Common Greenbrier in the vine layer; Sweet Pepperbush and Highbush Blueberry in the shrub layer; and Red Maple in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.12 Wetland L

Flagging series L-1 through L-8 delineates BVW to bank of an intermittent stream. This wetland is located in the northeastern portion of the site between the site access road and the northern most parking lot. Dominant wetland vegetation includes Inkberry in the herbaceous layer; Northern Bayberry (*Morella pensylvanica*) and Highbush Blueberry in the shrub layer; Common Greenbrier in the vine layer; and Pin Oak (*Quercus palustris*) and Red Maple in tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.13 Wetland M

Flagging series M-1 through M-26 delineates BVW to bank of an intermittent stream. Wetland M is located in the eastern portion of the site and drains to Wetland L. Dominant wetland vegetation includes Giant Goldenrod (*Solidago gigantea*) in the herbaceous layer; Common Greenbrier in the vine layer; Glossy Buckthorn (*Frangula alnus*) and Sweet Pepperbush in the shrub layer; and Red Maple in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.14 Wetland N

Flagging series 1-1 through N-23 delineates an isolated slope wetland in the northeastern portion of the site. Dominant wetland vegetation includes Giant Goldenrod and Sweet Pepperbush in the herbaceous layer; Sweet Pepperbush in the shrub layer; and Red Maple in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.15 Wetland O

Flagging series O-1 through O-28, O-100 through O-112, and O-200 and O-210 delineates BVW to bank of an intermittent stream in the northern portion of the site. Wetland O and Wetland F are connected by the intermittent stream along the northern boundary of the site. Dominant wetland vegetation includes Cinnamon Fern in the herbaceous layer; Common Greenbrier in the vine layer; Inkberry and Sweet Pepperbush in the shrub layer; and Red Maple in the tree layer. Evidence of hydrology

includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.16 Wetland P

Flagging series P-1 through P-67, P-100 through P-192, P-200 through P-205, P-300 through P-307, and P-400 through P-405 delineates BVW to bank of an intermittent stream and a perennial stream. Wetland P is located just south of the site. Dominant wetland vegetation includes Sphagnum Moss (*Sphagnum spp.*), Tussock Sedge (*Carex stricta*), and Cinnamon Fern in the herbaceous layer; Common Greenbrier in the vine layer; Sweet Pepperbush, Southern Arrowwood (*Viburnam dentatum*), Highbush Blueberry, Common Winterberry and Swamp Azalea (*Rhododendron viscosum*) in the shrub layer; Yellow Birch and Green Ash (*Fraxinus pennsylvanica*); and Red Maple and Pin Oak (*Quercus palustris*) in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.17 Wetland Q

Flagging series Q-1 through Q-35 delineates an isolated wetland that does hold a ¼ acre-foot of water so it would qualify as Isolated Land Subject to Flooding (ILSF), 310 CMR 10.57. Wetland Q is located off site to the southwest and adjacent to the western side of the Eversource facility. Dominant wetland vegetation includes Highbush Blueberry in the herbaceous layer; Common Greenbrier in the vine layer; Highbush Blueberry and Sweet Pepperbush in the shrub layer; Black Tupelo in the sapling layer; and Red Maple and Pin Oak in the tree layer. Evidence of

hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.18 Wetland R

Flagging series R-1 through R-67 delineates BVW to bank of an intermittent stream. Wetland R is adjacent to the site along its southwestern corner. Dominant wetland vegetation includes Cinnamon Fern and Sweet Pepperbush in the herbaceous layer; Common Greenbrier in the vine layer; Sweet Pepperbush in the shrub layer; and Red Maple in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.19 Wetland #2

Flagging series 2-1 through 2-26 delineates BVW to bank of an intermittent stream. Wetland #2 is connected to Wetland R by a culvert and it is located in the southwestern portion of the site between the site's main building and the access drive. Dominant wetland vegetation includes Sweet Pepperbush and Common Winterberry in the herbaceous layer; Common Greenbrier in the vine layer; and Sweet Pepperbush, Highbush Blueberry, and Maleberry (*Lyonia ligustrina*) in the shrub layer; and Red Maple in the sapling and tree layers. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.20 Wetland #4

Flagging series 4-1 through 4-9 delineates BVW to bank of an intermittent stream. Wetland #4 is located just southeast of the site's main building and north of the access drive. This wetland drains into Wetland P through a culvert. Dominant wetland vegetation includes Sweet Pepperbush in the herbaceous layer; Common Greenbrier in the vine layer; Sweet Pepperbush and Common Winterberry in the shrub layer; and Red Maple in the sapling and tree layers. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.21 Wetland #5

Flagging series 5-1 through 5-14 delineates BVW to bank of an intermittent stream. Wetland #5 is located in the eastern portion of the site between the main site building and the southernmost parking area. This wetland is connected to Wetland #8 that is connected to Wetland #9 which is connected to Wetland P by a culvert. Dominant wetland vegetation includes Cinnamon Fern and Sweet Pepperbush in the herbaceous layer; Common Greenbrier in the vine layer; Sweet Pepperbush in the shrub layer; and Red Maple in the sapling and tree layers. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.22 Wetland #7

Flagging series 7-1 through 7-12 delineates BVW to bank of an intermittent stream. This wetland is located between the two parking lots in the eastern portion of the site. Wetland #7 is connected to Wetland #8

that is connected to Wetland #9 that is connected to Wetland P by culverts. Dominant wetland vegetation includes Cinnamon Fern and Giant Goldenrod in the herbaceous layer and Red Maple in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.23 Wetland #8

Flagging series 8-1 through 8-9 delineates BVW to bank of an intermittent stream. Wetland #8 is located north of the southernmost parking lot Dominant wetland vegetation includes Giant Goldenrod and Sweet Pepperbush in the herbaceous layer; Common Greenbrier in the vine layer; Sweet Pepperbush in the shrub layer; and Red Maple in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.24 Wetland #9

Flagging series 9-1 through 9-10 delineates BVW to bank of an intermittent stream. Dominant wetland vegetation includes Sweet Pepperbush in the herbaceous layer; Common Greenbrier in the vine layer; Sweet Pepperbush in the shrub layer; Black Tupelo in the sapling layer; and Red Maple in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.25 Wetland #10

Flagging series 10-1 through 10-11 delineates BVW to bank of an intermittent stream. Dominant wetland vegetation includes Northern Bayberry (*Morella pensylvanica*) in the herbaceous layer; Common Greenbrier in the vine layer; Black Tupelo, Highbush Blueberry, and Northern Bayberry in the shrub layer; Black Tupelo in the sapling layer; and Red Maple, Black Tupelo, and Grey Birch (*Betula populifolia*) in the tree layer. Evidence of hydrology includes hydric soils (refer to Attachment 2, DEP Bordering Vegetated Wetland Delineation Field Data Forms).

5.1.26 Bordering Land Subject to Flooding

No Bordering Land Subject to Flooding (BLSF) 310 CMR 10.57, exists on the site or within 1,000 ln. ft. of the site. Other Massachusetts Wetlands Protection Act (MWPA) 310 CMR 10.00, resource areas on the site that aren't being discussed are Land Under Water Bodies or Waterways (310 CMR 10.56) since these resource areas are within the resource areas that have been delineated such as bank (310 CMR 10.54) to a stream.

5.2 Regulations that Apply to Delineated Resources Areas

The interests and functions of wetland resources areas are protected as defined by federal, state, and local regulations. Depending upon the type of wetland present, federal, state and local regulations may all apply to the wetland resources delineated and described above in this report, or only local and/or federal regulations may apply to wetland resources such as small isolated wetlands. The wetland resources delineated on the attached plans and

described above in this report are discussed below as they relate to state, federal and local regulations.

5.2.1 Massachusetts Wetlands Protection Act (310 CMR 10.00)

Under the Massachusetts Wetlands Protection Act, 310 CMR 10.55, flag series A-1 through A-33 as BVW which has a 100 ft. buffer zone extending horizontally outward from the BVW line (refer to Attachment 5, ANRAD Plan).

Massachusetts Department of Environmental Protection (DEP) Bordering Vegetated Wetland Delineation Field Data Forms were completed for observation plots located in the wetlands and uplands along each wetland transect discussed above and are presented as Attachment 2.

Wetland B (flags B-1 through B-57, B-100 through B-107, and B-200 through B-247, and B-300 through B-355) is regulated under 310 CMR 10.54 Bank to a perennial stream generating a 200 ft. Riverfront Area which is regulated under 310 CMR 10.58 (refer to Attachment 5, ANRAD Plan).

5.2.2 Federal Clean Water Act

Wetlands A, D, F, G, I, J, K, N, O, P, R, Wetland 2, Wetland 3, Wetland 4, Wetland 5, Wetland 6, Wetland 7, Wetland 8, Wetland 9, and Wetland 10 drain to the perennial stream delineated as Wetland B that flows into the Acushnet Cedar Swamp which drains into the Paskamansett River to the Slocums River which is a tributary that flows into Buzzards Bay. Since the wetlands listed above (Wetlands A, D, F, G, I, J, K, N, O, P, R, Wetland 2,

Wetland 3, Wetland 4, Wetland 5, Wetland 6, Wetland 7, Wetland 8, Wetland 9, and Wetland 10) discharge into coastal waters, they are considered as contiguous to a tributary to "waters of the U.S.", and regulated by the U.S. Army Corps of Engineers under the Clean Water Act.

5.2.3 Local Regulations and Bylaws

The City of New Bedford, MA, Wetland Ordinance Chapter 17, Section 17-18, Jurisdiction, states, *"no person shall remove, fill, dredge, alter, or build upon or within 100 feet of any bank; upon or within 100 feet of any lake, river, pond (or) stream; land under any fresh or salt waters; or upon any land subject to flooding or inundation by groundwater or surface water".*

Wetlands A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, Wetland 2, Wetland 3, Wetland 4, Wetland 5, Wetland 6, Wetland 7, Wetland 8, Wetland 9, and Wetland 10 are protected under this bylaw and have a 100 ft. buffer zone associated with them in addition to the 200 ft. Riverfront Area for Wetland B (flags B-1 through B-107, B-119 through B-127, B-200 through B-247, and B-300 through B-355) under MA Wetlands Protection Act Regulations.

6.0 Rare Species and Other Environmental Resources

This evaluation also included a review of the MA Natural Heritage Atlas, 2008, 13th edition, published by MA Natural Heritage and Endangered Species Program, Division of Fisheries and Wildlife, Westborough, MA. Based on review of the New Bedford North Quadrangle, the site is **not** within an area designated as Priority/Estimated Habitat of Rare Wildlife or within any Certified Vernal Pools. Mass/GIS data layers, including Priority/Estimated Habitat of rare species

(updated October, 2008), certified vernal pools (updated continually – layer downloaded on 04/29/18), and potential vernal pools (December 2000) have been layered on an ortho-photo of the site that has been included as Attachment 3.

Attachment 1

Site Plant List

Attachment 1

List of Plants Observed in Field

The following species were observed growing on site. They are listed classified relative to their affinity for wetland habitats. Classifications are based upon the U.S. Army Corps of Engineers, NWPL-National Wetland Plant List, Northcentral and Northeast 2016 Regional Wetland Plant List. This publication does not list all plants that grow in New England. "NL" which represents "not listed" or listed as "NA" which indicates "no agreement" indicates species not listed in the publication. Plant species listed as "NL" or "NA" below should be considered upland (UPL) plants since they are not included in the 2016 National Wetland Plant List for the Northcentral and Northeast Region.

In certain cases, plants may have been identified only on the family or genus level. In these cases, the indicator status, SESW (wetland) or SESU (upland), is listed by the most typical status of the genus or based upon characteristics of the plant as observed in the field.

Not withstanding classifications, it must be emphasized that individual plants of almost any species may be found in almost any habitat. It is not uncommon to find individual plants of OBL species growing in uplands or individual plants of UPL species growing in wetlands. For this reason, the total vegetation best serves as an indicator of wetlands rather than any individual species.

INDICATOR CATEGORIES AS DEFINED BY THE U.S. Army Corps of Engineers:

OBL: Obligate Wetland (OBL). Occur almost always (estimated probability > 99%) under natural conditions in wetlands.

FACW: Facultative Wetland (FACW). Usually occur in wetlands (estimated probability 67%-99%) but occasionally found in non-wetlands.

FAC: Facultative (FAC). Equally likely to occur in wetlands or non-wetlands (estimated probability 34%-66%).

FACU: Facultative Upland (FACU). Usually occur in non-wetlands (estimated probability 67%-99%), but occasionally found in wetlands (estimated probability 1%-33%).

UPL: Obligate Upland (UPL). Occur in wetlands in another region, but occur almost always (estimated probability >99%) under natural conditions in non-wetlands in the region specified.

HABIT: The plant characteristics and life forms assigned to each species.

A: Annual
B: Biennial
C: Clubmoss
E: Emergent
@: Epiphytic
F: Forb
/: Floating
F3: Fern
G: Grass
GL: Grasslike
H: Partly woody
HS: Half shrub
H2: Horsetail
I: Introduced
N: Native
P: Perennial
+: Parasitic
P3: Pepperwort
Q: Quillwort
S: Shrub
- : Saprophytic
Z: Submerged
$: Succulent
T: Tree
V: Herbaceous Vine
W: Waterfern
WV: Woody Vine

Plant List for 100 Duchaine Boulevard in New Bedford, MA

Scientific Name	Common Name	MA Ind	Habit
Acer rubrum	MAPLE, RED	FAC	NT
Achillea millefolium	YARROW, COMMON	FACU	PNF
Alliaria petiolata	MUSTARD, GARLIC	FACU	BIF
Alnus incana	ALDER, SPECKLED	FACW	NS
Ambrosia artemisiifolia	RAGWEED, ANNUAL	FACU	ANF
Amelanchier arborea	SERVICE-BERRY, DOWNY	FACU	NT
Aralia nudicaulis	SARSAPARILLA, WILD	FACU	PNF
Arisaema triphyllum	JACK-IN-THE-PULPIT	FAC	PNF
Berberis thunbergii	BARBERRY, JAPANESE	FACU	IS
Betula alleghaniensis	BIRCH, YELLOW	FAC	NT
Betula lenta	BIRCH, SWEET OR BLACK	FACU	NT
Betula papyrifera	BIRCH, PAPER	FAC	NTS
Betula populifolia	BIRCH, GRAY	FAC	NT
Bidens frondosa	BEGGAR-TICK, DEVIL'S	FACW	ANF
Callitriche heterophylla	WATER-STARWART, GREATER	OBL	PIZ/F
Carex blanda	SEDGE, EASTERN WOODLAND	FAC	PNGL
Carex crinita	SEDGE, FRINGED	OBL	PNEGL
Carex digitalis	SEDGE, SLENDER WOOD	UPL	PNGL
Carex flava	SEDGE, YELLOW-GREEN	OBL	PNGL
Carex leptonervia	SEDGE, NERVELESS WOOD	FAC	PNGL
Carex lupulina	SEDGE, HOP	OBL	PNEGL
Carex lurida	SEDGE, SHALLOW	OBL	PNEGL
Carex novae-angliae	SEDGE, NEW ENGLAND	FACU	PNGL
Carex stricta	SEDGE, UPTIGHT OR TUSSOCK	OBL	PNEGL
Carex sylvatica	SEDGE, EUROPEAN WOODLAND	FACU	PNEGL
Carex vulpinoidea	SEDGE, COMMON FOX	OBL	PNEGL
Celastrus orbiculata	BITTER-SWEET ORIENTAL OR ASIAN	UPL*	IWV
Cephalanthus occidentalis	BUTTONBUSH, COMMON	OBL	NT
Chamaedaphne calyculata	LEATHERLEAF	OBL	NS
Chimaphila maculata	PIPSISSEWA, STRIPED	SESU	PNS
Cirsium vulgare	THISTLE, BULL	FACU	BIF
Clethra alnifolia	PEPPER-BUSH, COAST OR SWEET	FAC	NS
Comptonia peregrina	SWEET FERN	NL	NS
Cornus amomum	DOGWOOD, SILKY	FACW	NS
Cynanchum louiseae	SWALLOWWORT, BLACK	UPL	

Scientific Name	Common Name	MA Ind	Habit
Daucus carota	QUEEN ANNE'S LACE	UPL	F
Dennstaedtia punctilobula	FERN, HAYSCENTED	UPL	F3
Dichanthelium clandestinum	GRASS, DEER-TONGUE ROSETTE	FACW	PNG
Dryopteris carthusiana	FERN, SPINULOSE WOOD	FACW	F3
Echinochloa crusgalli	GRASS, BARNYARD, LARGE	FAC	AIG
Elaeagnus umbellata	AUTUMN OLIVE	NL	
Euonymus atropurpureus	BURNING-BUSH, EASTERN WAHOO OR	FACU	NST
Eutrochium maculatum	JOE-PYE-WEED, SPOTTED TRUMPETWEED OR	OBL	PNF
Eurybia divaricata	ASTER, WHITE WOOD	NL	PNF
Fagus grandifolia	BEECH, AMERICAN	FACU	NT
Frangula alnus	BUCKTHORN, FALSE GLOSSY	FAC	IS
Fraxinus americana	ASH, WHITE	FACU	NT
Fraxinus pennsylvanica	ASH, GREEN	FACW	NT
Gaultheria procumbens	TEABERRY, EASTERN	FACU	PNS
Gaylussacia baccata	HUCKLEBERRY, BLACK	FACU	NS
Gramineae (Hydrophilic)	GRASSES, HYDROPHILIC	SESW	G
Gramineae (Upland)	GRASSES, UPLAND	SESU	G
Hamamelis virginiana	WITCH-HAZEL, COMMON OR AMERICAN	FACU	NST
Hypericum perforatum	ST. JOHN'S-WORT, COMMON	UPL	PNF
Ilex glabra	INK-BERRY	FACW	NS
Ilex opaca	HOLLY, AMERICAN	FACU	NTS
Ilex verticillata	WINTERBERRY, COMMON	FACW	NST
Impatiens capensis	TOUCH-ME-KNOT, SPOTTED	FACW	ANF
Juncus effusus	RUSH, SOFT OR LAMP	OBL	PNEGL
Juniperus virginiana	CEDAR, EASTERN RED	FACU	NT
Kalmia angustifolia	SHEEP-LAUREL	FAC	NS
Kalmia latifolia	LAUREL, MOUNTAIN	FACU	NST
Lemna minor	DUCKWEED, LESSER OR COMMON	OBL	PN/F
Lepidium virginicum	PEPPER-WORT, POORMAN'S	FACU	ABNF
Lindera benzoin	SPICEBUSH, NORTHERN	FACW	NST
Lonicera japonica	HONEYSUCKLE, JAPANESE	FACU	NSWV
Lonicera tatarica	HONEYSUCKLE, TWINSISTERS OR TARTARIAN	FACU*	IS
Lycopodium obscurum	CLUBMOSS, TREE	FACU	PNC
Lyonia ligustrina	MALEBERRY	FACW	NS
Lyonia lucida	FETTER-BUSH	FACW	NS
Lysimachia terrestris	LOOSESTRIFE, SWAMPCANDLES OR SWAMP	OBL	PNF
Lythrum salicaria	LOOSESTRIFE, PURPLE	OBL	PIF
Maianthemum canadense	LILY-OF-THE-VALLEY, WILD-OR FALSE	FACU	PNF

Scientific Name	Common Name	MA Ind	Habit
Mitchella repens	PARTRIDGE-BERRY	FACU	PNF
Monotropa uniflora	INDIAN-PIPE, ONE-FLOWER	FACU	PN-$F
Medicago lupulina	MEDIC, BLACK	FACU	AIF
Musci	MOSSES	NL	
Morella pensylvanica	BAYBERRY, NORTHERN	FAC	NS
Nyssa sylvatica	TUPELO, BLACK	FAC	NT
Oenotheraparviflora	EVENING-PRIMROSE, NORTHERN	FACU	BIF
Onoclea sensibilis	FERN, SENSITIVE	FACW	PNEF3
Osmundastrum cinnamomeum	FERN, CINNAMON	FACW	PNEF3
Osmunda claytoniana	FERN, INTERUPTED	FAC	PNEF3
Osmunda spectabilis	FERN, ROYAL	OBL	PNF3
Oxalis stricta	WOODSORREL, UPRIGHT YELLOW	FACU	PIF
Parthenocissus quinquefolia	CREEPER, VIRGINIA	FACU	NWV
Phalaris arundinacea	CANARY GRASS, REED	FACW	IP
Phragmites australis	REED, COMMON	FACW	PNEG
Phytolacca americana	POKEWEED, COMMON OR AMERICAN	FACU	PNF
Plantago lanceolata	PLANTAIN, ENGLISH	FACU	ABPIF
Plantago major	PLANTAIN, COMMON OR GREAT	FACU	PIF
Pinus rigida	PINE, PITCH	FACU	NT
Pinus strobus	PINE, EASTERN WHITE	FACU	NT
Polygonum amphibium	SMARTWEED, WATER	OBL	PNE/F
Polygonum hydropiperoides	SMARTWEED, SWAMP	OBL	PNEF
Polygonum pensylvanicum	SMARTWEED, PENNSYLVANIA	FACW	ANEF
Populus tremula	ASPEN, QUAKING	FACU	IT
Potentilla simplex	CINQUEFOIL, OLD FIELD	FACU	PNF
Prunus serotina	CHERRY, BLACK	FACU	NT
Prunus virginiana	CHERRY, CHOKE	FACU	NST
Pteridium aquilinum	FERN, BRACKEN	FACU	PNF3
Pyrus malus	APPLE	NL	IT
Quercus alba	OAK, NORTHERN WHITE	FACU-	NT
Quercus bicolor	OAK, SWAMP WHITE	FACW	NT
Quercus palustris	OAK, PIN	FACW	NT
Quercus rubra	OAK, NORTHERN RED	FACU	NT
Reynoutria japonica	KNOTWEED, JAPANESE	FACU	PIF
Rhamnus cathartica	BUCKTHORN, COMMON OR ALDERLEAF	UPL	IT
Rhexia virginica	MEADOW-BEAUTY OR HANSOME-HARRY	OBL	PNF
Rhododendron viscosum	AZALEA, SWAMP OR CLAMMY	FACW	NS
Rhus typhina	SUMAC, STAGHORN	NL	NST

Scientific Name	Common Name	MA Ind	Habit
Robinia pseudoacacia	LOCUST, BLACK	FACU	NT
Rosa multiflora	ROSE, MULTIFLORA OR RAMBLER	FACU	IS
Rubus allegheniensis	BLACKBERRY, ALLEGHENY	FACU	NS
Rubus alumnus	BLACKBERRY, OLD FEILD	FACU	NS
Rubus semisetosus	BLACKBERRY, NEW ENGLAND	FAC	NS
Rumex acetosella	SORREL, COMMON SHEEP	FACU	PIF
Rumex crispus	DOCK, CURLY	FAC	PIF
Salix bebbiana	WILLOW, BEBB OR GREY	FACW	NS
Salix discolor	WILLOW, PUSSY	FACW	NS
Salix nigra	WILLOW, BLACK	OBL	NT
Sambucus nigra	ELDER, BLACK	FACW	NS
Saxifraga virginiensis	SAXIFRAGE, VIRGINIA	FAC	PNF
Sassafras albidum	SASSAFRAS	FACU	NT
Scirpus atrovirens	BULRUSH, DARK-GREEN	OBL	PNEGL
Scirpus cyperinus	WOOL-GRASS OR COTTONGRASS BULLRUSH	OBL	PNEGL
Smilax rotundifolia	GREENBRIER, COMMON OR HORSE	FAC	NWV
Solanum dulcamara	NIGHTSHADE, CLIMBING	FAC	PIF
Solidago altissima	GOLDENROD, TALL	FACU	PNF
Solidago canadensis	GOLDEN-ROD, CANADIAN	FACU	PNF
Solidago gigantea	GOLDEN-ROD, GIANT OR LATE	FACW	PNF
Solidago rugosa	GOLDEN-ROD, WRINKLED-LEAF	FAC	PNF
Sphagnum spp.	MOSS, SPHAGNUM	SESW	
Spiraea betulifolia	MEADOW-SWEET, WHITE	FACW	NS
Spiraea tomentosa	STEEPLE-BUSH	FACW	NS
Symphyotrichum ericoides	ASTER, WHITE HEATH AMERICAN	FACU	PNF
Taraxacum officinale	DANDELION, COMMON	FACU	PIF
Thelypteris palustris	FERN, EASTERN MARSH	FACW	F3
Toxicodendron radicans	IVY, EASTERN POISON	FAC	NWVS
Trientalis borealis	STARFLOWER, MAYSTAR OR AMERICAN	FAC	PNF
Trifolium pratense	CLOVER, RED	FACU	BPIF
Trifolium repens	CLOVER, WHITE	FACU	PIF
Tsuga canadensis	HEMLOCK, EASTERN	FACU	NT
Typha latifolia	CATTAIL, BROAD-LEAF	OBL	PNEF
Ulmus americana	ELM, AMERICAN	FACW	NT
Ulmus rubra	ELM, SLIPPERY	FAC	NT
Vaccinium corymbosum	BLUEBERRY, HIGHBUSH	FACW	NS
Verbascum thapsus	MULLEIN, COMMON OR GREAT	UPL	F
Viburnum dentatum	ARROW-WOOD, SOUTHERN	FAC	NTS

Scientific Name	Common Name	MA Ind	Habit
Viburnam lentago	NANNY-BERRY OR WILD RASIN	FAC	NTS
Viola nephrophylla	VIOLET, NORTHERN BOG VIOLET	OBL	NF
Viola septentrionalis	VIOLET, NORTHERN WOODLAND	FACU	PNF
Viola papilionacea	VIOLET, COMMON	FAC	PNF
Vitis riparia	GRAPE, RIVER-BANK	FAC	NWV

Attachment 2

DEP Bordering Vegetated Wetland Delineation Field Data Forms

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland A-4** Date of Delineation: **February 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Northern White Oak (*Quercus alba*)	10.5%	14%	No	FACU
Red Maple (*Acer rubrum*)	63%	86%	Yes	FAC*
Saplings: Northern White Oak (*Quercus rubra*)	10.5%	50%	Yes	FACU
Red Maple (*Acer rubrum*)	10.5%	50%	Yes	FAC*
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	38%	100%	Yes	FAC*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	35%	Yes	FAC*
Cinnamon Fern (*Osmundastrum cinnamomeum*)	38%	65%	Yes	FACW*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	38%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 6 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag A-4

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-12"**	**10YR 3/2 Sandy loam**	**None**
B	**"12-22*"**	**10YR 5/1 Gravelly sand**	**None**

Remarks: *Refusal at 22 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx.. 5 ft. below delineated wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

- ☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland A-4** Date of Delineation: **February 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	38%	50%	Yes	FAC*
Northern White Oak (*Quercus alba*)	38%	50%	Yes	FACU
Saplings: Northern White Oak (*Quercus alba*)	20.5%	100%	Yes	FACU
Shrubs: Absent				
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	3%	5%	No	FAC*
Upland Grasses (*Gramineae spp.*)	63%	95%	Yes	SESU
Woody Vines: Common Greenbrier (*Simlax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag A-4

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-17"**	**10YR 2/2 Gravelly sandy loam**	**None**
B	**"17-24*"**	**10YR 6/6 Gravelly sandy loam**	**None**

Remarks: *Refusal at 24 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland A-33** Date of Delineation: **February 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Eastern White Pine (*Pinus strobus*)	38%	50%	Yes	FACU
Red Maple (*Acer rubrum*)	38%	50%	Yes	FAC*
Saplings: Absent				
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	38%	100%	Yes	FAC*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag A-33

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	**"11-0"**	**10YR 2/1 Muck/sapric**	**None**
B	**"0-19*"**	**10YR 5/1 Coarse sand**	**None**

Remarks: *Refusal at 19 inches under "Oa" horizon.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx.. 5 ft. below delineated wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland A-33** Date of Delineation: **February 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	38%	50%	Yes	FAC*
Eastern White Pine (*Pinus strobus*)	38%	50%	Yes	FACU
Saplings: Absent				
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	10.5%	22%	Yes	FAC*
Mountain Laurel (*Kalmia latifolia*)	38%	78%	Yes	FACU
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	10.5%	34%	Yes	FAC*
Mountain Laurel (*Kalmia latifolia*)	20.5%	66%	Yes	FACU
Woody Vines: Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag A-33

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑

Remarks: These soils were sampled from an upland island within Wetland A. The soils within Wetland A are representative of the soil survey.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-9"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"9-20*"**	**2.5Y 7/8 Loamy sand**	**None**

Remarks: *Refusal at 20 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland A-61** Date of Delineation: **February 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Eastern White Pine (*Pinus strobus*)	10.5%	14%	No	FACU
	Red Maple (*Acer rubrum*)	63%	86%	Yes	FAC*
Saplings:	Red Maple (*Acer rubrum*)	10.5%	100%	Yes	FAC*
Shrubs:	Sweet Pepperbush (*Clethra alnifolia*)	38%	100%	Yes	FAC*
Ground Cover:	Cinnamon Fern (*Osmundastrum cinnamomeum*)	3%	11%	No	FACW*
	Upland Mosses (*Musci spp.*)	3%	11%	No	SESU
	Sweet Pepperbush (*Clethra alnifolia*)	20.5%	78%	Yes	FAC*
Woody Vines:	Common Greenbrier (*Smilax rotundifolia*)	20.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 5 **Number of dominant non-wetland indicator plants: 0**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag A-61

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Pipestone loamy sand, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oi	**"2-0"**	**7.5YR 2.5/1 Fibric**	**None**
A	**"0-2"**	**10YR 2/2 Fine sandy loam**	**None**
B1	**"2-5"**	**10YR 5/6 Loamy sand**	**None**
B2	**"5-19*"**	**10YR 5/1 Loamy sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx.. 5 ft. below delineated wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland A-61** Date of Delineation: **February 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	20.5%	25%	Yes	FAC*
Northern White Oak (*Quercus alba*)	63%	75%	Yes	FACU
Saplings: Absent				
Shrubs: Eastern White Pine (*Pinus strobus*)	3%	7%	No	FACU
Autumn Olive (*Elaeagnus umbellata*)	38%	93%	Yes	UPL
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	FACU
Woody Vines: Common Greenbrier (*Simlax rotundifolia*)	20.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag A-61

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Pipestone loamy sand, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-3"**	**10YR 3/2 Loamy sand**	**None**
B	**"3-21*"**	**10YR 6/4 Loamy sand**	**None**

Remarks: *Refusal at 21 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

☐ Site inundated: _____

☐ Depth to free water in observation hole: _____

☐ Depth to soil saturation in observation hole: _____

☐ Water marks: _____

☐ Drift lines: _____

☐ Sediment deposits: _____

☐ Drainage patterns in BVW: _____

☐ Oxidized rhizospheres: _____

☐ Water-stained leaves: _____

☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other):

_____

☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland A-90** Date of Delineation: **February 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	20.5%	25%	Yes	FAC*
Pitch Pine (*Pinus rigida*)	63%	75%	Yes	FACU
Saplings: Red Maple (*Acer rubrum*)	10.5%	100%	Yes	FAC*
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	50%	Yes	FAC*
Highbush Blueberry (*Vaccinium corymbosum*)	20.5%	50%	Yes	FACW*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	50%	Yes	FAC*
Inkberry (*Ilex glabra*)	20.5%	50%	Yes	FACW*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	38%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 7 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag A-90

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Sudbury fine sandy loam, 0 to 3 percent**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oi	**"2-0"**	**7.5YR 2.5/1 Fibric**	**None**
A	**"0-2"**	**10YR 3/2 Fine sandy loam**	**None**
B	**"2-19*"**	**10YR 6/1 Sandy loam**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx.. 5 ft. below delineated wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland A-90** Date of Delineation: **February 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Northern Red Oak (*Quercus rubra*)	10.5%	13%	No	FACU
Northern White Oak (*Quercus alba*)	10.5%	13%	No	FACU
Pitch Pine (*Pinus rigida*)	63%	74%	Yes	FACU
Saplings: Absent				
Shrubs: Absent				
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	SESU
Woody Vines: Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 0 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag A-90

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Sudbury fine sandy loam, 0 to 3 percent**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-3"**	**10YR 2/2 Fine sandy loam**	**None**
B	**"3-20*"**	**10YR 4/6 Sandy loam**	**None**

Remarks: *Refusal at 20 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland A-122** Date of Delineation: **March 1, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Eastern White Pine (*Pinus strobus*)	10.5%	14%	No	FACU
Red Maple (*Acer rubrum*)	63%	86%	Yes	FAC*
Saplings: Absent				
Shrubs: Sassafras (*Sassafras albidum*)	3%	7%	No	FACU
Sweet Pepperbush (*Clethra alnifolia*)	38%	93%	Yes	FAC*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Woody Vines: Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 **Number of dominant non-wetland indicator plants: 0**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag A-122

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oi	**"12-9"**	**7.5YR 2.5/1 Fibric**	**None**
Oa	**"9-0"**	**10YR 2/1 Muck/sapric**	**None**
B1	**"0-11*"**	**10YR 5/1 Loamy sand**	**None**

Remarks: *Refusal at 11 inches under "Oa" horizon.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx.. 8 ft. below delineated wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland A-122** Date of Delineation: **March 1, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Sassafras (*Sassafras albidum*)	10.5%	13%	No	FACU
Red Maple (*Acer rubrum*)	10.5%	13%	No	FAC*
Northern White Oak (*Quercus alba*)	20.5%	26%	Yes	FACU
Eastern White Pine (*Pinus strobus*)	38%	48%	Yes	FACU
Saplings: Sassafras (*Sassafras albidum*)	10.5%	100%	Yes	FACU
Shrubs: Mountain Laurel (*Kalmia latifolia*)	85.5%	100%	Yes	FACU
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	3%	7%	No	FAC*
Mountain Laurel (*Kalmia latifolia*)	38%	93%	Yes	FACU

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 0 **Number of dominant non-wetland indicator plants: 5**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag A-122

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑

Remarks: These soils were sampled from an upland island within Wetland A. The soils within Wetland A are representative of the soil survey.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oi	**"3-0"**	**10YR 2/1 Fibric**	**None**
A	**"0-6"**	**10YR 2/2 Fine sandy loam**	**None**
B1	**"6-21*"**	**10YR 3/6 Fine sandy loam**	**None**

Remarks: *Refusal at 21 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland A-165** Date of Delineation: **March 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Eastern White Pine (*Pinus strobus*)	10.5%	14%	No	FACU
	Red Maple (*Acer rubrum*)	63%	86%	Yes	FAC*
Saplings:	Red Maple (*Acer rubrum*)	10.5%	100%	Yes	FAC*
Shrubs:	Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Ground Cover:	American Holly (*Ilex opaca*)	3%	13%	No	FACU
	Sweet Pepperbush (*Clethra alnifolia*)	20.5%	87%	Yes	FAC*

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 **Number of dominant non-wetland indicator plants: 0**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag A-165

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Sudbury fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-6"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"6-14*"**	**10YR 6/1 Sandy loam**	**None**

Remarks: *Refusal at 14 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx.. 10 ft. below delineated wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland A-165** Date of Delineation: **March 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Northern Red Oak (*Quercus rubra*)	10.5%	13%	No	FACU
Eastern White Pine (*Pinus strobus*)	10.5%	13%	No	FACU
Red Maple (*Acer rubrum*)	63%	74%	Yes	FAC*
Saplings: Black Cherry (*Prunus serotina*)	10.5%	50%	Yes	FACU
Eastern White Pine (*Pinus strobus*)	10.5%	50%	Yes	FACU
Shrubs: American Holly (*Ilex opaca*)	63%	100%	Yes	FACU
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	SESU
Woody Vines: Common Greenbrier (*Simlax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 4**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag A-165

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Sudbury fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-3"**	**10YR 2/2 Fine sandy loam**	**None**
B	**"3-19*"**	**10YR 4/6 Sandy loam**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland AA-1** Date of Delineation: **January 28, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Eastern White Pine (*Pinus strobus*)	10.5%	14%	No	FACU
	Red Maple (*Acer rubrum*)	63%	86%	Yes	FAC*
Saplings:	Red Maple (*Acer rubrum*)	10.5%	100%	Yes	FAC*
Shrubs:	Sweet Pepperbush (*Clethra alnifolia*)	38%	100%	Yes	FAC*
Ground Cover:	Cinnamon Fern (*Osmundastrum cinnamomeum*)	3%	11%	No	FACW*
	Upland Mosses (*Musci spp.*)	3%	11%	No	SESU
	Sweet Pepperbush (*Clethra alnifolia*)	20.5%	78%	Yes	FAC*
Woody Vines:	Common Greenbrier (*Smilax rotundifolia*)	20.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 5 **Number of dominant non-wetland indicator plants: 0**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag AA-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oi	**"9-5"**	**7.5YR 2.5/1 Fibric**	**None**
Oa	**"5-0"**	**10YR 2/1 Muck/sapric**	**None**
B1	**"0-3"**	**10YR 6/1 Sand**	**None**
B2	**"3-14"**	**10YR 3/4 Sandy loam**	**None**
B3	**"14-23*"**	**10YR 6/6 Sandy loam**	**None**

Remarks: *Refusal at 23 inches under "Oa" horizon.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx.. 5 ft. below delineated wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland AA-1** Date of Delineation: **January 28, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	20.5%	25%	Yes	FAC*
Eastern White Pine (*Pinus strobus*)	63%	75%	Yes	FACU
Saplings: Absent				
Shrubs: Mountain Laurel (*Kalmia latifolia*)	85.5%	100%	Yes	FACU
Ground Cover: Mountain Laurel (*Kalmia latifolia*)	20.5%	100%	Yes	FACU
Woody Vines: Common Greenbrier (*Simlax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag AA-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks: These soils were sampled from an upland island within Wetland A. The soils within Wetland A are representative of the soil survey.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oi	**"2-0"**	**7.5YR 2.5/1 Fibric**	**None**
A	**"0-3"**	**10YR 2/2 Fine sandy loam**	**None**
B1	**"3-12"**	**10YR 3/6 Fine sandy loam**	**None**
B2	**"12-21*"**	**10YR 5/8 Sandy loam**	**None**

Remarks: *Refusal at 21 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland C-1** Date of Delineation: **March 1, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Black Tupelo (*Nyssa sylvatica*)	20.5%	25%	Yes	FAC*
	Red Oak (*Quercus rubra*)	20.5%	25%	Yes	FACU
	Red Maple (*Acer rubrum*)	20.5%	25%	Yes	FAC*
	Pitch Pine (*Pinus rigida*)	20.5%	25%	Yes	FACU
Saplings:	Absent				
Shrubs:	Highbush Blueberry (*Vaccinium corymbosum*)	38%	100%	Yes	FACW*
Ground Cover:	Eastern Teaberry (*Gaultheria procumbens*)	10.5%	100%	Yes	FACU
Woody Vines:	Common Greenbrier (*Smilax rotundifolia*)	20.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag C-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Sudbury fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-8"**	**10YR 2/1 Silty loam**	**None**
B	**"8-21*"**	**10YR 6/1 Sand**	**None**

Remarks: *Refusal at 21 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **In the middle of the wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland C-1** Date of Delineation: **March 1, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	10.5%	13%	No	FAC*
Pin Oak (*Quercus Palustris*)	10.5%	13%	No	FACW*
Pitch Pine (*Pinus rigida*)	63%	74%	Yes	FACU
Saplings: Northern White Oak (*Quercus alba*)	10.5%	100%	Yes	FACU
Shrubs: Absent				
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	SESU
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	20.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 1 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag C-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Sudbury fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-6"**	**10YR 2/2 Fine sandy loam**	**None**
B1	**"6-19"**	**10YR 4/6 Sandy loam**	**None**
B2	**"19-24*"**	**10YR 4/4 Sandy loam**	**None**

Remarks: *Refusal at 24 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland D-1** Date of Delineation: **March 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Black Willow (*Salix nigra*)	38%	50%	Yes	FAC*
Red Maple (*Acer rubrum*)	38%	50%	Yes	FAC*
Saplings: Black Cherry (*Prunus serotina*)	10.5%	100%	Yes	FACU
Shrubs: Common Winterberry (*Ilex verticillata*)	20.5%	35%	Yes	FACW*
Sweet Pepperbush (*Clethra alnifolia*)	38%	65%	Yes	FAC*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 5 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag D-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-3"**	**10YR 2/2 Sandy loam**	**None**
B1	**"3-6"**	**10YR 4/4 Sandy loam**	**None**
B2	**"6-17*"**	**10YR 6/1 Loamy sand**	**None**

Remarks: *Refusal at 21 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx. 5 ft. down slope**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland D-1** Date of Delineation: **March 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Black Willow (*Salix nigra*)	10.5%	22%	Yes	FAC*
Red Maple (*Acer rubrum*)	38%	78%	Yes	FAC*
Saplings: Black Cherry (*Prunus serotina*)	10.5%	100%	Yes	FACU
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	10.5%	100%	Yes	FAC*
Ground Cover: Eastern White Pine (*Pinus strobus*)	10.5%	14%	No	FACU
Upland Grasses (*Gramineae spp.*)	63%	86%	Yes	SESU

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag D-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-4"**	**10YR 3/3 Sandy loam**	**None**
B1	**"4-10"**	**10YR 4/4 Sandy loam**	**None**
B2	**"10-18*"**	**10YR 4/6 Sandy loam**	**None**

Remarks: *Refusal at 18 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland E-1** Date of Delineation: **March 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Eastern Hemlock (*Tsuga canadensis*)	20.5%	26%	Yes	FACU
	Red Maple (*Acer rubrum*)	20.5%	26%	Yes	FAC*
	Pitch Pine (*Pinus rigida*)	38%	48%	Yes	FACU
Saplings:	Absent				
Shrubs:	Mountain Laurel (*Kalmia angustifolia*)	10.5%	34%	Yes	FACU
	Highbush Blueberry (*Vaccinium corymbosum*)	20.5%	66%%	Yes	FACW*
Ground Cover:	Sweet Pepperbush (*Clethra alnifolia*)	10.5%	100%	Yes	FAC*
Woody Vines:	Common Greenbrier (*Smilax rotundifolia*)	63%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag E-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Pipestone loamy sand, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-8"**	**10YR 2/1 Silty loam**	**None**
B	**"8-21*"**	**10YR 6/1 Loamy sand**	**None**

Remarks: *Refusal at 21 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **In the middle of the wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland E-1** Date of Delineation: **March 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	10.5%	12%	No	FAC*
Eastern Hemlock (*Tsuga canadensis*)	38%	44%	Yes	FACU
Pitch Pine (*Pinus rigida*)	38%	44%	Yes	FACU
Saplings: Absent				
Shrubs: Highbush Blueberry (*Vaccinium corymbosum*)	10.5%	22%	Yes	FACW*
Mountain Laurel (*Kalmia latifolia*)	38%	78%	Yes	FACU
Ground Cover: Mountain Laurel (*Kalmia latifolia*)	10.5%	100%	Yes	FACU
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	38%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 4**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag E-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Pipestone loamy sand, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oi	**"2-0"**	**7.5YR 2.5/1 Fine sandy loam**	**None**
A	**"0-3"**	**10YR 2/2 Fine sandy loam**	**None**
B	**"3-20*"**	**5Y 6/6 Loamy sand**	**None**

Remarks: *Refusal at 20 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland F-5** Date of Delineation: **March 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Black Tupelo (*Nyssa sylvatica*)	10.5%	12%	No	FAC*
	Pin Oak (Quercus *palustris*)	20.5%	23%	Yes	FACW*
	Red Maple (*Acer rubrum*)	20.5%	23%	Yes	FAC*
	Northern White Oak (*Quercus alba*)	38%	42%	Yes	FACU
Saplings:	Absent				
Shrubs:	Mountain Laurel (*Kalmia latifolia*)	10.5%	25%	Yes	FACU
	Black Tupelo (*Nyssa sylvatica*)	10.5%	25%	Yes	FAC*
	Red Maple (*Acer rubrum*)	20.5%	50%	Yes	FAC*
Ground Cover:	Mountain Laurel (*Kalmia latifolia*)	10.5%	50%	Yes	FACU
	Sweet Pepperbush (*Clethra alnifolia*)	10.5%	50%	Yes	FAC*
Woody Vines:	Common Greenbrier (*Smilax rotundifolia*)	38%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 6 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag F-5

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Pipestone loamy sand, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-3"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"3-20*"**	**10YR 6/1 Loamy sand**	**None**

Remarks: *Refusal at 20 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **In the middle of the wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland F-5** Date of Delineation: **March 10, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Pitch Pine (*Pinus rigida*)	10.5%	15%	No	FACU
Pin Oak (*Quercus Palustris*)	20.5%	30%	Yes	FACW*
Northern White Oak (*Quercus alba*)	38%	55%	Yes	FACU
Saplings: Absent				
Shrubs: Red Maple (*Acer rubrum*)	10.5%	22%	Yes	FAC*
Mountain Laurel (*Kalmia latifolia*)	38%	78%	Yes	FACU
Ground Cover: Black Tupelo (*Nyssa sylvatica*)	10.5%	14%	No	FAC*
Upland Grasses (*Gramineae spp.*)	63%	86%	Yes	SESU
Woody Vines: Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag F-5

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Pipestone loamy sand, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-9"**	**10YR 3/3 Fine sandy loam**	**None**
B1	**"6-19*"**	**10YR 4/6 Loamy sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland G-1** Date of Delineation: **March 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Eastern White Pine (*Pinus strobus*)	10.5%	13%	No	FACU
Pitch Pine (*Pinus rigida*)	10.5%	13%	No	FACU
Red Maple (*Acer rubrum*)	63%	74%	Yes	FAC*
Saplings: Absent				
Shrubs: White Meadowsweet (*Spiraea betulifolia*)	20.5%	35%	Yes	FACW*
Sweet Pepperbush (*Clethra alnifolia*)	38%	65%	Yes	FAC*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 5 **Number of dominant non-wetland indicator plants: 0**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag G-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-7"**	**10YR 3/1 Sandy loam**	**None**
B	**"7-19*"**	**10YR 6/1 Gravelly coarse sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx. 5 ft. down slope**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland G-1** Date of Delineation: **March 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Eastern White Pine (*Pinus strobus*)	10.5%	15%	No	FACU
Pitch Pine (*Pinus rigida*)	20.5%	30%	Yes	FACU
Red Maple (*Acer rubrum*)	38%	55%	Yes	FAC*
Saplings: Absent				
Shrubs: Absent				
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	SESU
Woody Vines: Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 1 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag G-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-4"**	**10YR 2/2 Sandy loam**	**None**
B	**"4-19*"**	**10YR 4/6 Coarse sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland G-54** Date of Delineation: **March 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	63%	100%	Yes	FAC*
Saplings: Absent				
Shrubs: Mountain Laurel (*Kalmia latifolia*)	10.5%	35%	Yes	FACU
Sweet Pepperbush (*Clethra alnifolia*)	38%	65%	Yes	FAC*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	38%	100%	Yes	FAC*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	38%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag G-54

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-7"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"7-21*"**	**10YR 6/1 Coarse sand**	**None**

Remarks: *Refusal at 21 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx. 5 ft. down slope**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland G-54** Date of Delineation: **March 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	63%	100%	Yes	FAC*
Saplings: Absent				
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	10.5%	50%	Yes	FAC*
Eastern White Pine (*Pinus strobus*)	10.5%	50%	Yes	FACU
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	SESU
Woody Vines: Oriental Bittersweet (*Celastrus orbiculata*)	10.5%	100%	Yes	UPL

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag G-54

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-4"**	**10YR 2/2 Fine sandy loam**	**None**
B	**"4-21*"**	**10YR 4/6 Fine sandy loam**	**None**

Remarks: *Refusal at 21 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland G-92** Date of Delineation: **March 28, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Black Tupelo (*Nyssa sylvatica*)	10.5%	22%	Yes	FAC*
Red Maple (*Acer rubrum*)	38%	78%	Yes	FAC*
Saplings: Eastern White Pine (*Pinus strobus*)	3%	100%	Yes	FACU
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	38%	100%	Yes	FAC*
Ground Cover: Eastern White Pine (*Pinus strobus*)	3%	13%	No	FACU
Sweet Pepperbush (*Clethra alnifolia*)	20.5%	87%	Yes	FAC*

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag G-92

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-7"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"7-20*"**	**10YR 5/1 Sandy loam**	**None**

Remarks: *Refusal at 20 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx. 5 ft. down slope**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland G-92** Date of Delineation: **March 28, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	38%	100%	Yes	FAC*
Saplings: Absent				
Shrubs: Absent				
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	SESU
Woody Vines: Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 1 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

Upland Plot Flag G-92

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-7"**	**10YR 2/2 Sandy loam**	**None**
B	**"7-22*"**	**10YR 4/4 Loamy sand**	**None**

Remarks: *Refusal at 22 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

Wetland Plot Flag H-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	**"8-0"**	**10YR 2/1 Muck/sapric**	**None**
B	**"0-16*"**	**10YR 6/1 Sand**	**None**

Remarks: *Refusal at 20 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx. 5 ft. down slope**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland H-1** Date of Delineation: **March 28, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Yellow Birch (*Betula alleghaniensis*)	20.5%	35%	Yes	FAC*
Red Maple (*Acer rubrum*)	38%	65%	Yes	FAC*
Saplings: Yellow Birch (*Betula alleghaniensis*)	10.5%	100%	Yes	FAC*
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	10.5%	100%	Yes	FAC*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 5 **Number of dominant non-wetland indicator plants: 0**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

- ☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland H-1** Date of Delineation: **March 28, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Yellow Birch (*Betula alleghaniensis*)	20.5%	25%	Yes	FAC*
Red Maple (*Acer rubrum*)	63%	75%	Yes	FAC*
Saplings: Yellow Birch (*Betula alleghaniensis*)	10.5%	100%	Yes	FAC*
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	3%	6%	No	FAC*
American Beech (*Fagus grandifolia*)	10.5%	20%	Yes	FACU
Mountain Laurel (*Kalmia latifolia*)	38%	74%	Yes	FACU
Ground Cover: Mountain Laurel (*Kalmia latifolia*)	10.5%	100%	Yes	FACU

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag H-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-3"**	**10YR 2/2 Sandy loam**	**None**
B	**"3-21*"**	**10YR 6/6 Sand**	**None**

Remarks: *Refusal at 21 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland I-1** Date of Delineation: **March 28, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	63%	100%	Yes	FAC*
Saplings: Yellow Birch (*Betula alleghaniensis*)	20.5%	100%	Yes	FAC*
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	38%	100%	Yes	FAC*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 **Number of dominant non-wetland indicator plants: 0**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag I-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-6"**	**10YR 2/1 Muck/sapric**	**None**
B	**"6-19*"**	**10YR 6/1 Sand**	**10YR 6/8**

Remarks: *Refusal at 20 inches. Mottles were observed from approximately 20% to 30% from 6 to 18 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx. 5 ft. down slope**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland I-1** Date of Delineation: **March 28, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	38%	100%	Yes	FAC*
Saplings: Absent				
Shrubs: Multiflora Rose (*Rosa multiflora*)	10.5%	100%	No	FACU
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	SESU
Woody Vines: Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 1 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag I-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-5"**	**10YR 2/2 Fine sandy loam**	**None**
B	**"5-18*"**	**10YR 6/4 Sandy loam**	**None**

Remarks: *Refusal at 18 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland I-57** Date of Delineation: **March 28, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	20.5%	26%	Yes	FAC*
Eastern White Pine (*Pinus Strobus*)	20.5%	26%	Yes	FACU
Northern White Pine (*Quercus alba*)	38%	48%	Yes	FACU
Saplings: Yellow Birch (*Betula alleghaniensis*)	20.5%	100%	Yes	FAC*
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	50%	Yes	FAC*
Highbush Blueberry (*Vaccinium corymbosum*)	20.5%	50%	Yes	FACW*
Woody Vines: Common Greenbrier (*Simlax rotundifolia*)	38%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 6 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag I-57

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oi	**"2-0"**	**7.5YR 2/1 10YR 2.5/1 Fine sandy loam**	**None**
A	**"0-7"**	**10YR 2/1 10YR 2/1 Fine sandy loam**	**None**
B	**"7-18*"**	**10YR 5/1 Sandy loam**	**None**

Remarks: *Refusal at 18 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx. 5 ft. down slope**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland I-57** Date of Delineation: **March 28, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	10.5%	22%	Yes	FAC*
Northern White Oak (*Quercus alba*)	38%	78%	Yes	FACU
Saplings: Absent				
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	50%	Yes	FAC*
Mountain Laurel (*Kalmia latifolia*)	20.5%	50%	Yes	FACU
Ground Cover: Upland Mosses (*Musci spp.*)	38%	50%	Yes	SESU
Upland Grasses (*Gramineae spp.*)	38%	50%	Yes	SESU
Woody Vines: Common Greenbrier (*Simlax rotundifolia*)	20.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 **Number of dominant non-wetland indicator plants: 4**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag I-57

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-6"**	**10YR 2/2 Fine sandy loam**	**None**
B1	**"6-11"**	**10YR 4/4 Sandy loam**	**None**
B2	**"11-18*"**	**10YR 6/6 Sand**	**None**

Remarks: *Refusal at 18 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland J-1** Date of Delineation: **March 28, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	38%	50%	Yes	FAC*
Yellow Birch (*Betula alleghaniensis*)	38%	50%	Yes	FAC*
Saplings: Absent				
Shrubs: Eastern White Pine (*Pinus strobus*)	3%	12%	No	FACU
Edge Blackberry (*Rubus ascendens*)	10.5%	44%	Yes	FAC*
Highbush Blueberry (*Vaccinium corymbosum*)	10.5%	44%	Yes	FACW*
Ground Cover: Poison Ivy (*Toxicodendron radicans*)	20.5%	100%	Yes	FAC*
Woody Vines: Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 5 **Number of dominant non-wetland indicator plants: 0**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag J-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks: Stormwater drainage appears to have created this wetland.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-7"**	**10YR 3/1 Sandy loam**	**None**
B1	**"7-11"**	**10YR 5/1 Sandy loam**	**None**
B2	**"11-19*"**	**10YR 7/1 Sandy loam**	**10YR 6/8**

Remarks: *Refusal at 19 inches. Mottles were observed from 12 to 19 inches deep and ranged from 15 to 20 percent.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☑ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☑ Oxidized rhizospheres: **Same as mottles**
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

- ☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only
- ☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II
- ☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland J-1** Date of Delineation: **March 28, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Yellow Birch (*Betula alleghaniensis*)	10.5%	20%	Yes	FAC*
Red Maple (*Acer rubrum*)	20.5%	40%	Yes	FAC*
Eastern White Pine (*Pinus strobus*)	20.5%	40%	Yes	FACU
Saplings: Absent				
Shrubs: Red Maple (*Acer rubrum*)	20.5%	50%	Yes	FAC*
Multiflora Rose (*Rosa multiflora*)	20.5%	50%	Yes	FACU
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	SESU
Woody Vines: Oriental Bittersweet (*Celastrus orbiculata*)	20.5%	100%	Yes	UPL

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 **Number of dominant non-wetland indicator plants: 4**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag J-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-3"**	**10YR 2/2 Fine sandy loam**	**None**
B	**"3-19*"**	**10YR 5/6 Sandy loam**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

☐ Site inundated: _____

☐ Depth to free water in observation hole: _____

☐ Depth to soil saturation in observation hole: _____

☐ Water marks: _____

☐ Drift lines: _____

☐ Sediment deposits: _____

☐ Drainage patterns in BVW: _____

☐ Oxidized rhizospheres: _____

☐ Water-stained leaves: _____

☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other):

_____

☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland K-11** Date of Delineation: **March 28, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	20.5%	26%	Yes	FAC*
Eastern White Pine (*Pinus Strobus*)	20.5%	26%	Yes	FACU
Northern White Pine (*Quercus alba*)	38%	48%	Yes	FACU
Saplings: Absent				
Shrubs: Highbush Blueberry (*Vaccinium corymbosum*)	10.5%	34%	Yes	FACW*
Sweet Pepperbush (*Clethra alnifolia*)	20.5%	66%	Yes	FAC*
Ground Cover: Highbush Blueberry (*Vaccinium corymbosum*)	10.5%	34%	Yes	FACW*
Sweet Pepperbush (Clethra alnifolia)	20.5%	66%	Yes	FAC*
Woody Vines: Common Greenbrier (*Simlax rotundifolia*)	38%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 6 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag K-11

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks: Stormwater drainage appears to have created this wetland.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-6"**	**10YR 2/1 10YR 2/1 Fine sandy loam**	**None**
B	**"6-17*"**	**10YR 6/1 Sandy loam**	**None**

Remarks: *Refusal at 17 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

☐ Site inundated: _____

☐ Depth to free water in observation hole: _____

☐ Depth to soil saturation in observation hole: _____

☐ Water marks: _____

☐ Drift lines: _____

☐ Sediment deposits: _____

☐ Drainage patterns in BVW: _____

☐ Oxidized rhizospheres: _____

☐ Water-stained leaves: _____

☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____

☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland K-11** Date of Delineation: **March 28, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Pin Oak (*Quercus palustris*)	10.5%	20%	Yes	FACW*
Red Maple (*Acer rubrum*)	20.5%	40%	Yes	FAC*
Eastern White Pine (*Pinus strobus*)	20.5%	40%	Yes	FACU
Saplings: Absent				
Shrubs: Absemt				
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	SESU
Woody Vines: Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag K-11

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-2"**	**10YR 2/2 Fine sandy loam**	**None**
B1	**"2-8"**	**10YR 3/3 Sandy loam**	**None**
B2	**"8-18*"**	**10YR 5/4 Coarse sand**	**None**

Remarks: *Refusal at 18 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland L-3** Date of Delineation: **March 29, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Pin Oak (*Quercus palustris*)	10.5%	20%	Yes	FACW*
Red Maple (*Acer rubrum*)	20.5%	40%	Yes	FAC*
Eastern White Pine (*Pinus strobus*)	20.5%	40%	Yes	FACU
Saplings: Absent				
Shrubs: Northern Bayberry (*Morella pensylvanica*)	20.5%	26%	Yes	FAC*
Mountain Laurel (*Kalmia latifolia*)	20.5%	26%	Yes	FACU
Highbush Blueberry (*Vaccinium corymbosum*)	38%	48%	Yes	FACW*
Ground Cover: Inkberry (*Ilex glabra*)	3%	100%	Yes	FACW*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	20.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 6 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag L-3

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks: Stormwater drainage appears to have created this wetland.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	**"5-0"**	**10YR 2/1 Muck**	**None**
B	**"0-14"**	**10YR 6/1 Loamy sand**	**None**

Remarks: *Refusal at 14 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☑ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland L-3** Date of Delineation: **March 29, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	20.5%	35%	Yes	FAC*
Eastern White Pine (*Pinus strobus*)	38%	65%	Yes	FACU
Saplings: Absent				
Shrubs: Mountain Laurel (*Kalmia latifolia*)	20.5%	50%	Yes	FACU
Highbush Blueberry (*Vaccinium corymbosum*)	20.5%	50%	Yes	FACW*
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	SESU
Woody Vines: Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag L-3

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-3"**	**10YR 2/2 Fine sandy loam**	**None**
B	**"3-18*"**	**10YR 5/4 Loamy sand**	**None**

Remarks: *Refusal at 18 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

☐ Site inundated: _____

☐ Depth to free water in observation hole: _____

☐ Depth to soil saturation in observation hole: _____

☐ Water marks: _____

☐ Drift lines: _____

☐ Sediment deposits: _____

☐ Drainage patterns in BVW: _____

☐ Oxidized rhizospheres: _____

☐ Water-stained leaves: _____

☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other):

_____

☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland M-4** Date of Delineation: **March 29, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Northern White Pine (*Quercus alba*)	20.5%	25%	Yes	FACU
	Red Maple (*Acer rubrum*)	63%	75%	Yes	FAC*
Saplings:	Absent				
Shrubs:	Glossy Buckthorn (*Frangula alnus*)	10.5%	12%	No	FAC*
	Muliflora Rose (*Rosa multiflora*)	38%	44%	Yes	FACU
	Sweet Pepperbush (*Clethra alnifolia*)	38%	44%	Yes	FAC*
Ground Cover:	Giant Goldenrod (*Solidago gigantea*)	38%	100%	Yes	FACW*
Woody Vines:	Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag M-4

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Paxton fine sandy loam, 8 to 16 percent slopes, very stony**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	**"2-0"**	**10YR 2/1 10YR 2/1 Muck/sapric**	**None**
B	**"0-15*"**	**10YR 6/1 Sandy loam**	**None**

Remarks: *Refusal at 15 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland M-4** Date of Delineation: **March 29, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	10.5%	22%	Yes	FAC*
Northern White Oak (*Quercus alba*)	38%	78%	Yes	FACU
Saplings: Absent				
Shrubs: Multiflora Rose (*Rosa multiflora*)	10.5%	100%	Yes	FACU
Ground Cover: Multiflora Rose (*Rosa multiflora*)	20.5%	25%	Yes	FACU
Upland Grasses (*Gramineae spp.*)	63%	75%	Yes	SESU
Woody Vines: Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 1 **Number of dominant non-wetland indicator plants: 4**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag M-4

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Paxton fine sandy loam, 8 to 16 percent slopes, very stony**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-6"**	**10YR 2/2 Fine sandy loam**	**None**
B	**"6-19*"**	**10YR 4/6 Stony coarse sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland N-6** Date of Delineation: **March 29, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Eastern White Pine (*Pinus strobus*)	10.5%	15%	No	FACU
	Northern White Oak (*Quercus alba*)	20.5%	30%	Yes	FACU
	Red Maple (*Acer rubrum*)	38%	55%	Yes	FAC*
Saplings: Absent					
Shrubs:	Eastern White Pine (*Pinus strobus*)	10.5%	34%	Yes	FACU
	Sweet Pepperbush (*Clethra alnifolia*)	20.5%	66%	Yes	FAC*
Ground Cover:	Sweet Pepperbush (*Clethra alnifolia*)	20.5%	35%	Yes	FAC*
	Giant Goldenrod (*Solidago gigantea*)	38%	65%	Yes	FACW*
Woody Vines: Absent					

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag N-6

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Woodbury fine sandy loam, 3to 8 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	**"7-0"**	**10YR 2/1 Muck/sapric**	**None**
B	**"0-13*"**	**10YR 6/1 Loamy sand**	**None**

Remarks: *Refusal at 13 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland N-6** Date of Delineation: **March 29, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Eastern White Pine (*Pinus strobus*)	20.5%	26%	Yes	FACU
Northern White Oak (*Quercus alba*)	20.5%	26%	Yes	FACU
Red Maple (*Acer rubrum*)	38%	48%	Yes	FAC*
Saplings: Absent				
Shrubs: Absent				
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	SESU
Woody Vines: Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 1 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag N-6

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Woodbury fine sandy loam, 3 to 8 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-3"**	**10YR 2/2 Sandy loam**	**None**
B	**"3-18*"**	**10YR 4/6 Loamy sand**	**None**

Remarks: *Refusal at 18 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland O-6** Date of Delineation: **March 29, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	20.5%	35%	Yes	FAC*
Eastern White Pine (*Pinus strobus*)	38%	65%	Yes	FACU
Saplings: Absent				
Shrubs: Inkberry (*Ilex glabra*)	10.5%	35%	Yes	FACW*
Sweet Pepperbush (*Clethra alnifolia*)	20.5%	65%	Yes	FAC*
Ground Cover: Cinnamon Fern (*Osmundastrum cinnamomeum*)	10.5%	100%	Yes	FACW*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	38%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 5 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag O-6

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Woodbury fine sandy loam, 3to 8 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-6"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"6-19*"**	**10YR 5/1 Loamy sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland O-6** Date of Delineation: **March 29, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Absent				
Saplings: Absent				
Shrubs: Mountain Laurel (*Kalmia latifolia*)	38%	100%	Yes	FACU
Ground Cover: Upland Grasses (*Gramineae spp.*)	38%	100%	Yes	SESU
Woody Vines: Common Greenbrier (*Simlax rotundifolia*)	20.5%	100%	Yesq	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 1 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent.

Upland Plot Flag O-6

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Woodbury fine sandy loam, 3 to 8 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-4"**	**10YR 2/2 Sandy loam**	**None**
B	**"4-18*"**	**10YR 5/6 Sandy loam**	**None**

Remarks: *Refusal at 18 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland P-10** Date of Delineation: **April 7, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Red Maple (*Acer rubrum*)	20.5%	26%	Yes	FAC*
	Eastern White Pine (*Pinus strobus*)	20.5%	26%	Yes	FACU
	Yellow Birch (*Betula alleghaniensis*)	38%	48%	Yes	FAC*
Saplings:	Yellow Birch (*Betula alleghaniensis*)	63%	100%	Yes	FAC*
Shrubs:	Sweet Pepperbush (*Clethra alnifolia*)	20.5%	35%	Yes	FAC*
	Japanese Knotweed (*Reynoutria japonica*)	38%	65%	Yes	FACU
Ground Cover:	Cinnamon Fern (*Osmundastrum cinnamomeum*)	20.5%	50%	Yes	FACW*
	Tussock Sedge (*Carex stricta*)	20.5%	50%	Yes	OBL*

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 6 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag P-10

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Whitman fine sandy loam, 0to 3 percent slopes, extremely stony**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-4"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"4-20*"**	**10YR 6/1 Loamy sand**	**None**

Remarks: *Refusal at 20 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland P-10** Date of Delineation: **April 7, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	3%	5%	No	FAC*
Eastern White Pine (*Pinus strobus*)	20.5%	33%	Yes	FAC*
Yellow Birch (*Betula alleghaniensis*)	38%	62%	Yes	FAC*
Saplings: Eastern White Pine (*Pinus strobus*)	10.5%	100%	Yes	FACU
Shrubs: Japanese Knotweed (*Reynoutria japonica*)	38%	100%	Yes	FACU
Ground Cover: American Holly (*Ilex opaca*)	3%	4%	No	FACU
Eastern White Pine (*Pinus strobus*)	3%	4%	No	FACU
Upland Grasses (*Gramineae spp.*)	63%	92%	Yes	SESU

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag P-10

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-2"**	**10YR 2/2 Fine sandy loam**	**None**
B1	**"2-11"**	**10YR 3/6 Sandy loam**	**None**
B2	**"11-21*"**	**10YR 4/6 Sandy loam**	**None**

Remarks: *Refusal at 21 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland P-52** Date of Delineation: **April 7, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	63%	100%	Yes	FAC*
Saplings: Yellow Birch (*Betula alleghaniensis*)	63%	100%	Yes	FAC*
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	25%	Yes	FAC*
Southern Arrowwood (*Viburnam dentatum*)	20.5%	25%	Yes	FAC*
Highbush Blueberry (Vaccinuim corymbosum)	20.5%	25%	Yes	FAC*
Common Winterberry (*Ilex verticillata*)	20.5%	25%	Yes	FAC*
Ground Cover: Sphagnum Moss (*Sphagnum spp.*)	20.5%	35%	Yes	SESW*
Tussock Sedge (*Carex stricta*)	38%	65%	Yes	OBL*

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 8 **Number of dominant non-wetland indicator plants: 0**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag P-52

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Deerfield loamy sand, 0to 5 percent slopes**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	**"9-0"**	**10YR 2/1 Muck/sapric**	**None**
B	**"0-16*"**	**10YR 6/1 Loamy sand**	**None**

Remarks: *Refusal at 16 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland P-52** Date of Delineation: **April 7, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Northern White Oak (*Quercus alba*)	10.5%	22%	Yes	FACU
Red Maple (*Acer rubrum*)	38%	78%	Yes	FAC*
Saplings: American Holly (*Ilex opaca*)	63%	100%	Yes	FACU
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	35%	Yes	FAC*
Mountain Laurel (*Kalmia latifolia*)	38%	65%	Yes	FACU
Ground Cover: Upland Mosses (*Musci spp.*)	10.5%	20%	Yes	SESU
Sweet Pepperbush (*Clethra alnifolia*)	20.5%	40%	Yes	FAC*
Mountain Laurel (*Kalmia latifolia*)	20.5%	40%	Yes	FACU

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 **Number of dominant non-wetland indicator plants: 5**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag P-52

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Deerfield loamy sand, 0 to 5 percent slopes**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-4"**	**10YR 2/2 Fine sandy loam**	**None**
B	**"4-19*"**	**10YR 4/6 Sandy loam**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland P-137** Date of Delineation: **April 7, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Eastern White Pine (*Pinus strobus*)	20.5%	25%	Yes	FACU
Red Maple (*Acer rubrum*)	63%	75%	Yes	FAC*
Saplings: Green Ash (*Fraxinus pennsylvanica*)	10.5%	100%	Yes	FACW*
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	35%	Yes	FAC*
Common Winterberry (*Ilex verticillata*)	38%	65%	Yes	FACW*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	38%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 6 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag P-137

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	**"12-0"**	**10YR 2/1 Muck/sapric**	**None**
B	**"0-16*"**	**10YR 5/1 Loamy sand**	**None**

Remarks: *Refusal at 16 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland P-137** Date of Delineation: **April 7, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Pin Oak (*Quercus palustris*)	10.5%	18%	No	FACW*
Red Maple (*Acer rubrum*)	10.5%	18%	No	FAC*
Eastern White Pine (*Pinus strobus*)	38%	64%	Yes	FACU
Saplings: Absent				
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	10.5%	34%	Yes	FAC*
Mountain Laurel (*Kalmia latifolia*)	20.5%	66%	Yes	FACU
Ground Cover: Mountain Laurel (*Kalmia latifolia*)	10.5%	100%	Yes	FACU
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	38%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag P-137

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oi	**"2-0"**	**10YR 2/2 Fibric**	**None**
A	**"0-2"**	**10YR 2/1 Fine sandy loam**	**None**
B1	**"2-6"**	**10YR 3/3 Sandy loam**	**None**
B2	**"6-19*"**	**10YR 4/6 Sandy loam**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland P-190** Date of Delineation: **April 8, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Eastern White Pine (*Pinus strobus*)	10.5%	15%	No	FACU
Pin Oak (*Quercus palustris*)	20.5%	30%	Yes	FACW*
Red Maple (*Acer rubrum*)	38%	55%	Yes	FAC*
Saplings: Green Ash (*Fraxinus pennsylvanica*)	10.5%	100%	Yes	FACW*
Shrubs: Mountain Laurel (*Kalmia latifolia*)	10.5%	22%	Yes	FACU
Sweet Pepperbush (*Clethra alnifolia*)	20.5%	44%	Yes	FAC*
Swamp Azalea (*Rhododendron viscosum*)	20.5%	44%	Yes	FACW*
Ground Cover: Sphagnum Moss (*Sphagnum spp.*)	10.5%	25%	Yes	SESW*
Mountain Laurel (*Kalmia latifolia*)	10.5%	25%	Yes	FACU
Sweet Pepperbush (*Clethra alnifolia*)	20.5%	50%	Yes	FAC*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	20.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 8 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag P-190

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oi	**"3-0"**	**7.5YR 2.5/1 Fibric**	**None**
A	**"0-5"**	**10YR 2/1 Fine sandy loam**	**None**
B1	**"0-5"**	**10YR 6/1 Loamy sand**	**None**
B2	**"9-19*"**	**10YR 5/4 Sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland P-190** Date of Delineation: **April 8, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Pin Oak (*Quercus palustris*)	10.5%	18%	No	FACW*
Red Maple (*Acer rubrum*)	10.5%	18%	No	FAC*
Eastern White Pine (*Pinus strobus*)	38%	64%	Yes	FACU
Saplings: Northern White Oak (*Quercus alba*)	10.5%	100%	Yes	FACU
Shrubs: Swamp Azalea (*Rhododendron viscosum*)	10.5%	13%	No	FACW*
Sweet Pepperbush (*Clethra alnifolia*)	10.5%	13%	No	FAC*
Mountain Laurel (*Kalmia latifolia*)	63%	74%	Yes	FACU
Ground Cover: Upland Moss (*Musci spp.*)	10.5%	25%	Yes	SESU
Sweet Pepperbush (*Clethra alnifolia*)	10.5%	25%	Yes	FAC*
Mountain Laurel (*Kalmia latifolia*)	20.5%	50%	Yes	FACU
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 5**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag P-190

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-3"**	**10YR 3/3 Fine sandy loam**	**None**
B	**"3-21*"**	**10YR 4/6 Sand**	**10YR 6/8**

Remarks: *Refusal at 21 inches. The 10YR 6/8 and 4/4 mottles at approximately 30% in the "B"Horizon occurred at approximately 10 inches and continued to 21 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland P-202** Date of Delineation: **April 8, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Eastern White Pine (*Pinus strobus*)	20.5%	25%	Yes	FACU
Red Maple (*Acer rubrum*)	63%	75%	Yes	FAC*
Saplings: Absent				
Shrubs Sweet Pepperbush (*Clethra alnifolia*)	20.5%	35%	Yes	FAC*
Highbush Blueberry (*Vaccinium corymbosum*)	38%	65%	Yes	FACW*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	10.5%	100%	Yes	FAC*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 5 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag P-202

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Swansea muck, 0 to 1 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-6"**	**10YR 2/1 Sandy loam**	**None**
B	**"6-21*"**	**10YR 5/1 Sand**	**None**

Remarks: *Refusal at 21 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland P-202** Date of Delineation: **April 8, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Pin Oak (*Quercus palustris*)	10.5%	11%	No	FACW*
Red Maple (*Acer rubrum*)	20.5%	22%	Yes	FAC*
Eastern White Pine (*Pinus strobus*)	63%	67%	Yes	FACU
Saplings: Absent				
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	3%	5%	No	FAC*
American Holly (*Ilex opaca*)	63%	95%	Yes	FACU
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag P-202

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Swansea muck, 0 to 1 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-6"**	**10YR 2/1 Sandy loam**	**None**
B	**"6-19*"**	**10YR 6/8 Sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland Q-3** Date of Delineation: **April 8, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Black Tupelo (*Nyssa sylvatica*)	10.5%	13%	No	FAC*
	Northern White Oak (*Quercus alba*)	10.5%	13%	No	FACU
	Red Maple (*Acer rubrum*)	20.5%	26%	Yes	FAC*
	Eastern White Pine (*Pinus strobus*)	38%	48%	Yes	FACU
Saplings:	Northern Red Oak (*Quercus rubra*)	10.5%	100%	Yes	FACU
Shrubs	Highbush Blueberry (*Vaccinium corymbosum*)	20.5%	35%	Yes	FACW*
	Sweet Pepperbush (*Clethra alnifolia*)	38%	65%	Yes	FAC*
Ground Cover:	Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Woody Vines:	Common Greenbrier (*Smilax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 5 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag Q-3

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Swansea muck, 0 to 1 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-6"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"6-19*"**	**10YR 6/1 Sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland Q-3** Date of Delineation: **April 8, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Black Tupelo (Nyssa sylvatica)	10.5%	11%	No	FAC*
Northern White Oak (*Quercus alba*)	10.5%	11%	No	FACU
Red Maple (*Acer rubrum*)	38%	39%	Yes	FAC*
Eastern White Pine (*Pinus strobus*)	38%	39%	Yes	FACU
Saplings: Eastern White Pine (*Pinus strobus*)	38%	100%	Yes	FACU
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	SESU
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag Q-3

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Swansea muck, 0 to 1 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-5"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"5-20*"**	**10YR 6/6 Sandy loam**	**None**

Remarks: *Refusal at 20 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland Q-21** Date of Delineation: **April 8, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	38%	50%	Yes	FAC*
Pin Oak (*Quercus palustris*)	38%	50%	Yes	FACW*
Saplings: Black Tupelo (*Nyssa sylvatica*)	10.5%	100%	Yes	FAC*
Shrubs Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	10.5%	100%	Yes	FAC*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 6 **Number of dominant non-wetland indicator plants: 0**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag Q-21

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Swansea muck, 0 to 1 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-6"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"6-19*"**	**10YR 6/1 Sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland Q-21** Date of Delineation: **April 8, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	20.5%	35%	Yes	FAC*
Pin Oak (*Quercus palustris*)	38%	65%	Yes	FACW*
Saplings: Red Maple (*Acer rubrum*)	10.5%	100%	Yes	FAC*
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	10.5%	100%	Yes	FAC*
Ground Cover: Upland Moss (*Musci spp.*)	20.5%	50%	Yes	SESU
Upland Grasses (*Gramineae spp.*)	20.5%	50%	Yes	SESU
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 5 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag Q-21

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Swansea muck, 0 to 1 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-3"**	**10YR 2/2 Sandy loam**	**None**
B	**"3-20*"**	**10YR 3/4 Sandy loam**	**None**

Remarks: *Refusal at 20 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland R-9** Date of Delineation: **April 8, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Eastern White Pine (*Pinus strobus*)	20.5%	25%	Yes	FACU
Red Maple (*Acer rubrum*)	63%	75%	Yes	FAC*
Saplings: Absent				
Shrubs Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	10.5%	34%	Yes	FAC*
Cinnamon Fern (*Osmundastrum cinnamomeum*)	20.5%	66%	Yes	FACW*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 5 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag R-9

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oi	**"3-0"**	**7.5YR 2.5/1 Fibric**	**None**
A	**"0-2"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"2-19*"**	**10YR 5/1 Loamy sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland R-9** Date of Delineation: **April 8, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	20.5%	35%	Yes	FAC*
Pin Oak (*Quercus palustris*)	38%	65%	Yes	FACW*
Saplings: Red Maple (*Acer rubrum*)	10.5%	100%	Yes	FAC*
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	10.5%	100%	Yes	FAC*
Ground Cover: Upland Moss (*Musci spp.*)	20.5%	50%	Yes	SESU
Upland Grasses (*Gramineae spp.*)	20.5%	50%	Yes	SESU
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag R-9

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Scarboro mucky sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oi	**"3-0"**	**10YR 2/1 Fibric**	**None**
A	**"0-3"**	**10YR 2/1 Sandy loam**	**None**
B	**"3-18*"**	**10YR 3/4 Sandy loam**	**None**

Remarks: *Refusal at 18 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland R-38** Date of Delineation: **April 8, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Eastern White Pine (*Pinus strobus*)	38%	50%	Yes	FACU
Red Maple (*Acer rubrum*)	38%	50%	Yes	FAC*
Saplings: Absent				
Shrubs Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Ground Cover: Sweet Pepperbush (*Clethra alnifolia*)	10.5%	100%	Yes	FAC*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	10.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag R-38

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Scarboro mucky fine sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-8"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"8-22*"**	**10YR 5/1 Loamy sand**	**None**

Remarks: *Refusal at 22 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland R-38** Date of Delineation: **April 8, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	38%	50%	Yes	FAC*
Eastern White Pine (*Pinus strobus*)	38%	50%	Yes	FACU
Saplings: Eastern White Pine (*Pinus strobus*)	20.5%	35%	Yes	FACU
American Holly (*Ilex opaca*)	38%	65%	Yes	FACU
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	3%	100%	Yes	FAC*
Ground Cover: Poison Ivy (*Toxicodendron radicans*)	10.5%	100%	Yes	FAC*
Woody Vines: Common Greenbrier (*Smilax rotundifolia*)	20.5%	35%	Yes	FAC*
Oriental Bittersweet (*Celastrus orbiculata*)	38%	65%	Yes	UPL

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 **Number of dominant non-wetland indicator plants: 4**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag R-38

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Scarboro mucky sandy loam, 0 to 3 percent slopes**

hydric soil inclusions: **Yes**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-2"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"2-20*"**	**10YR 3/4 Sandy loam**	**None**

Remarks: *Refusal at 20 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland 2-2** Date of Delineation: **February 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Eastern White Pine (*Pinus strobus*)	20.5%	25%	Yes	FACU
	Red Maple (*Acer rubrum*)	63%	75%	Yes	FAC*
Saplings:	Red Maple (*Acer rubrum*)	10.5%	100%	Yes	FAC*
Shrubs:	Highbush Blueberry (*Vaccinium corymbosum*)	10.5%	25%	Yes	FACW*
	Maleberry (*Lyonia ligustrina*)	10.5%	25%	Yes	FACW*
	Sweet Pepperbush (*Clethra alnifolia*)	20.5%	50%	Yes	FAC*
Ground Cover:	Sweet Pepperbush (*Clethra alnifolia*)	20.5%	50%	Yes	FAC*
	Common Winterberry (*Ilex verticillata*)	20.5%	50%	Yes	FACW*

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 7 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag 2-2

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks: Wetland appears to have been created as a result of stormwater drainage.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	**"7-0"**	**10YR 2/1 Muck/sapric**	**None**
B	**"0-16*"**	**10YR 6/1 Fine sandy loam**	**None**

Remarks: *Refusal at 16 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

☐ Site inundated: _____

☐ Depth to free water in observation hole: _____

☐ Depth to soil saturation in observation hole: _____

☑ Water marks: **On tree trunks**

☐ Drift lines: _____

☐ Sediment deposits: _____

☐ Drainage patterns in BVW: _____

☐ Oxidized rhizospheres: _____

☑ Water-stained leaves: **Approx.. 5 ft. below delineated wetland**

☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other):

_____

☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Other Indicators of Hydrology: (check all that apply and describe)

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland 2-2** Date of Delineation: **February 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Absent				
Saplings: Absent				
Shrubs: Absent				
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	SESU
Woody Vines: Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 0 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag 2-2

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-2"**	**10YR 2/2 Fine sandy loam**	**None**
B	**"2-19*"**	**10YR 4/6 Loamy sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

☐ Site inundated: _____

☐ Depth to free water in observation hole: _____

☐ Depth to soil saturation in observation hole: _____

☐ Water marks: _____

☐ Drift lines: _____

☐ Sediment deposits: _____

☐ Drainage patterns in BVW: _____

☐ Oxidized rhizospheres: _____

☐ Water-stained leaves: _____

☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other):

_____

☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland 4-7** Date of Delineation: **February 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Black Tupelo (*Nyssa sylvatica*)	10.5%	15%	No	FAC*
	Eastern White Pine (*Pinus strobus*)	20.5%	30%	Yes	FACU
	Red Maple (*Acer rubrum*)	38%	55%	Yes	FAC*
Saplings:	Red Maple (*Acer rubrum*)	10.5%	100%	Yes	FAC*
Shrubs:	Sweet Pepperbush (*Clethra alnifolia*)	38%	50%	Yes	FAC*
	Common Winterberry (*Ilex verticillata*)	38%	50%	Yes	FACW*
Ground Cover:	Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Woody Vines:	Common Greenbrier (*Smilax rotundifolia*)	3%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 6 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag 4-7

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks: Wetland appears to have been created as a result of stormwater drainage.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	**"10-0"**	**10YR 2/1 Muck/sapric**	**None**
B	**"0-9"**	**10YR 6/1 Sand**	**10YR 6/6**

Remarks: *Refusal at 9 inches under "Oa" horizon. Mottles occurred in "B" horizon at approximately 1 to 9 inches and ranged from approximately 20% to 30%.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☑ Water marks: **On tree trunks**
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx.. 5 ft. below delineated wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland 4-7** Date of Delineation: **February 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Absent				
Saplings: Absent				
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Ground Cover: Eastern White Pine (*Pinus strobus*)	20.5%	25%	Yes	FACU
Upland Grasses (*Gramineae spp.*)	63%	75%	Yes	SESU
Woody Vines: Oriental Bittersweet (*Celastrus orbiculata*)	10.5%	100%	Yes	UPL

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 1 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag 4-7

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-6"**	**10YR 2/2 Fine sandy loam**	**None**
B	**"6-19*"**	**10YR 4/6 Loamy sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

☐ Site inundated: _____

☐ Depth to free water in observation hole: _____

☐ Depth to soil saturation in observation hole: _____

☐ Water marks: _____

☐ Drift lines: _____

☐ Sediment deposits: _____

☐ Drainage patterns in BVW: _____

☐ Oxidized rhizospheres: _____

☐ Water-stained leaves: _____

☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other):

_____

☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland 5-2** Date of Delineation: **February 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Eastern White Pine (*Pinus strobus*)	38%	50%	Yes	FACU
	Red Maple (*Acer rubrum*)	38%	50%	Yes	FAC*
Saplings:	Red Maple (*Acer rubrum*)	10.5%	100%	Yes	FAC*
Shrubs:	Sweet Pepperbush (*Clethra alnifolia*)	38%	100%	Yes	FAC*
Ground Cover:	Sweet Pepperbush (*Clethra alnifolia*)	10.5%	22%	Yes	FAC*
	Cinnamon Fern (*Osmundastrum cinnamomeum*)	38%	78%	Yes	FACW*
Woody Vines:	Common Greenbrier (*Smilax rotundifolia*)	3%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 6 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag 5-2

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks: Wetland appears to be created from stormwater drainage.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-6"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"6-19*"**	**10YR 6/1 Sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☑ Water marks: **On tree trunks**
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx.. 5 ft. below delineated wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland 5-2** Date of Delineation: **February 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	20.5%	25%	Yes	FAC*
Eastern White Pine (*Pinus strobus*)	63%	75%	Yes	FACU
Saplings: Absent				
Shrubs: Apple (*Pyrus malus*)	3%	9%	No	SESU
Northern Red Oak (*Quercus rubra*)	10.5%	31%	Yes	FACU
Sweet Pepperbush (*Clethra alnifolia*)	20.5%	60%	Yes	FAC*
Ground Cover: Canada Mayflower (*Maianthemum canadense*)	3%	11%	No	FACU
American Holly (*Ilex opaca*)	3%	11%	No	FACU
Upland Grasses (*Gramineae spp.*)	20.5%	78%	Yes	FACU
Woody Vines: Common Greenbrier (*Simlax rotundifolia*)	3%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag 5-2

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-2"**	**10YR 2/2 Fine sandy loam**	**None**
B	**"2-18*"**	**10YR 4/6 Sandy loam**	**None**

Remarks: *Refusal at 18 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

☐ Site inundated: _____

☐ Depth to free water in observation hole: _____

☐ Depth to soil saturation in observation hole: _____

☐ Water marks: _____

☐ Drift lines: _____

☐ Sediment deposits: _____

☐ Drainage patterns in BVW: _____

☐ Oxidized rhizospheres: _____

☐ Water-stained leaves: _____

☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other):

_____

☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland 7-10** Date of Delineation: **February 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Eastern White Pine (*Pinus strobus*)	20.5%	25%	Yes	FACU
	Red Maple (*Acer rubrum*)	63%	75%	Yes	FAC*
Saplings:	Absent				
Shrubs:	American Holly (*Ilex opaca*)	3%	13%	No	FACU
	Eastern White Pine (*Pinus strobus*)	20.5%	87%	Yes	FACU
Ground Cover:	Cinnamon Fern (*Osmundastrum cinnamomeum*)	20.5%	50%	Yes	FACW*
	Giant Goldenrod (*Solidago gigantea*)	20.5%	50%	Yes	FACW*
Woody Vines:	Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 3 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag 7-10

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks: Wetland appears to have been created as a result of stormwater drainage.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	**"7-0"**	**10YR 2/1 Muck/sapric**	**None**
B	**"0-16*"**	**10YR 6/1 Sand**	**10YR 6/6**

Remarks: *Refusal at 16 inches under "Oa" horizon. Mottles occurred in "B" horizon at approximately 1 to 16 inches and ranged from approximately 20% to 30%.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☑ Water marks: **On tree trunks**
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx.. 5 ft. below delineated wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland 7-10** Date of Delineation: **February 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Eastern White Pine (*Pinus strobus*)	20.5%	25%	Yes	FACU
Red Maple (*Acer rubrum*)	63%	75%	Yes	FAC*
Saplings: Absent				
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Ground Cover: Upland Grasses (*Gramineae spp.*)	63%	100%	Yes	SESU
Woody Vines: Oriental Bittersweet (*Celastrus orbiculata*)	20.5%	100%	Yes	UPL

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag 7-10

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-2"**	**10YR 2/2 Fine sandy loam**	**None**
B	**"2-19*"**	**10YR 4/6 Loamy sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland 8-1** Date of Delineation: **February 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Eastern White Pine (*Pinus strobus*)	38%	50%	Yes	FACU
	Red Maple (*Acer rubrum*)	38%	50%	Yes	FAC*
Saplings:	Absent				
Shrubs:	Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Ground Cover:	Sweet Pepperbush (*Clethra alnifolia*)	20.5%	50%	Yes	FAC*
	Giant Goldenrod (*Solidago gigantea*)	20.5%	50%	Yes	FACW*
Woody Vines:	Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 4 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag 8-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks: Wetland appears to have been created as a result of stormwater drainage.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-6"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"6-18*"**	**10YR 6/1 Sandy loam**	**None**

Remarks: *Refusal at 18 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

☐ Site inundated: _____

☐ Depth to free water in observation hole: _____

☐ Depth to soil saturation in observation hole: _____

☑ Water marks: **On tree trunks**

☐ Drift lines: _____

☐ Sediment deposits: _____

☐ Drainage patterns in BVW: _____

☐ Oxidized rhizospheres: _____

☑ Water-stained leaves: **Approx.. 5 ft. below delineated wetland**

☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____

☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland 8-1** Date of Delineation: **February 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Eastern White Pine (*Pinus strobus*)	38%	50%	Yes	FACU
Red Maple (*Acer rubrum*)	38%	50%	Yes	FAC*
Saplings: Absent				
Shrubs: Absent				
Ground Cover: American Holly (*Ilex opaca*)	3%	5%	No	FACU
Eastern White Pine (*Pinus strobus*)	3%	5%	No	FACU
Upland Mosses (*Musci spp.*)	10.5%	20%	Yes	SESU
Upland Grasses (*Gramineae spp.*)	38%	70%	Yes	SESU
Woody Vines: Absent				

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 1 **Number of dominant non-wetland indicator plants: 3**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag 8-1

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-2"**	**10YR 2/2 Fine sandy loam**	**None**
B	**"2-19*"**	**10YR 4/6 Loamy sand**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

☐ Site inundated: _____

☐ Depth to free water in observation hole: _____

☐ Depth to soil saturation in observation hole: _____

☐ Water marks: _____

☐ Drift lines: _____

☐ Sediment deposits: _____

☐ Drainage patterns in BVW: _____

☐ Oxidized rhizospheres: _____

☐ Water-stained leaves: _____

☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other):

_____

☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland 9-8** Date of Delineation: **February 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Eastern White Pine (*Pinus strobus*)	38%	50%	Yes	FACU
	Red Maple (*Acer rubrum*)	38%	50%	Yes	FAC*
Saplings:	Black Tupelo (*Nyssa sylvatica*)	10.5%	100%	Yes	FAC*
Shrubs:	Sweet Pepperbush (*Clethra alnifolia*)	38%	100%	Yes	FAC*
Ground Cover:	Sweet Pepperbush (*Clethra alnifolia*)	20.5%	100%	Yes	FAC*
Woody Vines:	Common Greenbrier (*Smilax rotundifolia*)	20.5%	100%	Yes	FAC*

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 5 **Number of dominant non-wetland indicator plants: 1**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag 9-8

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks: This wetland appears to have been created because of stormwater drainage.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
Oa	**"8-0"**	**10YR 2/1 Muck/sapric**	**None**
B	**"0-9*"**	**10YR 6/1 Sand**	**None**

Remarks: *Refusal at 9 inches under "Oa" horizon.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx.. 5 ft. below delineated wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland 9-8** Date of Delineation: **February 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Red Maple (*Acer rubrum*)	38%	50%	Yes	FAC*
Eastern White Pine (*Pinus strobus*)	38%	50%	Yes	FACU
Saplings: Eastern White Pine (*Pinus strobus*)	20.5%	35%	Yes	FACU
Witch Hazel (*Hamamelis virginiana*)	38%	65%	Yes	FACU
Shrubs: Sweet Pepperbush (*Clethra alnifolia*)	3%	10%	No	FAC*
American Holly (*Ilex opaca*)	10.5%	30%	Yes	FACU
Northern Red Oak (*Quercus rubra*)	10.5%	30%	Yes	FACU
Mountain Laurel (*Kalmia latifolia*)	10.5%	30%	Yes	FACU
\				
Ground Cover: Sweet Pepperbush (*Clehtra alnifolia*)	20.5%	50%	Yes	FAC*
Northern Red Oak (*Quercus rubra*)	20.5%	50%	Yes	FACU

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 7**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag 9-8

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-3"**	**10YR 2/2 Fine sandy loam**	**None**
B1	**"3-21*"**	**10YR 4/6 Sandy loam**	**None**

Remarks: *Refusal at 21 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Wetland 10-7** Date of Delineation: **February 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)		B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees:	Grey Birch (*Betula populifolia*)	20.5	22%	Yes	FAC*
	Eastern White Pine (*Pinus strobus*)	38%	44%	Yes	FACU
	Black Tupelo (*Nyssa sylvanica*)	38%	44%	Yes	FAC*
Saplings:	American Holly (*Ilex opaca*)	10.5%	22%	Yes	FACU
	Black Tupelo (*Nyssa sylvatica*)	38%	78%	Yes	FAC*
Shrubs:	Black Tupelo (*Nyssa sylvatica*)	20.5%	22%	Yes	FAC*
	Highbush Blueberry (*Vaccinium corymbosum*)	38%	44%	Yes	FACW*
	Northern Bayberry (*Morella pensylvanica*)	38%	44%	Yes	FAC*
Ground Cover:	Northern Bayberry (*Morella pensylvanica*)	20.5%	100%	Yes	FAC*

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 7 **Number of dominant non-wetland indicator plants: 2**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☑ no ☐

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Wetland Plot Flag 10-7

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Southern Part, Massachusetts Date observed: 06/14/18**

map number: **Sheet N/A – US NRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☐ no ☑
Remarks: This wetland appears to have been created because of stormwater drainage.

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-5"**	**10YR 2/1 Fine sandy loam**	**None**
B	**"5-18*"**	**10YR 6/1 Sandy loam**	**None**

Remarks: *Refusal at 18 inches.

3. Other:

Conclusion: Is soil hydric? yes ☑ no ☐

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☑ Water marks: **On tree trunks**
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☑ Water-stained leaves: **Approx.. 5 ft. below delineated wetland**
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☑ Other: **Buttressed roots**

Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☑	☐
Wetland hydrology present:		
hydric soil present	☑	☐
other indicators of hydrology present	☑	☐
Sample location is in BVW	☑	☐

Submit this form with the Request for Determination of Applicability or Notice of Intent.

DEP Bordering Vegetated Wetland (310 CMR 10.55) Delineation Field Data Form

Applicant: **Parallel Products, Inc.** Prepared by: **Tunison Environmental Consultants, LLC.** Project Location: **100 Duchaine Blvd, New Bedford, Massachusetts** DEP File #:

Check all that apply:

☐ Vegetation alone presumed adequate to delineate BVW boundary: fill out Section I only

☑ Vegetation and other indicators of hydrology used to delineate BVW boundary: fill out Sections I and II

☐ Method other than dominance test used (attach additional information)

Section I. Vegetation Observation Plot Number: **NA** Transect Number: **Upland 10-7** Date of Delineation: **February 27, 2018**

A. Sample Layer and Plant Species (by common/scientific name)	B. Percent Cover (or basal area)	C. Percent Dominance	D. Dominant Plant (yes or no)	E. Wetland Indicator Category*
Trees: Eastern White Pine (*Pinus strobus*)	63%	100%	Yes	FACU
Saplings: American Holly (*Ilex opaca*)	20.5%	100%	Yes	FACU
Shrubs: Northern Red Oak (*Quercus rubra*)	10.5%	34%	Yes	FACU
Northern Bayberry (*Morella pensylvanica*)	20.5%	66%	Yes	FAC*
Ground Cover: Northern Bayberry (*Morella pensylvanica*)	20.5%	50%	Yes	FAC*
Upland Grasses (*Gramineae spp.*)	20.5%	50%	Yes	SESU

Woody Vines: Absent

* Use an asterisk to mark indicator plants: plant species listed in the wetlands Protection Act (MGL c.131, s.40); plants in the genus *Sphagnum*; plants listed as FAC, FACW, or OBL; or plants with physiological or morphological adaptations. If any plants are identified as wetland indicator plants due to physiological or morphological adaptations, describe the adaptation next to the asterisk.

Vegetation conclusion:

Number of dominant wetland indicator plants: 2 **Number of dominant non-wetland indicator plants: 4**

Is the number of dominant wetland plants equal to or greater than the number of dominant non-wetland plants: yes ☐ no ☑

If vegetation alone is presumed adequate to delineate the BVW boundary, submit this form with the Request for Determination of Applicability or Notice of Intent. MA DEP; 3/95

Upland Plot Flag 10-7

Section II. Indicators of Hydrology

Hydric Soil Interpretation

1. Soil Survey

Is there a published soil survey for this site? **yes X** no

title/date: **USDA/NRCS Websoil Soil Survey of Bristol County, Massachusetts, Southern Part, Date observed: 06/14/18**

map number: **Sheet N/A – USNRCS Web Soil Survey**

soil type mapped: **Urban land**

hydric soil inclusions: **No**

Are field observations consistent with soil survey? yes ☑ no ☐

Remarks:

2. Soil Description

Horizon	Depth	Matrix Color	Mottles Color
A	**"0-2"**	**10YR 2/2 Fine sandy loam**	**None**
B1	**"2-19*"**	**10YR 4/6 Sandy loam**	**None**

Remarks: *Refusal at 19 inches.

3. Other:

Conclusion: Is soil hydric? yes ☐ no ☑

Other Indicators of Hydrology: (check all that apply and describe)

- ☐ Site inundated: _____
- ☐ Depth to free water in observation hole: _____
- ☐ Depth to soil saturation in observation hole: _____
- ☐ Water marks: _____
- ☐ Drift lines: _____
- ☐ Sediment deposits: _____
- ☐ Drainage patterns in BVW: _____
- ☐ Oxidized rhizospheres: _____
- ☐ Water-stained leaves: _____
- ☐ Recorded data (stream, lake, or tidal gauge; aerial photo; other): _____
- ☐ Other: _____

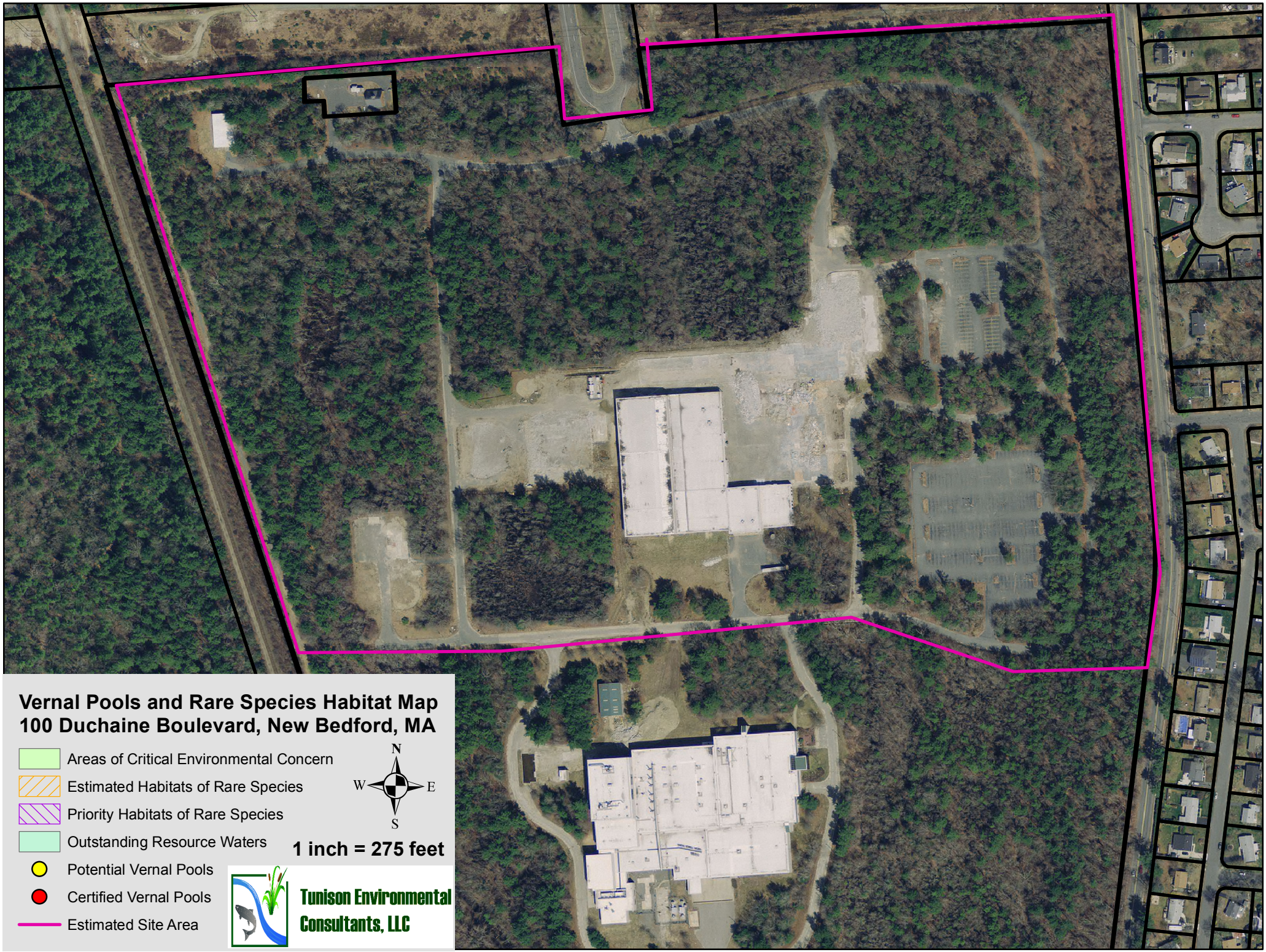
Vegetation and Hydrology Conclusion

	yes	no
Number of wetland indicator plants greater than or equal to number of non-wetland indicator plants	☐	☑
Wetland hydrology present:		
hydric soil present	☐	☑
other indicators of hydrology present	☐	☑
Sample location is in BVW	☐	☑

Submit this form with the Request for Determination of Applicability or Notice of Intent.

Attachment 3

Natural Heritage and Endangered Species Program Estimated Habitat of Rare Wildlife and Certified Vernal Pools, New Bedford North Quadrangle Map


Vernal Pools and Rare Species Habitat Map
100 Duchaine Boulevard, New Bedford, MA
Areas of Critical Environmental Concern
Estimated Habitats of Rare Species
Priority Habitats of Rare Species
Outstanding Resource Waters
Potential Vernal Pools
Certified Vernal Pools
Estimated Site Area
N
W
E
S
1 inch = 275 feet
Tunison Environmental
Consultants, LLC

Attachment 4

NRCS Soil Map and Report

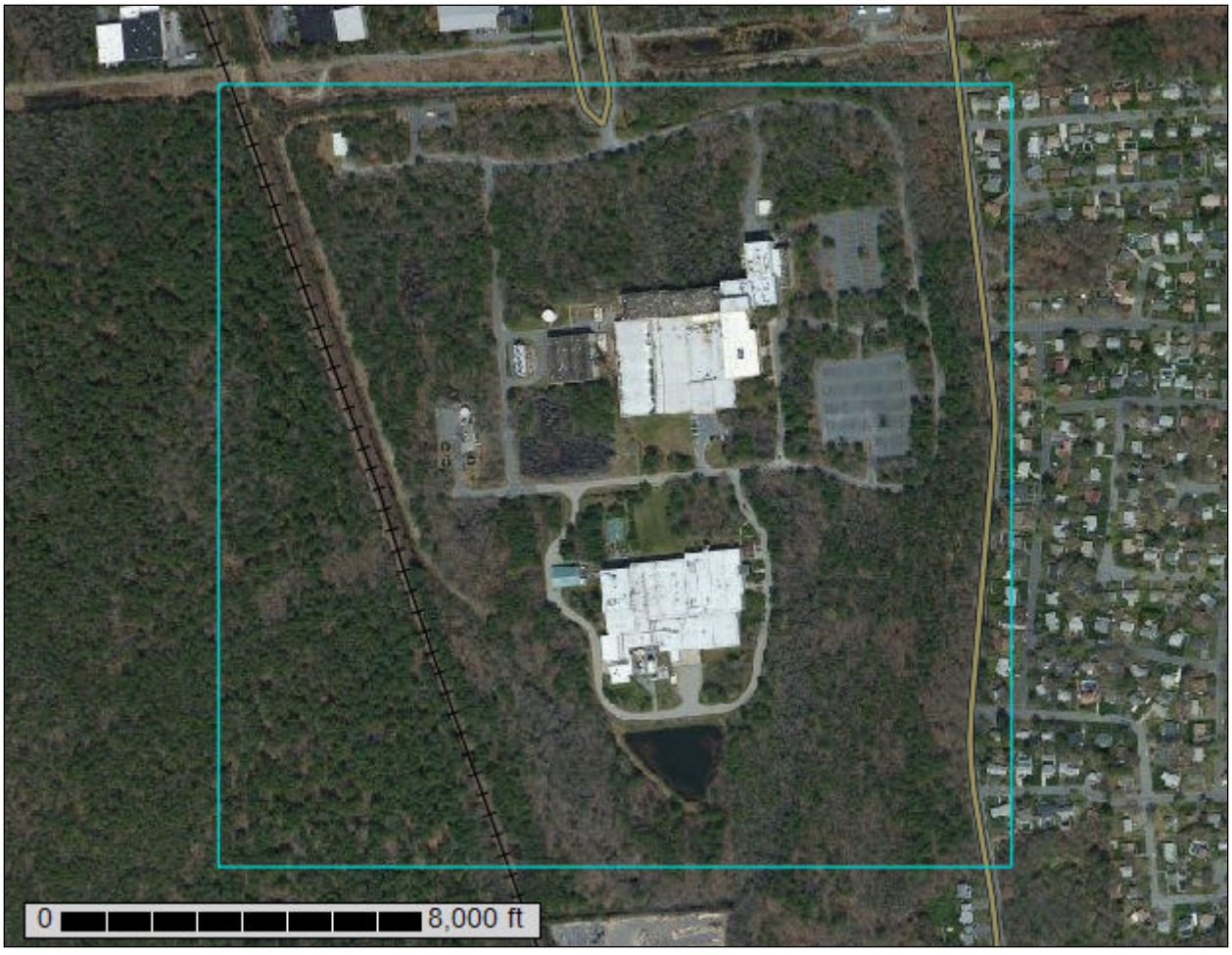
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Bristol County, Massachusetts, Southern Part



June 14, 2018

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bristol County, Massachusetts, Southern Part
Survey Area Data: Version 11, Oct 6, 2017

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Mar 30, 2011—Oct 8, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
38A	Pipestone loamy sand, 0 to 3 percent slopes	8.8	5.3%
39A	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	50.7	30.6%
51A	Swansea muck, 0 to 1 percent slopes	10.1	6.1%
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	13.2	8.0%
256B	Deerfield loamy sand, 0 to 5 percent slopes	12.2	7.4%
260A	Sudbury fine sandy loam, 0 to 3 percent slopes	25.4	15.4%
305B	Paxton fine sandy loam, 3 to 8 percent slopes	0.3	0.2%
305C	Paxton fine sandy loam, 8 to 15 percent slopes	0.5	0.3%
306C	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	7.5	4.5%
310B	Woodbridge fine sandy loam, 3 to 8 percent slopes	0.5	0.3%
311B	Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony	4.1	2.5%
312B	Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony	2.4	1.5%
602	Urban land	27.0	16.3%
651	Udorthents, smoothed	2.8	1.7%
Totals for Area of Interest		**165.3**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some

observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The

pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Bristol County, Massachusetts, Southern Part

38A—Pipestone loamy sand, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: v5q7
Elevation: 600 to 1,000 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Pipestone and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Pipestone

Setting

Landform: Terraces
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loose sandy glaciofluvial deposits

Typical profile

H1 - 0 to 4 inches: loamy sand
H2 - 4 to 24 inches: loamy coarse sand
H3 - 24 to 60 inches: sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 6 to 18 inches
Frequency of flooding: None
Frequency of ponding: Occasional
Available water storage in profile: Low (about 4.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Deerfield

Percent of map unit: 5 percent
Hydric soil rating: No

Scarboro
Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: Yes

Wareham
Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: Yes

39A—Scarboro mucky fine sandy loam, 0 to 3 percent slopes

Map Unit Setting
National map unit symbol: 2svky
Elevation: 0 to 1,320 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 250 days
Farmland classification: Not prime farmland

Map Unit Composition
Scarboro and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Scarboro

Setting
Landform: Drainageways, outwash terraces, outwash deltas, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Sandy glaciofluvial deposits derived from schist and/or sandy glaciofluvial deposits derived from gneiss and/or sandy glaciofluvial deposits derived from granite

Typical profile
Oe - 0 to 3 inches: mucky peat
A - 3 to 11 inches: mucky fine sandy loam
Cg1 - 11 to 21 inches: sand
Cg2 - 21 to 65 inches: gravelly coarse sand

Properties and qualities
Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (1.42 to 14.17 in/hr)

Depth to water table: About 0 to 2 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 5w
Hydrologic Soil Group: A/D
Hydric soil rating: Yes

Minor Components

Swansea

Percent of map unit: 10 percent
Landform: Swamps, bogs
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Walpole

Percent of map unit: 5 percent
Landform: Deltas, outwash plains, outwash terraces, depressions, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread, talf, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Wareham

Percent of map unit: 5 percent
Landform: Depressions
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

51A—Swansea muck, 0 to 1 percent slopes

Map Unit Setting

National map unit symbol: 2trl2
Elevation: 0 to 1,140 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of unique importance

Map Unit Composition

Swansea and similar soils: 80 percent
Minor components: 20 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Swansea

Setting

Landform: Swamps, bogs
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Highly decomposed organic material over loose sandy and gravelly glaciofluvial deposits

Typical profile

Oa1 - 0 to 24 inches: muck
Oa2 - 24 to 34 inches: muck
Cg - 34 to 79 inches: coarse sand

Properties and qualities

Slope: 0 to 1 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to high (0.14 to 14.17 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: Rare
Frequency of ponding: Frequent
Available water storage in profile: Very high (about 16.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8w
Hydrologic Soil Group: B/D
Hydric soil rating: Yes

Minor Components

Freetown

Percent of map unit: 10 percent
Landform: Swamps, bogs
Landform position (three-dimensional): Dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Whitman

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Drainageways, depressions
Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope, tread, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

73A—Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2w695
Elevation: 0 to 1,580 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Whitman, extremely stony, and similar soils: 81 percent
Minor components: 19 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Whitman, Extremely Stony

Setting

Landform: Drainageways, drumlins, depressions, hills, ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oi - 0 to 1 inches: peat
A - 1 to 10 inches: fine sandy loam
Bg - 10 to 17 inches: gravelly fine sandy loam
Cdg - 17 to 61 inches: fine sandy loam

Properties and qualities

Slope: 0 to 3 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 7 to 38 inches to densic material
Natural drainage class: Very poorly drained
Runoff class: Negligible
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: Yes

Minor Components

Ridgebury, extremely stony

Percent of map unit: 10 percent
Landform: Drainageways, drumlins, hills, depressions, ground moraines
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Scarboro

Percent of map unit: 5 percent
Landform: Drainageways, outwash deltas, outwash terraces, depressions
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Swansea

Percent of map unit: 3 percent
Landform: Swamps, bogs, marshes
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Woodbridge, extremely stony

Percent of map unit: 1 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope, crest
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

256B—Deerfield loamy sand, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: v5lq
Elevation: 0 to 1,000 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Deerfield and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Deerfield

Setting

Landform: Outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Loose sandy glaciofluvial deposits derived from granite and gneiss

Typical profile

H1 - 0 to 7 inches: loamy sand
H2 - 7 to 15 inches: loamy sand
H3 - 15 to 60 inches: sand

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High to very high (6.00 to 20.00 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3w
Hydrologic Soil Group: A
Hydric soil rating: No

Minor Components

Sudbury

Percent of map unit: 10 percent
Hydric soil rating: No

Wareham

Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: Yes

Pipestone

Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: Yes

260A—Sudbury fine sandy loam, 0 to 3 percent slopes

Map Unit Setting

National map unit symbol: v5rh
Elevation: 0 to 2,100 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Sudbury and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sudbury

Setting

Landform: Outwash plains
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Friable coarse-loamy eolian deposits over loose sandy glaciofluvial deposits derived from granite and gneiss

Typical profile

H1 - 0 to 4 inches: fine sandy loam
H2 - 4 to 18 inches: fine sandy loam
H3 - 18 to 28 inches: gravelly coarse sandy loam
H4 - 28 to 60 inches: gravelly coarse sand

Properties and qualities

Slope: 0 to 3 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: About 18 to 36 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Walpole
Percent of map unit: 5 percent
Landform: Terraces
Hydric soil rating: Yes

Deerfield
Percent of map unit: 5 percent
Hydric soil rating: No

Merrimac
Percent of map unit: 5 percent
Hydric soil rating: No

Ninigret
Percent of map unit: 5 percent
Hydric soil rating: No

305B—Paxton fine sandy loam, 3 to 8 percent slopes

Map Unit Setting
National map unit symbol: 2t2qp
Elevation: 0 to 1,570 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition
Paxton and similar soils: 80 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile
Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 18 to 39 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Woodbridge

Percent of map unit: 9 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury

Percent of map unit: 6 percent
Landform: Drainageways, hills, depressions, ground moraines
Landform position (two-dimensional): Backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, base slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Charlton

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

305C—Paxton fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: 2w66y

Elevation: 0 to 1,320 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Paxton and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 8 inches: fine sandy loam
Bw1 - 8 to 15 inches: fine sandy loam
Bw2 - 15 to 26 inches: fine sandy loam
Cd - 26 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Charlton

Percent of map unit: 7 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Woodbridge

Percent of map unit: 6 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Ridgebury

Percent of map unit: 2 percent
Landform: Drainageways, drumlins, hills, depressions, ground moraines
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Hydric soil rating: Yes

306C—Paxton fine sandy loam, 8 to 15 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2w677
Elevation: 0 to 1,330 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Paxton, very stony, and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Paxton, Very Stony

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 10 inches: fine sandy loam
Bw1 - 10 to 17 inches: fine sandy loam
Bw2 - 17 to 28 inches: fine sandy loam
Cd - 28 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 8 to 15 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 37 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Woodbridge, very stony

Percent of map unit: 8 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Charlton, very stony

Percent of map unit: 5 percent
Landform: Hills
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury, very stony

Percent of map unit: 2 percent
Landform: Drainageways, drumlins, hills, depressions, ground moraines
Landform position (two-dimensional): Toeslope, footslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

310B—Woodbridge fine sandy loam, 3 to 8 percent slopes

Map Unit Setting

National map unit symbol: 2t2ql
Elevation: 0 to 1,470 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Woodbridge, fine sandy loam, and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Fine Sandy Loam

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Ap - 0 to 7 inches: fine sandy loam
Bw1 - 7 to 18 inches: fine sandy loam
Bw2 - 18 to 30 inches: fine sandy loam
Cd - 30 to 65 inches: gravelly fine sandy loam

Properties and qualities

Slope: 3 to 8 percent
Depth to restrictive feature: 20 to 39 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 18 to 30 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 3.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Paxton

Percent of map unit: 10 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, summit, shoulder
Landform position (three-dimensional): Side slope, crest, nose slope
Down-slope shape: Linear, convex
Across-slope shape: Convex
Hydric soil rating: No

Ridgebury

Percent of map unit: 8 percent
Landform: Drainageways, hills, depressions, ground moraines
Landform position (two-dimensional): Backslope, footslope, toeslope
Landform position (three-dimensional): Head slope, base slope, dip
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

311B—Woodbridge fine sandy loam, 0 to 8 percent slopes, very stony

Map Unit Setting

National map unit symbol: 2t2qr
Elevation: 0 to 1,440 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F
Frost-free period: 140 to 240 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Woodbridge, very stony, and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Very Stony

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 9 inches: fine sandy loam
Bw1 - 9 to 20 inches: fine sandy loam

Bw2 - 20 to 32 inches: fine sandy loam
Cd - 32 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 8 percent
Percent of area covered with surface fragments: 1.6 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 19 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Paxton, very stony

Percent of map unit: 10 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Ridgebury, very stony

Percent of map unit: 8 percent
Landform: Drainageways, drumlins, depressions, hills, ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

312B—Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony

Map Unit Setting

National map unit symbol: 2t2qs
Elevation: 0 to 1,580 feet
Mean annual precipitation: 36 to 71 inches
Mean annual air temperature: 39 to 55 degrees F

Frost-free period: 140 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition

Woodbridge, extremely stony, and similar soils: 82 percent
Minor components: 18 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Woodbridge, Extremely Stony

Setting

Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Backslope, footslope, summit
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Coarse-loamy lodgment till derived from gneiss, granite, and/or schist

Typical profile

Oe - 0 to 2 inches: moderately decomposed plant material
A - 2 to 9 inches: fine sandy loam
Bw1 - 9 to 20 inches: fine sandy loam
Bw2 - 20 to 32 inches: fine sandy loam
Cd - 32 to 67 inches: gravelly fine sandy loam

Properties and qualities

Slope: 0 to 8 percent
Percent of area covered with surface fragments: 9.0 percent
Depth to restrictive feature: 20 to 43 inches to densic material
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)
Depth to water table: About 19 to 27 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline (0.0 to 1.9 mmhos/cm)
Available water storage in profile: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: C/D
Hydric soil rating: No

Minor Components

Paxton, extremely stony

Percent of map unit: 10 percent
Landform: Drumlins, hills, ground moraines
Landform position (two-dimensional): Shoulder, backslope, summit
Landform position (three-dimensional): Crest, side slope
Down-slope shape: Linear, convex
Across-slope shape: Convex, linear
Hydric soil rating: No

Ridgebury, extremely stony
Percent of map unit: 8 percent
Landform: Drainageways, drumlins, depressions, hills, ground moraines
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope, head slope
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

602—Urban land

Map Unit Setting
National map unit symbol: v5ry
Frost-free period: 120 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition
Urban land: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting
Parent material: Excavated and filled land

Minor Components

Udorthents
Percent of map unit: 15 percent
Hydric soil rating: Unranked

651—Udorthents, smoothed

Map Unit Setting
National map unit symbol: v5rw
Elevation: 0 to 3,000 feet
Mean annual precipitation: 45 to 54 inches
Mean annual air temperature: 43 to 54 degrees F
Frost-free period: 145 to 240 days
Farmland classification: Not prime farmland

Map Unit Composition
Udorthents, smoothed, and similar soils: 100 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Smoothed

Setting

Parent material: Made land over loose sandy and gravelly glaciofluvial deposits and/or firm coarse-loamy basal till derived from granite and gneiss

Typical profile

H1 - 0 to 6 inches: variable
H2 - 6 to 60 inches: variable

Properties and qualities

Slope: 0 to 15 percent
Depth to restrictive feature: More than 80 inches
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.06 to 20.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: A
Hydric soil rating: Unranked

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United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Attachment 5

USGS Stream Stats Results

StreamStats Output Report

State/Region ID	MA		
Workspace ID	MA20180621162114027000		
Latitude	41.71821		
Longitude	-70.95664		
Time	6/21/2018	12:21:31 PM	

Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	1.09	square miles
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	73.28	percent
FOREST	Percentage of area covered by forest	27.59	percent
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

Probability Statistics Parameters 100 Percent Perennial Flow Probability

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	1.09	square miles	0.01	1.99
PCTSNDGRV	Percent Underlain By Sand And Gravel	73.28	percent	0	100
FOREST	Percent Forest	27.59	percent	0	100
MAREGION	Massachusetts Region	0	dimensionless	0	1

Probability Statistics Flow Report 100 Percent Perennial Flow Probability

Statistic	Value	Unit	PC
Probability Stream Flowing Perennially	0.955	dim	71

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy andcompleteness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distributionconstitute any such warranty.

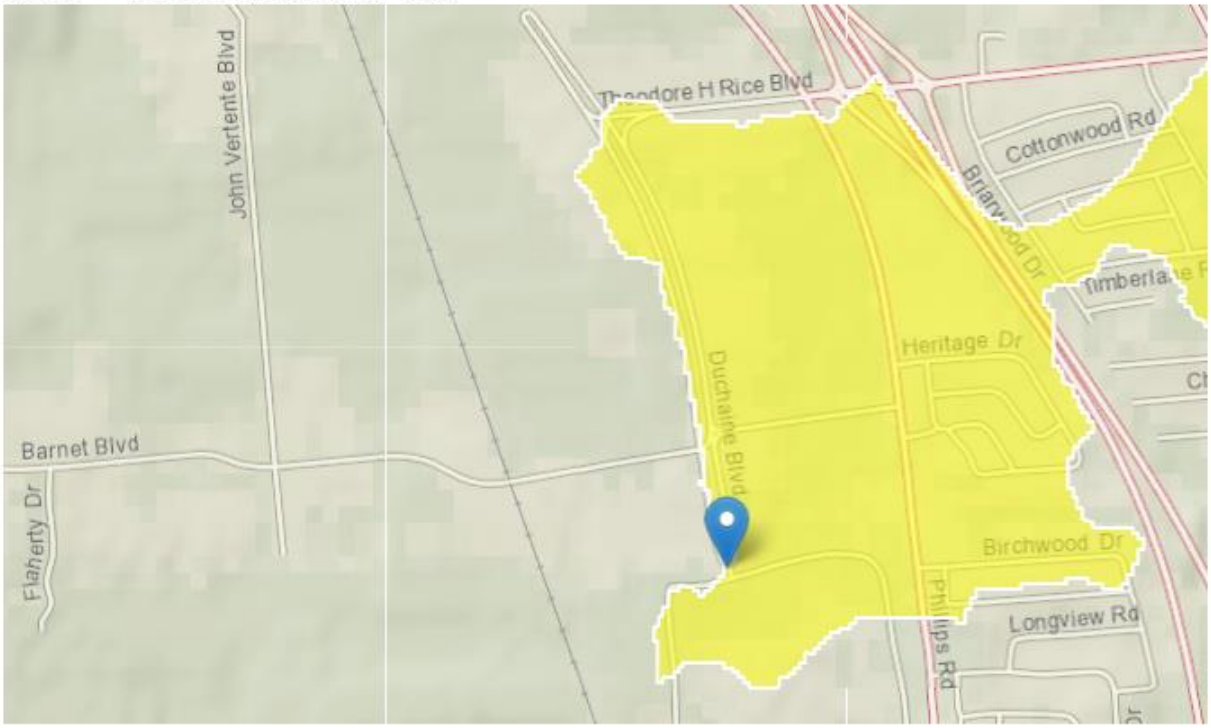
USGS Software Disclaimer: This software has been approved for release by the U.S. Geological Survey (USGS). Although the software has been subjected to rigorous review, the USGS reserves the right to update the software as needed pursuant to further analysis and review. No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the software and related material nor shall the fact of release constitute any such warranty. Furthermore, the software is released on condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from its authorized or unauthorized use.

USGS Product Names Disclaimer: Any use of trade, firm, or product names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Application Version: 4.2.1

StreamStats Report

Region ID: MA
Workspace ID: MA20190709010616284000
Clicked Point (Latitude, Longitude): 41.71827, -70.95260
Time: 2019-07-08 21:06:51 -0400



Basin Characteristics

Parameter Code	Parameter Description	Value	Unit
DRNAREA	Area that drains to a point on a stream	0.37	square miles
PCTSNDGRV	Percentage of land surface underlain by sand and gravel deposits	53.98	percent
FOREST	Percentage of area covered by forest	2.42	percent
MAREGION	Region of Massachusetts 0 for Eastern 1 for Western	0	dimensionless

Probability Statistics Parameters[Perennial Flow Probability]

Parameter Code	Parameter Name	Value	Units	Min Limit	Max Limit
DRNAREA	Drainage Area	0.37	square miles	0.01	1.99
PCTSNDGRV	Percent Underlain By Sand And Gravel	53.98	percent	0	100
FOREST	Percent Forest	2.42	percent	0	100
MAREGION	Massachusetts Region	0	dimensionless	0	1

Probability Statistics Flow Report[Perennial Flow Probability]

PII: Prediction Interval-Lower, Piu: Prediction Interval-Upper, SEp: Standard Error of Prediction, SE: Standard Error (other -- see report)

Statistic	Value	Unit	PC
Probability Stream Flowing Perennially	0.914	dim	71

Probability Statistics Citations

Bent, G.C., and Steeves, P.A.,2006, A revised logistic regression equation and an automated procedure for mapping the probability of a stream flowing perennially in Massachusetts: U.S. Geological Survey Scientific Investigations Report 2006–5031, 107 p. (http://pubs.usgs.gov/sir/2006/5031/pdfs/SIR_2006-5031rev.pdf)

USGS Data Disclaimer: Unless otherwise stated, all data, metadata and related materials are considered to satisfy the quality standards relative to the purpose for which the data were collected. Although these data and associated metadata have been reviewed for accuracy and completeness and approved for release by the U.S. Geological Survey (USGS), no warranty expressed or implied is made regarding the display or utility of the data for other purposes, nor on all computer systems, nor shall the act of distribution constitute any such warranty.

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Application Version: 4.3.8

CERTIFIED ABUTTERS LIST

City of New Bedford

REQUEST *for a* CERTIFIED ABUTTERS LIST

This information is needed so that an official abutters list as required by MA General Law may be created and used in notifying abutters. You, as applicant, are responsible for picking up and paying for the certified abutters list from the assessor's office (city hall, room #109).

SUBJECT PROPERTY			
MAP #	133 and 134	LOT(S)#	67 and 5 & 462
ADDRESS: 100 Duchaine Boulevard - New Bedford, MA 02745			
OWNER INFORMATION			
NAME: SMRE 100, LLC			
MAILING ADDRESS: 100 Duchaine Boulevard - New Bedford, MA 02745			
APPLICANT/CONTACT PERSON INFORMATION			
NAME (IF DIFFERENT): Matthew White - Farland Corp.			
MAILING ADDRESS (IF DIFFERENT): 401 County Street - New Bedford, MA 02740			
TELEPHONE #	(508) 717-3479		
EMAIL ADDRESS:	mwhite@farlandcorp.com		

REASON FOR THIS REQUEST: *Check appropriate*	
	ZONING BOARD OF APPEALS APPLICATION
✓	PLANNING BOARD APPLICATION
✓	CONSERVATION COMMISSION APPLICATION
	LICENSING BOARD APPLICATION
	OTHER (*Please explain*):

PLANNING DEPARTMENT

Once obtained, the Certified List of Abutters must be attached to this Certification Letter.

Submit this form to the Planning Division Room 303 in City Hall, 133 William Street. You, as applicant, are responsible for picking up and paying for the certified abutters list from the assessor's office (city hall, room #109).

Official Use Only:

As Administrative Assistant to the City of New Bedford's Board of Assessors, I do hereby certify that the names and addresses as identified on the attached "abutters list" are duly recorded and appear on the most recent tax.

Carlos Amado — Printed Name

Carlos Amado — Signature

4/11/2019 — Date

April 9, 2019
Dear Applicant,

Please find below the List of Abutters within 100 feet of the property known as 100 Duchaine Blvd (Map 134 Lot 5). The current ownership listed herein must be checked and verified by the City of New Bedford Assessor's Office. Following said verification, the list shall be considered a Certified List of Abutters.

Please note that multiple listed properties with identical owner name and mailing address shall be considered duplicates, and shall require only 1 mailing. Additionally, City of New Bedford-Owned properties shall not require mailed notice.

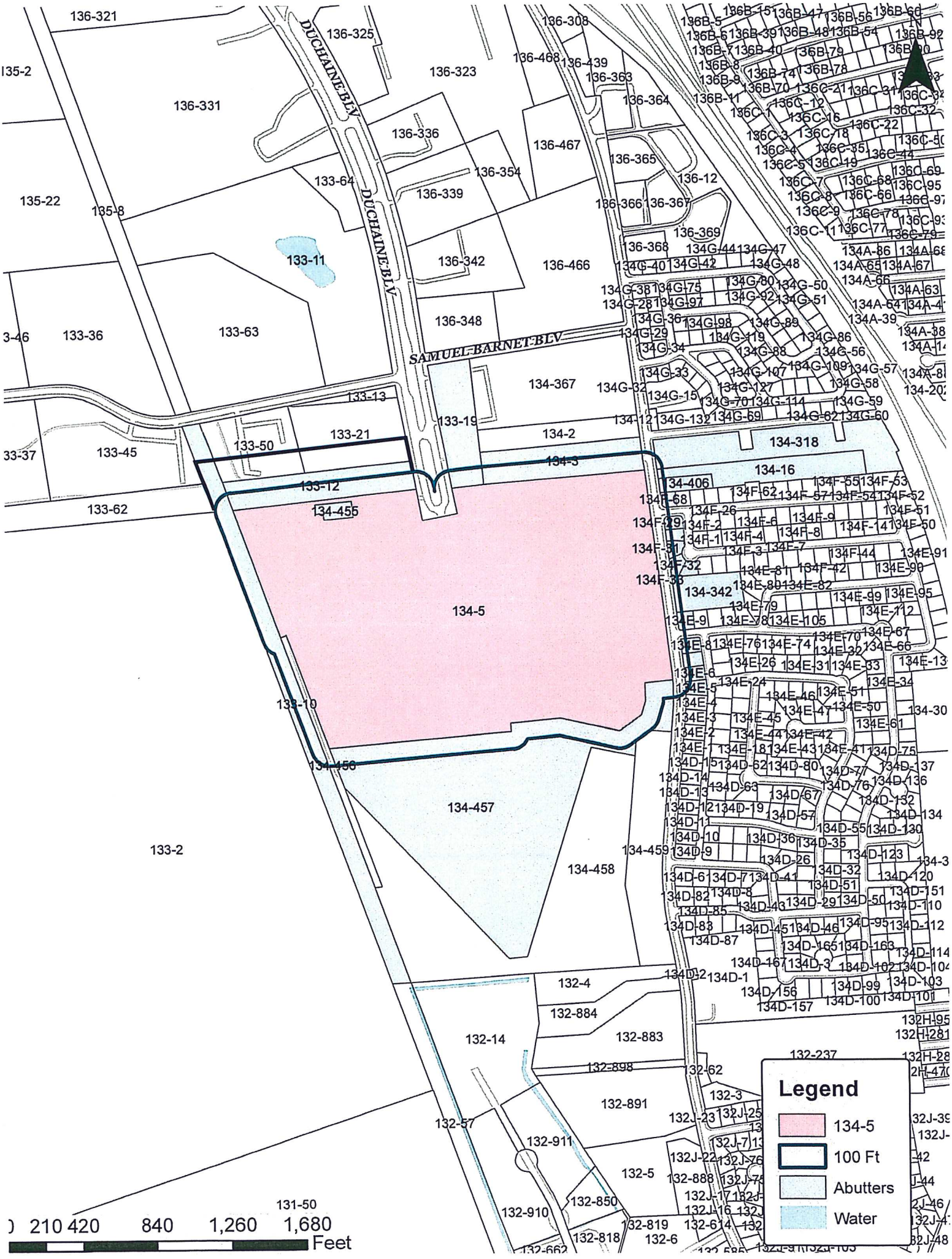
Parcel	Location	Owner and Mailing Address
134E-6	107 RIDGEWOOD RD	DUBOIS RAYMOND, DUBOIS DIANE C 107 RIDGEWOOD ROAD NEW BEDFORD, MA 02745
134E-7	115 RIDGEWOOD RD	CATOJO LENNY, 115 RIDGEWOOD ROAD NEW BEDFORD, MA 02745
134E-8	125 RIDGEWOOD RD	DEVLIN ROBERT, 125 RIDGEWOOD RD NEW BEDFORD, MA 02745
134F-29	109 BIRCHWOOD DR	~~TAYLOR BRUCE M,~~ Taylor Amanda L. 109 BIRCHWOOD DR NEW BEDFORD, MA 02745
134F-31	97 IVY RD	~~BARBOSA LUISA P~~, Dasilva Manuel E, Dasilva Laura Ann 97 IVY RD NEW BEDFORD, MA 02745
134F-30	99 IVY RD	TAVARES JOSE, 99 IVY ROAD NEW BEDFORD, MA 02745
134E-9	993 PINE HILL DR	BATES GAIL A, 993 PINE HILL DRIVE NEW BEDFORD, MA 02745
134-455	107 DUCHAINE BLVD	CITY OF NEW BEDFORD, 133 WILLIAM STREET NEW BEDFORD, MA 02740
134E-5	99 RIDGEWOOD RD	SEIFERT JEFFREY A, SEIFERT LORIE A 99 RIDGEWOOD ROAD NEW BEDFORD, MA 02745
134-406	1844 PHILLIPS RD	CRAPO VICTORIA J, ~~CRAPO DENNIS S~~ 1844 PHILLIPS ROAD NEW BEDFORD, MA 02745
134F-33	93 IVY RD	GONSALVES ROBIN, GONSALVES ANTONIO JR, Correia Darlene 93 IVY ROAD NEW BEDFORD, MA 02745
134F-32	95 IVY RD	BOUCHARD DENNIS P, BOUCHARD WANDA M 95 IVY ROAD NEW BEDFORD, MA 02745
134-342	1784 PHILLIPS RD	HATHAWAY ROBERT, C/O ROBERT J HATHAWAY, Hathaway Jessie O. 1784 PHILLIPS ROAD NEW BEDFORD, MA 02745

April 9, 2019
Dear Applicant,

Please find below the List of Abutters within 100 feet of the property known as 100 Duchaine Blvd (Map 134 Lot 5). The current ownership listed herein must be checked and verified by the City of New Bedford Assessor's Office. Following said verification, the list shall be considered a Certified List of Abutters.

Please note that multiple listed properties with identical owner name and mailing address shall be considered duplicates, and shall require only 1 mailing. Additionally, City of New Bedford-Owned properties shall not require mailed notice.

Parcel	Location	Owner and Mailing Address
134F-68	112 BIRCHWOOD DR	LORANTOS GEORGE G JR, LORANTOS CHERYL 112 BIRCHWOOD DRIVE NEW BEDFORD, MA 02745
133-12 RES	SAMUEL BARNETT BLVD	GREATER NEW BEDFORD, INDUSTRIAL FOUNDATION ~~227 UNION ST RM 607~~ 1213 Purchase St. Unit 2 NEW BEDFORD, MA 02740
134-16	PHILLIPS RD	ABREU JOSEPH L, 759 BELLEVILLE AVE NEW BEDFORD, MA 02745
133-10	RIGHT OF WAY	PENN CENTRAL CO, CONSOLIDATED RAIL CORP 500 WATER STREET DEPT J910 JACKSONVILLE, FL 32202
134-5	100 DUCHAINE BLVD	~~LOGAL LLC, C/O ERIC DECOSTA~~ SMRE 100 LLC, C/O Ruberto Israel & Weiner PC ~~100 DUCHAINE BLVD~~ 255 State St - 7th floor ~~NEW BEDFORD, MA 02745~~ Boston, MA 02109
134-457	50 DUCHAINE BLVD	~~SM REAL ESTATE LLC~~, NSTAR Electric Company ~~401 INDUSTRY ROAD - SUITE 100~~ P.O. Box 270 ~~LOUISVILLE, KY 40208~~ Hartford, CT 06141
133-19	126 DUCHAINE BLVD	N E PLASTICS CORP, 310 SALEM ST WOBURN, MA 01801
134-3	1885 PHILLIPS RD	COMMONWEALTH ELECTRIC CO, C/O PROPERTY TAX DEPARTMENT P O BOX 270 HARTFORD, CT 06141
134-318	PHILLIPS RD	COMMONWEALTH ELECTRIC CO, C/O PROPERTY TAX DEPARTMENT P O BOX 270 HARTFORD, CT 06141
133-50	30 SAMUEL BERNETT BLVD	IMTRA CORPORATION, 30 SAMUEL BARNETT BLVD NEW BEDFORD, MA 02745
133-21	127 DUCHAINE BLVD	MILHENCH ARTHUR L "TRUSTEE", MILHENCH 2001 NOMINEE TRUST (THE) 127 DUCHAINE BLVD NEW BEDFORD, MA 024745


DUCHAINE BLV
SAMUEL-BARNET-BLV
134-5
134-455
134-456
134-457
134-458
134-459
133-10
133-11
133-12
133-13
133-19
133-21
133-50
133-62
133-63
133-2
132-14
132-57
132-911
132-910
132-5
132-850
132-818
132-819
132-6
132-62
132-891
132-883
132-884
132-4
134-367
134-2
134-3
134-16
134-318
134-342
136-321
136-325
136-331
136-336
136-339
136-342
136-348
136-354
136-364
136-365
136-366
136-367
136-368
136-369
136-466
136-467
136-468
Legend
134-5
100 Ft
Abutters
Water
210 420 840 1,260 1,680
Feet

ABUTTER NOTIFICATION

Notification to Abutters Under the Massachusetts Wetlands Protection Act

In accordance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, you are hereby notified of the following:

A. The name of the applicant is Tim Cusson – Parallel Products of New England.

B. The applicant has filed a Notice of Intent with the Conservation Commission for the municipality of New Bedford seeking permission to remove, fill, dredge or alter an Area Subject to Protection under the Wetlands Protection Act (General Laws Chapter 131, Section 40).

C. The address of the lot where the activity is proposed is 100 Duchaine Boulevard (Assessor's Plot 134 Lot 5).

D. Copies of the Notice of Intent may be examined at the New Bedford Conservation Commission office at 133 William Street, Room 304 (Office of Environmental Stewardship) – New Bedford, MA 02740 between the hours of 8:30 a.m. and 3:30 p.m. on Monday through Friday.

E. Copies of the Notice of Intent may also be obtained from the applicant's representative FOR A REASONABLE FEE by calling: Farland Corp. at (508) 717-3479 between the hours of 8:00 am and 4:00 pm on Monday – Friday.

F. Information regarding the date, time and place of the public hearing may be obtained from the NEW BEDFORD CONSERVATION COMMISSION by calling: (508)991-6188.

NOTE: Notice of the public hearing, including its date, time, and place, will be published at least five (5) days in advance in a publication with general circulation in the Community.

NOTE: Notice of the public hearing, including its date, time, and place, will be posted in the City or Town Hall not less than forty-eight (48) hours in advance.

NOTE: You also may contact the nearest Department of Environmental Protection Regional Office for more information about this application or the Wetlands Protection Act. To contact DEP, call: (508) 946-2700

AFFADAVIT OF SERVICE

Under the Massachusetts Wetlands Protection Act

(to be submitted to the Massachusetts Department of Environmental Protection and the Conservation Commission when filing a Notice of Intent)

I, Christian A. Farland hereby certify under the pains and penalties of perjury that on October 3, 2019, I gave notification to abutters in compliance with the second paragraph of Massachusetts General Laws Chapter 131, Section 40, and the DEP Guide to Abutter Notification dated April 8, 1994, in connection with the following matter:

> A Notice of Intent filed under the Massachusetts Wetlands Protection Act by Tim Cusson - Parallel Products of New England with the New Bedford Conservation Commission on October 3, 2019 for property located at 100 Duchaine Boulevard - New Bedford, MA 02745.

The form of the notification, and a list of the abutters to whom it was given and their addresses, are attached to this Affidavit of Service.

Name

10-3-19

Date

FARLAND CORP.

ENGINEERING A BETTER TOMORROW

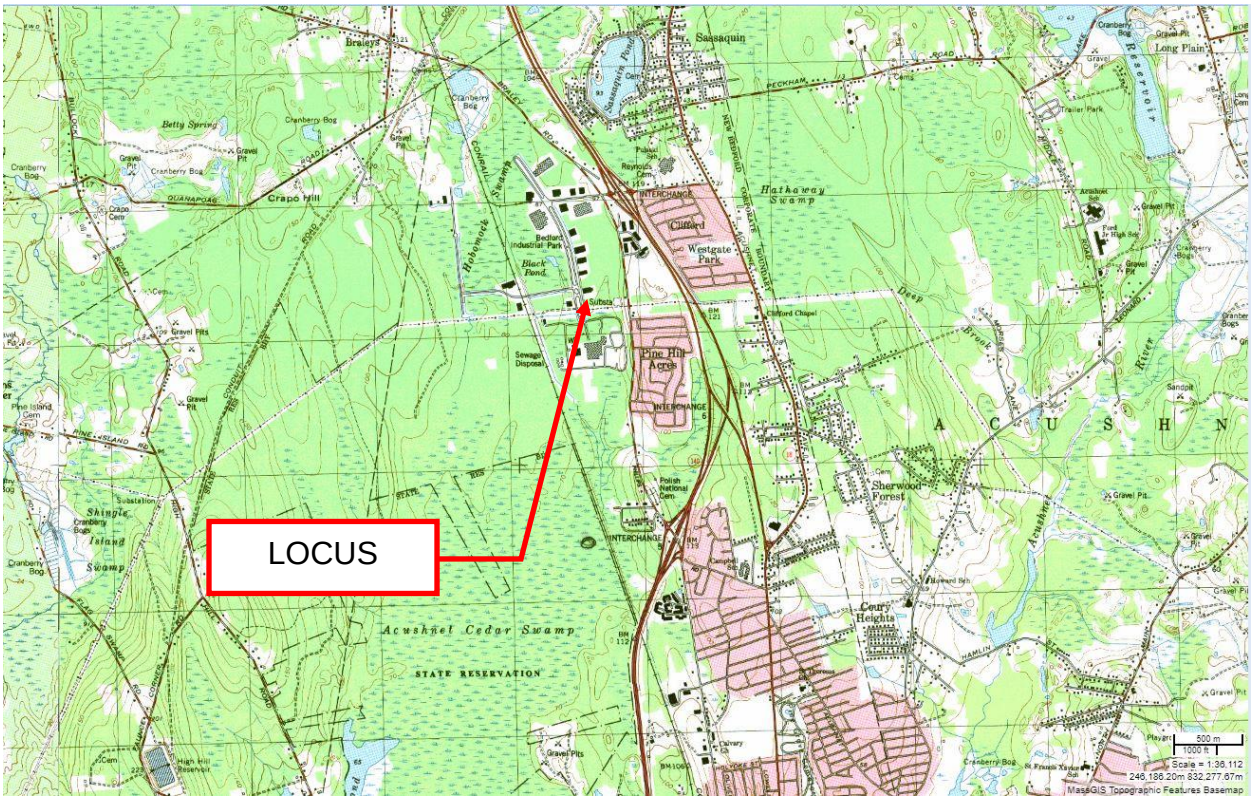
ENGINEERING | SITE WORK | LAND SURVEYING

STORMWATER REPORT

October 2, 2019

SITE PLAN

ASSESSORS MAP 134 LOT 5
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745



PREPARED FOR:

TIM CUSSON
PARALLEL PRODUCTS OF NEW ENGLAND
100 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745

TABLE OF CONTENTS

SECTIONS:

1. STORMWATER CHECKLIST
2. PROJECT NARRATIVE & SUMMARY
3. METHODOLOGY
4. EXISTING CONDITIONS
5. STORMWATER MANAGEMENT OVERVIEW
6. STORMWATER MANAGEMENT STANDARDS

EXHIBTS:

EXHIBIT “A” – USGS MAP (TOPO! VERSION 2.1.0)

EXHIBIT “B” – FIRM MAP

EXHIBIT “C” – NHESP PRIORITY & ESTIMATED HABITAT MAP

EXHIBIT “D” – NRCS SOIL MAP & REPORT

EXHIBIT “E” – HYDROLOGIC CALCULATIONS (STANDARD 2)

EXHIBIT “F” – RECHARGE CALCULATIONS (STANDARD 3)

EXHIBIT “G” – DRAWDOWN CALCULATIONS (STANDARD 3)

EXHIBIT “H” – WATER QUALITY VOLUME CALCULATIONS (STANDARD 4)

EXHIBIT “I” – FOREBAY SIZING CALCULATIONS (STANDARD 4)

EXHIBIT “J” – TSS REMOVAL CALCULATIONS (STANDARD 4)

EXHIBIT “K” – LONG TERM POLLUTION PREVENTION PLAN (STANDARD 4)

EXHIBIT “L” – OPERATION & MAINTENANCE PLAN & LOGS (STANDARD 9)

EXHIBIT “M” – ILLICIT DISCHARGE STATEMENT (STANDARD 10)

EXHIBIT “N” – PIPE CAPACITY CALCULATIONS

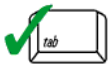
EXHIBIT “O” – WATERSHED PLANS

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

A. Introduction

Important: When filling out forms on the computer, use only the tab key to move your cursor - do not use the return key.



A Stormwater Report must be submitted with the Notice of Intent permit application to document compliance with the Stormwater Management Standards. The following checklist is NOT a substitute for the Stormwater Report (which should provide more substantive and detailed information) but is offered here as a tool to help the applicant organize their Stormwater Management documentation for their Report and for the reviewer to assess this information in a consistent format. As noted in the Checklist, the Stormwater Report must contain the engineering computations and supporting information set forth in Volume 3 of the Massachusetts Stormwater Handbook. The Stormwater Report must be prepared and certified by a Registered Professional Engineer (RPE) licensed in the Commonwealth.

The Stormwater Report must include:

- The Stormwater Checklist completed and stamped by a Registered Professional Engineer (see page 2) that certifies that the Stormwater Report contains all required submittals.[1] This Checklist is to be used as the cover for the completed Stormwater Report.
- Applicant/Project Name
- Project Address
- Name of Firm and Registered Professional Engineer that prepared the Report
- Long-Term Pollution Prevention Plan required by Standards 4-6
- Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan required by Standard 8[2]
- Operation and Maintenance Plan required by Standard 9

In addition to all plans and supporting information, the Stormwater Report must include a brief narrative describing stormwater management practices, including environmentally sensitive site design and LID techniques, along with a diagram depicting runoff through the proposed BMP treatment train. Plans are required to show existing and proposed conditions, identify all wetland resource areas, NRCS soil types, critical areas, Land Uses with Higher Potential Pollutant Loads (LUHPPL), and any areas on the site where infiltration rate is greater than 2.4 inches per hour. The Plans shall identify the drainage areas for both existing and proposed conditions at a scale that enables verification of supporting calculations.

As noted in the Checklist, the Stormwater Management Report shall document compliance with each of the Stormwater Management Standards as provided in the Massachusetts Stormwater Handbook. The soils evaluation and calculations shall be done using the methodologies set forth in Volume 3 of the Massachusetts Stormwater Handbook.

To ensure that the Stormwater Report is complete, applicants are required to fill in the Stormwater Report Checklist by checking the box to indicate that the specified information has been included in the Stormwater Report. If any of the information specified in the checklist has not been submitted, the applicant must provide an explanation. The completed Stormwater Report Checklist and Certification must be submitted with the Stormwater Report.

[1] The Stormwater Report may also include the Illicit Discharge Compliance Statement required by Standard 10. If not included in the Stormwater Report, the Illicit Discharge Compliance Statement must be submitted prior to the discharge of stormwater runoff to the post-construction best management practices.

[2] For some complex projects, it may not be possible to include the Construction Period Erosion and Sedimentation Control Plan in the Stormwater Report. In that event, the issuing authority has the discretion to issue an Order of Conditions that approves the project and includes a condition requiring the proponent to submit the Construction Period Erosion and Sedimentation Control Plan before commencing any land disturbance activity on the site.

Massachusetts Department of Environmental Protection
Bureau of Resource Protection - Wetlands Program

Checklist for Stormwater Report

B. Stormwater Checklist and Certification

The following checklist is intended to serve as a guide for applicants as to the elements that ordinarily need to be addressed in a complete Stormwater Report. The checklist is also intended to provide conservation commissions and other reviewing authorities with a summary of the components necessary for a comprehensive Stormwater Report that addresses the ten Stormwater Standards.

Note: Because stormwater requirements vary from project to project, it is possible that a complete Stormwater Report may not include information on some of the subjects specified in the Checklist. If it is determined that a specific item does not apply to the project under review, please note that the item is not applicable (N.A.) and provide the reasons for that determination.

A complete checklist must include the Certification set forth below signed by the Registered Professional Engineer who prepared the Stormwater Report.

Registered Professional Engineer's Certification

I have reviewed the Stormwater Report, including the soil evaluation, computations, Long-term Pollution Prevention Plan, the Construction Period Erosion and Sedimentation Control Plan (if included), the Long-term Post-Construction Operation and Maintenance Plan, the Illicit Discharge Compliance Statement (if included) and the plans showing the stormwater management system, and have determined that they have been prepared in accordance with the requirements of the Stormwater Management Standards as further elaborated by the Massachusetts Stormwater Handbook. I have also determined that the information presented in the Stormwater Checklist is accurate and that the information presented in the Stormwater Report accurately reflects conditions at the site as of the date of this permit application.

Registered Professional Engineer Block and Signature

10-2-19

Signature and Date

Checklist

Project Type: Is the application for new development, redevelopment, or a mix of new and redevelopment?

☐ New development

☐ Redevelopment

☒ Mix of New Development and Redevelopment

Checklist for Stormwater Report

Checklist (continued)

LID Measures: Stormwater Standards require LID measures to be considered. Document what environmentally sensitive design and LID Techniques were considered during the planning and design of the project:

☐ No disturbance to any Wetland Resource Areas

☐ Site Design Practices (e.g. clustered development, reduced frontage setbacks)

☐ Reduced Impervious Area (Redevelopment Only)

☒ Minimizing disturbance to existing trees and shrubs

☐ LID Site Design Credit Requested:

- ☐ Credit 1
- ☐ Credit 2
- ☐ Credit 3

☐ Use of "country drainage" versus curb and gutter conveyance and pipe

☐ Bioretention Cells (includes Rain Gardens)

☒ Constructed Stormwater Wetlands (includes Gravel Wetlands designs)

☐ Treebox Filter

☐ Water Quality Swale

☐ Grass Channel

☐ Green Roof

☐ Other (describe): _____

Standard 1: No New Untreated Discharges

☒ No new untreated discharges

☒ Outlets have been designed so there is no erosion or scour to wetlands and waters of the Commonwealth

☐ Supporting calculations specified in Volume 3 of the Massachusetts Stormwater Handbook included.

Checklist for Stormwater Report

Checklist (continued)

Standard 2: Peak Rate Attenuation

☐ Standard 2 waiver requested because the project is located in land subject to coastal storm flowage and stormwater discharge is to a wetland subject to coastal flooding.

☒ Evaluation provided to determine whether off-site flooding increases during the 100-year 24-hour storm.

☒ Calculations provided to show that post-development peak discharge rates do not exceed pre-development rates for the 2-year and 10-year 24-hour storms. If evaluation shows that off-site flooding increases during the 100-year 24-hour storm, calculations are also provided to show that post-development peak discharge rates do not exceed pre-development rates for the 100-year 24-hour storm.

Standard 3: Recharge

☐ Soil Analysis provided.

☒ Required Recharge Volume calculation provided.

☐ Required Recharge volume reduced through use of the LID site Design Credits.

☒ Sizing the infiltration, BMPs is based on the following method: Check the method used.

☒ Static ☐ Simple Dynamic ☐ Dynamic Field[1]

☐ Runoff from all impervious areas at the site discharging to the infiltration BMP.

☒ Runoff from all impervious areas at the site is *not* discharging to the infiltration BMP and calculations are provided showing that the drainage area contributing runoff to the infiltration BMPs is sufficient to generate the required recharge volume.

☒ Recharge BMPs have been sized to infiltrate the Required Recharge Volume.

☐ Recharge BMPs have been sized to infiltrate the Required Recharge Volume *only* to the maximum extent practicable for the following reason:

- ☐ Site is comprised solely of C and D soils and/or bedrock at the land surface
- ☐ M.G.L. c. 21E sites pursuant to 310 CMR 40.0000
- ☐ Solid Waste Landfill pursuant to 310 CMR 19.000
- ☐ Project is otherwise subject to Stormwater Management Standards only to the maximum extent practicable.

☒ Calculations showing that the infiltration BMPs will drain in 72 hours are provided.

☐ Property includes a M.G.L. c. 21E site or a solid waste landfill and a mounding analysis is included.

[1] 80% TSS removal is required prior to discharge to infiltration BMP if Dynamic Field method is used.

Checklist for Stormwater Report

Checklist (continued)

Standard 3: Recharge (continued)

☐ The infiltration BMP is used to attenuate peak flows during storms greater than or equal to the 10-year 24-hour storm and separation to seasonal high groundwater is less than 4 feet and a mounding analysis is provided.

☐ Documentation is provided showing that infiltration BMPs do not adversely impact nearby wetland resource areas.

Standard 4: Water Quality

The Long-Term Pollution Prevention Plan typically includes the following:

- Good housekeeping practices;
- Provisions for storing materials and waste products inside or under cover;
- Vehicle washing controls;
- Requirements for routine inspections and maintenance of stormwater BMPs;
- Spill prevention and response plans;
- Provisions for maintenance of lawns, gardens, and other landscaped areas;
- Requirements for storage and use of fertilizers, herbicides, and pesticides;
- Pet waste management provisions;
- Provisions for operation and management of septic systems;
- Provisions for solid waste management;
- Snow disposal and plowing plans relative to Wetland Resource Areas;
- Winter Road Salt and/or Sand Use and Storage restrictions;
- Street sweeping schedules;
- Provisions for prevention of illicit discharges to the stormwater management system;
- Documentation that Stormwater BMPs are designed to provide for shutdown and containment in the event of a spill or discharges to or near critical areas or from LUHPPL;
- Training for staff or personnel involved with implementing Long-Term Pollution Prevention Plan;
- List of Emergency contacts for implementing Long-Term Pollution Prevention Plan.

☒ A Long-Term Pollution Prevention Plan is attached to Stormwater Report and is included as an attachment to the Wetlands Notice of Intent.

☒ Treatment BMPs subject to the 44% TSS removal pretreatment requirement and the one inch rule for calculating the water quality volume are included, and discharge:

- ☐ is within the Zone II or Interim Wellhead Protection Area
- ☐ is near or to other critical areas
- ☐ is within soils with a rapid infiltration rate (greater than 2.4 inches per hour)
- ☒ involves runoff from land uses with higher potential pollutant loads.

☐ The Required Water Quality Volume is reduced through use of the LID site Design Credits.

☒ Calculations documenting that the treatment train meets the 80% TSS removal requirement and, if applicable, the 44% TSS removal pretreatment requirement, are provided.

Checklist for Stormwater Report

Checklist (continued)

Standard 4: Water Quality (continued)

☒ The BMP is sized (and calculations provided) based on:

- ☒ The ½" or 1" Water Quality Volume or
- ☐ The equivalent flow rate associated with the Water Quality Volume and documentation is provided showing that the BMP treats the required water quality volume.

☐ The applicant proposes to use proprietary BMPs, and documentation supporting use of proprietary BMP and proposed TSS removal rate is provided. This documentation may be in the form of the propriety BMP checklist found in Volume 2, Chapter 4 of the Massachusetts Stormwater Handbook and submitting copies of the TARP Report, STEP Report, and/or other third party studies verifying performance of the proprietary BMPs.

☐ A TMDL exists that indicates a need to reduce pollutants other than TSS and documentation showing that the BMPs selected are consistent with the TMDL is provided.

Standard 5: Land Uses With Higher Potential Pollutant Loads (LUHPPLs)

☐ The NPDES Multi-Sector General Permit covers the land use and the Stormwater Pollution Prevention Plan (SWPPP) has been included with the Stormwater Report.

☒ The NPDES Multi-Sector General Permit covers the land use and the SWPPP will be submitted ***prior to*** the discharge of stormwater to the post-construction stormwater BMPs.

☐ The NPDES Multi-Sector General Permit does ***not*** cover the land use.

☐ LUHPPLs are located at the site and industry specific source control and pollution prevention measures have been proposed to reduce or eliminate the exposure of LUHPPLs to rain, snow, snow melt and runoff, and been included in the long term Pollution Prevention Plan.

☐ All exposure has been eliminated.

☐ All exposure has ***not*** been eliminated and all BMPs selected are on MassDEP LUHPPL list.

☐ The LUHPPL has the potential to generate runoff with moderate to higher concentrations of oil and grease (e.g. all parking lots with >1000 vehicle trips per day) and the treatment train includes an oil grit separator, a filtering bioretention area, a sand filter or equivalent.

Standard 6: Critical Areas

☐ The discharge is near or to a critical area and the treatment train includes only BMPs that MassDEP has approved for stormwater discharges to or near that particular class of critical area.

☐ Critical areas and BMPs are identified in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 7: Redevelopments and Other Projects Subject to the Standards only to the maximum extent practicable

☒ The project is subject to the Stormwater Management Standards only to the maximum Extent Practicable as a:

- ☐ Limited Project
- ☐ Small Residential Projects: 5-9 single family houses or 5-9 units in a multi-family development provided there is no discharge that may potentially affect a critical area.
- ☐ Small Residential Projects: 2-4 single family houses or 2-4 units in a multi-family development with a discharge to a critical area
- ☐ Marina and/or boatyard provided the hull painting, service and maintenance areas are protected from exposure to rain, snow, snow melt and runoff
- ☐ Bike Path and/or Foot Path
- ☐ Redevelopment Project
- ☒ Redevelopment portion of mix of new and redevelopment.

☐ Certain standards are not fully met (Standard No. 1, 8, 9, and 10 must always be fully met) and an explanation of why these standards are not met is contained in the Stormwater Report.

☒ The project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Report. The redevelopment checklist found in Volume 2 Chapter 3 of the Massachusetts Stormwater Handbook may be used to document that the proposed stormwater management system (a) complies with Standards 2, 3 and the pretreatment and structural BMP requirements of Standards 4-6 to the maximum extent practicable and (b) improves existing conditions.

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control

A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan must include the following information:

- Narrative;
- Construction Period Operation and Maintenance Plan;
- Names of Persons or Entity Responsible for Plan Compliance;
- Construction Period Pollution Prevention Measures;
- Erosion and Sedimentation Control Plan Drawings;
- Detail drawings and specifications for erosion control BMPs, including sizing calculations;
- Vegetation Planning;
- Site Development Plan;
- Construction Sequencing Plan;
- Sequencing of Erosion and Sedimentation Controls;
- Operation and Maintenance of Erosion and Sedimentation Controls;
- Inspection Schedule;
- Maintenance Schedule;
- Inspection and Maintenance Log Form.

☐ A Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan containing the information set forth above has been included in the Stormwater Report.

Checklist for Stormwater Report

Checklist (continued)

Standard 8: Construction Period Pollution Prevention and Erosion and Sedimentation Control (continued)

☐ The project is highly complex and information is included in the Stormwater Report that explains why it is not possible to submit the Construction Period Pollution Prevention and Erosion and Sedimentation Control Plan with the application. A Construction Period Pollution Prevention and Erosion and Sedimentation Control has ***not*** been included in the Stormwater Report but will be submitted ***before*** land disturbance begins.

☐ The project is ***not*** covered by a NPDES Construction General Permit.

☐ The project is covered by a NPDES Construction General Permit and a copy of the SWPPP is in the Stormwater Report.

☒ The project is covered by a NPDES Construction General Permit but no SWPPP been submitted. The SWPPP will be submitted BEFORE land disturbance begins.

Standard 9: Operation and Maintenance Plan

☒ The Post Construction Operation and Maintenance Plan is included in the Stormwater Report and includes the following information:

- ☒ Name of the stormwater management system owners;
- ☒ Party responsible for operation and maintenance;
- ☒ Schedule for implementation of routine and non-routine maintenance tasks;
- ☒ Plan showing the location of all stormwater BMPs maintenance access areas;
- ☐ Description and delineation of public safety features;
- ☐ Estimated operation and maintenance budget; and
- ☒ Operation and Maintenance Log Form.

☐ The responsible party is ***not*** the owner of the parcel where the BMP is located and the Stormwater Report includes the following submissions:

- ☐ A copy of the legal instrument (deed, homeowner's association, utility trust or other legal entity) that establishes the terms of and legal responsibility for the operation and maintenance of the project site stormwater BMPs;
- ☐ A plan and easement deed that allows site access for the legal entity to operate and maintain BMP functions.

Standard 10: Prohibition of Illicit Discharges

☒ The Long-Term Pollution Prevention Plan includes measures to prevent illicit discharges;

☒ An Illicit Discharge Compliance Statement is attached;

☐ NO Illicit Discharge Compliance Statement is attached but will be submitted ***prior to*** the discharge of any stormwater to post-construction BMPs.

STORMWATER MANAGEMENT REPORT AND HYDROLOGIC ANALYSIS

Proposed Site Plan
100 Duchaine Boulevard (Assessors Map 134 Lot 5)
New Bedford, Massachusetts 02745

Project Summary

The 71-acre project site is located within the New Bedford Industrial Park at 100 Duchaine Boulevard in New Bedford. The site is generally bounded by industrial properties and Samuel Barnet Boulevard to the north, Phillips Road to the east, undeveloped land to the south and a rail line and the Acushnet Cedar Swamp State Reservation to the west. The site was previously developed by the Polaroid Corporation and contains access roads, parking areas, stormwater management infrastructure and numerous buildings. The applicant purchased the site in 2016 and has relocated a portion of its processing and recycling operations from 969 Shawmut Avenue to the project site. The site also contains 1.5 MW of solar PV mounted on a series of carport canopies. Access to the site is provided from Duchaine Boulevard, via an internal one-way loop roadway surrounding the proposed facility. The site has adequate area to support truck movement and access and is easily accessible from Route 140 (Alfred M Bessette Memorial Highway) via Braley Road or Phillips Road.

Wetland resource areas in the vicinity of the project include Bank, Bordering Vegetated Wetlands (BVW), Land under Water (LUW), and Riverfront Area. The project site is not located in Priority and/or Estimated Habitat as mapped by the Division of Fisheries and Wildlife's (DFW) Natural Heritage and Endangered Species Program (NHESP) or an Area of Critical Environmental Concern (ACEC). The site does not contain any structures listed in the State Register of Historic Places or the Massachusetts Historical Commission's (MHC) Inventory of Historic and Archaeological Assets of the Commonwealth.

The applicant is seeking approval for the construction of a rail sidetrack from the existing rail line to the glass processing facility, open box culvert stream crossing, wetland crossing, bunker buildings for glass recycling, photovoltaic canopies, stormwater improvements and necessary site grading and utilities.

As indicated on the site plans included, the project development area is separated from the existing rail line by large wetland area that extends from the north property line to the south property line. The variations on rail alignment are limited by the design restrictions (radius of curves, slope, etc) associated with rail development. The design of the rail sidetrack has been designed to minimize the impacts to wetlands to the extent possible.

Our recommendation for the stream crossing, based in part on recommendations made to us by Green Seal and TEC Associates, is a three-sided open box culvert that would comply with the Massachusetts Stream Crossing Guidelines. This option provides an unmitigated natural floor but requires the impingement of two large concrete strip footing foundations, due to the nature of the existing soil conditions. Preliminary designs require an excavation profile of roughly 1,000 square feet in order to install these footings, with an ultimate impact of roughly 300 square feet.

For the second part of this project, which includes the crossing of a bordering vegetated wetland area, we recommend a raised track section between the Redi-Rock walls. Gravity block walls can be installed on a minimal footprint across this section, with two box culverts located at the point of lowest elevation to hydraulically connect the wetlands. Total length of this section would span approximately 215 feet and be no more than 20 feet in width.

In order to attenuate the increased stormwater runoff generated by the proposed impervious site coverage and to provide the appropriate level of water quality treatment, additional stormwater management practices have been proposed. Proposed structural BMP's include sediment forebays, detention basin and subsurface recharge system.

Methodology

Drainage computations were performed using the Natural Resources Conservation Services (NRCS) TR-20 method and HydroCAD® Drainage Calculation Software to determine the change in the existing and post-development runoff rates from each drainage area for the 2-, 10-, and 100-year 24 hour storm events. The limits of the work proposed to complete the project fall within an area subject to protection by the Wetlands Protection Act, therefore, compliance with DEP Stormwater Management Standards is required. Sketches of the existing and proposed watershed areas, HydroCAD® Report, and copies of the calculation sheets are included as appendices to this report.

Existing Conditions

The soils underlying the site are identified in the Natural Resources Conservation Service (NRCS) Soil Survey of Bristol County ***(see Exhibit D)***. The site soils are classified as 39A (Scarboro mucky fine sandy loam, 0-3 percent slopes, Hydrologic Soil Group: "C") and 602 (Urban Land, HSG: "Unranked")

Stormwater Management Overview

Existing Conditions:

The project site has been divided into five existing subcatchment drainage areas, each having their own respective discharge design points. The design points chosen for this site are the BVW areas existing to the north, west and south as well as the existing infiltration basins located to the west and east of the existing building. Several catch basins surrounding the building collect runoff and direct it towards these design points,

however the majority of runoff that these subcatchment areas attribute to total site runoff come from sheet flow over both impervious and pervious areas.

Proposed Conditions:
Under proposed conditions, eight subcatchment areas have been included in the drainage model. Four design points have been chosen to receive the runoff from these subcatchment areas including all but one of the design points from the existing conditions. By altering the subcatchment area that attributes to the westerly BVW in existing conditions we can redirect this runoff to the main design point in proposed conditions, the northerly BVW. A constructed stormwater pocket wetland has been incorporated into the design and will allow for the management of much of the runoff generated in the existing conditions. New underground drainage pipes and manholes will facilitate the path of runoff to this pocket wetland in areas that previously experienced sheet flow over existing grade.

The proposed pocket wetland has been designed in accordance with the DEP Stormwater Handbook. In accordance with the Stormwater Handbook, the rate mitigation facilities have been engineered to reduce post-development runoff rates from pre-development conditions.

Stormwater Management Standards

Standard 1:

- Under proposed conditions, there will be no new untreated discharges or erosion in wetland areas. In proposed conditions the newly designed management practices have been sized such that all storm events up to the 100-year 24-hour storm can eb contained within the provided storage volumes. Stormwater discharges have been held below erodible velocities. This standard has been met.

Standard 2:

- The design of the stormwater system was designed for the post-development conditions to handle all storms' peak discharges and runoff volume to include the 2 and 10-year storm events. The site drainage system was designed in consideration of the structural standards and techniques of the Best Management Practices (BMP) and Low Impact Development (LID) outlined in the "Stormwater Management Handbook".

  The results of site drainage calculations are presented in the following Tables. The results are based upon evaluation of Pre-development conditions and the design of proposed surface drainage systems for the Post-development condition. These results show the Post-Development offsite runoff rates are reduced to less than the Pre-development conditions for the two-year and ten-year storm events, thus meeting the BMP guidelines for this site development.

Table 1 - Comparison of Pre- versus Post-Development Offsite Runoff Towards Northerly BVW						
Frequency Storm	**2-Year**		**10-Year**		**100-Year**	
	Rate (cfs)	Volume (af)	Rate (cfs)	Volume (af)	Rate (cfs)	Volume (af)
Pre-Development	2.91	0.230	6.37	0.465	12.67	0.902
Post-Development	0.02	0.006	0.18	0.023	0.76	0.062

Table 2 - Comparison of Pre- versus Post-Development Offsite Runoff Towards Easterly Detention Basin						
Frequency Storm	**2-Year**		**10-Year**		**100-Year**	
	Rate (cfs)	Volume (af)	Rate (cfs)	Volume (af)	Rate (cfs)	Volume (af)
Pre-Development	5.10	0.367	7.82	0.575	12.06	0.909
Post-Development	0.13	0.012	0.35	0.027	0.78	0.057

Table 3 - Comparison of Pre- versus Post-Development Offsite Runoff Towards Southerly BVW						
Frequency Storm	**2-Year**		**10-Year**		**100-Year**	
	Rate (cfs)	Volume (af)	Rate (cfs)	Volume (af)	Rate (cfs)	Volume (af)
Pre-Development	0.00	0.001	0.02	0.005	0.17	0.017
Post-Development	0.00	<0.001	0.02	0.002	0.08	0.007

Table 4 - Comparison of Pre- versus Post-Development Offsite Runoff Towards Westerly Detention Basin						
Frequency Storm	**2-Year**		**10-Year**		**100-Year**	
	Rate (cfs)	Volume (af)	Rate (cfs)	Volume (af)	Rate (cfs)	Volume (af)
Pre-Development	2.89	0.208	5.24	0.372	9.17	0.655
Post-Development	1.43	0.118	3.34	0.247	6.88	0.491

Table 5 - Comparison of Pre- versus Post-Development Offsite Runoff Towards Westerly BVW						
Frequency Storm	**2-Year**		**10-Year**		**100-Year**	
	Rate (cfs)	Volume (af)	Rate (cfs)	Volume (af)	Rate (cfs)	Volume (af)
Pre-Development	0.14	0.011	0.19	0.016	0.28	0.023
Post-Development	0.00	0.000	0.00	0.000	0.00	0.000

*See ***Exhibit E*** for supporting hydrologic calculations

Standard 3:

- The proposed stormwater pocket wetland has been designed to recharge some of the anticipated stormwater runoff from all the impervious area located within the design subcatchment areas. The required Recharge Volume has been calculated using the Static Method and calculations are provided in ***Exhibit F***. As a partial re-development project, this Standard is required to be met to the maximum extent practicable for these existing areas. The proposed design, however, provides the required recharge volume within the proposed drainage areas. Drawdown Calculations have also been provided in ***Exhibit G***. This standard has been met.

Standard 4:

- The proposed stormwater management systems for this project have been designed to remove 80% of the average annual post construction load of Total Suspended Solids in accordance with this standard, as shown in calculations provided in ***Exhibit J***. Suitable practices for source control and pollution prevention have been identified in a long-term pollution prevention plan in ***Exhibit K***. Structural BMPs have been designed to capture the required water quality volume (***Exhibit H)*** determined in accordance with the Stormwater Handbook. As a partial redevelopment project, runoff from the new impervious areas is required to be treated to the maximum extent practicable. This standard has been met.

Standard 5:

- Stormwater discharges are proposed to be treated by the specific structural BMPs determined to be suitable for treating runoff from such land uses. Sediment Forebays and constructed wetlands are appropriate BMPs for use with Land Uses with Higher Potential Pollutant Load. Stormwater treatment has been designed to provide 44% TSS removal prior to discharge to the infiltration BMPs, and BMPs have been designed to treat 1.0 inch of runoff times the total new impervious area at the post-development site. This standard has been met

Standard 6:

- The site does not discharge within the Zone II or IWPA of a public water supply, nor does it discharge near or to any critical areas. This standard does not apply.

Standard 7:

- This project is a partial re-development project. Much of the site is currently paved or covered with impervious cover. Those areas where new impervious coverage is proposed have been designed to meet all the required Stormwater Standards. Those areas where existing impervious is proposed to remain will be allowed to maintain existing drainage patterns, where much of the runoff from the existing parking lot area is directed through an existing piped drainage system to several existing stormwater basin resource areas throughout the site, which attenuates the runoff prior to discharge to the BVW.

Standard 8:

- We have provided for Construction Period Pollution in accordance with the regulations. A formal Construction Period Pollution Prevention Plan will be submitted prior to construction.

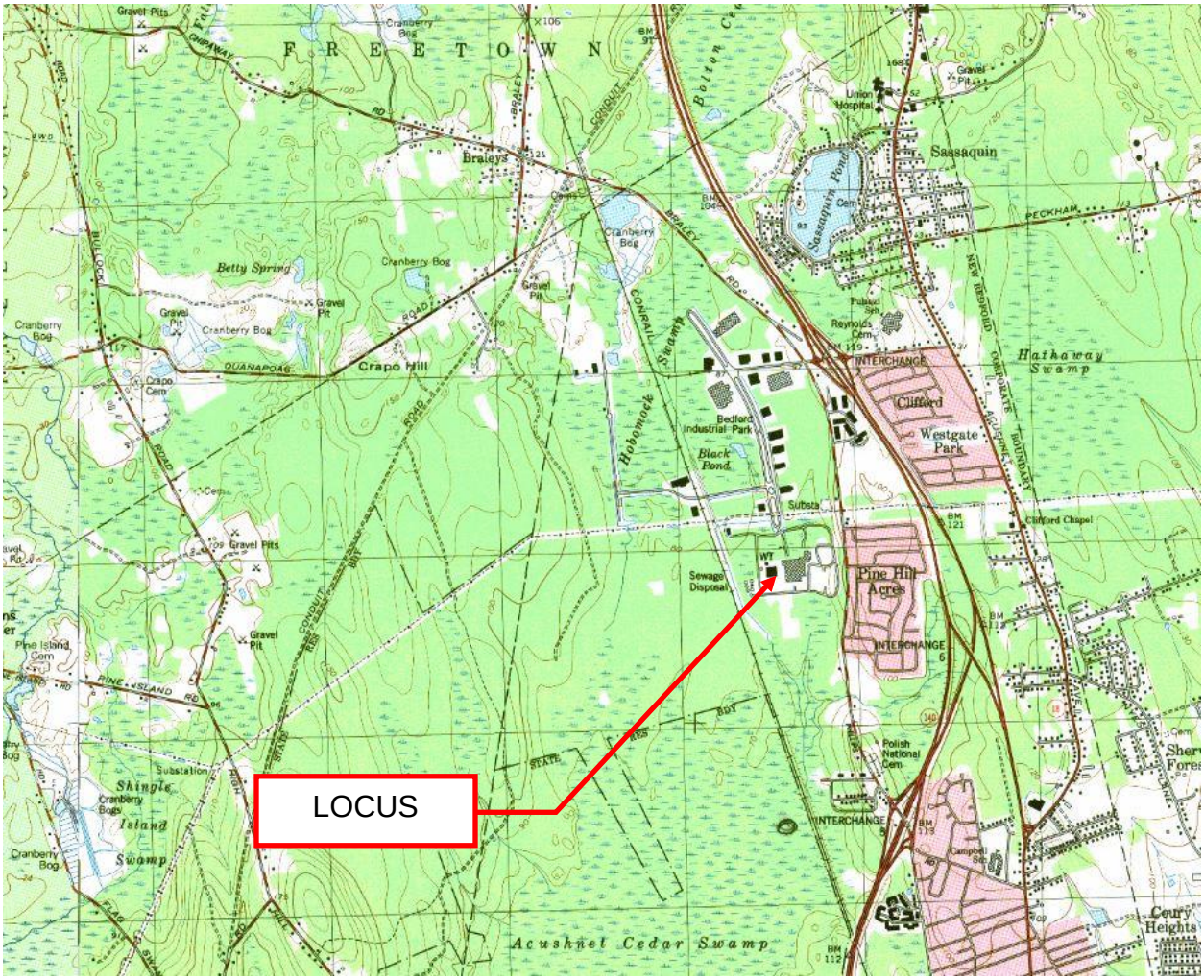
Standard 9:

- A long-term operation and maintenance plan has been prepared to ensure that stormwater management systems function as designed. ***(Exhibit L)***

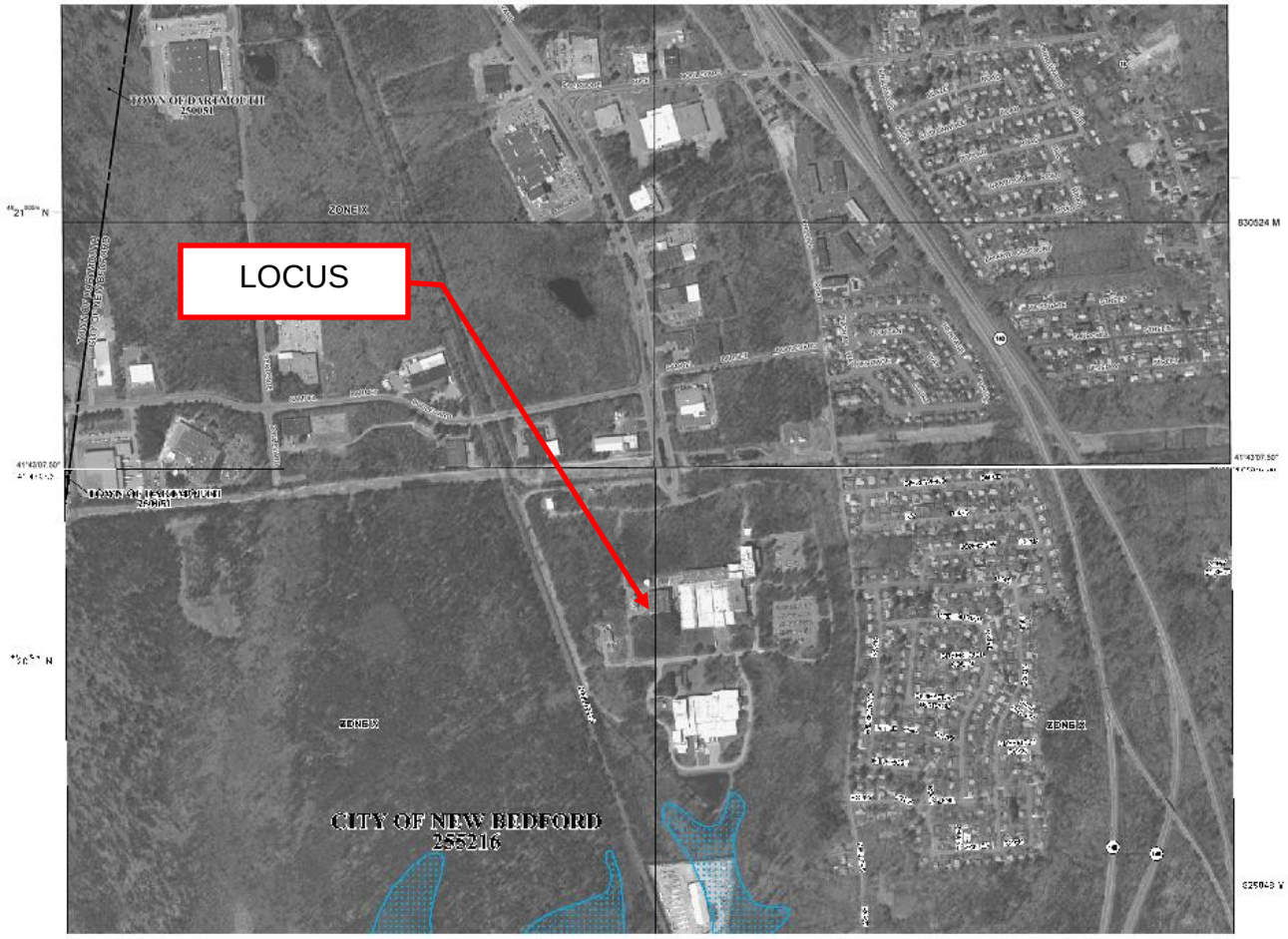
Standard 10:

- We are not proposing any illicit discharges as defined in the Stormwater Management Regulations. See attached letter in ***(Exhibit M)***

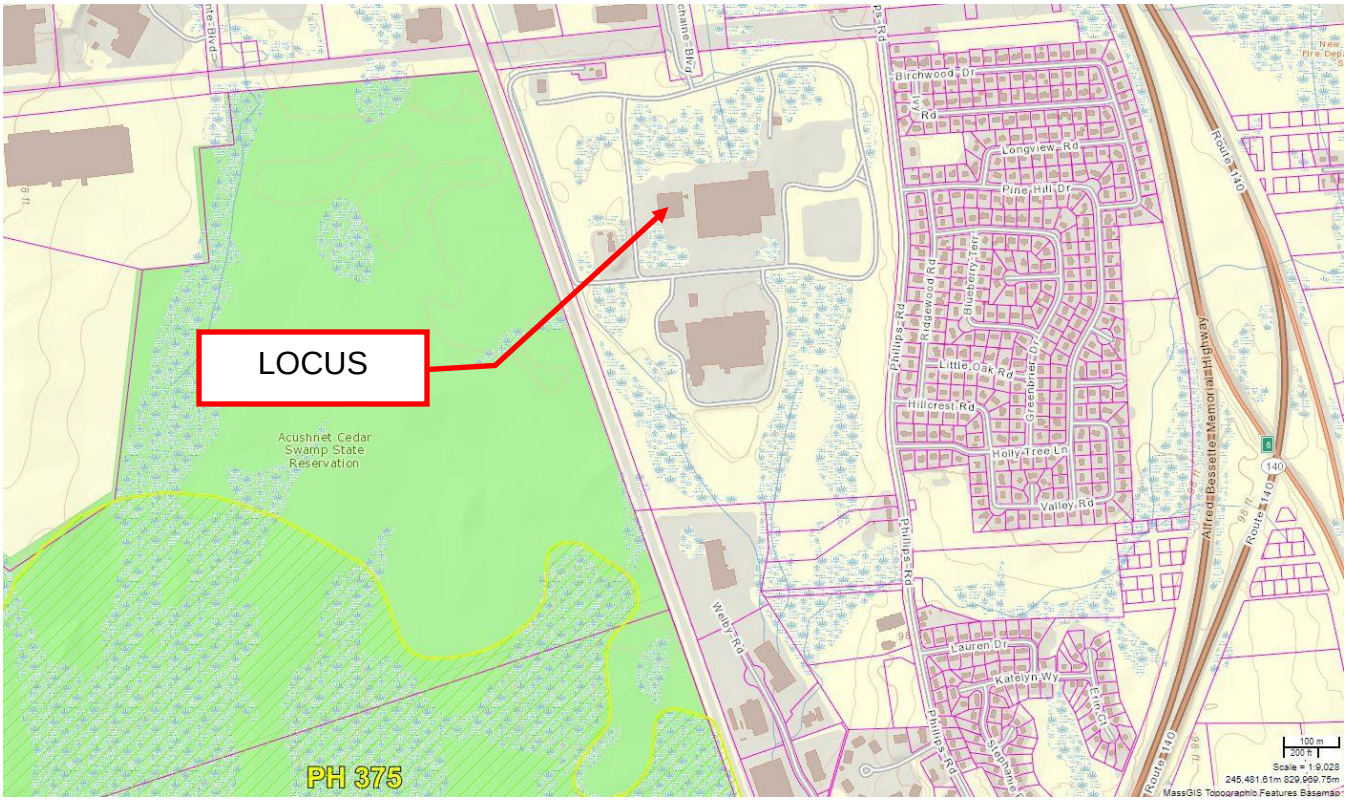
USGS MAP
TOPO! VERSION 2.1.0



FIRM MAP PANELS
#25005C0377F & 25005C0379F



NHESP PRIORITY & ESTIMATED HABITAT MAP, 2017



NRCS SOIL MAP & REPORT

Map Scale: 1:5,470 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 50 100 200 300

Feet
0 250 500 1000 1500

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 19N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Bristol County, Massachusetts, Southern Part
Survey Area Data: Version 12, Sep 7, 2018

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

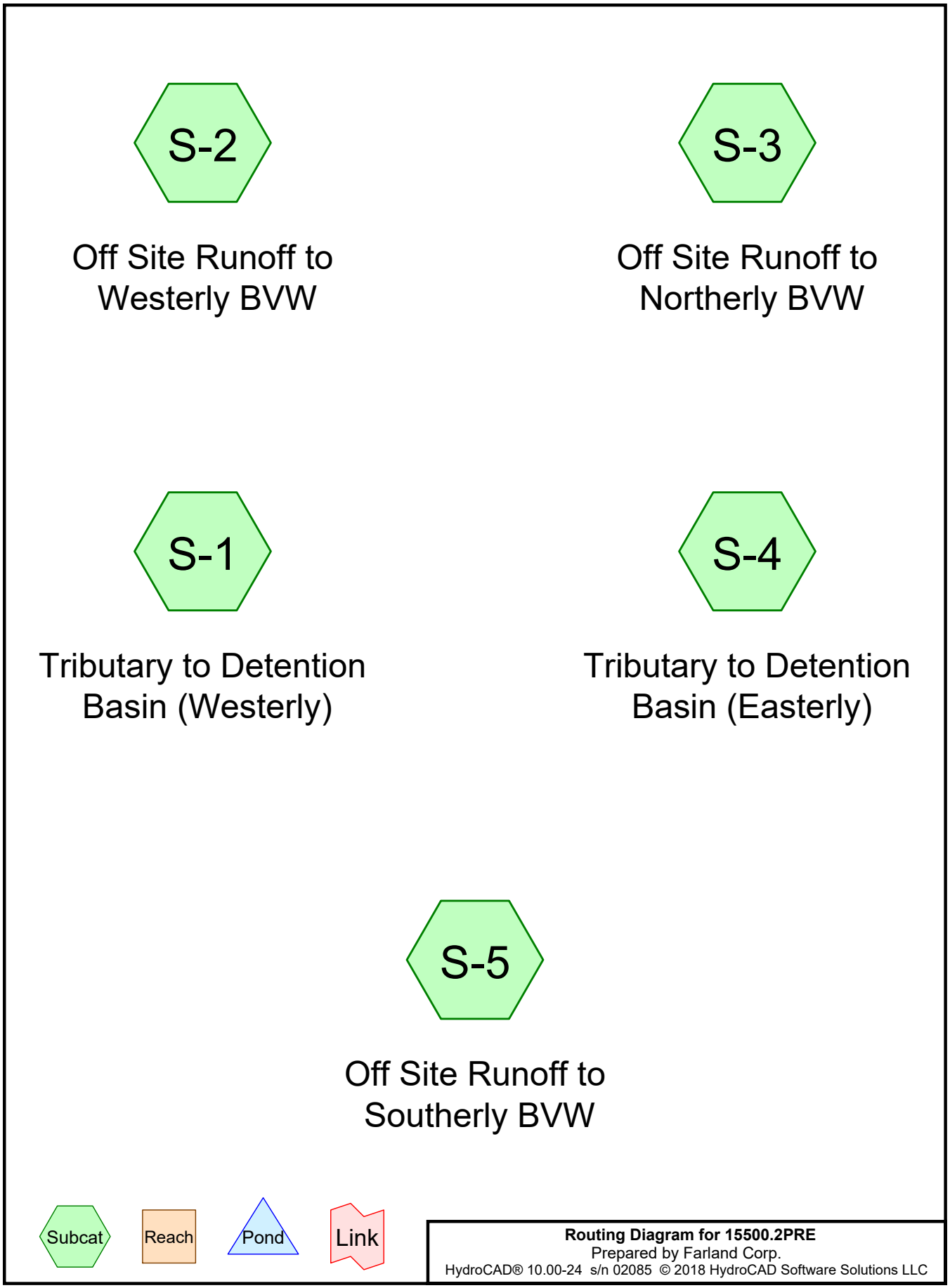
Date(s) aerial images were photographed: Dec 31, 2009—Jul 3, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
38A	Pipestone loamy sand, 0 to 3 percent slopes	10.5	12.2%
39A	Scarboro mucky fine sandy loam, 0 to 3 percent slopes	23.7	27.6%
73A	Whitman fine sandy loam, 0 to 3 percent slopes, extremely stony	2.3	2.7%
256A	Deerfield loamy fine sand, 0 to 3 percent slopes	0.4	0.4%
260A	Sudbury fine sandy loam, 0 to 3 percent slopes	11.8	13.8%
306C	Paxton fine sandy loam, 8 to 15 percent slopes, very stony	5.5	6.4%
312B	Woodbridge fine sandy loam, 0 to 8 percent slopes, extremely stony	2.8	3.3%
602	Urban land	27.9	32.4%
651	Udorthents, smoothed	1.0	1.2%
Totals for Area of Interest		**86.0**	**100.0%**

HYDROLOGIC CALCULATIONS (STANDARD #2)



Routing Diagram for 15500.2PRE
Prepared by Farland Corp.
HydroCAD® 10.00-24 s/n 02085 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.525	49	50-75% Grass cover, Fair, HSG A (S-1, S-4)
0.834	68	<50% Grass cover, Poor, HSG A (S-3)
0.182	39	>75% Grass cover, Good, HSG A (S-5)
1.074	98	Concrete Pad, HSG A (S-3)
1.101	76	Gravel roads, HSG A (S-1)
1.849	98	Roadway and Concrete (S-1, S-4)
0.041	98	Roadway/Concrete (S-2)
0.013	98	Walkways, HSG A (S-5)
0.154	98	Water Surface (S-1)
1.171	43	Woods/grass comb., Fair, HSG A (S-3)
6.944	**76**	**TOTAL AREA**

Summary for Subcatchment S-1: Tributary to Detention Basin (Westerly)

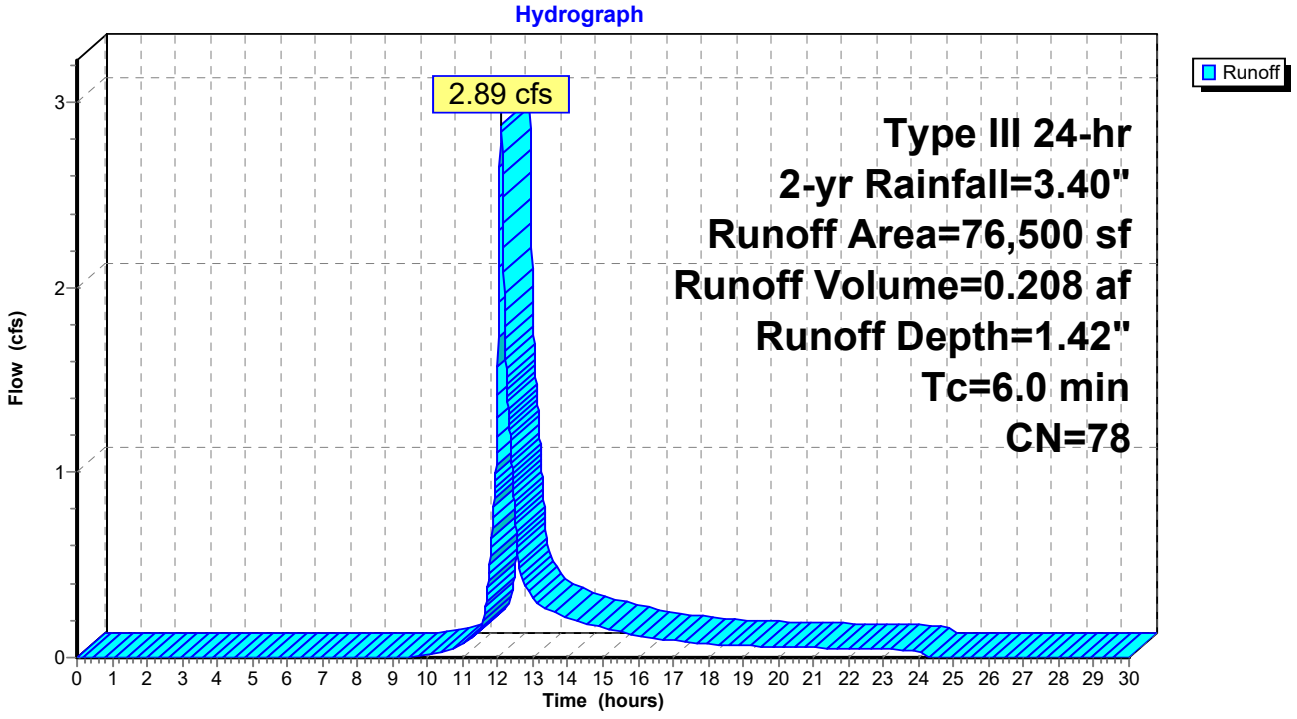
Runoff = 2.89 cfs @ 12.09 hrs, Volume= 0.208 af, Depth= 1.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	9,910	49	50-75% Grass cover, Fair, HSG A
*	11,940	98	Roadway and Concrete
	6,700	98	Water Surface
	47,950	76	Gravel roads, HSG A
	76,500	78	Weighted Average
	57,860		75.63% Pervious Area
	18,640		24.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-1: Tributary to Detention Basin (Westerly)



Summary for Subcatchment S-2: Off Site Runoff to Westerly BVW

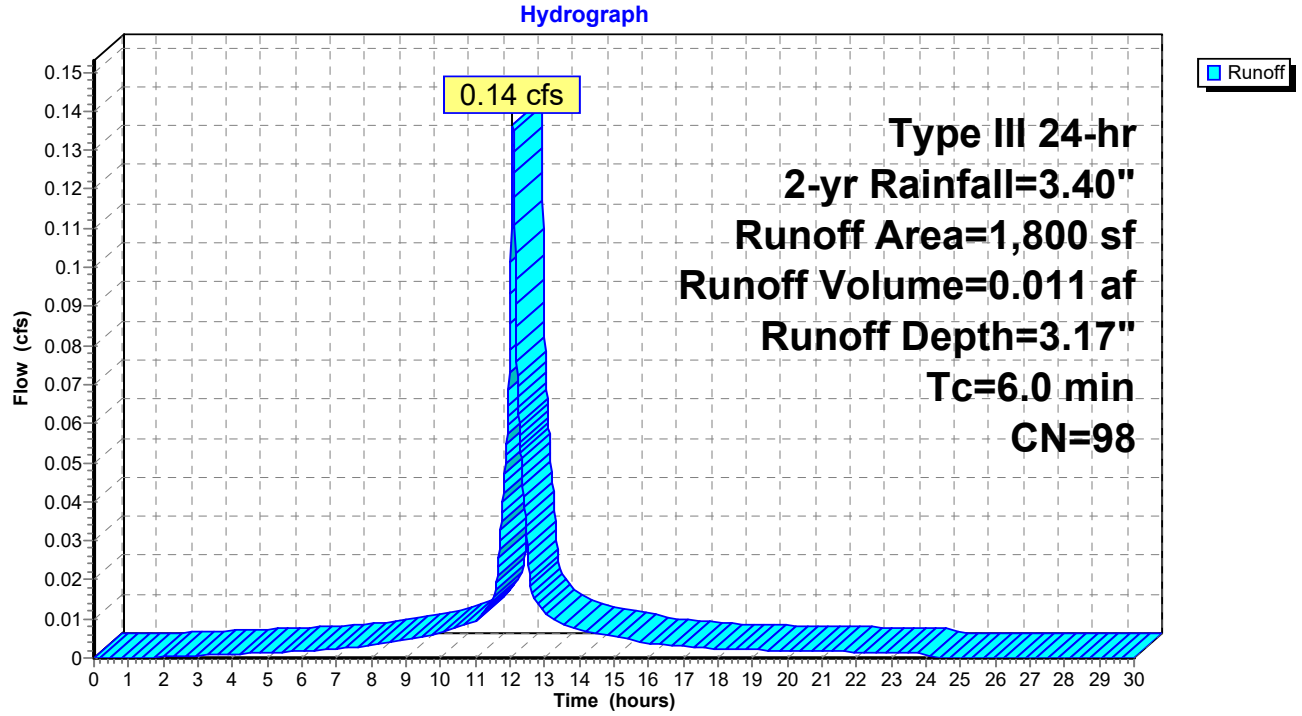
Runoff = 0.14 cfs @ 12.08 hrs, Volume= 0.011 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	1,800	98	Roadway/Concrete
	1,800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-2: Off Site Runoff to Westerly BVW



Summary for Subcatchment S-3: Off Site Runoff to Northerly BVW

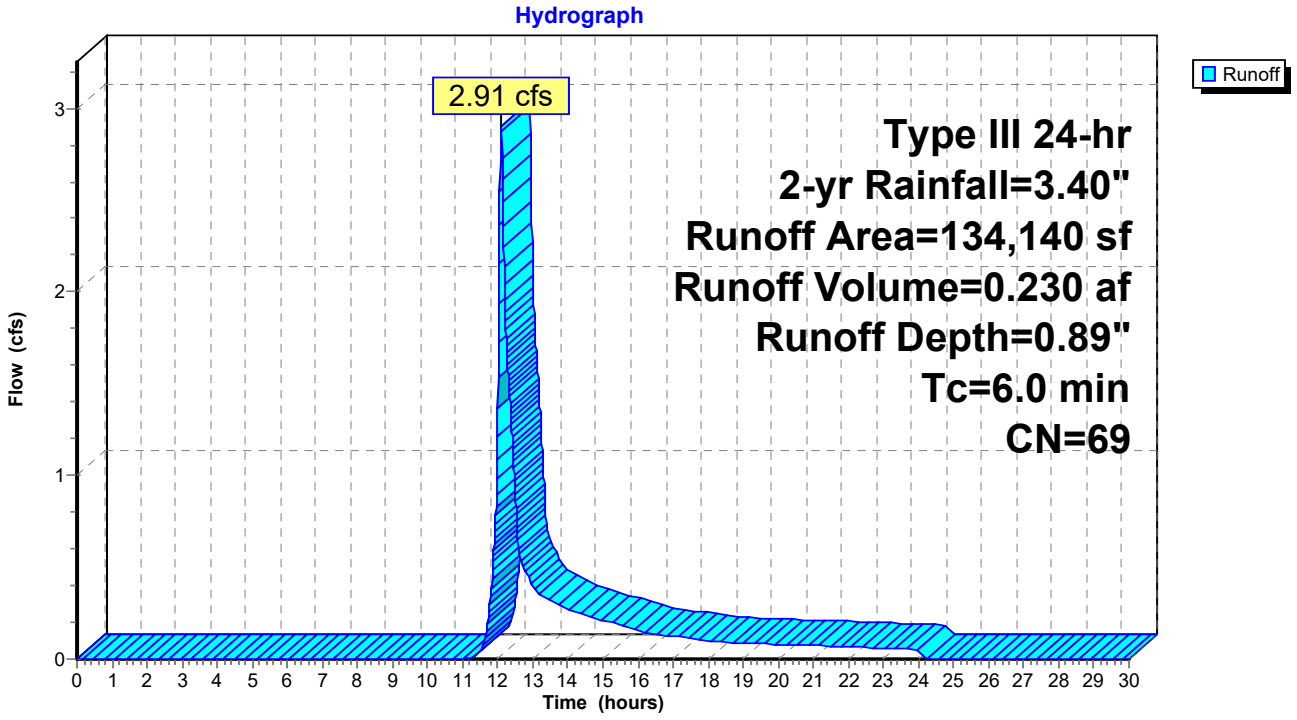
Runoff = 2.91 cfs @ 12.10 hrs, Volume= 0.230 af, Depth= 0.89"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	50,990	43	Woods/grass comb., Fair, HSG A
*	46,800	98	Concrete Pad, HSG A
	36,350	68	<50% Grass cover, Poor, HSG A
	134,140	69	Weighted Average
	87,340		65.11% Pervious Area
	46,800		34.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-3: Off Site Runoff to Northerly BVW



Summary for Subcatchment S-4: Tributary to Detention Basin (Easterly)

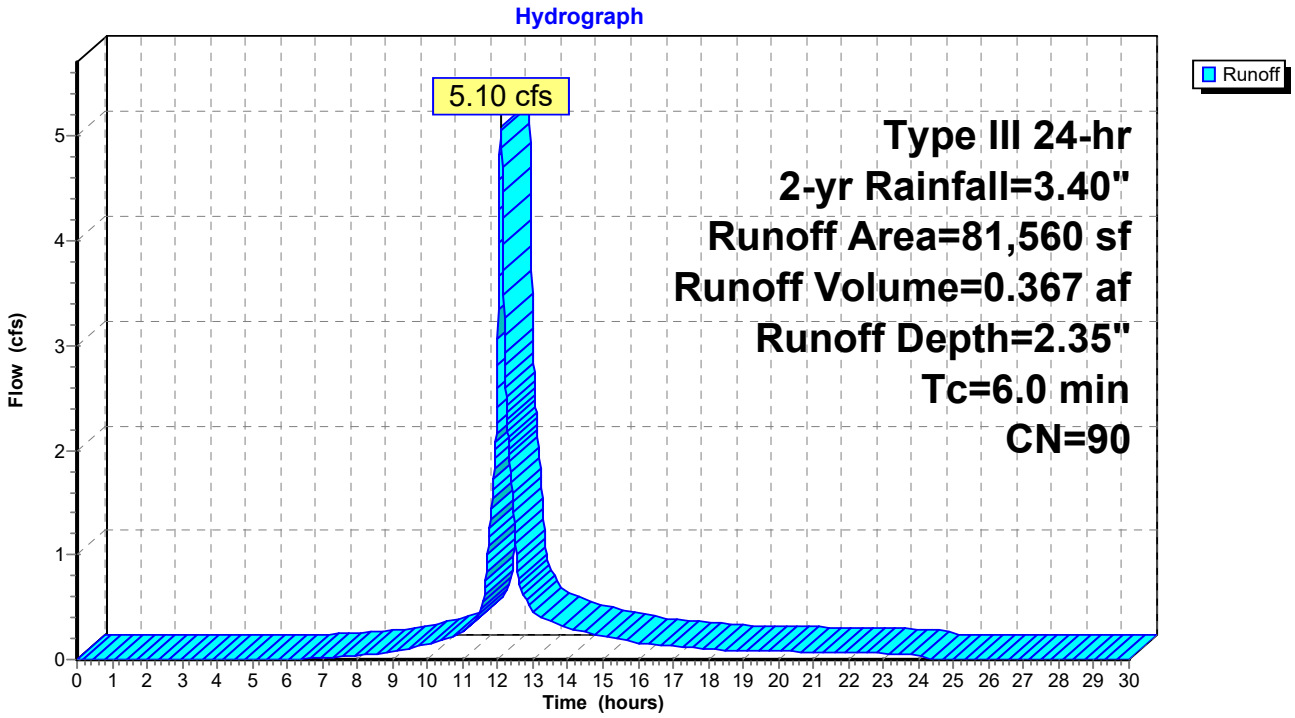
Runoff = 5.10 cfs @ 12.09 hrs, Volume= 0.367 af, Depth= 2.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	12,950	49	50-75% Grass cover, Fair, HSG A
*	68,610	98	Roadway and Concrete
	81,560	90	Weighted Average
	12,950		15.88% Pervious Area
	68,610		84.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-4: Tributary to Detention Basin (Easterly)



Summary for Subcatchment S-5: Off Site Runoff to Southerly BVW

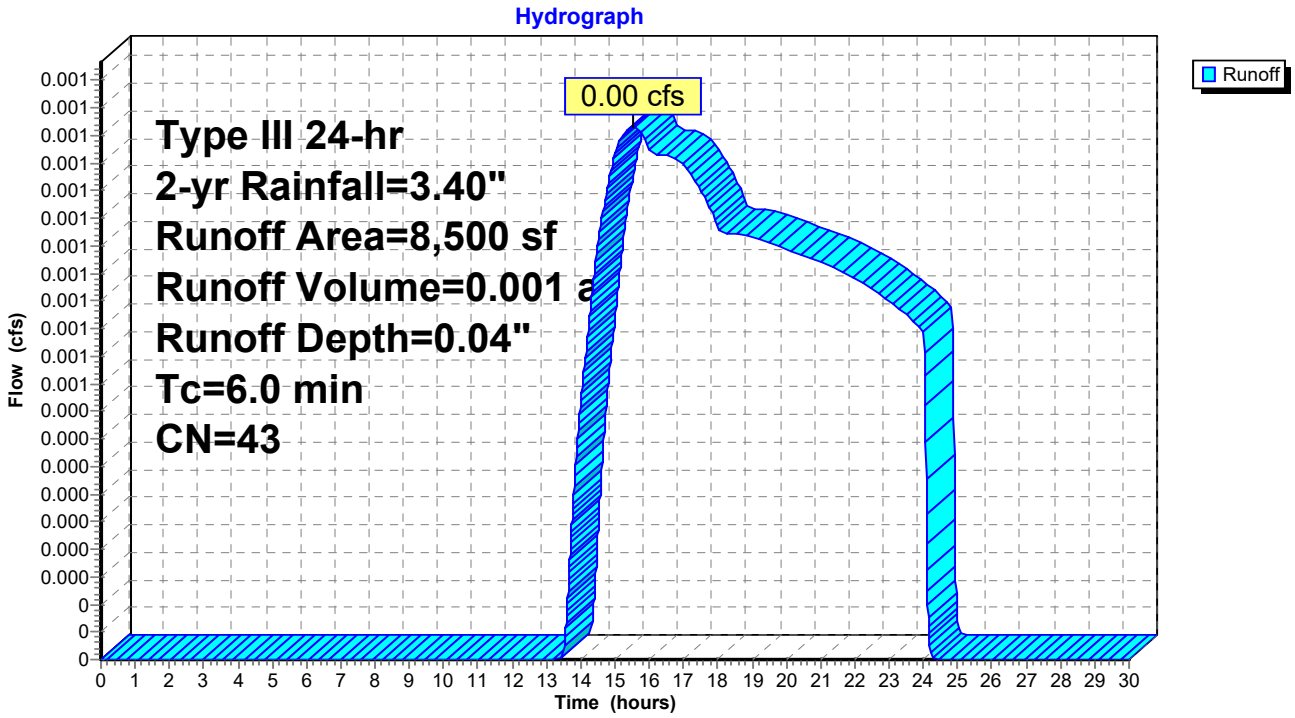
Runoff = 0.00 cfs @ 15.50 hrs, Volume= 0.001 af, Depth= 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	7,920	39	>75% Grass cover, Good, HSG A
*	580	98	Walkways, HSG A
	8,500	43	Weighted Average
	7,920		93.18% Pervious Area
	580		6.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-5: Off Site Runoff to Southerly BVW



Summary for Subcatchment S-1: Tributary to Detention Basin (Westerly)

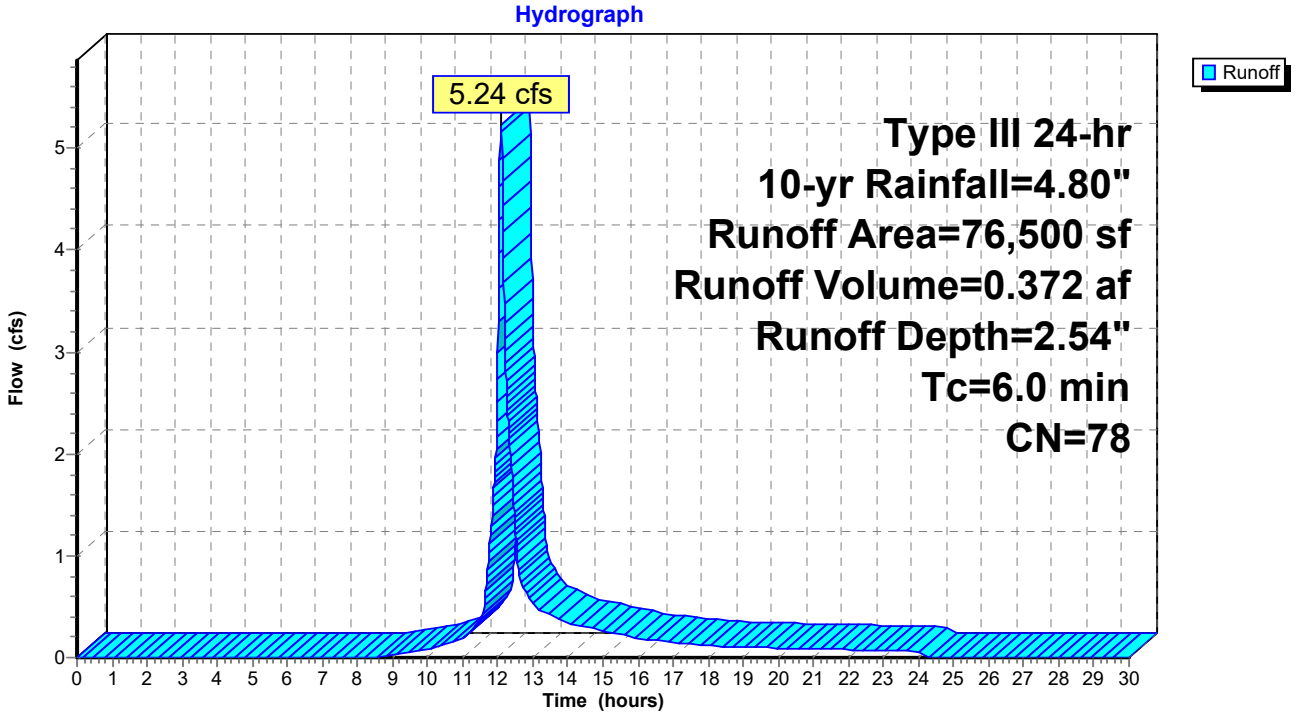
Runoff = 5.24 cfs @ 12.09 hrs, Volume= 0.372 af, Depth= 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	9,910	49	50-75% Grass cover, Fair, HSG A
*	11,940	98	Roadway and Concrete
	6,700	98	Water Surface
	47,950	76	Gravel roads, HSG A
	76,500	78	Weighted Average
	57,860		75.63% Pervious Area
	18,640		24.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-1: Tributary to Detention Basin (Westerly)



Summary for Subcatchment S-2: Off Site Runoff to Westerly BVW

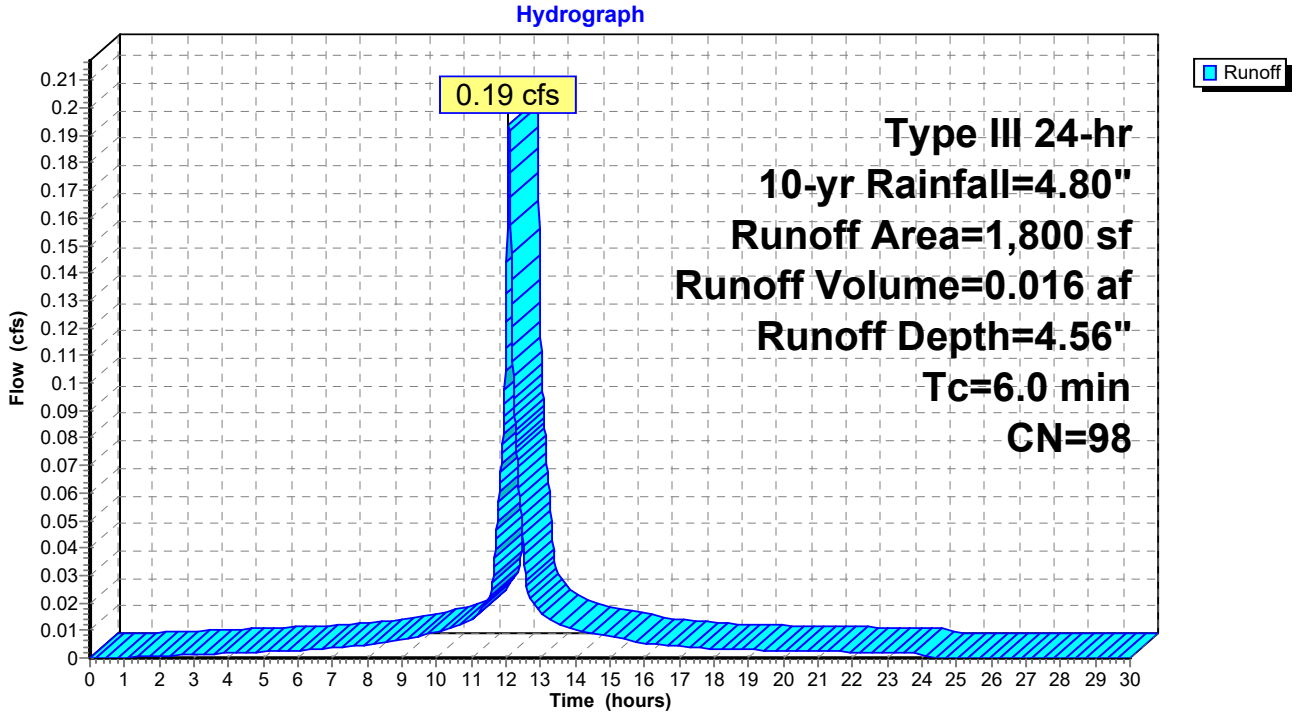
Runoff = 0.19 cfs @ 12.08 hrs, Volume= 0.016 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	1,800	98	Roadway/Concrete
	1,800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-2: Off Site Runoff to Westerly BVW



Summary for Subcatchment S-3: Off Site Runoff to Northerly BVW

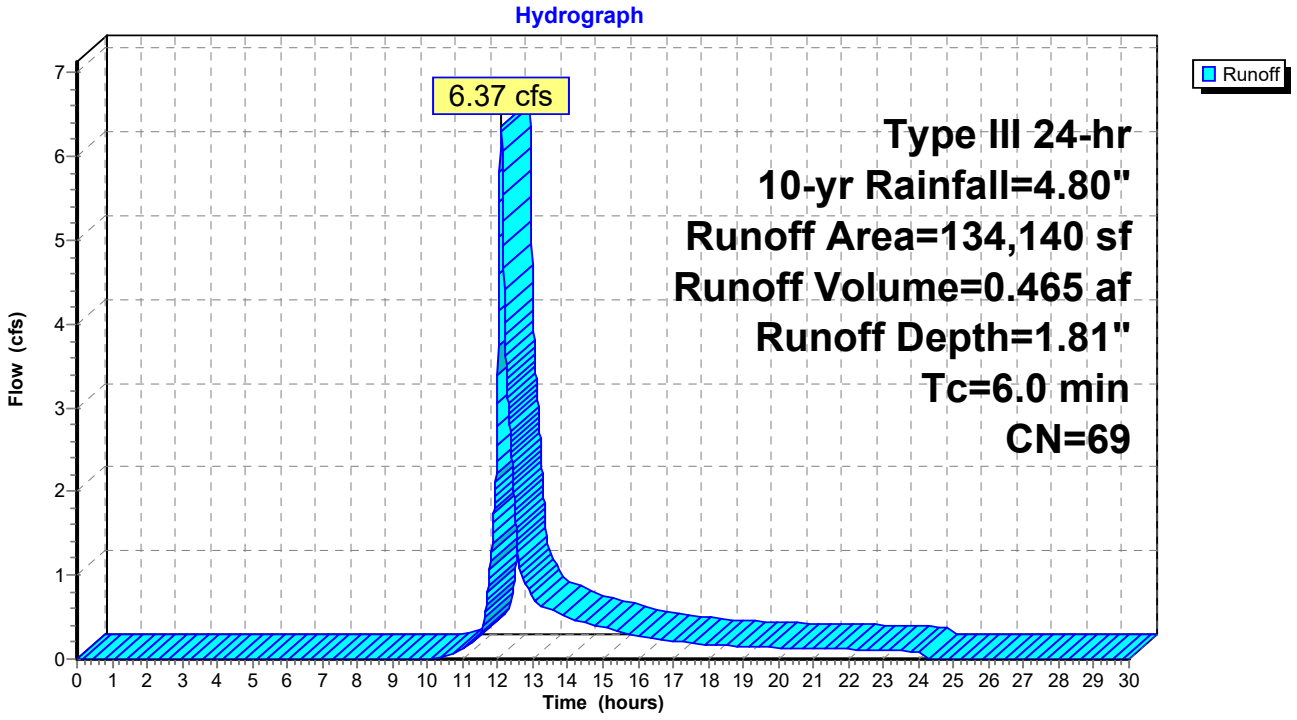
Runoff = 6.37 cfs @ 12.09 hrs, Volume= 0.465 af, Depth= 1.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	50,990	43	Woods/grass comb., Fair, HSG A
*	46,800	98	Concrete Pad, HSG A
	36,350	68	<50% Grass cover, Poor, HSG A
	134,140	69	Weighted Average
	87,340		65.11% Pervious Area
	46,800		34.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-3: Off Site Runoff to Northerly BVW



Summary for Subcatchment S-4: Tributary to Detention Basin (Easterly)

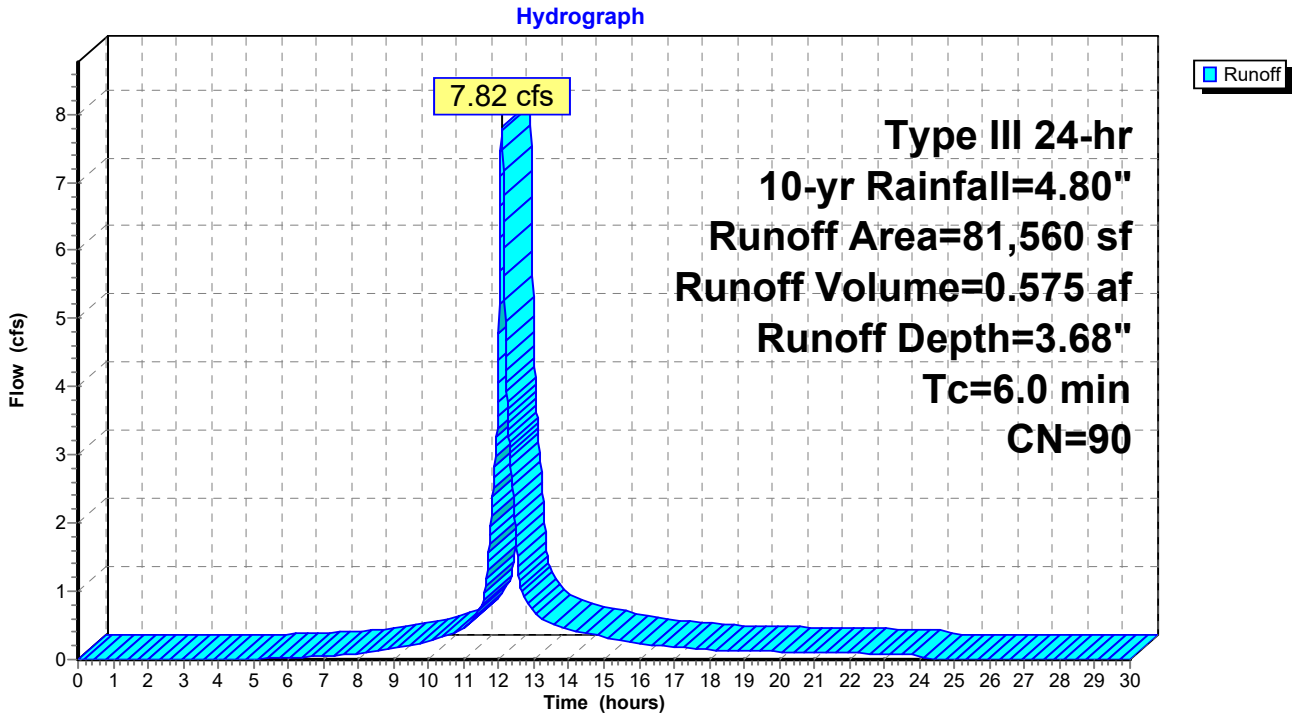
Runoff = 7.82 cfs @ 12.09 hrs, Volume= 0.575 af, Depth= 3.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	12,950	49	50-75% Grass cover, Fair, HSG A
*	68,610	98	Roadway and Concrete
	81,560	90	Weighted Average
	12,950		15.88% Pervious Area
	68,610		84.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-4: Tributary to Detention Basin (Easterly)



Summary for Subcatchment S-5: Off Site Runoff to Southerly BVW

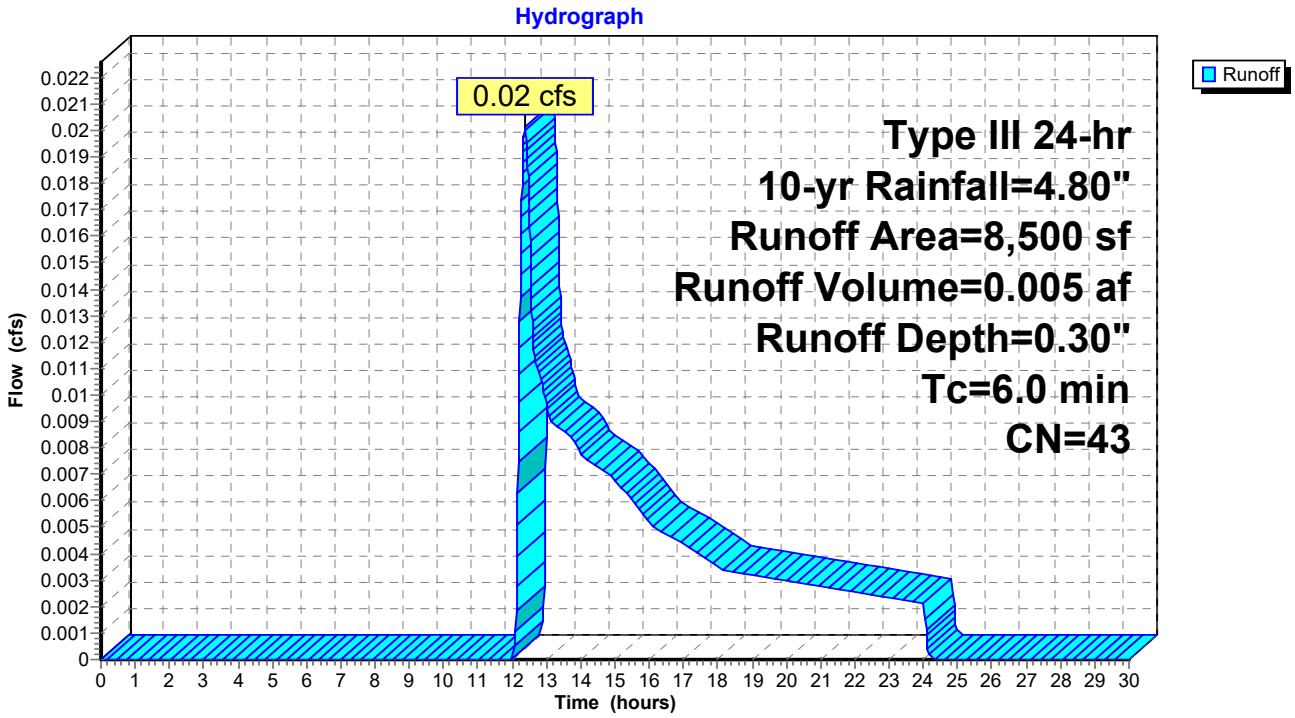
Runoff = 0.02 cfs @ 12.38 hrs, Volume= 0.005 af, Depth= 0.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	7,920	39	>75% Grass cover, Good, HSG A
*	580	98	Walkways, HSG A
	8,500	43	Weighted Average
	7,920		93.18% Pervious Area
	580		6.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-5: Off Site Runoff to Southerly BVW



Summary for Subcatchment S-1: Tributary to Detention Basin (Westerly)

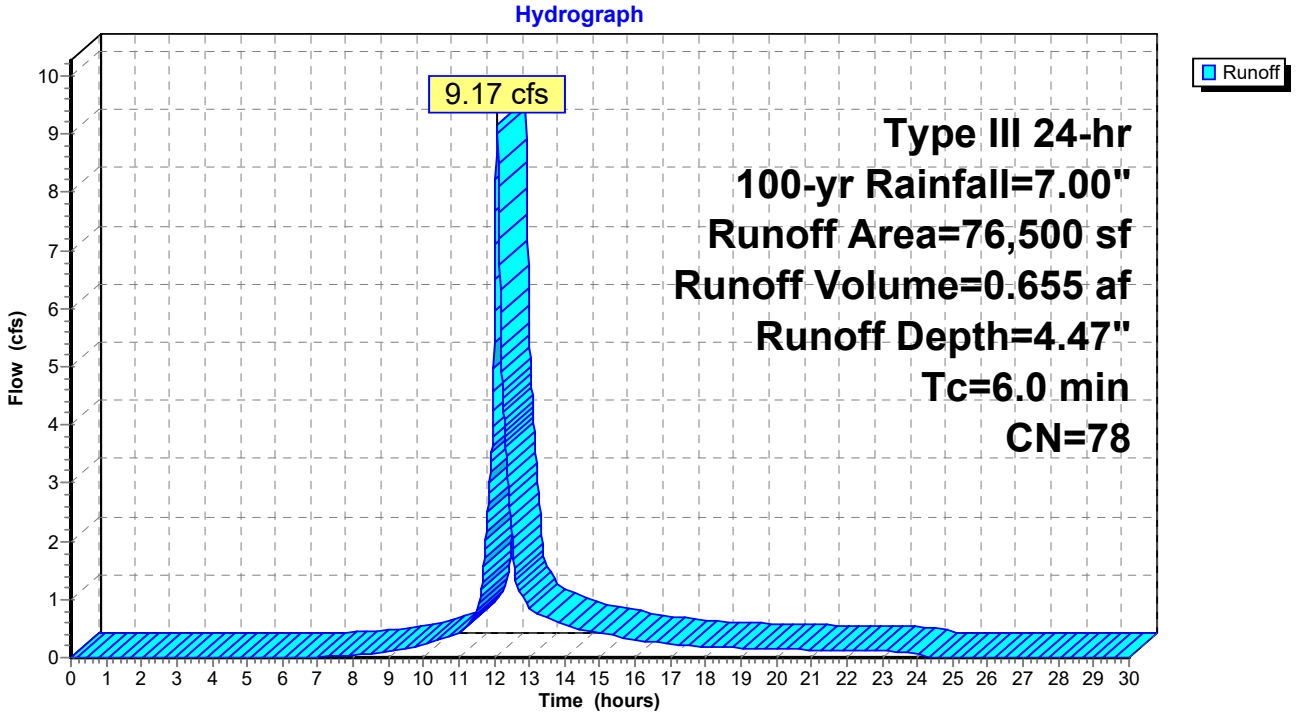
Runoff = 9.17 cfs @ 12.09 hrs, Volume= 0.655 af, Depth= 4.47"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	9,910	49	50-75% Grass cover, Fair, HSG A
*	11,940	98	Roadway and Concrete
	6,700	98	Water Surface
	47,950	76	Gravel roads, HSG A
	76,500	78	Weighted Average
	57,860		75.63% Pervious Area
	18,640		24.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-1: Tributary to Detention Basin (Westerly)



Summary for Subcatchment S-2: Off Site Runoff to Westerly BVW

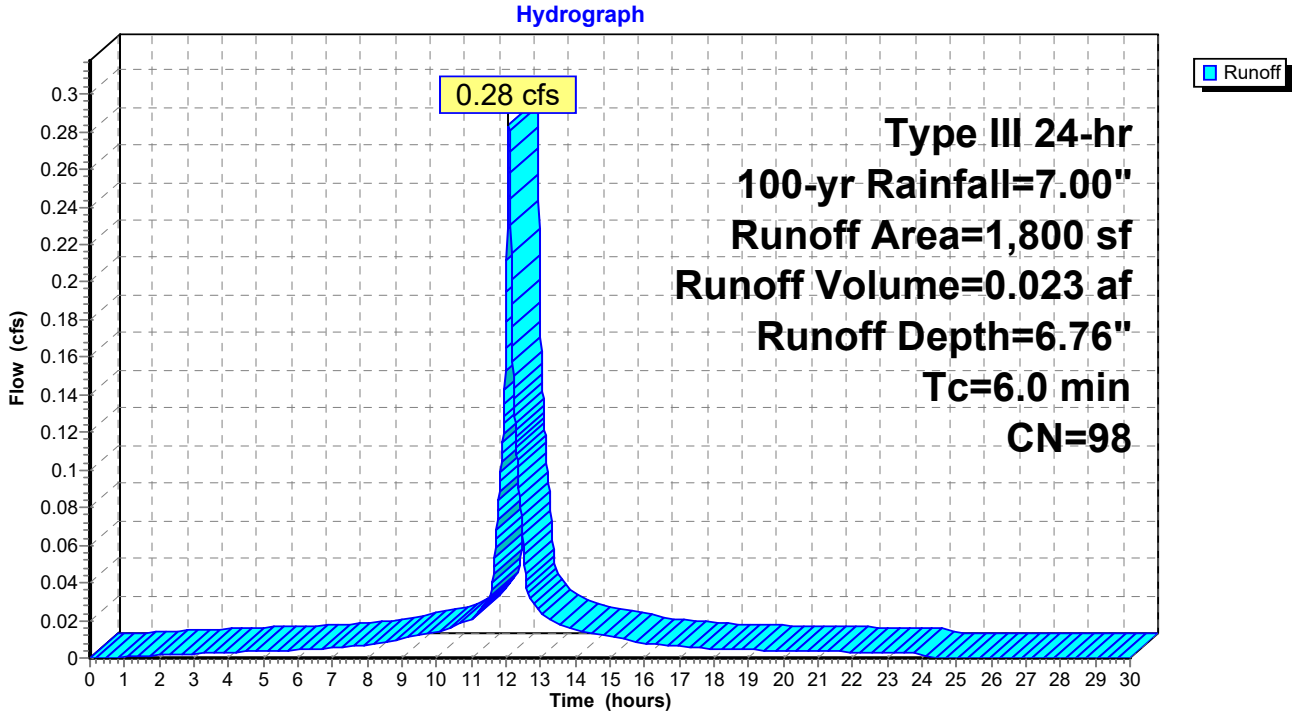
Runoff = 0.28 cfs @ 12.08 hrs, Volume= 0.023 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
*	1,800	98	Roadway/Concrete
	1,800		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-2: Off Site Runoff to Westerly BVW



Summary for Subcatchment S-3: Off Site Runoff to Northerly BVW

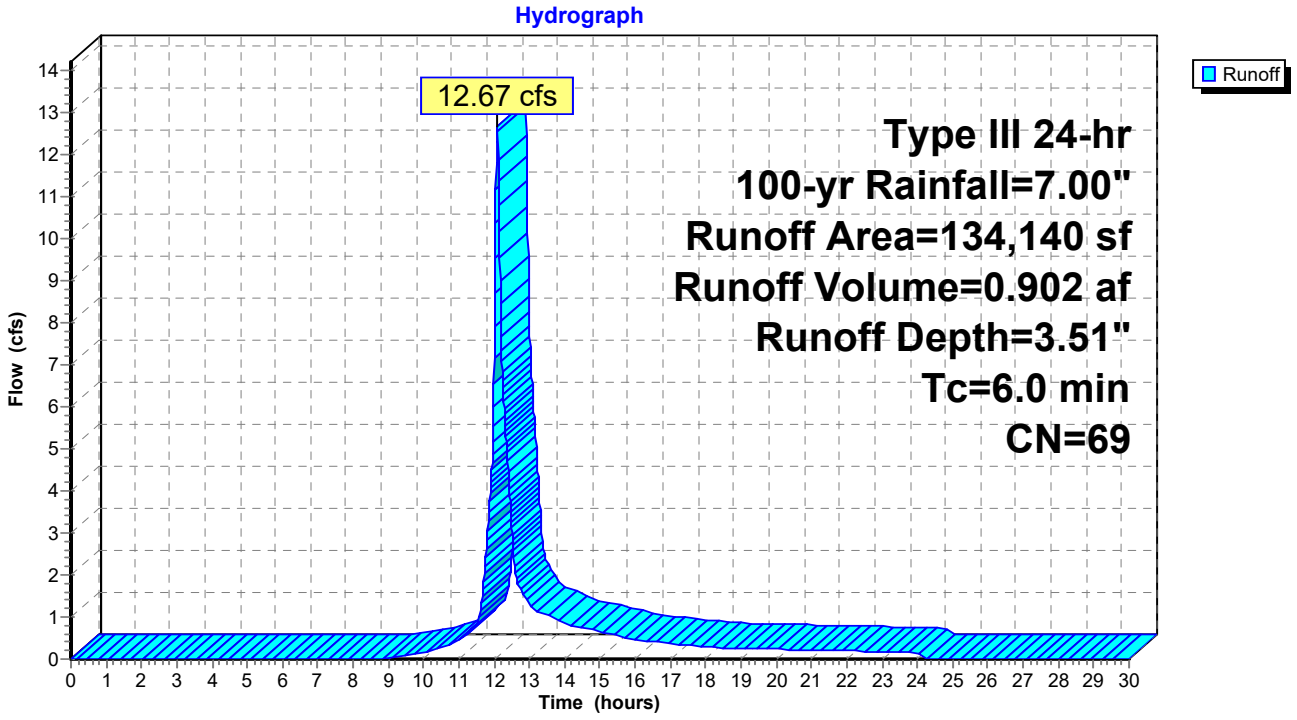
Runoff = 12.67 cfs @ 12.09 hrs, Volume= 0.902 af, Depth= 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	50,990	43	Woods/grass comb., Fair, HSG A
*	46,800	98	Concrete Pad, HSG A
	36,350	68	<50% Grass cover, Poor, HSG A
	134,140	69	Weighted Average
	87,340		65.11% Pervious Area
	46,800		34.89% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-3: Off Site Runoff to Northerly BVW



Summary for Subcatchment S-4: Tributary to Detention Basin (Easterly)

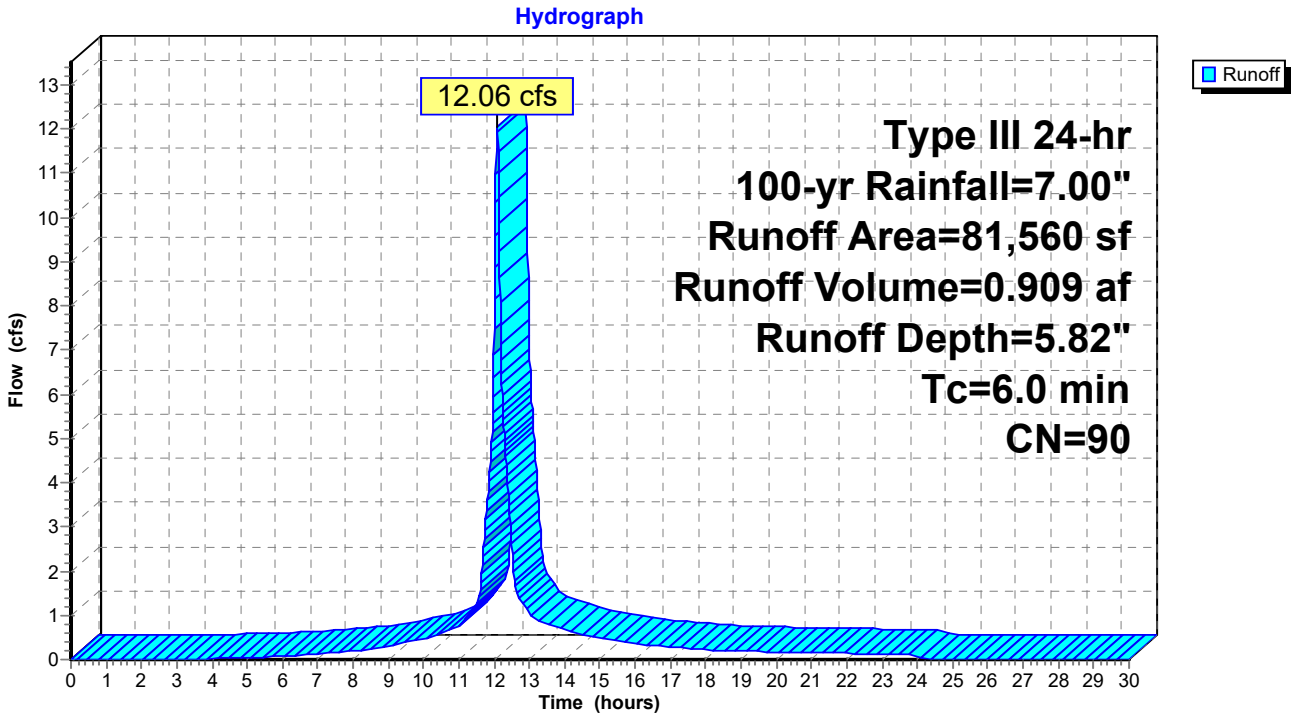
Runoff = 12.06 cfs @ 12.08 hrs, Volume= 0.909 af, Depth= 5.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	12,950	49	50-75% Grass cover, Fair, HSG A
*	68,610	98	Roadway and Concrete
	81,560	90	Weighted Average
	12,950		15.88% Pervious Area
	68,610		84.12% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-4: Tributary to Detention Basin (Easterly)



Summary for Subcatchment S-5: Off Site Runoff to Southerly BVW

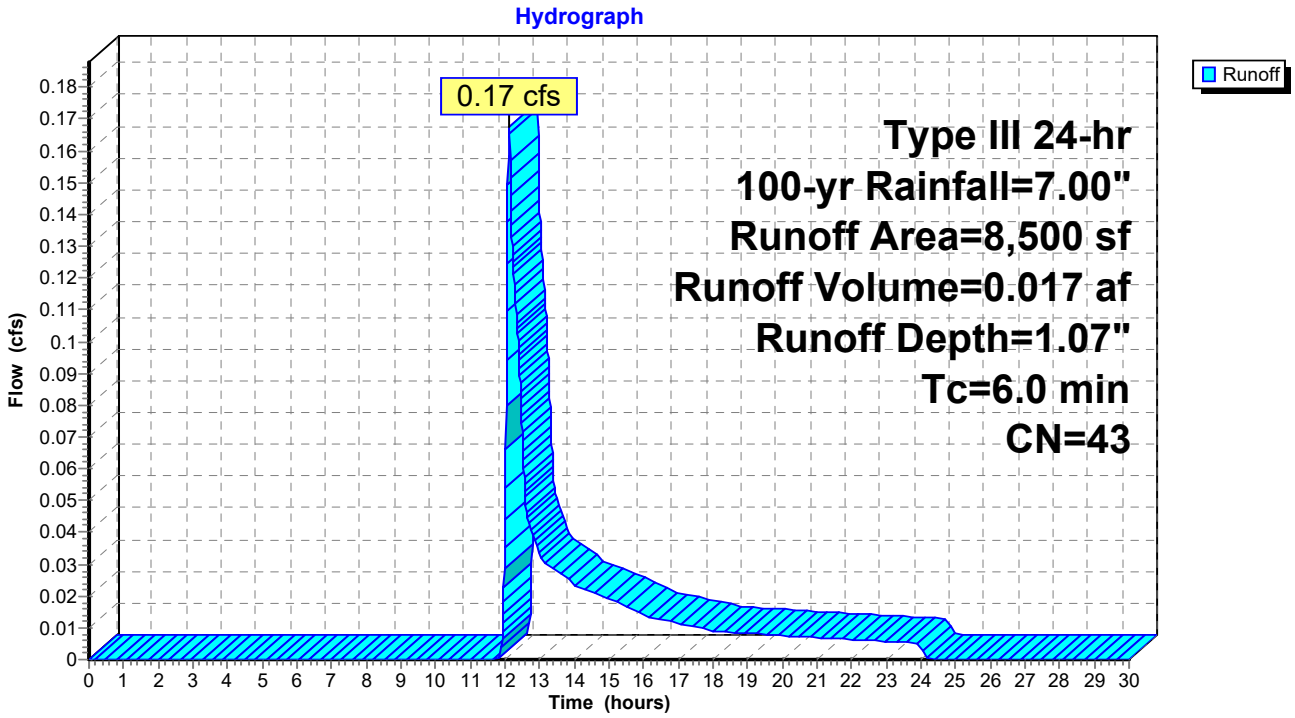
Runoff = 0.17 cfs @ 12.12 hrs, Volume= 0.017 af, Depth= 1.07"

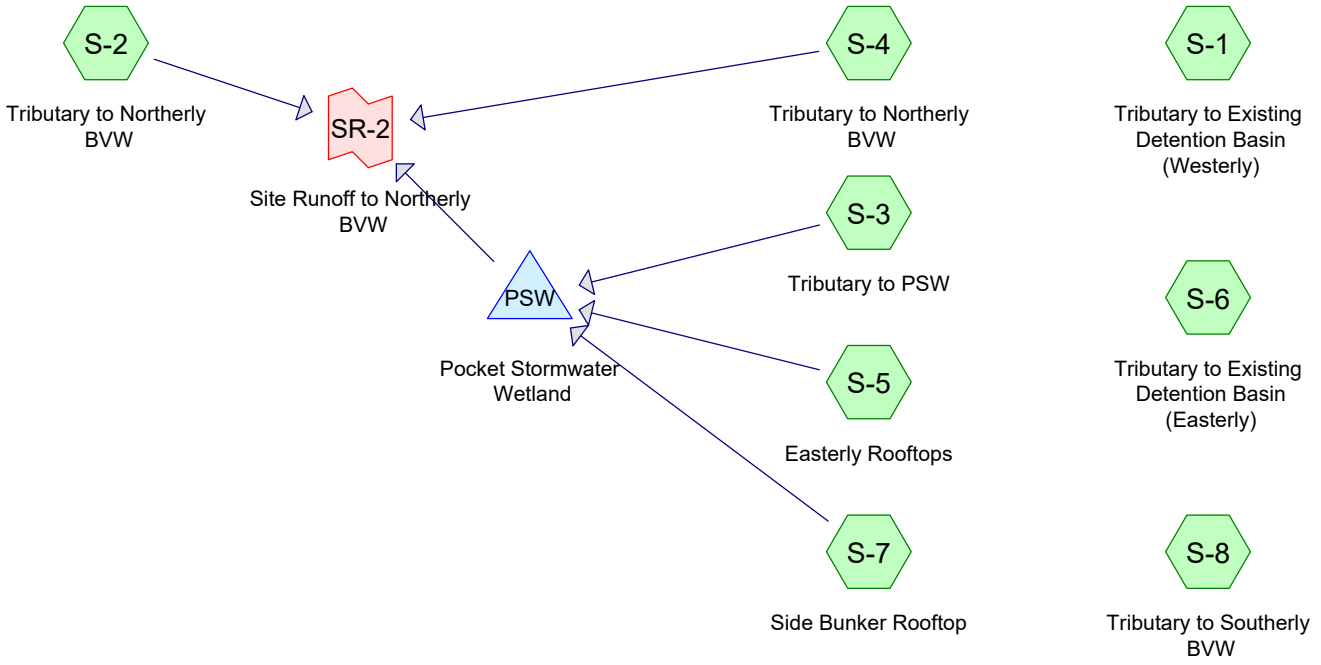
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	7,920	39	>75% Grass cover, Good, HSG A
*	580	98	Walkways, HSG A
	8,500	43	Weighted Average
	7,920		93.18% Pervious Area
	580		6.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-5: Off Site Runoff to Southerly BVW





Subcat Reach Pond Link

Routing Diagram for 15500.2POST
Prepared by Farland Corp.
HydroCAD® 10.00-24 s/n 02085 © 2018 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.391	39	>75% Grass cover, Good, HSG A (S-1, S-2, S-3, S-4, S-6, S-8)
0.021	98	Concrete, HSG A (S-4)
0.632	76	Crushed Stone, HSG A (S-3)
1.314	76	Gravel roads, HSG A (S-1, S-2)
0.180	76	Gravel, HSG A (S-5)
0.162	98	Paved parking, HSG A (S-1, S-6)
2.049	98	Roof (S-5, S-7)
0.009	98	Walkways, HSG A (S-8)
1.117	98	Water Surface, HSG A (S-3)
0.069	30	Woods, Good, HSG A (S-3)
6.944	**79**	**TOTAL AREA**

Summary for Subcatchment S-1: Tributary to Existing Detention Basin (Westerly)

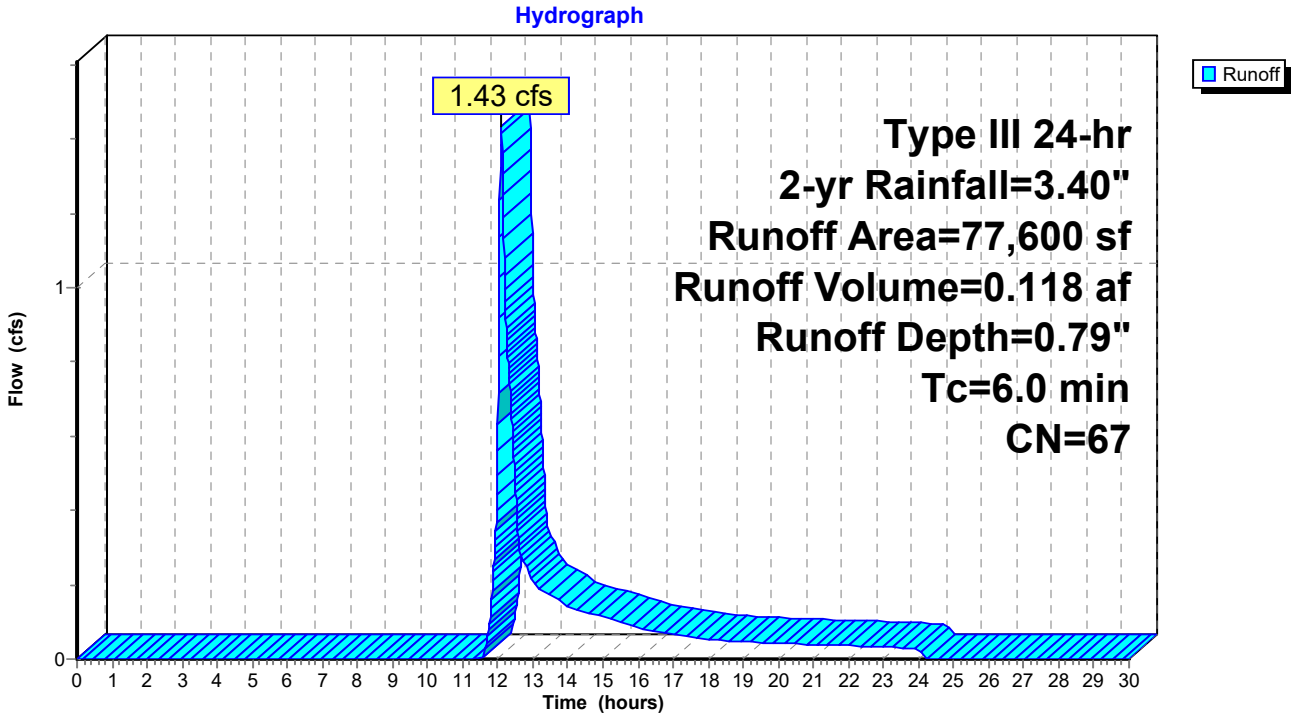
Runoff = 1.43 cfs @ 12.10 hrs, Volume= 0.118 af, Depth= 0.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

Area (sf)	CN	Description
53,029	76	Gravel roads, HSG A
2,926	98	Paved parking, HSG A
21,645	39	>75% Grass cover, Good, HSG A
77,600	67	Weighted Average
74,674		96.23% Pervious Area
2,926		3.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min Tc**

Subcatchment S-1: Tributary to Existing Detention Basin (Westerly)



Summary for Subcatchment S-2: Tributary to Northerly BVW

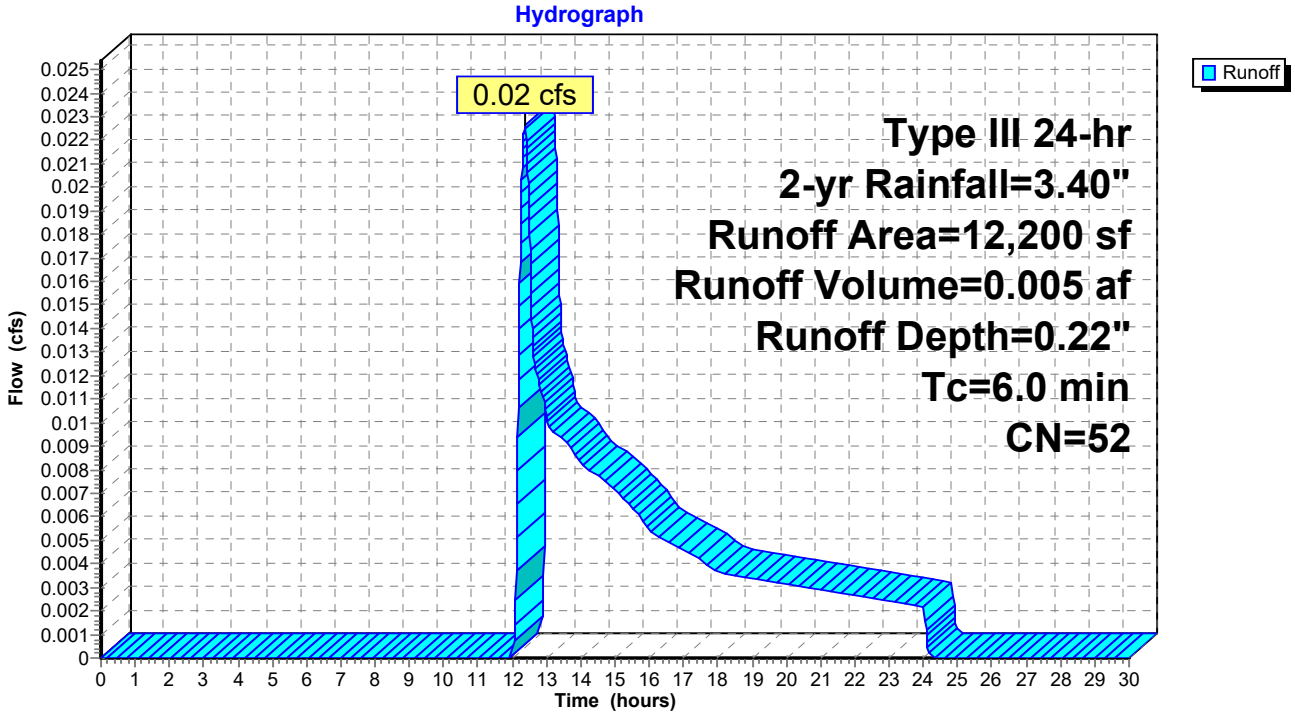
Runoff = 0.02 cfs @ 12.37 hrs, Volume= 0.005 af, Depth= 0.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

Area (sf)	CN	Description
4,200	76	Gravel roads, HSG A
8,000	39	>75% Grass cover, Good, HSG A
12,200	52	Weighted Average
12,200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-2: Tributary to Northerly BVW



Summary for Subcatchment S-3: Tributary to PSW

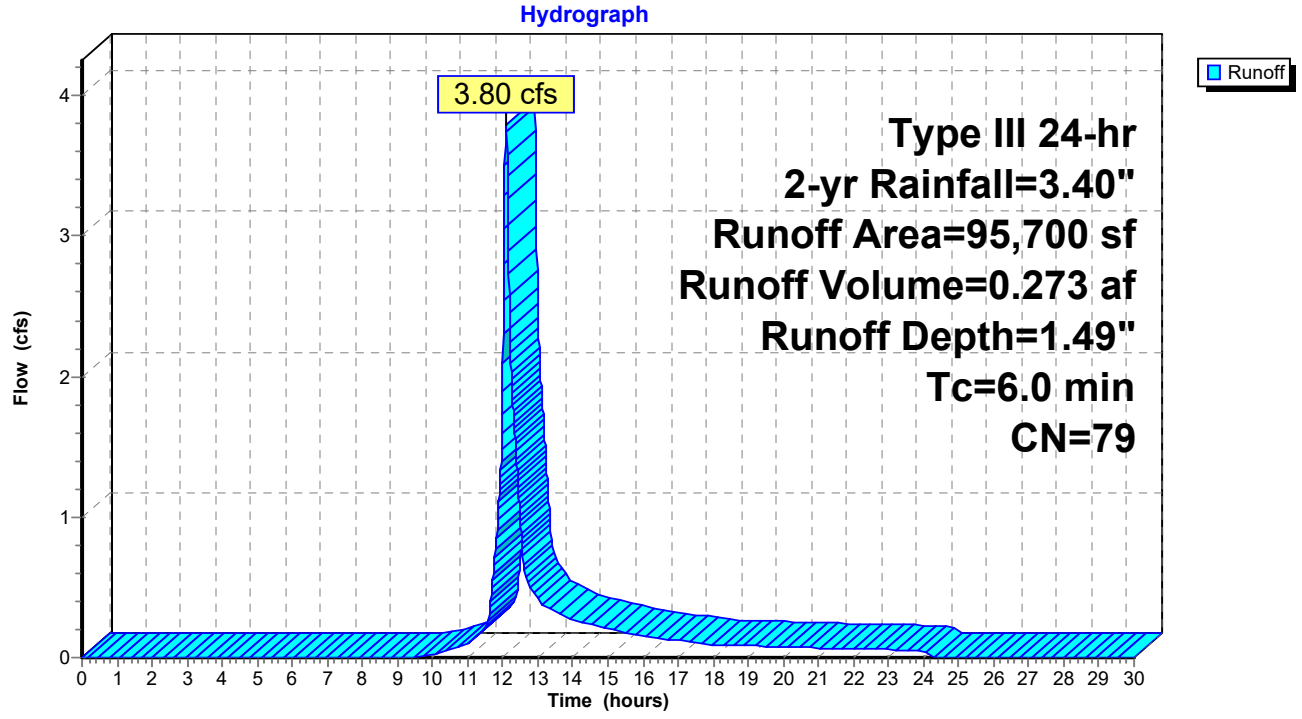
Runoff = 3.80 cfs @ 12.09 hrs, Volume= 0.273 af, Depth= 1.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	27,530	76	Crushed Stone, HSG A
	16,520	39	>75% Grass cover, Good, HSG A
	3,000	30	Woods, Good, HSG A
	48,650	98	Water Surface, HSG A
	95,700	79	Weighted Average
	47,050		49.16% Pervious Area
	48,650		50.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-3: Tributary to PSW



Summary for Subcatchment S-4: Tributary to Northerly BVW

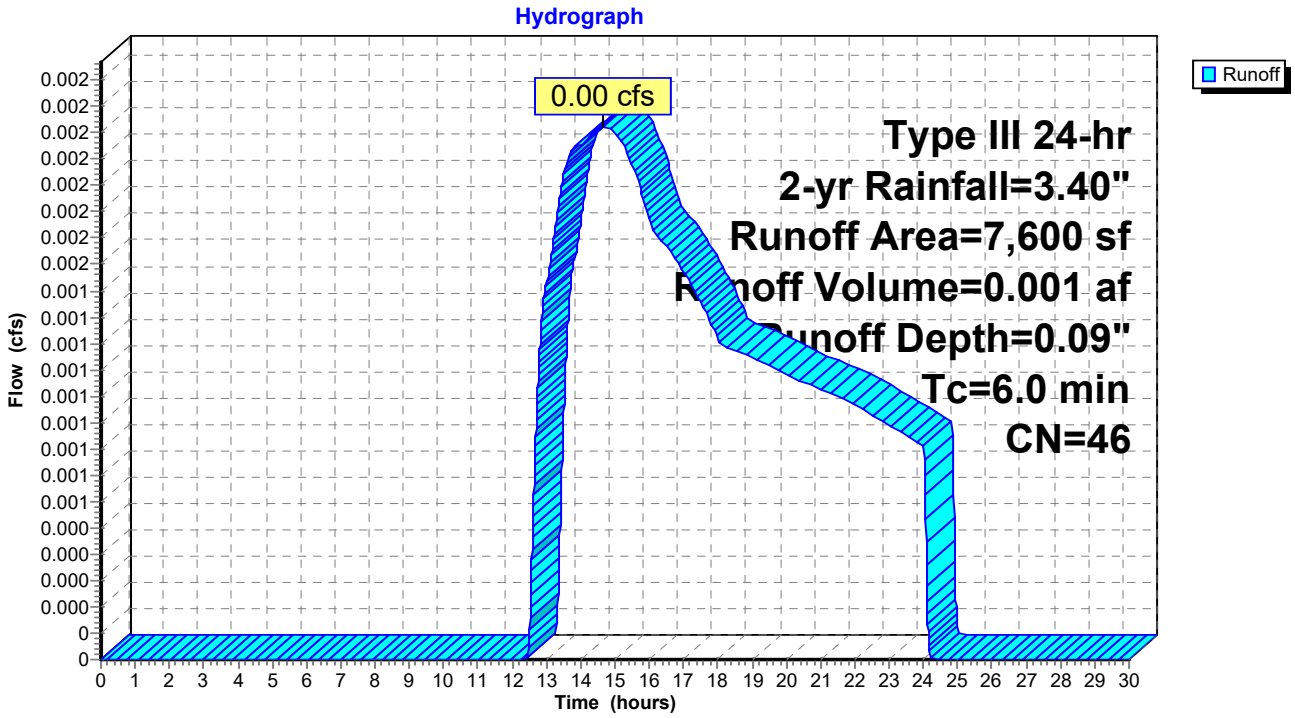
Runoff = 0.00 cfs @ 14.66 hrs, Volume= 0.001 af, Depth= 0.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	935	98	Concrete, HSG A
	6,665	39	>75% Grass cover, Good, HSG A
	7,600	46	Weighted Average
	6,665		87.70% Pervious Area
	935		12.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-4: Tributary to Northerly BVW



Summary for Subcatchment S-5: Easterly Rooftops

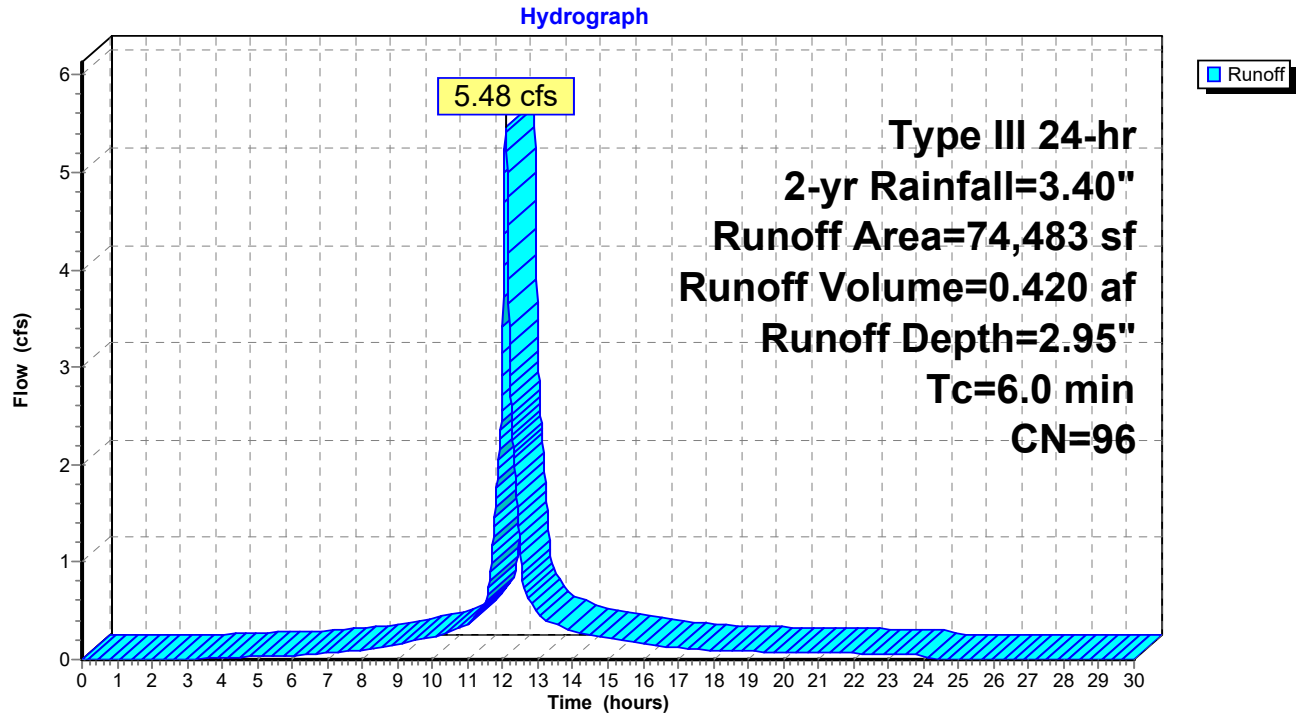
Runoff = 5.48 cfs @ 12.08 hrs, Volume= 0.420 af, Depth= 2.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	66,660	98	Roof
*	7,823	76	Gravel, HSG A
	74,483	96	Weighted Average
	7,823		10.50% Pervious Area
	66,660		89.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min Tc**

Subcatchment S-5: Easterly Rooftops



Summary for Subcatchment S-6: Tributary to Existing Detention Basin (Easterly)

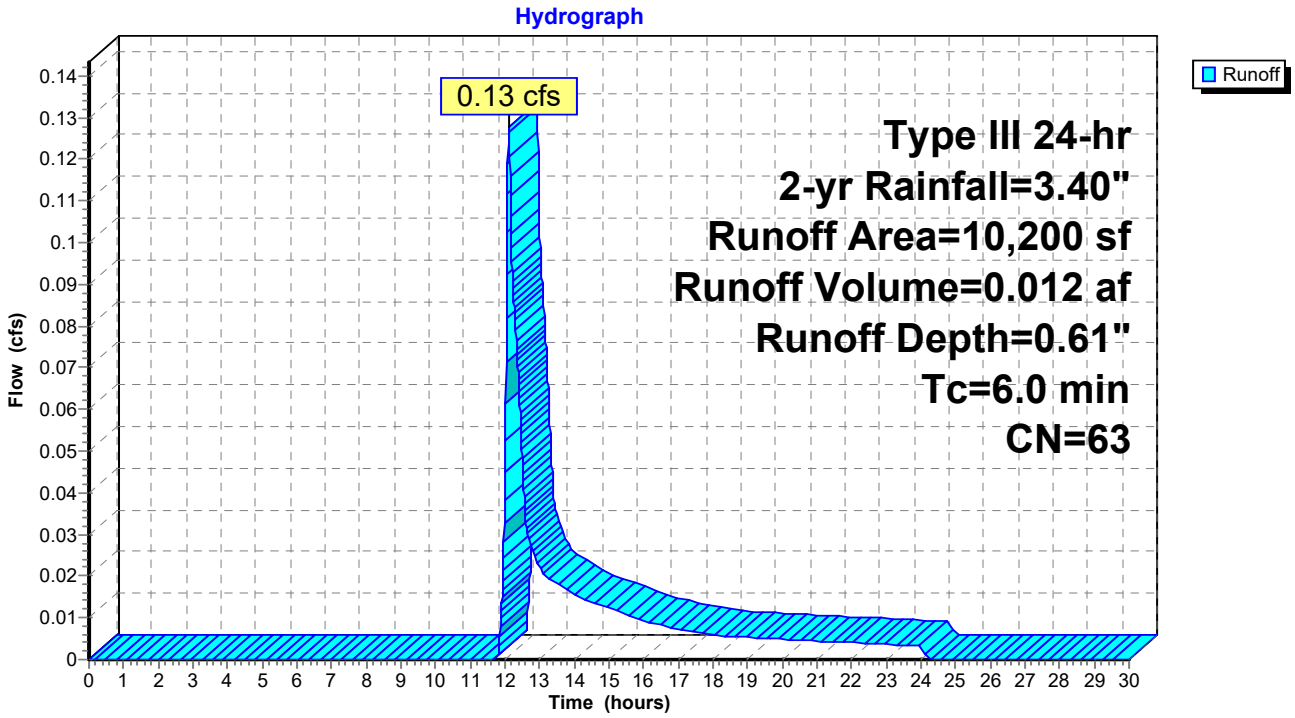
Runoff = 0.13 cfs @ 12.11 hrs, Volume= 0.012 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

Area (sf)	CN	Description
4,150	98	Paved parking, HSG A
6,050	39	>75% Grass cover, Good, HSG A
10,200	63	Weighted Average
6,050		59.31% Pervious Area
4,150		40.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-6: Tributary to Existing Detention Basin (Easterly)



Summary for Subcatchment S-7: Side Bunker Rooftop

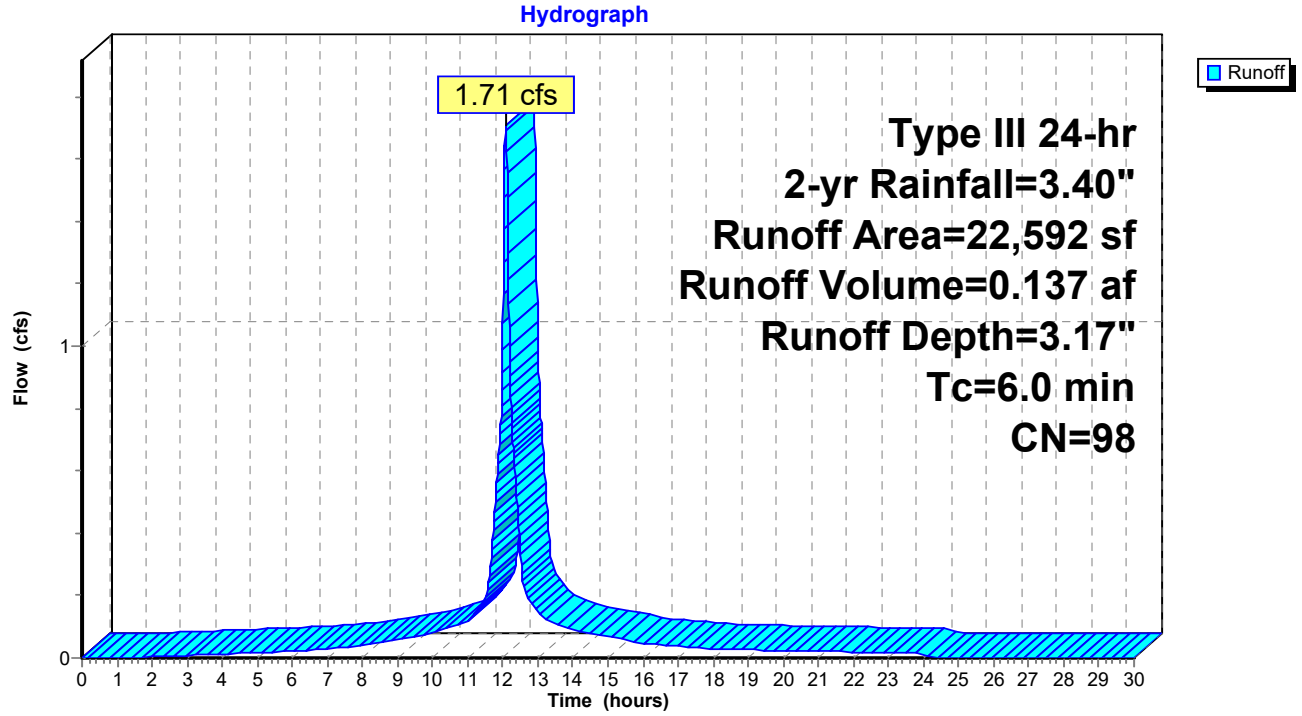
Runoff = 1.71 cfs @ 12.08 hrs, Volume= 0.137 af, Depth= 3.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
*	22,592	98	Roof
	22,592		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min Tc**

Subcatchment S-7: Side Bunker Rooftop



Summary for Subcatchment S-8: Tributary to Southerly BVW

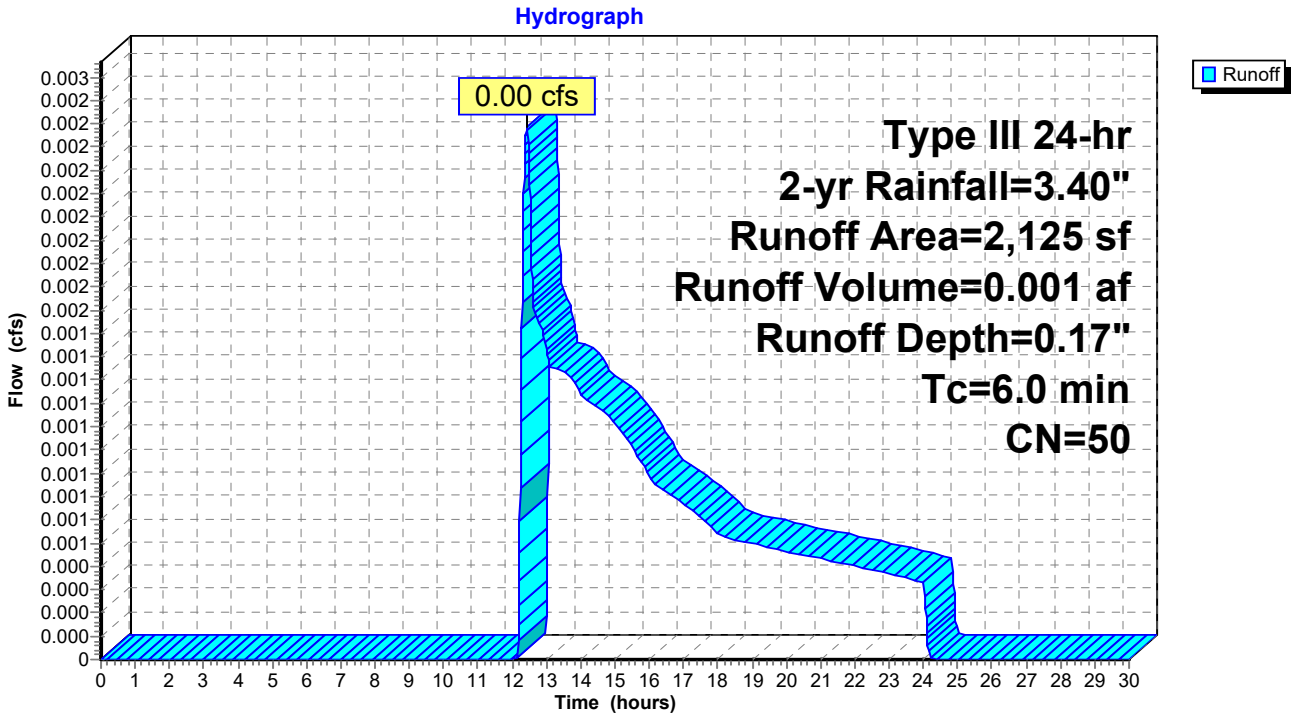
Runoff = 0.00 cfs @ 12.42 hrs, Volume= 0.001 af, Depth= 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 2-yr Rainfall=3.40"

	Area (sf)	CN	Description
	1,725	39	>75% Grass cover, Good, HSG A
*	400	98	Walkways, HSG A
	2,125	50	Weighted Average
	1,725		81.18% Pervious Area
	400		18.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-8: Tributary to Southerly BVW



Summary for Pond PSW: Pocket Stormwater Wetland

[92] Warning: Device #1 is above defined storage
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=591)

Inflow Area = 4.426 ac, 71.54% Impervious, Inflow Depth = 2.25" for 2-yr event
Inflow = 10.98 cfs @ 12.09 hrs, Volume= 0.829 af
Outflow = 8.27 cfs @ 12.08 hrs, Volume= 0.829 af, Atten= 25%, Lag= 0.0 min
Discarded = 8.27 cfs @ 12.08 hrs, Volume= 0.829 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 76.04' @ 12.16 hrs Surf.Area= 21,122 sf Storage= 797 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 0.3 min (792.9 - 792.7)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	40,272 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

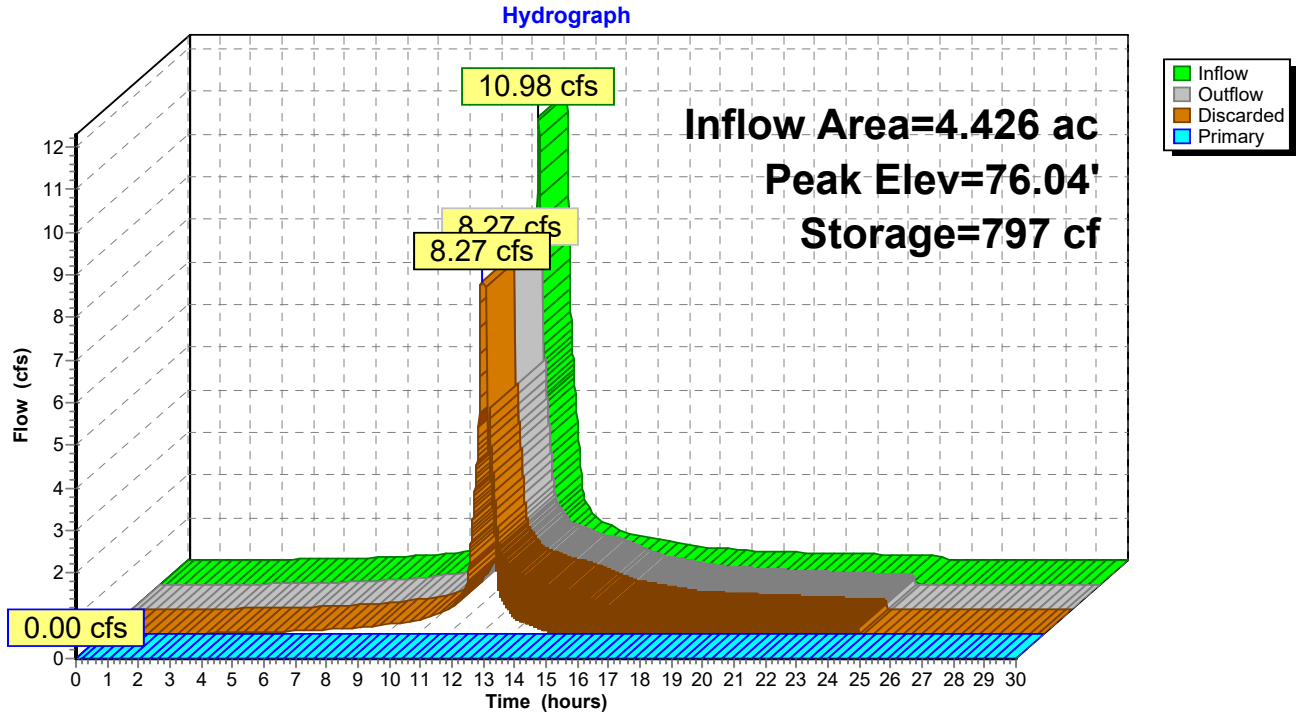
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	21,000	0	0
77.00	24,213	22,607	22,607
77.50	46,450	17,666	40,272

Device	Routing	Invert	Outlet Devices
#1	Primary	77.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	76.00'	**8.27 cfs Exfiltration at all elevations**

Discarded OutFlow Max=8.27 cfs @ 12.08 hrs HW=76.02' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 8.27 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=0.00' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond PSW: Pocket Stormwater Wetland

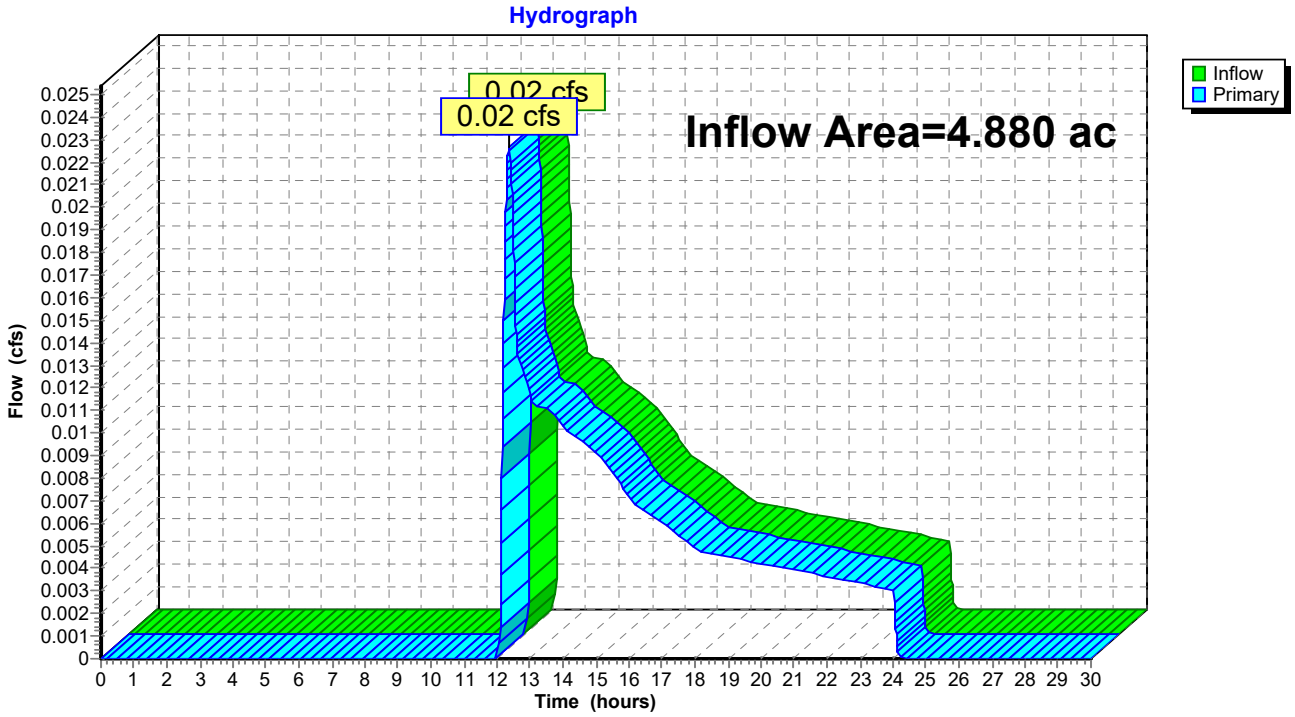


Summary for Link SR-2: Site Runoff to Northerly BVW

Inflow Area = 4.880 ac, 65.31% Impervious, Inflow Depth = 0.02" for 2-yr event
Inflow = 0.02 cfs @ 12.37 hrs, Volume= 0.006 af
Primary = 0.02 cfs @ 12.37 hrs, Volume= 0.006 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SR-2: Site Runoff to Northerly BVW



Summary for Subcatchment S-1: Tributary to Existing Detention Basin (Westerly)

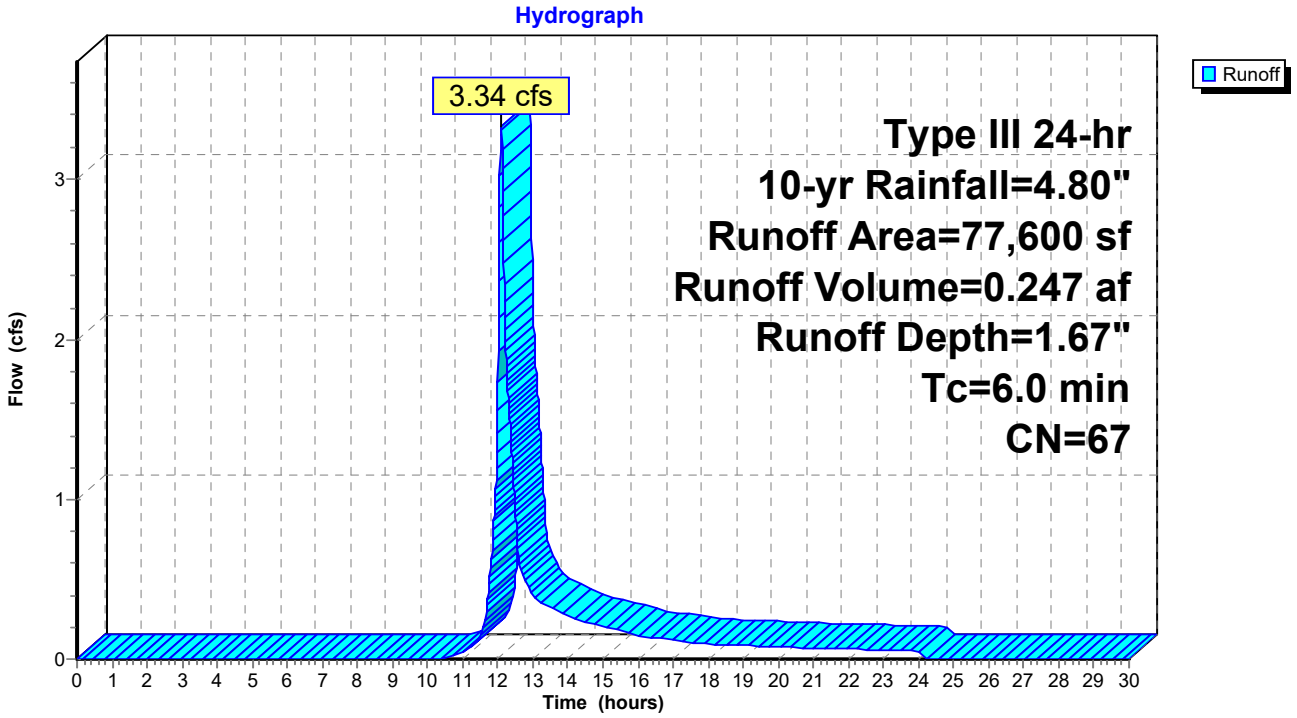
Runoff = 3.34 cfs @ 12.09 hrs, Volume= 0.247 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

Area (sf)	CN	Description
53,029	76	Gravel roads, HSG A
2,926	98	Paved parking, HSG A
21,645	39	>75% Grass cover, Good, HSG A
77,600	67	Weighted Average
74,674		96.23% Pervious Area
2,926		3.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min Tc**

Subcatchment S-1: Tributary to Existing Detention Basin (Westerly)



Summary for Subcatchment S-2: Tributary to Northerly BVW

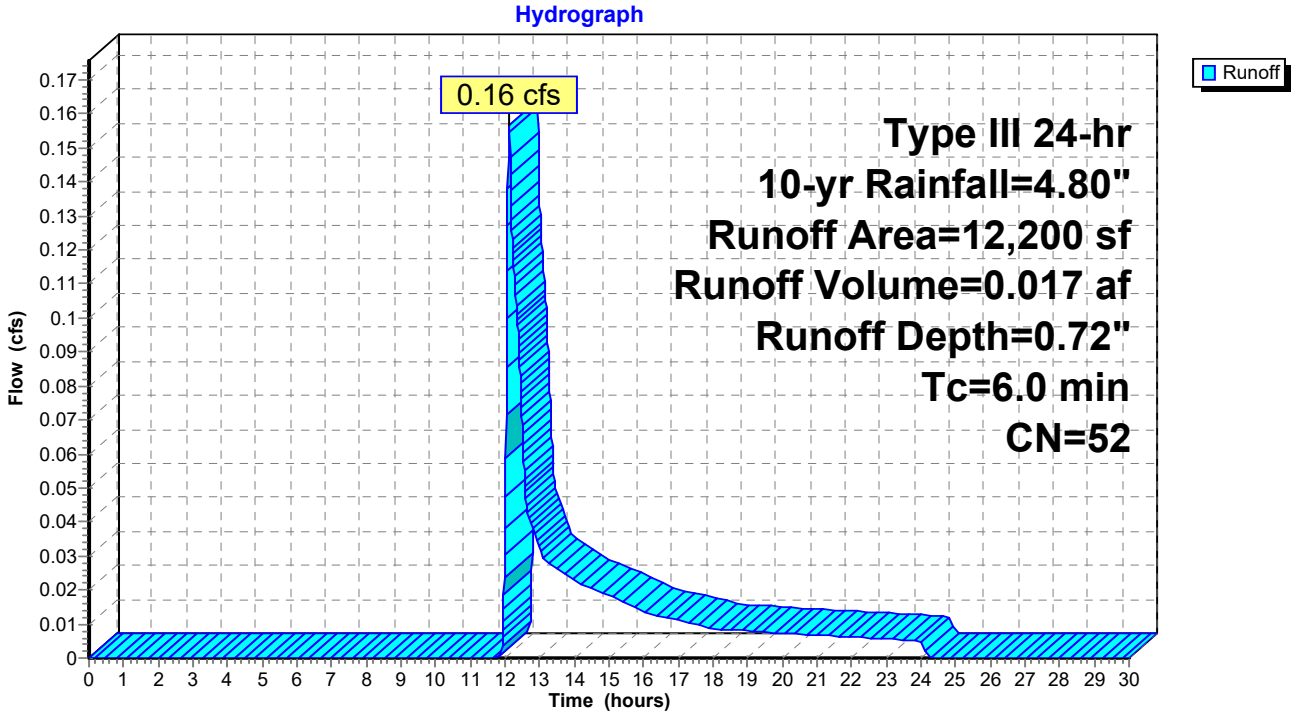
Runoff = 0.16 cfs @ 12.12 hrs, Volume= 0.017 af, Depth= 0.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

Area (sf)	CN	Description
4,200	76	Gravel roads, HSG A
8,000	39	>75% Grass cover, Good, HSG A
12,200	52	Weighted Average
12,200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-2: Tributary to Northerly BVW



Summary for Subcatchment S-3: Tributary to PSW

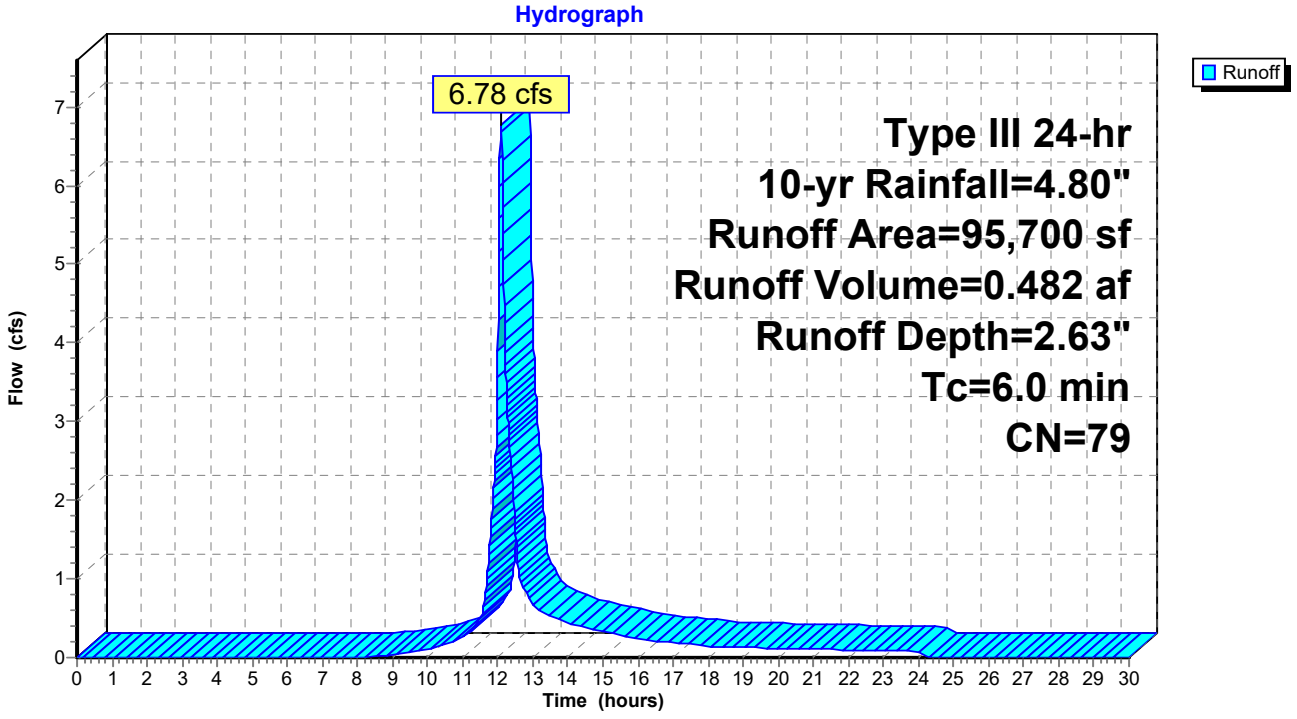
Runoff = 6.78 cfs @ 12.09 hrs, Volume= 0.482 af, Depth= 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	27,530	76	Crushed Stone, HSG A
	16,520	39	>75% Grass cover, Good, HSG A
	3,000	30	Woods, Good, HSG A
	48,650	98	Water Surface, HSG A
	95,700	79	Weighted Average
	47,050		49.16% Pervious Area
	48,650		50.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-3: Tributary to PSW



Summary for Subcatchment S-4: Tributary to Northerly BVW

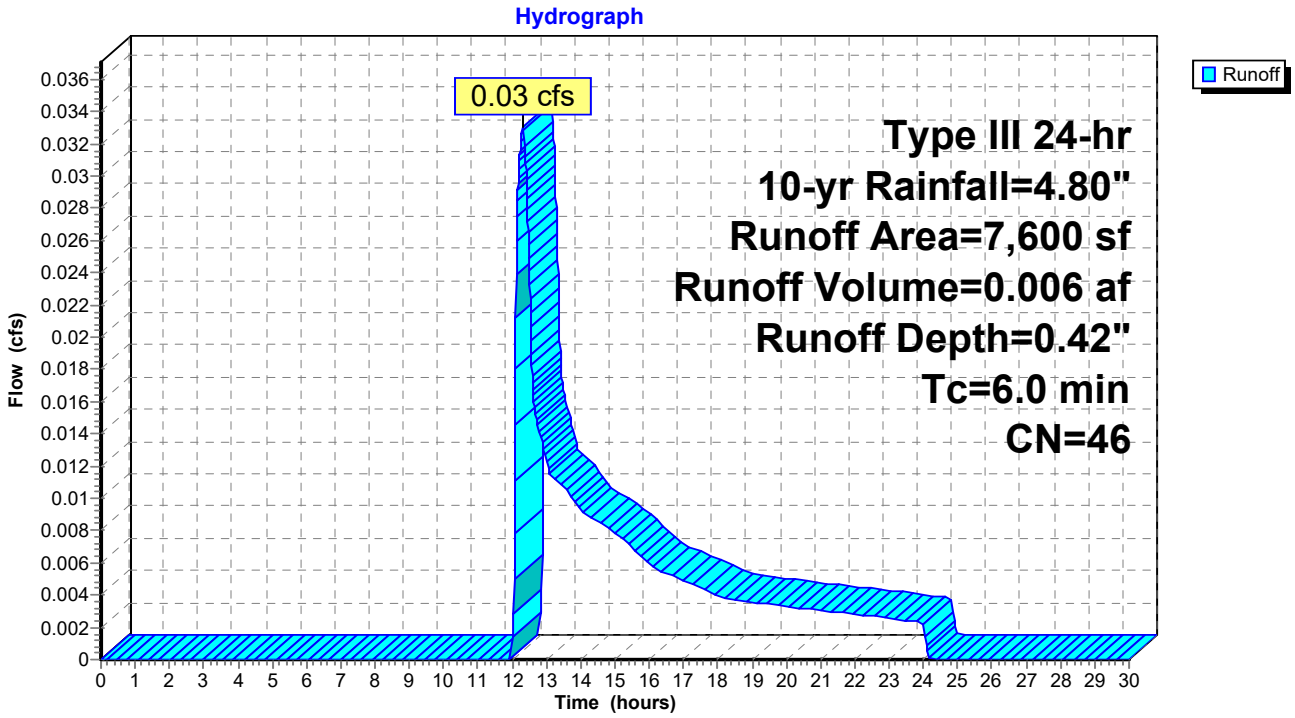
Runoff = 0.03 cfs @ 12.30 hrs, Volume= 0.006 af, Depth= 0.42"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	935	98	Concrete, HSG A
	6,665	39	>75% Grass cover, Good, HSG A
	7,600	46	Weighted Average
	6,665		87.70% Pervious Area
	935		12.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-4: Tributary to Northerly BVW



Summary for Subcatchment S-5: Easterly Rooftops

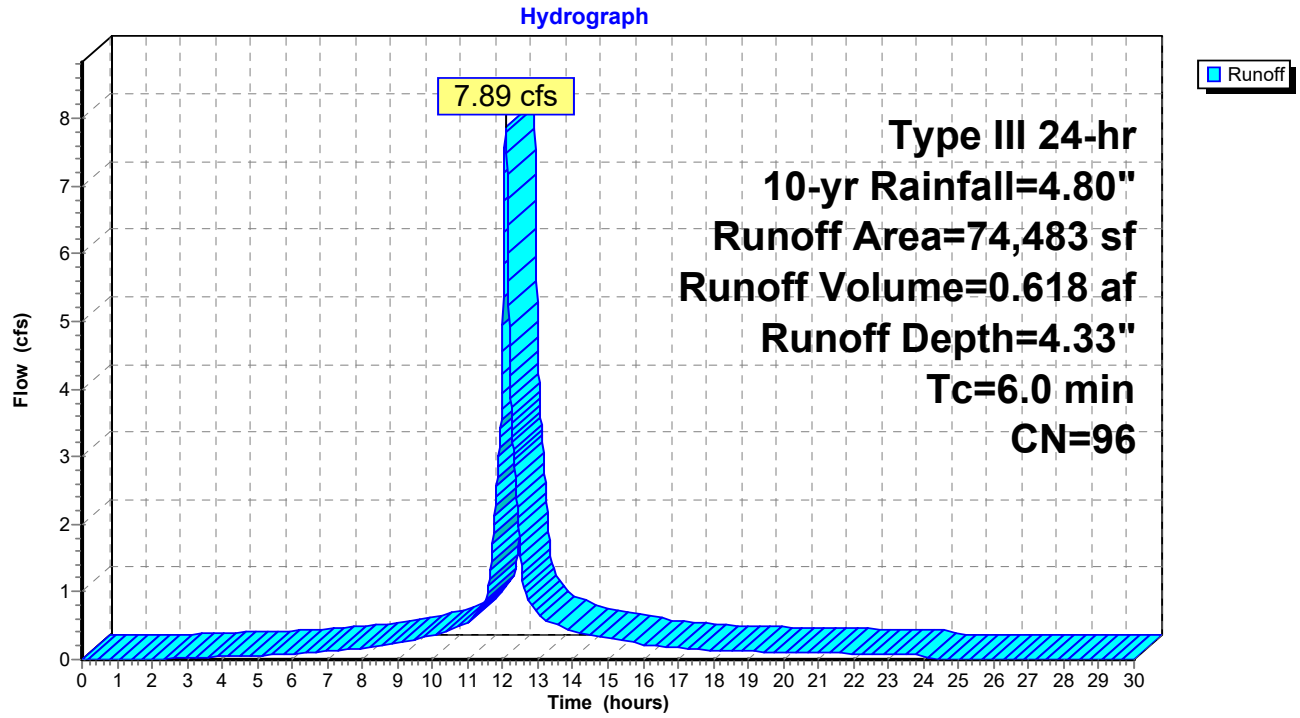
Runoff = 7.89 cfs @ 12.08 hrs, Volume= 0.618 af, Depth= 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	66,660	98	Roof
*	7,823	76	Gravel, HSG A
	74,483	96	Weighted Average
	7,823		10.50% Pervious Area
	66,660		89.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min Tc**

Subcatchment S-5: Easterly Rooftops



Summary for Subcatchment S-6: Tributary to Existing Detention Basin (Easterly)

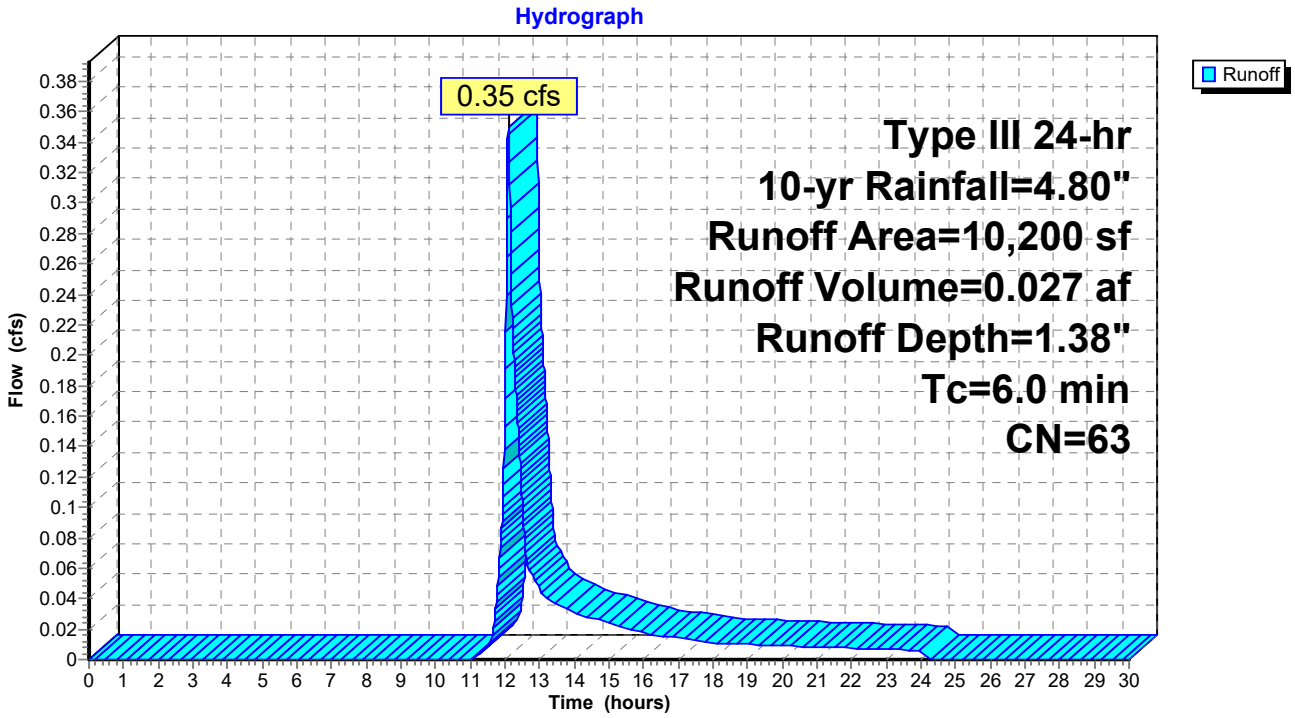
Runoff = 0.35 cfs @ 12.10 hrs, Volume= 0.027 af, Depth= 1.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

Area (sf)	CN	Description
4,150	98	Paved parking, HSG A
6,050	39	>75% Grass cover, Good, HSG A
10,200	63	Weighted Average
6,050		59.31% Pervious Area
4,150		40.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-6: Tributary to Existing Detention Basin (Easterly)



Summary for Subcatchment S-7: Side Bunker Rooftop

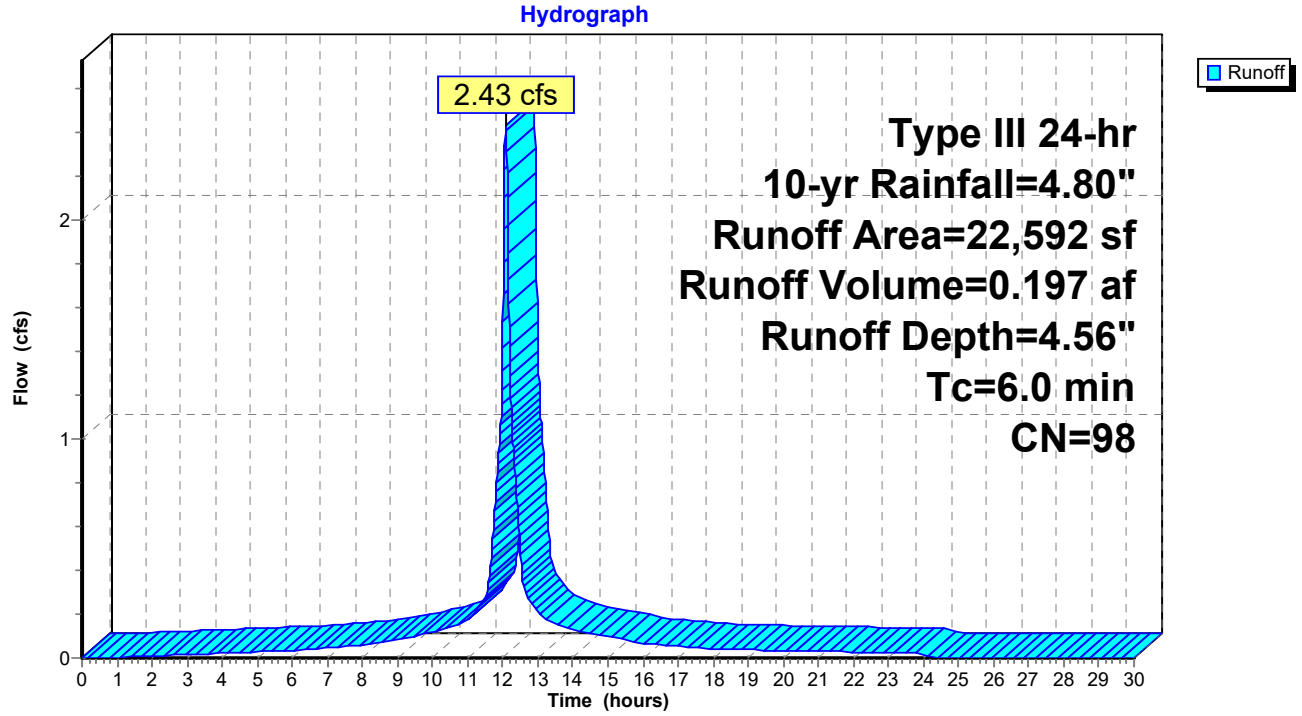
Runoff = 2.43 cfs @ 12.08 hrs, Volume= 0.197 af, Depth= 4.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
*	22,592	98	Roof
	22,592		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min Tc**

Subcatchment S-7: Side Bunker Rooftop



Summary for Subcatchment S-8: Tributary to Southerly BVW

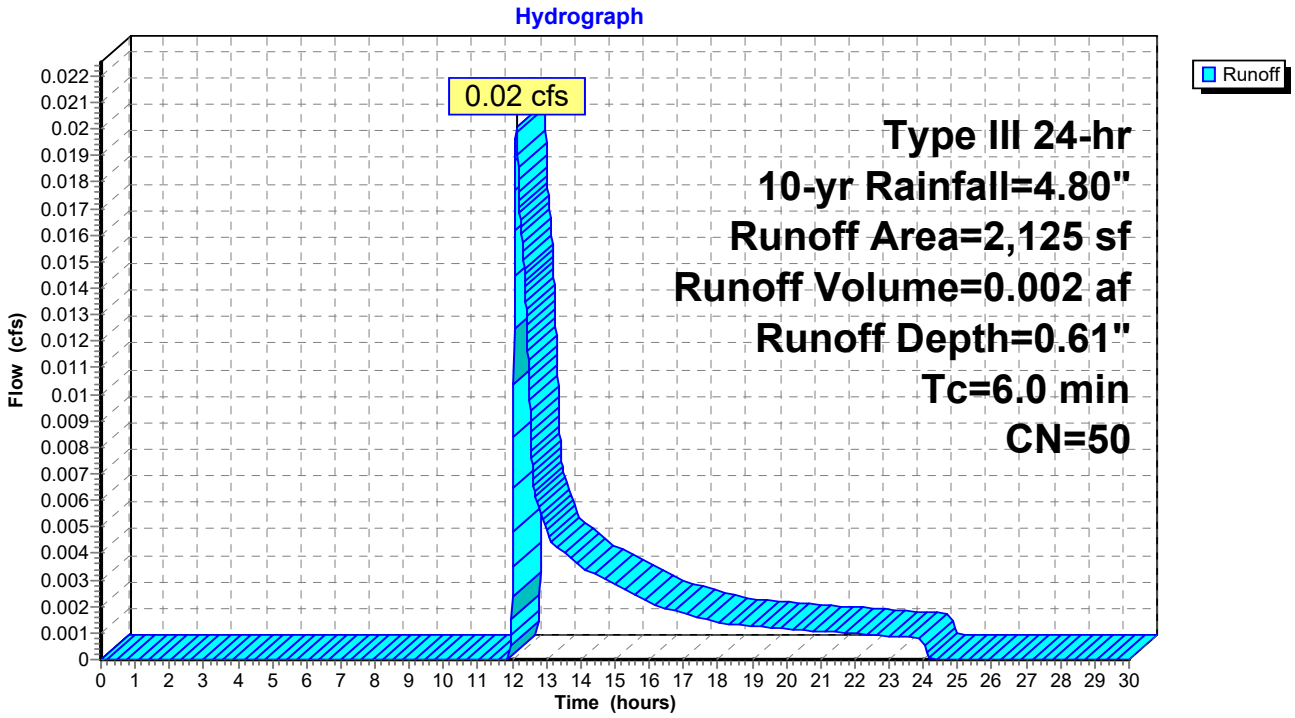
Runoff = 0.02 cfs @ 12.13 hrs, Volume= 0.002 af, Depth= 0.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 10-yr Rainfall=4.80"

	Area (sf)	CN	Description
	1,725	39	>75% Grass cover, Good, HSG A
*	400	98	Walkways, HSG A
	2,125	50	Weighted Average
	1,725		81.18% Pervious Area
	400		18.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-8: Tributary to Southerly BVW



Summary for Pond PSW: Pocket Stormwater Wetland

[92] Warning: Device #1 is above defined storage
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=574)

Inflow Area = 4.426 ac, 71.54% Impervious, Inflow Depth = 3.52" for 10-yr event
Inflow = 17.09 cfs @ 12.09 hrs, Volume= 1.296 af
Outflow = 8.27 cfs @ 12.02 hrs, Volume= 1.298 af, Atten= 52%, Lag= 0.0 min
Discarded = 8.27 cfs @ 12.02 hrs, Volume= 1.298 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 76.20' @ 12.24 hrs Surf.Area= 21,658 sf Storage= 4,367 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 1.9 min (786.4 - 784.5)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	40,272 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

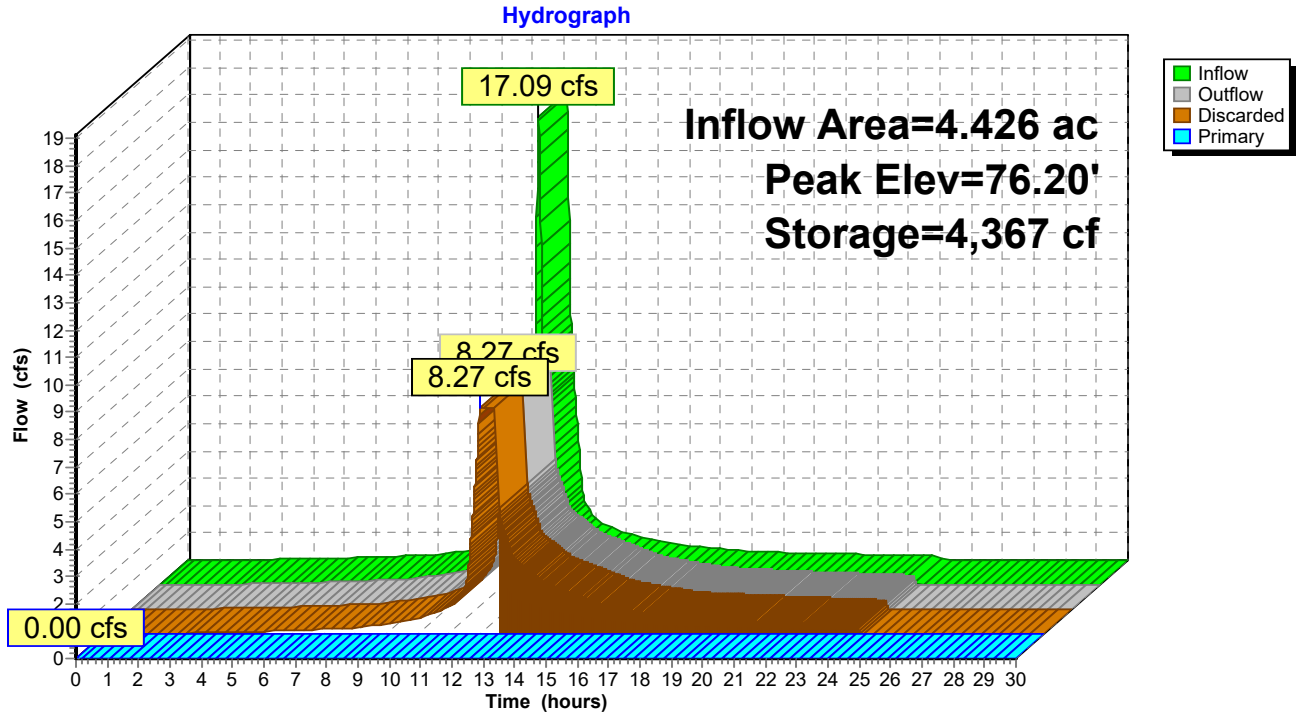
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	21,000	0	0
77.00	24,213	22,607	22,607
77.50	46,450	17,666	40,272

Device	Routing	Invert	Outlet Devices
#1	Primary	77.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	76.00'	**8.27 cfs Exfiltration at all elevations**

Discarded OutFlow Max=8.27 cfs @ 12.02 hrs HW=76.02' (Free Discharge)
↑**2=Exfiltration** (Exfiltration Controls 8.27 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=0.00' (Dynamic Tailwater)
↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond PSW: Pocket Stormwater Wetland

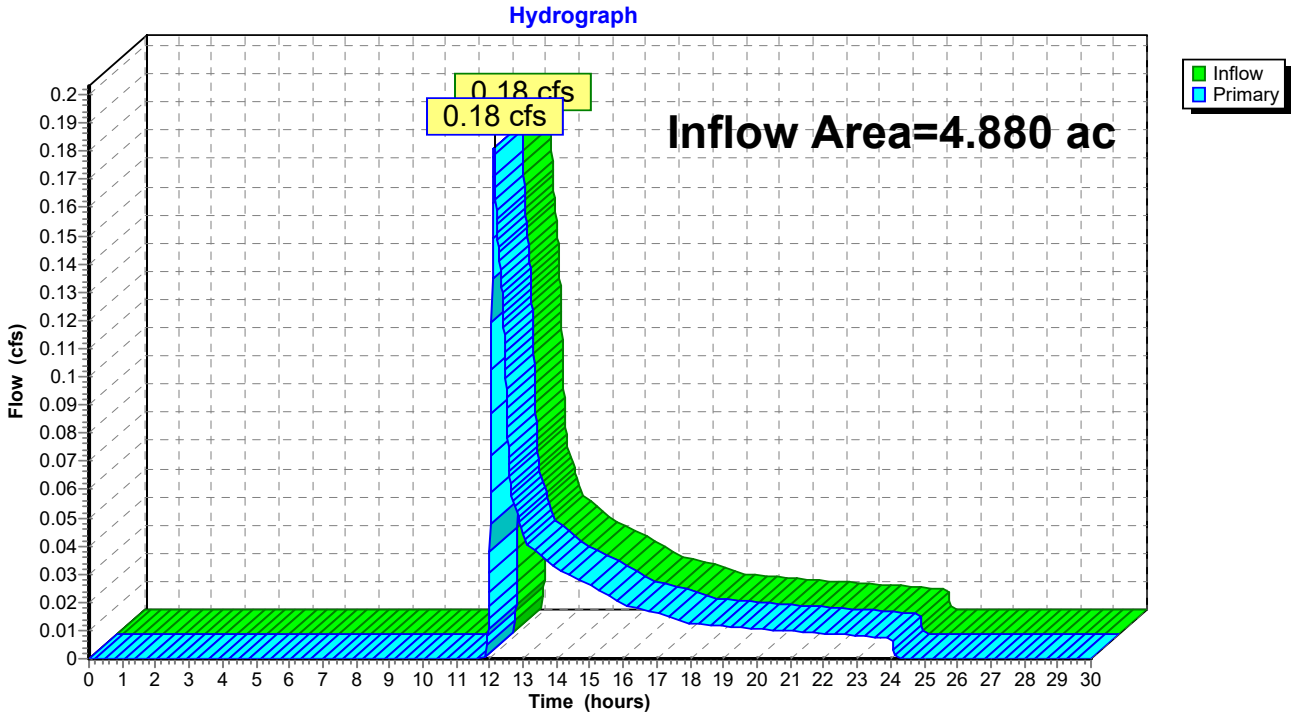


Summary for Link SR-2: Site Runoff to Northerly BVW

Inflow Area = 4.880 ac, 65.31% Impervious, Inflow Depth = 0.06" for 10-yr event
Inflow = 0.18 cfs @ 12.13 hrs, Volume= 0.023 af
Primary = 0.18 cfs @ 12.13 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SR-2: Site Runoff to Northerly BVW



Summary for Subcatchment S-1: Tributary to Existing Detention Basin (Westerly)

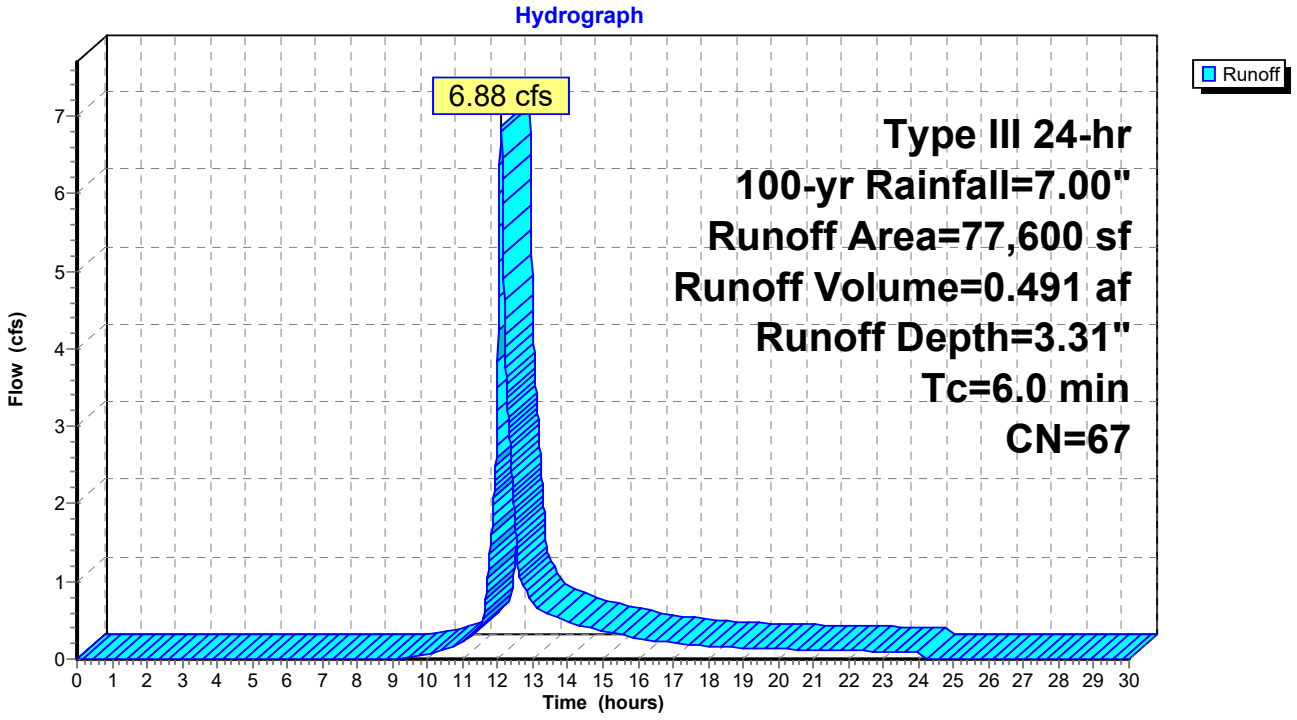
Runoff = 6.88 cfs @ 12.09 hrs, Volume= 0.491 af, Depth= 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

Area (sf)	CN	Description
53,029	76	Gravel roads, HSG A
2,926	98	Paved parking, HSG A
21,645	39	>75% Grass cover, Good, HSG A
77,600	67	Weighted Average
74,674		96.23% Pervious Area
2,926		3.77% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min Tc**

Subcatchment S-1: Tributary to Existing Detention Basin (Westerly)



Summary for Subcatchment S-2: Tributary to Northerly BVW

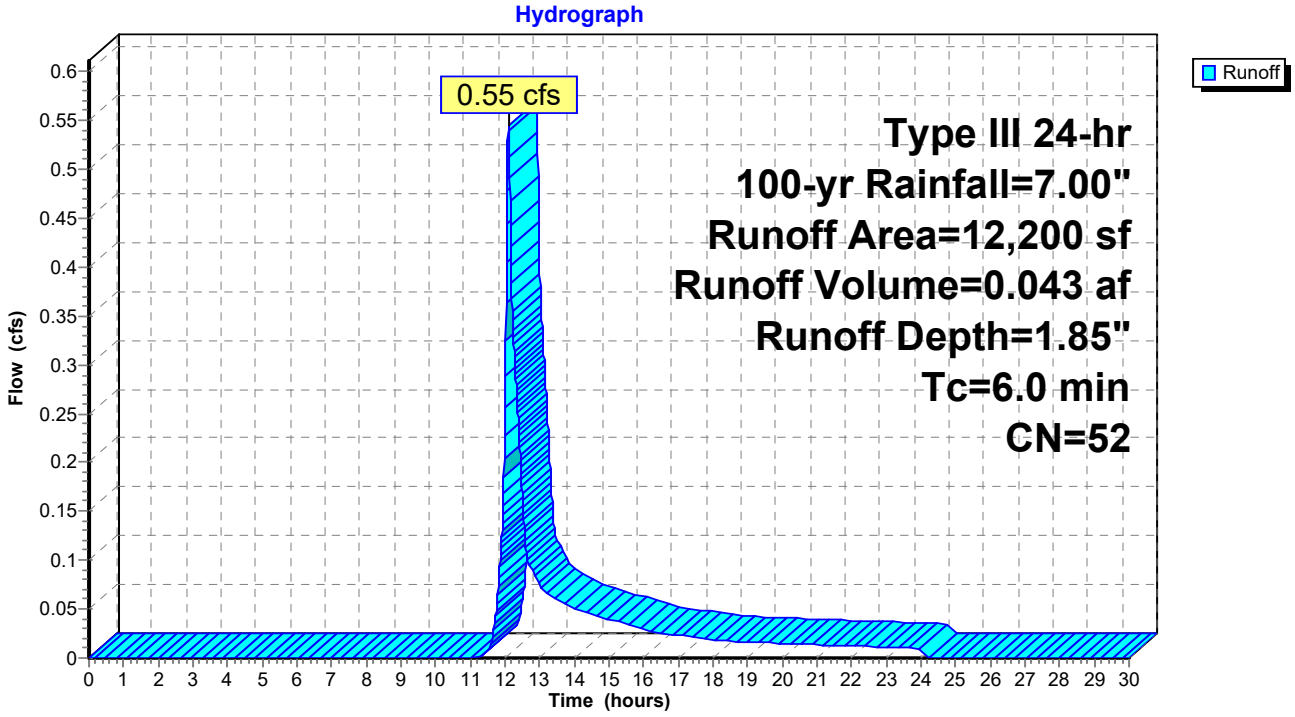
Runoff = 0.55 cfs @ 12.10 hrs, Volume= 0.043 af, Depth= 1.85"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

Area (sf)	CN	Description
4,200	76	Gravel roads, HSG A
8,000	39	>75% Grass cover, Good, HSG A
12,200	52	Weighted Average
12,200		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-2: Tributary to Northerly BVW



Summary for Subcatchment S-3: Tributary to PSW

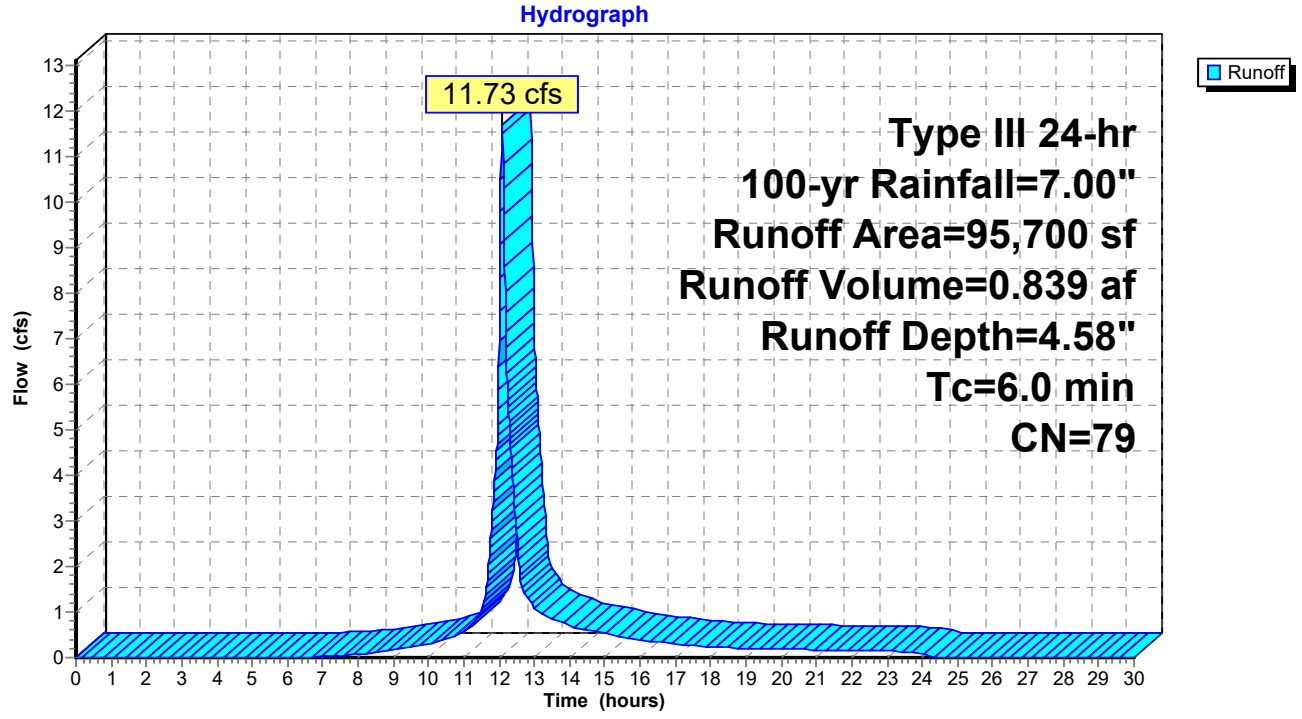
Runoff = 11.73 cfs @ 12.09 hrs, Volume= 0.839 af, Depth= 4.58"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
*	27,530	76	Crushed Stone, HSG A
	16,520	39	>75% Grass cover, Good, HSG A
	3,000	30	Woods, Good, HSG A
	48,650	98	Water Surface, HSG A
	95,700	79	Weighted Average
	47,050		49.16% Pervious Area
	48,650		50.84% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-3: Tributary to PSW



Summary for Subcatchment S-4: Tributary to Northerly BVW

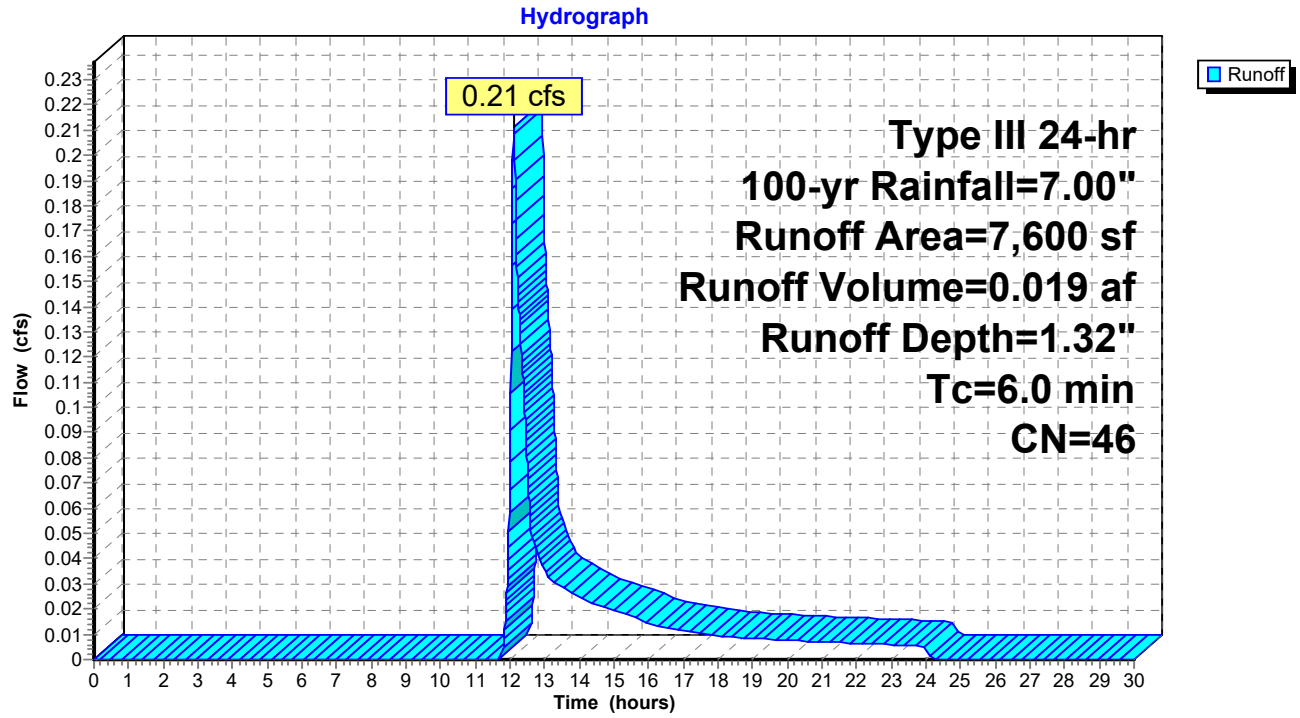
Runoff = 0.21 cfs @ 12.11 hrs, Volume= 0.019 af, Depth= 1.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
*	935	98	Concrete, HSG A
	6,665	39	>75% Grass cover, Good, HSG A
	7,600	46	Weighted Average
	6,665		87.70% Pervious Area
	935		12.30% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-4: Tributary to Northerly BVW



Summary for Subcatchment S-5: Easterly Rooftops

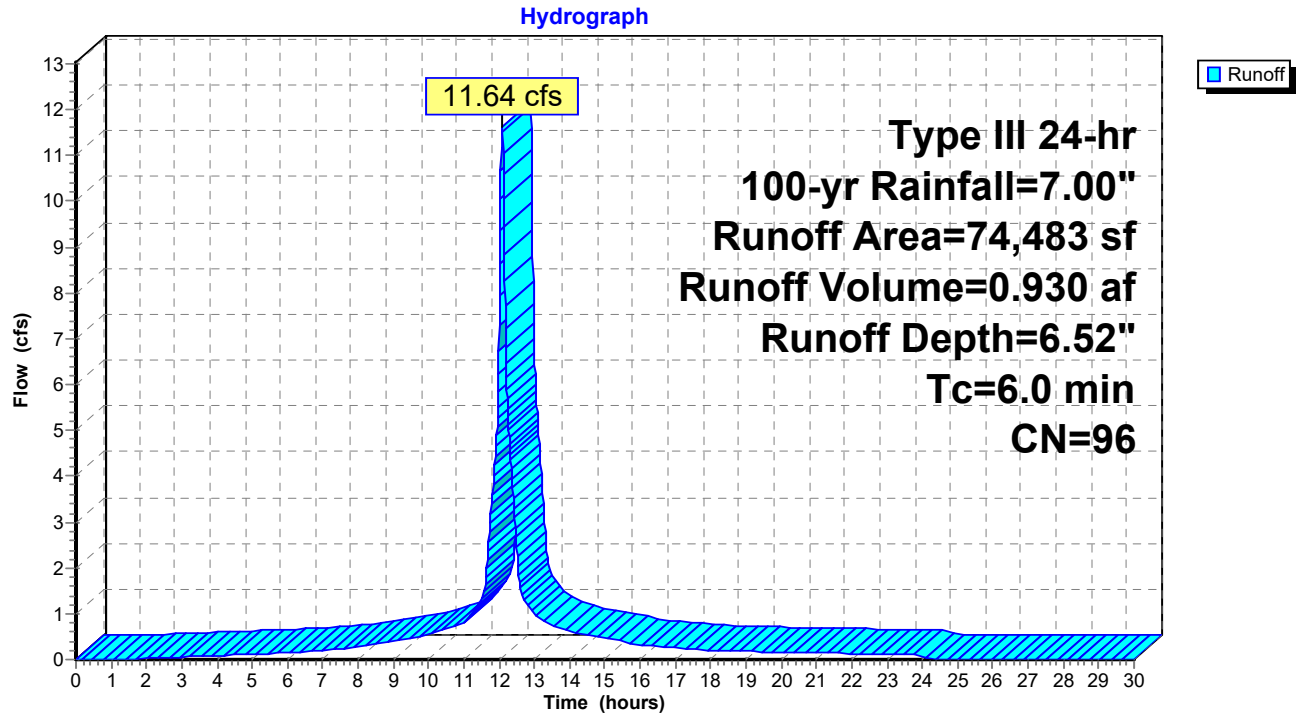
Runoff = 11.64 cfs @ 12.08 hrs, Volume= 0.930 af, Depth= 6.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
*	66,660	98	Roof
*	7,823	76	Gravel, HSG A
	74,483	96	Weighted Average
	7,823		10.50% Pervious Area
	66,660		89.50% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min Tc**

Subcatchment S-5: Easterly Rooftops



Summary for Subcatchment S-6: Tributary to Existing Detention Basin (Easterly)

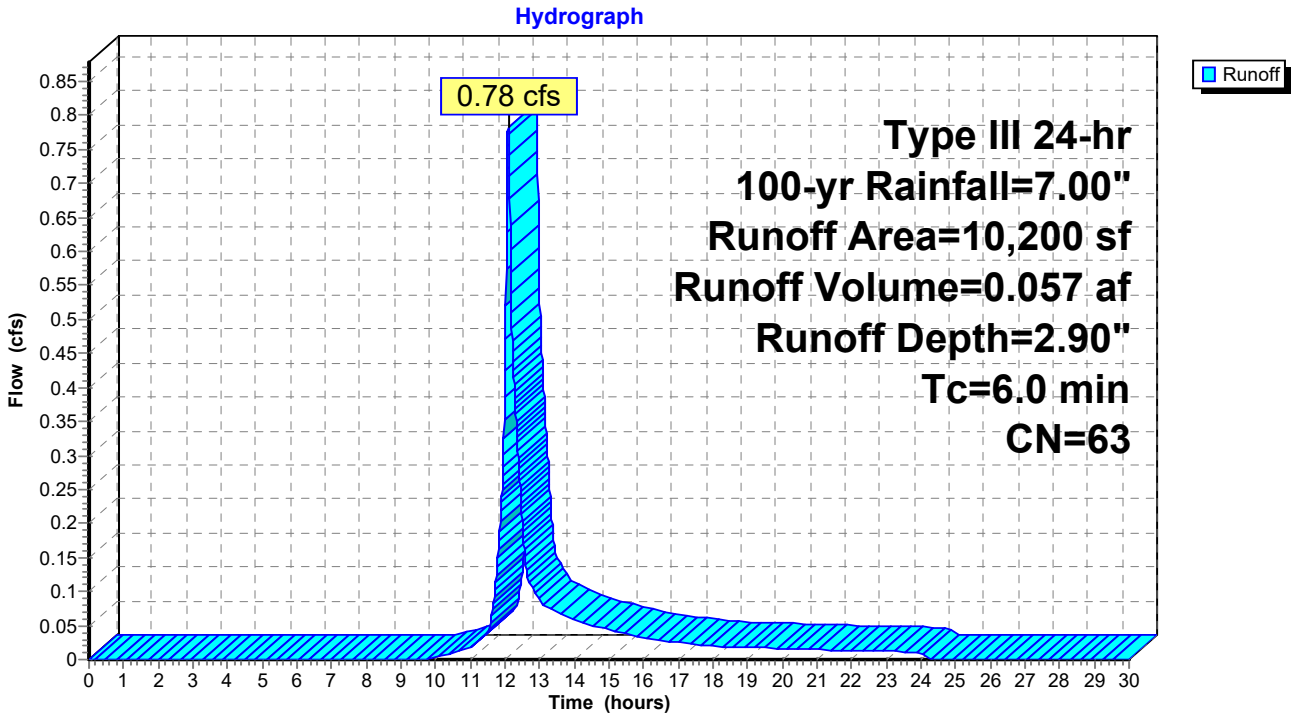
Runoff = 0.78 cfs @ 12.09 hrs, Volume= 0.057 af, Depth= 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

Area (sf)	CN	Description
4,150	98	Paved parking, HSG A
6,050	39	>75% Grass cover, Good, HSG A
10,200	63	Weighted Average
6,050		59.31% Pervious Area
4,150		40.69% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-6: Tributary to Existing Detention Basin (Easterly)



Summary for Subcatchment S-7: Side Bunker Rooftop

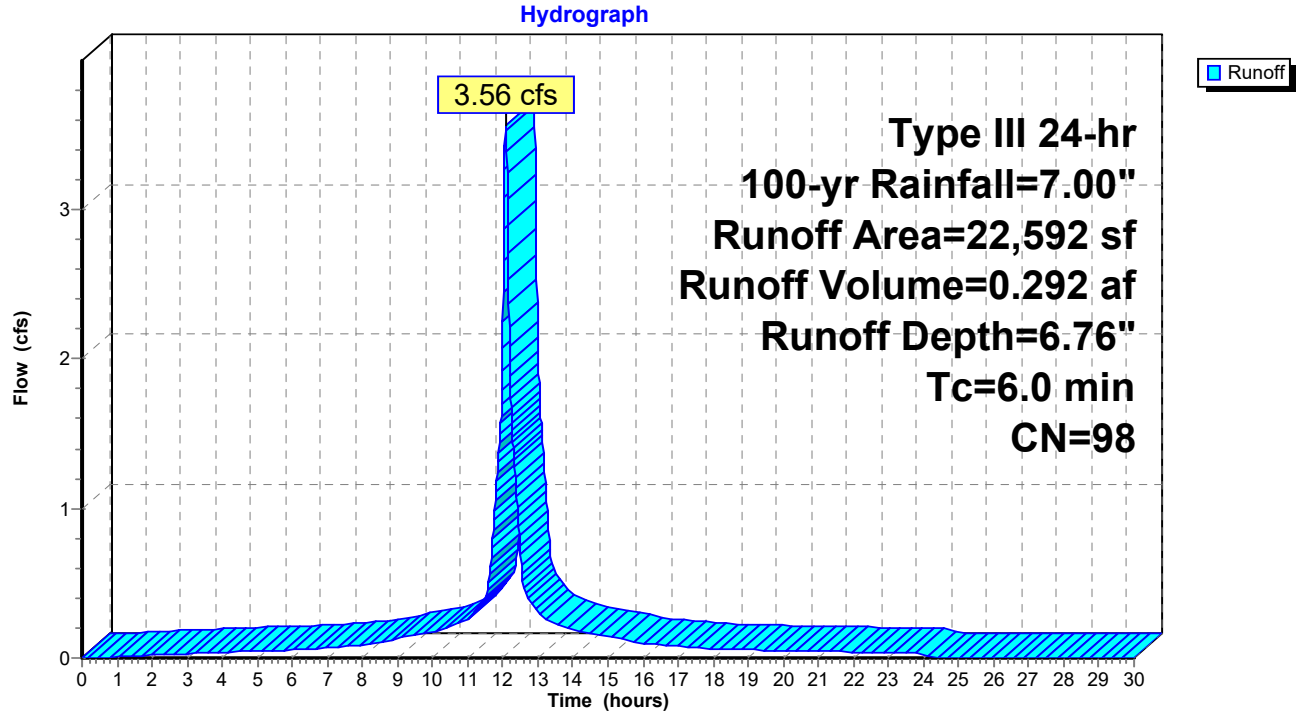
Runoff = 3.56 cfs @ 12.08 hrs, Volume= 0.292 af, Depth= 6.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
*	22,592	98	Roof
	22,592		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min Tc**

Subcatchment S-7: Side Bunker Rooftop



Summary for Subcatchment S-8: Tributary to Southerly BVW

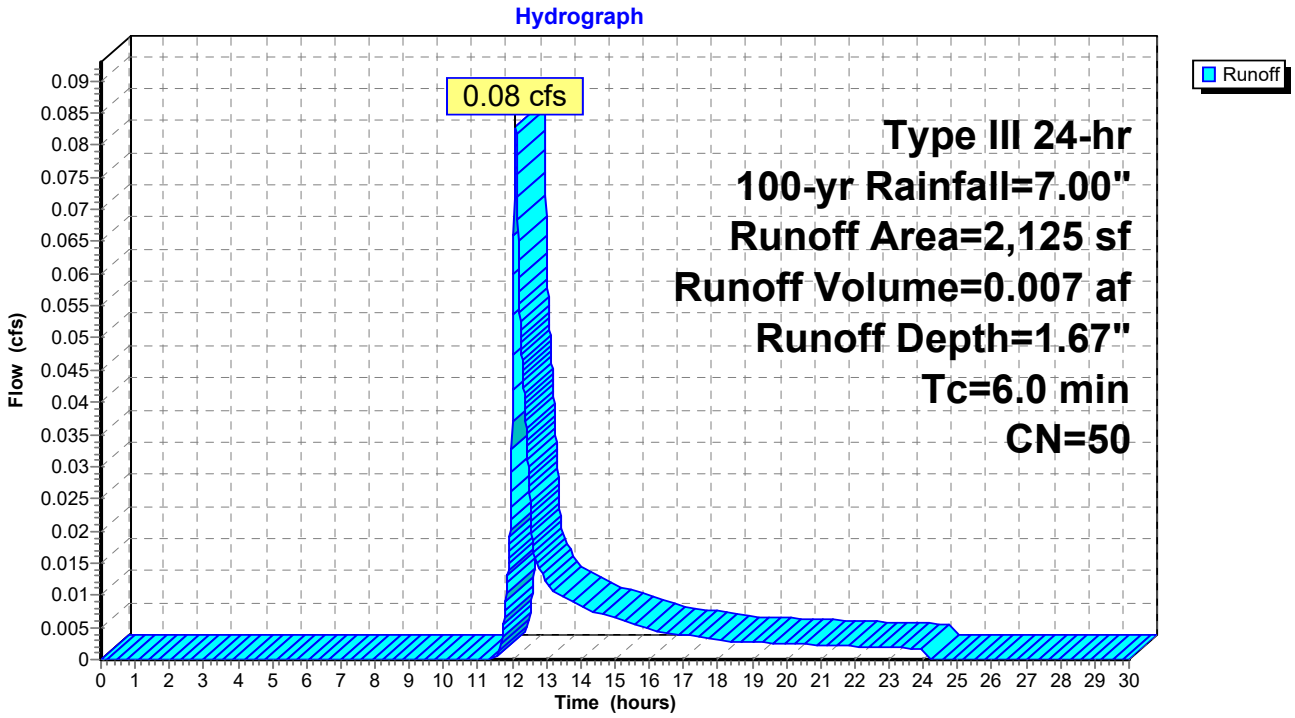
Runoff = 0.08 cfs @ 12.10 hrs, Volume= 0.007 af, Depth= 1.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
Type III 24-hr 100-yr Rainfall=7.00"

	Area (sf)	CN	Description
	1,725	39	>75% Grass cover, Good, HSG A
*	400	98	Walkways, HSG A
	2,125	50	Weighted Average
	1,725		81.18% Pervious Area
	400		18.82% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0					**Direct Entry, Min. Tc**

Subcatchment S-8: Tributary to Southerly BVW



Summary for Pond PSW: Pocket Stormwater Wetland

[92] Warning: Device #1 is above defined storage
[87] Warning: Oscillations may require smaller dt or Finer Routing (severity=546)

Inflow Area = 4.426 ac, 71.54% Impervious, Inflow Depth = 5.59" for 100-yr event
Inflow = 26.92 cfs @ 12.08 hrs, Volume= 2.061 af
Outflow = 8.27 cfs @ 11.91 hrs, Volume= 2.062 af, Atten= 69%, Lag= 0.0 min
Discarded = 8.27 cfs @ 11.91 hrs, Volume= 2.062 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs / 3
Peak Elev= 76.63' @ 12.40 hrs Surf.Area= 23,011 sf Storage= 13,772 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)
Center-of-Mass det. time= 7.1 min (783.0 - 775.8)

Volume	Invert	Avail.Storage	Storage Description
#1	76.00'	40,272 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

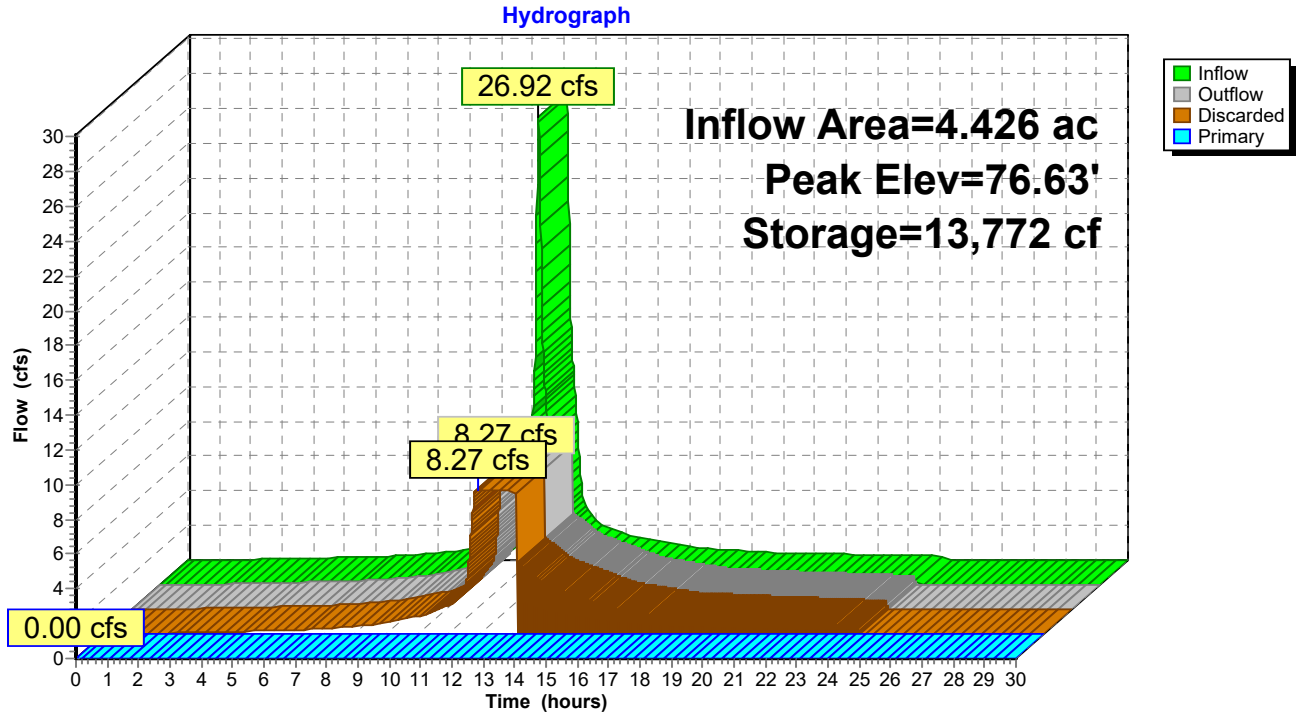
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
76.00	21,000	0	0
77.00	24,213	22,607	22,607
77.50	46,450	17,666	40,272

Device	Routing	Invert	Outlet Devices
#1	Primary	77.50'	**10.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64
#2	Discarded	76.00'	**8.27 cfs Exfiltration at all elevations**

Discarded OutFlow Max=8.27 cfs @ 11.91 hrs HW=76.02' (Free Discharge)
↑—**2=Exfiltration** (Exfiltration Controls 8.27 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=76.00' TW=0.00' (Dynamic Tailwater)
↑—**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond PSW: Pocket Stormwater Wetland

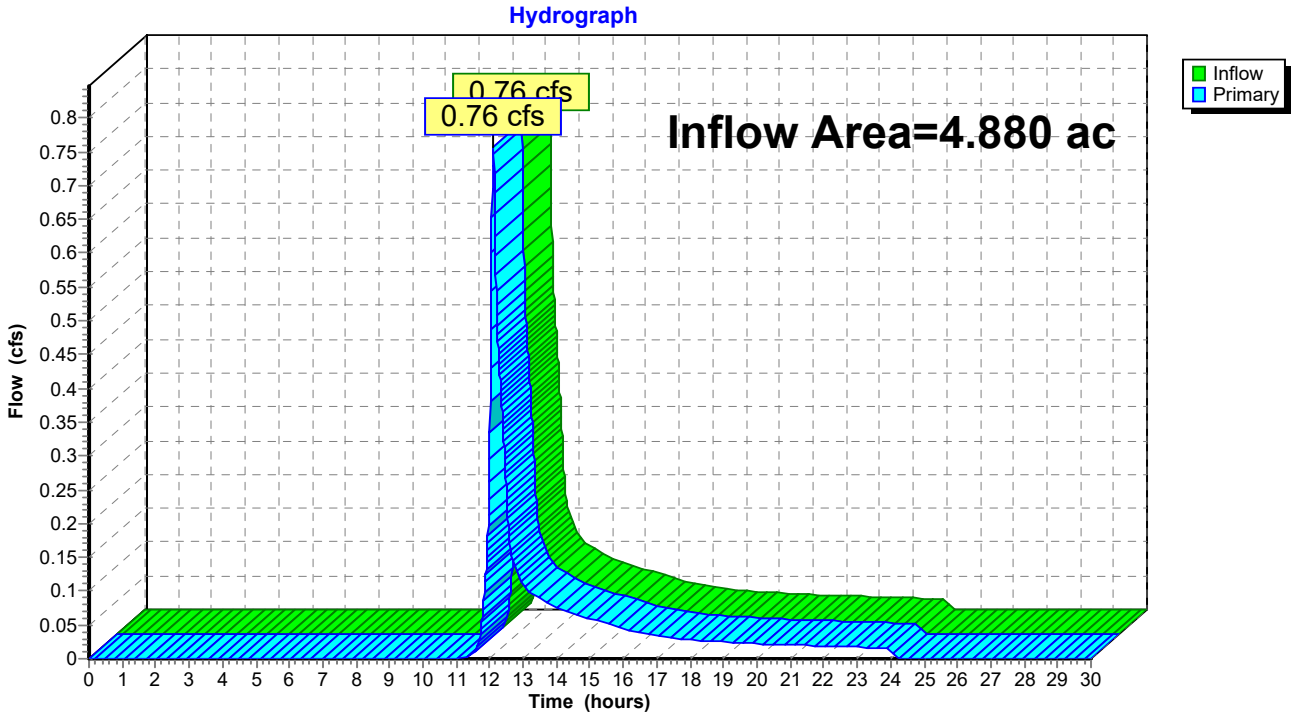


Summary for Link SR-2: Site Runoff to Northerly BVW

Inflow Area = 4.880 ac, 65.31% Impervious, Inflow Depth = 0.15" for 100-yr event
Inflow = 0.76 cfs @ 12.10 hrs, Volume= 0.062 af
Primary = 0.76 cfs @ 12.10 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

Link SR-2: Site Runoff to Northerly BVW



RECHARGE CALCULATIONS (STANDARD #3)

RECHARGE CALCULATIONS
SITE PLAN – 100 DUCHAINE BOULEVARD

REQUIRED:

Recharge Volume Required ("C" Soils) = [Impervious Area x (Recharge Depth/12)]
= [137,902 sf x (0.25"/12)]
= 2,873 c.f. (Required Volume)

Total Required Recharge Volume = 2,873 c.f.

STATIC METHOD:

- Assume the entire Required Recharge Volume is discharged to the infiltration device before infiltration begins.

PROVIDED:

Stormwater Pocket Wetland:

- Cumulative Volume below the lowest outlet (elev. =77.50) = 40,272 c.f.

Total Recharge Volume Provided = 4,0272 c.f.

DRAWDOWN CALCULATIONS (STANDARD #3)

$$Time_{drawdown} = \frac{Rv}{(K)(Bottom\ Area)}$$

Where:
Rv = Required Storage Volume = (F)(impervious area)
F = Target Depth Factor (see Table 2.3.2)
K = Saturated Hydraulic Conductivity For "Static" and "Simple Dynamic" Methods, use Rawls Rate (see Table 2.3.3). For "Dynamic Field" Method, use 50% of the in-situ saturated hydraulic conductivity.

$$Time_{drawdown} = \frac{Rv}{(K)(Bottom\ Area)} = 4.37 \text{ hours}$$

Rv =	*2872.95833*	*C.F.*
F =	*0.25*	*inch*
IA =	*137,902*	*S.F.*
K =	*0.17*	*inch/hr.*
BA =	*46450*	*S.F.*

Where:
Rv = Storage Volume
F = Target Depth Factor (see Table 2.3.2)
K = Saturated Hydraulic Conductivity For "Static" and "Simple Dynamic" Methods, use Rawls Rate (see Table 2.3.3). For "Dynamic Field" Method, use 50% of the in-situ saturated hydraulic conductivity.

$$Time_{drawdown} = \frac{Rv}{(K)(Bottom\ Area)} = 61.20 \text{ hours}$$

Rv =	*40,272*	*C.F.*
F =	*0.25*	*inch*
K =	*0.17*	*inch/hr.*
BA =	*46450*	*S.F.*

WATER QUALITY VOLUME CALCULATIONS (STANDARD #4)

WATER QUALITY VOLUME CALCULATIONS
SITE PLAN – 100 DUCHAINE BOULEVARD

REQUIRED VOLUME:

*Water Quality Volume Required = (1.0"/12) x (Total Impervious Area)
*Water Quality Volume Required = (1.0"/12) x (137,902 sf) = 11,491 c.f.

PROVIDED:

Stormwater Pocket Wetland:

- Cumulative Volume below the lowest outlet (elev. =77.50) = 40,272 c.f.

Total Water Quality Volume Provided = 40,272 c.f.

40,275 c.f. (Provided) >>> 11,491 c.f. (Required)

FOREBAY SIZING CALCULATIONS (STANDARD #4)

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SEDIMENT FOREBAY SIZING CALCULATIONS

CONTRIBUTING AREA TO FOREBAY AT WATER QUALITY BASIN #1

Impervious Area = 137,902 s.f.

REQUIRED VOLUME OF SEDIMENT FOREBAY = VOLUME PRODUCED BY 0.25" RUNOFF/IMPERVIOUS ACRE

= 0.25 "/ACRE x $\frac{1 \text{ ACRE}}{43{,}560 \text{ S.F.}}$ X 137,902 S.F.

= 0.791 INCHES OF RUNOFF

TOTAL VOLUME PRODUCED = 0.791 INCHES X $\frac{1 \text{ FT}}{12 \text{ IN}}$ X 137,902 S.F.

= 9,095 C.F.

PROVIDED VOLUME OF SEDIMENT FOREBAY

BOTTOM FOREBAY EL. =	76.00	AREA =	21,000 S.F.
FOREBAY BERM EL. =	77.00	AREA =	24,213 S.F.

VOLUME PROVIDED = 22,607 C.F.

TSS REMOVAL CALCULATIONS (STANDARD #4)

INSTRUCTIONS:

Version 1, Automated: Mar. 4, 2008

1. In BMP Column, click on Blue Cell to Activate Drop Down Menu
2. Select BMP from Drop Down Menu
3. After BMP is selected, TSS Removal and other Columns are automatically completed.

Location: 100 Duchaine Boulevard

TSS Removal Calculation Worksheet

B BMP[1]	C TSS Removal Rate[1]	D Starting TSS Load*	E Amount Removed (C*D)	F Remaining Load (D-E)
Street Sweeping - 10%	**0.10**	**1.00**	**0.10**	**0.90**
Sediment Forebay	**0.25**	**0.90**	**0.23**	**0.68**
Constructed Stormwater Wetland	**0.80**	**0.68**	**0.54**	**0.14**
	0.00	**0.14**	**0.00**	**0.14**
	0.00	**0.14**	**0.00**	**0.14**

Total TSS Removal = **87%**

Separate Form Needs to be Completed for Each Outlet or BMP Train

Project: 15-500.2

Prepared By: **Christian A. Farland, P.E.**

Date: **3-Jul-19**

*Equals remaining load from previous BMP (E) which enters the BMP

Non-automated TSS Calculation Sheet must be used if Proprietary BMP Proposed

1. From MassDEP Stormwater Handbook Vol. 1

LONG TERM
POLLUTION PREVENTION PLAN
(STANDARD #4)

FARLAND CORP.

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ENGINEERING | SITE WORK | LAND SURVEYING

Long Term Pollution Prevention Plan

Site Plan
100 Duchaine Boulevard
New Bedford, MA 02745

October 2, 2019

Owner:

SMRE 100, LLC
255 State Street, 7th Floor
Boston, MA 02109

Prepared For:

Parallel Products of
New England
100 Duchaine Boulevard
New Bedford, MA 02745

Prepared By:

Christian A. Farland, P.E.
Farland Corp.
Project No. 15-500.2

Long Term Pollution Prevention Plan

This Long-Term Pollution Prevention Plan serves to outline good housekeeping practices in order to prevent pollution of the wetland resource areas and surrounding environment. The Long-Term Operation & Maintenance Plan shall be taken as part of this document as it is a critical part of this plan and shall be adhered to. Proper operation and maintenance records shall be kept on file at all times.

Snow disposal shall be carried out by the owner. The owner should follow DEP guideline #BRPG 01-01 for all snow removal requirements.

The following areas shall be avoided for snow disposal:

- Avoid dumping the snow in the bordering vegetated wetlands.
- Avoid dumping of snow on top of storm drain catch basins or in stormwater drainage swales or ditches. Snow combined with sand and debris may block a storm drainage system, causing localized flooding. A high volume of sand, sediment, and litter released from melting snow also may be quickly transported through the system into surface water.

In order to prevent or minimize the potential for a spill of hazardous substances or oils to contaminate stormwater, a spill control and containment kit, including spill berm, absorbent materials, rags, gloves, and trash containers, shall be readily available. All product manufacturers recommended spill cleanup methods shall be known by maintenance personnel, who shall be trained regarding these procedures and the location of the cleanup procedure information and supplies. In the event of oil, gasoline or other hazardous waste spill on-site, the City of New Bedford Fire Department, DEP and the Conservation Agent shall be notified immediately. For spills of less than ¼ gallon, clean-up with absorbent materials or other appropriate means, unless circumstances dictate that the spill should be treated by a professional emergency response contractor. Spills which exceed the reportable quantities of substances mentioned in 40 CFR 110, 40 CFR 117, or 40 CFG 302 must be immediately reported to the EPA National Response Center (800) 242-8802. Any catch basin that may be affected by the spill shall be covered immediately with a spill protector drain cover or similar product, or a spill berm placed around the perimeter of the opening to prevent any contamination into the drainage system. Proper cleanup and disposal of hazardous wastes must follow all applicable local and state regulations and must be carried out by a qualified contractor.

The maintenance of all individual lawns, gardens and landscaped areas shall be performed by the owner. The site is not located within or near an Area of Critical Environmental Concern. However, good housekeeping practices should include proper storage and minimal use of cleaning products and fertilizers.

LONG TERM
OPERATION & MAINTENANCE PLAN
(STANDARD #9)

FARLAND CORP.

ENGINEERING A BETTER TOMORROW

ENGINEERING | SITE WORK | LAND SURVEYING

Long Term Operation and Maintenance Plan

Site Plan
100 Duchaine Boulevard
New Bedford, MA 02745

October 2, 2019

Owner:

SMRE 100, LLC
255 State Street, 7th Floor
Boston, MA 02109

Prepared For:

Parallel Products of
New England
100 Duchaine Boulevard
New Bedford, MA 02745

Prepared By:

Christian A. Farland, P.E.
Farland Corp.
Project No. 15-500.2

Street Sweeping

The parking lot will be inspected and maintained by the owner.

It shall be the responsibility of the owner to:

Inspections:

Inspect sediment deposit accumulations on the parking lots quarterly.

Maintenance:

Sweep parking lots twice annually. One of the bi-annual sweepings is to be scheduled during the early spring months to clear sediment, sand and debris left behind following the winter accumulation.

Dispose of the accumulated sediment and hydrocarbons in accordance with local, state, and federal guidelines and regulations.

Stone/ Rip Rap Areas

The owner of the rip rap areas shall be the owner.

The rip rap areas are to be inspected and maintained by the owner.

It shall be the responsibility of the owner to:

Inspections:

Inspect the rip rapped areas quarterly.

Maintenance:

Remove accumulated sediment, trash, leaves and debris at least annually. Check for signs of erosion and repair as need. Replace any damaged areas with new rip rap of the same size.

Dispose of the accumulated sediment and hydrocarbons in accordance with local, state, and federal guidelines and regulations.

Infiltration Basin

The owner of the basins shall be the owner.

The basins are to be inspected and maintained by the owner.

It shall be the responsibility of the owner to:

Inspections:

Inspect to basins quarterly and after major storms (>3.2” of rain in 24 hours)

Inspect fore-bay quarterly.

Inspect basins for settlement, subsidence, erosion, cracking or tree growth on the embankment, condition of stone; sediment accumulation around the outlet or within the basin; and erosion within the basin and banks.

Inspect outlet structures and/ or outlet pipes for evidence of clogging, sediment deposits or signs of erosion around the structure/ pipe.

Ensure that the basins are operating as designed. If inspection shows that a basin fails to fully drain within 72 hours following a storm event, then the responsible party shall retain a Registered Professional Civil Engineer licensed in the state of Massachusetts to assess the reason for infiltration/ detention failure and recommend corrective action for restoring the intended functions. For a wet pond, fully drained means that the ponding level in the basin is at or below the lowest elevation of the outlet structure. For an infiltration basin, fully drained means that there is no ponding occurring in the infiltration basin.

Inspect emergency spillways for signs of erosion.

Maintenance:

When mowing the basin and forebay, mow the buffer area, side slopes, and basin bottom. Remove grass clippings and accumulated debris. Mow three times per year in May, July and September.

Remove accumulated trash, leaves, debris in basin and forebay every month between April and November of each year. Inspect areas in February of each year, if possible, to determine whether the aforementioned services are required.

If the infiltration basin is ponding in areas or not infiltrating as designed, use deep tilling to break up clogged surfaces, and re-vegetate immediately.

Replace stone in forebay and at all pipe ends once every five (5) years or when sediment depth is excessive.

Do not store snow in basin area.

Remove sediment from the basin and forebay as necessary and at least once every 5 years but wait until the floor of the basin is thoroughly dry. After removing sediment, replace any vegetation damaged during clean-out by either re-seeding or re-sodding.

Dispose of the accumulated sediment and hydrocarbons in accordance with local, state, and federal guidelines and regulations.

Drain Lines

After construction, the drain lines shall be inspected after every major storm for the first few months to ensure proper functions. Presence of accumulated sand and silt would indicate more frequent maintenance of the pre-treatment devices is required. Thereafter, the drain lines shall be inspected at least once per year. Accumulated silt shall be removed by a vactor truck or other method preferred.

100 Duchaine Boulevard
Operation & Maintenance Log Form

STRUCTURAL SEDIMENT CONTROL BMPS

BMP	DATE INSPECTED	SEDIMENT BUILDUP (YES/NO)	IF SEDIMENT BUILDUP, DATE CLEANED
Infiltration Basin #1			
RipRap to S.P.W.			
Rail Culvert #1			
Rail Culvert #2			
OTHER:			

Maintenance Notes:

_____
_____
_____

TO BE PERFORMED BY:_____ON OR BEFORE:_____

ILLICIT DISCHARGE STATEMENT (STANDARD #10)

October 2, 2019

Conservation Commission
New Bedford City Hall
133 William Street
New Bedford, MA 02740

RE: Site Plan – 100 Duchaine Boulevard
Illicit Discharge Compliance Statement (IDCS)

To Whom it Concerns,

As required, we are submitting this Illicit Discharge Compliance Statement verifying that no illicit discharges exist on the site or are proposed. We have included in the pollution prevention plan measures to prevent illicit discharges to the stormwater management system, including wastewater discharges and discharges of stormwater contaminated by contact with process wastes, raw materials, toxic pollutants, hazardous substances, oil, or grease.

The site plan identifies the location of any systems for conveying wastewater and/or groundwater on the site and show that there are no connections between the stormwater and wastewater management systems and the location of any measures taken to prevent the entry of illicit discharges into the stormwater management system.

Please feel free to contact us if you should need any further information.

Very Truly Yours,

FARLAND CORP., INC.

Christian A. Farland

Christian A. Farland , P.E., LEED AP
Principal Engineer and President

PIPE CAPACITY CALCULATIONS

FARLAND CORP.

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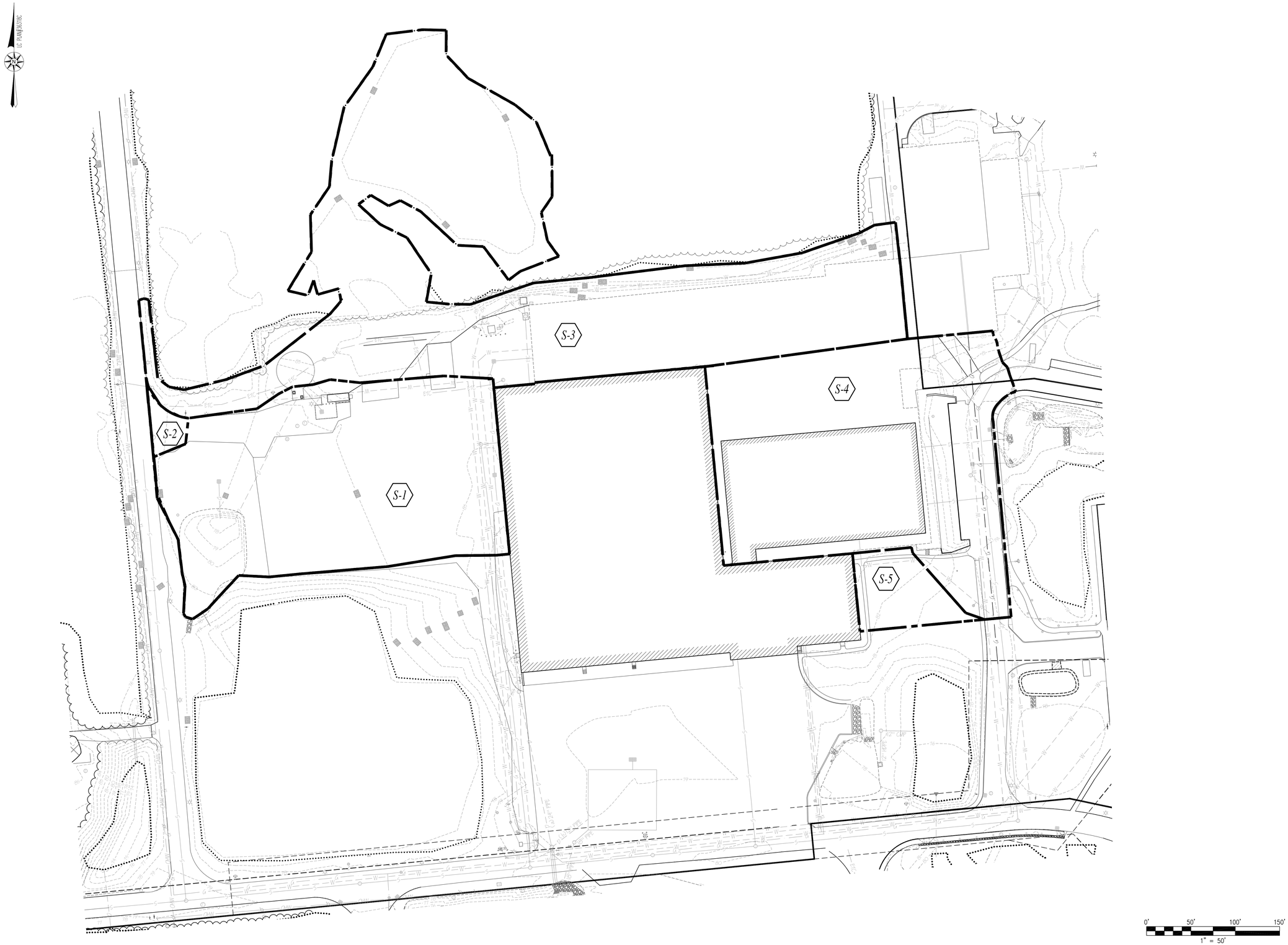
PIPE CAPACITY CALCULATIONS

10 YEAR STORM EVENT

Pipe Description				Draiange Area (Acres)			Comp. C-Value	CA	Time of Concentration (min)			I (in./hr)	Qc=CIA (cfs)
Length #	DA #	From	To	Total	Imperv. C=0.90	Pervious C=0.30			Inlet	Drain	Total		
DRAINAGE PIPES													
1		SBRoof	DMH-1	0.837	0.837	0.000	0.90	0.753	6	0.94	6.94	4.8	3.62
2		Groof	DMH-2	0.860	0.860	0.000	0.90	0.774	6	0.87	6.87	4.8	3.72
3		DMH-1	DMH-2	0.837	0.837	0.000	0.90	0.753	6	0.70	6.70	4.8	3.62
4		DMH-2	RipRap	1.697	1.697	0.000	0.90	1.527	6	0.81	6.81	4.8	7.33

Length #	Pipe Diameter (in)	Pipe Material (n-value)	Slope (ft./ft.)	Length (ft)	Full Flow			Current Flow				Pipe capacity
					Vf (ft/sec)	Qf (cfs)	Vc (ft/sec)	Qc (cfs)	Qc/Qf	d/D (in.)	Flow Depth in pipe (in)	Flow capacity check
DRAINAGE PIPES												
1	12	0.013	0.0100	303	4.54	3.56	5.36	3.62	1.01	0.8	9.8	**OK!**
2	12	0.013	0.0100	279	4.54	3.56	5.35	3.72	1.04	0.9	10.2	**OK!**
3	12	0.013	0.0100	225	4.54	3.56	5.36	3.62	1.01	0.8	9.8	**OK!**
4	18	0.013	0.0100	322	5.94	10.50	6.59	7.33	0.70	0.6	10.9	**OK!**

WATERSHED PLANS



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REVISIONS

CHRISTIAN ALBERT FARLAND
No. 47544
CIVIL
COMMONWEALTH OF MASSACHUSETTS
REGISTERED PROFESSIONAL ENGINEER

FARLAND CORP.
www.FarlandCorp.com
401 COUNTY STREET
NEW BEDFORD, MA 02740
P.508.717.3479
OFFICES IN:
- TAUNTON
- MARLBOROUGH
- WARWICK, RI

DRAWN BY: MJW
DESIGNED BY: CAF
CHECKED BY: CAF

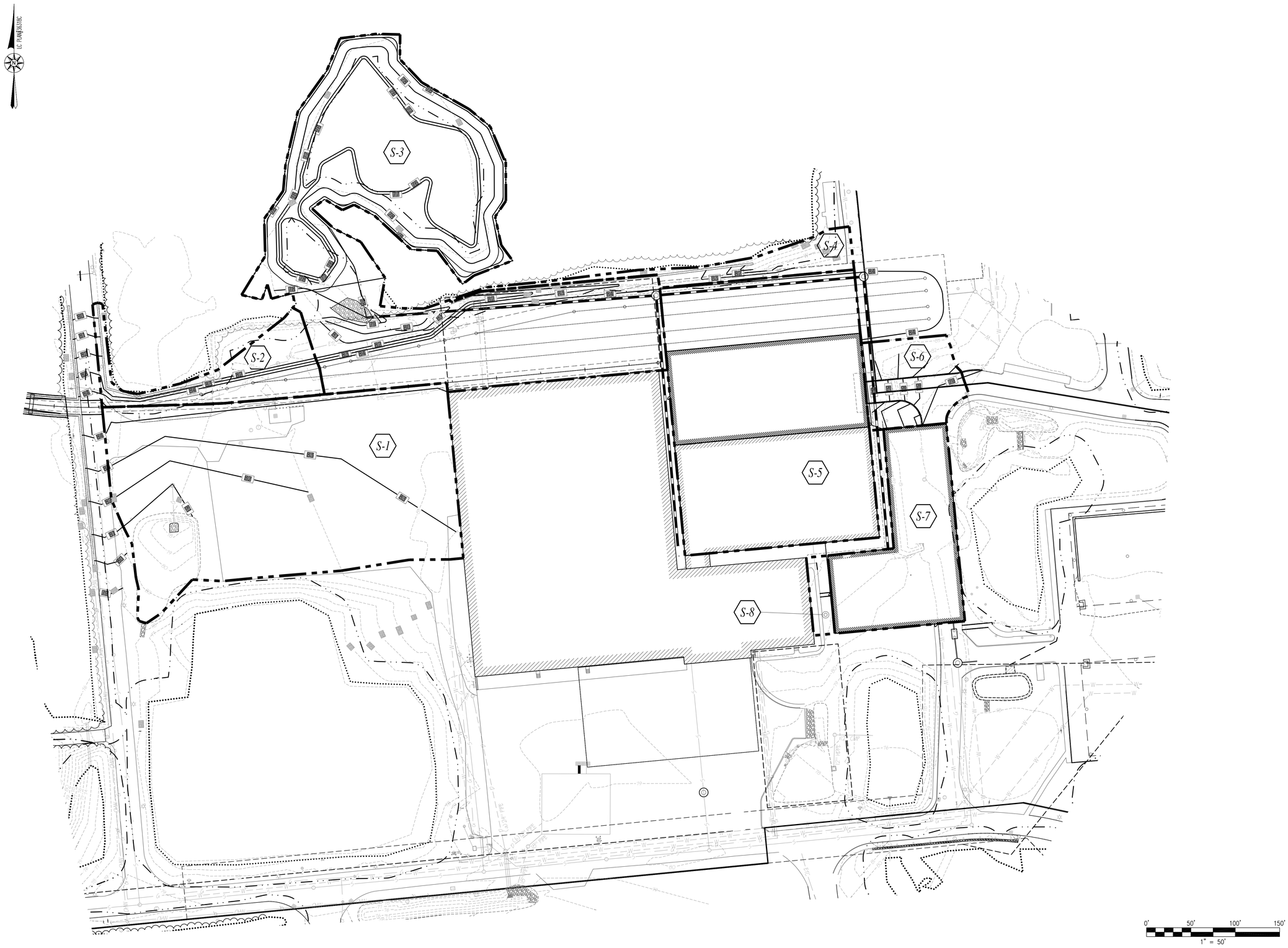
SITE PLAN
100 DUCHAINE BOULEVARD
ASSESSORS MAP 134 LOT 5
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

JULY 3, 2019
SCALE: 1"=50'
JOB NO. 15-500.2
LATEST REVISION:

PRE-SUBCATCHMENT

SHEET 5a OF 18



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DRAWN BY:	MJW
DESIGNED BY:	CAF
CHECKED BY:	CAF

SITE PLAN
100 DUCHAINE BOULEVARD
ASSESSORS MAP 134 LOT 5
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

JULY 3, 2019	
SCALE:	1"=50'
JOB NO. 15-500.2	
LATEST REVISION:	

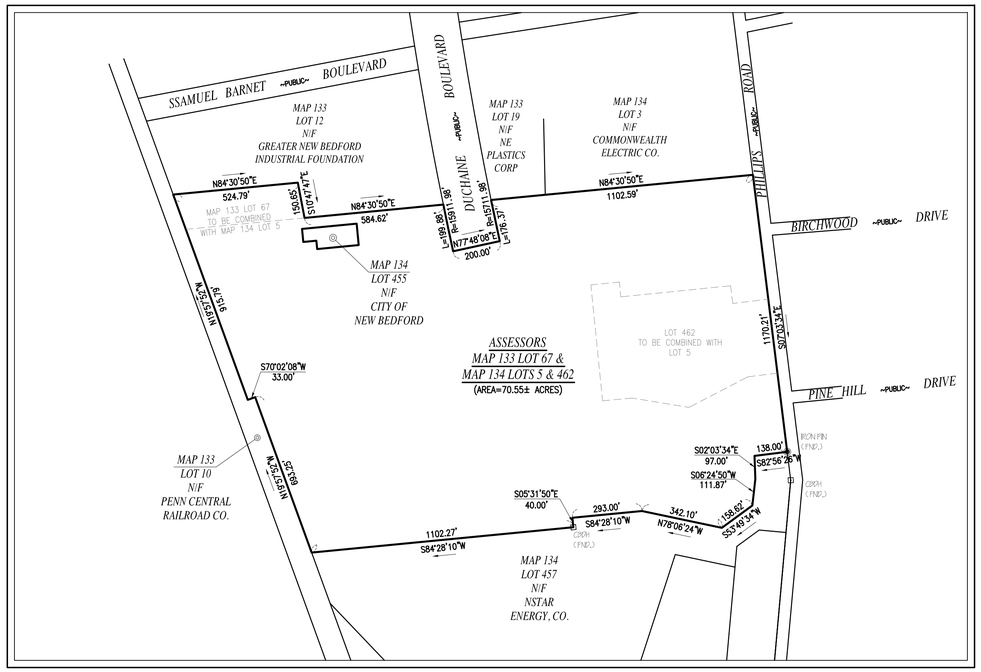
POST-SUBCATCHMENT

SHEET 5b OF 18

SITE PLAN

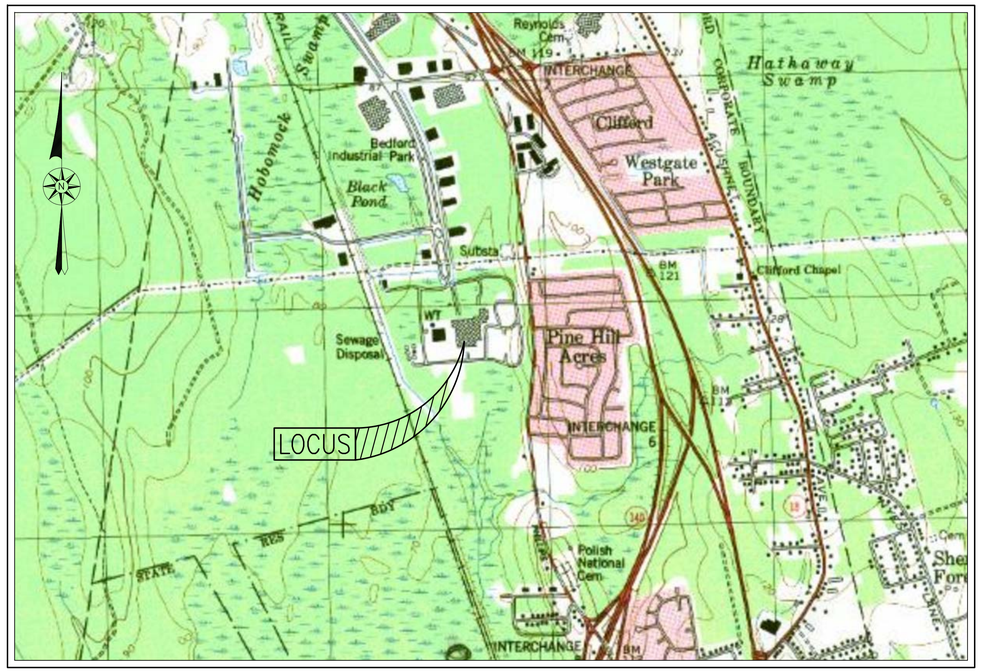
SITE PLAN

100 DUCHAINE BOULEVARD
ASSESSORS MAP 133 LOT 67 AND MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS



OVERALL SITE MAP

SCALE: 1"=300'



AREA MAP

SCALE: 1"=1,000'±

RECORD OWNER:
REGISTERED:
ASSESSORS MAP 134 LOT 5
SMRE 100, LLC
255 STATE STREET, 7TH FLOOR
BOSTON, MA 02109
L.C. CERTIFICATE No. 24201
LOT 8 ON L.C. PLAN 36318D

ASSESSORS MAP 134 LOT 462
SMRE SUBLOT 20 LLC
401 INDUSTRY ROAD – SUITE 100
LOUISVILLE, KY 40208
L.C. CERTIFICATE No. 24417
LOT 7 ON L.C. PLAN 36318D

UNREGISTERED:
ASSESSORS MAP 133 LOT 67
SMRE 100, LLC
50 DUCHAINE BOULEVARD
NEW BEDFORD, MA 02745
DEED BOOK 12378 PAGE 314
PARCEL B ON PLAN BOOK 177 PAGE 55

– ZONING DATA –

DISTRICT: IC (INDUSTRIAL C)

DESCRIPTION	REQUIRED	EXISTING	PROVIDED
LOT AREA	0 S.F.	61.96± AC	70.55± AC
LOT FRONTAGE	0 FT	576.17 FT	576.17 FT
FRONT SETBACK	25 FT	642.5± FT	582.0± FT
SIDE SETBACK	25 FT	758.9± FT	674.9± FT
REAR SETBACK	25 FT	192.5± FT	86.8± FT
BUILDING HEIGHT (MAXIMUM)	100 FT	<100 FT	<100 FT
BUILDING COVERAGE (MAXIMUM)	50 %	4.0± %	6.8± %
LOT COVERAGE (MAXIMUM PER)	80 %	<50 %	<50 %

– INDEX –

SHEET	DESCRIPTION
1	COVER
2–4	EXISTING CONDITIONS
5–6	EROSION CONTROL & DEMOLITION
7–9	LAYOUT
10	TRAFFIC CIRCULATION
11–12	UTILITIES
13–14	GRADING & DRAINAGE
15–17	LIGHTING & LANDSCAPING
18	COLOR PRESENTATION
19	NOTES & LEGEND
20–24	DETAILS
25	ARCHITECTURAL

– PARKING & LOADING REQUIREMENTS –

PRINCIPAL USE: RECYCLING FACILITY

(FOR PARKING REGULATION PURPOSES: BUSINESS ENGAGED IN WAREHOUSING & DISTRIBUTION)

REQUIREMENT	REQURIED	PROVIDED
1 SPACE PER 1,500 S.F. OF G.F.A. UP TO 15,000 S.F. THEREAFTER, ONE ADDITIONAL SPACE FOR EACH 5,000 S.F. OR PORTION THEREOF IN EXCESS OF 15,000 S.F., PLUS ONE SPACE FOR EACH VEHICLE UTILIZED IN THE BUSINESS.	47 STANDARD SPACES PLUS FLEET VEHICLES	189 TOTAL SPACES
WHEN 26–50 TOTAL PARKING SPACES ARE REQUIRED, 2 MUST BE ACCESSIBLE SPACES. ONE IN EVERY EIGHT ACCESSIBLE SPACES, BUT NOT LESS THAN ONE, SHALL BE VAN ACCESSIBLE	2 TOTAL SPACES (2 VAN)	2 TOTAL SPACES (2 VAN)
TWO (2) LOADING SPACES FOR EACH BUILDING CONTAINING 10,000 S.F. OF GROSS FLOOR AREA. THEREAFTER, ONE (1) ADDITIONAL LOADING SPACE SHALL BE REQUIRED FOR EACH FIFTEEN (15) FEET OF DOCK, PLATFORM, OR OPENING IN THE BUILDING WHERE THE LOADING OR UNLOADING OF COMMODITIES IS INTENDED TO OCCUR.	18 LOADING SPACES	20 LOADING SPACES

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2	8/8/19	PLANNING BOARD COMMENTS
3	9/13/19	CONSERVATION COMMENTS

CHRISTIAN ALBERT FARLAND No. 47544 CIVIL REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

FARLAND CORP.
www.FarlandCorp.com
401 COUNTY STREET
NEW BEDFORD, MA 02740
P.508.717.3479
OFFICES IN:
●TAUNTON
●MARLBOROUGH
●WARWICK, RI

DRAWN BY: MJW
DESIGNED BY: CAF
CHECKED BY: CAF

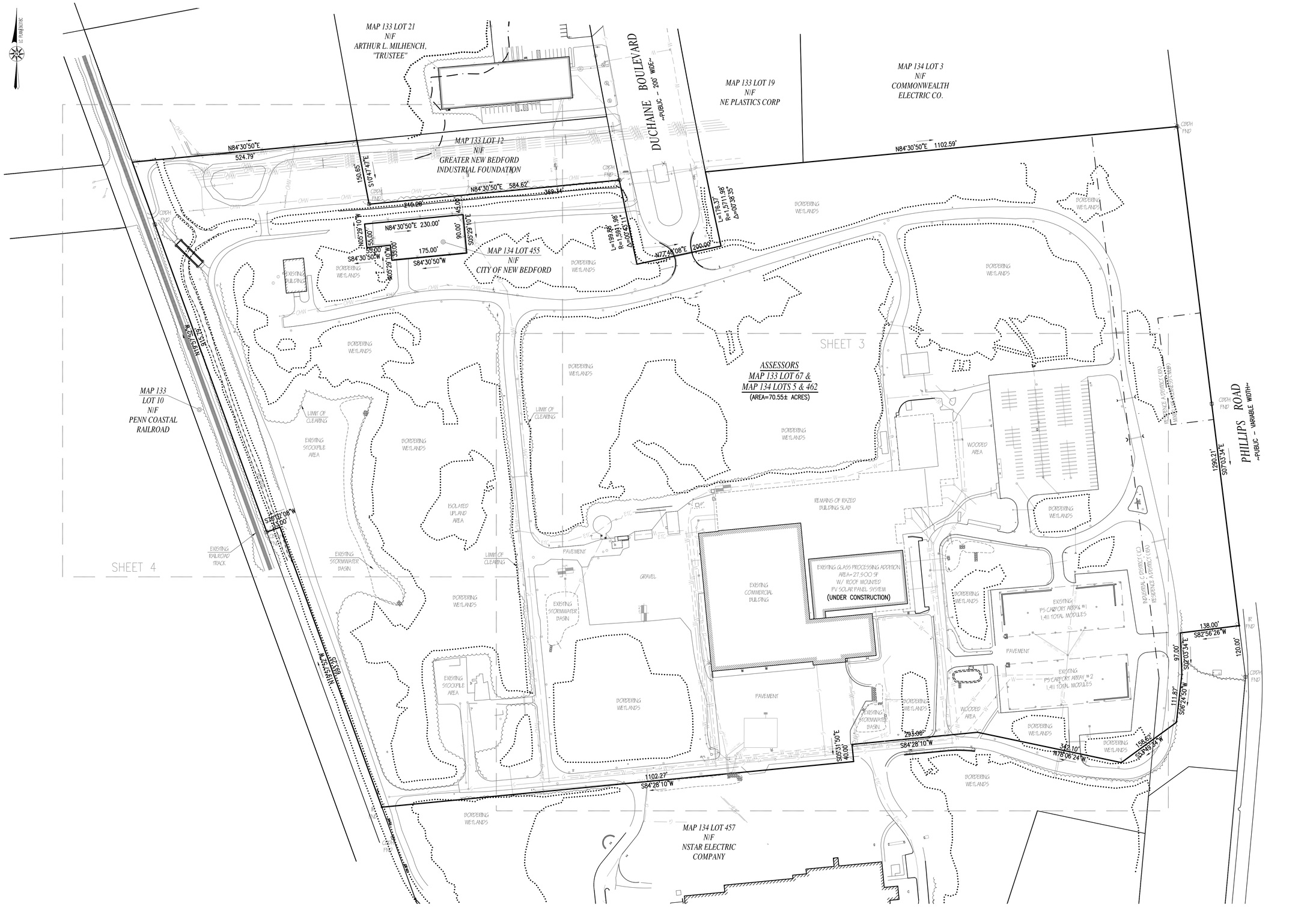
SITE PLAN
— 100 DUCHAINE BOULEVARD —
ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

JULY 3, 2019
SCALE: AS NOTED
JOB NO. 15-500.2
LATEST REVISION: SEPTEMBER 13, 2019

COVER

SHEET 1 OF 25



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SEPTEMBER 13, 2019

EXISTING CONDITIONS
OVERALL SITE
SHEET 2 OF 25

MATCH LINE

N/F
ST. PAUL'S CHURCH

BORDERING WETLANDS

EXISTING TRANSFORMER PAD

REMAINS OF RAZED BUILDING SLAB

WOODED AREA

ADJACENT PARKING AREA WITH 152 TOTAL PARKING SPACES

EXISTING VAN ACCESSIBLE PARKING SPACES (2)

CB-10
RIM=78.42
INV=76.8±

12" CMP
INV.=76.9±

EXISTING STORMWATER BASIN

12" HDPE
INV.=76.4±

STRING INVERTERS ON EACH CANOPY ATTACHED TO COLUMNS (TYPICAL)

15" CMP
INV.=76.62

12" HDPE
INV.=76.1±

12" CMP
INV.=76.77

12" CMP
INV.=76.82

BORDERING WETLANDS

50' FES

EXISTING PS CARPORT ARRAY #1
1,411 TOTAL MODULES

CB-11
RIM=77.70
INV=74.78

CB-12
RIM=77.58
INV=76.28

CB-13
RIM=77.65
INV= 74.25(a)
73.98(b)
74.70(c)
73.95(d)

CONCRETE SUPPORT COLUMN (TYPICAL)

EXISTING PS CARPORT ARRAY #2
1,411 TOTAL MODULES

RIM=78.10
INV=75.92

48" CMP
INV.=75.59

15" CMP
INV.=75.82

INV.=75.45

15" CMP
INV.=74.31

45" CMP
INV.=75.02

BORDERING WETLANDS

CB-1
(STORMCEPTOR)
RIM=80.77
INV=78.0±

10" HDPE
INV.=77.2±

12" RCP
INV.=77.2±

EXISTING STORMWATER BASIN

4" PVC
INV.=77.0±

4" PVC
INV.=76.9±

CB-2
RIM=82.16
INV=80.6±

GRAVEL

TH #1

TH #2

LIMIT OF CLEARING

EDGE OF GRAVEL

PAVEMENT

FUEL PUMP

CONCRETE PADS

CB-3
RIM=81.55
INV=78.1±(IN)
78.1±(OUT)

CB-4
RIM=80.82
INV=76.7±(IN)
76.7±(OUT)

EXISTING COMMERCIAL BUILDING

EXISTING GLASS PROCESSING ADDITION
AREA=27,500 SF
W/ ROOF MOUNTED
PV SOLAR PANEL SYSTEM
(UNDER CONSTRUCTION)

CB-9
RIM=79.04
INV=77.1±

CB-8
RIM=78.97
INV=76.9±

DMH-1
RIM=79.78
INV=76.1±(IN)
76.1±(OUT)

CONCRETE APRON

SMH-4
RIM=79.44
18"INV.=74.29(N)
8"INV.=74.79(W)
18"INV.=74.25(S)

CB-7 (NDS)
RIM=77.85
INV=76.7±(a)
76.7±(b)

6" HDPE
INV.=76.5±

DMH-4
RIM=78.51
INV=75.4±(a)
75.4±(b)

BORDERING WETLANDS

12" CMP
INV.=74.54

12" CMP-FES
INV.=74.76

CB-6 (NDS)
RIM=77.95
INV=76.7±

CB-5 DOUBLE STORMCEPTOR
RIM=78.70
INV=76.2±

DMH-2
RIM=79.12
INV=75.5±(a)
75.4±(b)
75.4±(c)

PAVEMENT

EXISTING CULTEC C-100CHP SUBSURFACE RECHARGE SYSTEM
CHAMBER INV.=75.9±
STONE INV.=75.4±
12" INV. OUT=75.9±
18" INV. OUT=75.9±

SMH-3
RIM=79.85
18"INV.=72.66(E)
8"INV.=75.08(S)
18"INV.=72.58(W)

RAIN GARDEN

CB-10
RIM=79.19
INV=

WOODED AREA

EXISTING STORMWATER BASIN

12" WATER MAIN

8" SEWER MAIN

CB-5
RIM=78.21
INV=

CB-6
RIM=78.22
INV=

24" CORR. METAL
INV.=74.5±

24" CORR. METAL
INV.=75.6±

24" CORR. METAL

WOODED AREA

BORDERING WETLANDS

EDGE OF WATER

2-24" FES
INV.=74.2±

18" PIPE
INV.=76.9±

DMH-5
RIM=79.12
INV=75.9±(IN)
75.9±(OUT)

SMH-2
RIM=80.06
18"INV.=72.88(E)
6"INV.=72.88(N)
18"INV.=72.72(W)

EXISTING CONCRETE FLOW CONTROL STRUCTURE
RIM=78.7±
4' WEIR ELEV.=76.9±
4" ORIFICE ELEV.=75.8±
12" HDPE INV.=75.4±

12" CMP
INV.=75.01

SMH-5
RIM=78.92
18"INV.=75.97(N)
18"INV.=75.87(W)

BORDERING WETLANDS

0' 50' 100' 150'
1" = 50'

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SITE PLAN

— 100 DUCHAINE BOULEVARD —
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ASSESSORS MAP 134 LOTS 5 & 462
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PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
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LOUISVILLE, KY 40208

JULY 3, 2019
SCALE: 1"=50'
JOB NO. 15-500.2
LATEST REVISION:
SEPTEMBER 13, 2019

EXISTING CONDITIONS

SHEET 3 OF 25

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EXISTING CONDITIONS CONT.

MATCH LINE

EROSION CONTROL (LIMIT-OF-WORK)

LIMIT OF CLEARING

AREA OF PROPOSED POCKET STORMWATER WETLAND

EROSION CONTROL & PROPOSED LIMIT OF CLEARING (LIMIT-OF-WORK)

BORDERING WETLANDS

LANDSCAPED AREA (TO BE REMOVED)

EROSION CONTROL (LIMIT-OF-WORK)

25-FT WETLANDS BUFFER

CONCRETE SLAB WITHIN RAILWAY LAYOUT (TO BE R&D)

EROSION CONTROL (LIMIT-OF-WORK)

WOODED AREA

EROSION CONTROL (LIMIT-OF-WORK)

LIMIT OF EXISTING CONCRETE FOUNDATION TO BE REMOVED

GRAVEL ACCESS RAMP (TO BE REMOVED)

EXISTING TRANSFORMER (TO REMAIN)

100-FT WETLANDS BUFFER

CONSTRUCTION ENTRANCE PAD

ADD SILTSACS TO ALL CATCH BASINS WITHIN 100' OF PROJECT

EROSION CONTROL (LIMIT-OF-WORK)

EXISTING FIRE HYDRANT (TO BE REMOVED)

EXISTING STORMWATER BASIN

FUEL PUMP (TO BE RELOCATED)

CONCRETE PADS (TO BE REMOVED)

PAVEMENT

GRAVEL

SECTION OF PAVED ROADWAY (TO BE REMOVED & RE-GRADED)

EXISTING GLASS RECYCLING BUILDING AREA=105,000 SF

CONCRETE RETAINING WALL (TO BE REMOVED)

GLASS BUILDING (UNDER CONSTRUCTION) FF=85.5±

PARKING SPACES (TO BE REMOVED)

EXISTING UTILITY SERVICES (TO BE REMOVED)

EXISTING STORMWATER BASIN

EXISTING UTILITY SERVICES (TO BE REMOVED)

EXISTING FIRE HYDRANT (TO BE REMOVED)

EXISTING CONC. RET. WALLS (TO BE REMOVED)

EOG (EDGE OF GRAVEL)

EROSION CONTROL (LIMIT-OF-WORK)

EXISTING WATER SERVICE (TO BE CUT & REDIRECTED)

PORTIONS OF PAVED WALKWAY (TO BE REMOVED)

EROSION CONTROL (LIMIT-OF-WORK)

CONCRETE APRON

PAVEMENT

BASIN GARDEN

WOODED AREA

EXISTING CONC. RET. WALLS (TO BE REMOVED)

EXISTING CATCH BASIN (TO BE RE-LOCATED)

EXISTING STORMWATER BASIN

BORDERING WETLANDS

LIMIT OF CLEARING

0' 50' 100' 150'

1" = 50'

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EROSION CONTROL & DEMOLITION
SHEET 5 OF 25

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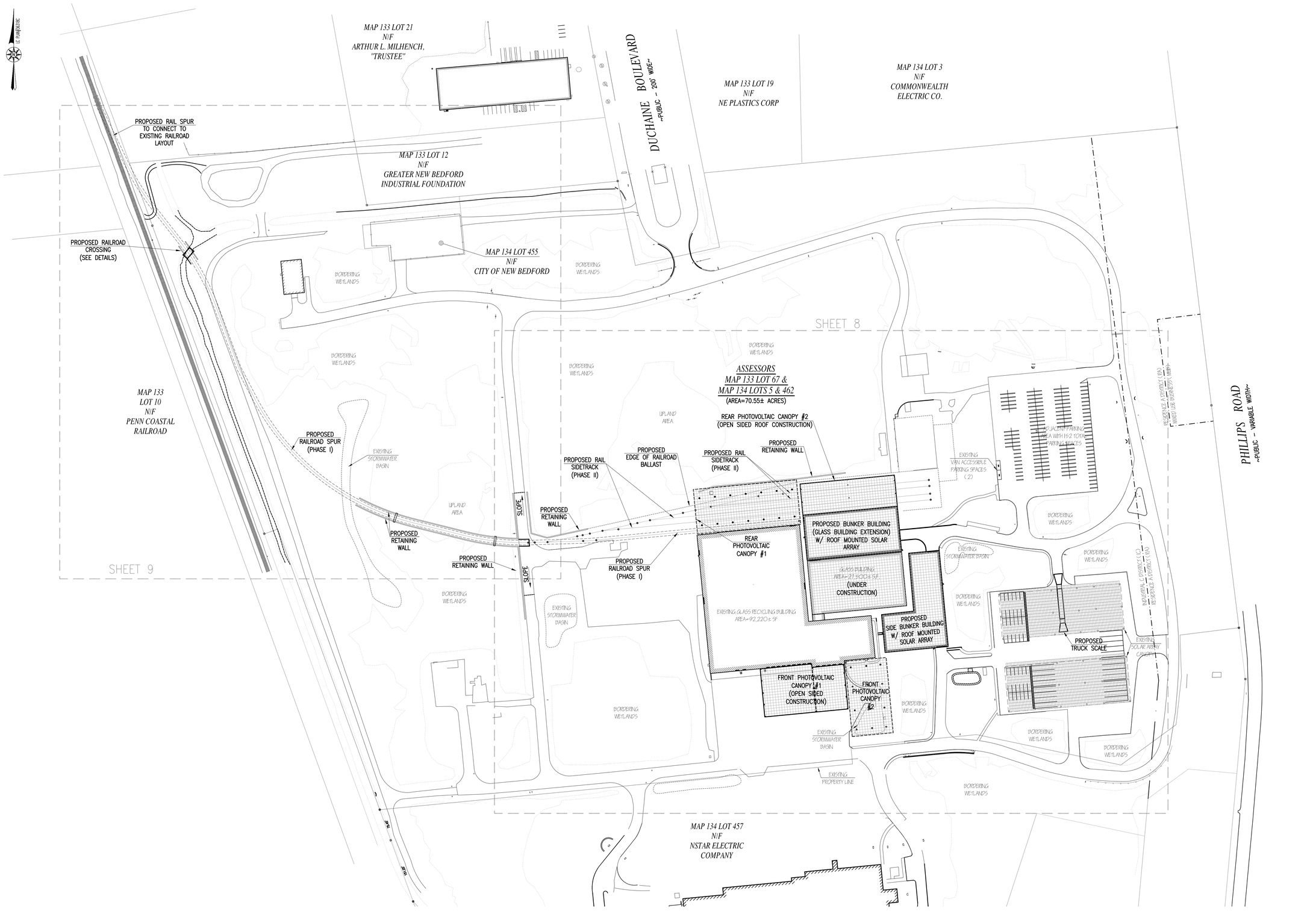
EROSION CONTROL & DEMO CONT.
SHEET 6 OF 25



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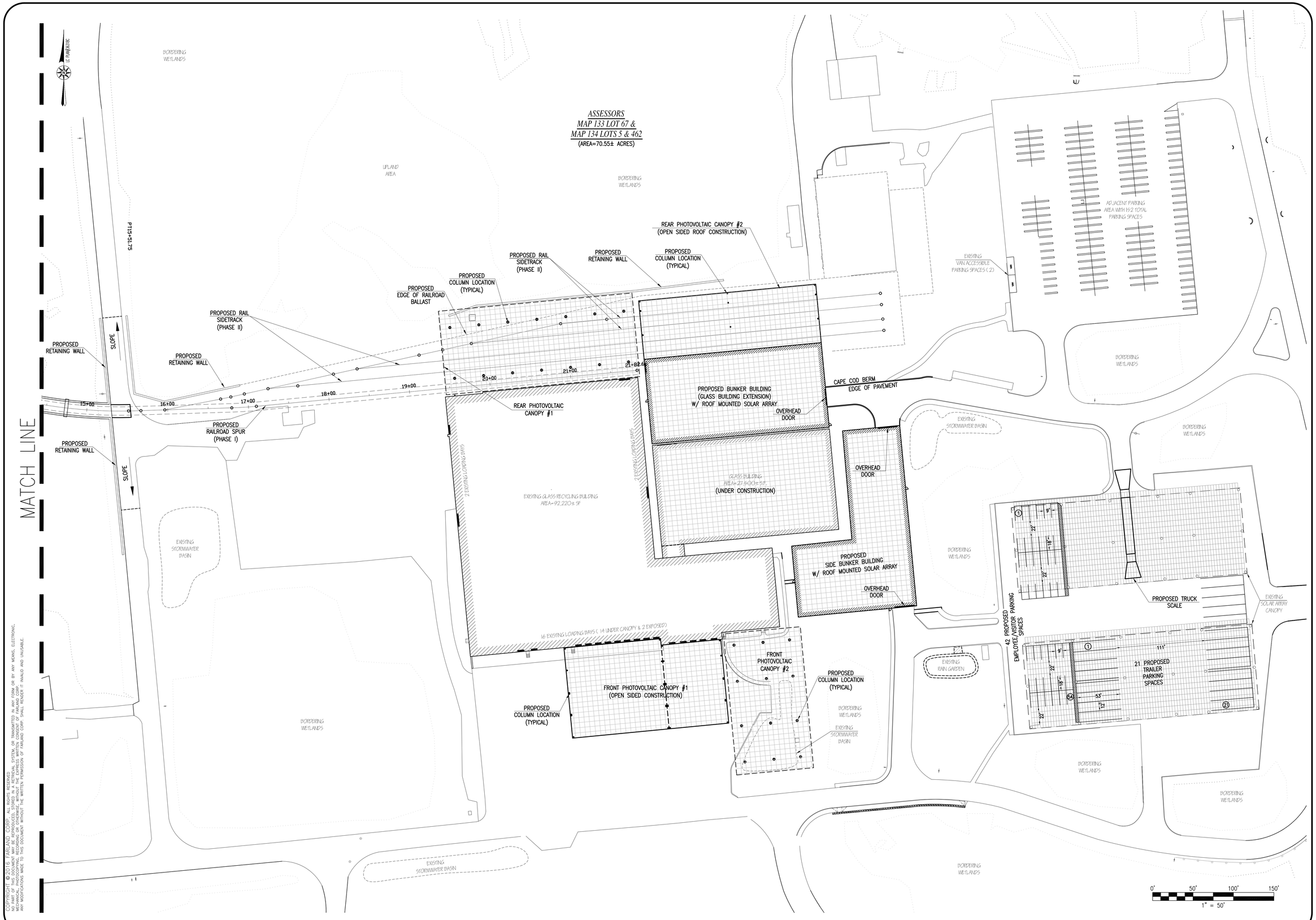
LAYOUT
OVERALL SITE
SHEET 7 OF 25



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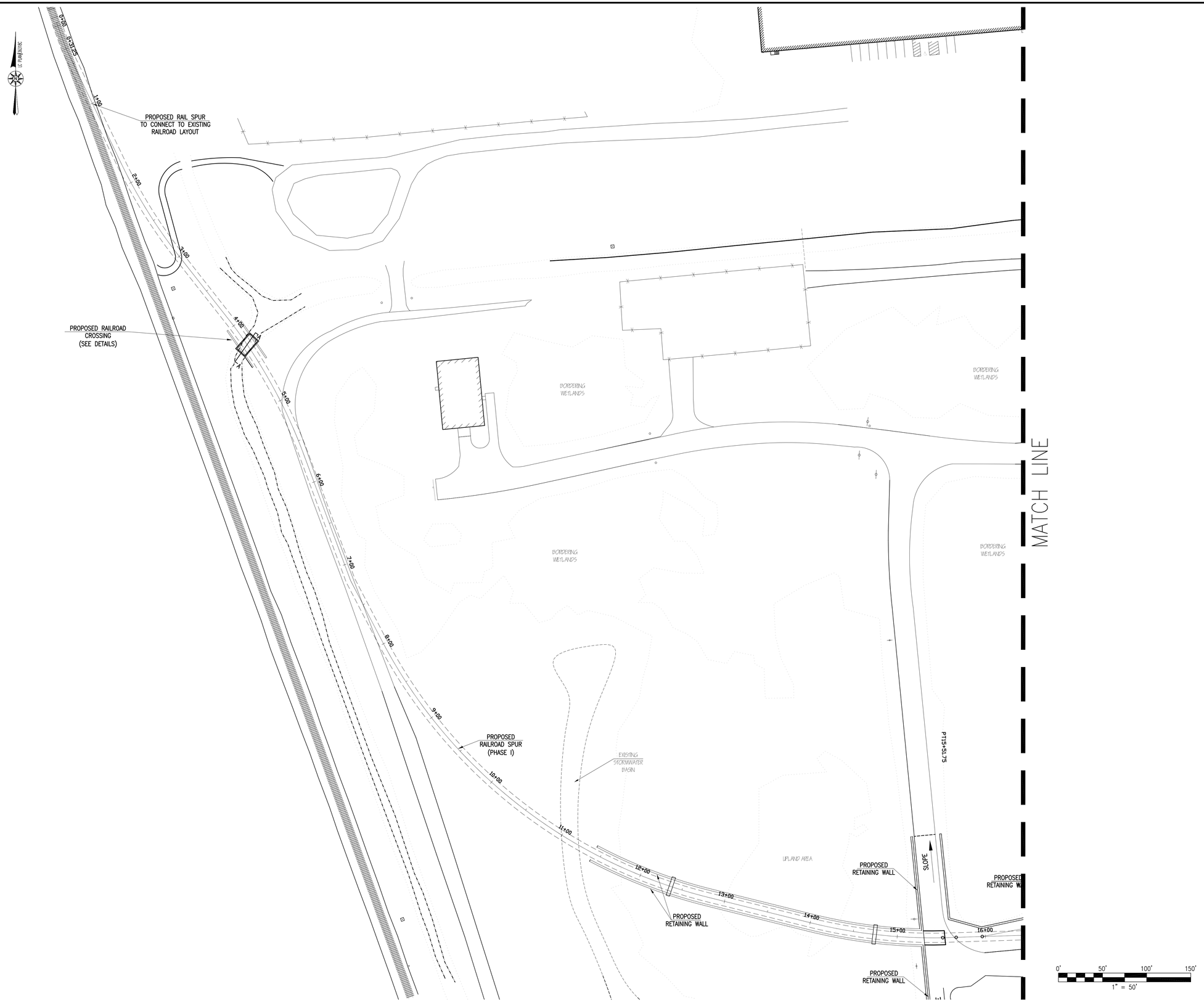

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LAYOUT
CONT.
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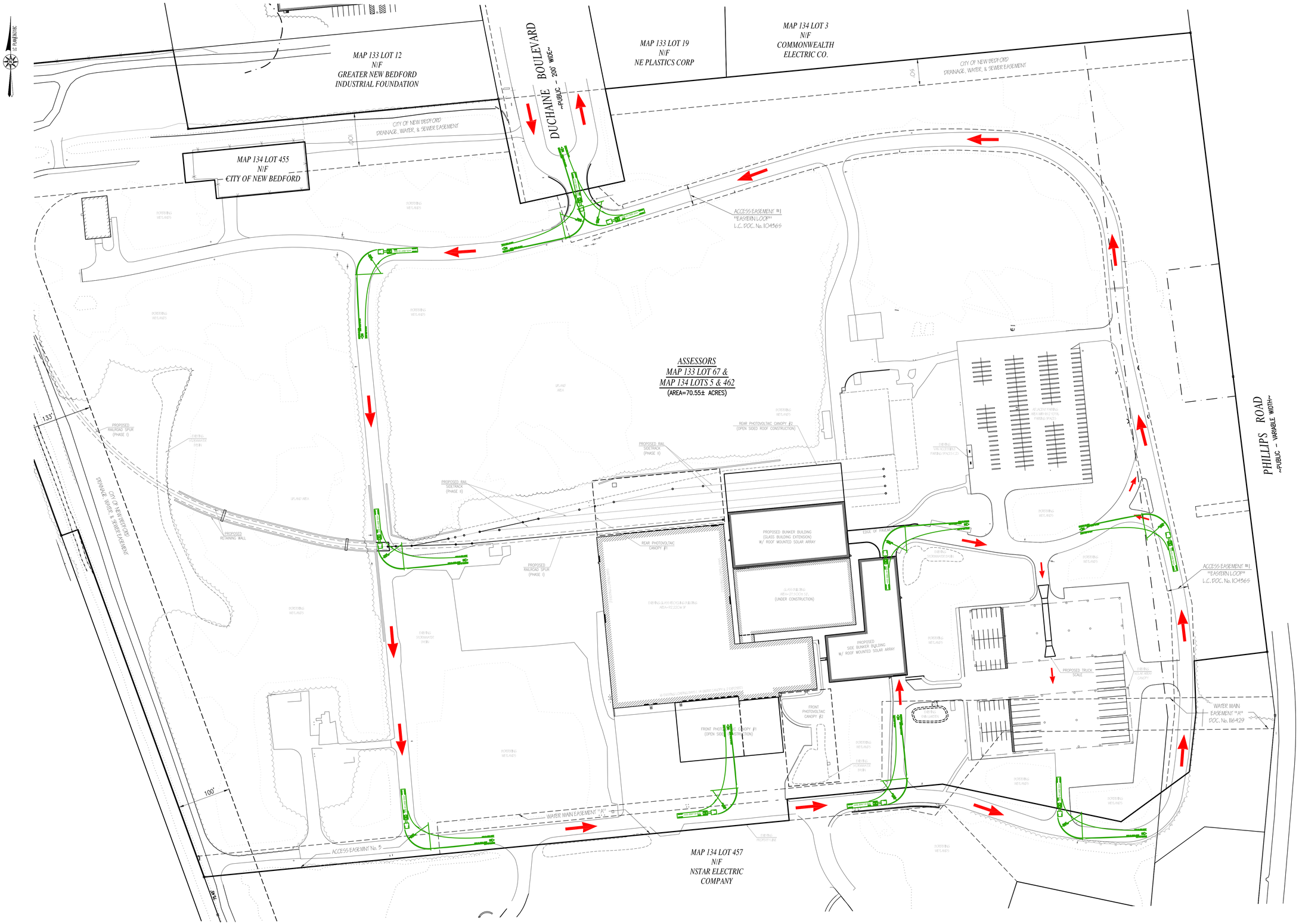

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REVISIONS

1	7/10/19	CONSERVATION COMMENTS
2	8/8/19	PLANNING BOARD COMMENTS
3	9/13/19	CONSERVATION COMMENTS

COMMONWEALTH OF MASSACHUSETTS
CHRISTIAN ALBERT FARLAND
No. 47544
CIVIL
REGISTERED PROFESSIONAL ENGINEER

FARLAND CORP.
www.FarlandCorp.com
401 COUNTY STREET
NEW BEDFORD, MA 02740
P.508.717.3479
OFFICES IN:
- TAUNTON
- MARLBOROUGH
- WARWICK, RI

DRAWN BY: MJW
DESIGNED BY: CAF
CHECKED BY: CAF

SITE PLAN
100 DUCHAINE BOULEVARD
ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

JULY 3, 2019
SCALE: 1"=80'
JOB NO. 15-500.2
LATEST REVISION:
SEPTEMBER 13, 2019

TRAFFIC CIRCULATION

ASSESSORS
MAP 133 LOT 67 &
MAP 134 LOTS 5 & 462
(AREA=70.55± ACRES)

REAR PHOTOVOLTAIC CANOPY #2
(OPEN SIDED ROOF CONSTRUCTION)

REAR PHOTOVOLTAIC
CANOPY #1

PROPOSED BUNKER BUILDING
(GLASS BUILDING EXTENSION)
W/ ROOF MOUNTED SOLAR ARRAY

FIRE
HYDRANT

EXISTING GLASS RECYCLING BUILDING
AREA=105,000 SF

EXISTING GLASS RECYCLING BUILDING
AREA=92,220± SF

GLASS BUILDING
AREA= 27,500± S.F.
(UNDER CONSTRUCTION)

PROPOSED
SIDE BUNKER BUILDING
W/ ROOF MOUNTED SOLAR ARRAY

BENCHMARK
X-CUT IN FRONT BONNET BOLT
ELEV.= 80.96 (NAVD 88)

SMH
RIM=EXISTING
6" INV.=75.1±(N)
8" INV.=74.8±(E)
15"INV.=74.1±(S)

RE-ROUTED
12" D.I. FIRE SERVICE

12" D.I. FIRE SERVICE

CB-7 (NDS)
RIM=77.81
INV=76.7±(a)
76.7±(b)

FIRE
HYDRANT

CAP FOR
FUTURE USE

FRONT
PHOTOVOLTAIC
CANOPY #2

PROPOSED
SAMPLING MANHOLE
(ALL INTERNAL WASTE WATER
TO EXIT THROUGH THIS LINE)

FRONT PHOTOVOLTAIC CANOPY #1
(OPEN SIDED CONSTRUCTION)

BORDERING
WETLANDS

SMH-3
RIM=79.85
15"INV.=72.66 (E)
8"INV.=73.08 (S)
15"INV.=72.58 (W)

SMH
RIM=EXISTING
6"INV.=74.2±(N)
6"INV.=74.1±(S)

SMH-2
RIM=80.05
15"INV.=72.88(E)
6"INV.=72.88(N)
15"INV.=72.72(W)

SMH-3
RIM=78.92
18"INV.=73.97(N)
15"INV.=73.57(W)

MATCH LINE

0' 50' 100' 150'
1" = 50'

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COMMONWEALTH OF MASSACHUSETTS
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SITE PLAN

— 100 DUCHAINE BOULEVARD —
ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

JULY 3, 2019
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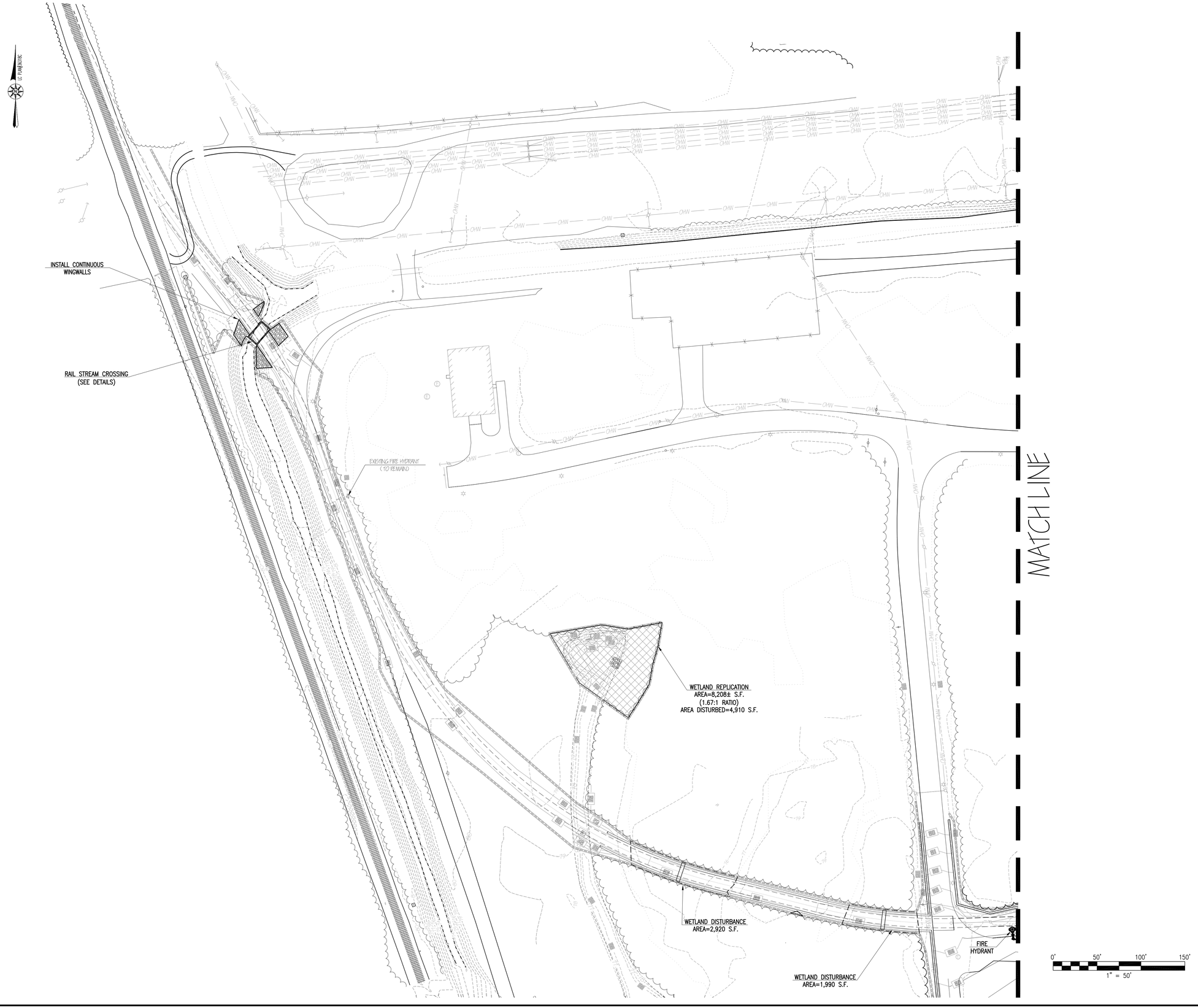
UTILITIES

SHEET 11 OF 25



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CHRISTIAN ALBERT FARLAND No. 47544 CIVIL REGISTERED PROFESSIONAL ENGINEER COMMONWEALTH OF MASSACHUSETTS

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SITE PLAN

100 DUCHAINE BOULEVARD

ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

JULY 3, 2019
SCALE: 1"=50'
JOB NO. 15-500.2
LATEST REVISION: SEPTEMBER 13, 2019

UTILITIES CONT.

SHEET 12 OF 25

MATCH LINE

HIGH MARSH ZONE
LOW MARSH ZONE
PROPOSED POCKET STORMWATER WETLAND
FOREBAY BERM ELV=77.25
SEDIMENT FOREBAY
10' WIDE SPILLWAY ELV=77.50
FLOW PATH
PROPOSED EROSION CONTROL (LIMIT OF WORK)

ASSESSORS MAP 133 LOT 67 & MAP 134 LOTS 5 & 462
(AREA=70.55± ACRES)

25-FT WETLANDS BUFFER
100-FT WETLANDS BUFFER

CB-1 (STORMCEPTOR)
RIM=80.77
RIM=81.0 (NEW)
INV=78.0±

DMH
RIM=84.50
INV.=79.6±

DMH
RIM=84.50
INV.=80.7±

REAR PHOTOVOLTAIC CANOPY #2
(OPEN SIDED ROOF CONSTRUCTION)

REPLACE WITH CDS WATER QUALITY UNIT

BW=79.50 TW=82.50
BW=81.50 TW=81.50
18" HDPE W/ FES INV.=78.0±
BW=79.50 TW=83.50
BW=79.50 TW=80.00
18" HDPE
12" HDPE
36" HDPE
12" HDPE

BW=79.00 TW=79.50
BW=79.00 TW=83.00
BW=78.50 TW=83.00
BW=82.00 TW=83.00
+85.0
+85.0
+85.0
+85.0

CB-10
RIM=78.42
INV=76.8±

12" CMP INV.=76.9±

PROPOSED BUNKER BUILDING
(GLASS BUILDING EXTENSION)
W/ ROOF MOUNTED SOLAR ARRAY

REAR PHOTOVOLTAIC CANOPY #1

ETLAND CROSSING
E DETAIL SHEET 23)

2'x4'x22' OPEN BOX CULVERT INV.=75.5±

WETLAND DISTURBANCE AREA=1,990 S.F.

BW=79.50 TW=84.50

+81.5

BW=79.50 TW=80.00

FIRE HYDRANT

12" RCP INV.=77.2±

GLASS BUILDING AREA=27,600± SF (UNDER CONSTRUCTION)

EXISTING GLASS RECYCLING BUILDING AREA=92,220± SF

12" HDPE INV.=76.4±

12" HDPE INV.=76.1±

BENCHMARK
X-CUT IN FRONT BONNET BOLT
ELEV.= 80.96 (NAVD 88)

PROPOSED EROSION CONTROL (LIMIT OF WORK)

PROPOSED SIDE BUNKER BUILDING W/ ROOF MOUNTED SOLAR ARRAY

CB-7 (NDS)
RIM=77.81
INV=76.7±(a)
76.7±(b)

FRONT PHOTOVOLTAIC CANOPY #1
(OPEN SIDED CONSTRUCTION)

FRONT PHOTOVOLTAIC CANOPY #2

CB-7 DOUBLE STORMCEPTOR
RIM=78.70
INV=76.2±
(REMOVE & RELOCATE)

CB-6 (NDS)
RIM=77.95
INV=76.7±

DMH-4
(RE-LOCATED)
RIM=78.57
INV=75.4±(a)
75.4±(b)

12" HDPE

12" CMP INV.=74.54
12" CMP-FES INV.=74.76

EXISTING STORMWATER BASIN

DMH-1
RIM=79.78
INV=76.1±(IN)
76.1±(OUT)

EXISTING CULTEC C-100HD SUBSURFACE RECHARGE SYSTEM
CHAMBER INV.=75.9±
STONE INV.=75.4±
12" INV. OUT=75.9±
18" INV. OUT=75.9±

DMH-2
RIM=79.12
INV=75.5±(a)
75.4±(b)
75.4±(c)

2.24" FES INV.=75.2±

18" PIPE INV.=76.9±

DMH-3
RIM=79.12
INV=75.9±(IN)
79.9±(OUT)

EXISTING CONCRETE FLOW CONTROL STRUCTURE
RIM=78.7±
4' WEIR ELEV.=76.9±
4" ORIFICE ELEV.=75.6±
12" HDPE INV.=75.4±

0' 50' 100' 150'
1" = 50'

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COMMONWEALTH OF MASSACHUSETTS
CHRISTIAN ALBERT FARLAND
No. 47544
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SITE PLAN

100 DUCHAINE BOULEVARD

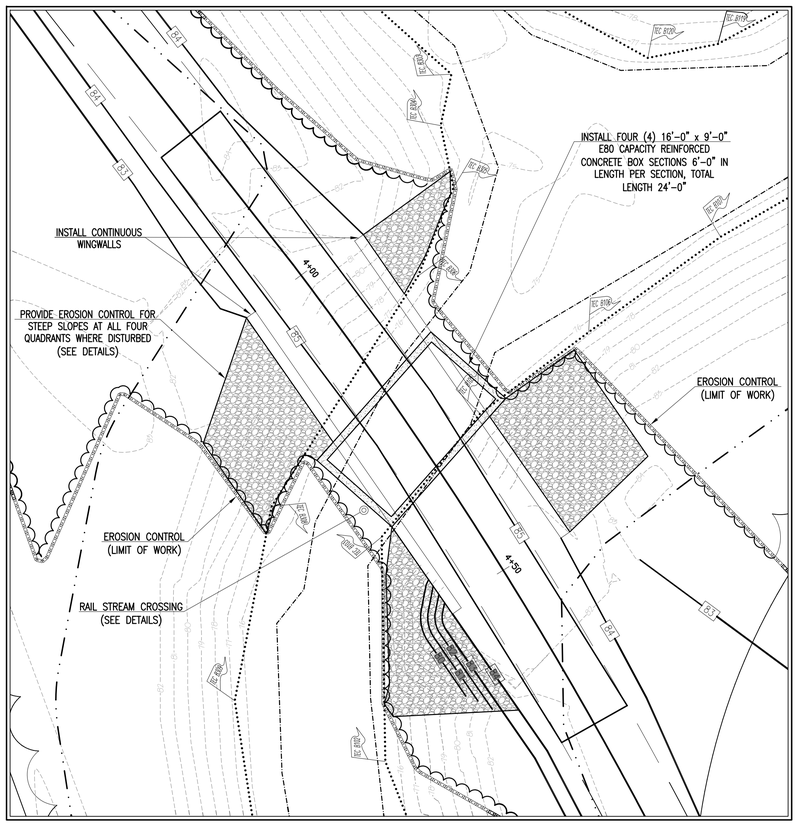
ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

JULY 3, 2019
SCALE: 1"=50'
JOB NO. 15-500.2
LATEST REVISION:
SEPTEMBER 13, 2019

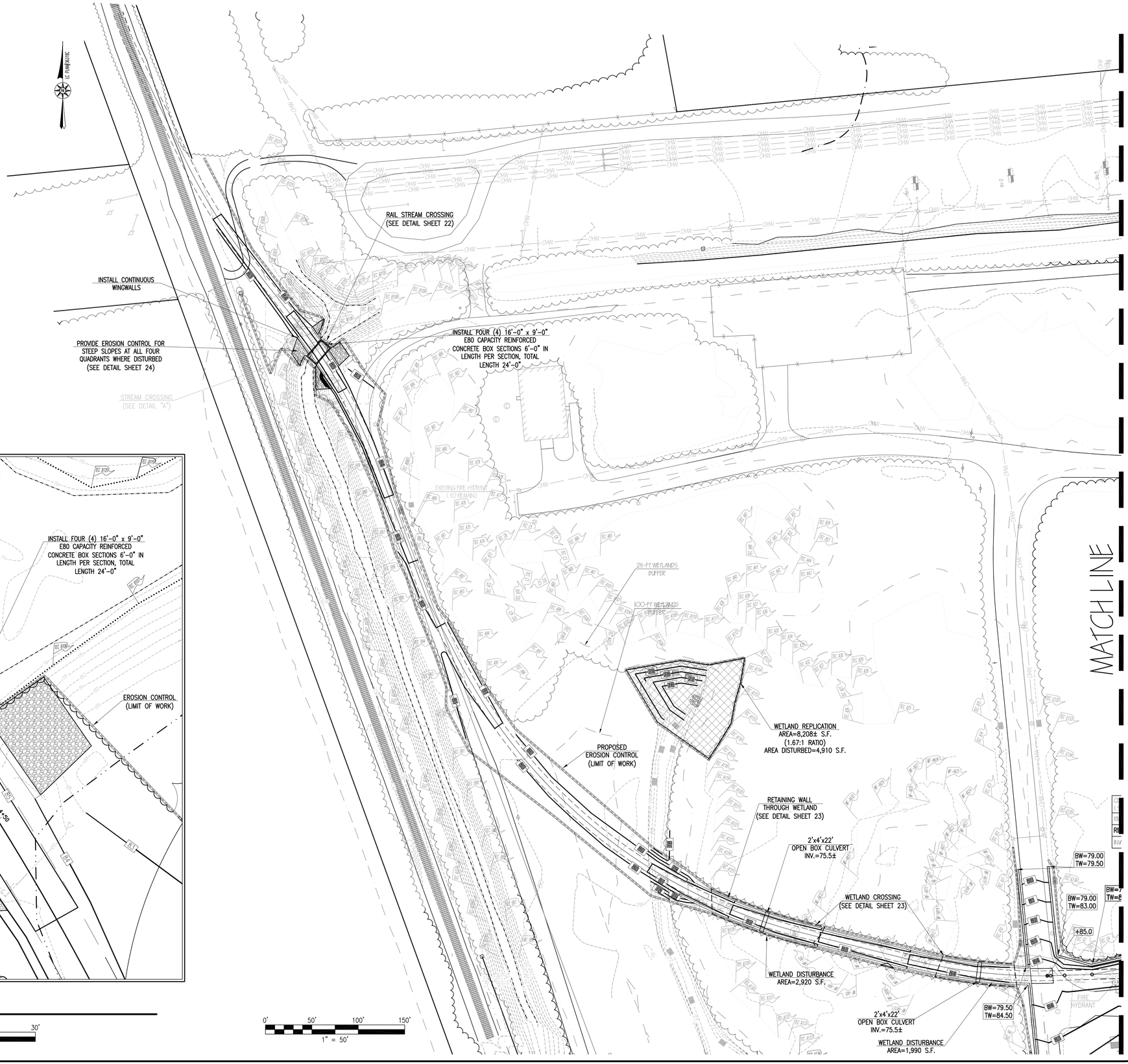
GRADING & DRAINAGE

SHEET 13 OF 25



RAIL CROSSING (DETAIL "A")

SCALE: 1"=10'



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SITE PLAN

— 100 DUCHAINE BOULEVARD —
ASSESSORS MAP 133 LOT 67
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NEW BEDFORD, MASSACHUSETTS

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401 INDUSTRY ROAD
LOUISVILLE, KY 40208

JULY 3, 2019
SCALE: AS NOTED
JOB NO. 15-500.2
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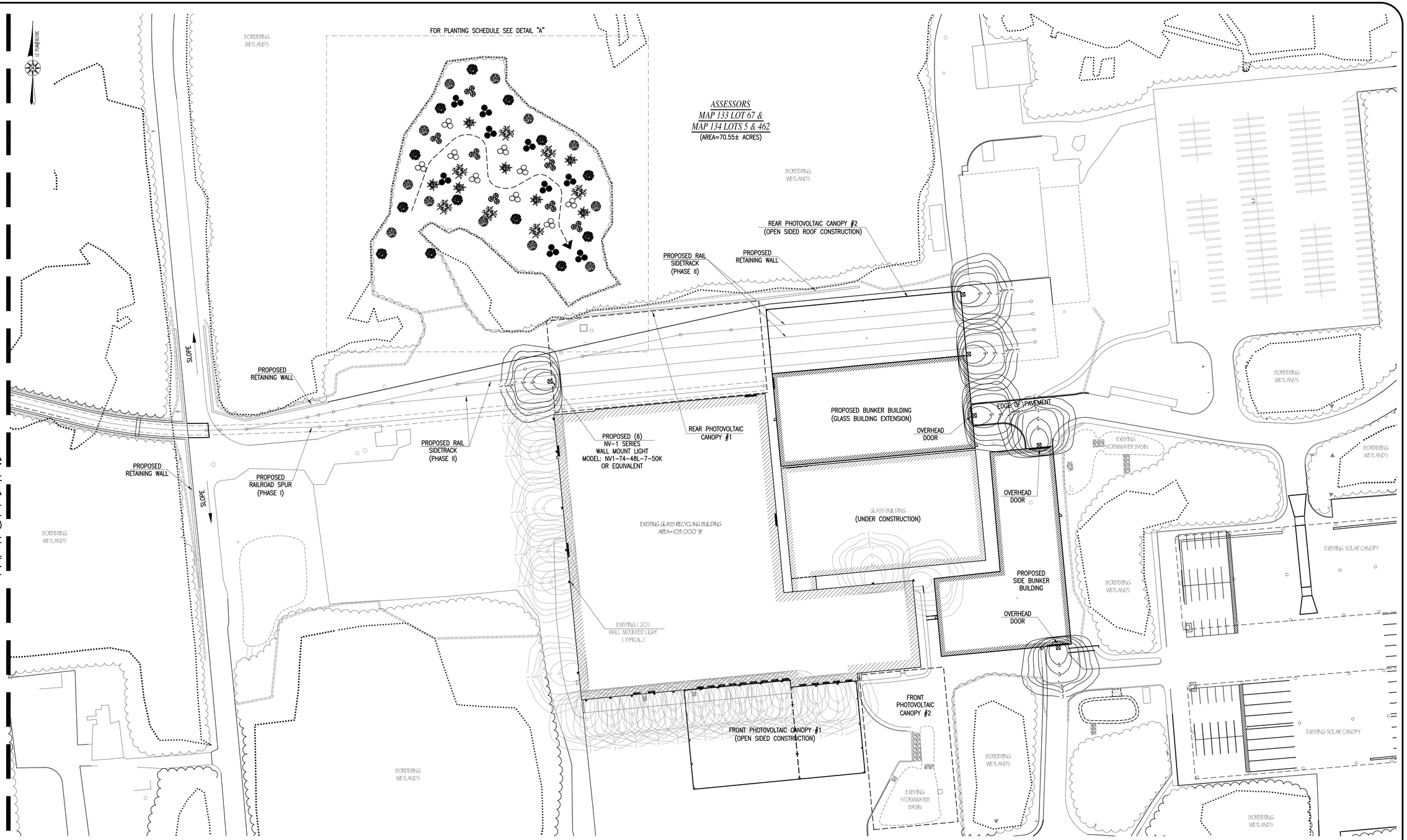
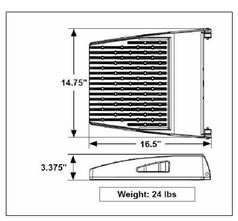
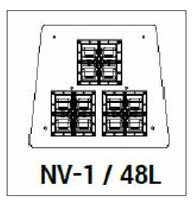
SEPTEMBER 13, 2019

GRADING & DRAINAGE CONT.
SHEET 14 OF 25

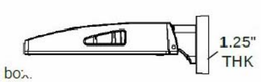






WALL MOUNT (WM)

Cast Aluminum Plate for direct wall mount. 3" extruded aluminum arm mounts directly to a cast wall mount box.



WALL MOUNT LIGHT (NV1-T4-48L-7-50K)

NOT TO SCALE

0' 50' 100' 150'

1" = 50'

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100 DUCHAINE BOULEVARD

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LIGHTING & LANDSCAPING

SHEET 15 OF 25

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LIGHTING & LANDSCAPING CONT.
SHEET 16 OF 25

POCKET WETLAND PLANTING TABLE

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY
TREES				
	ACER RUBRUM	RED MAPLE	3 INCH CALIPER	13
	BETULA POPULIFOLIA	GRAY BIRCH	3 INCH CALIPER	12
SHRUBS				
	CLETHRA ALNIFOLIA	SWEET PEPPERBUSH	24 INCH	27
	VACCINUIM CONYMBOSIUM	HIGHBUSH BLUEBERRY	24 INCH	21
	ILEX VERTICILLATA	WINTERBERRY	24 INCH	27
GROUND				
	ONOCLEA SENSIBILIS	SENSITIVE FERN	1 GALLON	28
	OSMUNDA CINNAMOMEA	CINNAMON FERN	1 GALLON	28

WETLAND REPLICATION PLANTING TABLE

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY
TREES				
	ACER RUBRUM	RED MAPLE	3 INCH CALIPER	8
	BETULA POPULIFOLIA	GRAY BIRCH	3 INCH CALIPER	6
SHRUBS				
	CLETHRA ALNIFOLIA	SWEET PEPPERBUSH	24 INCH	18
	VACCINUIM CONYMBOSIUM	HIGHBUSH BLUEBERRY	24 INCH	18
	ILEX VERTICILLATA	WINTERBERRY	24 INCH	12
GROUND				
	ONOCLEA SENSIBILIS	SENSITIVE FERN	1 GALLON	24
	OSMUNDA CINNAMOMEA	CINNAMON FERN	1 GALLON	20

RIVERFRONT RESTORATION PLANTING TABLE

SYMBOL	BOTANICAL NAME	COMMON NAME	SIZE	QUANTITY
TREES				
	ACER RUBRUM	RED MAPLE	3 INCH CALIPER	3
	BETULA POPULIFOLIA	GRAY BIRCH	3 INCH CALIPER	2
SHRUBS				
	CLETHRA ALNIFOLIA	SWEET PEPPERBUSH	24 INCH	18
	VACCINUIM CONYMBOSIUM	HIGHBUSH BLUEBERRY	24 INCH	23
	ILEX VERTICILLATA	WINTERBERRY	24 INCH	18

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WATERING & MONITORING NOTES:

1. DEPENDING UPON THE WEATHER, THE REPLICATION AREA MAY NEED DAILY WATERING FOR APPROXIMATELY ONE MONTH, OR UNTIL THE PLANTINGS HAVE TAKEN ROOT AND GROWTH IS OBSERVED. IT IS RECOMMENDED THAT PLANTING BE PERFORMED IN APRIL/MAY OR SEPTEMBER/OCTOBER, TO AVOID PLANT MORTALITY DURING SUMMER MONTHS. PLANTINGS SHALL BE WATERED AS NECESSARY TO ENSURE SURVIVAL FOR A MINIMUM TWO-YEAR PERIOD.
2. THE CITY OF NEW BEDFORD CONSERVATION COMMISSION SHALL BE NOTIFIED 72 HOURS IN ADVANCE OF THE COMMENCEMENT OF WETLAND REPLICATION CONSTRUCTION.
3. THE CONSERVATION AGENT OF THE NEW BEDFORD SHALL BE NOTIFIED SO AS TO CONDUCT INSPECTIONS AT THE FOLLOWING MILESTONES OF CONSTRUCTION OF THE REPLICATION AREA: AFTER THE INSTALLATION OF THE EROSION CONTROLS, PRIOR TO THE EXCAVATION OF THE REPLICATION AREAS, AFTER THE SUBGRADE OF THE REPLICATION AREA HAS BEEN EXCAVATED AND AFTER THE FINAL GRADING AND PLANTINGS HAVE BEEN DONE.
4. A WETLAND SCIENTIST OR OTHER QUALIFIED PROFESSIONAL SHALL CONDUCT A PRE-CONSTRUCITON MEETING WITH THE CONTRACTOR, AND SHALL INSPECT THE CONSTRUCTION OF THE REPLICATION AREA UPON EXCAVATION TO THE SUBGRADE, WHEN WETSOIL MIX IS APPLIED AT FINISH GRADE, AND ONCE PLANTING HAVE BEEN INSTALLED.
5. IN COMPLIANCE WITH 310 CMR 10.55(4), THE WETLAND PROFESSIONAL SHALL SUBMIT MONITORING REPORTS DOCUMENTING THE ESTABLISHMENT OF AT LEAST 75% COVERAGE OF INDIGENOUS WETLAND PLANTS WITHIN THE REPLICATION AREA. THESE REPORTS SHALL BE PROVIDED AT THE END OF CONSTRUCTION AND ONE A YEAR FOR TWO YEARS. THE CONSERVATION COMMISSION RESERVES THE RIGHT TO REQUEST ADDITIONAL SEEDING OR PLANTING TO GUARANTEE THE SUCCESS OF THE REPLICATION AREAS. PROPOSED SHRUB AND TREE PLANTINGS THAT DIE DURING THIS TIME PERIOD SHALL BE REPLACED. THE REPORTS SHALL ALSO DOCUMENT THE PRESENCE OF INVASIVE SPECIES WITHIN THE REPLICATION AREA AND RECOMMEND CONTROL METHODS.
6. AFTER THE SECOND GROWING SEASON, A REPORT SHALL BE SUBMITTED TO THE CONSERVATION COMMISSION, STATING THE SUCCESS OF THE WETLAND REPLICATION AREA. IN ACCORDANCE WITH THE PERFORMANCE STANDARDS FOUND IN 310 CMR 10.55(4)(B)(6), IF THE 75% AERIAL COVERAGE CRITERIA IS NOT ACHIEVED, A MITIGATION PLAN SHALL BE SUBMITTED TO THE CONSERVATION COMMISSION AND THE MONITORING PERIOD SHALL BE EXTENDED.

TEMPORARY DISTURBANCE & RESTORATION NOTES:

1. ALL AREAS THAT ARE ALTERED DURING CONSTRUCTION PERIOD ACTIVITIES THAT WILL NOT CONTAIN PERMANENT STRUCTURES OR SITE FEATURES SHALL BE RESTORED TO A SIMILAR STATE OF THE ORIGINAL CONDITIONS.
2. TOPSOIL SHALL BE STRIPPED AND STOCKPILED FOR REUSE ELSEWHERE ON-SITE. EXCAVATION SHALL EXTEND TO APPROXIMATELY 12" BELOW THE PROPOSED FINAL GRADE ELEVATION. IF DENSE SOILS ARE ENCOUNTERED, IT IS RECOMMENDED TO EXCAVATE AN ADDITIONAL 6" TO ACCOMMODATE WETLAND SOIL MIX.
3. THE WETLAND SOIL AND SEED MIX TO BE USED IN THESE AREAS SHOULD BE "NEW ENGLAND EROSION CONTROL/RESTORATION MIX FOR DETENTION BASINS AND MOIST SITES" OR AN APPROVED EQUIVALENT.
4. FOLLOWING THE PLACEMENT OF THE APPROVED SOIL AND SEED MIX, GRADES SHALL BE BLENDED WITH ADJACENT UNDISTURBED AREAS TO PROVIDE AS CLOSE TO ORIGINAL SLOPE AS POSSIBLE.

CONSTRUCTION SEQUENCE & NOTES

1. THE WETLAND REPLICATION AREA SHALL BE CONSTRUCTED PRIOR TO ANY EARTH DISTURBANCE REQUIRED FOR THE PROPOSED PROJECT.
2. WETLAND REPLICATION SHALL BE PERFORMED UNDER THE DIRECTION AND GUIDANCE OF A QUALIFIED BOTANIST. THE RESUME OF THE WETLAND PROFESSIONAL WHO SHALL OVERSEE THE CONSTRUCTION OF THE WETLAND REPLICATION AREA IS TO BE SUBMITTED TO THE CONSERVAITON COMMISSION OR ITS DESIGNATED AGENT FOR ACCEPTANCE TWO WEEKS PRIOR TO THE INITIATION OF REPLICATION ACTIVITIES.
3. PRIOR TO THE COMMENCEMENT OF WORK, THE LIMITS OF THE EXISTING WETLAND BOUNDARY SHALL BE STAKED OR FLAGGED AT 15' INTERVALS IN THE VICINITY OF THE REPLICATION AREAS, AND AN EROSION CONTROL BARRIER (STRAW WATTLE AND/OR SILT FENCE) SHALL BE INSTALLED ALONG THE PERIMETER OF THE REPLICATION AREA, AS SHOWN ON THE SITE PLAN, TO SERVE AS A LIMIT OF WORK, SUCH THAT NO ACTIVITIES ARE TO OCCUR ON THE WETLAND SIDE OF THE BARRIER.
4. ACCESS TO THE WETLAND REPLICATION AREA SHALL OCCUR FROM UPLAND AREAS AND SHALL NOT RESULT IN IMPACT TO EXISTING WETLANDS..
5. CONSTRUCTION SHALL COMMENCE WITH REMOVAL OF EXISTING VEGETATION WITHIN THE REPLICATION AREA. EXISTING MATURE UPLAND TREES THAT ARE FACULTATIVE OR WETTER MAY BE LEFT ON HUMMOCKS WITHIN THE REPLICATION AREA, AS THEY MAY PROVIDE SHADING TO THE PLANTINGS INSTALLED AROUND THESE HUMMOCKS. EXISTING BOULDERS WITHIN THE REPLICATION AREA ARE ALSO TO REMAIN. BOULDERS SHALL NOT COMPRISE MORE THAN 15% OF THE COVERAGE OF THE REPLICATION AREA.
6. TOPSOIL SHALL BE STRIPPED AND STOCKPILED FOR REUSE ELSEWHERE ON-SITE. EXCAVATION SHALL EXTEND TO APPROXIMATELY 12" BELOW THE PROPOSED FINAL GRADE ELEVATION. IF DENSE SOILS ARE ENCOUNTERED, IT IS RECOMMENDED TO EXCAVATE AN ADDITIONAL 6" TO ACCOMMODATE WETLAND SOIL MIX.
7. THE EXCAVATED REPLICATION AREA FLOOR SHALL BE GRADED TO BLEND WITH UNDISTURBED WETLAND AREAS AND REMAINING HUMMOCKS WHERE EXISTING TREES ARE TO REMAIN. THE REPLICATION AREA SHALL NOT HAVE FINISHED TOPOGRAPHY WHICH RESULTS IN COMPLETELY FLAT TOPOGRAPHY. THE FINISH GRADING SHOULD RESULT IN A SHALLOW PIT AND MOUND TOPOGRAPHY THROUGHOUT THE REPLICATION AREA.
8. A WET SOIL MIX SHALL BE COMPRISED OF THE "O" AND "A" HORIZON SOILS STRIPPED FROM THE WETLAND DISTURBANCE AREA. SHOULD THESE SOILS BE OF INSUFFICIENT QUANTITY OR QUALITY, A CREATED BLEND CONSISTING OF ONE PART SANDY LOAM AND ONE PART COMPOSTED LEAVES OR PEAT MOSS SHALL BE USED.
9. TREE, SHRUB, AND GROUND COVER PLANTINGS SHALL BE INSTALLED PER PLAN IMMEDIATELY FOLLOWING THE EXCAVATION AND PLACEMENT OF ORGANIC SOILS WITHIN THE REPLICATION AREA. DUE TO HIGH PLANT MORTALITY, PLANTING SHOULD BE AVOIDED DURING THE SUMMER MONTHS. LOCATION OF PLANTS MAY BE ADJUSTED IN THE FIELD TO ACCOMMODATE EXISTING TREES AND/OR BOULDERS WHICH ARE TO REMAIN. TREES ARE TO BE PLANTED AT NO MORE THAN 25 FEET ON-CENTER. SHRUBS PLANTED AT 5-6 FEET ON CENTER, AND FERNS AT 3-5 FEET ON CENTER. ALL WETLAND PLANTING IS TO BE PERFORMED BY HAND.
10. AFTER PLANTING IS COMPLETED, THE REPLICATION AREA SHALL BE HAND RAKED TO ELIMINATE ANY DEPRESSIONS GREATER THAN FOUR INCHES IN DEPTH WHICH MAY HAVE BEEN CREATED DURING DIGGING, AND TO ELIMINATE COMPACTION AS MUCH AS POSSIBLE.
11. THE WETLAND FLOOR SHALL BE SEEDED WITH COMMERCIALLY AVAILABLE SEED MIX (NEW ENGLAND WETLAND PLANTS, INC. "NEW ENGLAND WETMIX", OR EQUAL), APPLIED AT A RATE OF 1 LB PER 2.500 S.F.
12. THE FINAL ELEVATIONS OF THE WETLAND REPLICATION AREA SHALL BE SHOWN ON AN AS-BUILT PLAN (0.50' CONTOURS) AND STAMPED BY A MASSACHUSETTS PROFESSIONAL LAND SURVEYOR. A COPY OF THE STAMPED AS-BUILT PLAN SHALL BE PROVIDED TO THE NEW BEDFORD CONSERVATION COMMISSION FOR ACCEPTANCE PRIOR TO THE WETLAND PLANTINGS.
13. THE SEASONAL HIGH GROUNDWATER ELEVATION IN THE WETLAND REPLICATION AREA SHALL BE VERIFIED BY A CERTIFIED SOIL SCIENTIST, WETLAND PROFESSIONAL OR PROFESSIONAL CIVIL ENGINEER PRIOR TO BACKFILLING THE REPLICATION AREA. THE ELEVATION OF THE SEASONAL HIGH GROUNDWATER SHALL BE PROVIDED TO THE CONSERVATION AGENT ALONG WITH VERIFICATION THAT IT WILL SUPPORT THE PROPOSED PLANTINGS.

SURROUNDING UPLAND PLANT SPECIES

Tree layer
Red maple (Acer rubrum)
White pine (Pinus strobus)
Gray birch (Betula populifolia)
White oak (Quercus alba)
Eastern hemlock (Tsuga canadensis)

Shrub layer
White pine (Pinus strobus)
Gray birch (Betula populifolia)
Black gum (Nyssa sylvatica)
Sweet pepperbush (Clethra alnifolia)
American holly (Ilex opaca)
American beech (Fagus grandifolia)

Climbing woody vines
Round-leaved greenbrier (Smilax rotundifolia)

Herbaceous
Broom sedge (Andropogon virginicus)
Little bluestem (Schizachyrium scoparium)
Unspecified sedge species (Carex sp.)
Trailing raspberry (Rubus sp.)

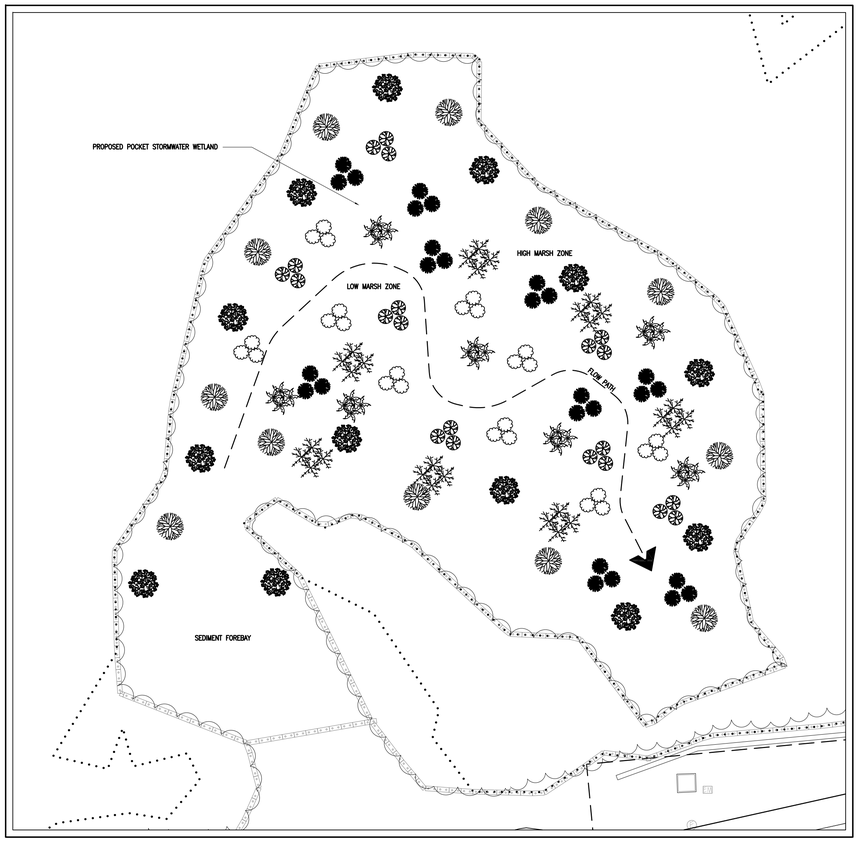
SURROUNDING WETLAND PLANT SPECIES

Tree layer
Gray birch (Betula populifolia)

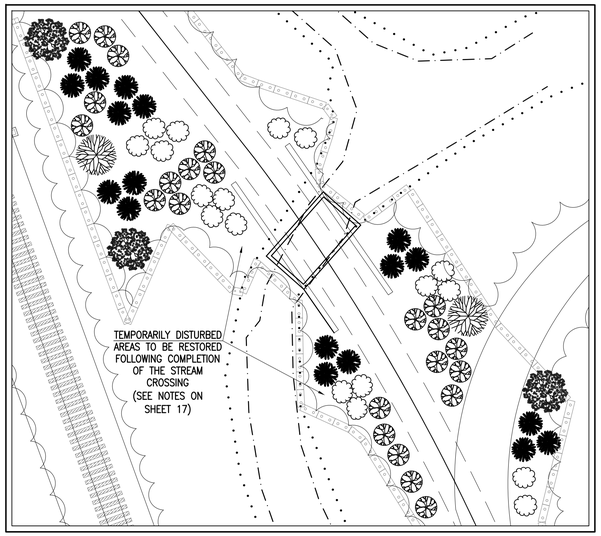
Shrub layer
Red maple (Acer rubrum)
Sweet pepperbush (Clethra alnifolia)
Multiflora rose (Rosa multiflora)
Highbush blueberry (Vaccinium corymbosum)
Maleberry (Lyonia ligustrina)
Arrowwood (Viburnum recognitum)

Climbing woody vines
Oriental bittersweet (Celastrus orbiculatus)

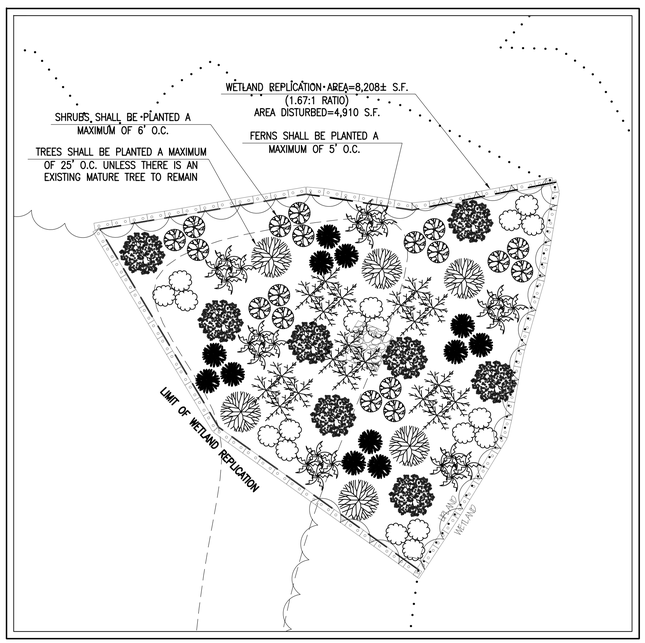
Herbaceous layer
Sensitive fern (Onoclea sensibilis)
Cinnamon fern (Osmunda cinnamomea)
Soft rush (Juncus effusus)
Reed canary-grass (Phalaris arundinacea)
Pennsylvania smartweed (Polygonum pensylvanica)
Arrow-leaved tearthumb (Polygonum cuspidatum)



STORMWATER POCKET WETLAND (DETAIL "A")
SCALE: 1"=30'



RIVERFRONT AREA RESTORATION (DETAIL "C")
SCALE: 1"=20'



WETLAND REPLICATION (DETAIL "B")
SCALE: 1"=20'

REVISIONS		
1	7/10/19	CONSERVATION COMMENTS
2	8/8/19	PLANNING BOARD COMMENTS
3	9/13/19	CONSERVATION COMMENTS

COMMONWEALTH OF MASSACHUSETTS
CHRISTIAN ALBERT FARLAND
No. 47544
CIVIL
REGISTERED PROFESSIONAL ENGINEER

FARLAND CORP.
www.FarlandCorp.com
401 COUNTY STREET
NEW BEDFORD, MA 02740
P.508.717.3479
OFFICES IN:
●TAUNTON
●MARLBOROUGH
●WARWICK, RI

DRAWN BY: MJW
DESIGNED BY: CAF
CHECKED BY: CAF

SITE PLAN

100 DUCHAINE BOULEVARD

ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

JULY 3, 2019
SCALE: AS NOTED
JOB NO. 15-500.2
LATEST REVISION:
SEPTEMBER 13, 2019

LANDSCAPING & PLANTING SCHEDULES
SHEET 17 OF 25

COLOR KEY

- = EXISTING BUILDING
- = PROPOSED BUILDING
- = PROPOSED SOLAR CANOPY
- = UPLAND GREENSPACE
- = WETLAND GREENSPACE
- = PERENNIAL STREAM

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REVISIONS

1	7/10/19	CONSERVATION COMMENTS
2	8/8/19	PLANNING BOARD COMMENTS
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SITE PLAN

100 DUCHAINE BOULEVARD

ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

JULY 3, 2019
SCALE: 1"=100'
JOB NO. 15-500.2
LATEST REVISION:
SEPTEMBER 13, 2019

PRESENTATION

GENERAL CONSTRUCTION NOTES

1. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AND STRUCTURES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF VARIOUS UTILITY COMPANIES AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THIS INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE LOCATION OF ALL UNDERGROUND UTILITIES AND STRUCTURES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION. THE CONTRACTOR MUST CONTACT THE APPROPRIATE UTILITY COMPANY, ANY GOVERNING PERMITTING AUTHORITY, AND "DIG SAFE" AT LEAST 72 HOURS PRIOR TO ANY EXCAVATION WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES INTERFERING WITH THE PROPOSED CONSTRUCTION AND APPROPRIATE REMEDIAL ACTION TAKEN BEFORE PROCEEDING WITH THE WORK. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLAN.
2. TOPOGRAPHIC AND PROPERTY LINE SURVEY PERFORMED BY FARLAND CORP. IN APRIL OF 2019.
3. VERTICAL ELEVATIONS REFER TO THE NORTH AMERICAN VERTICAL DATUM (NAVD) OF 1988 AND HORIZONTAL LOCATIONS REFER TO THE NORTH AMERICAN DATUM (NAD) OF 1983.
4. ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH ALL APPLICABLE STATE AND LOCAL STANDARDS AND REGULATIONS.
5. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL CONTROL POINTS AND BENCH MARKS NECESSARY FOR THE WORK.
6. ALL BENCHMARKS SHOWN ON THIS PLAN ARE TO BE CHECKED FOR CONSISTENCY BY THE CONTRACTOR. ANY DISCREPANCIES MUST BE RESOLVED BY THIS OFFICE PRIOR TO CONSTRUCTION.
7. WHERE PROPOSED PAVEMENT AND WALKS ARE TO MEET EXISTING, THE CONTRACTOR SHALL SAWCUT A NEAT LINE AND MATCH GRADE. SEAL ALL JOINTS WITH HOT BITUMINOUS ASPHALT JOINT SEALER.
8. CURBING TO BE AS INDICATED ON THE PLANS.
9. ALL EXISTING TREES, SHRUBS AND GROUND COVER WHERE NATURAL GRADE IS TO BE RETAINED SHALL BE KEPT IN THEIR EXISTING STATE UNLESS REMOVAL IS REQUIRED FOR CONSTRUCTION PURPOSES.
10. ALL AREAS DISTURBED BY CONSTRUCTION AND NOT TO BE PAVED OR OTHERWISE TREATED AS NOTED ON PLAN SHALL BE TREATED WITH 4" OF LOAM, SEEDED AND HAY MULCHED FOR EROSION CONTROL.
11. SITE IMPROVEMENTS SHALL CONFORM TO A.D.A. SPECIFICATIONS.
12. LIGHTING SHALL BE DIRECTED ON SITE AND AWAY FROM TRAFFIC INTERFERENCE.
13. TEST PITS AND/OR BORINGS WERE TAKEN FOR THE PURPOSE OF DESIGN AND SHOW CONDITIONS AT BORING POINTS ONLY. THEY DO NOT NECESSARILY SHOW THE NATURE OF ALL MATERIALS TO BE ENCOUNTERED DURING CONSTRUCTION.
14. THE CONTRACTOR SHALL PROTECT AND/OR CAP OFF ALL EXISTING ON-SITE UTILITY SERVICES ACCORDING TO THE LOCAL AUTHORITY'S SPECIFICATIONS. SERVICES SHALL BE CAPPED OFF WHERE SAME ENTER THE PERIMETER OF THE PROPERTY LINE.
15. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL CONSTRUCTION DOCUMENTS, SPECIFICATIONS AND SITE CONDITIONS PRIOR TO BIDDING AND PRIOR TO CONSTRUCTION.
16. ANY DISCREPANCIES BETWEEN DRAWINGS, SPECIFICATIONS AND SITE CONDITIONS SHALL BE REPORTED IMMEDIATELY TO THE OWNER'S REPRESENTATIVE FOR CLARIFICATION AND RESOLUTION PRIOR TO BIDDING OR CONSTRUCTION.
17. THESE PLANS ARE PERMITTING PLANS AND SHALL NOT TO BE USED FOR CONSTRUCTION. A FINAL SET OF STAMPED PLANS FOR CONSTRUCTION WILL BE ISSUED AFTER RECEIVING FINAL APPROVAL FROM THE LOCAL AND/OR STATE DEPARTMENTS.

CONSTRUCTION SEQUENCING NOTES

1. CONSTRUCT TEMPORARY AND PERMANENT EROSION CONTROL FACILITIES. EROSION CONTROL FACILITIES SHALL BE INSTALLED PRIOR TO ANY EARTH MOVING.
2. TREE PROTECTION FENCE SHALL BE INSTALLED AND APPROVED BY THE OWNER REPRESENTATIVE PRIOR TO ANY EARTH MOVING.
3. ALL PERMANENT DITCHES AND SWALES ARE TO BE STABILIZED WITH VEGETATION OR RIP RAP PRIOR TO DIRECTING RUNOFF TO THEM.
4. CLEAR CUT, DEMOLISH AND DISPOSE OF EXISTING SITE ELEMENTS NOT TO REMAIN.
5. STORMWATER SHALL NOT BE DIRECTED TOWARDS THE INFILTRATION BASINS UNTIL THE ENTIRE CONTRIBUTING DRAINAGE AREA HAS BEEN STABILIZED.
6. GRADE AND GRAVEL ALL PAVED AREAS. ALL PROPOSED PAVED AREAS SHALL BE STABILIZED IMMEDIATELY AFTER GRADING.
7. BEGIN ALL PERMANENT AND TEMPORARY SEEDING AND MULCHING. ALL CUT AND FILL SLOPES SHALL BE SEEDED AND MULCHED IMMEDIATELY AFTER THEIR CONSTRUCTION.
8. DAILY, OR AS REQUIRED, CONSTRUCT TEMPORARY BERMS, DRAINS, DITCHES, SILT FENCES AND MULCH AND SEED AS REQUIRED.
9. FINISH PAVING ALL HARD SURFACE AREAS.
10. INSPECT AND MAINTAIN ALL EROSION AND SEDIMENT CONTROL MEASURES.
11. COMPLETE PERMANENT SEEDING AND LANDSCAPING.
12. REMOVE TEMPORARY EROSION CONTROL MEASURES.
13. THE CONSTRUCTION SEQUENCE SHALL BE CONFINED TO THE LIMIT OF WORK AS SHOWN ON THE DRAWINGS.
14. UPON COMPLETION OF CONSTRUCTION THE OWNER SHALL AGREE TO MAINTAIN AND CLEAN ALL DRAINAGE STRUCTURES AS REQUIRED.

SITE PREPARATION NOTES

1. WITHIN THE LIMIT OF WORK LINE AS NOTED ON THE SITE PLANS, REMOVE AND DISCARD ALL CONCRETE PAVEMENT, BITUMINOUS CONCRETE PAVEMENT, BRICK PAVEMENT, TOP SOIL, MULCH, TRASH, DEAD TREES AND STUMPS, SHRUBBERY, CHAIN LINK FENCE POSTS, RAILS, FABRIC, GATES, FOOTINGS AND ALL APPURTENANCES, BOLLARDS, POSTS, CONCRETE FOOTINGS AND FOUNDATIONS, WALLS AND CURBS UNLESS OTHERWISE NOTED.
2. THE OWNER'S REPRESENTATIVE SHALL BE CONSULTED AND WILL REVIEW THE WORK ON SITE WITH THE CONTRACTOR BEFORE ANY WORK SHALL COMMENCE.
3. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND REPORT ANY DISCREPANCIES BETWEEN PLANS AND ACTUAL CONDITIONS TO THE OWNER'S REPRESENTATIVE PRIOR TO STARTING WORK.
4. THE CONTRACTOR IS RESPONSIBLE FOR ANY DAMAGE TO EXISTING CONDITIONS TO REMAIN THAT ARE DUE TO CONTRACTOR OPERATIONS.
5. ALL ITEMS TO BE REMOVED THAT ARE NOT STOCKPILED FOR LATER REUSE ON THE PROJECT OR DELIVERED TO THE OWNER SHALL BE LEGALLY DISPOSED OF OFF SITE BY THE CONTRACTOR.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING HIS EFFORTS OF THE DEMOLITION WITH ALL TRADES.
7. THE CONTRACTOR SHALL COORDINATE ALL ADJUSTMENT OR ABANDONMENT OF UTILITIES WITH THE RESPECTIVE UTILITY COMPANY.
8. THE CONTRACTOR SHALL MAINTAIN OR ADJUST TO NEW FINISH GRADES AS NECESSARY ALL UTILITY AND SITE STRUCTURES SUCH AS LIGHT POLES, SIGN POLES, MANHOLES, CATCH BASINS, HAND HOLES, WATER AND GAS GATES, HYDRANTS, ETC., FROM MAINTAINED UTILITY AND SITE SYSTEMS UNLESS OTHERWISE NOTED OR DIRECTED BY THE OWNER'S REPRESENTATIVE.

UTILITY AND GRADING NOTES

1. ALL ON-SITE STORM DRAINAGE PIPES SHALL BE HIGH DENSITY POLYETHYLENE PIPE (HDPE) OR RCP, UNLESS NOTED OTHERWISE.
2. HDPE PIPE SHALL CONFORM WITH AASHTO DESIGNATIONS M294 AND M252, SHALL BE MANUFACTURED WITH HIGH DENSITY POLYETHYLENE PLASTIC AND SHALL BE ADS N-12 PIPE AS MANUFACTURED BY ADVANCE DRAINAGE SYSTEM, INC. OR HANCOR HI Q PIPE AS MANUFACTURED BY HANCOR, INC. OR APPROVED EQUAL UNLESS OTHERWISE NOTED OR DETAILED.
3. A MINIMUM OF 18" VERTICAL CLEARANCE SHALL BE MAINTAINED WHERE WATER SERVICES CROSS STORM DRAIN LINES.
4. ALL SERVICE CONNECTIONS SHALL BE INSTALLED TO A POINT OF 10 FEET FROM THE BUILDING WALL UNLESS OTHERWISE NOTED OR DETAILED.
5. ALL WATER MAINS SHALL BE INSTALLED WITH A MINIMUM OF 5 FEET OF COVER AND A MAXIMUM OF 6 FEET OF COVER EXCEPT AS NOTED OR DETAILED OTHERWISE. GREATER DEPTHS ARE PERMITTED WHERE REQUIRED TO AVOID CONFLICTS WITH OTHER UTILITIES.
6. GENERALLY, WATER MAIN FITTINGS IDENTIFIED ON THIS DRAWING ARE SHOWN FOR INSTALLATION LOCATION PURPOSE. THE CONTRACTOR SHALL NOTE THAT NOT ALL FITTINGS ARE NOTED, SHOWN OR INDICATED.
7. ALL WATER MAIN FITTINGS, TEES, BENDS, HYDRANTS, ETC. SHALL BE RESTRAINED WITH CONCRETE THRUST BLOCKS.
8. ALL HYDRANTS SHALL BE INSTALLED WITH A 6" C.L.D.I. RUNOUT AND SHALL BE INSTALLED WITH APPROPRIATELY SIZED GATE VALVE, BOX, AND TEE FITTING. ALL HYDRANTS SHALL MEET LOCAL MUNICIPAL SPECIFICATION REQUIREMENTS AND SHALL BE INSTALLED IN ACCORDANCE WITH ALL LOCAL MUNICIPAL REQUIREMENTS.
9. DOMESTIC WATER SERVICES 2.5" AND SMALLER SHALL BE TYPE K COPPER TUBING AND SHALL BE INSTALLED WITH APPROPRIATELY SIZED CORPORATION STOP AND APPROVED SADDLE CURB STOP, AND BOX, USING MATERIALS SPECIFIED BY THE MUNICIPAL WATER DEPARTMENT OR COMPANY.
10. ALL WATER MAINS 3" AND LARGER SHALL BE CEMENT LINED DUCTILE IRON – CLASS 52, AND SHALL BE INSTALLED WITH APPROPRIATELY SIZED FITTINGS AND GATE VALVES.
11. ALL WATER MAIN APPURTENANCES, MATERIALS, METHODS OF INSTALLATION AND TESTING REQUIREMENTS SHALL MEET OR EXCEED ALL LOCAL MUNICIPAL REQUIREMENTS.
12. PRESSURE AND LEAKAGE TEST, DISINFETION AND FLUSHING SHALL BE IN ACCORDANCE WITH ALL LOCAL MUNICIPAL STANDARDS AND REQUIREMENTS. CONTRACTORS SHALL BE RESPONSIBLE FOR ALL COSTS IN CONNECTION WITH UTILITY TESTS, FLUSHING AND INSPECTIONS AS REQUIRED BY THE LOCAL MUNICIPALITY.
13. PRIMARY WATER METER AND BACKFLOW PREVENTER SHALL BE LOCATED AT THE POINT WHERE THE WATER LINE ENTERS THE BUILDING UNLESS OTHERWISE NOTED OR DETAILED ON THE DRAWINGS.
14. ALL GRAVITY SEWER PIPE SHALL BE PVC PER ASTM D3034, SDR-35 AND ASTM D1784 WITH RUBBER GASKET JOINTS.
15. WHERE SANITARY SEWERS CROSS WATER LINES, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE CROWN OF THE SEWER IS AT LEAST EIGHTEEN INCHES BELOW THE INVERT OF THE WATER MAIN. IF THE ELEVATION OF THE SEWER CANNOT BE VARIED TO MEET THIS REQUIREMENT. THE WATER MAIN SHALL BE RELOCATED TO PROVIDE THIS SEPARATION OR CONSTRUCTED WITH MECHANICAL JOINT PIPE FOR A DISTANCE OF TEN FEET ON EACH SIDE OF THE SEWER. ONE FULL LENGTH OF WATER MAIN SHALL BE CENTERED OVER THE SEWER SO THAT BOTH JOINTS WILL BE AS FAR AS THE SEWER AS POSSIBLE. IF MECHANICAL JOINT PIPE IS NOT USED THAN BOTH THE WATER MAIN AND SANITARY SEWER SHALL BE ENCASED IN CONCRETE FOR A MINIMUM DISTANCE OF 10 FEET FROM THE CROSSING POINT OF THE OTHER PIPE AS MEASURED NORMALLY FROM ALL POINTS ALONG THE PIPE.
16. DUE TO THE SMALL SCALE OF THE SITE WORK DRAWINGS, EXACT LOCATION OF UTILITY STUBS FOR BUILDING CONNECTIONS SHALL BE VERIFIED WITH THE BUILDING DRAWINGS. SERVICE STUBS TO THE BUILDING SHALL BE INSTALLED TO A POINT 10 FEET FROM THE BUILDING WALL UNLESS OTHERWISE NOTED OR DETAILED.
17. BEFORE THE DEVELOPMENT SITE IS GRADED, THE AREA OF THE DRAINAGE BASINS SHOULD BE FENCED OFF TO PREVENT HEAVY EQUIPMENT FROM COMPACTING THE UNDERLYING SOIL.
18. WHERE PROPOSED GRADES MEET EXISTING GRADES, CONTRACTOR SHALL BLEND GRADES TO PROVIDE A SMOOTH TRANSITION BETWEEN EXISTING AND NEW WORK. PONDING AT TRANSITION AREAS WILL NOT BE ALLOWED.
19. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE AWAY FROM ALL BUILDING FOUNDATIONS AND STRUCTURES.
20. MAXIMUM SLOPE IN DISTURBED AREAS SHALL NOT EXCEED 3:1 , UNLESS OTHERWISE NOTED.
21. CONTRACTOR SHALL VERIFY EXISTING GRADES AND NOTIFY OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES.
22. CONTRACTOR SHALL ADJUST UTILITY ELEMENT MEANT TO BE FLUSH WITH GRADE THAT IS AFFECTED BY SITE WORK OR GRADE CHANGES, WHETHER SPECIFICALLY NOTED ON PLANS OR NOT.
23. WHERE AN EXISTING UTILITY IS FOUND TO CONFLICT WITH THE PROPOSED WORK, THE LOCATION, ELEVATION AND SIZE OF THE UTILITY SHALL BE ACCURATELY DETERMINED WITHOUT DELAY BY THE CONTRACTOR, AND THE INFORMATION FURNISHED TO THE OWNER'S REPRESENTATIVE FOR RESOLUTION OF THE CONFLICT.
24. THE CONTRACTOR SHALL MAKE ALL ARRANGEMENTS FOR THE ALTERATION AND ADJUSTMENT OF ALL GAS, ELECTRIC, TELEPHONE AND ANY OTHER PRIVATE UTILITIES BY THE UTILITY COMPANIES.
25. ELECTRICAL DUCT BANK LOCATION IS SHOWN FOR COORDINATION PURPOSES, REFER TO ELECTRICAL PLANS FOR SECTIONS AND DETAILS OF THE UTILITY DUCT BANK.
26. THE LOCATION, SIZE, DEPTH AND SPECIFICATIONS FOR CONSTRUCTION OF PRIVATE UTILITY SERVICES SHALL BE INSTALLED ACCORDING TO THE REQUIREMENTS PROVIDED BY AND APPROVED BY THE RESPECTIVE UTILITY COMPANY (GAS, TELEPHONE AND ELECTRICAL). FINAL DESIGN AND LOCATIONS AT THE BUILDING WILL BE PROVIDED BY THE ARCHITECT. THE CONTRACTOR SHALL COORDINATE THE INSTALLATION OF THE UTILITY CONNECTIONS WITH THE RESPECTIVE COMPANIES PRIOR TO ANY UTILITY CONSTRUCTION.

LAYOUT AND MATERIAL NOTES

1. CONTRACTOR SHALL THOROUGHLY FAMILIARIZE THEMSELVES WITH ALL CONSTRUCTION DOCUMENTS, SPECIFICATIONS AND SITE CONDITIONS PRIOR TO BIDDING AND PRIOR TO CONSTRUCTION.
2. ANY DISCREPANCIES BETWEEN DRAWINGS, SPECIFICATIONS AND SITE CONDITIONS SHALL BE REPORTED IMMEDIATELY TO THE OWNER'S REPRESENTATITIVE FOR CLARIFICATION AND RESOLUTION PRIOR TO BIDDING OR CONSTRUCTION.
3. SEE ARCHITECTURAL DRAWINGS FOR EXACT BUILDING DIMENSIONS AND ALL DETAILS CONTIGUOUS TO THE BUILDING INCLUDING SIDEWALKS, RAMPS, UTILITY ENTRANCE LOCATIONS, WALL PACKS, CONCRETE DOOR PADS, ROOF DRAINS, ETC.
4. ACCESSIBLE CURB RAMPS SHALL BE PER THE MASSACHUSETTS ARCHITECTURAL ACCESS BOARD AND THE AMERICANS WITH DISABILITIES ACT ACCESSIBLITY GUIDELINES, WHICHER IS MORE STRINGENT.
5. THE FOLLOWING LAYOUT CRITERIA SHALL CONTROL UNLESS OTHERWISE NOTED ON THE PLAN:
   ALL DIMENSIONS ARE TO OUTSIDE FACE OF BUILDING.
   ALL DIMENSIONS ARE TO FACE OF CURB AT GUTTER LINE.
   ALL DIMENSIONS ARE TO CENTER OF PAVEMENT MARKINGS.
   ALL TIES TO PROPERTY LINES ARE PERPENDICULAR TO THE PROPERTY LINE UNLESS OTHERWISE NOTED.

SOIL EROSION AND SEDIMENT CONTROL NOTES

1. THE CONSERVATION COMMISSION SHALL BE NOTIFIED, AT LEAST 72 HOURS PRIOR TO ANY LAND DISTURBANCE.
2. A COPY OF THE SOIL EROSION AND SEDIMENT CONTROL PLAN MUST BE MAINTAINED ON THE PROJECT SITE DURING CONSTRUCTION.
3. SOIL EROSION AND SEDIMENT CONTROL PRACTICES IN THE PLAN SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PLANS AND SPECIFICATIONS.
4. ALL APPLICABLE SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE IN PLACE PRIOR TO ANY DEMOLITION GRADING OPERATIONS AND/OR INSTALLATION OF PROPOSED STRUCTURES OR UTILITIES.
5. ALL APPLICABLE SOIL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE LEFT IN PLACE UNTIL CONSTRUCTION IS COMPLETED AND/OR THE AREA IS STABILIZED.
6. ALL SOIL EROSION AND SEDIMENT CONTROL STRUCTURES SHALL BE INSPECTED AND MAINTAINED ON A REGULAR BASIS AND AFTER EVERY STORM EVENT.
7. THE MAINTENANCE OF SOIL EROSION AND SEDIMENT CONTROL MEASURES AND FACILITIES DURING AND IMMEDIATELY AFTER CONSTRUCTION RESTS WITH THE GENERAL CONTRACTOR. UPON ACCEPTANCE OF THE PROJECT, THE OWNER SHALL BECOME RESPONSIBLE FOR MAINTENANCE OF ANY REMAINING MEASURES AND FACILITIES.
8. OFF SITE SEDIMENT DISTURBANCE MAY REQUIRE ADDITIONAL CONTROL MEASURES TO BE DETERMINED BY THE ENGINEER.
9. THE CONSERVATION COMMISSION AND/OR ENGINEER MAY REQUIRE ADDITIONAL SOIL EROSION MEASURES TO BE INSTALLED, AS DIRECTED BY THE DISTRICT INSPECTOR.
10. ADJOINING PROPERTIES SHALL BE PROTECTED FROM EXCAVATION AND FILLING OPERATIONS AT ALL TIMES.
11. THE CONTRACTOR SHALL UTILIZE ALL METHODS NECESSARY TO PREVENT BLOWING AND MOVEMENT OF DUST FROM THE EXPOSED SOIL SURFACES.
12. PAVED ROADWAYS MUST BE KEPT CLEAN AT ALL TIMES.
13. A CRUSHED STONE TIRE CLEANING PAD WILL BE INSTALLED WHEREVER A CONSTRUCTION ENTRANCE EXISTS. SEE LOCATION DETAIL ON PLAN.
14. ALL CATCH BASIN INLETS SHALL BE PROTECTED DURING CONSTRUCTION AS DETAILED ON THE PLAN, IF APPLICABLE.
15. ALL STORM DRAINAGE OUTLETS SHALL BE PROTECTED AS REQUIRED HEREON BEFORE DISCHARGE POINTS BECOME OPERATIONAL.
16. THE SITE SHALL AT ALL TIMES BE GRADED AND MAINTAINED SUCH THAT ALL STORMWATER RUNOFF IS DIVERTED TO SOIL EROSION AND SEDIMENT CONTROL FACILITIES.
17. LAND AREAS EXPOSED AT ANY ONE TIME AND THE LENGTH OF EXPOSURE SHALL BE KEPT TO A PRACTICAL MINIMUM. THEY SHALL BE LEFT IN A NEAT AND FINISHED APPEARANCE AND PROTECTED FROM EROSION.
18. ANY DISTURBED AREA THAT WILL BE LEFT EXPOSED FOR MORE THAN SIXTY (60) DAYS AND NOT SUBJECT TO CONSTRUCTION TRAFFIC SHALL IMMEDIATELY RECEIVE A TEMPORARY SEEDING AND FERTILIZATION. IF THE SEASON PROHIBITS TEMPORARY SEEDING, THE DISTRIBUTED AREAS SHALL BE MULCHED.
19. ALL CRITICAL AREAS SUBJECT TO EROSION SHALL RECEIVE A TEMPORARY SEEDING AND BE MULCHED IN ACCORDANCE WITH THE SPECIFICATIONS IMMEDIATELY FOLLOWING ROUGH GRADING.
20. IMMEDIATELY AFTER COMPLETION OF STRIPPING AND STOCKPILING OF TOPSOIL, SEED THE STOCKPILE WITH ANNUAL RYE GRASS. STABILIZE TOPSOIL STOCKPILES WITH STRAW MULCH FOR PROTECTION IF THE SEASON DOES NOT PERMIT THE APPLICATION AND ESTABLISHMENT OF TEMPORARY SEEDING.
21. SOIL STOCKPILES ARE NOT TO BE LOCATED WITHIN FIFTY (50) FEET OF WETLANDS, THE FLOODPLAIN, SLOPE, ROADWAY OR DRAINAGE FACILITIES. THE BASE OF ALL STOCKPILES SHALL BE PROTECTED BY A HAY BALE BARRIER OR SEDIMENT FENCE. LOCATIONS ARE DELINEATED ON THE PLAN.
22. MAXIMUM SIDE SLOPES OF ALL EXPOSED SURFACES SHALL NOT BE CONSTRUCTED STEEPER THAN 3:1 UNLESS OTHERWISE APPROVED BY THE DISTRICT.
23. ALL AREAS NOT STABILIZED BY CONSTRUCTION, SODDING OR LANDSCAPING SHALL BE SEEDED AND STABILIZED IN ACCORDANCE WITH THE SEEDING AND MULCHING SPECIFICATIONS.
24. MULCHING IS REQUIRED ON ALL SEEDED AREAS TO INSURE AGAINST EROSION BEFORE GRASS IS ESTABLISHED TO PROMOTE EARLIER VEGETATIVE COVER.
25. ALL DEWATERING OPERATIONS MUST DISCHARGE DIRECTLY INTO A SEDIMENT FILTRATION DEVICE. THE SEDIMENT FILTER MUST BE CAPABLE OF FILTERING THE SEDIMENT AND BE PLACED SO AS NOT TO CAUSE EROSION OF THE DOWNSTREAM AREA.

GENERAL PLANTING NOTES

1. ALL PLANT MATERIAL SHALL CONFORM TO THE STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN OR THE PLANT MATERIAL WILL BE UNACCEPTABLE. ALL PLANT MATERIAL SHALL BE TRUE TO SPECIES, VARIETY, SIZE AND BE CERTIFIED DISEASE AND INSECT FREE. THE OWNER AND/OR THE LANDSCAPE ARCHITECT RESERVES THE RIGHT TO APPROVE ALL PLANT MATERIAL ON SITE PRIOR TO INSTALLATION.
2. ALL PLANT MATERIAL SHALL BE PROPERLY GUYED, STAKED, WRAPPED, AND PLANTED IN CONFORMANCE WITH THE TYPICAL PLANTING DETAILS. GUY WIRES SHALL BE ATTACHED TO THE TREE AT A HEIGHT OF TWO-THIRDS THE HEIGHT OF THE TREE AND SHOULD BE LOCATED AT POINTS SO AS NOT TO SPLIT THE TRUNK OF MULTI-STEMMED TREES. PROVIDE THREE STAKES PER TREE UNLESS NOTED OTHERWISE INSTALL ALL PLANT MATERIAL ON UNDISTURBED GRADE. PROVIDE BURLAP WRAPPING WITH A 50% OVERLAP. CUT AND REMOVE BURLAP FROM TOP ONE-THIRD OF THE ROOT BALL.
3. PROVIDE PLANTING PITS AS INDICATED ON PLANTING DETAILS. BACKFILL PLANTING PITS WITH ONE PART EACH OF TOP SOIL, PEAT MOSS, AND PARENT MATERIAL. IF WET SOIL CONDITIONS EXIST THEN PLANTING PITS SHALL BE EXCAVATED AN ADDITIONAL 12" AND FILLED WITH SAND.
4. NEWLY INSTALLED PLANT MATERIAL SHALL BE WATERED AT THE TIME OF INSTALLATION AND SHALL BE SUBSEQUENTLY FLOODED TWICE WITHIN TWENTY-FOUR (24) HOURS OF PLANTING. REGULAR WATERING SHALL BE PROVIDED TO ENSURE THE ESTABLISHMENT, GROWTH AND SURVIVAL OF ALL PLANTS.
5. ALL PLANT MATERIAL SHALL BE GUARANTEED FOR ONE YEAR AFTER THE DATE OF FINAL ACCEPTANCE. ANY PLANT MATERIAL THAT DIES WITHIN THAT TIME PERIOD SHALL BE REMOVED, INCLUDING THE STUMP, AND REPLACED WITH MATERIAL OF SIMILAR SIZE AND SPECIES AT THE EXPENSE OF THE DEVELOPER. THE REPLACED PLANT MATERIAL SHALL BE GUARANTEED FOR ONE YEAR AFTER THE REPLACEMENT DATE.
6. THE LANDSCAPE CONTRACTOR SHALL PROVIDE A MINIMUM 4" LAYER OF TOPSOIL IN ALL LAWN AREAS AND A MINIMUM OF 6" OF TOPSOIL IN ALL PLANTING AREAS. A FULL SOIL ANALYSIS SHALL BE CONDUCTED AFTER CONSTRUCTION AND PRIOR TO PLANTING TO DETERMINE THE EXTENT OF SOIL AMENDMENT REQUIRED.
7. ALL DISTURBED LAWN AREAS SHALL BE STABILIZED WITH EITHER SOD OR SEED AS INDICATED ON THE LANDSCAPE PLANS. SEED SHALL CONSIST OF THE MIXTURE LISTED IN THE GENERAL SEEDING NOTES. ALL DISTURBED LAWN AREAS SHALL BE TOP SOILED, LIMED, FERTILIZED, AND FINE GRADED PRIOR TO LAWN INSTALLATION.
8. ALL PLANTING BEDS SHALL RECEIVE 3" OF SHREDDED PINE, CEDAR OR HEMLOCK BARK.
9. ALL SHRUB MASSES SHALL BE PLANTED IN CONTINUOUS MULCHED BEDS.
10. ALL TREES ARE TO BE GUYED, 3 EACH, UNLESS OTHERWISE NOTED ON PLAN.
11. ALL DECIDUOUS TREES ARE TO BE WRAPPED, WITH TREE WRAP, UP TO THE FIRST BRANCHING AND SECURED.
12. THE LANDSCAPE CONTRACTOR IS TO PERFORM ALL CONTRACTED WORK IN A REASONABLE PERIOD OF CONTINUOUS WORK.
13. THE LANDSCAPE CONTRACTOR IS TO MAINTAIN PLANT MATERIAL WHILE THE PROJECT IS UNDERWAY AND FOR A PERIOD OF TWO WEEKS AFTER THE COMPLETION OF THE PROJECT UNLESS OTHERWISE SPECIFIED.
14. THE CONTRACTOR IS TO CLEAN UP AND REMOVE ANY DEBRIS FROM THE SITE, CAUSED BY THE LANDSCAPE CONTRACTOR.

LEGEND

EXISTING		PROPOSED
101	CONTOUR LINE	101
x101.1	SPOT GRADE	+101.1
EOP	EDGE OF PAVEMENT	EOP
VGC	VERTICAL GRANITE CURB	VCC
SGC	SLOPED GRANITE CURB	SGC
VCC	VERTICAL CONCRETE CURB	VCC
BCC	BITUMINOUS CONCRETE CURB	BCC
CCB	CAPE COD BERM	CCB
	STONE WALL	
	CHAIN LINK FENCE	
	IRON FENCE	
	POST & RAIL FENCE	
	STOCKADE FENCE	
	GUARD RAIL	
	HAY BALES	
W	WATER LINE	W
	FIRE HYDRANT	
	POST INDICATOR VALVE	
	WATER GATE	
	WATER METER PIT	
	IRRIGATION HAND HOLE	
	WELL	
S	SEWER LINE	
	SEWER MANHOLE	
G	GAS LINE	
	GAS METER	
	GAS GATE	
D	DRAIN LINE	
	DRAIN MANHOLE	
	CATCH BASIN	
OHW	OVERHEAD WIRES	
E/C	ELECTRIC, TELEPHONE & CABLE	
	UTILITY POLE	
	GUY WIRE	

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COMMONWEALTH OF MASSACHUSETTS
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DRAWN BY: MJW
DESIGNED BY: CAF
CHECKED BY: CAF

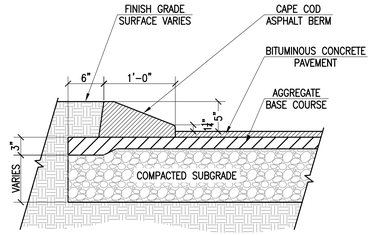
SITE PLAN
100 DUCHAINE BOULEVARD
ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

PREPARED FOR: PARALLEL PRODUCTS OF NEW ENGLAND
401 INDUSTRY ROAD
LOUISVILLE, KY 40208

JULY 3, 2019
SCALE: AS NOTED
JOB NO. 15-500.2
LATEST REVISION:
SEPTEMBER 13, 2019

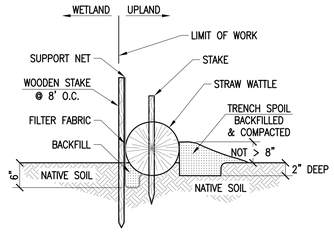
NOTES & LEGEND

SHEET 19 OF 25



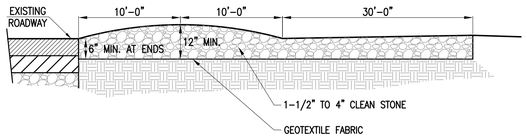
BITUMINIOUS CONCRETE CAPE COD BERM

NOT TO SCALE



STAKED STRAW WATTLE WITH SILT FENCE

NOT TO SCALE



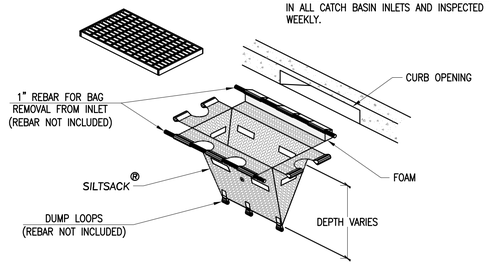
(12' WIDE MINIMUM)

NOTE: PURPOSE IS TO REMOVE MUD FROM TIRES OF CONSTRUCTION VEHICLES.

TEMPORARY CONSTRUCTION ENTRANCE

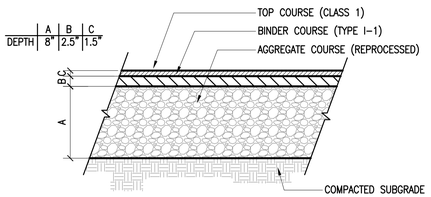
NOT TO SCALE

NOTE:
REGULAR FLOW SILTSACKS SHALL BE INSTALLED IN ALL CATCH BASIN INLETS AND INSPECTED WEEKLY.



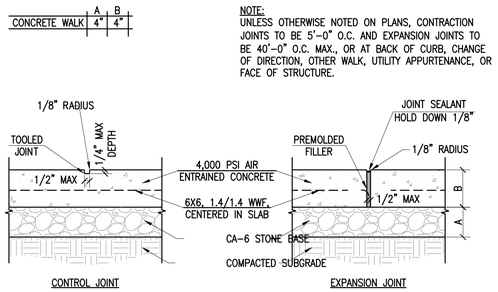
REGULAR FLOW SILTSACK®

NOT TO SCALE



BITUMINOUS CONCRETE PAVEMENT

NOT TO SCALE

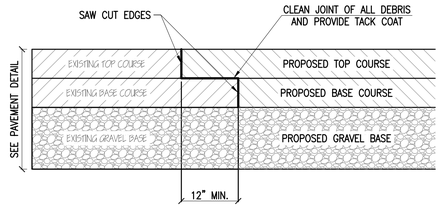


NOTE:
UNLESS OTHERWISE NOTED ON PLANS, CONTRACTION JOINTS TO BE 5'-0" O.C. AND EXPANSION JOINTS TO BE 40'-0" O.C. MAX., OR AT BACK OF CURB, CHANGE OF DIRECTION, OTHER WALK, UTILITY APPURTENANCE, OR FACE OF STRUCTURE.

CONCRETE PAVEMENT SIDEWALK

NOT TO SCALE

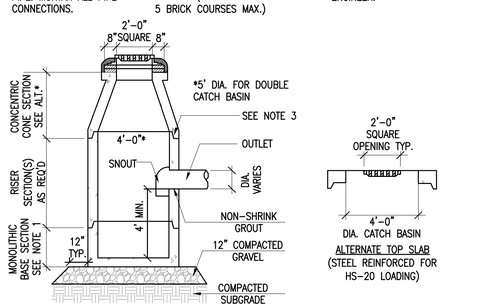
NOTES:
1. TACK COAT – PROVIDE EMULSIFIED ASPHALT WHICH CONFORMS TO THE REQUIREMENTS OF THE STATE SPECIFICATIONS, DILUTED WITH ONE PART WATER TO ONE ONE PART ASPHALT FOLLOWING AASHTO M140/ASTM D997, OR AASHTO M208/ASTM D2397, SS-1H, CSS-1, OR CSS-1H.



PAVEMENT SAWCUT KEY DETAIL

NOT TO SCALE

NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 1" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
3. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
4. CATCH BASIN FRAME SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR. (2 BRICK COURSES MIN. 5 BRICK COURSES MAX.)
5. FRAME AND GRATE TO BE EQUAL TO LEBARON LK 120 (3 FLANGE) OR LK 121 (4 FLANGE) WITH SG-1 GRATE. DOUBLE FRAME AND GRATE SHALL BE LEBARON TYPE R-3531 B OR APPROVED EQUAL BY THE ENGINEER.

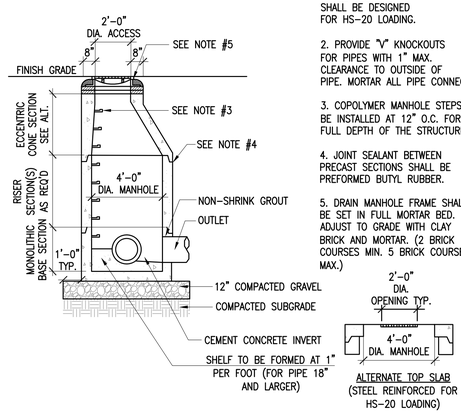


ALTERNATE TOP SLAB
(STEEL REINFORCED FOR HS-20 LOADING)

CATCH BASIN

NOT TO SCALE

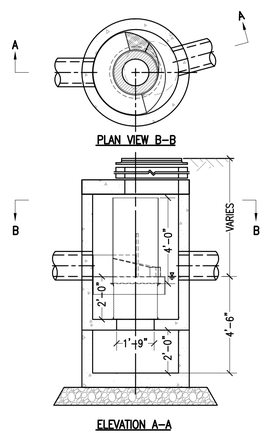
NOTES:
1. ALL SECTIONS SHALL BE DESIGNED FOR HS-20 LOADING.
2. PROVIDE "V" KNOCKOUTS FOR PIPES WITH 1" MAX. CLEARANCE TO OUTSIDE OF PIPE. MORTAR ALL PIPE CONNECTIONS.
3. COPOLYMER MANHOLE STEPS SHALL BE INSTALLED AT 12" O.C. FOR THE FULL DEPTH OF THE STRUCTURE
4. JOINT SEALANT BETWEEN PRECAST SECTIONS SHALL BE PREFORMED BUTYL RUBBER.
5. DRAIN MANHOLE FRAME SHALL BE SET IN FULL MORTAR BED. ADJUST TO GRADE WITH CLAY BRICK AND MORTAR. (2 BRICK COURSES MIN. 5 BRICK COURSES MAX.)



ALTERNATE TOP SLAB
(STEEL REINFORCED FOR HS-20 LOADING)

DRAIN MANHOLE

NOT TO SCALE



CONTECH CDS WATER QUALITY UNIT

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DRAWN BY: MJW
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SITE PLAN

— 100 DUCHAINE BOULEVARD —
ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

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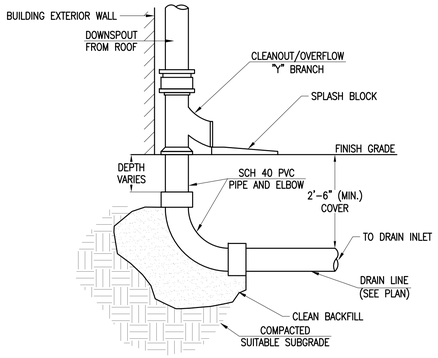
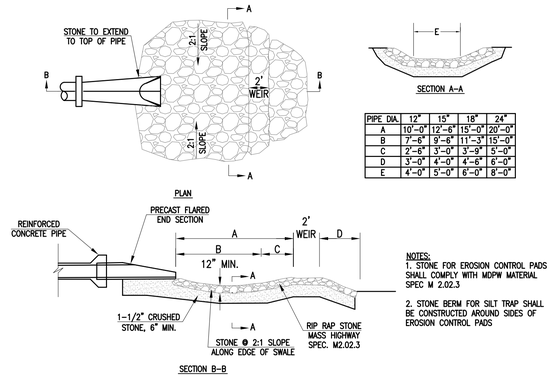
DETAILS

SHEET 20 OF 25



DOWNSPOUT CONNECTION FROM ROOF

NOT TO SCALE

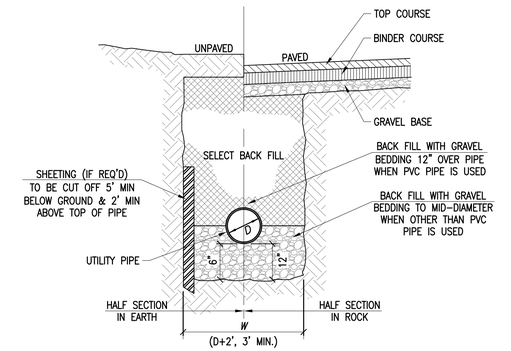


PIPE DIA	12"	15"	18"	24"
A	10'-0"	12'-6"	15'-0"	20'-0"
B	7'-6"	9'-6"	11'-3"	15'-0"
C	2'-6"	3'-0"	3'-9"	5'-0"
D	3'-0"	4'-0"	4'-6"	6'-0"
E	4'-0"	5'-0"	6'-0"	8'-0"

NOTES:
1. STONE FOR EROSION CONTROL PADS SHALL COMPLY WITH MDPW MATERIAL SPEC M 2.02.3
2. STONE BERM FOR SILT TRAP SHALL BE CONSTRUCTED AROUND SIDES OF EROSION CONTROL PADS

FLARED END OUTLET

NOT TO SCALE



UTILITY TRENCH

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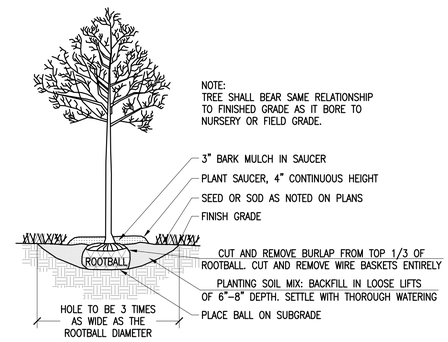
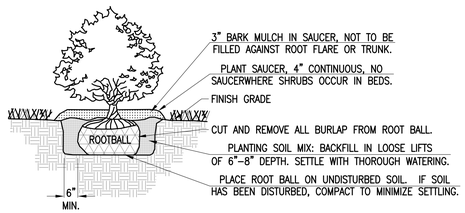


TREE PLANTING

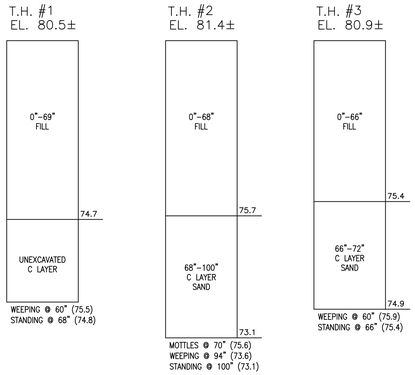
NOT TO SCALE



NOTES:
1. SHRUB SHALL BEAR SAME RELATIONSHIP TO FINISHED GRADE AS IT BORE TO NURSERY OR FIELD GRADE.
2. WHERE SHRUBS OCCUR IN GROUPINGS IN PLANT BEDS, PROVIDE 2' DEEP CONTINUOUS LOAM BED.

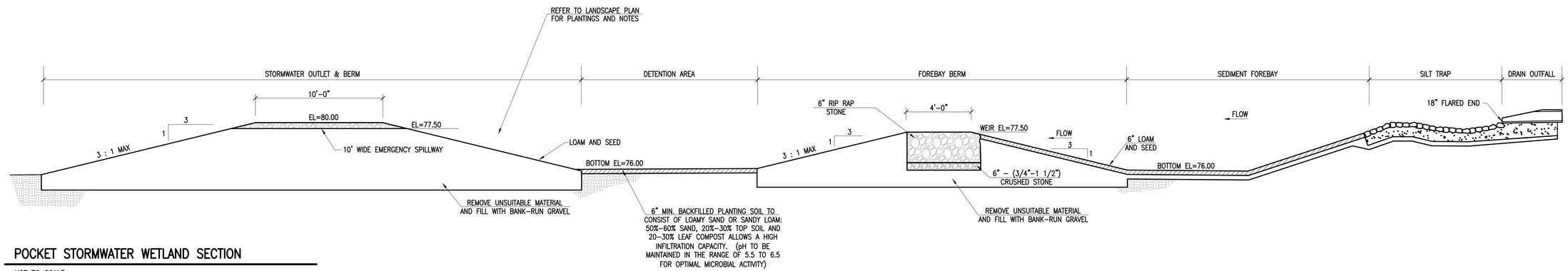
SHRUB PLANTING

NOT TO SCALE



SOIL PROFILES

NOT TO SCALE



POCKET STORMWATER WETLAND SECTION

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LOUISVILLE, KY 40208

JULY 3, 2019
SCALE: AS NOTED
JOB NO. 15-500.2
LATEST REVISION:
SEPTEMBER 13, 2019

DETAILS CONT.

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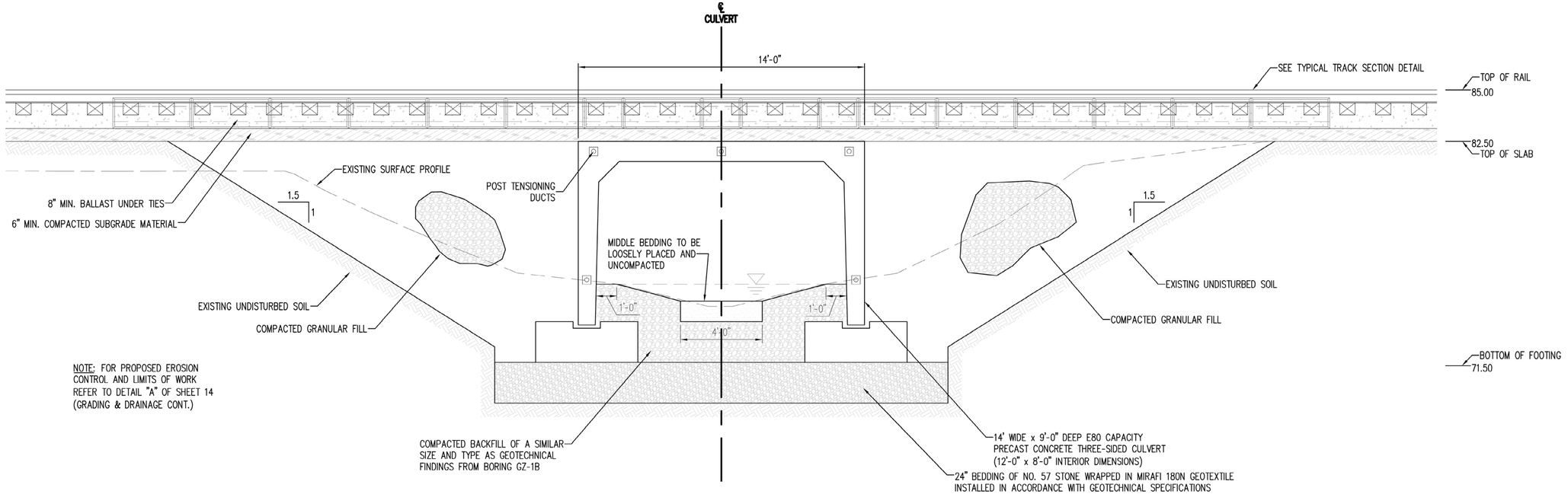

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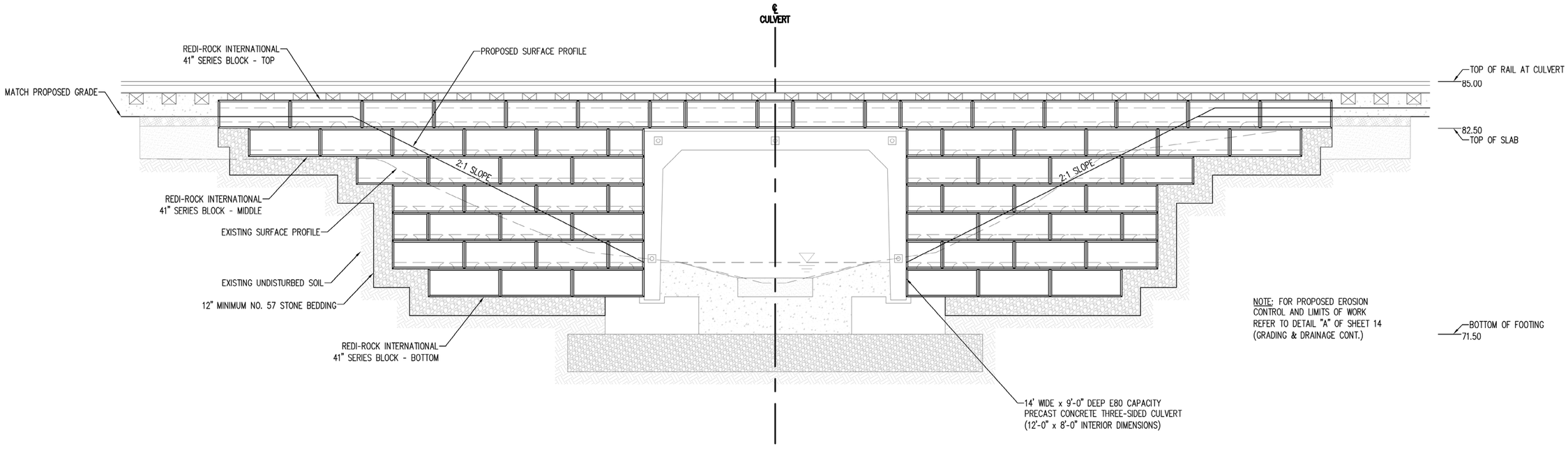

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DESIGNED BY: CAF
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SITE PLAN
100 DUCHAINE BOULEVARD
ASSESSORS MAP 133 LOT 67
ASSESSORS MAP 134 LOTS 5 & 462
NEW BEDFORD, MASSACHUSETTS

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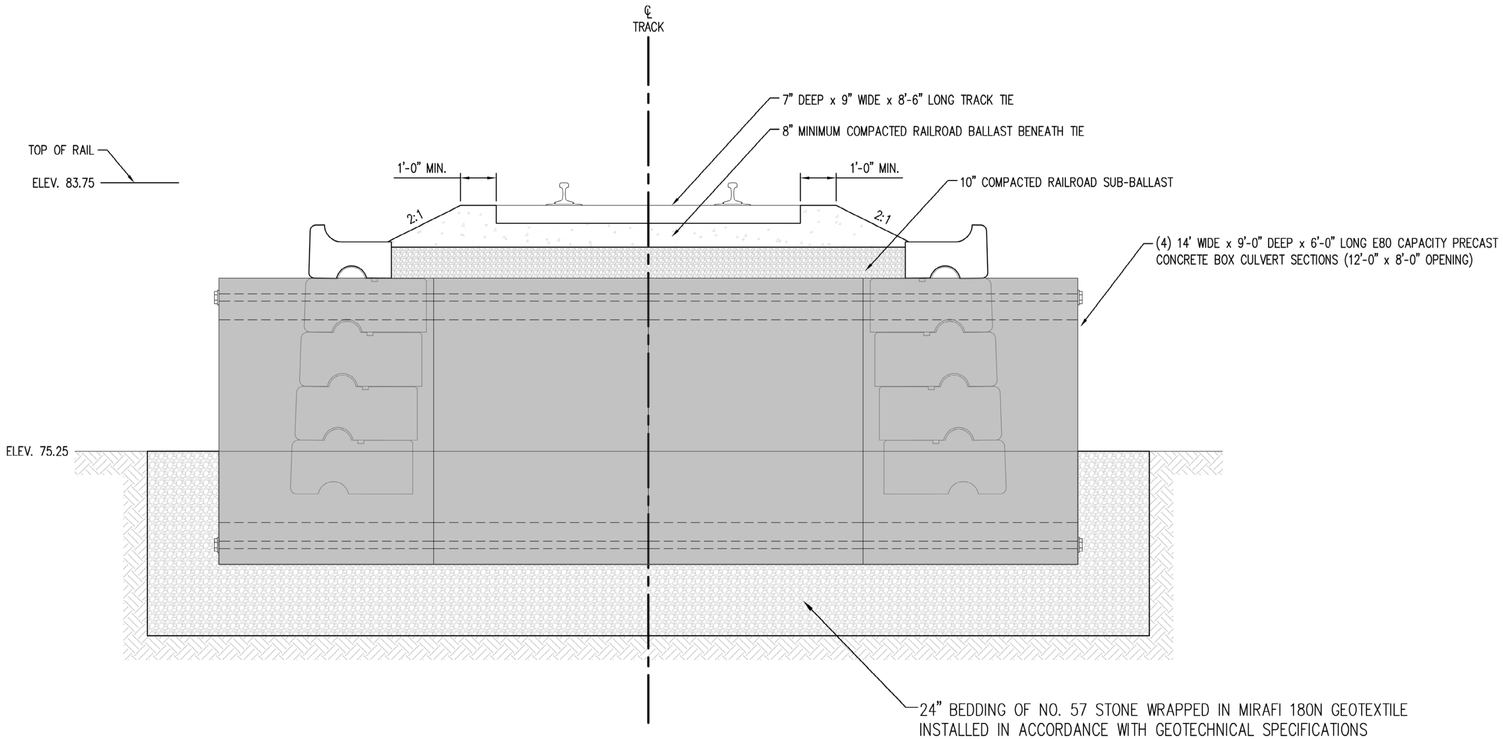

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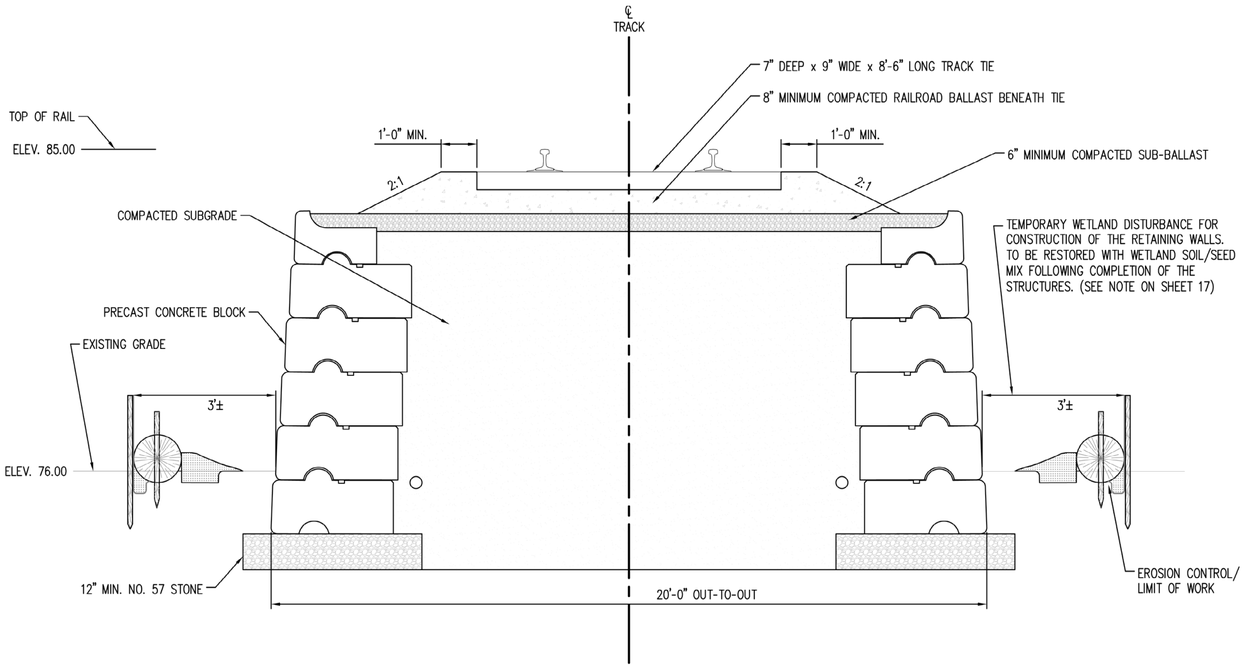
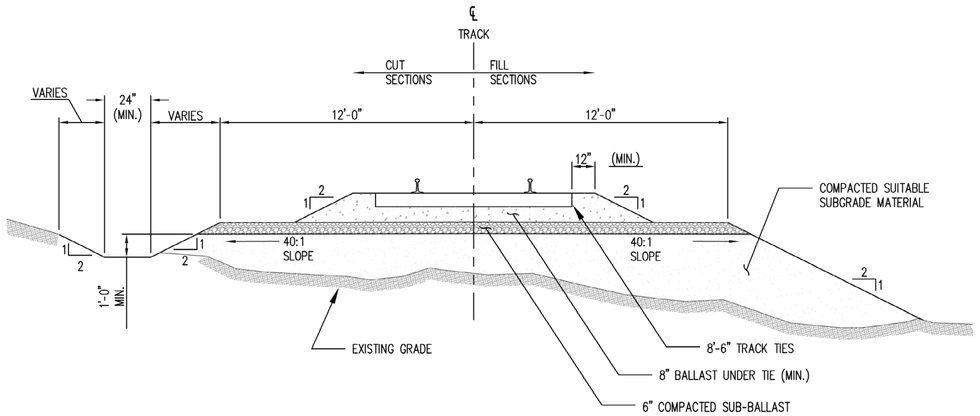


WETLAND CROSSING - SECTION VIEW



TYPICAL CROSS SECTION - SINGLE RAIL

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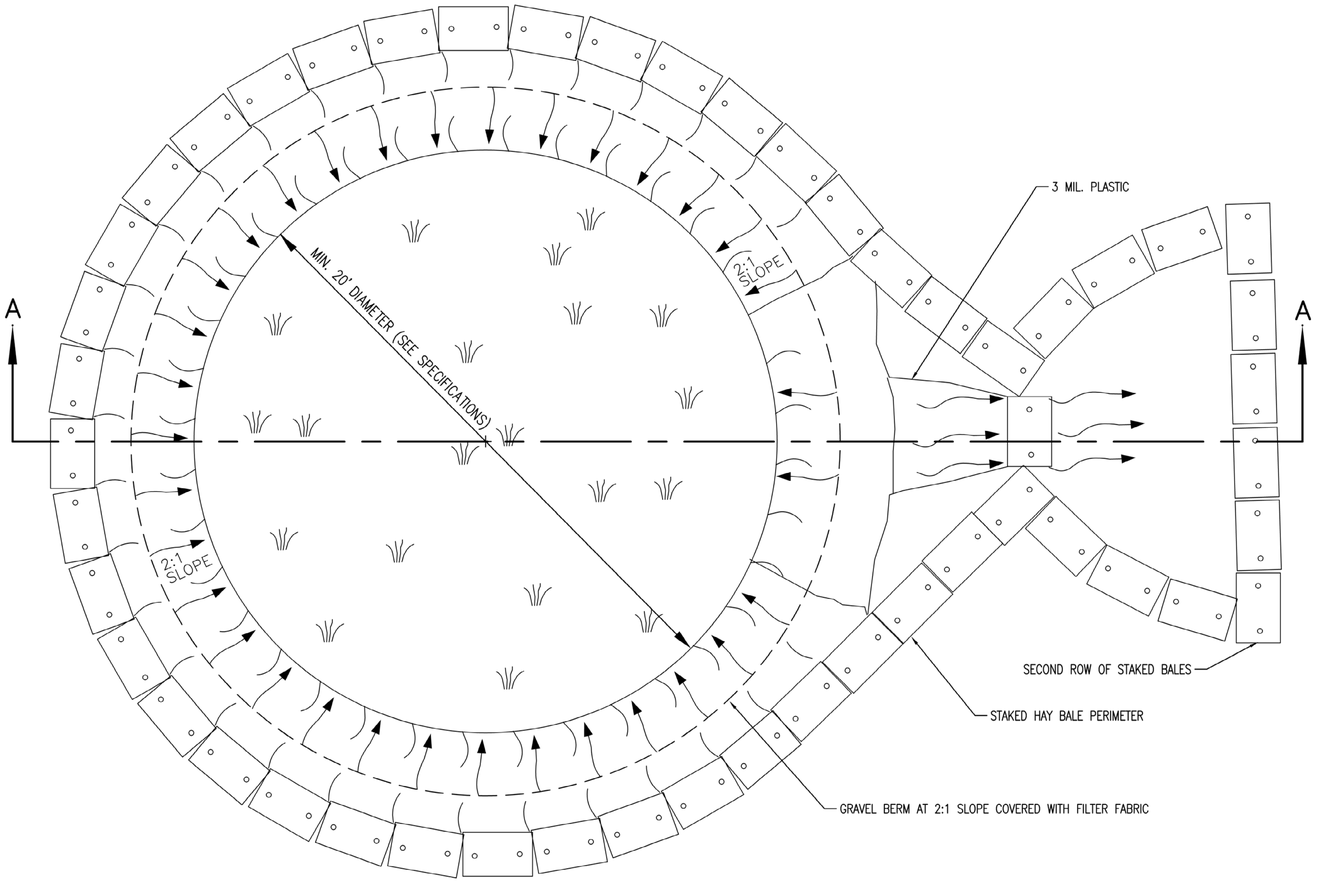
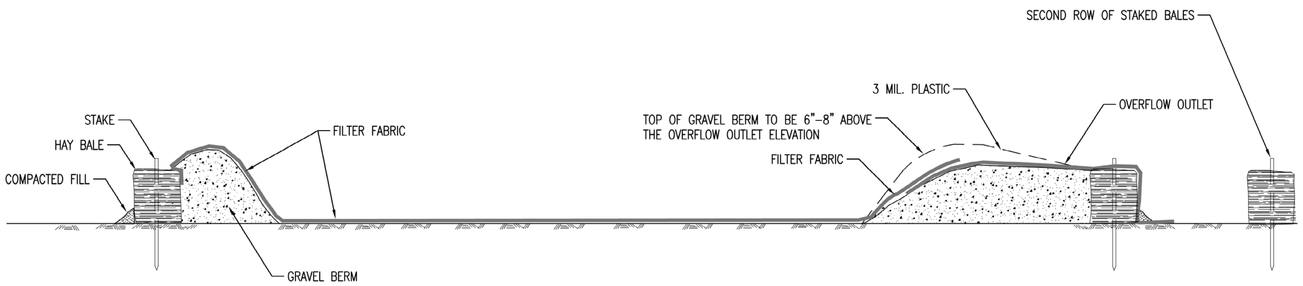


PLAN VIEW
N.T.S.



SECTION A-A
N.T.S.

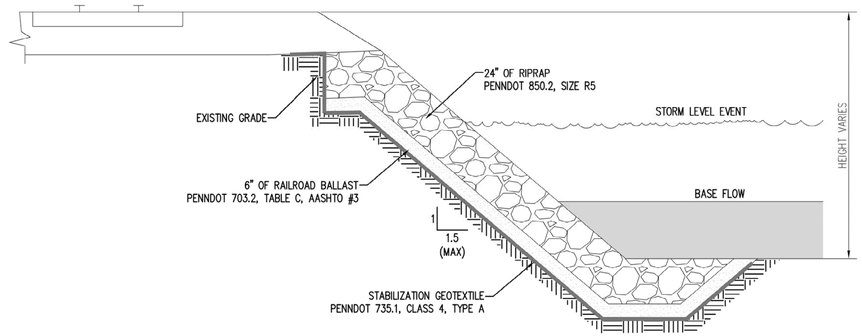
COFFERDAM SEDIMENTATION BASIN
N.T.S.

PURPOSE & APPLICATIONS

1. A COFFERDAM SEDIMENTATION BASIN IS A SMALL, TEMPORARY PONDING AREA TO INTERCEPT SEDIMENT-LADEN RUNOFF FROM SMALL DISTURBED AREAS LONG ENOUGH TO ALLOW THE COARSER SEDIMENT PARTICLES TO SETTLE OUT.

SPECIFICATIONS

1. LOCATION: THE COFFERDAM SHALL BE LOCATED ON UNDISTURBED GROUND AND SO THAT IT CAN BE INSTALLED PRIOR TO CONSTRUCTION. COFFERDAMS MUST NOT BE LOCATED ANY CLOSER THAN 20 FEET FROM A PROPOSED BUILDING FOUNDATION IF THE COFFERDAM IS TO FUNCTION DURING CONSTRUCTION. LOCATE COFFERDAM TO OBTAIN MAXIMUM STORAGE BENEFIT FROM THE TERRAIN, FOR EASE OF CLEANING OUT AND DISPOSAL OF THE ACCUMULATED SEDIMENT.
2. COFFERDAM CLEAN OUT: SEDIMENT SHALL BE REMOVED AND THE COFFERDAM RESTORED TO ITS ORIGINAL DIMENSION WHEN THE SEDIMENTS HAVE ACCUMULATED TO 1/2 OF THE COFFERDAM'S DESIGN DEPTH. SEDIMENT REMOVED FROM THE COFFERDAM SHALL BE DEPOSITED IN A PROTECTED AREA AND IN SUCH A MANNER THAT IT WILL NOT ERODE.
3. EXCAVATION: ALL EXCAVATION OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT EROSION AND WATER POLLUTION SHALL BE MINIMAL.
4. OUTLET: THE OUTLET SHALL BE DESIGNED, CONSTRUCTED AND MAINTAINED IN SUCH A MANNER THAT SEDIMENT DOES NOT LEAVE THE COFFERDAM AND THAT EROSION AT OR BELOW THE OUTLET DOES NOT OCCUR. THE COFFERDAM MUST OUTLET ONTO STABILIZED (PREFERABLY UNDISTURBED) GROUND, INTO A WATERCOURSE, STABILIZED CHANNEL, OR INTO A STORM DRAIN SYSTEM.
5. CAPACITY: THE CAPACITY SHALL BE SUFFICIENT TO CONTAIN ALL OF THE PUMPED WATER AND MATERIALS. THE RATE OF INFILTRATION INTO THE GROUND AND THROUGH ANY DIKES SHALL BE EQUAL TO OR GREATER THAN THE RATE OF PUMPING INTO THE BASIN. BASIN DIMENSIONS VARY WITH STORAGE CAPACITY NEEDED, MINIMUM INSIDE DIAMETER IS 20'.



STONE SLOPE PROTECTION
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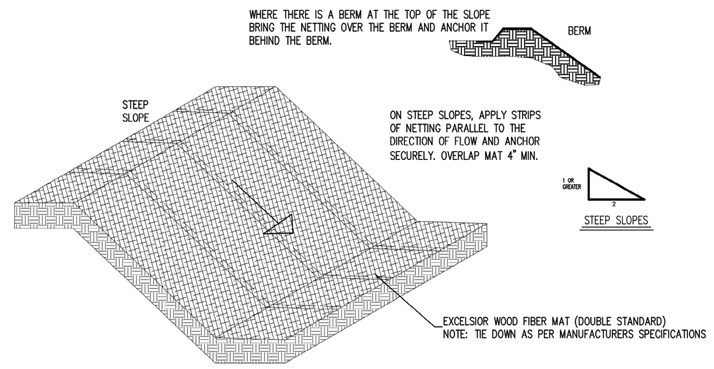

EROSION CONTROL - STEEP SLOPES
N.T.S.

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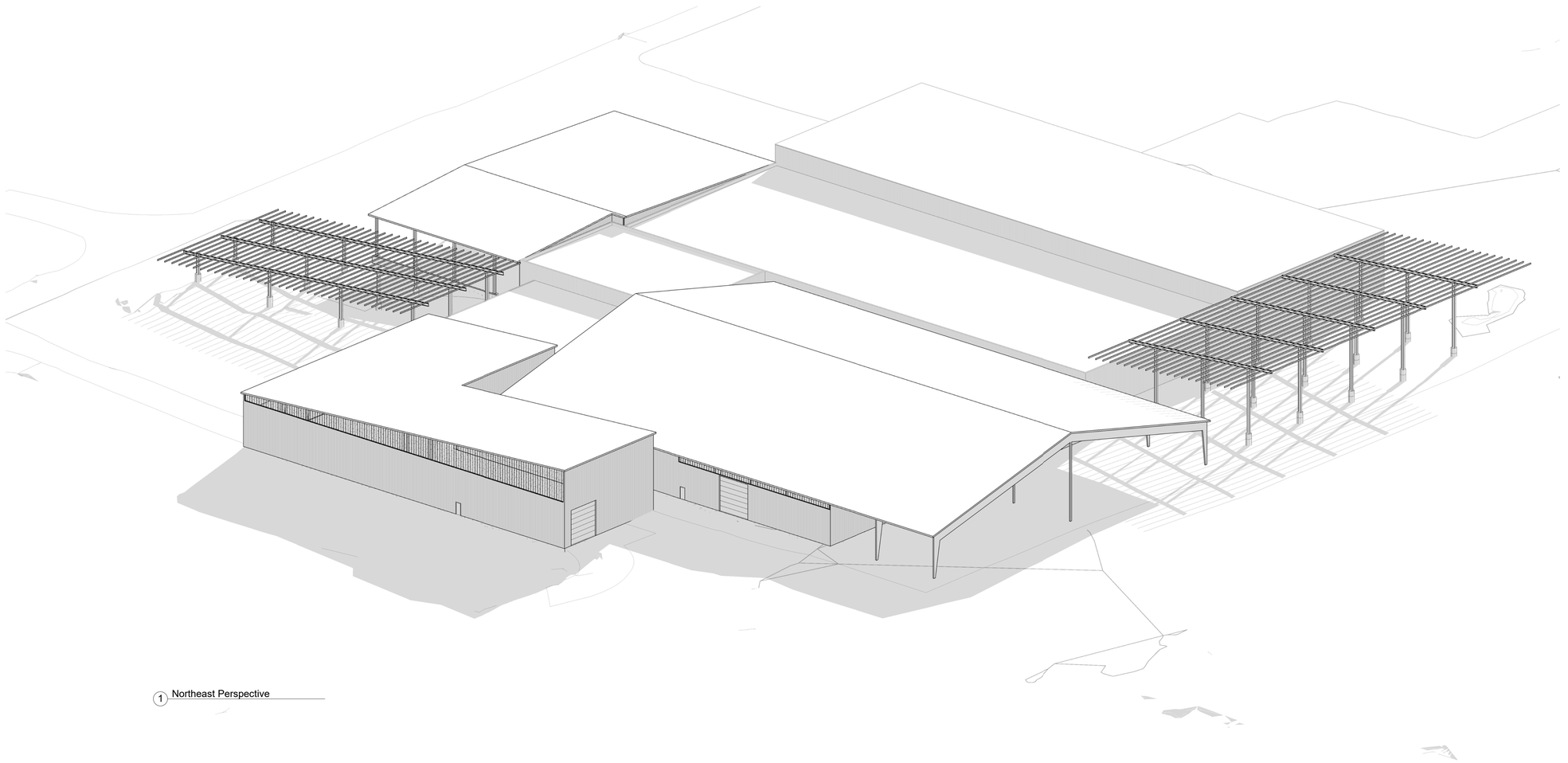

1 Northeast Perspective

Parallel Products | Northeast Perspective

Schematic Design Analysis

Project Number: 19-004

Date: 5/20/19

William Starck Architects, Inc. I 126 Cove Street, Fall River MA 02720 I p:508.679.5733 f:508.672.8556 I www.starckarchitects.com

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ATTACHMENT 7

TRAFFIC STUDY

McMAHON
TRANSPORTATION ENGINEERS & PLANNERS

Traffic Impact Study

Solid Waste Transfer Station

100 Duchaine Boulevard
New Bedford, MA

Prepared by
McMahon Associates, Inc.
350 Myles Standish Boulevard, Suite 103
Taunton, MA 02780
508.823.2245

Prepared for
Green Seal Environmental, Inc.

July 2018
Revised September 2019

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INTRODUCTION

McMahon Associates, Inc. has reviewed the existing traffic operations and potential traffic impacts associated with the proposed solid waste facility to be located at 100 Duchaine Boulevard in New Bedford, Massachusetts, as shown in Figure 1. The purpose of this study was to evaluate existing and projected traffic operational and safety conditions in the vicinity of the site and identify mitigating measures to offset potential project-related traffic impacts on the surrounding roadways, if determined to necessary based on safety and/or operational conditions. This study has determined that the proposed project, when developed and operational will allow for safe and efficient access to and from the facility without the addition of mitigation measures.

Our assessment is based on a review of current traffic volumes and crash data collected for this study, a review of readily accessible traffic analyses, and the anticipated traffic generating characteristics of the proposed development. This study examines existing and projected traffic operations (both with and without the proposed project) at key intersections in the vicinity of the project site. The study area was chosen based on a review of the surrounding roadway network and anticipated traffic generating characteristics of the proposed project. It provides a detailed analysis of traffic operations during the weekday morning and weekday afternoon peak hours, when the combination of adjacent roadway volumes and potential traffic increases associated with the project would be greatest.

Based on the analysis presented in this study, McMahon Associates concludes that the projected traffic increases associated with both the background traffic growth and the project-related traffic generated by the proposed facility can be accommodated on the surrounding roadway network. This report documents our findings and recommendations. It should be noted that these conclusions conservatively base all inbound and outbound traffic via truck without incorporating alternative modes or methods of waste disposal.

Project Description

The project site is bounded by a rail line to the east, Philips Road to the west, industrial properties to the north and undeveloped land to the south. The project is expected to be completed in two phases. Phase 1 includes the previous NWD Trucking facility tenant to vacate the site, and the relocation of the current New Bedford Transfer station to the site. Under the Phase 1 waiver granted by MEPA, this phase also includes the use of the existing building to process recyclable glass. Phase 2 includes the constructing of a solid waste facility that will accept municipal solid waste (MSW) and construction and demolition (C&D) materials for handling the maximum daily approval of 1,500 tons per day (tpd). Access to the proposed site would be provided by one full-access driveway from Duchaine Boulevard, which leads to an internal one-way loop roadway surrounding the proposed facility. To date, Phase 1 of the project is completed.

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Figure 1
Site Location
New Bedford Transfer Station
New Bedford, MA

Study Methodology

This study evaluates existing and projected traffic operations at study area intersections for the weekday morning and weekday afternoon peak hour traffic conditions when the combination of adjacent roadway volumes and potential traffic increases associated with the project would be greatest.

The study was conducted in three steps. The first step involved an inventory of existing traffic conditions in the vicinity of the site. As part of this inventory, traffic counts were collected at key intersections during the weekday morning and weekday afternoon peak periods. Crash data was obtained from the Massachusetts Department of Transportation (MassDOT) to evaluate existing safety conditions within the study area.

The second step of the study builds upon data collected in the first phase and establishes the basis for evaluating the transportation impacts associated with future conditions. In this step, Existing 2019 traffic volumes were projected to 2026 No Build (without project) conditions and 2026 Build (with project) conditions. In this phase, the projected traffic demands of other future developments that could influence traffic volumes at the study area intersections were assessed.

The final step identifies measures, if necessary, to improve existing and future traffic operations and safety, minimize potential traffic impacts, and provide safe and efficient access to the project site.

Study Area Intersections

The area identified for detailed analysis in this study was determined based on a review of the anticipated traffic generating characteristics of the proposed project, a review of the surrounding roadway network serving the project site. The study area intersections include:

- Route 140 Northbound on/off-ramp at Braley Road
- Route 140 Southbound on/off-ramp at Braley Road
- Braley Road/Theodore Rice Boulevard at Phillips Road
- Theodore Rice Boulevard at Duchaine Boulevard
- Duchaine Boulevard at Samuel Barnet Boulevard
- Phillips Road at Samuel Barnet Boulevard
- Duchaine Boulevard at Site Driveway

EXISTING CONDITIONS

Effective evaluation of potential traffic impacts associated with the proposed development requires a thorough understanding of the existing traffic conditions on the roadways and intersections serving the project site. The assessment of existing conditions consists of an inventory of the roadway and intersection geometries and traffic control devices, collection of peak-period traffic volumes, and a review of recent crash history. A discussion of this information is presented below.

Roadway Network

The project site benefits from access via the local and regional roadway systems. A brief description of the principal roadways serving the project site is presented below.

Alfred Bessette Memorial Highway (Route 140)
Alfred Bessette Memorial Highway (Route 140) is a limited access roadway that is classified as an urban principal arterial under MassDOT jurisdiction. Route 140 runs in the north-south direction throughout southeastern Massachusetts, providing two lanes of travel in each direction and separated by a grass median. Route 140 has exits adjacent to the study area at Philips Road (Exit 5) and Braley Road (Exit 7). Route 140 northbound and southbound ramps are under stop control with both Philips Road and Braley Road.

Braley Road
Braley Road is classified as an urban minor arterial under MassDOT jurisdiction within the study area, and primarily provides access to residential and industrial properties. Braley Road generally runs in the east-west direction between Acushnet Avenue to the east and Phillips Road to the west, providing a single travel lane measuring 11 feet in width in each direction.

Theodore Rice Boulevard
Braley Road ends at Philips Road and Theodore Rice Boulevard continues as the east-west connection between Philips Road to the east and Duchaine Boulevard to the west, which provides access to industrial land uses. Theodore Rice Boulevard is classified as a local roadway under City of New Bedford jurisdiction and provides a 20-foot wide travel lane in each direction, separated by a 12-foot wide raised, grass median. There are no sidewalks provided on either side of the roadway. The posted speed limit on Theodore Rice Boulevard is 30 mph.

Phillips Road
Phillips Road is classified as an urban major collector under City of New Bedford jurisdiction and runs in the north-south direction between Braley Road/Theodore Rice Boulevard to the north and Church Street to the south. Phillips Road is a two lane, two-way roadway, providing a 15-foot wide travel lane in each direction. Within the study area, a four-foot wide sidewalk

and a six-foot wide marked bike lane are each provided on either side of the roadway. The posted speed limit on Phillips Road is 30 mph.

Duchaine Boulevard

Duchaine Boulevard is classified as a local roadway under City of New Bedford jurisdiction and provides access to industrial lane uses within the New Bedford Industrial Park. Duchaine Boulevard runs in the north-south direction and provides two 14-foot wide travel lanes in each direction separated by a grass median. Shoulders measuring 11 feet in width are provided on both sides of the roadway. Since the roadway is median divided, there are multiple U-turns locations along the corridor and the posted speed limit is 30 mph.

Samuel Barnet Boulevard

Samuel Barnet Boulevard is a local roadway under City of New Bedford jurisdiction and runs in the east-west direction, providing a connection between Phillips Road to the east and Duchaine Boulevard to the west. Samuel Barnet Boulevard provides access to industrial land uses and serves the New Bedford Industrial Park. Samuel Barnet Boulevard is a two-way, two-lane roadway generally providing a 13-foot wide travel lane in each direction, with seven-foot wide shoulders on either side of the roadway. The posted speed limit on Samuel Barnet Boulevard is 30 mph.

Existing Traffic Volumes

Existing Peak Hour Traffic Volumes

Manual turning movement counts were conducted at the study area intersections on Wednesday, June 13, 2018. The traffic counts were conducted during the weekday morning peak period from 7:00 AM to 9:00 AM, and the weekday afternoon peak period from 3:00 PM to 6:00 PM. The traffic counts are summarized in 15-minute intervals and are provided in Appendix A of this report. The four highest consecutive 15-minute intervals during the peak periods constitutes as the peak hour for the study area network. The highest weekday morning peak hour volume was recorded between 7:30 AM and 8:30 AM, and the afternoon peak hour was recorded between 3:00 PM and 4:00 PM.

The 2018 collected traffic volumes were adjusted to take into account the completion of Phase 1 of the proposed project. This included the removal of the trips associated with the previous trucking facility located on site, and the addition of the trips associated with the glass facility that is currently occupying the site under the Phase 1 Waiver granted by MEPA. These calculated volumes represent the 2019 Existing volumes that are used as a baseline for the traffic analysis presented in this report.

A 48-hour automatic traffic recorder (ATR) count was conducted on Duchaine Boulevard on Wednesday, June 13, 2018 and Thursday, June 14, 2018. The ATR collected traffic volumes on Duchaine Boulevard near the proposed project site. The results of the counts are tabulated in 15-minute periods and are provided in Appendix B of this report. The four highest consecutive 15-minute intervals during the weekday morning and weekday afternoon peak periods constitutes as the peak hours for Duchaine Boulevard. The ATR data and peak hourly traffic flows are summarized in Table 1 below.

Table 1: ATR Summary

	ADT[1]	HV%[2]	85th Percentile Speed[3] (mph)	AM Peak (7:00AM to 8:00AM)	PM Peak (3:00PM to 4:00PM)
Duchaine Boulevard					
North of Samuel Barnet Boulevard					
Northbound	2010	25.0	37	136	202
Southbound	2130	24.0	36	269	121
TOTAL	**4,140**	**24.5**	**37**	**405**	**323**

[1] ADT - Average Daily Traffic (Vehicles per Day)

[2] HV% - Percentage of Heavy Vehicles based on TMC completed on June 13, 2018

[3] Based on Field Speed Study completed July 13, 2018

Seasonal Variation

In order to determine seasonal variation in the area of the project, traffic count data from MassDOT continuous count station 617 on Route 140 just north of the project site was reviewed. Based on this data, traffic volumes in the month of June are higher than an average month. Therefore, to present a conservative analysis, traffic volumes were not adjusted downward to present an average month. The 2019 Existing peak hourly traffic flows are depicted in Figures 2 and 3 for the weekday morning, and weekday afternoon peak hours, respectively.

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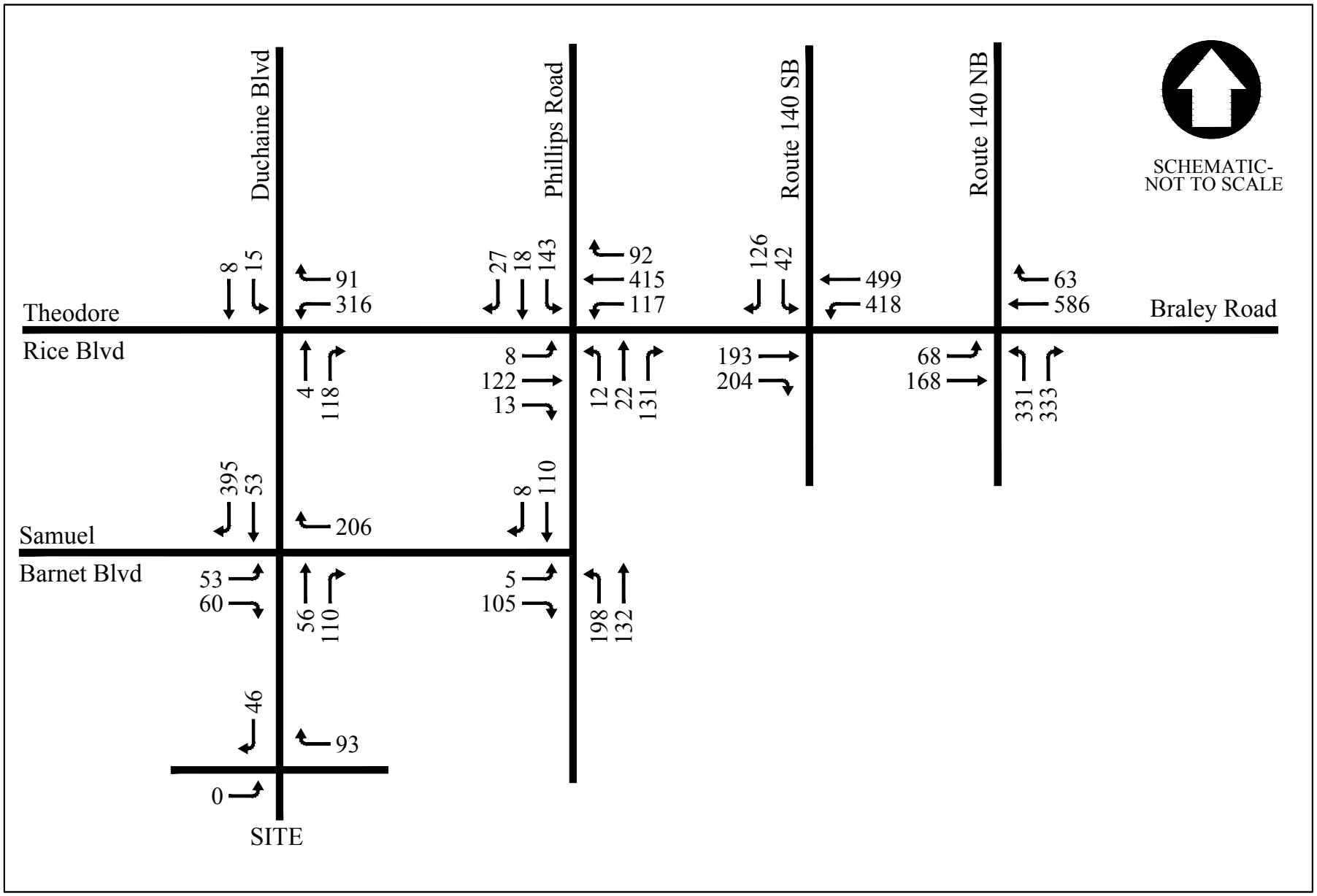

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Figure 2
2019 Existing Weekday AM
Transfer Station
New Bedford, MA

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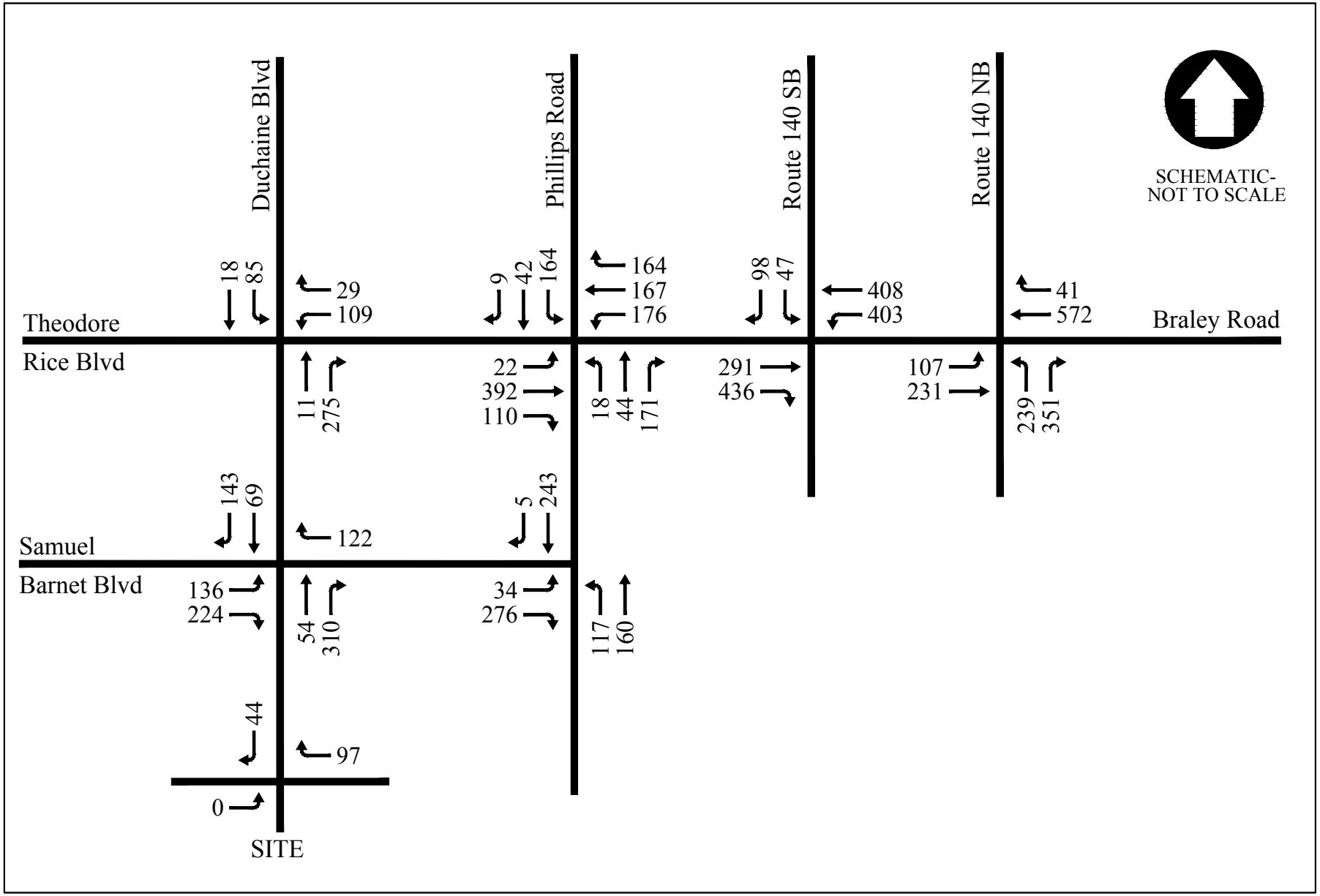
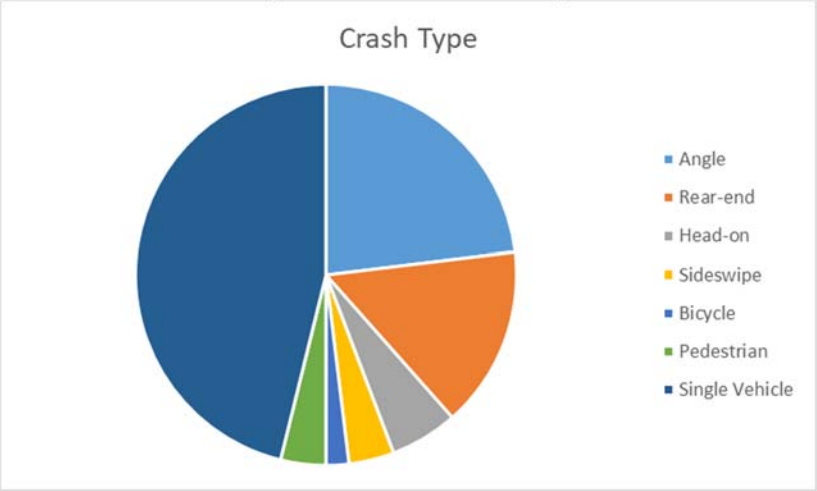


Figure 3
2019 Existing Weekday PM
Transfer Station
New Bedford, MA

Crash Summary

Crash data for the study area intersections was obtained from MassDOT for the most recent five-year period available. This data includes complete yearly crash summaries for 2011, 2012, 2013, 2014, and 2015. The crash data is summarized in Figure 4 below and a detailed summary is provided in Appendix C.

Figure 4: Crash Summary



Over the five-year period analyzed, the unsignalized intersection of the Route 140 Northbound on/off ramps at Braley Road had a total of 13 reported crashes, resulting in a crash rate of 0.43 crashes per million vehicles entering. The majority of the reported crashes were single vehicle, rear-end, and angle collisions with seven of the reported crashes resulting in personal injury. The unsignalized intersection of the Route 140 Southbound on/off ramps at Braley Road had a total of five reported crashes, resulting in a crash rate of 0.15 crashes per million vehicles entering. A majority of the reported crashes at this intersection were single vehicle collisions, one of which resulted in personal injury. The intersection of Duchaine Boulevard at Samuel Barnet Boulevard had a total of three reported crashes, resulting in a crash rate of 0.15 crashes per million vehicles entering and all three reported crashes were single vehicle collisions resulting in property damage only. The intersection of Phillips Road at Samuel Barnet Boulevard also had a total of three reported crashes which resulted in a crash rate of 0.18 crashes per million vehicles entering, two of which resulted in personal injury and one involving property damage only. The resulting crash rates at all of these intersections were lower than both the identical statewide and District 5 average crash rates of 0.57 crashes per million entering vehicles.

The unsignalized intersection of Braley Road/Theodore Rice Boulevard at Phillips Road had a total of 17 reported crashes over the five-year period analyzed, resulting in a crash rate of 0.59 crashes per million vehicles entering, which is slightly higher than the statewide and District 5

crash rate. The majority of the 17 reported crashes were single vehicle collisions and angle collisions, and seven crashes resulted in personal injury.

The unsignalized intersection of Theodore Rice Boulevard at Duchaine Boulevard had a total of 11 crashes over the five-year period analyzed resulting in a crash rate of 1.12 crashes per million vehicles entering, which is higher than the statewide and District 5 average crash rate. Seven of the 11 reported crashes were single vehicle collisions, one of which, in 2014, resulted in a fatality. Based on reports, speed was a prominent factor in this fatal crash and it is suspected that the operator of the vehicle was street racing and the fatal crash was believed to be an isolated incident.

FUTURE CONDITIONS

To determine future traffic demands on the study area roadways, the 2019 Existing traffic volumes were projected to the future year 2026, when the proposed development is expected to be fully built and occupied. Independent of the proposed project, traffic volumes on the roadways in 2026 are assumed to include existing traffic, as well as new traffic resulting from general growth in the study area and from other planned development projects. The potential background traffic growth unrelated to the proposed project was considered in the development of the 2026 No Build (without project) peak hour traffic volumes. The anticipated traffic increases associated with the proposed development were then added to the 2026 No Build volumes to reflect the 2026 Build (with project) traffic conditions. A more detailed description of the development of the 2026 No Build and 2026 Build traffic volume networks follows.

Future Roadway Improvements

Planned roadway improvement projects can affect area travel patterns and future traffic operations. There are no planned roadway improvements that would impact traffic on the study area roadways.

Background Traffic Growth

Traffic growth is primarily a function of changes in motor vehicle use and expected land redevelopment in the region. To predict a rate at which traffic on the roadways in the vicinity of the site can be expected to grow during the seven-year forecast period (2019 to 2026), both historic traffic growth and planned area redevelopments were examined.

Historic Traffic Growth

A background growth rate of one percent per year was confirmed with the Southeastern Regional Planning and Economic Development District (SPREDD) in order to forecast increases in general traffic volumes on the study area roadways and intersections for our future analysis. This rate captures growth associated with general changes in population and accounts for other small developments in the vicinity of the study area.

Site-Specific Growth

There are no planned/permitted developments adjacent to the project study area to be added as site specific growth.

2026 No Build Traffic Volumes

The 2019 Existing peak hour traffic volumes were grown by one percent per year over the seven-year study horizon (2019 to 2026) to establish the 2026 base future traffic volumes. The 2026 No Build weekday morning and weekday afternoon peak hour traffic volume networks are illustrated in Figures 5 and 6, respectively, and are documented in the traffic projection model presented in Appendix D of this report.

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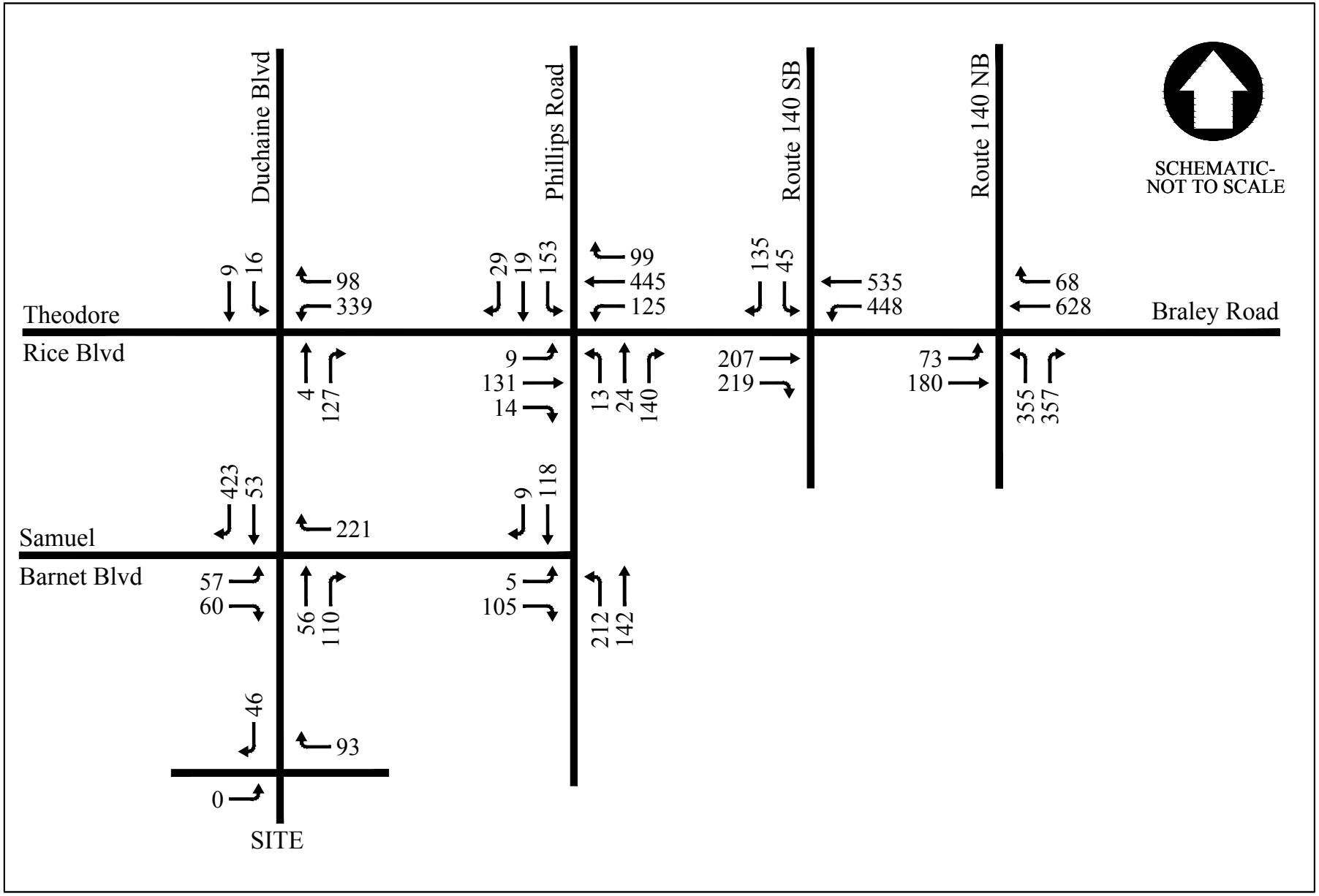

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Figure 5
2026 No Build Weekday AM
Transfer Station
New Bedford, MA

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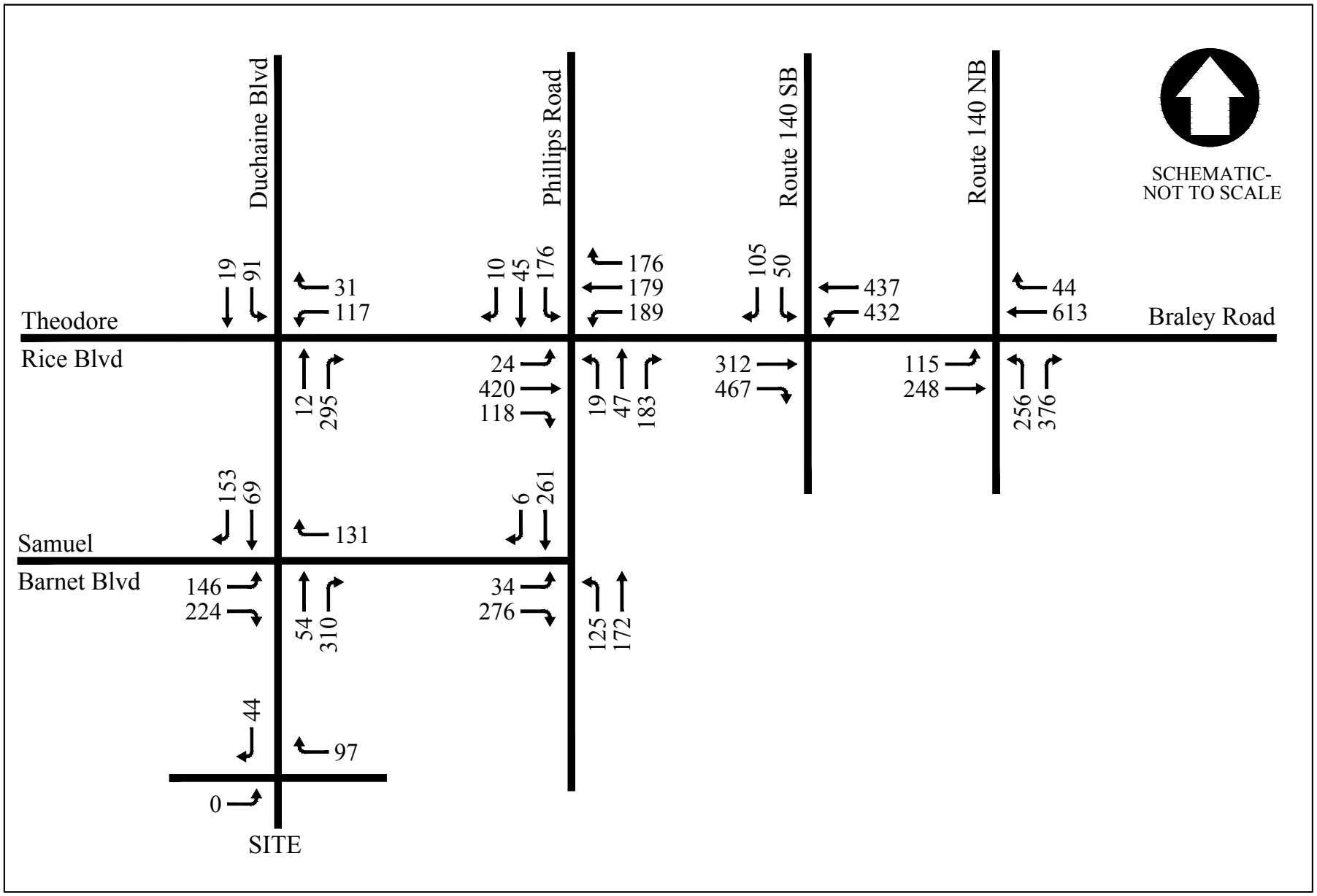

Figure 6
2026 No Build Weekday PM
Transfer Station
New Bedford, MA

Site-Generated Traffic

The site proposes to receive a maximum of 1,500 tpd of solid waste (MSW and C&D). To estimate the trip generation for the proposed site, data was collected for a three-month period from a comparable site in Rochester, MA that has a maximum approval for 1,500 tpd. Based on information received, the inbound materials to the Rochester site were applied to the New Bedford facility. Inbound materials to the proposed site include approximately 1071 tons/day in transfer trailers (approximately 28.2 tons per load), 243 tons/day in packer trucks (approximately 9 tons per load), 11 tons/day in roll-off trucks (approximately 5.5 tons per load), and 26 tons/day in roll-off containers (approximately 4 tons per load of the maximum 6.5 tons per truck capacity to be conservative).Although it is expected that the majority of outbound transportation of materials from the site will be done via rail, outbound materials were conservatively estimated to be transported from the proposed site by trailers (28 tons per load) in trucks that are assumed to be empty entering the site and full exiting the site.

In addition to the 1,500 tpd of solid waste (MSW and C&D), the site proposes to process biosolids, which would account for approximately 500 additional tpd of solid waste to be processed. Biosolid processing consists of drying the biosolid to a moisture content of 7%. Due to this, the outbound weight of the biosolids would drop to 45 tons. This outbound dried material is expected to be combined with the MSW outbound material. The existing NWD Trucking facility would be removed and associated trips have been removed from generation estimates.

The proposed facility is expected to operate with approximately 75 daily employees, operating in three, 8-hour shifts each consisting of 25 employees. These shifts are scheduled to run from 6:00 AM to 2:30 PM, 2:00 PM to 10:30PM, and 10:00PM to 6:30AM. Based on these shifts, it is expected that all employees will be leaving the site outside of the peak hours.

Phase 2 of the proposed facility is expected to generate approximately 450 new truck trips per day (225 truck trips entering, 225 truck trips exiting) for the solid waste operations.

The site is proposed to accept truck deliveries between 5:00 AM and 9:00 PM. Data from the comparable site in Rochester, MA provides the hourly distribution of truck traffic entering the site. This data was utilized to determine the estimated number of trips expected to access the site during both the weekday morning and weekday afternoon peak hours. To present a conservative analysis, the peak hour of the site generated traffic was applied to the existing peak hour traffic of the surrounding roadways.

A summary of the expected peak hour trip generation is shown in Table 2 below and is shown in detail in Appendix E of this report.

Table 2: Vehicular Trip Generation

Description	Weekday			Weekday AM Peak Hour (2)			Weekday PM Peak Hour (2)		
	In	Out	Total	In	Out	Total	In	Out	Total
MSW/C&D Trips(1)									
Packer	27	27	54	3	2	5	3	2	5
Roll-off Container	4	4	8	1	0	1	0	1	1
Roll-off	2	2	4	0	0	0	0	0	0
MSW Transfer Trailer	38	38	76	4	4	8	4	4	8
C&D Transfer Trailer	5	5	10	0	1	1	1	0	1
Outbound Trailers	54	54	108	6	5	11	6	5	11
Biosolid Trips	20	20	40	2	2	4	2	2	4
Truck Trip Total	***150***	***150***	***300***	***16***	***14***	***30***	***16***	***14***	***30***
Transfer Station Employees	75	75	150	0	0	0	0	0	0
Total	**225**	**225**	**450**	**16**	**14**	**30**	**16**	**14**	**30**

(1) Based on the volume of trucks delivering solid waste to Covanta in Rochester as determined from MassDEP records for 2015.

(2) Based on the daily distribution of trucks delivering waste to Covanta in Rochester as determined from MassDEP records for 2015.

As shown in Table 2, the peak hour trip generation of the proposed transfer station is estimated to result in an increase of approximately 30 vehicle trips (16 entering and 14 exiting) during the weekday morning peak hour, and approximately 30 vehicle trips (16 entering and 14 existing) during the weekday afternoon peak hour. Over the course of an average weekday, the proposed project is estimated to result in of approximately 450 daily vehicle trips.

Project Trip Distribution and Assignment

The traffic expected to be generated by the proposed development was distributed onto the study area roadways and intersections based on expected access to/from Route 140. It was assumed that all of the truck traffic entering the site will utilize Route 140 to Braley Road. Although a small portion of the employee trips are assumed to access the site from the south, utilizing Phillips Road, based on the employee shifts, it is expected that these trips will occur outside of the peak hour. The resulting arrival and departure patterns are presented in Figure 7. The resulting distributed new project trips during the weekday morning and afternoon peak hours are shown in Figure 8.

2026 Future Build Peak Hour Traffic Volumes

To establish the 2026 Build peak hour traffic volumes, the project-related traffic was assigned to the surrounding roadway network based on the project distribution patterns discussed above. These project trips were then added to the 2026 No Build peak hour traffic volumes to reflect the 2026 Build peak hour traffic volumes. The resulting 2026 Build weekday morning and weekday afternoon peak hour traffic volumes are presented in Figures 9 and 10, respectively.

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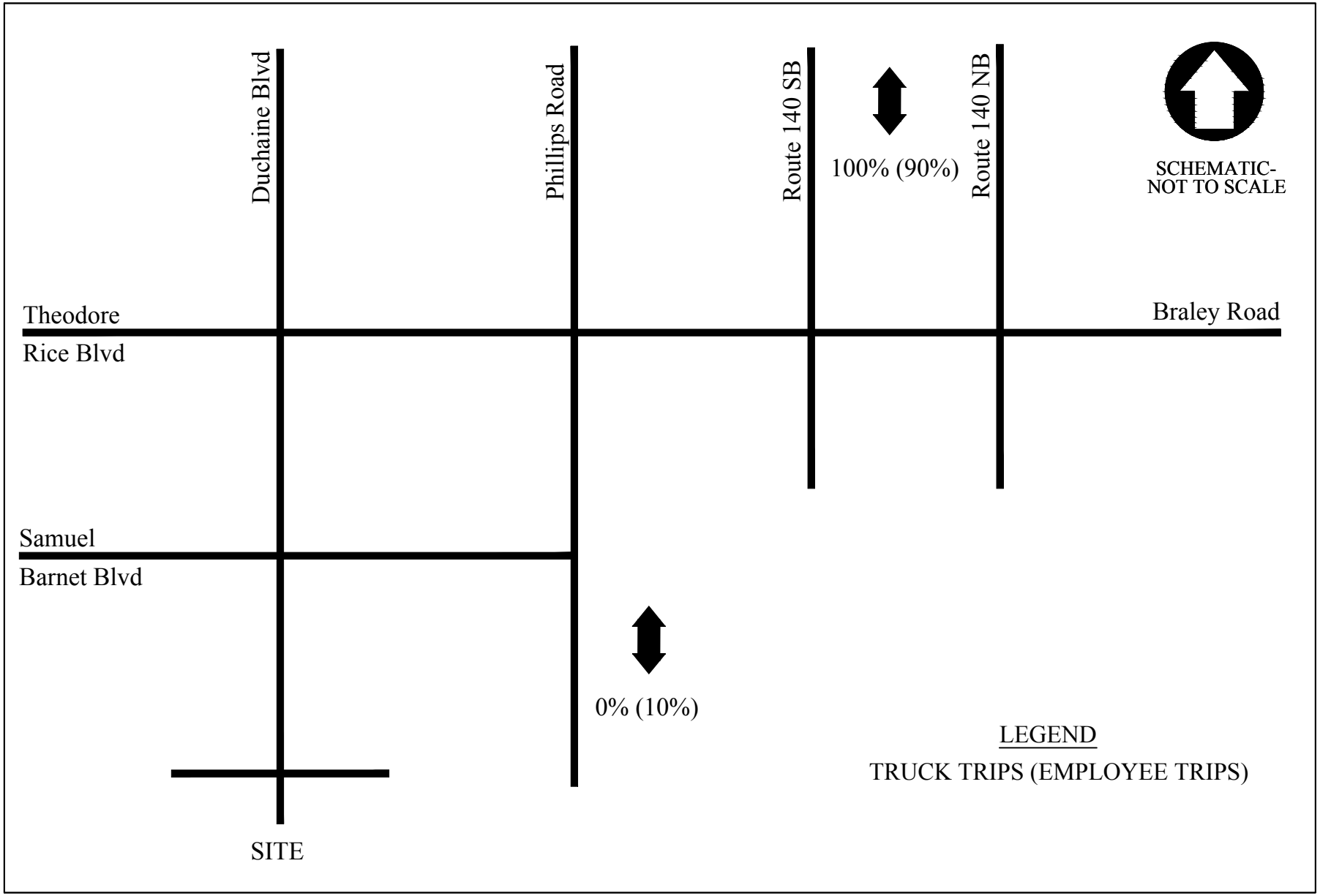

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Figure 7
Direction of Arrivals and Departures
Transfer Station
New Bedford, MA

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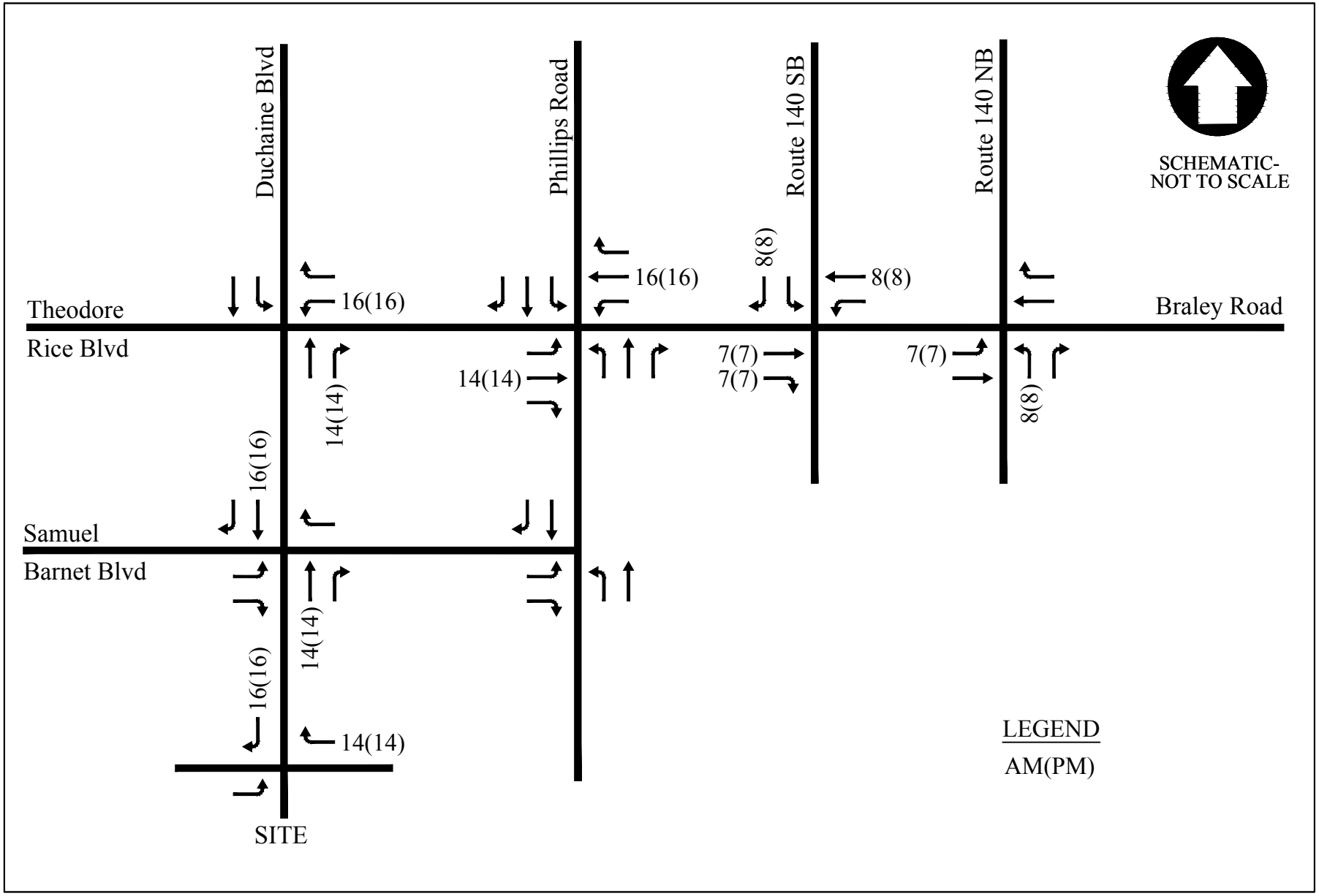

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Figure 8
Proejct New Truck Trips
Transfer Station
New Bedford, MA

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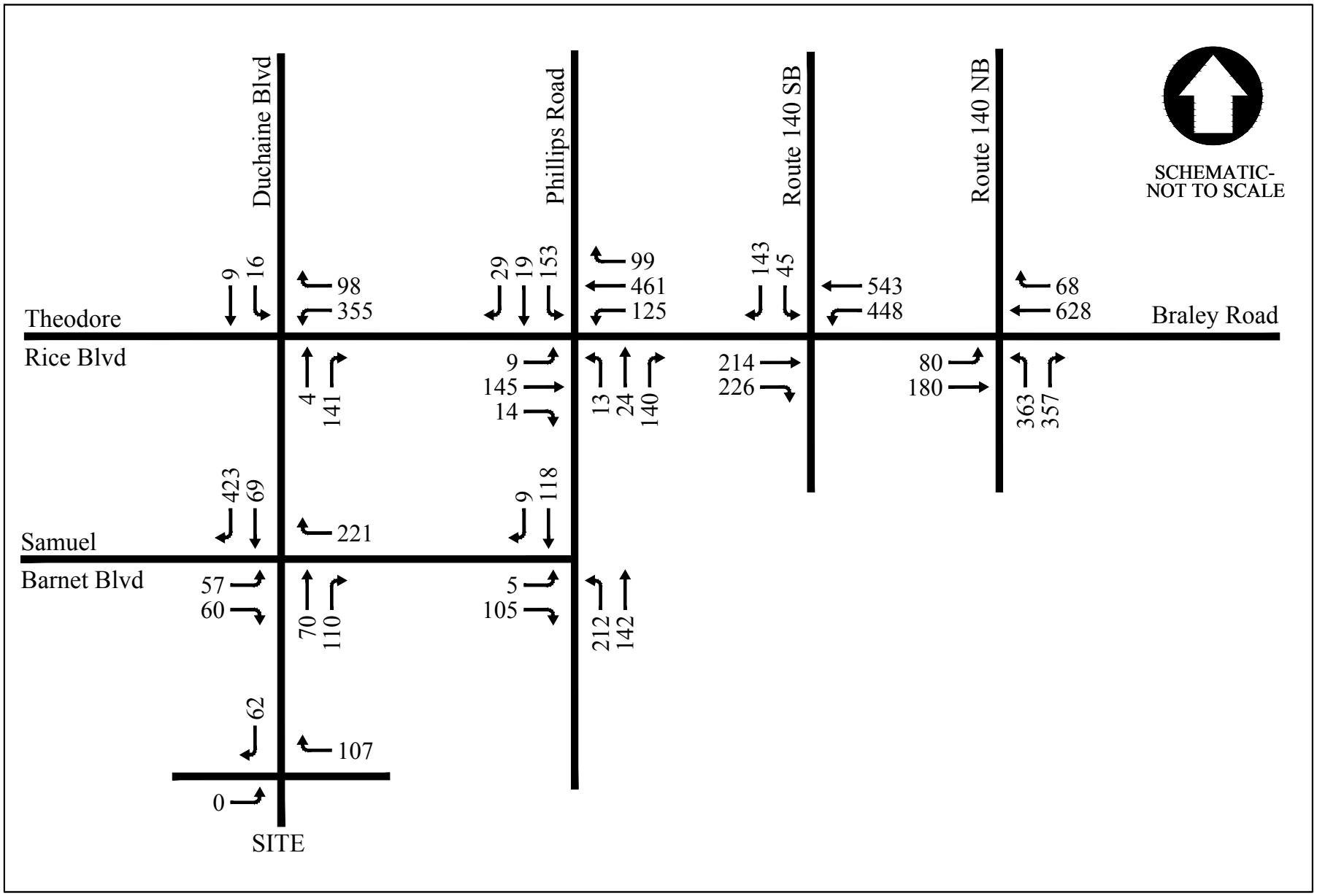

Figure 9
2026 Build Weekday AM
Transfer Station
New Bedford, MA

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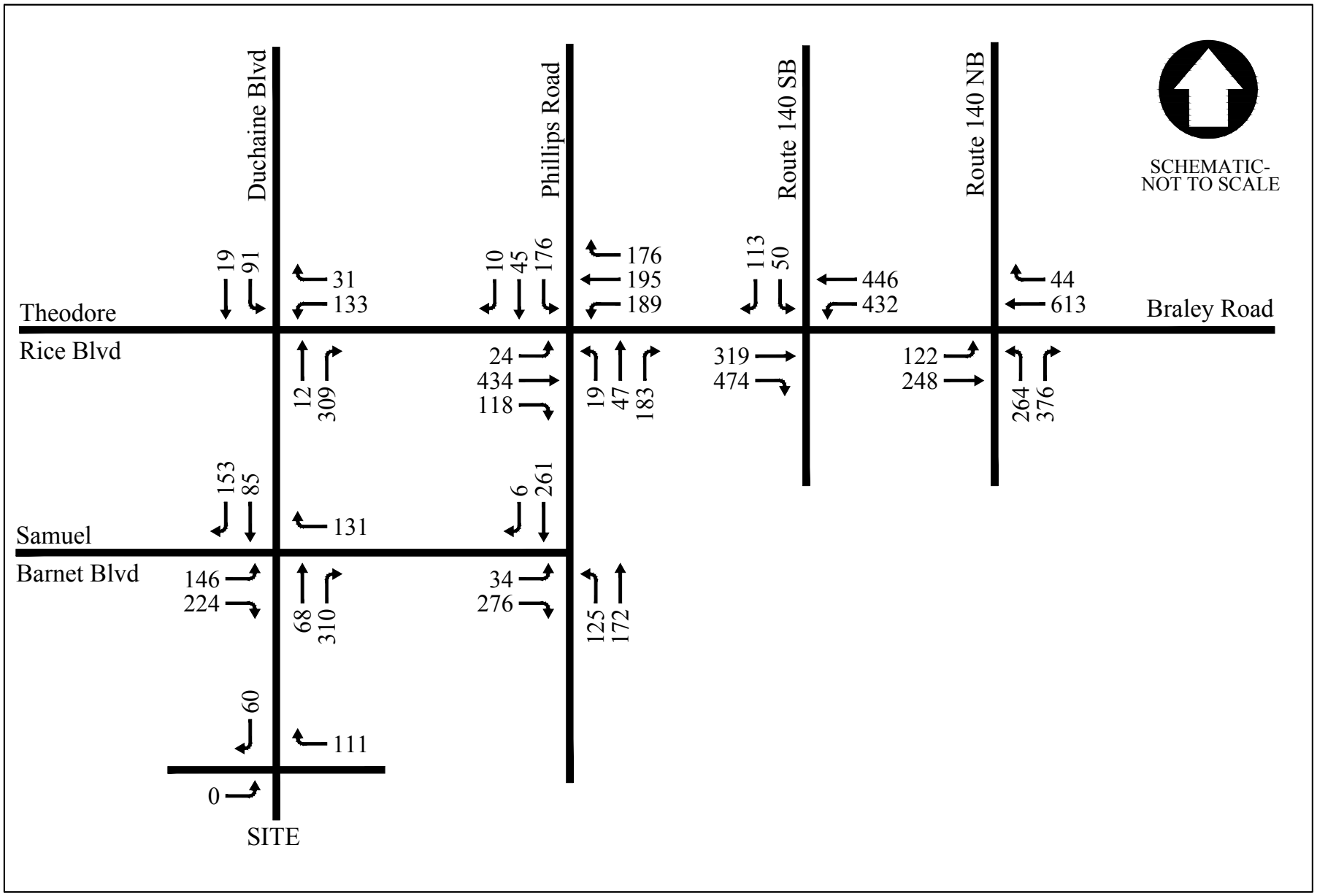

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Figure 10
2026 Build Weekday PM
Transfer Station
New Bedford, MA

TRAFFIC OPERATIONS ANALYSIS

In previous sections of this report, the quantity of traffic on the study area roadways was described. The following section describes the quality of traffic flow at the study area intersections for the given travel demands. As a basis for this assessment, intersection capacity analyses were conducted using Synchro capacity analysis software for the study area intersections under the 2019 Existing, 2026 No Build and 2026 Build peak hour traffic conditions. The weekday morning and weekday afternoon peak hours were analyzed for the study area intersections under the three conditions. This analysis is based on procedures contained in the *Highway Capacity Manual* (HCM) which are summarized in Appendix F. A discussion of the evaluation criteria and a summary of the results of the capacity analyses are presented below.

Level-of-Service Criteria

Operating levels of service (LOS) are reported on a scale of A to F with A representing the best conditions (with little or no delay) and F representing the worst operating conditions (long delays).

Capacity Analysis Results

Intersection capacity analyses were conducted for the study area intersections to evaluate the 2019 Existing, 2026 No Build and 2026 Build peak hour traffic conditions. Based on the analysis, the network peak hour of the adjacent street traffic occurs between 7:30 AM and 8:30 AM for the weekday morning, and 3:00 PM and 4:00 PM for the weekday afternoon.

The capacity analysis results for the 2019 Existing, 2026 No Build and 2026 Build conditions are presented in Appendix G, Appendix H, and Appendix I, respectively. The results of the signalized and unsignalized intersection capacity analyses are presented in Table 3 below.

Table 3: Capacity Analysis Results

			2019 Existing						2026 No Build						2026 Build					
			Weekday AM			Weekday PM			Weekday AM			Weekday PM			Weekday AM			Weekday PM		
Intersection	Movement		LOS[1]	Delay[2]	V/C[3]	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C	LOS	Delay	V/C
Route 140 Northbound Ramps	EB	LT	A	2.9	0.10	A	3.1	0.14	A	3.0	0.11	A	3.2	0.16	A	3.2	0.12	A	3.4	0.17
at Braley Road	WB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	NB	L	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00
		R	B	12.3	0.42	B	14.4	0.51	B	12.9	0.46	C	15.7	0.56	B	12.9	0.46	C	15.7	0.56
Route 140 Southbound Ramps	EB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
at Braley Road	WB	LT	A	4.8	0.42	A	7.7	0.56	A	5.1	0.46	A	9.0	0.63	A	5.1	0.47	A	9.2	0.64
	SB	L	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00
		R	B	14.6	0.28	B	12.2	0.19	C	15.6	0.32	B	12.7	0.21	C	16.1	0.34	B	13.0	0.23
Braley Road/	EB	LT	B	13.6	0.33	F	>50.0	>1.00	B	14.7	0.67	F	>50.0	>1.00	C	15.4	0.41	F	>50.0	>1.00
Theodore Rice Boulevard at		R	A	9.7	0.03	B	13.3	0.29	B	10.1	0.03	B	14.4	0.33	B	10.2	0.03	B	14.5	0.33
Phillips Road	WB	LTR	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00
	NB	LTR	B	13.6	0.38	D	26.3	0.70	B	14.8	0.43	D	31.7	0.80	C	15.1	0.44	D	31.6	0.81
	SB	LTR	B	14.3	0.39	C	24.0	0.60	C	15.5	0.43	D	27.9	0.69	C	15.8	0.44	D	28.0	0.70
Theodore Rice Boulevard at	WB	LR	A	8.0	0.25	A	7.6	0.08	A	8.1	0.26	A	7.6	0.09	A	8.1	0.28	A	7.7	0.10
Duchaine Boulevard	NB	TR	C	21.0	0.01	B	11.5	0.01	C	22.8	0.01	B	11.6	0.01	C	24.1	0.01	B	12.1	0.02
	SB	L	C	21.5	0.08	B	12.0	0.19	C	23.8	0.10	B	12.4	0.21	D	25.4	0.11	B	13.1	0.22
		T	A	0.0	0.00	A	0.0	0.02	A	0.0	0.00	A	0.0	0.02	A	0.0	0.00	A	0.0	0.00
Duchaine Boulevard at	EB	LR	B	12.7	0.12	B	11.7	0.24	B	13.0	0.14	B	11.9	0.26	B	13.5	0.15	B	12.4	0.27
Samuel Barnet Boulevard	WB	R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	NB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Phillips Road at	EB	LR	B	10.6	0.18	C	18.8	0.61	B	10.7	0.18	C	20.4	0.63	B	10.7	0.18	C	20.4	0.63
Samuel Barnet Boulevard	NB	LT	A	4.8	0.17	A	3.5	0.12	A	4.9	0.19	A	3.6	0.13	A	4.9	0.19	A	3.6	0.13
	SB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Duchaine Boulevard at	EB	L	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Site Driveway	WB	R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00

1 Level-of-Service
2 Average vehicle delay in seconds
3 Volume to capacity ratio
n/a Not Applicable

Table 3 reports the level-of-service results for the unsignalized intersections within the study area during the weekday morning and weekday afternoon peak hours (which can also be found in Appendix J). The specific capacity analysis results of the study area intersections are discussed below.

Route 140 Northbound on/off-ramp at Braley Road

As shown in Table 3, the critical stop-controlled northbound approach at the Route 140 Northbound off-ramp currently operates at a LOS B for right turning vehicles, and LOS F for left turning vehicles during both the weekday morning and weekday afternoon peak hours. Under the 2026 No Build conditions, the right turn movement is expected to drop from LOS B to LOS C during the weekday afternoon peak hour, while continuing to operate at LOS B during the weekday morning peak hour. The left turn movement is expected to continue to operate at LOS

F. Under the 2026 Build conditions, the capacity analysis indicates that there are not expected to be any changes in LOS for the northbound approach. All movements on Braley Road are shown to operate at LOS A during all peak hours analyzed.

Route 140 Southbound on/off-ramp at Braley Road

The capacity analysis results show the stop-controlled southbound approach at the Route 140 southbound off-ramp currently operating at LOS F for left turning vehicles and LOS B for right turning vehicles. Under the 2026 No Build conditions the southbound approach is expected to drop from LOS B to LOC C for right turning vehicles, while continuing to operate at LOS F for left turning vehicles during the weekday morning peak hour. Under the 2026 Build conditions, the southbound approach is not expected to experience any changes in LOS. All movements on Braley Road are shown to operate at LOS A during all peak hours analyzed.

Braley Road/Theodore Rice Boulevard at Phillips Road

Under the 2019 Existing conditions, the stop-controlled northbound approach is shown to operate at a LOS B during the weekday morning peak hour and LOS D during the weekday afternoon peak hour. The stop-controlled southbound approach is shown to operate at LOS B during the weekday morning peak hour, and LOS C during the weekday afternoon peak hour. The stop-controlled eastbound approach is shown to operate at LOS B for the left and through movement and LOS A for the right turn movement during the weekday morning peak hour, and LOS F and LOS B for the left and through movement and right turn movements, respectively, during the weekday afternoon peak hour. The stop-controlled westbound approach is shown to operate at LOS F during both the weekday morning and weekday afternoon peak hours.

Under the 2026 No Build conditions, the southbound approach is expected to drop from LOS B to LOS C during the weekday morning peak hour, and from LOS C to LOS D during the afternoon peak hour. The eastbound right turn movement is expected to drop from LOS A to LOS B during the weekday morning peak hour. All other approaches are not expected to experience changes in LOS under the 2026 No Build conditions.

Under the 2026 Build conditions, the eastbound left turn and through movement is expected to drop from LOS B to LOS C, and the northbound approach is expected to drop from LOS B to LOS C during the weekday morning peak hour. All other approaches are expected to continue to operate at the same LOS under all future conditions analyzed.

Theodore Rice Boulevard at Duchaine Boulevard

The stop-controlled northbound approach at the intersection of Theodore Rice Boulevard at Duchaine Boulevard is shown to currently operate at a LOS C during the weekday morning peak hour and LOS B during the weekday afternoon peak hour. The southbound left turn approach is also shown to operate at a LOS C during the weekday morning peak hour and LOS B during the weekday afternoon peak hour while the southbound through movement operates at a LOS A

during both peak hours. The capacity analysis indicates that under the 2026 No Build conditions, there is not expected to be any changes in LOS at either approach.

Under the 2026 Build conditions, the southbound left turn movement is expected to drop from LOS C to LOS D while all other movements continue to operate with the same LOS. The westbound movement is shown to operate at LOS A under all conditions analyzed.

Duchaine Boulevard at Samuel Barnet Boulevard

The stop-controlled eastbound movement at the intersection of Duchaine Boulevard at Samuel Barnet Boulevard currently operates at a LOS B during both the weekday morning and weekday afternoon peak hours. Based on the capacity analysis results, it is expected that the eastbound approach will continue to operate at LOS B under all future conditions (2026 No Build and 2026 Build). The westbound, northbound and southbound free movements are shown to operate at LOS A during all peak hours analyzed.

Phillips Road at Samuel Barnet Boulevard

The critical eastbound approach on Samuel Barnet Boulevard at the intersection of Phillips Road at Samuel Barnet Boulevard currently operates at a LOS B during the weekday morning peak hour and LOS C during the weekday afternoon peak hour. The capacity analysis indicates that under the 2026 No Build and 2026 Build conditions, there are not expected to be any changes in LOS at this approach. All movements on Phillips Road are shown to operate at LOS A during all peak hours analyzed.

CONCLUSION

Phase 2 of the proposed transfer station development project consists of a solid waste treatment plant proposed to accommodate a receiving capacity of approximately 1,500 tons per day or MSW and C&D materials and additional biosolid materials. The site is currently utilizing the existing buildings on the site to process recyclable class as part of Phase 1, and proposed to construct new buildings to handle municipal solid waste (MSW) as well as construction and demolition (C&D) waste under Phase 2. The site is proposed to be accessed via the existing site driveway on Duchaine Boulevard, which leads to an internal one-way loop roadway surrounding the proposed facility.

Phase 2 of the transfer station development is expected to result in an increase of approximately 30 vehicle trips (16 entering and 14 exiting) during the weekday morning peak hour, and approximately 30 vehicle trips (16 entering and 14 existing) during the weekday afternoon peak hour. Over the course of an average weekday, the proposed project is estimated to result in of approximately 450 daily vehicle trips.

The capacity analysis indicates that the proposed development will not have any appreciable impact on the operations of the study area intersections or roadways. Based on the capacity analysis there are expected to be minor increases in delay at the southbound right turn movement at the intersection of the Route 140 southbound off ramp and Braley Road, and the northbound approach at the intersection of Braley Road/Theodore Rice Boulevard at Philips Road. However, both of these approaches are expected to operate under capacity under the 2026 Build conditions. The capacity analysis results indicate that the operations at the other study area intersections are not expected to be impacted as a result of the proposed development. McMahon Associates, Inc. concludes that mitigation measures are not necessary on the surrounding roadway network to accommodate the proposed development.

Additionally, it is our opinion that the traffic impacts of the proposed development of this solid waste facility located at 100 Duchaine Boulevard do not constitute a danger to the public health, safety, or the environment with consideration to traffic congestion, pedestrian and vehicular safety, and roadway configuration.

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Appendix for Traffic Impact Study

Solid Waste Transfer Station

100 Duchaine Boulevard
New Bedford, MA

Prepared by
McMahon Associates, Inc.
350 Myles Standish Boulevard, Suite 103
Taunton, MA 02780
508.823.2245

Prepared for
Green Seal Environmental, Inc.

July 2018
Revised September 2019

APPENDIX A

Manual Turning Movement Count Data

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Northbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063A
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Route 140 NB On-Ramp From North				Braley Road From East				Route 140 NB Off-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	21	142	0	0	48	0	44	1	0	48	19	0	323
07:15 AM	0	0	0	0	16	145	0	0	56	0	62	2	0	34	16	0	331
07:30 AM	0	0	0	0	19	151	0	0	77	0	80	1	0	37	12	0	377
07:45 AM	0	0	0	0	16	150	0	0	78	0	97	0	0	37	18	0	396
Total	0	0	0	0	72	588	0	0	259	0	283	4	0	156	65	0	1427
08:00 AM	0	0	0	0	12	133	0	0	80	0	70	0	0	45	8	0	348
08:15 AM	0	0	0	0	15	142	0	0	95	0	80	1	0	45	16	0	394
08:30 AM	0	0	0	0	16	166	0	0	71	0	36	2	0	43	10	0	344
08:45 AM	0	0	0	1	14	137	0	0	68	0	51	1	0	33	19	1	325
Total	0	0	0	1	57	578	0	0	314	0	237	4	0	166	53	1	1411
Grand Total	0	0	0	1	129	1166	0	0	573	0	520	8	0	322	118	1	2838
Apprch %	0	0	0	100	10	90	0	0	52	0	47.2	0.7	0	73	26.8	0.2	
Total %	0	0	0	0	4.5	41.1	0	0	20.2	0	18.3	0.3	0	11.3	4.2	0	
Cars & Peds	0	0	0	1	128	1130	0	0	551	0	496	8	0	302	87	1	2704
% Cars & Peds	0	0	0	100	99.2	96.9	0	0	96.2	0	95.4	100	0	93.8	73.7	100	95.3
Trucks & Buses	0	0	0	0	1	36	0	0	22	0	24	0	0	19	31	0	133
% Trucks & Buses	0	0	0	0	0.8	3.1	0	0	3.8	0	4.6	0	0	5.9	26.3	0	4.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0

	Route 140 NB On-Ramp From North					Braley Road From East					Route 140 NB Off-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	**19**	**151**	0	0	**170**	77	0	80	**1**	158	0	37	12	0	49	377
07:45 AM	0	0	0	0	0	16	150	0	0	166	78	0	**97**	0	175	0	37	**18**	0	55	**396**
08:00 AM	0	0	0	0	0	12	133	0	0	145	80	0	70	0	150	0	**45**	8	0	53	348
08:15 AM	0	0	0	0	0	15	142	0	0	157	**95**	0	80	1	**176**	0	45	16	0	**61**	394
Total Volume	0	0	0	0	0	62	576	0	0	638	330	0	327	2	659	0	164	54	0	218	1515
% App. Total	0	0	0	0		9.7	90.3	0	0		50.1	0	49.6	0.3		0	75.2	24.8	0		
PHF	.000	.000	.000	.000	.000	.816	.954	.000	.000	.938	.868	.000	.843	.500	.936	.000	.911	.750	.000	.893	.956
Cars & Peds	0	0	0	0	0	62	562	0	0	624	316	0	313	2	631	0	152	40	0	192	1447
% Cars & Peds	0	0	0	0	0	100	97.6	0	0	97.8	95.8	0	95.7	100	95.8	0	92.7	74.1	0	88.1	95.5
Trucks & Buses	0	0	0	0	0	0	14	0	0	14	14	0	14	0	28	0	11	14	0	25	67
% Trucks & Buses	0	0	0	0	0	0	2.4	0	0	2.2	4.2	0	4.3	0	4.2	0	6.7	25.9	0	11.5	4.4
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0	0.5	0.1

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Northbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063A
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds

	Route 140 NB On-Ramp From North				Braley Road From East				Route 140 NB Off-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	21	140	0	0	46	0	41	1	0	46	17	0	312
07:15 AM	0	0	0	0	16	144	0	0	55	0	60	2	0	34	11	0	322
07:30 AM	0	0	0	0	19	148	0	0	74	0	75	1	0	33	9	0	359
07:45 AM	0	0	0	0	16	147	0	0	77	0	94	0	0	34	10	0	378
Total	0	0	0	0	72	579	0	0	252	0	270	4	0	147	47	0	1371
08:00 AM	0	0	0	0	12	131	0	0	75	0	66	0	0	43	7	0	334
08:15 AM	0	0	0	0	15	136	0	0	90	0	78	1	0	42	14	0	376
08:30 AM	0	0	0	0	15	151	0	0	69	0	34	2	0	38	9	0	318
08:45 AM	0	0	0	1	14	133	0	0	65	0	48	1	0	32	10	1	305
Total	0	0	0	1	56	551	0	0	299	0	226	4	0	155	40	1	1333
Grand Total	0	0	0	1	128	1130	0	0	551	0	496	8	0	302	87	1	2704
Apprch %	0	0	0	100	10.2	89.8	0	0	52.2	0	47	0.8	0	77.4	22.3	0.3	
Total %	0	0	0	0	4.7	41.8	0	0	20.4	0	18.3	0.3	0	11.2	3.2	0	

	Route 140 NB On-Ramp From North					Braley Road From East					Route 140 NB Off-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	**19**	**148**	0	0	**167**	74	0	75	**1**	150	0	33	9	0	42	359
07:45 AM	0	0	0	0	0	16	147	0	0	163	77	0	**94**	0	**171**	0	34	10	0	44	**378**
08:00 AM	0	0	0	0	0	12	131	0	0	143	75	0	66	0	141	0	**43**	7	0	50	334
08:15 AM	0	0	0	0	0	15	136	0	0	151	**90**	0	78	1	169	0	42	**14**	0	**56**	376
Total Volume	0	0	0	0	0	62	562	0	0	624	316	0	313	2	631	0	152	40	0	192	1447
% App. Total	0	0	0	0		9.9	90.1	0	0		50.1	0	49.6	0.3		0	79.2	20.8	0		
PHF	.000	.000	.000	.000	.000	.816	.949	.000	.000	.934	.878	.000	.832	.500	.923	.000	.884	.714	.000	.857	.957

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Northbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063A
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Trucks & Buses

	Route 140 NB On-Ramp From North				Braley Road From East				Route 140 NB Off-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	2	0	0	2	0	3	0	0	2	2	0	11
07:15 AM	0	0	0	0	0	1	0	0	1	0	2	0	0	0	5	0	9
07:30 AM	0	0	0	0	0	3	0	0	3	0	5	0	0	3	3	0	17
07:45 AM	0	0	0	0	0	3	0	0	1	0	3	0	0	3	8	0	18
Total	0	0	0	0	0	9	0	0	7	0	13	0	0	8	18	0	55
08:00 AM	0	0	0	0	0	2	0	0	5	0	4	0	0	2	1	0	14
08:15 AM	0	0	0	0	0	6	0	0	5	0	2	0	0	3	2	0	18
08:30 AM	0	0	0	0	1	15	0	0	2	0	2	0	0	5	1	0	26
08:45 AM	0	0	0	0	0	4	0	0	3	0	3	0	0	1	9	0	20
Total	0	0	0	0	1	27	0	0	15	0	11	0	0	11	13	0	78
Grand Total	0	0	0	0	1	36	0	0	22	0	24	0	0	19	31	0	133
Apprch %	0	0	0	0	2.7	97.3	0	0	47.8	0	52.2	0	0	38	62	0	
Total %	0	0	0	0	0.8	27.1	0	0	16.5	0	18	0	0	14.3	23.3	0	

	Route 140 NB On-Ramp From North					Braley Road From East					Route 140 NB Off-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	0	0	0	0	2	0	0	2	**5**	0	**4**	0	**9**	0	2	1	0	3	14
08:15 AM	0	0	0	0	0	0	6	0	0	6	5	0	2	0	7	0	3	2	0	5	18
08:30 AM	0	0	0	0	0	**1**	**15**	0	0	**16**	2	0	2	0	4	0	**5**	1	0	6	**26**
08:45 AM	0	0	0	0	0	0	4	0	0	4	3	0	3	0	6	0	1	**9**	0	**10**	20
Total Volume	0	0	0	0	0	1	27	0	0	28	15	0	11	0	26	0	11	13	0	24	78
% App. Total	0	0	0	0		3.6	96.4	0	0		57.7	0	42.3	0		0	45.8	54.2	0		
PHF	.000	.000	.000	.000	.000	.250	.450	.000	.000	.438	.750	.000	.688	.000	.722	.000	.550	.361	.000	.600	.750

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Northbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063A
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Bikes by Direction

	Route 140 NB On-Ramp From North				Braley Road From East				Route 140 NB Off-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	

	Route 140 NB On-Ramp From North					Braley Road From East					Route 140 NB Off-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	**1**	**1**
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.250

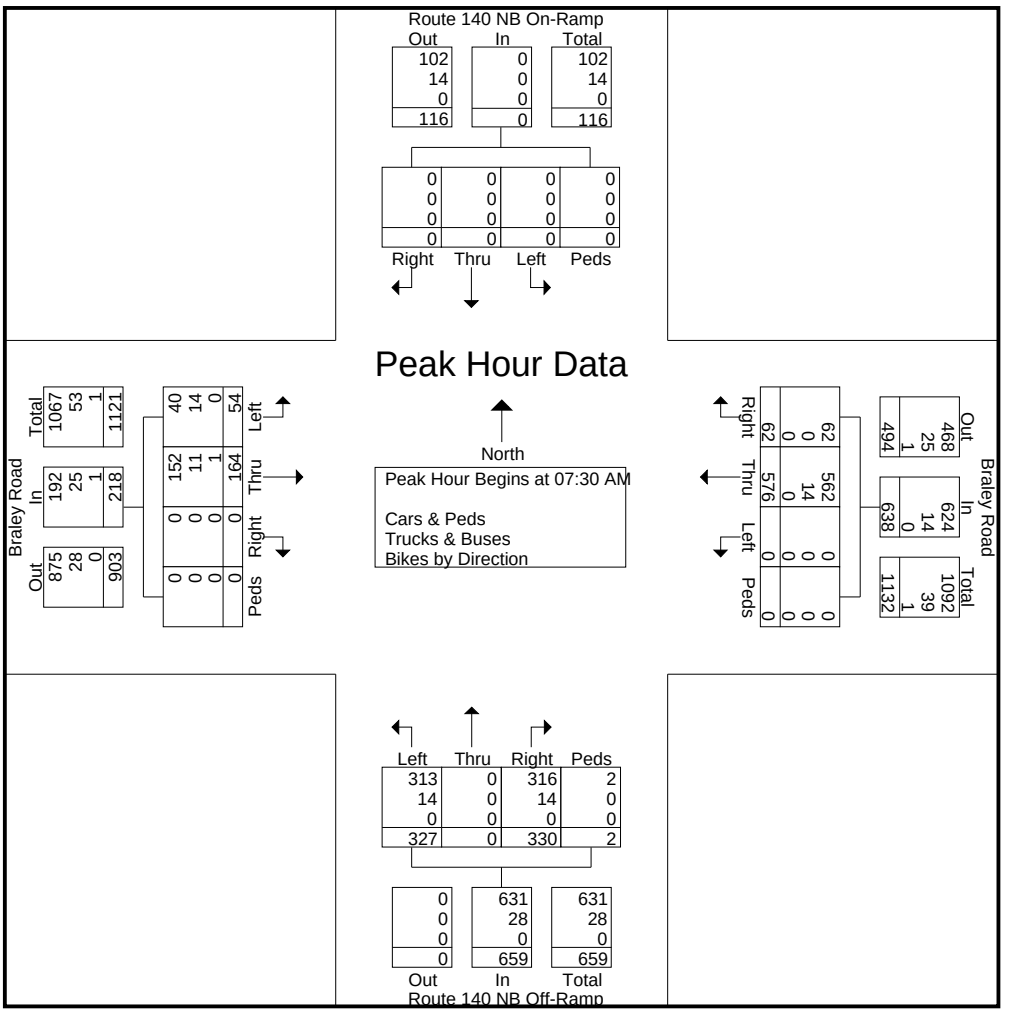
Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Northbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063A
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

	Route 140 NB On-Ramp From North					Braley Road From East					Route 140 NB Off-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	0	0	0	0	**19**	**151**	0	0	**170**	77	0	80	**1**	158	0	37	12	0	49	377
07:45 AM	0	0	0	0	0	16	150	0	0	166	78	0	**97**	0	175	0	37	**18**	0	55	**396**
08:00 AM	0	0	0	0	0	12	133	0	0	145	80	0	70	0	150	0	**45**	8	0	53	348
08:15 AM	0	0	0	0	0	15	142	0	0	157	**95**	0	80	1	**176**	0	45	16	0	**61**	394
Total Volume	0	0	0	0	0	62	576	0	0	638	330	0	327	2	659	0	164	54	0	218	1515
% App. Total	0	0	0	0		9.7	90.3	0	0		50.1	0	49.6	0.3		0	75.2	24.8	0		
PHF	.000	.000	.000	.000	.000	.816	.954	.000	.000	.938	.868	.000	.843	.500	.936	.000	.911	.750	.000	.893	.956
Cars & Peds	0	0	0	0	0	62	562	0	0	624	316	0	313	2	631	0	152	40	0	192	1447
% Cars & Peds	0	0	0	0	0	100	97.6	0	0	97.8	95.8	0	95.7	100	95.8	0	92.7	74.1	0	88.1	95.5
Trucks & Buses	0	0	0	0	0	0	14	0	0	14	14	0	14	0	28	0	11	14	0	25	67
% Trucks & Buses	0	0	0	0	0	0	2.4	0	0	2.2	4.2	0	4.3	0	4.2	0	6.7	25.9	0	11.5	4.4
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0	0.5	0.1



Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Northbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063AA
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Route 140 NB On-Ramp From North				Braley Road From East				Route 140 NB Off-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	0	15	163	0	0	87	0	48	0	0	56	22	0	391
03:15 PM	0	0	0	0	12	151	0	0	96	0	62	0	0	70	19	0	410
03:30 PM	0	0	0	0	8	134	0	1	67	0	58	1	0	58	32	1	360
03:45 PM	0	0	0	0	6	118	0	0	98	0	66	0	0	45	17	0	350
Total	0	0	0	0	41	566	0	1	348	0	234	1	0	229	90	1	1511
04:00 PM	0	0	0	0	8	109	0	0	88	0	49	0	0	53	29	0	336
04:15 PM	0	0	0	0	6	104	0	0	98	0	50	0	0	60	18	0	336
04:30 PM	0	0	0	0	12	109	0	0	100	0	45	0	0	65	15	0	346
04:45 PM	0	0	0	0	7	100	0	0	102	0	48	0	0	48	14	0	319
Total	0	0	0	0	33	422	0	0	388	0	192	0	0	226	76	0	1337
05:00 PM	0	0	0	0	9	112	0	0	90	0	41	1	0	71	58	0	382
05:15 PM	0	0	0	0	10	105	0	0	94	0	48	0	0	55	17	0	329
05:30 PM	0	0	0	0	9	91	0	0	95	0	34	0	0	52	17	0	298
05:45 PM	0	0	0	0	9	89	0	0	101	0	31	0	0	47	6	0	283
Total	0	0	0	0	37	397	0	0	380	0	154	1	0	225	98	0	1292
Grand Total	0	0	0	0	111	1385	0	1	1116	0	580	2	0	680	264	1	4140
Apprch %	0	0	0	0	7.4	92.5	0	0.1	65.7	0	34.2	0.1	0	72	27.9	0.1	
Total %	0	0	0	0	2.7	33.5	0	0	27	0	14	0	0	16.4	6.4	0	
Cars & Peds	0	0	0	0	108	1354	0	1	1103	0	546	2	0	671	255	1	4041
% Cars & Peds	0	0	0	0	97.3	97.8	0	100	98.8	0	94.1	100	0	98.7	96.6	100	97.6
Trucks & Buses	0	0	0	0	3	30	0	0	13	0	34	0	0	7	9	0	96
% Trucks & Buses	0	0	0	0	2.7	2.2	0	0	1.2	0	5.9	0	0	1	3.4	0	2.3
Bikes by Direction	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
% Bikes by Direction	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0.3	0	0	0.1

	Route 140 NB On-Ramp From North					Braley Road From East					Route 140 NB Off-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	0	0	0	0	0	**15**	**163**	0	0	**178**	87	0	48	0	135	0	56	22	0	78	391
03:15 PM	0	0	0	0	0	12	151	0	0	163	96	0	62	0	158	0	**70**	19	0	89	**410**
03:30 PM	0	0	0	0	0	8	134	0	**1**	143	67	0	58	**1**	126	0	58	**32**	**1**	**91**	360
03:45 PM	0	0	0	0	0	6	118	0	0	124	**98**	0	**66**	0	**164**	0	45	17	0	62	350
Total Volume	0	0	0	0	0	41	566	0	1	608	348	0	234	1	583	0	229	90	1	320	1511
% App. Total	0	0	0	0		6.7	93.1	0	0.2		59.7	0	40.1	0.2		0	71.6	28.1	0.3		
PHF	.000	.000	.000	.000	.000	.683	.868	.000	.250	.854	.888	.000	.886	.250	.889	.000	.818	.703	.250	.879	.921
Cars & Peds	0	0	0	0	0	39	549	0	1	589	338	0	215	1	554	0	225	86	1	312	1455
% Cars & Peds	0	0	0	0	0	95.1	97.0	0	100	96.9	97.1	0	91.9	100	95.0	0	98.3	95.6	100	97.5	96.3
Trucks & Buses	0	0	0	0	0	2	17	0	0	19	10	0	19	0	29	0	4	4	0	8	56
% Trucks & Buses	0	0	0	0	0	4.9	3.0	0	0	3.1	2.9	0	8.1	0	5.0	0	1.7	4.4	0	2.5	3.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

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E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063AA
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds

	Route 140 NB On-Ramp From North				Braley Road From East				Route 140 NB Off-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	0	15	158	0	0	84	0	44	0	0	56	21	0	378
03:15 PM	0	0	0	0	10	145	0	0	93	0	57	0	0	68	17	0	390
03:30 PM	0	0	0	0	8	130	0	1	65	0	54	1	0	57	32	1	349
03:45 PM	0	0	0	0	6	116	0	0	96	0	60	0	0	44	16	0	338
Total	0	0	0	0	39	549	0	1	338	0	215	1	0	225	86	1	1455
04:00 PM	0	0	0	0	8	105	0	0	88	0	46	0	0	52	29	0	328
04:15 PM	0	0	0	0	6	103	0	0	98	0	48	0	0	59	17	0	331
04:30 PM	0	0	0	0	12	106	0	0	100	0	43	0	0	63	14	0	338
04:45 PM	0	0	0	0	7	98	0	0	102	0	48	0	0	48	12	0	315
Total	0	0	0	0	33	412	0	0	388	0	185	0	0	222	72	0	1312
05:00 PM	0	0	0	0	9	111	0	0	89	0	37	1	0	71	58	0	376
05:15 PM	0	0	0	0	9	104	0	0	93	0	46	0	0	54	16	0	322
05:30 PM	0	0	0	0	9	90	0	0	95	0	32	0	0	52	17	0	295
05:45 PM	0	0	0	0	9	88	0	0	100	0	31	0	0	47	6	0	281
Total	0	0	0	0	36	393	0	0	377	0	146	1	0	224	97	0	1274
Grand Total	0	0	0	0	108	1354	0	1	1103	0	546	2	0	671	255	1	4041
Apprch %	0	0	0	0	7.4	92.5	0	0.1	66.8	0	33.1	0.1	0	72.4	27.5	0.1	
Total %	0	0	0	0	2.7	33.5	0	0	27.3	0	13.5	0	0	16.6	6.3	0	

	Route 140 NB On-Ramp From North					Braley Road From East					Route 140 NB Off-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	0	0	0	0	0	**15**	**158**	0	0	**173**	84	0	44	0	128	0	56	21	0	77	378
03:15 PM	0	0	0	0	0	10	145	0	0	155	93	0	57	0	150	0	**68**	17	0	85	**390**
03:30 PM	0	0	0	0	0	8	130	0	**1**	139	65	0	54	**1**	120	0	57	**32**	**1**	**90**	349
03:45 PM	0	0	0	0	0	6	116	0	0	122	**96**	0	**60**	0	**156**	0	44	16	0	60	338
Total Volume	0	0	0	0	0	39	549	0	1	589	338	0	215	1	554	0	225	86	1	312	1455
% App. Total	0	0	0	0		6.6	93.2	0	0.2		61	0	38.8	0.2		0	72.1	27.6	0.3		
PHF	.000	.000	.000	.000	.000	.650	.869	.000	.250	.851	.880	.000	.896	.250	.888	.000	.827	.672	.250	.867	.933

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Northbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063AA
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Trucks & Buses

	Route 140 NB On-Ramp From North				Braley Road From East				Route 140 NB Off-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	0	0	5	0	0	3	0	4	0	0	0	1	0	13
03:15 PM	0	0	0	0	2	6	0	0	3	0	5	0	0	2	2	0	20
03:30 PM	0	0	0	0	0	4	0	0	2	0	4	0	0	1	0	0	11
03:45 PM	0	0	0	0	0	2	0	0	2	0	6	0	0	1	1	0	12
Total	0	0	0	0	2	17	0	0	10	0	19	0	0	4	4	0	56
04:00 PM	0	0	0	0	0	4	0	0	0	0	3	0	0	1	0	0	8
04:15 PM	0	0	0	0	0	1	0	0	0	0	2	0	0	1	1	0	5
04:30 PM	0	0	0	0	0	3	0	0	0	0	2	0	0	0	1	0	6
04:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2	0	4
Total	0	0	0	0	0	10	0	0	0	0	7	0	0	2	4	0	23
05:00 PM	0	0	0	0	0	1	0	0	1	0	4	0	0	0	0	0	6
05:15 PM	0	0	0	0	1	1	0	0	1	0	2	0	0	1	1	0	7
05:30 PM	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	2
05:45 PM	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	2
Total	0	0	0	0	1	3	0	0	3	0	8	0	0	1	1	0	17
Grand Total	0	0	0	0	3	30	0	0	13	0	34	0	0	7	9	0	96
Apprch %	0	0	0	0	9.1	90.9	0	0	27.7	0	72.3	0	0	43.8	56.2	0	
Total %	0	0	0	0	3.1	31.2	0	0	13.5	0	35.4	0	0	7.3	9.4	0	

	Route 140 NB On-Ramp From North					Braley Road From East					Route 140 NB Off-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	0	0	0	0	0	0	5	0	0	5	**3**	0	4	0	7	0	0	1	0	1	13
03:15 PM	0	0	0	0	0	**2**	**6**	0	0	**8**	3	0	5	0	**8**	0	**2**	**2**	0	**4**	**20**
03:30 PM	0	0	0	0	0	0	4	0	0	4	2	0	4	0	6	0	1	0	0	1	11
03:45 PM	0	0	0	0	0	0	2	0	0	2	2	0	**6**	0	8	0	1	1	0	2	12
Total Volume	0	0	0	0	0	2	17	0	0	19	10	0	19	0	29	0	4	4	0	8	56
% App. Total	0	0	0	0		10.5	89.5	0	0		34.5	0	65.5	0		0	50	50	0		
PHF	.000	.000	.000	.000	.000	.250	.708	.000	.000	.594	.833	.000	.792	.000	.906	.000	.500	.500	.000	.500	.700

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Northbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063AA
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Bikes by Direction

	Route 140 NB On-Ramp From North				Braley Road From East				Route 140 NB Off-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
Apprch %	0	0	0	0	0	100	0	0	0	0	0	0	0	100	0	0	
Total %	0	0	0	0	0	33.3	0	0	0	0	0	0	0	66.7	0	0	

	Route 140 NB On-Ramp From North					Braley Road From East					Route 140 NB Off-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	0	**2**	**2**
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.250

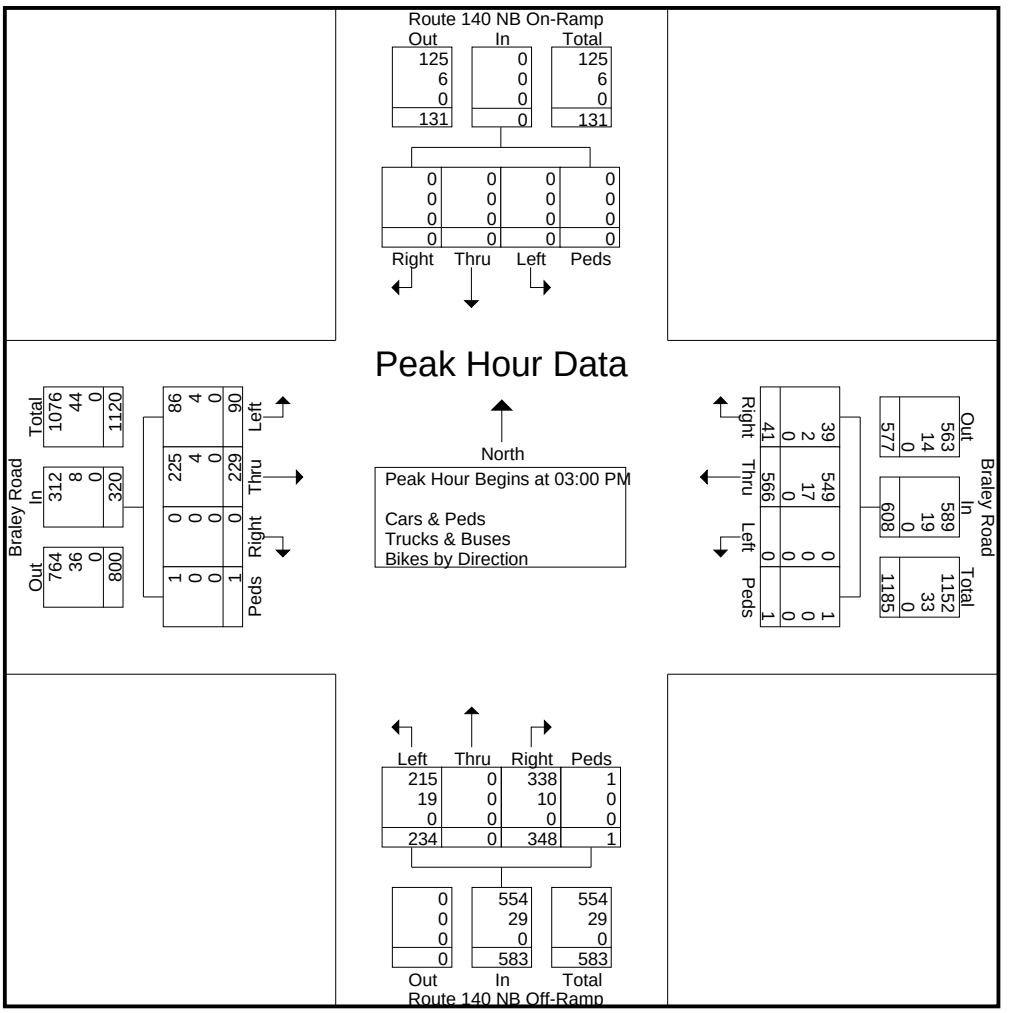
Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Northbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063AA
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

	Route 140 NB On-Ramp From North					Braley Road From East					Route 140 NB Off-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	0	0	0	0	0	**15**	**163**	0	0	**178**	87	0	48	0	135	0	56	22	0	78	391
03:15 PM	0	0	0	0	0	12	151	0	0	163	96	0	62	0	158	0	**70**	19	0	89	**410**
03:30 PM	0	0	0	0	0	8	134	0	**1**	143	67	0	58	**1**	126	0	58	**32**	**1**	**91**	360
03:45 PM	0	0	0	0	0	6	118	0	0	124	**98**	0	**66**	0	**164**	0	45	17	0	62	350
Total Volume	0	0	0	0	0	41	566	0	1	608	348	0	234	1	583	0	229	90	1	320	1511
% App. Total	0	0	0	0		6.7	93.1	0	0.2		59.7	0	40.1	0.2		0	71.6	28.1	0.3		
PHF	.000	.000	.000	.000	.000	.683	.868	.000	.250	.854	.888	.000	.886	.250	.889	.000	.818	.703	.250	.879	.921
Cars & Peds	0	0	0	0	0	39	549	0	1	589	338	0	215	1	554	0	225	86	1	312	1455
% Cars & Peds	0	0	0	0	0	95.1	97.0	0	100	96.9	97.1	0	91.9	100	95.0	0	98.3	95.6	100	97.5	96.3
Trucks & Buses	0	0	0	0	0	2	17	0	0	19	10	0	19	0	29	0	4	4	0	8	56
% Trucks & Buses	0	0	0	0	0	4.9	3.0	0	0	3.1	2.9	0	8.1	0	5.0	0	1.7	4.4	0	2.5	3.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Southbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063B
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Route 140 SB Off-Ramp From North				Braley Road From East				Route 140 SB On-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	29	0	9	0	0	76	108	0	0	0	0	0	109	56	0	0	387
07:15 AM	26	0	7	0	0	93	115	0	0	0	0	1	45	45	0	0	332
07:30 AM	37	0	12	0	0	120	111	0	0	0	0	1	50	37	0	0	368
07:45 AM	28	0	14	0	0	136	112	0	0	0	0	0	40	41	0	0	371
Total	120	0	42	0	0	425	446	0	0	0	0	2	244	179	0	0	1458
08:00 AM	30	0	11	0	0	109	91	0	0	0	0	1	47	42	0	0	331
08:15 AM	29	0	5	0	0	119	100	0	0	0	0	0	49	56	0	0	358
08:30 AM	29	0	3	0	0	90	117	0	0	0	0	2	40	49	0	0	330
08:45 AM	16	0	7	0	0	88	100	0	0	0	0	2	31	44	0	0	288
Total	104	0	26	0	0	406	408	0	0	0	0	5	167	191	0	0	1307
Grand Total	224	0	68	0	0	831	854	0	0	0	0	7	411	370	0	0	2765
Apprch %	76.7	0	23.3	0	0	49.3	50.7	0	0	0	0	100	52.6	47.4	0	0	
Total %	8.1	0	2.5	0	0	30.1	30.9	0	0	0	0	0.3	14.9	13.4	0	0	
Cars & Peds	198	0	62	0	0	798	827	0	0	0	0	7	387	325	0	0	2604
% Cars & Peds	88.4	0	91.2	0	0	96	96.8	0	0	0	0	100	94.2	87.8	0	0	94.2
Trucks & Buses	26	0	6	0	0	33	27	0	0	0	0	0	24	44	0	0	160
% Trucks & Buses	11.6	0	8.8	0	0	4	3.2	0	0	0	0	0	5.8	11.9	0	0	5.8
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0.3	0	0	0

	Route 140 SB Off-Ramp From North					Braley Road From East					Route 140 SB On-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	29	0	9	0	38	0	76	108	0	184	0	0	0	0	0	**109**	**56**	0	0	**165**	**387**
07:15 AM	26	0	7	0	33	0	93	**115**	0	208	0	0	0	**1**	**1**	45	45	0	0	90	332
07:30 AM	**37**	0	12	0	**49**	0	120	111	0	231	0	0	0	1	1	50	37	0	0	87	368
07:45 AM	28	0	**14**	0	42	0	**136**	112	0	**248**	0	0	0	0	0	40	41	0	0	81	371
Total Volume	120	0	42	0	162	0	425	446	0	871	0	0	0	2	2	244	179	0	0	423	1458
% App. Total	74.1	0	25.9	0		0	48.8	51.2	0		0	0	0	100		57.7	42.3	0	0		
PHF	.811	.000	.750	.000	.827	.000	.781	.970	.000	.878	.000	.000	.000	.500	.500	.560	.799	.000	.000	.641	.942
Cars & Peds	109	0	39	0	148	0	408	442	0	850	0	0	0	2	2	232	154	0	0	386	1386
% Cars & Peds	90.8	0	92.9	0	91.4	0	96.0	99.1	0	97.6	0	0	0	100	100	95.1	86.0	0	0	91.3	95.1
Trucks & Buses	11	0	3	0	14	0	17	4	0	21	0	0	0	0	0	12	24	0	0	36	71
% Trucks & Buses	9.2	0	7.1	0	8.6	0	4.0	0.9	0	2.4	0	0	0	0	0	4.9	13.4	0	0	8.5	4.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0	0.2	0.1

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Southbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063B
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds

	Route 140 SB Off-Ramp From North				Braley Road From East				Route 140 SB On-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	27	0	8	0	0	72	107	0	0	0	0	0	109	52	0	0	375
07:15 AM	23	0	7	0	0	91	114	0	0	0	0	1	41	40	0	0	317
07:30 AM	32	0	10	0	0	113	110	0	0	0	0	1	47	32	0	0	345
07:45 AM	27	0	14	0	0	132	111	0	0	0	0	0	35	30	0	0	349
Total	109	0	39	0	0	408	442	0	0	0	0	2	232	154	0	0	1386
08:00 AM	29	0	9	0	0	105	89	0	0	0	0	1	43	41	0	0	317
08:15 AM	25	0	4	0	0	115	97	0	0	0	0	0	47	51	0	0	339
08:30 AM	23	0	3	0	0	86	102	0	0	0	0	2	38	43	0	0	297
08:45 AM	12	0	7	0	0	84	97	0	0	0	0	2	27	36	0	0	265
Total	89	0	23	0	0	390	385	0	0	0	0	5	155	171	0	0	1218
Grand Total	198	0	62	0	0	798	827	0	0	0	0	7	387	325	0	0	2604
Apprch %	76.2	0	23.8	0	0	49.1	50.9	0	0	0	0	100	54.4	45.6	0	0	
Total %	7.6	0	2.4	0	0	30.6	31.8	0	0	0	0	0.3	14.9	12.5	0	0	

	Route 140 SB Off-Ramp From North					Braley Road From East					Route 140 SB On-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	27	0	8	0	35	0	72	107	0	179	0	0	0	0	0	**109**	**52**	0	0	**161**	**375**
07:15 AM	23	0	7	0	30	0	91	**114**	0	205	0	0	0	**1**	**1**	41	40	0	0	81	317
07:30 AM	**32**	0	10	0	**42**	0	113	110	0	223	0	0	0	1	1	47	32	0	0	79	345
07:45 AM	27	0	**14**	0	41	0	**132**	111	0	**243**	0	0	0	0	0	35	30	0	0	65	349
Total Volume	109	0	39	0	148	0	408	442	0	850	0	0	0	2	2	232	154	0	0	386	1386
% App. Total	73.6	0	26.4	0		0	48	52	0		0	0	0	100		60.1	39.9	0	0		
PHF	.852	.000	.696	.000	.881	.000	.773	.969	.000	.874	.000	.000	.000	.500	.500	.532	.740	.000	.000	.599	.924

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Southbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063B
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Trucks & Buses

	Route 140 SB Off-Ramp From North				Braley Road From East				Route 140 SB On-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	2	0	1	0	0	4	1	0	0	0	0	0	0	4	0	0	12
07:15 AM	3	0	0	0	0	2	1	0	0	0	0	0	4	5	0	0	15
07:30 AM	5	0	2	0	0	7	1	0	0	0	0	0	3	4	0	0	22
07:45 AM	1	0	0	0	0	4	1	0	0	0	0	0	5	11	0	0	22
Total	11	0	3	0	0	17	4	0	0	0	0	0	12	24	0	0	71
08:00 AM	1	0	2	0	0	4	2	0	0	0	0	0	4	1	0	0	14
08:15 AM	4	0	1	0	0	4	3	0	0	0	0	0	2	5	0	0	19
08:30 AM	6	0	0	0	0	4	15	0	0	0	0	0	2	6	0	0	33
08:45 AM	4	0	0	0	0	4	3	0	0	0	0	0	4	8	0	0	23
Total	15	0	3	0	0	16	23	0	0	0	0	0	12	20	0	0	89
Grand Total	26	0	6	0	0	33	27	0	0	0	0	0	24	44	0	0	160
Apprch %	81.2	0	18.8	0	0	55	45	0	0	0	0	0	35.3	64.7	0	0	
Total %	16.2	0	3.8	0	0	20.6	16.9	0	0	0	0	0	15	27.5	0	0	

	Route 140 SB Off-Ramp From North					Braley Road From East					Route 140 SB On-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	1	0	**2**	0	3	0	**4**	2	0	6	0	0	0	0	0	**4**	1	0	0	5	14
08:15 AM	4	0	1	0	5	0	4	3	0	7	0	0	0	0	0	2	5	0	0	7	19
08:30 AM	**6**	0	0	0	**6**	0	4	**15**	0	**19**	0	0	0	0	0	2	6	0	0	8	**33**
08:45 AM	4	0	0	0	4	0	4	3	0	7	0	0	0	0	0	4	**8**	0	0	**12**	23
Total Volume	15	0	3	0	18	0	16	23	0	39	0	0	0	0	0	12	20	0	0	32	89
% App. Total	83.3	0	16.7	0		0	41	59	0		0	0	0	0		37.5	62.5	0	0		
PHF	.625	.000	.375	.000	.750	.000	1.00	.383	.000	.513	.000	.000	.000	.000	.000	.750	.625	.000	.000	.667	.674

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Southbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063B
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Bikes by Direction

	Route 140 SB Off-Ramp From North				Braley Road From East				Route 140 SB On-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0	0	

	Route 140 SB Off-Ramp From North					Braley Road From East					Route 140 SB On-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	**1**	**1**
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.250

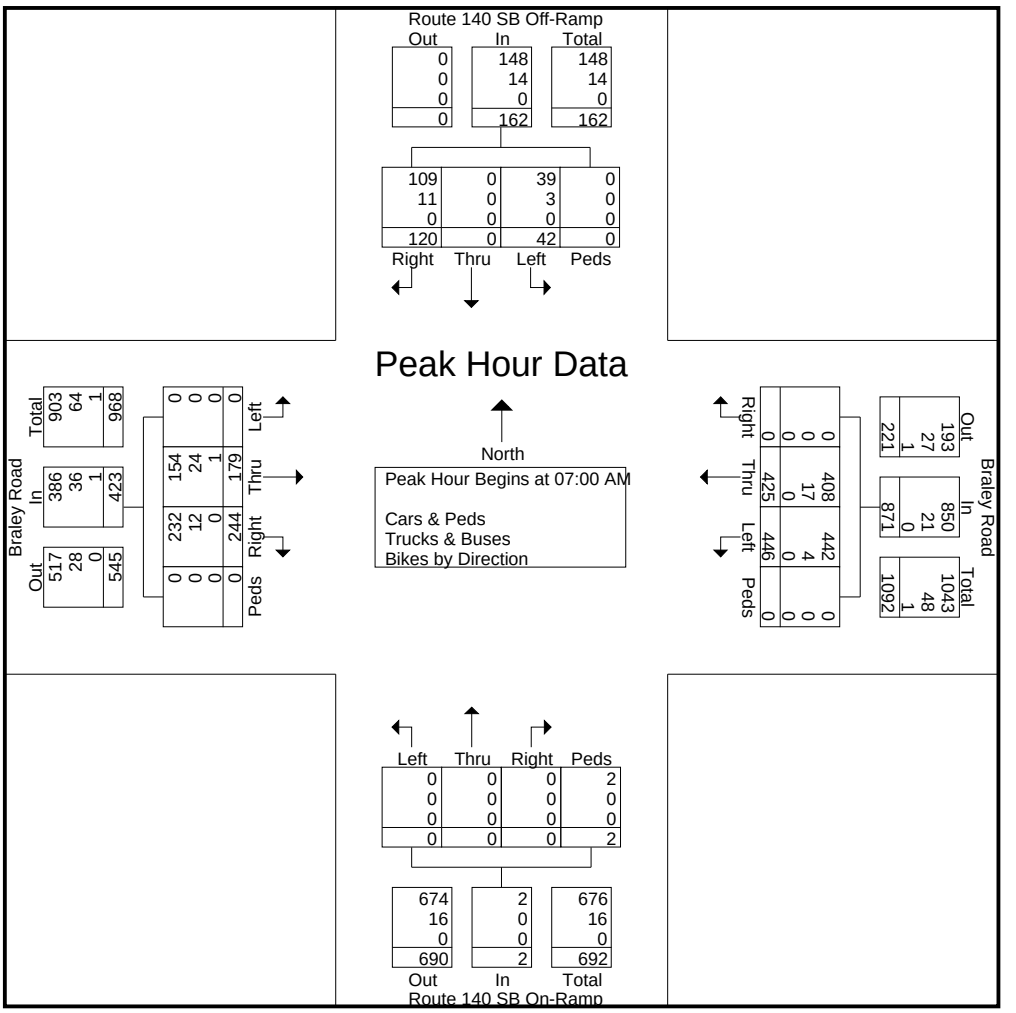
Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Southbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063B
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

	Route 140 SB Off-Ramp From North					Braley Road From East					Route 140 SB On-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	29	0	9	0	38	0	76	108	0	184	0	0	0	0	0	**109**	**56**	0	0	**165**	**387**
07:15 AM	26	0	7	0	33	0	93	**115**	0	208	0	0	0	**1**	**1**	45	45	0	0	90	332
07:30 AM	**37**	0	12	0	**49**	0	120	111	0	231	0	0	0	1	1	50	37	0	0	87	368
07:45 AM	28	0	**14**	0	42	0	**136**	112	0	**248**	0	0	0	0	0	40	41	0	0	81	371
Total Volume	120	0	42	0	162	0	425	446	0	871	0	0	0	2	2	244	179	0	0	423	1458
% App. Total	74.1	0	25.9	0		0	48.8	51.2	0		0	0	0	100		57.7	42.3	0	0		
PHF	.811	.000	.750	.000	.827	.000	.781	.970	.000	.878	.000	.000	.000	.500	.500	.560	.799	.000	.000	.641	.942
Cars & Peds	109	0	39	0	148	0	408	442	0	850	0	0	0	2	2	232	154	0	0	386	1386
% Cars & Peds	90.8	0	92.9	0	91.4	0	96.0	99.1	0	97.6	0	0	0	100	100	95.1	86.0	0	0	91.3	95.1
Trucks & Buses	11	0	3	0	14	0	17	4	0	21	0	0	0	0	0	12	24	0	0	36	71
% Trucks & Buses	9.2	0	7.1	0	8.6	0	4.0	0.9	0	2.4	0	0	0	0	0	4.9	13.4	0	0	8.5	4.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	1
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.6	0	0	0.2	0.1



Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Southbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063BB
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Route 140 SB Off-Ramp From North				Braley Road From East				Route 140 SB On-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	22	0	9	0	0	92	120	0	0	0	0	0	128	68	0	0	439
03:15 PM	18	0	11	0	0	101	111	0	0	0	0	0	77	79	0	0	397
03:30 PM	27	0	14	0	0	105	87	0	0	0	0	0	132	74	0	0	439
03:45 PM	27	0	13	0	0	101	80	0	0	0	0	0	79	49	0	1	350
Total	94	0	47	0	0	399	398	0	0	0	0	0	416	270	0	1	1625
04:00 PM	38	0	12	0	0	80	76	0	0	0	0	0	112	70	0	0	388
04:15 PM	23	0	20	0	0	85	70	0	0	0	0	0	64	57	0	0	319
04:30 PM	19	0	20	0	0	79	80	0	0	0	0	0	72	68	0	0	338
04:45 PM	21	0	11	0	0	77	70	0	0	0	0	0	75	52	0	0	306
Total	101	0	63	0	0	321	296	0	0	0	0	0	323	247	0	0	1351
05:00 PM	25	0	16	0	0	67	84	0	0	0	0	1	115	112	0	0	420
05:15 PM	30	1	19	0	0	74	81	0	0	0	0	0	56	50	0	0	311
05:30 PM	19	0	19	0	0	59	67	0	0	0	0	0	66	47	0	0	277
05:45 PM	16	0	15	0	0	65	57	0	0	0	0	0	35	38	0	0	226
Total	90	1	69	0	0	265	289	0	0	0	0	1	272	247	0	0	1234
Grand Total	285	1	179	0	0	985	983	0	0	0	0	1	1011	764	0	1	4210
Apprch %	61.3	0.2	38.5	0	0	50.1	49.9	0	0	0	0	100	56.9	43	0	0.1	
Total %	6.8	0	4.3	0	0	23.4	23.3	0	0	0	0	0	24	18.1	0	0	
Cars & Peds	269	1	176	0	0	944	959	0	0	0	0	1	973	748	0	1	4072
% Cars & Peds	94.4	100	98.3	0	0	95.8	97.6	0	0	0	0	100	96.2	97.9	0	100	96.7
Trucks & Buses	16	0	3	0	0	40	24	0	0	0	0	0	38	14	0	0	135
% Trucks & Buses	5.6	0	1.7	0	0	4.1	2.4	0	0	0	0	0	3.8	1.8	0	0	3.2
Bikes by Direction	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
% Bikes by Direction	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0.3	0	0	0.1

	Route 140 SB Off-Ramp From North					Braley Road From East					Route 140 SB On-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	22	0	9	0	31	0	92	**120**	0	**212**	0	0	0	0	0	128	68	0	0	196	**439**
03:15 PM	18	0	11	0	29	0	101	111	0	212	0	0	0	0	0	77	**79**	0	0	156	397
03:30 PM	**27**	0	**14**	0	**41**	0	**105**	87	0	192	0	0	0	0	0	**132**	74	0	0	**206**	439
03:45 PM	27	0	13	0	40	0	101	80	0	181	0	0	0	0	0	79	49	0	**1**	129	350
Total Volume	94	0	47	0	141	0	399	398	0	797	0	0	0	0	0	416	270	0	1	687	1625
% App. Total	66.7	0	33.3	0		0	50.1	49.9	0		0	0	0	0		60.6	39.3	0	0.1		
PHF	.870	.000	.839	.000	.860	.000	.950	.829	.000	.940	.000	.000	.000	.000	.000	.788	.854	.000	.250	.834	.925
Cars & Peds	87	0	46	0	133	0	376	385	0	761	0	0	0	0	0	393	263	0	1	657	1551
% Cars & Peds	92.6	0	97.9	0	94.3	0	94.2	96.7	0	95.5	0	0	0	0	0	94.5	97.4	0	100	95.6	95.4
Trucks & Buses	7	0	1	0	8	0	23	13	0	36	0	0	0	0	0	23	7	0	0	30	74
% Trucks & Buses	7.4	0	2.1	0	5.7	0	5.8	3.3	0	4.5	0	0	0	0	0	5.5	2.6	0	0	4.4	4.6
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Southbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063BB
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds

	Route 140 SB Off-Ramp From North				Braley Road From East				Route 140 SB On-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	20	0	9	0	0	86	117	0	0	0	0	0	124	67	0	0	423
03:15 PM	17	0	11	0	0	95	106	0	0	0	0	0	70	75	0	0	374
03:30 PM	26	0	14	0	0	101	83	0	0	0	0	0	128	73	0	0	425
03:45 PM	24	0	12	0	0	94	79	0	0	0	0	0	71	48	0	1	329
Total	87	0	46	0	0	376	385	0	0	0	0	0	393	263	0	1	1551
04:00 PM	38	0	12	0	0	76	73	0	0	0	0	0	110	69	0	0	378
04:15 PM	21	0	19	0	0	83	69	0	0	0	0	0	62	56	0	0	310
04:30 PM	18	0	20	0	0	76	77	0	0	0	0	0	69	65	0	0	325
04:45 PM	19	0	11	0	0	75	70	0	0	0	0	0	72	50	0	0	297
Total	96	0	62	0	0	310	289	0	0	0	0	0	313	240	0	0	1310
05:00 PM	24	0	16	0	0	64	83	0	0	0	0	1	114	111	0	0	413
05:15 PM	28	1	18	0	0	73	79	0	0	0	0	0	54	49	0	0	302
05:30 PM	18	0	19	0	0	56	67	0	0	0	0	0	65	47	0	0	272
05:45 PM	16	0	15	0	0	65	56	0	0	0	0	0	34	38	0	0	224
Total	86	1	68	0	0	258	285	0	0	0	0	1	267	245	0	0	1211
Grand Total	269	1	176	0	0	944	959	0	0	0	0	1	973	748	0	1	4072
Apprch %	60.3	0.2	39.5	0	0	49.6	50.4	0	0	0	0	100	56.5	43.4	0	0.1	
Total %	6.6	0	4.3	0	0	23.2	23.6	0	0	0	0	0	23.9	18.4	0	0	

	Route 140 SB Off-Ramp From North					Braley Road From East					Route 140 SB On-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	20	0	9	0	29	0	86	**117**	0	**203**	0	0	0	0	0	124	67	0	0	191	423
03:15 PM	17	0	11	0	28	0	95	106	0	201	0	0	0	0	0	70	**75**	0	0	145	374
03:30 PM	**26**	0	**14**	0	**40**	0	**101**	83	0	184	0	0	0	0	0	**128**	73	0	0	**201**	**425**
03:45 PM	24	0	12	0	36	0	94	79	0	173	0	0	0	0	0	71	48	0	**1**	120	329
Total Volume	87	0	46	0	133	0	376	385	0	761	0	0	0	0	0	393	263	0	1	657	1551
% App. Total	65.4	0	34.6	0		0	49.4	50.6	0		0	0	0	0		59.8	40	0	0.2		
PHF	.837	.000	.821	.000	.831	.000	.931	.823	.000	.937	.000	.000	.000	.000	.000	.768	.877	.000	.250	.817	.912

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Southbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063BB
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Trucks & Buses

	Route 140 SB Off-Ramp From North				Braley Road From East				Route 140 SB On-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	2	0	0	0	0	6	3	0	0	0	0	0	4	1	0	0	16
03:15 PM	1	0	0	0	0	6	5	0	0	0	0	0	7	4	0	0	23
03:30 PM	1	0	0	0	0	4	4	0	0	0	0	0	4	1	0	0	14
03:45 PM	3	0	1	0	0	7	1	0	0	0	0	0	8	1	0	0	21
Total	7	0	1	0	0	23	13	0	0	0	0	0	23	7	0	0	74
04:00 PM	0	0	0	0	0	4	3	0	0	0	0	0	2	1	0	0	10
04:15 PM	2	0	1	0	0	2	1	0	0	0	0	0	2	1	0	0	9
04:30 PM	1	0	0	0	0	3	3	0	0	0	0	0	3	1	0	0	11
04:45 PM	2	0	0	0	0	2	0	0	0	0	0	0	3	2	0	0	9
Total	5	0	1	0	0	11	7	0	0	0	0	0	10	5	0	0	39
05:00 PM	1	0	0	0	0	3	1	0	0	0	0	0	1	1	0	0	7
05:15 PM	2	0	1	0	0	1	2	0	0	0	0	0	2	1	0	0	9
05:30 PM	1	0	0	0	0	2	0	0	0	0	0	0	1	0	0	0	4
05:45 PM	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	0	2
Total	4	0	1	0	0	6	4	0	0	0	0	0	5	2	0	0	22
Grand Total	16	0	3	0	0	40	24	0	0	0	0	0	38	14	0	0	135
Apprch %	84.2	0	15.8	0	0	62.5	37.5	0	0	0	0	0	73.1	26.9	0	0	
Total %	11.9	0	2.2	0	0	29.6	17.8	0	0	0	0	0	28.1	10.4	0	0	

	Route 140 SB Off-Ramp From North					Braley Road From East					Route 140 SB On-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	2	0	0	0	2	0	6	3	0	9	0	0	0	0	0	4	1	0	0	5	16
03:15 PM	1	0	0	0	1	0	6	**5**	0	**11**	0	0	0	0	0	7	**4**	0	0	**11**	**23**
03:30 PM	1	0	0	0	1	0	4	4	0	8	0	0	0	0	0	4	1	0	0	5	14
03:45 PM	**3**	0	**1**	0	**4**	0	**7**	1	0	8	0	0	0	0	0	**8**	1	0	0	9	21
Total Volume	7	0	1	0	8	0	23	13	0	36	0	0	0	0	0	23	7	0	0	30	74
% App. Total	87.5	0	12.5	0		0	63.9	36.1	0		0	0	0	0		76.7	23.3	0	0		
PHF	.583	.000	.250	.000	.500	.000	.821	.650	.000	.818	.000	.000	.000	.000	.000	.719	.438	.000	.000	.682	.804

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Southbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063BB
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Bikes by Direction

	Route 140 SB Off-Ramp From North				Braley Road From East				Route 140 SB On-Ramp From South				Braley Road From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	1	0	0	0	0	0	0	0	2	0	0	3
Apprch %	0	0	0	0	0	100	0	0	0	0	0	0	0	100	0	0	
Total %	0	0	0	0	0	33.3	0	0	0	0	0	0	0	66.7	0	0	

	Route 140 SB Off-Ramp From North					Braley Road From East					Route 140 SB On-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	**2**	0	0	**2**	**2**
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	100	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.250

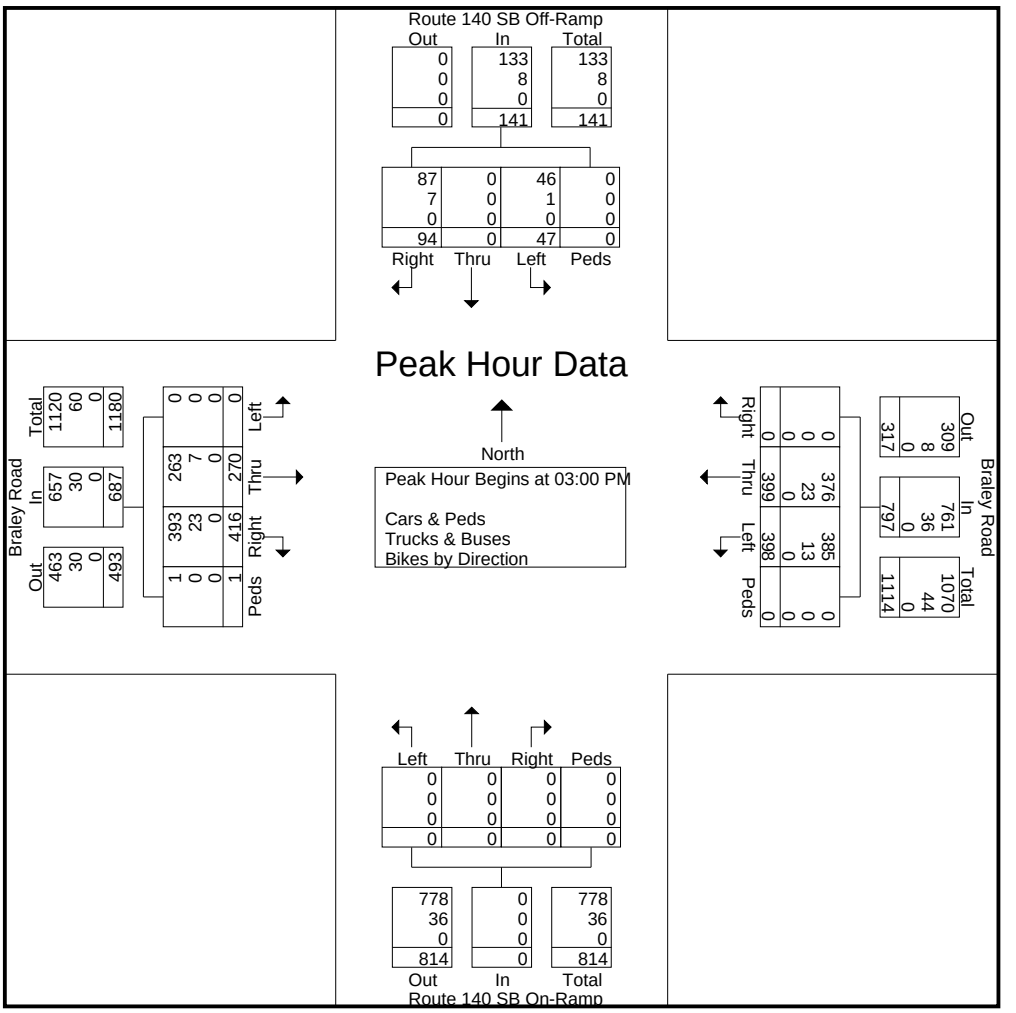
Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Route 140 Southbound Ramps
E/W: Braley Road
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063BB
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

	Route 140 SB Off-Ramp From North					Braley Road From East					Route 140 SB On-Ramp From South					Braley Road From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	22	0	9	0	31	0	92	**120**	0	**212**	0	0	0	0	0	128	68	0	0	196	**439**
03:15 PM	18	0	11	0	29	0	101	111	0	212	0	0	0	0	0	77	**79**	0	0	156	397
03:30 PM	**27**	0	**14**	0	**41**	0	**105**	87	0	192	0	0	0	0	0	**132**	74	0	0	**206**	439
03:45 PM	27	0	13	0	40	0	101	80	0	181	0	0	0	0	0	79	49	0	**1**	129	350
Total Volume	94	0	47	0	141	0	399	398	0	797	0	0	0	0	0	416	270	0	1	687	1625
% App. Total	66.7	0	33.3	0		0	50.1	49.9	0		0	0	0	0		60.6	39.3	0	0.1		
PHF	.870	.000	.839	.000	.860	.000	.950	.829	.000	.940	.000	.000	.000	.000	.000	.788	.854	.000	.250	.834	.925
Cars & Peds	87	0	46	0	133	0	376	385	0	761	0	0	0	0	0	393	263	0	1	657	1551
% Cars & Peds	92.6	0	97.9	0	94.3	0	94.2	96.7	0	95.5	0	0	0	0	0	94.5	97.4	0	100	95.6	95.4
Trucks & Buses	7	0	1	0	8	0	23	13	0	36	0	0	0	0	0	23	7	0	0	30	74
% Trucks & Buses	7.4	0	2.1	0	5.7	0	5.8	3.3	0	4.5	0	0	0	0	0	5.5	2.6	0	0	4.4	4.6
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
E/W: Braley Road/Theo Rice Blvd.
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063C
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Phillips Road From North				Braley Road From East				Phillips Road From South				Theodore Rice Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	11	2	37	0	16	76	12	0	27	2	5	0	9	101	2	0	300
07:15 AM	2	10	42	0	20	84	15	0	29	6	2	1	3	16	0	0	230
07:30 AM	6	3	39	0	17	110	31	0	28	3	2	0	0	22	0	0	261
07:45 AM	7	4	33	0	26	124	14	0	24	7	6	0	6	23	1	0	275
Total	26	19	151	0	79	394	72	0	108	18	15	1	18	162	3	0	1066
08:00 AM	8	1	37	2	20	98	28	0	28	6	2	0	5	25	5	0	265
08:15 AM	6	10	33	0	28	78	43	0	50	6	2	0	2	25	2	0	285
08:30 AM	6	5	35	0	16	64	33	2	41	6	3	1	0	11	0	0	223
08:45 AM	5	12	21	0	23	62	23	0	19	4	6	0	1	34	2	0	212
Total	25	28	126	2	87	302	127	2	138	22	13	1	8	95	9	0	985
Grand Total	51	47	277	2	166	696	199	2	246	40	28	2	26	257	12	0	2051
Apprch %	13.5	12.5	73.5	0.5	15.6	65.5	18.7	0.2	77.8	12.7	8.9	0.6	8.8	87.1	4.1	0	
Total %	2.5	2.3	13.5	0.1	8.1	33.9	9.7	0.1	12	2	1.4	0.1	1.3	12.5	0.6	0	
Cars & Peds	44	46	270	2	161	649	192	2	234	37	27	2	25	208	9	0	1908
% Cars & Peds	86.3	97.9	97.5	100	97	93.2	96.5	100	95.1	92.5	96.4	100	96.2	80.9	75	0	93
Trucks & Buses	5	1	6	0	5	47	7	0	12	2	1	0	0	49	3	0	138
% Trucks & Buses	9.8	2.1	2.2	0	3	6.8	3.5	0	4.9	5	3.6	0	0	19.1	25	0	6.7
Bikes by Direction	2	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	5
% Bikes by Direction	3.9	0	0.4	0	0	0	0	0	0	2.5	0	0	3.8	0	0	0	0.2

	Phillips Road From North					Braley Road From East					Phillips Road From South					Theodore Rice Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	6	3	**39**	0	48	17	110	31	0	158	28	3	2	0	33	0	22	0	0	22	261
07:45 AM	7	4	33	0	44	26	**124**	14	0	**164**	24	**7**	**6**	0	37	**6**	23	1	0	30	275
08:00 AM	**8**	1	37	**2**	48	20	98	28	0	146	28	6	2	0	36	5	**25**	**5**	0	**35**	265
08:15 AM	6	**10**	33	0	**49**	**28**	78	**43**	0	149	**50**	6	2	0	**58**	2	25	2	0	29	**285**
Total Volume	27	18	142	2	189	91	410	116	0	617	130	22	12	0	164	13	95	8	0	116	1086
% App. Total	14.3	9.5	75.1	1.1		14.7	66.5	18.8	0		79.3	13.4	7.3	0		11.2	81.9	6.9	0		
PHF	.844	.450	.910	.250	.964	.813	.827	.674	.000	.941	.650	.786	.500	.000	.707	.542	.950	.400	.000	.829	.953
Cars & Peds	24	17	139	2	182	90	386	111	0	587	128	21	11	0	160	12	67	6	0	85	1014
% Cars & Peds	88.9	94.4	97.9	100	96.3	98.9	94.1	95.7	0	95.1	98.5	95.5	91.7	0	97.6	92.3	70.5	75.0	0	73.3	93.4
Trucks & Buses	2	1	2	0	5	1	24	5	0	30	2	1	1	0	4	0	28	2	0	30	69
% Trucks & Buses	7.4	5.6	1.4	0	2.6	1.1	5.9	4.3	0	4.9	1.5	4.5	8.3	0	2.4	0	29.5	25.0	0	25.9	6.4
Bikes by Direction	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3
% Bikes by Direction	3.7	0	0.7	0	1.1	0	0	0	0	0	0	0	0	0	0	7.7	0	0	0	0.9	0.3

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
E/W: Braley Road/Theo Rice Blvd.
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063C
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds

	Phillips Road From North				Braley Road From East				Phillips Road From South				Theodore Rice Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	11	2	36	0	15	71	12	0	25	1	5	0	9	100	2	0	289
07:15 AM	1	10	40	0	19	81	14	0	28	6	2	1	3	11	0	0	216
07:30 AM	5	3	38	0	16	101	29	0	28	3	1	0	0	17	0	0	241
07:45 AM	7	4	32	0	26	121	12	0	24	7	6	0	6	12	0	0	257
Total	24	19	146	0	76	374	67	0	105	17	14	1	18	140	2	0	1003
08:00 AM	7	1	37	2	20	92	28	0	28	5	2	0	4	19	5	0	250
08:15 AM	5	9	32	0	28	72	42	0	48	6	2	0	2	19	1	0	266
08:30 AM	6	5	34	0	15	56	32	2	36	5	3	1	0	8	0	0	203
08:45 AM	2	12	21	0	22	55	23	0	17	4	6	0	1	22	1	0	186
Total	20	27	124	2	85	275	125	2	129	20	13	1	7	68	7	0	905
Grand Total	44	46	270	2	161	649	192	2	234	37	27	2	25	208	9	0	1908
Apprch %	12.2	12.7	74.6	0.6	16	64.6	19.1	0.2	78	12.3	9	0.7	10.3	86	3.7	0	
Total %	2.3	2.4	14.2	0.1	8.4	34	10.1	0.1	12.3	1.9	1.4	0.1	1.3	10.9	0.5	0	

	Phillips Road From North					Braley Road From East					Phillips Road From South					Theodore Rice Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	5	3	**38**	0	46	16	101	29	0	146	28	3	1	0	32	0	17	0	0	17	241
07:45 AM	**7**	4	32	0	43	26	**121**	12	0	**159**	24	**7**	**6**	0	37	**6**	12	0	0	18	257
08:00 AM	7	1	37	**2**	**47**	20	92	28	0	140	28	5	2	0	35	4	**19**	**5**	0	**28**	250
08:15 AM	5	**9**	32	0	46	**28**	72	**42**	0	142	**48**	6	2	0	**56**	2	19	1	0	22	**266**
Total Volume	24	17	139	2	182	90	386	111	0	587	128	21	11	0	160	12	67	6	0	85	1014
% App. Total	13.2	9.3	76.4	1.1		15.3	65.8	18.9	0		80	13.1	6.9	0		14.1	78.8	7.1	0		
PHF	.857	.472	.914	.250	.968	.804	.798	.661	.000	.923	.667	.750	.458	.000	.714	.500	.882	.300	.000	.759	.953

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
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City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063C
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Trucks & Buses

	Phillips Road From North				Braley Road From East				Phillips Road From South				Theodore Rice Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	1	0	1	5	0	0	2	1	0	0	0	1	0	0	11
07:15 AM	1	0	2	0	1	3	1	0	1	0	0	0	0	5	0	0	14
07:30 AM	1	0	0	0	1	9	2	0	0	0	1	0	0	5	0	0	19
07:45 AM	0	0	1	0	0	3	2	0	0	0	0	0	0	11	1	0	18
Total	2	0	4	0	3	20	5	0	3	1	1	0	0	22	1	0	62
08:00 AM	0	0	0	0	0	6	0	0	0	1	0	0	0	6	0	0	13
08:15 AM	1	1	1	0	0	6	1	0	2	0	0	0	0	6	1	0	19
08:30 AM	0	0	1	0	1	8	1	0	5	0	0	0	0	3	0	0	19
08:45 AM	2	0	0	0	1	7	0	0	2	0	0	0	0	12	1	0	25
Total	3	1	2	0	2	27	2	0	9	1	0	0	0	27	2	0	76
Grand Total	5	1	6	0	5	47	7	0	12	2	1	0	0	49	3	0	138
Apprch %	41.7	8.3	50	0	8.5	79.7	11.9	0	80	13.3	6.7	0	0	94.2	5.8	0	
Total %	3.6	0.7	4.3	0	3.6	34.1	5.1	0	8.7	1.4	0.7	0	0	35.5	2.2	0	

	Phillips Road From North					Braley Road From East					Phillips Road From South					Theodore Rice Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	0	0	0	0	6	0	0	6	0	**1**	0	0	1	0	6	0	0	6	13
08:15 AM	1	**1**	**1**	0	**3**	0	6	**1**	0	7	2	0	0	0	2	0	6	**1**	0	7	19
08:30 AM	0	0	1	0	1	**1**	**8**	1	0	**10**	**5**	0	0	0	**5**	0	3	0	0	3	19
08:45 AM	**2**	0	0	0	2	1	7	0	0	8	2	0	0	0	2	0	**12**	1	0	**13**	**25**
Total Volume	3	1	2	0	6	2	27	2	0	31	9	1	0	0	10	0	27	2	0	29	76
% App. Total	50	16.7	33.3	0		6.5	87.1	6.5	0		90	10	0	0		0	93.1	6.9	0		
PHF	.375	.250	.500	.000	.500	.500	.844	.500	.000	.775	.450	.250	.000	.000	.500	.000	.563	.500	.000	.558	.760

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
E/W: Braley Road/Theo Rice Blvd.
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063C
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Bikes by Direction

	Phillips Road From North				Braley Road From East				Phillips Road From South				Theodore Rice Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
08:00 AM	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	2
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
08:45 AM	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	2	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	4
Grand Total	2	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	5
Apprch %	66.7	0	33.3	0	0	0	0	0	0	100	0	0	100	0	0	0	
Total %	40	0	20	0	0	0	0	0	0	20	0	0	20	0	0	0	

	Phillips Road From North					Braley Road From East					Phillips Road From South					Theodore Rice Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	**1**	0	0	0	**1**	0	0	0	0	0	0	0	0	0	0	**1**	0	0	0	**1**	**2**
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	**1**	0	0	**1**	0	0	0	0	0	1
08:45 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	2	0	0	0	2	0	0	0	0	0	0	1	0	0	1	1	0	0	0	1	4
% App. Total	100	0	0	0		0	0	0	0		0	100	0	0		100	0	0	0		
PHF	.500	.000	.000	.000	.500	.000	.000	.000	.000	.000	.000	.250	.000	.000	.250	.250	.000	.000	.000	.250	.500

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
E/W: Braley Road/Theo Rice Blvd.
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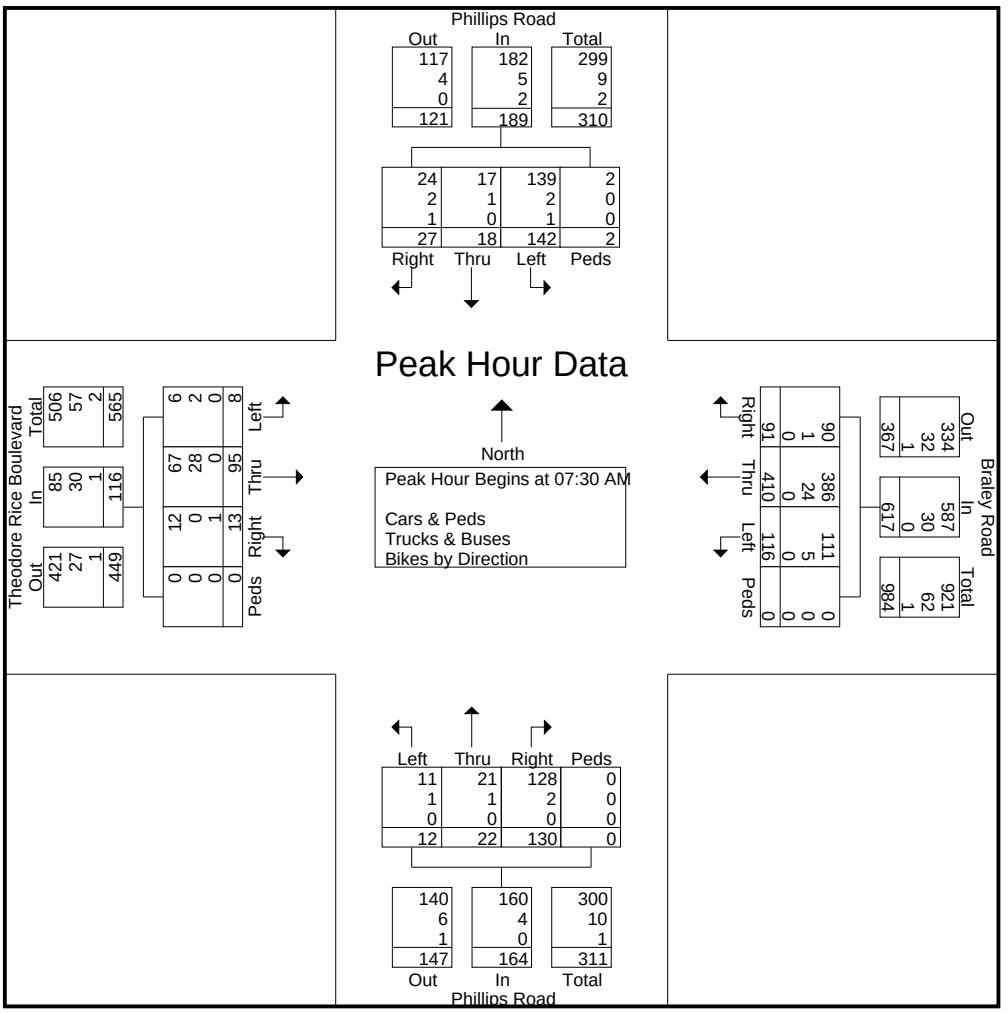
Client: McM/S. Hawkins

File Name : 05063C
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

	Phillips Road From North					Braley Road From East					Phillips Road From South					Theodore Rice Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	6	3	**39**	0	48	17	110	31	0	158	28	3	2	0	33	0	22	0	0	22	261
07:45 AM	7	4	33	0	44	26	**124**	14	0	**164**	24	**7**	**6**	0	37	**6**	23	1	0	30	275
08:00 AM	**8**	1	37	**2**	48	20	98	28	0	146	28	6	2	0	36	5	**25**	**5**	0	**35**	265
08:15 AM	6	**10**	33	0	**49**	**28**	78	**43**	0	149	**50**	6	2	0	**58**	2	25	2	0	29	**285**
Total Volume	27	18	142	2	189	91	410	116	0	617	130	22	12	0	164	13	95	8	0	116	1086
% App. Total	14.3	9.5	75.1	1.1		14.7	66.5	18.8	0		79.3	13.4	7.3	0		11.2	81.9	6.9	0		
PHF	.844	.450	.910	.250	.964	.813	.827	.674	.000	.941	.650	.786	.500	.000	.707	.542	.950	.400	.000	.829	.953
Cars & Peds	24	17	139	2	182	90	386	111	0	587	128	21	11	0	160	12	67	6	0	85	1014
% Cars & Peds	88.9	94.4	97.9	100	96.3	98.9	94.1	95.7	0	95.1	98.5	95.5	91.7	0	97.6	92.3	70.5	75.0	0	73.3	93.4
Trucks & Buses	2	1	2	0	5	1	24	5	0	30	2	1	1	0	4	0	28	2	0	30	69
% Trucks & Buses	7.4	5.6	1.4	0	2.6	1.1	5.9	4.3	0	4.9	1.5	4.5	8.3	0	2.4	0	29.5	25.0	0	25.9	6.4
Bikes by Direction	1	0	1	0	2	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	3
% Bikes by Direction	3.7	0	0.7	0	1.1	0	0	0	0	0	0	0	0	0	0	7.7	0	0	0	0.9	0.3



Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
E/W: Braley Road/Theo Rice Blvd.
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063CC
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Phillips Road From North				Braley Road From East				Phillips Road From South				Theodore Rice Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	3	11	38	0	33	33	47	0	57	14	5	0	54	100	6	0	401
03:15 PM	5	12	39	0	42	37	38	0	37	11	8	0	8	80	7	0	324
03:30 PM	1	7	43	0	46	44	42	0	47	10	1	2	42	116	6	0	407
03:45 PM	0	12	41	0	39	43	45	0	26	9	4	0	5	58	3	0	285
Total	9	42	161	0	160	157	172	0	167	44	18	2	109	354	22	0	1417
04:00 PM	4	23	51	0	44	21	57	0	38	12	0	0	20	95	6	0	371
04:15 PM	0	13	30	0	44	23	40	0	34	10	6	0	6	53	10	0	269
04:30 PM	0	13	32	0	37	20	41	0	30	18	3	0	9	79	8	0	290
04:45 PM	0	7	32	0	34	16	46	0	24	10	0	0	6	67	2	0	244
Total	4	56	145	0	159	80	184	0	126	50	9	0	41	294	26	0	1174
05:00 PM	2	8	47	0	36	9	47	0	57	14	1	0	44	121	14	0	400
05:15 PM	1	12	29	0	42	13	52	0	30	13	2	0	2	48	2	0	246
05:30 PM	2	4	43	0	27	13	38	0	24	11	1	0	5	49	1	0	218
05:45 PM	1	12	35	0	34	14	33	0	20	10	1	0	1	16	1	0	178
Total	6	36	154	0	139	49	170	0	131	48	5	0	52	234	18	0	1042
Grand Total	19	134	460	0	458	286	526	0	424	142	32	2	202	882	66	0	3633
Apprch %	3.1	21.9	75	0	36.1	22.5	41.4	0	70.7	23.7	5.3	0.3	17.6	76.7	5.7	0	
Total %	0.5	3.7	12.7	0	12.6	7.9	14.5	0	11.7	3.9	0.9	0.1	5.6	24.3	1.8	0	
Cars & Peds	14	132	453	0	453	244	514	0	415	139	32	2	198	844	60	0	3500
% Cars & Peds	73.7	98.5	98.5	0	98.9	85.3	97.7	0	97.9	97.9	100	100	98	95.7	90.9	0	96.3
Trucks & Buses	5	2	6	0	5	42	11	0	8	3	0	0	4	38	6	0	130
% Trucks & Buses	26.3	1.5	1.3	0	1.1	14.7	2.1	0	1.9	2.1	0	0	2	4.3	9.1	0	3.6
Bikes by Direction	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	3
% Bikes by Direction	0	0	0.2	0	0	0	0.2	0	0.2	0	0	0	0	0	0	0	0.1

	Phillips Road From North					Braley Road From East					Phillips Road From South					Theodore Rice Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	3	11	38	0	52	33	33	**47**	0	113	**57**	**14**	5	0	**76**	**54**	100	6	0	160	401
03:15 PM	**5**	**12**	39	0	**56**	42	37	38	0	117	37	11	**8**	0	56	8	80	**7**	0	95	324
03:30 PM	1	7	**43**	0	51	**46**	**44**	42	0	**132**	47	10	1	**2**	60	42	**116**	6	0	**164**	**407**
03:45 PM	0	12	41	0	53	39	43	45	0	127	26	9	4	0	39	5	58	3	0	66	285
Total Volume	9	42	161	0	212	160	157	172	0	489	167	44	18	2	231	109	354	22	0	485	1417
% App. Total	4.2	19.8	75.9	0		32.7	32.1	35.2	0		72.3	19	7.8	0.9		22.5	73	4.5	0		
PHF	.450	.875	.936	.000	.946	.870	.892	.915	.000	.926	.732	.786	.563	.250	.760	.505	.763	.786	.000	.739	.870
Cars & Peds	6	41	156	0	203	157	134	168	0	459	160	42	18	2	222	107	335	18	0	460	1344
% Cars & Peds	66.7	97.6	96.9	0	95.8	98.1	85.4	97.7	0	93.9	95.8	95.5	100	100	96.1	98.2	94.6	81.8	0	94.8	94.8
Trucks & Buses	3	1	5	0	9	3	23	4	0	30	7	2	0	0	9	2	19	4	0	25	73
% Trucks & Buses	33.3	2.4	3.1	0	4.2	1.9	14.6	2.3	0	6.1	4.2	4.5	0	0	3.9	1.8	5.4	18.2	0	5.2	5.2
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
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Client: McM/S. Hawkins

File Name : 05063CC
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds

	Phillips Road From North				Braley Road From East				Phillips Road From South				Theodore Rice Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	2	11	37	0	32	28	45	0	57	14	5	0	54	96	3	0	384
03:15 PM	4	11	38	0	41	33	36	0	34	10	8	0	8	72	7	0	302
03:30 PM	0	7	43	0	46	39	42	0	44	9	1	2	40	114	6	0	393
03:45 PM	0	12	38	0	38	34	45	0	25	9	4	0	5	53	2	0	265
Total	6	41	156	0	157	134	168	0	160	42	18	2	107	335	18	0	1344
04:00 PM	4	23	51	0	44	19	55	0	38	12	0	0	19	92	6	0	363
04:15 PM	0	13	30	0	44	20	39	0	34	10	6	0	6	51	9	0	262
04:30 PM	0	13	30	0	37	16	41	0	29	18	3	0	9	75	8	0	279
04:45 PM	0	7	32	0	33	15	44	0	24	10	0	0	6	63	2	0	236
Total	4	56	143	0	158	70	179	0	125	50	9	0	40	281	25	0	1140
05:00 PM	1	8	47	0	35	7	46	0	57	14	1	0	43	120	14	0	393
05:15 PM	1	12	29	0	42	10	52	0	29	13	2	0	2	46	1	0	239
05:30 PM	1	4	43	0	27	9	36	0	24	11	1	0	5	47	1	0	209
05:45 PM	1	11	35	0	34	14	33	0	20	9	1	0	1	15	1	0	175
Total	4	35	154	0	138	40	167	0	130	47	5	0	51	228	17	0	1016
Grand Total	14	132	453	0	453	244	514	0	415	139	32	2	198	844	60	0	3500
Apprch %	2.3	22	75.6	0	37.4	20.1	42.4	0	70.6	23.6	5.4	0.3	18	76.6	5.4	0	
Total %	0.4	3.8	12.9	0	12.9	7	14.7	0	11.9	4	0.9	0.1	5.7	24.1	1.7	0	

	Phillips Road From North					Braley Road From East					Phillips Road From South					Theodore Rice Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	2	11	37	0	50	32	28	**45**	0	105	**57**	**14**	5	0	**76**	**54**	96	3	0	153	384
03:15 PM	**4**	11	38	0	**53**	41	33	36	0	110	34	10	**8**	0	52	8	72	**7**	0	87	302
03:30 PM	0	7	**43**	0	50	**46**	**39**	42	0	**127**	44	9	1	**2**	56	40	**114**	6	0	**160**	**393**
03:45 PM	0	**12**	38	0	50	38	34	45	0	117	25	9	4	0	38	5	53	2	0	60	265
Total Volume	6	41	156	0	203	157	134	168	0	459	160	42	18	2	222	107	335	18	0	460	1344
% App. Total	3	20.2	76.8	0		34.2	29.2	36.6	0		72.1	18.9	8.1	0.9		23.3	72.8	3.9	0		
PHF	.375	.854	.907	.000	.958	.853	.859	.933	.000	.904	.702	.750	.563	.250	.730	.495	.735	.643	.000	.719	.855

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

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File Name : 05063CC
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Trucks & Buses

	Phillips Road From North				Braley Road From East				Phillips Road From South				Theodore Rice Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	1	0	1	0	1	5	2	0	0	0	0	0	0	4	3	0	17
03:15 PM	1	1	1	0	1	4	2	0	3	1	0	0	0	8	0	0	22
03:30 PM	1	0	0	0	0	5	0	0	3	1	0	0	2	2	0	0	14
03:45 PM	0	0	3	0	1	9	0	0	1	0	0	0	0	5	1	0	20
Total	3	1	5	0	3	23	4	0	7	2	0	0	2	19	4	0	73
04:00 PM	0	0	0	0	0	2	2	0	0	0	0	0	1	3	0	0	8
04:15 PM	0	0	0	0	0	3	1	0	0	0	0	0	0	2	1	0	7
04:30 PM	0	0	1	0	0	4	0	0	0	0	0	0	0	4	0	0	9
04:45 PM	0	0	0	0	1	1	2	0	0	0	0	0	0	4	0	0	8
Total	0	0	1	0	1	10	5	0	0	0	0	0	1	13	1	0	32
05:00 PM	1	0	0	0	1	2	1	0	0	0	0	0	1	1	0	0	7
05:15 PM	0	0	0	0	0	3	0	0	1	0	0	0	0	2	1	0	7
05:30 PM	1	0	0	0	0	4	1	0	0	0	0	0	0	2	0	0	8
05:45 PM	0	1	0	0	0	0	0	0	0	1	0	0	0	1	0	0	3
Total	2	1	0	0	1	9	2	0	1	1	0	0	1	6	1	0	25
Grand Total	5	2	6	0	5	42	11	0	8	3	0	0	4	38	6	0	130
Apprch %	38.5	15.4	46.2	0	8.6	72.4	19	0	72.7	27.3	0	0	8.3	79.2	12.5	0	
Total %	3.8	1.5	4.6	0	3.8	32.3	8.5	0	6.2	2.3	0	0	3.1	29.2	4.6	0	

	Phillips Road From North					Braley Road From East					Phillips Road From South					Theodore Rice Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	**1**	0	1	0	2	**1**	5	**2**	0	8	0	0	0	0	0	0	4	**3**	0	7	17
03:15 PM	1	**1**	1	0	**3**	1	4	2	0	7	**3**	**1**	0	0	**4**	0	**8**	0	0	**8**	**22**
03:30 PM	1	0	0	0	1	0	5	0	0	5	3	1	0	0	4	**2**	2	0	0	4	14
03:45 PM	0	0	**3**	0	3	1	**9**	0	0	**10**	1	0	0	0	1	0	5	1	0	6	20
Total Volume	3	1	5	0	9	3	23	4	0	30	7	2	0	0	9	2	19	4	0	25	73
% App. Total	33.3	11.1	55.6	0		10	76.7	13.3	0		77.8	22.2	0	0		8	76	16	0		
PHF	.750	.250	.417	.000	.750	.750	.639	.500	.000	.750	.583	.500	.000	.000	.563	.250	.594	.333	.000	.781	.830

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

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File Name : 05063CC
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Bikes by Direction

	Phillips Road From North				Braley Road From East				Phillips Road From South				Theodore Rice Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	2
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	1	0	0	0	0	0	1	0	0	0	0	0	0	0	2
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	1	0	0	0	1	0	1	0	0	0	0	0	0	0	3
Apprch %	0	0	100	0	0	0	100	0	100	0	0	0	0	0	0	0	
Total %	0	0	33.3	0	0	0	33.3	0	33.3	0	0	0	0	0	0	0	

	Phillips Road From North					Braley Road From East					Phillips Road From South					Theodore Rice Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:45 PM																					
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	**1**	0	**1**	0	0	0	0	0	**1**	0	0	0	**1**	0	0	0	0	0	**2**
Total Volume	0	0	1	0	1	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	2
% App. Total	0	0	100	0		0	0	0	0		100	0	0	0		0	0	0	0		
PHF	.000	.000	.250	.000	.250	.000	.000	.000	.000	.000	.250	.000	.000	.000	.250	.000	.000	.000	.000	.000	.250

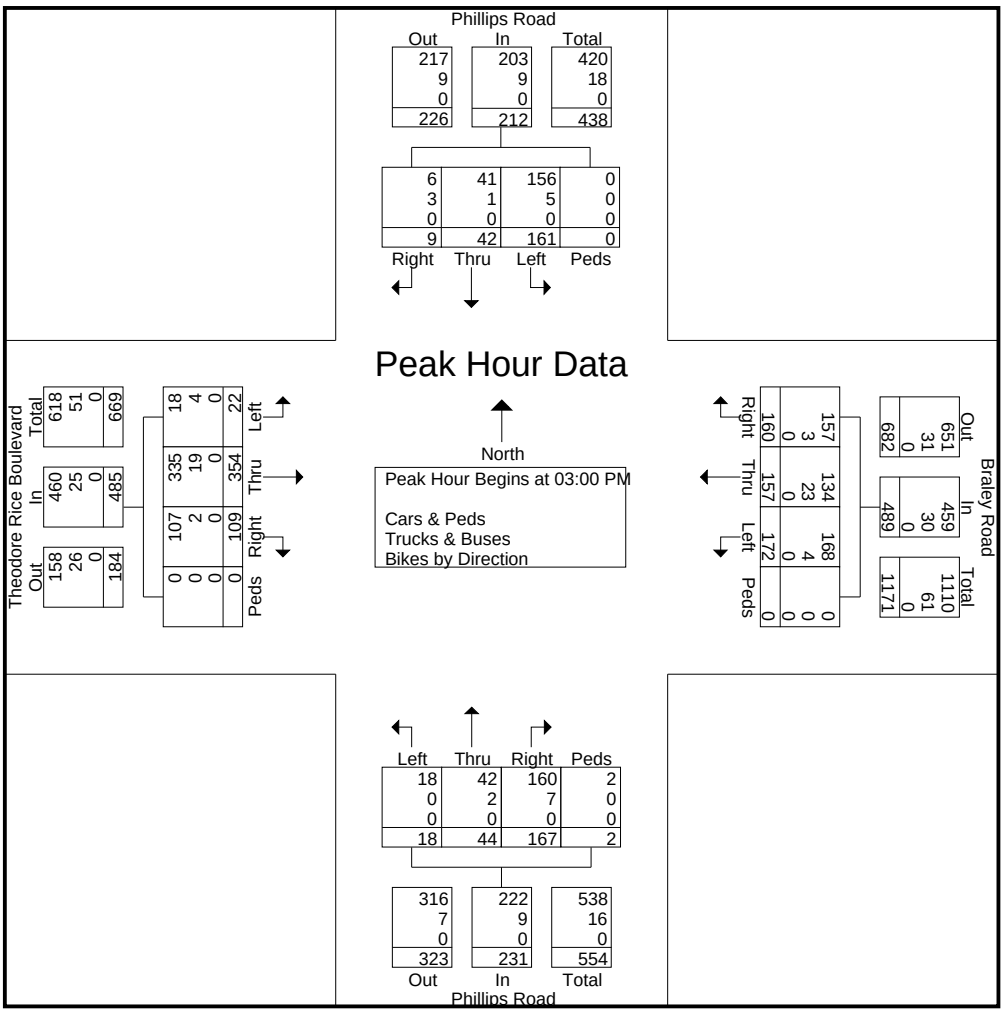
Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
E/W: Braley Road/Theo Rice Blvd.
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063CC
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

	Phillips Road From North					Braley Road From East					Phillips Road From South					Theodore Rice Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	3	11	38	0	52	33	33	**47**	0	113	**57**	**14**	5	0	**76**	**54**	100	6	0	160	401
03:15 PM	**5**	**12**	39	0	**56**	42	37	38	0	117	37	11	**8**	0	56	8	80	**7**	0	95	324
03:30 PM	1	7	**43**	0	51	**46**	**44**	42	0	**132**	47	10	1	**2**	60	42	**116**	6	0	**164**	**407**
03:45 PM	0	12	41	0	53	39	43	45	0	127	26	9	4	0	39	5	58	3	0	66	285
Total Volume	9	42	161	0	212	160	157	172	0	489	167	44	18	2	231	109	354	22	0	485	1417
% App. Total	4.2	19.8	75.9	0		32.7	32.1	35.2	0		72.3	19	7.8	0.9		22.5	73	4.5	0		
PHF	.450	.875	.936	.000	.946	.870	.892	.915	.000	.926	.732	.786	.563	.250	.760	.505	.763	.786	.000	.739	.870
Cars & Peds	6	41	156	0	203	157	134	168	0	459	160	42	18	2	222	107	335	18	0	460	1344
% Cars & Peds	66.7	97.6	96.9	0	95.8	98.1	85.4	97.7	0	93.9	95.8	95.5	100	100	96.1	98.2	94.6	81.8	0	94.8	94.8
Trucks & Buses	3	1	5	0	9	3	23	4	0	30	7	2	0	0	9	2	19	4	0	25	73
% Trucks & Buses	33.3	2.4	3.1	0	4.2	1.9	14.6	2.3	0	6.1	4.2	4.5	0	0	3.9	1.8	5.4	18.2	0	5.2	5.2
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
E: Theodore Rice Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063D
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Duchaine Boulevard From North			Theodore Rice Boulevard From East			Duchaine Boulevard From South			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
07:00 AM	1	24	0	15	48	0	73	0	0	161
07:15 AM	1	2	0	11	53	0	17	2	0	86
07:30 AM	3	3	0	23	85	0	20	1	0	135
07:45 AM	1	4	0	40	84	0	24	2	0	155
Total	6	33	0	89	270	0	134	5	0	537
08:00 AM	2	4	0	17	78	0	29	0	0	130
08:15 AM	2	4	0	10	65	0	18	1	0	100
08:30 AM	2	2	0	6	28	0	11	2	0	51
08:45 AM	3	7	0	9	38	0	24	5	0	86
Total	9	17	0	42	209	0	82	8	0	367
Grand Total	15	50	0	131	479	0	216	13	0	904
Apprch %	23.1	76.9	0	21.5	78.5	0	94.3	5.7	0	
Total %	1.7	5.5	0	14.5	53	0	23.9	1.4	0	
Cars & Peds	12	45	0	121	434	0	167	9	0	788
% Cars & Peds	80	90	0	92.4	90.6	0	77.3	69.2	0	87.2
Trucks & Buses	3	5	0	10	45	0	49	4	0	116
% Trucks & Buses	20	10	0	7.6	9.4	0	22.7	30.8	0	12.8
Bikes by Direction	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0

	Duchaine Boulevard From North				Theodore Rice Boulevard From East				Duchaine Boulevard From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	1	**24**	0	**25**	15	48	0	63	**73**	0	0	**73**	**161**
07:15 AM	1	2	0	3	11	53	0	64	17	**2**	0	19	86
07:30 AM	**3**	3	0	6	23	**85**	0	108	20	1	0	21	135
07:45 AM	1	4	0	5	**40**	84	0	**124**	24	2	0	26	155
Total Volume	6	33	0	39	89	270	0	359	134	5	0	139	537
% App. Total	15.4	84.6	0		24.8	75.2	0		96.4	3.6	0		
PHF	.500	.344	.000	.390	.556	.794	.000	.724	.459	.625	.000	.476	.834
Cars & Peds	6	32	0	38	85	249	0	334	108	4	0	112	484
% Cars & Peds	100	97.0	0	97.4	95.5	92.2	0	93.0	80.6	80.0	0	80.6	90.1
Trucks & Buses	0	1	0	1	4	21	0	25	26	1	0	27	53
% Trucks & Buses	0	3.0	0	2.6	4.5	7.8	0	7.0	19.4	20.0	0	19.4	9.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
E: Theodore Rice Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063D
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds

	Duchaine Boulevard From North			Theodore Rice Boulevard From East			Duchaine Boulevard From South			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
07:00 AM	1	24	0	14	45	0	72	0	0	156
07:15 AM	1	2	0	11	48	0	11	1	0	74
07:30 AM	3	3	0	21	75	0	13	1	0	116
07:45 AM	1	3	0	39	81	0	12	2	0	138
Total	6	32	0	85	249	0	108	4	0	484
08:00 AM	2	4	0	16	74	0	23	0	0	119
08:15 AM	1	3	0	9	59	0	14	0	0	86
08:30 AM	2	1	0	6	23	0	9	2	0	43
08:45 AM	1	5	0	5	29	0	13	3	0	56
Total	6	13	0	36	185	0	59	5	0	304
Grand Total	12	45	0	121	434	0	167	9	0	788
Apprch %	21.1	78.9	0	21.8	78.2	0	94.9	5.1	0	
Total %	1.5	5.7	0	15.4	55.1	0	21.2	1.1	0	

	Duchaine Boulevard From North				Theodore Rice Boulevard From East				Duchaine Boulevard From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	1	**24**	0	**25**	14	45	0	59	**72**	0	0	**72**	**156**
07:15 AM	1	2	0	3	11	48	0	59	11	1	0	12	74
07:30 AM	**3**	3	0	6	21	75	0	96	13	1	0	14	116
07:45 AM	1	3	0	4	**39**	**81**	0	**120**	12	**2**	0	14	138
Total Volume	6	32	0	38	85	249	0	334	108	4	0	112	484
% App. Total	15.8	84.2	0		25.4	74.6	0		96.4	3.6	0		
PHF	.500	.333	.000	.380	.545	.769	.000	.696	.375	.500	.000	.389	.776

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
E: Theodore Rice Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063D
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Trucks & Buses

	Duchaine Boulevard From North			Theodore Rice Boulevard From East			Duchaine Boulevard From South			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
07:00 AM	0	0	0	1	3	0	1	0	0	5
07:15 AM	0	0	0	0	5	0	6	1	0	12
07:30 AM	0	0	0	2	10	0	7	0	0	19
07:45 AM	0	1	0	1	3	0	12	0	0	17
Total	0	1	0	4	21	0	26	1	0	53
08:00 AM	0	0	0	1	4	0	6	0	0	11
08:15 AM	1	1	0	1	6	0	4	1	0	14
08:30 AM	0	1	0	0	5	0	2	0	0	8
08:45 AM	2	2	0	4	9	0	11	2	0	30
Total	3	4	0	6	24	0	23	3	0	63
Grand Total	3	5	0	10	45	0	49	4	0	116
Apprch %	37.5	62.5	0	18.2	81.8	0	92.5	7.5	0	
Total %	2.6	4.3	0	8.6	38.8	0	42.2	3.4	0	

	Duchaine Boulevard From North				Theodore Rice Boulevard From East				Duchaine Boulevard From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 08:00 AM													
08:00 AM	0	0	0	0	1	4	0	5	6	0	0	6	11
08:15 AM	1	1	0	2	1	6	0	7	4	1	0	5	14
08:30 AM	0	1	0	1	0	5	0	5	2	0	0	2	8
08:45 AM	**2**	**2**	0	**4**	**4**	**9**	0	**13**	**11**	**2**	0	**13**	**30**
Total Volume	3	4	0	7	6	24	0	30	23	3	0	26	63
% App. Total	42.9	57.1	0		20	80	0		88.5	11.5	0		
PHF	.375	.500	.000	.438	.375	.667	.000	.577	.523	.375	.000	.500	.525

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
E: Theodore Rice Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063D
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Bikes by Direction

	Duchaine Boulevard From North			Theodore Rice Boulevard From East			Duchaine Boulevard From South			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	
Total %										

	Duchaine Boulevard From North				Theodore Rice Boulevard From East				Duchaine Boulevard From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

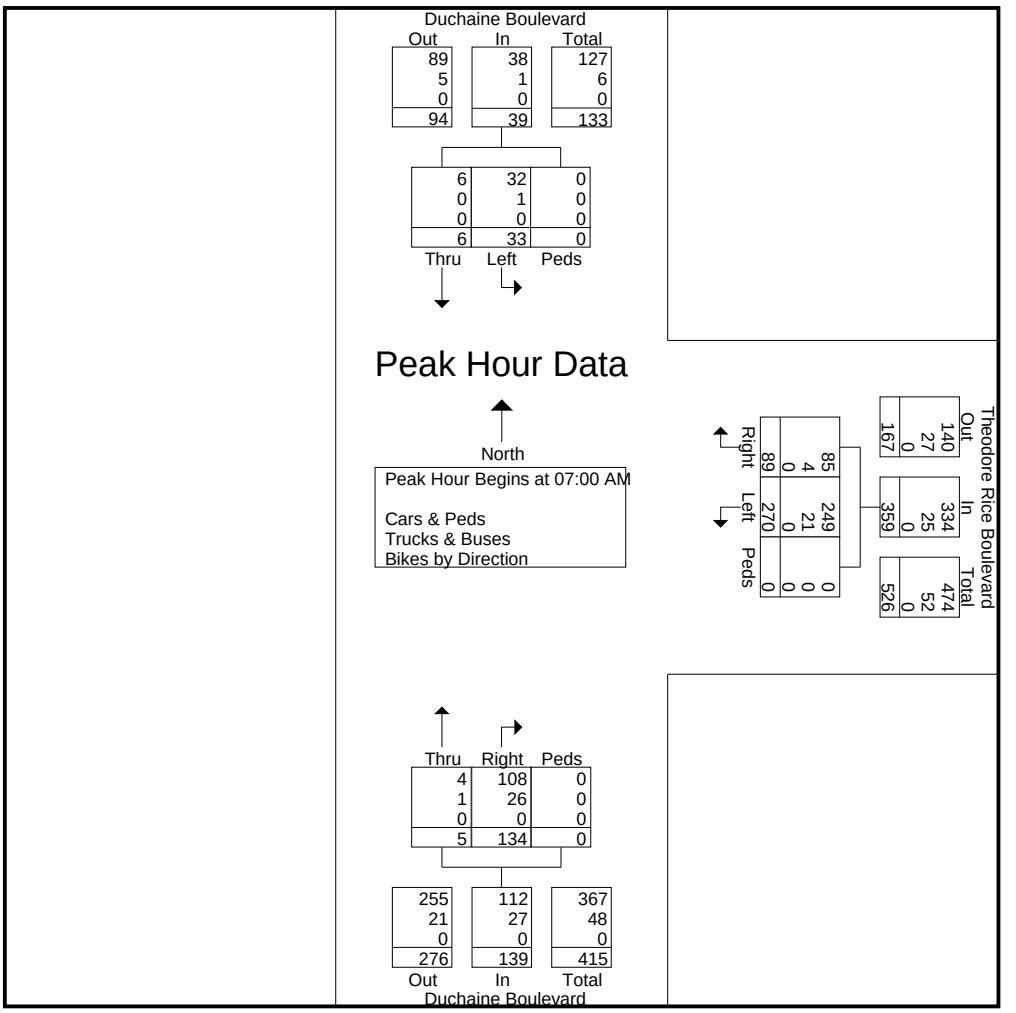
Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
E: Theodore Rice Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063D
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

	Duchaine Boulevard From North				Theodore Rice Boulevard From East				Duchaine Boulevard From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	1	**24**	0	**25**	15	48	0	63	**73**	0	0	**73**	**161**
07:15 AM	1	2	0	3	11	53	0	64	17	**2**	0	19	86
07:30 AM	**3**	3	0	6	23	**85**	0	108	20	1	0	21	135
07:45 AM	1	4	0	5	**40**	84	0	**124**	24	2	0	26	155
Total Volume	6	33	0	39	89	270	0	359	134	5	0	139	537
% App. Total	15.4	84.6	0		24.8	75.2	0		96.4	3.6	0		
PHF	.500	.344	.000	.390	.556	.794	.000	.724	.459	.625	.000	.476	.834
Cars & Peds	6	32	0	38	85	249	0	334	108	4	0	112	484
% Cars & Peds	100	97.0	0	97.4	95.5	92.2	0	93.0	80.6	80.0	0	80.6	90.1
Trucks & Buses	0	1	0	1	4	21	0	25	26	1	0	27	53
% Trucks & Buses	0	3.0	0	2.6	4.5	7.8	0	7.0	19.4	20.0	0	19.4	9.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0



Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
E: Theodore Rice Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063DD
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Duchaine Boulevard From North			Theodore Rice Boulevard From East			Duchaine Boulevard From South			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
03:00 PM	4	27	0	5	21	0	123	2	0	182
03:15 PM	5	11	0	13	24	0	42	3	0	98
03:30 PM	3	40	0	5	29	0	43	5	0	125
03:45 PM	6	6	0	6	28	0	34	1	0	81
Total	18	84	0	29	102	0	242	11	0	486
04:00 PM	2	15	0	1	10	0	77	3	0	108
04:15 PM	2	7	0	4	11	0	34	4	0	62
04:30 PM	7	10	0	1	15	0	48	2	0	83
04:45 PM	3	8	0	0	13	0	42	2	0	68
Total	14	40	0	6	49	0	201	11	0	321
05:00 PM	2	58	0	3	10	0	62	0	0	135
05:15 PM	2	11	0	3	10	0	30	0	0	56
05:30 PM	1	9	0	3	11	0	30	0	0	54
05:45 PM	1	3	0	2	15	0	13	2	0	36
Total	6	81	0	11	46	0	135	2	0	281
Grand Total	38	205	0	46	197	0	578	24	0	1088
Apprch %	15.6	84.4	0	18.9	81.1	0	96	4	0	
Total %	3.5	18.8	0	4.2	18.1	0	53.1	2.2	0	
Cars & Peds	35	193	0	36	159	0	541	18	0	982
% Cars & Peds	92.1	94.1	0	78.3	80.7	0	93.6	75	0	90.3
Trucks & Buses	3	12	0	10	38	0	37	6	0	106
% Trucks & Buses	7.9	5.9	0	21.7	19.3	0	6.4	25	0	9.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0

	Duchaine Boulevard From North				Theodore Rice Boulevard From East				Duchaine Boulevard From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:00 PM													
03:00 PM	4	27	0	31	5	21	0	26	**123**	2	0	**125**	**182**
03:15 PM	5	11	0	16	**13**	24	0	**37**	42	3	0	45	98
03:30 PM	3	**40**	0	**43**	5	**29**	0	34	43	**5**	0	48	125
03:45 PM	**6**	6	0	12	6	28	0	34	34	1	0	35	81
Total Volume	18	84	0	102	29	102	0	131	242	11	0	253	486
% App. Total	17.6	82.4	0		22.1	77.9	0		95.7	4.3	0		
PHF	.750	.525	.000	.593	.558	.879	.000	.885	.492	.550	.000	.506	.668
Cars & Peds	16	79	0	95	24	79	0	103	222	8	0	230	428
% Cars & Peds	88.9	94.0	0	93.1	82.8	77.5	0	78.6	91.7	72.7	0	90.9	88.1
Trucks & Buses	2	5	0	7	5	23	0	28	20	3	0	23	58
% Trucks & Buses	11.1	6.0	0	6.9	17.2	22.5	0	21.4	8.3	27.3	0	9.1	11.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
E: Theodore Rice Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063DD
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds

	Duchaine Boulevard From North			Theodore Rice Boulevard From East			Duchaine Boulevard From South			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
03:00 PM	4	25	0	4	15	0	117	2	0	167
03:15 PM	4	9	0	12	19	0	35	1	0	80
03:30 PM	2	39	0	3	25	0	42	4	0	115
03:45 PM	6	6	0	5	20	0	28	1	0	66
Total	16	79	0	24	79	0	222	8	0	428
04:00 PM	2	15	0	1	8	0	74	2	0	102
04:15 PM	1	5	0	3	9	0	33	3	0	54
04:30 PM	7	9	0	1	11	0	44	2	0	74
04:45 PM	3	8	0	0	12	0	37	1	0	61
Total	13	37	0	5	40	0	188	8	0	291
05:00 PM	2	56	0	2	8	0	61	0	0	129
05:15 PM	2	10	0	2	9	0	28	0	0	51
05:30 PM	1	9	0	1	8	0	29	0	0	48
05:45 PM	1	2	0	2	15	0	13	2	0	35
Total	6	77	0	7	40	0	131	2	0	263
Grand Total	35	193	0	36	159	0	541	18	0	982
Apprch %	15.4	84.6	0	18.5	81.5	0	96.8	3.2	0	
Total %	3.6	19.7	0	3.7	16.2	0	55.1	1.8	0	

	Duchaine Boulevard From North				Theodore Rice Boulevard From East				Duchaine Boulevard From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:00 PM													
03:00 PM	4	25	0	29	4	15	0	19	**117**	2	0	**119**	**167**
03:15 PM	4	9	0	13	**12**	19	0	**31**	35	1	0	36	80
03:30 PM	2	**39**	0	**41**	3	**25**	0	28	42	**4**	0	46	115
03:45 PM	**6**	6	0	12	5	20	0	25	28	1	0	29	66
Total Volume	16	79	0	95	24	79	0	103	222	8	0	230	428
% App. Total	16.8	83.2	0		23.3	76.7	0		96.5	3.5	0		
PHF	.667	.506	.000	.579	.500	.790	.000	.831	.474	.500	.000	.483	.641

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
E: Theodore Rice Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063DD
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Trucks & Buses

	Duchaine Boulevard From North			Theodore Rice Boulevard From East			Duchaine Boulevard From South			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
03:00 PM	0	2	0	1	6	0	6	0	0	15
03:15 PM	1	2	0	1	5	0	7	2	0	18
03:30 PM	1	1	0	2	4	0	1	1	0	10
03:45 PM	0	0	0	1	8	0	6	0	0	15
Total	2	5	0	5	23	0	20	3	0	58
04:00 PM	0	0	0	0	2	0	3	1	0	6
04:15 PM	1	2	0	1	2	0	1	1	0	8
04:30 PM	0	1	0	0	4	0	4	0	0	9
04:45 PM	0	0	0	0	1	0	5	1	0	7
Total	1	3	0	1	9	0	13	3	0	30
05:00 PM	0	2	0	1	2	0	1	0	0	6
05:15 PM	0	1	0	1	1	0	2	0	0	5
05:30 PM	0	0	0	2	3	0	1	0	0	6
05:45 PM	0	1	0	0	0	0	0	0	0	1
Total	0	4	0	4	6	0	4	0	0	18
Grand Total	3	12	0	10	38	0	37	6	0	106
Apprch %	20	80	0	20.8	79.2	0	86	14	0	
Total %	2.8	11.3	0	9.4	35.8	0	34.9	5.7	0	

	Duchaine Boulevard From North				Theodore Rice Boulevard From East				Duchaine Boulevard From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:00 PM													
03:00 PM	0	**2**	0	2	1	6	0	7	6	0	0	6	15
03:15 PM	**1**	2	0	**3**	1	5	0	6	**7**	**2**	0	**9**	**18**
03:30 PM	1	1	0	2	**2**	4	0	6	1	1	0	2	10
03:45 PM	0	0	0	0	1	**8**	0	**9**	6	0	0	6	15
Total Volume	2	5	0	7	5	23	0	28	20	3	0	23	58
% App. Total	28.6	71.4	0		17.9	82.1	0		87	13	0		
PHF	.500	.625	.000	.583	.625	.719	.000	.778	.714	.375	.000	.639	.806

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
E: Theodore Rice Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063DD
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Bikes by Direction

	Duchaine Boulevard From North			Theodore Rice Boulevard From East			Duchaine Boulevard From South			
Start Time	Thru	Left	Peds	Right	Left	Peds	Right	Thru	Peds	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	
Total %										

	Duchaine Boulevard From North				Theodore Rice Boulevard From East				Duchaine Boulevard From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:00 PM													
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

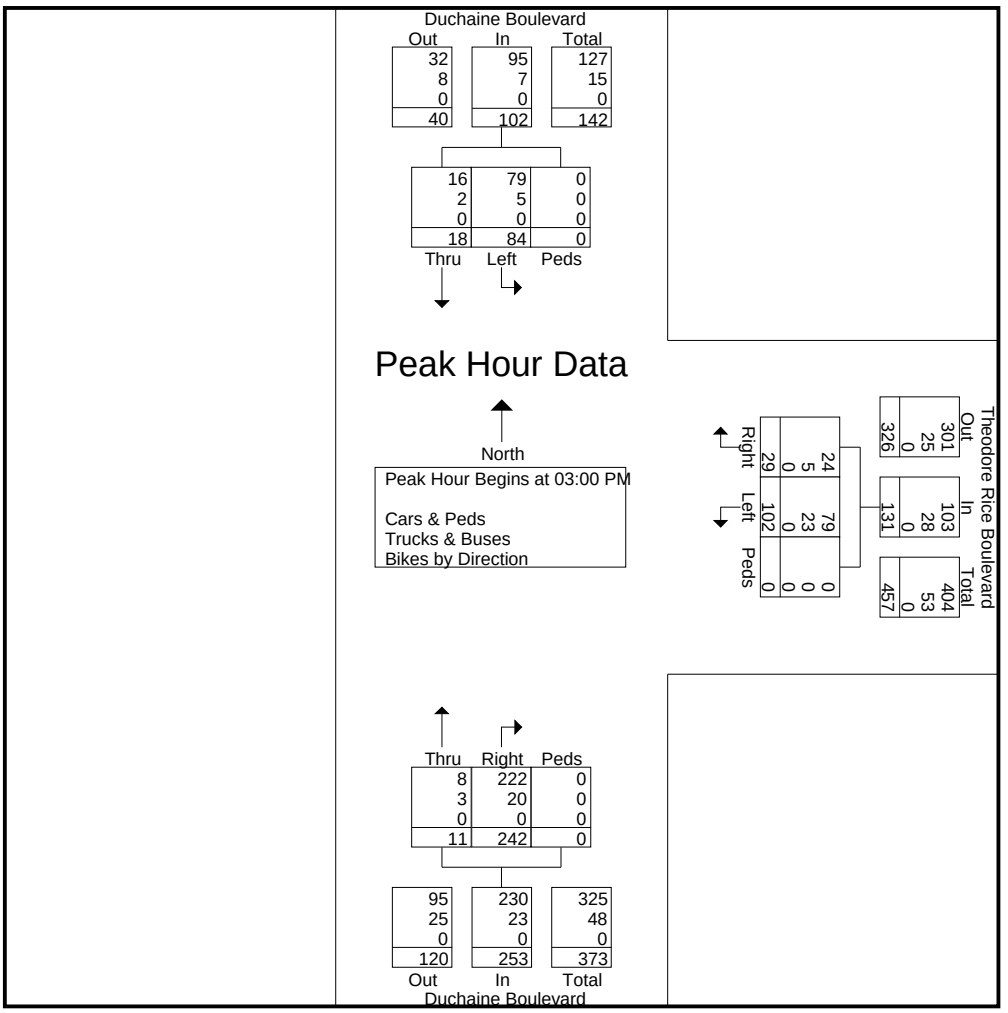
Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
E: Theodore Rice Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063DD
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

	Duchaine Boulevard From North				Theodore Rice Boulevard From East				Duchaine Boulevard From South				
Start Time	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:00 PM													
03:00 PM	4	27	0	31	5	21	0	26	**123**	2	0	**125**	**182**
03:15 PM	5	11	0	16	**13**	24	0	**37**	42	3	0	45	98
03:30 PM	3	**40**	0	**43**	5	**29**	0	34	43	**5**	0	48	125
03:45 PM	**6**	6	0	12	6	28	0	34	34	1	0	35	81
Total Volume	18	84	0	102	29	102	0	131	242	11	0	253	486
% App. Total	17.6	82.4	0		22.1	77.9	0		95.7	4.3	0		
PHF	.750	.525	.000	.593	.558	.879	.000	.885	.492	.550	.000	.506	.668
Cars & Peds	16	79	0	95	24	79	0	103	222	8	0	230	428
% Cars & Peds	88.9	94.0	0	93.1	82.8	77.5	0	78.6	91.7	72.7	0	90.9	88.1
Trucks & Buses	2	5	0	7	5	23	0	28	20	3	0	23	58
% Trucks & Buses	11.1	6.0	0	6.9	17.2	22.5	0	21.4	8.3	27.3	0	9.1	11.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0



Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
E/W: Samuel Barnet Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063E
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Duchaine Boulevard From North				Samuel Barnet Boulevard From East				Duchaine Boulevard From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	60	38	0	0	39	0	0	0	61	7	0	0	53	0	30	0	288
07:15 AM	48	31	0	0	47	0	0	0	10	6	0	0	2	0	5	0	149
07:30 AM	100	14	1	0	52	0	0	0	18	7	0	0	8	0	12	0	212
07:45 AM	131	12	0	0	78	0	0	0	31	8	0	0	10	0	17	0	287
Total	339	95	1	0	216	0	0	0	120	28	0	0	73	0	64	0	936
08:00 AM	83	13	2	0	32	0	0	0	47	10	0	0	35	0	14	1	237
08:15 AM	77	13	0	0	42	0	0	0	12	5	0	0	7	0	9	0	165
08:30 AM	31	10	1	0	26	0	0	1	12	2	0	0	8	0	6	0	97
08:45 AM	44	6	0	0	23	0	0	0	17	5	0	0	10	0	16	0	121
Total	235	42	3	0	123	0	0	1	88	22	0	0	60	0	45	1	620
Grand Total	574	137	4	0	339	0	0	1	208	50	0	0	133	0	109	1	1556
Apprch %	80.3	19.2	0.6	0	99.7	0	0	0.3	80.6	19.4	0	0	54.7	0	44.9	0.4	
Total %	36.9	8.8	0.3	0	21.8	0	0	0.1	13.4	3.2	0	0	8.5	0	7	0.1	
Cars & Peds	527	127	4	0	326	0	0	1	180	31	0	0	122	0	80	1	1399
% Cars & Peds	91.8	92.7	100	0	96.2	0	0	100	86.5	62	0	0	91.7	0	73.4	100	89.9
Trucks & Buses	47	10	0	0	13	0	0	0	28	19	0	0	11	0	29	0	157
% Trucks & Buses	8.2	7.3	0	0	3.8	0	0	0	13.5	38	0	0	8.3	0	26.6	0	10.1
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Duchaine Boulevard From North					Samuel Barnet Boulevard From East					Duchaine Boulevard From South					Samuel Barnet Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	60	**38**	0	0	98	39	0	0	0	39	**61**	7	0	0	**68**	**53**	0	**30**	0	**83**	**288**
07:15 AM	48	31	0	0	79	47	0	0	0	47	10	6	0	0	16	2	0	5	0	7	149
07:30 AM	100	14	**1**	0	115	52	0	0	0	52	18	7	0	0	25	8	0	12	0	20	212
07:45 AM	**131**	12	0	0	**143**	**78**	0	0	0	**78**	31	**8**	0	0	39	10	0	17	0	27	287
Total Volume	339	95	1	0	435	216	0	0	0	216	120	28	0	0	148	73	0	64	0	137	936
% App. Total	77.9	21.8	0.2	0		100	0	0	0		81.1	18.9	0	0		53.3	0	46.7	0		
PHF	.647	.625	.250	.000	.760	.692	.000	.000	.000	.692	.492	.875	.000	.000	.544	.344	.000	.533	.000	.413	.813
Cars & Peds	317	92	1	0	410	208	0	0	0	208	104	13	0	0	117	67	0	52	0	119	854
% Cars & Peds	93.5	96.8	100	0	94.3	96.3	0	0	0	96.3	86.7	46.4	0	0	79.1	91.8	0	81.3	0	86.9	91.2
Trucks & Buses	22	3	0	0	25	8	0	0	0	8	16	15	0	0	31	6	0	12	0	18	82
% Trucks & Buses	6.5	3.2	0	0	5.7	3.7	0	0	0	3.7	13.3	53.6	0	0	20.9	8.2	0	18.8	0	13.1	8.8
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
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City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063E
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds

	Duchaine Boulevard From North				Samuel Barnet Boulevard From East				Duchaine Boulevard From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	55	38	0	0	39	0	0	0	59	6	0	0	52	0	30	0	279
07:15 AM	42	31	0	0	44	0	0	0	7	1	0	0	1	0	4	0	130
07:30 AM	93	11	1	0	49	0	0	0	13	4	0	0	5	0	9	0	185
07:45 AM	127	12	0	0	76	0	0	0	25	2	0	0	9	0	9	0	260
Total	317	92	1	0	208	0	0	0	104	13	0	0	67	0	52	0	854
08:00 AM	78	11	2	0	30	0	0	0	41	8	0	0	31	0	11	1	213
08:15 AM	72	11	0	0	42	0	0	0	9	5	0	0	7	0	5	0	151
08:30 AM	27	7	1	0	24	0	0	1	12	2	0	0	8	0	5	0	87
08:45 AM	33	6	0	0	22	0	0	0	14	3	0	0	9	0	7	0	94
Total	210	35	3	0	118	0	0	1	76	18	0	0	55	0	28	1	545
Grand Total	527	127	4	0	326	0	0	1	180	31	0	0	122	0	80	1	1399
Apprch %	80.1	19.3	0.6	0	99.7	0	0	0.3	85.3	14.7	0	0	60.1	0	39.4	0.5	
Total %	37.7	9.1	0.3	0	23.3	0	0	0.1	12.9	2.2	0	0	8.7	0	5.7	0.1	

	Duchaine Boulevard From North					Samuel Barnet Boulevard From East					Duchaine Boulevard From South					Samuel Barnet Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	55	**38**	0	0	93	39	0	0	0	39	**59**	**6**	0	0	**65**	**52**	0	**30**	0	**82**	**279**
07:15 AM	42	31	0	0	73	44	0	0	0	44	7	1	0	0	8	1	0	4	0	5	130
07:30 AM	93	11	**1**	0	105	49	0	0	0	49	13	4	0	0	17	5	0	9	0	14	185
07:45 AM	**127**	12	0	0	**139**	**76**	0	0	0	**76**	25	2	0	0	27	9	0	9	0	18	260
Total Volume	317	92	1	0	410	208	0	0	0	208	104	13	0	0	117	67	0	52	0	119	854
% App. Total	77.3	22.4	0.2	0		100	0	0	0		88.9	11.1	0	0		56.3	0	43.7	0		
PHF	.624	.605	.250	.000	.737	.684	.000	.000	.000	.684	.441	.542	.000	.000	.450	.322	.000	.433	.000	.363	.765

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

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Client: McM/S. Hawkins

File Name : 05063E
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Trucks & Buses

	Duchaine Boulevard From North				Samuel Barnet Boulevard From East				Duchaine Boulevard From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	5	0	0	0	0	0	0	0	2	1	0	0	1	0	0	0	9
07:15 AM	6	0	0	0	3	0	0	0	3	5	0	0	1	0	1	0	19
07:30 AM	7	3	0	0	3	0	0	0	5	3	0	0	3	0	3	0	27
07:45 AM	4	0	0	0	2	0	0	0	6	6	0	0	1	0	8	0	27
Total	22	3	0	0	8	0	0	0	16	15	0	0	6	0	12	0	82
08:00 AM	5	2	0	0	2	0	0	0	6	2	0	0	4	0	3	0	24
08:15 AM	5	2	0	0	0	0	0	0	3	0	0	0	0	0	4	0	14
08:30 AM	4	3	0	0	2	0	0	0	0	0	0	0	0	0	1	0	10
08:45 AM	11	0	0	0	1	0	0	0	3	2	0	0	1	0	9	0	27
Total	25	7	0	0	5	0	0	0	12	4	0	0	5	0	17	0	75
Grand Total	47	10	0	0	13	0	0	0	28	19	0	0	11	0	29	0	157
Apprch %	82.5	17.5	0	0	100	0	0	0	59.6	40.4	0	0	27.5	0	72.5	0	
Total %	29.9	6.4	0	0	8.3	0	0	0	17.8	12.1	0	0	7	0	18.5	0	

	Duchaine Boulevard From North					Samuel Barnet Boulevard From East					Duchaine Boulevard From South					Samuel Barnet Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	6	0	0	0	6	**3**	0	0	0	**3**	3	5	0	0	8	1	0	1	0	2	19
07:30 AM	**7**	**3**	0	0	**10**	3	0	0	0	3	5	3	0	0	8	3	0	3	0	6	**27**
07:45 AM	4	0	0	0	4	2	0	0	0	2	**6**	**6**	0	0	**12**	1	0	**8**	0	**9**	27
08:00 AM	5	2	0	0	7	2	0	0	0	2	6	2	0	0	8	**4**	0	3	0	7	24
Total Volume	22	5	0	0	27	10	0	0	0	10	20	16	0	0	36	9	0	15	0	24	97
% App. Total	81.5	18.5	0	0		100	0	0	0		55.6	44.4	0	0		37.5	0	62.5	0		
PHF	.786	.417	.000	.000	.675	.833	.000	.000	.000	.833	.833	.667	.000	.000	.750	.563	.000	.469	.000	.667	.898

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
E/W: Samuel Barnet Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063E
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Bikes by Direction

	Duchaine Boulevard From North				Samuel Barnet Boulevard From East				Duchaine Boulevard From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %																	

	Duchaine Boulevard From North					Samuel Barnet Boulevard From East					Duchaine Boulevard From South					Samuel Barnet Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

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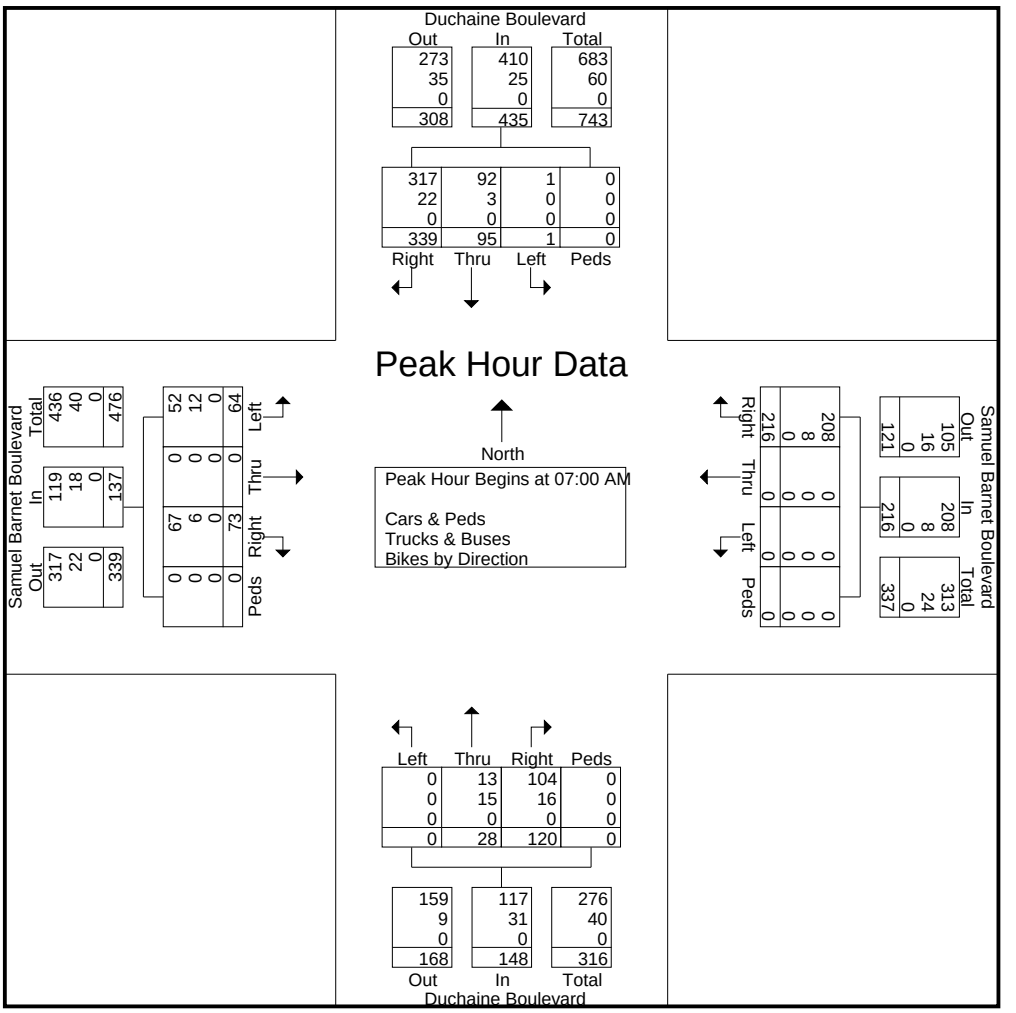
Client: McM/S. Hawkins

File Name : 05063E
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

	Duchaine Boulevard From North					Samuel Barnet Boulevard From East					Duchaine Boulevard From South					Samuel Barnet Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	60	**38**	0	0	98	39	0	0	0	39	**61**	7	0	0	**68**	**53**	0	**30**	0	**83**	**288**
07:15 AM	48	31	0	0	79	47	0	0	0	47	10	6	0	0	16	2	0	5	0	7	149
07:30 AM	100	14	**1**	0	115	52	0	0	0	52	18	7	0	0	25	8	0	12	0	20	212
07:45 AM	**131**	12	0	0	**143**	**78**	0	0	0	**78**	31	**8**	0	0	39	10	0	17	0	27	287
Total Volume	339	95	1	0	435	216	0	0	0	216	120	28	0	0	148	73	0	64	0	137	936
% App. Total	77.9	21.8	0.2	0		100	0	0	0		81.1	18.9	0	0		53.3	0	46.7	0		
PHF	.647	.625	.250	.000	.760	.692	.000	.000	.000	.692	.492	.875	.000	.000	.544	.344	.000	.533	.000	.413	.813
Cars & Peds	317	92	1	0	410	208	0	0	0	208	104	13	0	0	117	67	0	52	0	119	854
% Cars & Peds	93.5	96.8	100	0	94.3	96.3	0	0	0	96.3	86.7	46.4	0	0	79.1	91.8	0	81.3	0	86.9	91.2
Trucks & Buses	22	3	0	0	25	8	0	0	0	8	16	15	0	0	31	6	0	12	0	18	82
% Trucks & Buses	6.5	3.2	0	0	5.7	3.7	0	0	0	3.7	13.3	53.6	0	0	20.9	8.2	0	18.8	0	13.1	8.8
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
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City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063EE
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Duchaine Boulevard From North				Samuel Barnet Boulevard From East				Duchaine Boulevard From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	31	19	0	0	32	0	0	0	105	6	0	0	85	0	50	0	328
03:15 PM	41	22	0	0	37	0	0	0	41	4	0	0	16	0	30	0	191
03:30 PM	34	12	1	0	25	0	0	0	124	9	0	0	97	0	35	0	337
03:45 PM	36	10	1	0	25	0	0	0	40	4	0	0	26	0	20	0	162
Total	142	63	2	0	119	0	0	0	310	23	0	0	224	0	135	0	1018
04:00 PM	14	15	0	0	18	0	0	0	130	5	0	0	101	0	62	0	345
04:15 PM	16	4	0	0	7	0	0	0	27	2	0	0	19	0	28	0	103
04:30 PM	14	11	1	0	10	0	0	0	51	4	0	1	46	0	36	0	174
04:45 PM	19	9	0	0	14	0	0	0	42	7	0	0	21	0	22	0	134
Total	63	39	1	0	49	0	0	0	250	18	0	1	187	0	148	0	756
05:00 PM	9	11	0	0	8	0	0	0	135	1	0	0	108	0	46	0	318
05:15 PM	14	7	0	0	13	0	0	0	36	0	0	0	27	0	22	0	119
05:30 PM	12	7	0	0	9	0	0	0	37	3	0	0	33	0	24	0	125
05:45 PM	17	4	0	0	13	0	0	0	34	2	0	0	32	0	11	0	113
Total	52	29	0	0	43	0	0	0	242	6	0	0	200	0	103	0	675
Grand Total	257	131	3	0	211	0	0	0	802	47	0	1	611	0	386	0	2449
Apprch %	65.7	33.5	0.8	0	100	0	0	0	94.4	5.5	0	0.1	61.3	0	38.7	0	
Total %	10.5	5.3	0.1	0	8.6	0	0	0	32.7	1.9	0	0	24.9	0	15.8	0	
Cars & Peds	221	94	3	0	183	0	0	0	790	37	0	1	605	0	355	0	2289
% Cars & Peds	86	71.8	100	0	86.7	0	0	0	98.5	78.7	0	100	99	0	92	0	93.5
Trucks & Buses	36	37	0	0	28	0	0	0	12	10	0	0	6	0	31	0	160
% Trucks & Buses	14	28.2	0	0	13.3	0	0	0	1.5	21.3	0	0	1	0	8	0	6.5
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Duchaine Boulevard From North					Samuel Barnet Boulevard From East					Duchaine Boulevard From South					Samuel Barnet Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:15 PM																					
03:15 PM	**41**	**22**	0	0	**63**	**37**	0	0	0	**37**	41	4	0	0	45	16	0	30	0	46	191
03:30 PM	34	12	**1**	0	47	25	0	0	0	25	124	**9**	0	0	133	97	0	35	0	132	337
03:45 PM	36	10	1	0	47	25	0	0	0	25	40	4	0	0	44	26	0	20	0	46	162
04:00 PM	14	15	0	0	29	18	0	0	0	18	**130**	5	0	0	**135**	**101**	0	**62**	0	**163**	**345**
Total Volume	125	59	2	0	186	105	0	0	0	105	335	22	0	0	357	240	0	147	0	387	1035
% App. Total	67.2	31.7	1.1	0		100	0	0	0		93.8	6.2	0	0		62	0	38	0		
PHF	.762	.670	.500	.000	.738	.709	.000	.000	.000	.709	.644	.611	.000	.000	.661	.594	.000	.593	.000	.594	.750
Cars & Peds	112	33	2	0	147	89	0	0	0	89	330	20	0	0	350	238	0	128	0	366	952
% Cars & Peds	89.6	55.9	100	0	79.0	84.8	0	0	0	84.8	98.5	90.9	0	0	98.0	99.2	0	87.1	0	94.6	92.0
Trucks & Buses	13	26	0	0	39	16	0	0	0	16	5	2	0	0	7	2	0	19	0	21	83
% Trucks & Buses	10.4	44.1	0	0	21.0	15.2	0	0	0	15.2	1.5	9.1	0	0	2.0	0.8	0	12.9	0	5.4	8.0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
E/W: Samuel Barnet Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063EE
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds

	Duchaine Boulevard From North				Samuel Barnet Boulevard From East				Duchaine Boulevard From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	25	18	0	0	30	0	0	0	104	5	0	0	84	0	45	0	311
03:15 PM	38	10	0	0	29	0	0	0	40	4	0	0	16	0	20	0	157
03:30 PM	31	7	1	0	24	0	0	0	124	8	0	0	97	0	33	0	325
03:45 PM	31	6	1	0	22	0	0	0	37	3	0	0	25	0	17	0	142
Total	125	41	2	0	105	0	0	0	305	20	0	0	222	0	115	0	935
04:00 PM	12	10	0	0	14	0	0	0	129	5	0	0	100	0	58	0	328
04:15 PM	12	1	0	0	6	0	0	0	26	1	0	0	19	0	28	0	93
04:30 PM	11	7	1	0	7	0	0	0	50	2	0	1	44	0	35	0	158
04:45 PM	17	9	0	0	13	0	0	0	39	4	0	0	21	0	19	0	122
Total	52	27	1	0	40	0	0	0	244	12	0	1	184	0	140	0	701
05:00 PM	7	10	0	0	7	0	0	0	135	1	0	0	108	0	45	0	313
05:15 PM	11	7	0	0	11	0	0	0	36	0	0	0	26	0	21	0	112
05:30 PM	10	6	0	0	8	0	0	0	37	3	0	0	33	0	23	0	120
05:45 PM	16	3	0	0	12	0	0	0	33	1	0	0	32	0	11	0	108
Total	44	26	0	0	38	0	0	0	241	5	0	0	199	0	100	0	653
Grand Total	221	94	3	0	183	0	0	0	790	37	0	1	605	0	355	0	2289
Apprch %	69.5	29.6	0.9	0	100	0	0	0	95.4	4.5	0	0.1	63	0	37	0	
Total %	9.7	4.1	0.1	0	8	0	0	0	34.5	1.6	0	0	26.4	0	15.5	0	

	Duchaine Boulevard From North					Samuel Barnet Boulevard From East					Duchaine Boulevard From South					Samuel Barnet Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:15 PM																					
03:15 PM	**38**	**10**	0	0	**48**	**29**	0	0	0	**29**	40	4	0	0	44	16	0	20	0	36	157
03:30 PM	31	7	**1**	0	39	24	0	0	0	24	124	**8**	0	0	132	97	0	33	0	130	325
03:45 PM	31	6	1	0	38	22	0	0	0	22	37	3	0	0	40	25	0	17	0	42	142
04:00 PM	12	10	0	0	22	14	0	0	0	14	**129**	5	0	0	**134**	**100**	0	**58**	0	**158**	**328**
Total Volume	112	33	2	0	147	89	0	0	0	89	330	20	0	0	350	238	0	128	0	366	952
% App. Total	76.2	22.4	1.4	0		100	0	0	0		94.3	5.7	0	0		65	0	35	0		
PHF	.737	.825	.500	.000	.766	.767	.000	.000	.000	.767	.640	.625	.000	.000	.653	.595	.000	.552	.000	.579	.726

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

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Client: McM/S. Hawkins

File Name : 05063EE
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Trucks & Buses

	Duchaine Boulevard From North				Samuel Barnet Boulevard From East				Duchaine Boulevard From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	6	1	0	0	2	0	0	0	1	1	0	0	1	0	5	0	17
03:15 PM	3	12	0	0	8	0	0	0	1	0	0	0	0	0	10	0	34
03:30 PM	3	5	0	0	1	0	0	0	0	1	0	0	0	0	2	0	12
03:45 PM	5	4	0	0	3	0	0	0	3	1	0	0	1	0	3	0	20
Total	17	22	0	0	14	0	0	0	5	3	0	0	2	0	20	0	83
04:00 PM	2	5	0	0	4	0	0	0	1	0	0	0	1	0	4	0	17
04:15 PM	4	3	0	0	1	0	0	0	1	1	0	0	0	0	0	0	10
04:30 PM	3	4	0	0	3	0	0	0	1	2	0	0	2	0	1	0	16
04:45 PM	2	0	0	0	1	0	0	0	3	3	0	0	0	0	3	0	12
Total	11	12	0	0	9	0	0	0	6	6	0	0	3	0	8	0	55
05:00 PM	2	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	5
05:15 PM	3	0	0	0	2	0	0	0	0	0	0	0	1	0	1	0	7
05:30 PM	2	1	0	0	1	0	0	0	0	0	0	0	0	0	1	0	5
05:45 PM	1	1	0	0	1	0	0	0	1	1	0	0	0	0	0	0	5
Total	8	3	0	0	5	0	0	0	1	1	0	0	1	0	3	0	22
Grand Total	36	37	0	0	28	0	0	0	12	10	0	0	6	0	31	0	160
Apprch %	49.3	50.7	0	0	100	0	0	0	54.5	45.5	0	0	16.2	0	83.8	0	
Total %	22.5	23.1	0	0	17.5	0	0	0	7.5	6.2	0	0	3.8	0	19.4	0	

	Duchaine Boulevard From North					Samuel Barnet Boulevard From East					Duchaine Boulevard From South					Samuel Barnet Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	**6**	1	0	0	7	2	0	0	0	2	1	**1**	0	0	2	**1**	0	5	0	6	17
03:15 PM	3	**12**	0	0	**15**	**8**	0	0	0	**8**	1	0	0	0	1	0	0	**10**	0	**10**	**34**
03:30 PM	3	5	0	0	8	1	0	0	0	1	0	1	0	0	1	0	0	2	0	2	12
03:45 PM	5	4	0	0	9	3	0	0	0	3	**3**	1	0	0	**4**	1	0	3	0	4	20
Total Volume	17	22	0	0	39	14	0	0	0	14	5	3	0	0	8	2	0	20	0	22	83
% App. Total	43.6	56.4	0	0		100	0	0	0		62.5	37.5	0	0		9.1	0	90.9	0		
PHF	.708	.458	.000	.000	.650	.438	.000	.000	.000	.438	.417	.750	.000	.000	.500	.500	.000	.500	.000	.550	.610

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
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File Name : 05063EE
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Bikes by Direction

	Duchaine Boulevard From North				Samuel Barnet Boulevard From East				Duchaine Boulevard From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Right	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total %																	

	Duchaine Boulevard From North					Samuel Barnet Boulevard From East					Duchaine Boulevard From South					Samuel Barnet Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:00 PM																					
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0	0		0	0	0	0		0	0	0	0		0	0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

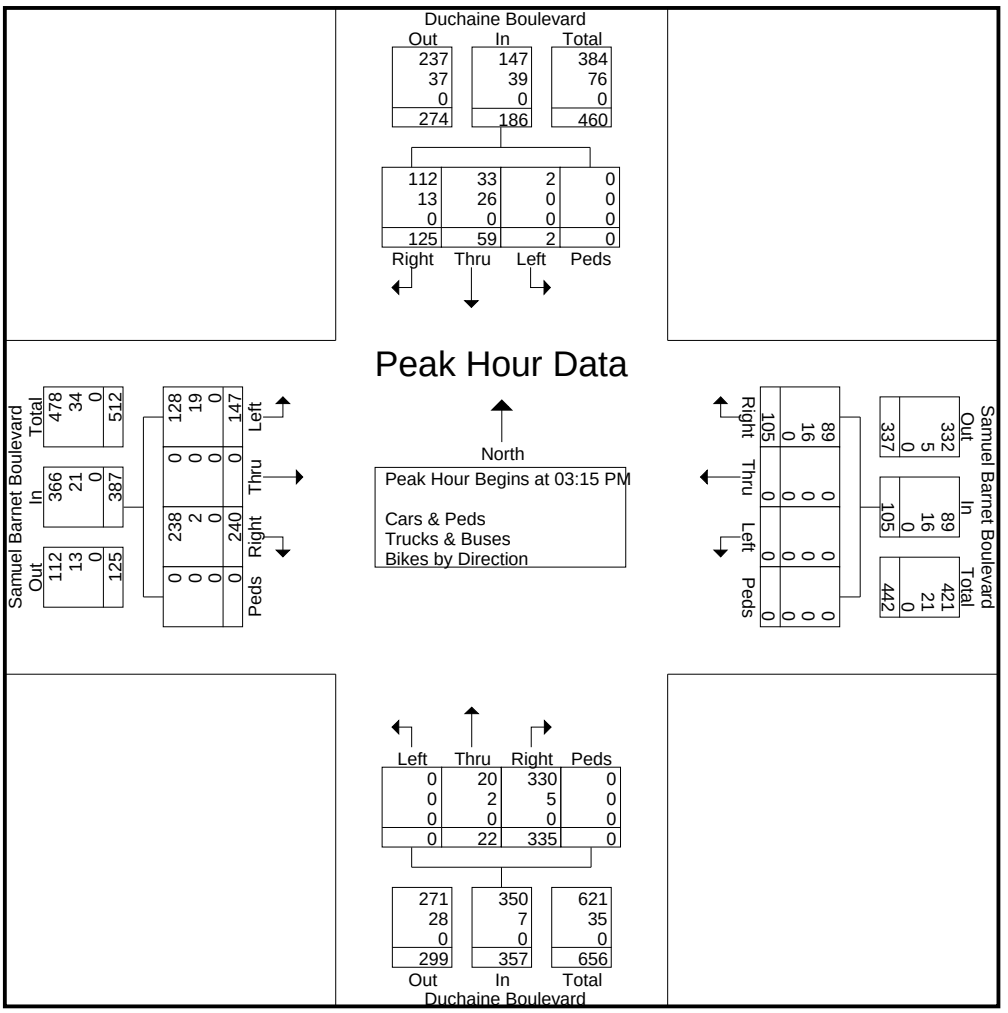
Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Duchaine Boulevard
E/W: Samuel Barnet Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063EE
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

	Duchaine Boulevard From North					Samuel Barnet Boulevard From East					Duchaine Boulevard From South					Samuel Barnet Boulevard From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 03:15 PM																					
03:15 PM	**41**	**22**	0	0	**63**	**37**	0	0	0	**37**	41	4	0	0	45	16	0	30	0	46	191
03:30 PM	34	12	**1**	0	47	25	0	0	0	25	124	**9**	0	0	133	97	0	35	0	132	337
03:45 PM	36	10	1	0	47	25	0	0	0	25	40	4	0	0	44	26	0	20	0	46	162
04:00 PM	14	15	0	0	29	18	0	0	0	18	**130**	5	0	0	**135**	**101**	0	**62**	0	**163**	**345**
Total Volume	125	59	2	0	186	105	0	0	0	105	335	22	0	0	357	240	0	147	0	387	1035
% App. Total	67.2	31.7	1.1	0		100	0	0	0		93.8	6.2	0	0		62	0	38	0		
PHF	.762	.670	.500	.000	.738	.709	.000	.000	.000	.709	.644	.611	.000	.000	.661	.594	.000	.593	.000	.594	.750
Cars & Peds	112	33	2	0	147	89	0	0	0	89	330	20	0	0	350	238	0	128	0	366	952
% Cars & Peds	89.6	55.9	100	0	79.0	84.8	0	0	0	84.8	98.5	90.9	0	0	98.0	99.2	0	87.1	0	94.6	92.0
Trucks & Buses	13	26	0	0	39	16	0	0	0	16	5	2	0	0	7	2	0	19	0	21	83
% Trucks & Buses	10.4	44.1	0	0	21.0	15.2	0	0	0	15.2	1.5	9.1	0	0	2.0	0.8	0	12.9	0	5.4	8.0
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
W: Samuel Barnet Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063F
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Phillips Road From North			Phillips Road From South			Samuel Barnet Boulevard From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
07:00 AM	0	15	0	24	40	0	58	3	0	140
07:15 AM	2	20	0	31	44	0	12	0	0	109
07:30 AM	3	24	0	25	50	0	17	2	0	121
07:45 AM	1	27	0	34	75	0	32	1	0	170
Total	6	86	0	114	209	0	119	6	0	540
08:00 AM	1	24	0	29	34	0	44	2	0	134
08:15 AM	3	34	0	43	37	0	12	0	0	129
08:30 AM	2	37	0	43	24	0	11	0	0	117
08:45 AM	0	37	0	24	25	0	17	1	0	104
Total	6	132	0	139	120	0	84	3	0	484
Grand Total	12	218	0	253	329	0	203	9	0	1024
Apprch %	5.2	94.8	0	43.5	56.5	0	95.8	4.2	0	
Total %	1.2	21.3	0	24.7	32.1	0	19.8	0.9	0	
Cars & Peds	8	213	0	240	319	0	177	7	0	964
% Cars & Peds	66.7	97.7	0	94.9	97	0	87.2	77.8	0	94.1
Trucks & Buses	4	4	0	13	10	0	26	2	0	59
% Trucks & Buses	33.3	1.8	0	5.1	3	0	12.8	22.2	0	5.8
Bikes by Direction	0	1	0	0	0	0	0	0	0	1
% Bikes by Direction	0	0.5	0	0	0	0	0	0	0	0.1

	Phillips Road From North				Phillips Road From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	**3**	24	0	27	25	50	0	75	17	**2**	0	19	121
07:45 AM	1	27	0	28	34	**75**	0	**109**	32	1	0	33	**170**
08:00 AM	1	24	0	25	29	34	0	63	**44**	2	0	**46**	134
08:15 AM	3	**34**	0	**37**	**43**	37	0	80	12	0	0	12	129
Total Volume	8	109	0	117	131	196	0	327	105	5	0	110	554
% App. Total	6.8	93.2	0		40.1	59.9	0		95.5	4.5	0		
PHF	.667	.801	.000	.791	.762	.653	.000	.750	.597	.625	.000	.598	.815
Cars & Peds	6	105	0	111	127	190	0	317	86	4	0	90	518
% Cars & Peds	75.0	96.3	0	94.9	96.9	96.9	0	96.9	81.9	80.0	0	81.8	93.5
Trucks & Buses	2	3	0	5	4	6	0	10	19	1	0	20	35
% Trucks & Buses	25.0	2.8	0	4.3	3.1	3.1	0	3.1	18.1	20.0	0	18.2	6.3
Bikes by Direction	0	1	0	1	0	0	0	0	0	0	0	0	1
% Bikes by Direction	0	0.9	0	0.9	0	0	0	0	0	0	0	0	0.2

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
W: Samuel Barnet Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063F
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Cars & Peds

	Phillips Road From North			Phillips Road From South			Samuel Barnet Boulevard From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
07:00 AM	0	15	0	22	40	0	56	3	0	136
07:15 AM	1	20	0	30	42	0	9	0	0	102
07:30 AM	2	23	0	25	48	0	13	1	0	112
07:45 AM	1	25	0	33	73	0	26	1	0	159
Total	4	83	0	110	203	0	104	5	0	509
08:00 AM	1	24	0	28	32	0	38	2	0	125
08:15 AM	2	33	0	41	37	0	9	0	0	122
08:30 AM	1	36	0	38	23	0	11	0	0	109
08:45 AM	0	37	0	23	24	0	15	0	0	99
Total	4	130	0	130	116	0	73	2	0	455
Grand Total	8	213	0	240	319	0	177	7	0	964
Apprch %	3.6	96.4	0	42.9	57.1	0	96.2	3.8	0	
Total %	0.8	22.1	0	24.9	33.1	0	18.4	0.7	0	

	Phillips Road From North				Phillips Road From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	**2**	23	0	25	25	48	0	73	13	1	0	14	112
07:45 AM	1	25	0	26	33	**73**	0	**106**	26	1	0	27	**159**
08:00 AM	1	24	0	25	28	32	0	60	**38**	**2**	0	**40**	125
08:15 AM	2	**33**	0	**35**	**41**	37	0	78	9	0	0	9	122
Total Volume	6	105	0	111	127	190	0	317	86	4	0	90	518
% App. Total	5.4	94.6	0		40.1	59.9	0		95.6	4.4	0		
PHF	.750	.795	.000	.793	.774	.651	.000	.748	.566	.500	.000	.563	.814

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Client: McM/S. Hawkins

File Name : 05063F
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Trucks & Buses

	Phillips Road From North			Phillips Road From South			Samuel Barnet Boulevard From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
07:00 AM	0	0	0	2	0	0	2	0	0	4
07:15 AM	1	0	0	1	2	0	3	0	0	7
07:30 AM	1	1	0	0	2	0	4	1	0	9
07:45 AM	0	2	0	1	2	0	6	0	0	11
Total	2	3	0	4	6	0	15	1	0	31
08:00 AM	0	0	0	1	2	0	6	0	0	9
08:15 AM	1	0	0	2	0	0	3	0	0	6
08:30 AM	1	1	0	5	1	0	0	0	0	8
08:45 AM	0	0	0	1	1	0	2	1	0	5
Total	2	1	0	9	4	0	11	1	0	28
Grand Total	4	4	0	13	10	0	26	2	0	59
Apprch %	50	50	0	56.5	43.5	0	92.9	7.1	0	
Total %	6.8	6.8	0	22	16.9	0	44.1	3.4	0	

	Phillips Road From North				Phillips Road From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	**1**	0	0	1	**1**	**2**	0	**3**	3	0	0	3	7
07:30 AM	1	1	0	**2**	0	2	0	2	4	**1**	0	5	9
07:45 AM	0	**2**	0	2	1	2	0	3	**6**	0	0	**6**	**11**
08:00 AM	0	0	0	0	1	2	0	3	6	0	0	6	9
Total Volume	2	3	0	5	3	8	0	11	19	1	0	20	36
% App. Total	40	60	0		27.3	72.7	0		95	5	0		
PHF	.500	.375	.000	.625	.750	1.00	.000	.917	.792	.250	.000	.833	.818

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

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Client: McM/S. Hawkins

File Name : 05063F
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Bikes by Direction

	Phillips Road From North			Phillips Road From South			Samuel Barnet Boulevard From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	1	0	0	0	0	0	0	0	1
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	0	0	1
Grand Total	0	1	0	0	0	0	0	0	0	1
Apprch %	0	100	0	0	0	0	0	0	0	
Total %	0	100	0	0	0	0	0	0	0	

	Phillips Road From North				Phillips Road From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	**1**
Total Volume	0	1	0	1	0	0	0	0	0	0	0	0	1
% App. Total	0	100	0		0	0	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.250

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File Name : 05063F
Site Code : Y1821511
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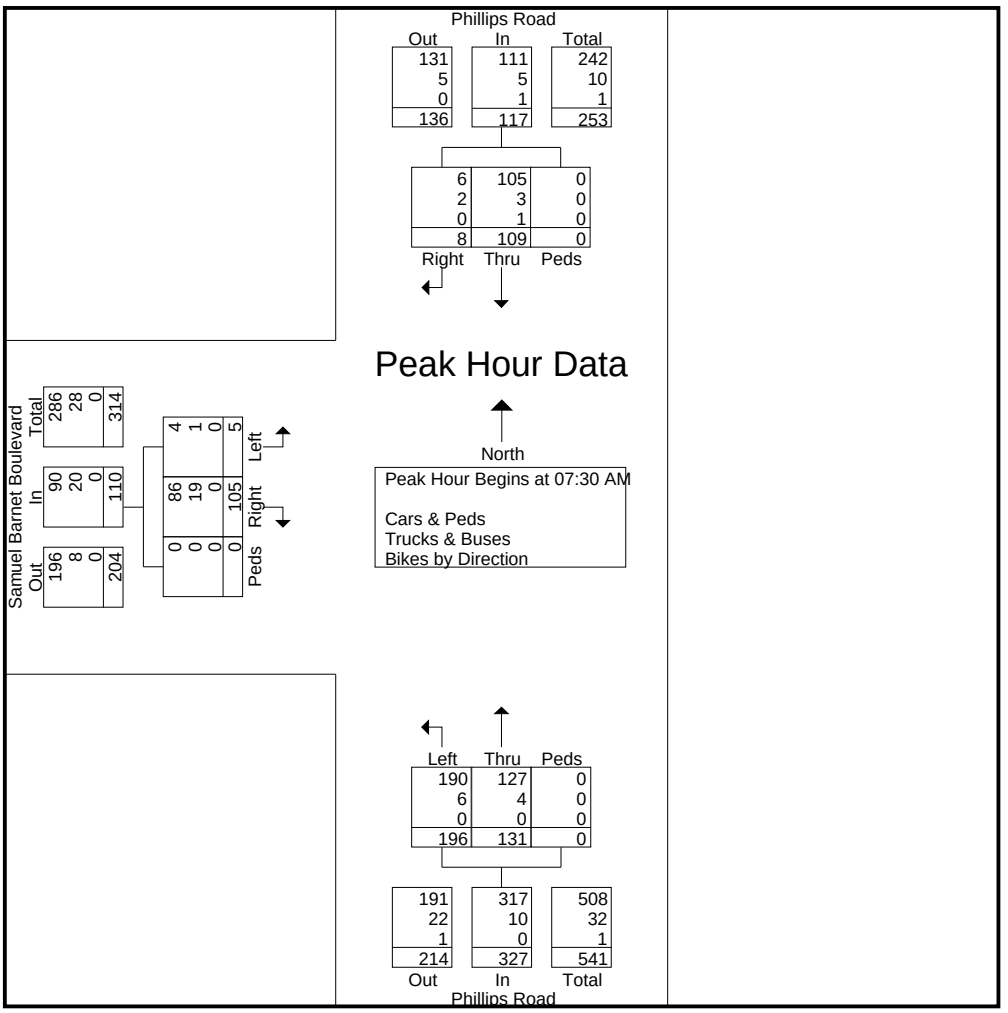
Page No : 1

	Phillips Road From North				Phillips Road From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:30 AM													
07:30 AM	**3**	24	0	27	25	50	0	75	17	**2**	0	19	121
07:45 AM	1	27	0	28	34	**75**	0	**109**	32	1	0	33	**170**
08:00 AM	1	24	0	25	29	34	0	63	**44**	2	0	**46**	134
08:15 AM	3	**34**	0	**37**	**43**	37	0	80	12	0	0	12	129
Total Volume	8	109	0	117	131	196	0	327	105	5	0	110	554
% App. Total	6.8	93.2	0		40.1	59.9	0		95.5	4.5	0		
PHF	.667	.801	.000	.791	.762	.653	.000	.750	.597	.625	.000	.598	.815
Cars & Peds	6	105	0	111	127	190	0	317	86	4	0	90	518
% Cars & Peds	75.0	96.3	0	94.9	96.9	96.9	0	96.9	81.9	80.0	0	81.8	93.5
Trucks & Buses	2	3	0	5	4	6	0	10	19	1	0	20	35
% Trucks & Buses	25.0	2.8	0	4.3	3.1	3.1	0	3.1	18.1	20.0	0	18.2	6.3
Bikes by Direction	0	1	0	1	0	0	0	0	0	0	0	0	1
% Bikes by Direction	0	0.9	0	0.9	0	0	0	0	0	0	0	0	0.2



Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
W: Samuel Barnet Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063FF
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Phillips Road From North			Phillips Road From South			Samuel Barnet Boulevard From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
03:00 PM	0	98	0	41	31	0	87	15	0	272
03:15 PM	3	38	0	42	39	0	34	8	0	164
03:30 PM	1	62	0	38	22	0	114	7	0	244
03:45 PM	1	43	0	37	24	0	38	4	0	147
Total	5	241	0	158	116	0	273	34	0	827
04:00 PM	2	77	0	35	16	0	128	1	0	259
04:15 PM	0	58	0	50	7	0	31	0	0	146
04:30 PM	0	55	0	34	11	0	46	5	0	151
04:45 PM	0	50	0	26	14	0	36	2	0	128
Total	2	240	0	145	48	0	241	8	0	684
05:00 PM	1	68	0	40	7	0	112	22	0	250
05:15 PM	2	48	0	38	11	0	38	1	0	138
05:30 PM	0	40	0	19	9	0	40	0	0	108
05:45 PM	1	38	0	25	11	0	32	0	0	107
Total	4	194	0	122	38	0	222	23	0	603
Grand Total	11	675	0	425	202	0	736	65	0	2114
Apprch %	1.6	98.4	0	67.8	32.2	0	91.9	8.1	0	
Total %	0.5	31.9	0	20.1	9.6	0	34.8	3.1	0	
Cars & Peds	8	661	0	417	177	0	726	62	0	2051
% Cars & Peds	72.7	97.9	0	98.1	87.6	0	98.6	95.4	0	97
Trucks & Buses	3	13	0	8	25	0	10	3	0	62
% Trucks & Buses	27.3	1.9	0	1.9	12.4	0	1.4	4.6	0	2.9
Bikes by Direction	0	1	0	0	0	0	0	0	0	1
% Bikes by Direction	0	0.1	0	0	0	0	0	0	0	0

	Phillips Road From North				Phillips Road From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:00 PM													
03:00 PM	0	**98**	0	**98**	41	31	0	72	87	**15**	0	102	**272**
03:15 PM	**3**	38	0	41	**42**	**39**	0	**81**	34	8	0	42	164
03:30 PM	1	62	0	63	38	22	0	60	**114**	7	0	**121**	244
03:45 PM	1	43	0	44	37	24	0	61	38	4	0	42	147
Total Volume	5	241	0	246	158	116	0	274	273	34	0	307	827
% App. Total	2	98	0		57.7	42.3	0		88.9	11.1	0		
PHF	.417	.615	.000	.628	.940	.744	.000	.846	.599	.567	.000	.634	.760
Cars & Peds	4	236	0	240	151	103	0	254	269	32	0	301	795
% Cars & Peds	80.0	97.9	0	97.6	95.6	88.8	0	92.7	98.5	94.1	0	98.0	96.1
Trucks & Buses	1	5	0	6	7	13	0	20	4	2	0	6	32
% Trucks & Buses	20.0	2.1	0	2.4	4.4	11.2	0	7.3	1.5	5.9	0	2.0	3.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
W: Samuel Barnet Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063FF
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Cars & Peds

	Phillips Road From North			Phillips Road From South			Samuel Barnet Boulevard From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
03:00 PM	0	96	0	41	29	0	86	15	0	267
03:15 PM	2	37	0	39	32	0	34	7	0	151
03:30 PM	1	60	0	35	21	0	114	6	0	237
03:45 PM	1	43	0	36	21	0	35	4	0	140
Total	4	236	0	151	103	0	269	32	0	795
04:00 PM	1	75	0	35	13	0	127	1	0	252
04:15 PM	0	56	0	50	6	0	30	0	0	142
04:30 PM	0	54	0	34	8	0	45	5	0	146
04:45 PM	0	49	0	26	13	0	34	1	0	123
Total	1	234	0	145	40	0	236	7	0	663
05:00 PM	1	67	0	40	6	0	112	22	0	248
05:15 PM	1	48	0	38	10	0	38	1	0	136
05:30 PM	0	39	0	19	8	0	40	0	0	106
05:45 PM	1	37	0	24	10	0	31	0	0	103
Total	3	191	0	121	34	0	221	23	0	593
Grand Total	8	661	0	417	177	0	726	62	0	2051
Apprch %	1.2	98.8	0	70.2	29.8	0	92.1	7.9	0	
Total %	0.4	32.2	0	20.3	8.6	0	35.4	3	0	

	Phillips Road From North				Phillips Road From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:00 PM													
03:00 PM	0	**96**	0	**96**	**41**	29	0	70	86	**15**	0	101	**267**
03:15 PM	**2**	37	0	39	39	**32**	0	**71**	34	7	0	41	151
03:30 PM	1	60	0	61	35	21	0	56	**114**	6	0	**120**	237
03:45 PM	1	43	0	44	36	21	0	57	35	4	0	39	140
Total Volume	4	236	0	240	151	103	0	254	269	32	0	301	795
% App. Total	1.7	98.3	0		59.4	40.6	0		89.4	10.6	0		
PHF	.500	.615	.000	.625	.921	.805	.000	.894	.590	.533	.000	.627	.744

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
W: Samuel Barnet Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063FF
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Trucks & Buses

	Phillips Road From North			Phillips Road From South			Samuel Barnet Boulevard From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
03:00 PM	0	2	0	0	2	0	1	0	0	5
03:15 PM	1	1	0	3	7	0	0	1	0	13
03:30 PM	0	2	0	3	1	0	0	1	0	7
03:45 PM	0	0	0	1	3	0	3	0	0	7
Total	1	5	0	7	13	0	4	2	0	32
04:00 PM	1	2	0	0	3	0	1	0	0	7
04:15 PM	0	1	0	0	1	0	1	0	0	3
04:30 PM	0	1	0	0	3	0	1	0	0	5
04:45 PM	0	1	0	0	1	0	2	1	0	5
Total	1	5	0	0	8	0	5	1	0	20
05:00 PM	0	1	0	0	1	0	0	0	0	2
05:15 PM	1	0	0	0	1	0	0	0	0	2
05:30 PM	0	1	0	0	1	0	0	0	0	2
05:45 PM	0	1	0	1	1	0	1	0	0	4
Total	1	3	0	1	4	0	1	0	0	10
Grand Total	3	13	0	8	25	0	10	3	0	62
Apprch %	18.8	81.2	0	24.2	75.8	0	76.9	23.1	0	
Total %	4.8	21	0	12.9	40.3	0	16.1	4.8	0	

	Phillips Road From North				Phillips Road From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:15 PM													
03:15 PM	**1**	1	0	2	**3**	**7**	0	**10**	0	**1**	0	1	**13**
03:30 PM	0	**2**	0	2	3	1	0	4	0	1	0	1	7
03:45 PM	0	0	0	0	1	3	0	4	**3**	0	0	**3**	7
04:00 PM	1	2	0	**3**	0	3	0	3	1	0	0	1	7
Total Volume	2	5	0	7	7	14	0	21	4	2	0	6	34
% App. Total	28.6	71.4	0		33.3	66.7	0		66.7	33.3	0		
PHF	.500	.625	.000	.583	.583	.500	.000	.525	.333	.500	.000	.500	.654

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
W: Samuel Barnet Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063FF
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Bikes by Direction

	Phillips Road From North			Phillips Road From South			Samuel Barnet Boulevard From West			
Start Time	Right	Thru	Peds	Thru	Left	Peds	Right	Left	Peds	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	1	0	0	0	0	0	0	0	1
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	0	0	0	0	0	1
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	1	0	0	0	0	0	0	0	1
Apprch %	0	100	0	0	0	0	0	0	0	
Total %	0	100	0	0	0	0	0	0	0	

	Phillips Road From North				Phillips Road From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:30 PM													
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	**1**	0	**1**	0	0	0	0	0	0	0	0	**1**
Total Volume	0	1	0	1	0	0	0	0	0	0	0	0	1
% App. Total	0	100	0		0	0	0		0	0	0		
PHF	.000	.250	.000	.250	.000	.000	.000	.000	.000	.000	.000	.000	.250

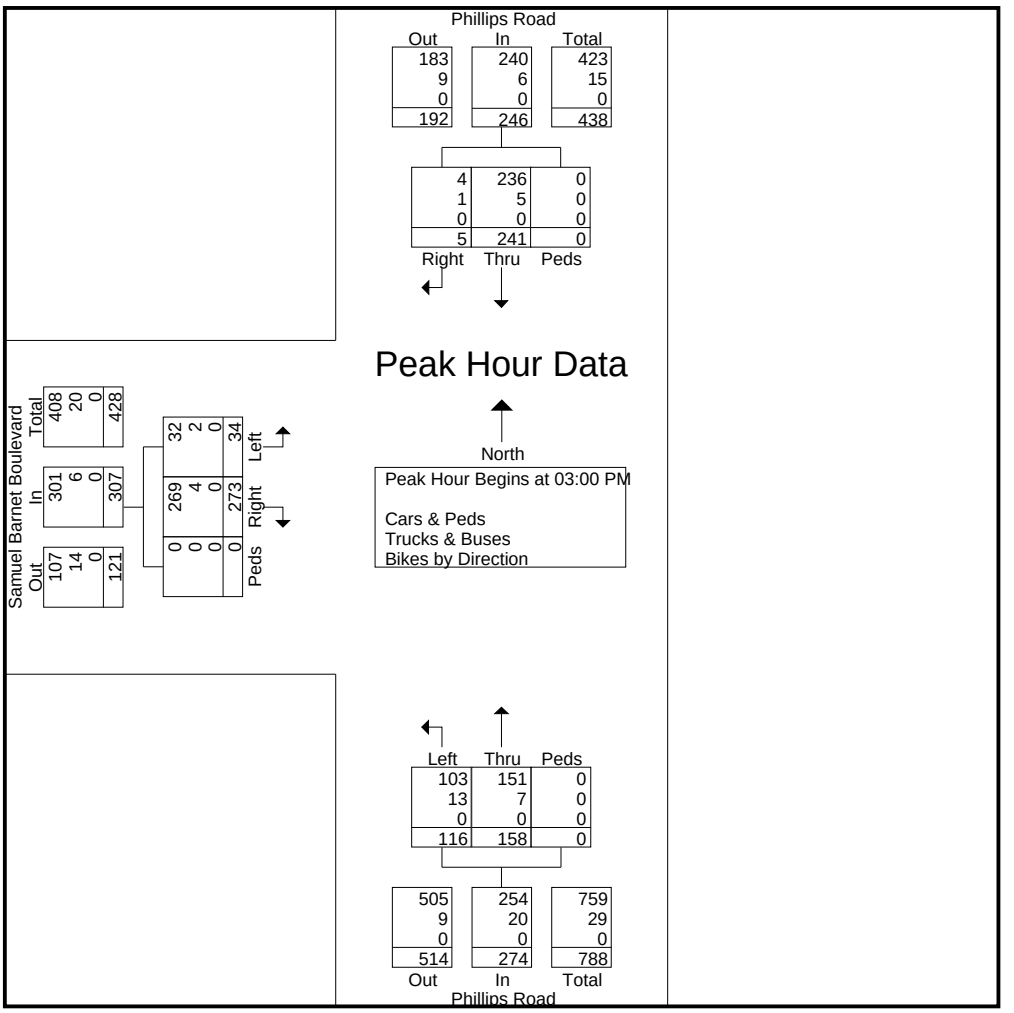
Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N/S: Phillips Road
W: Samuel Barnet Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063FF
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

	Phillips Road From North				Phillips Road From South				Samuel Barnet Boulevard From West				
Start Time	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Right	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:00 PM													
03:00 PM	0	**98**	0	**98**	41	31	0	72	87	**15**	0	102	**272**
03:15 PM	**3**	38	0	41	**42**	**39**	0	**81**	34	8	0	42	164
03:30 PM	1	62	0	63	38	22	0	60	**114**	7	0	**121**	244
03:45 PM	1	43	0	44	37	24	0	61	38	4	0	42	147
Total Volume	5	241	0	246	158	116	0	274	273	34	0	307	827
% App. Total	2	98	0		57.7	42.3	0		88.9	11.1	0		
PHF	.417	.615	.000	.628	.940	.744	.000	.846	.599	.567	.000	.634	.760
Cars & Peds	4	236	0	240	151	103	0	254	269	32	0	301	795
% Cars & Peds	80.0	97.9	0	97.6	95.6	88.8	0	92.7	98.5	94.1	0	98.0	96.1
Trucks & Buses	1	5	0	6	7	13	0	20	4	2	0	6	32
% Trucks & Buses	20.0	2.1	0	2.4	4.4	11.2	0	7.3	1.5	5.9	0	2.0	3.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0



Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N: Duchaine Boulevard
E/W: #100 Site Drive (Exit/Enter Only)
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063G
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Duchaine Boulevard From North			Exit #100 Eversource Driveway From East			Enter #100 Eversource Driveway From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
07:00 AM	19	0	0	12	0	0	0	0	0	31
07:15 AM	30	0	0	12	0	0	0	0	0	42
07:30 AM	11	0	0	13	0	0	0	0	0	24
07:45 AM	7	0	0	27	0	0	0	0	0	34
Total	67	0	0	64	0	0	0	0	0	131
08:00 AM	15	0	0	17	0	0	0	0	0	32
08:15 AM	12	0	0	9	0	0	0	0	0	21
08:30 AM	9	0	0	12	0	0	0	0	0	21
08:45 AM	9	0	0	14	0	0	0	0	0	23
Total	45	0	0	52	0	0	0	0	0	97
Grand Total	112	0	0	116	0	0	0	0	0	228
Apprch %	100	0	0	100	0	0	0	0	0	
Total %	49.1	0	0	50.9	0	0	0	0	0	
Cars & Peds	103	0	0	82	0	0	0	0	0	185
% Cars & Peds	92	0	0	70.7	0	0	0	0	0	81.1
Trucks & Buses	9	0	0	34	0	0	0	0	0	43
% Trucks & Buses	8	0	0	29.3	0	0	0	0	0	18.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0

	Duchaine Boulevard From North				Exit #100 Eversource Driveway From East				Enter #100 Eversource Driveway From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	**30**	0	0	**30**	12	0	0	12	0	0	0	0	**42**
07:30 AM	11	0	0	11	13	0	0	13	0	0	0	0	24
07:45 AM	7	0	0	7	**27**	0	0	**27**	0	0	0	0	34
08:00 AM	15	0	0	15	17	0	0	17	0	0	0	0	32
Total Volume	63	0	0	63	69	0	0	69	0	0	0	0	132
% App. Total	100	0	0		100	0	0		0	0	0		
PHF	.525	.000	.000	.525	.639	.000	.000	.639	.000	.000	.000	.000	.786
Cars & Peds	59	0	0	59	43	0	0	43	0	0	0	0	102
% Cars & Peds	93.7	0	0	93.7	62.3	0	0	62.3	0	0	0	0	77.3
Trucks & Buses	4	0	0	4	26	0	0	26	0	0	0	0	30
% Trucks & Buses	6.3	0	0	6.3	37.7	0	0	37.7	0	0	0	0	22.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N: Duchaine Boulevard
E/W: #100 Site Drive (Exit/Enter Only)
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063G
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds

	Duchaine Boulevard From North			Exit #100 Eversource Driveway From East			Enter #100 Eversource Driveway From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
07:00 AM	19	0	0	10	0	0	0	0	0	29
07:15 AM	30	0	0	5	0	0	0	0	0	35
07:30 AM	9	0	0	8	0	0	0	0	0	17
07:45 AM	7	0	0	17	0	0	0	0	0	24
Total	65	0	0	40	0	0	0	0	0	105
08:00 AM	13	0	0	13	0	0	0	0	0	26
08:15 AM	11	0	0	7	0	0	0	0	0	18
08:30 AM	6	0	0	12	0	0	0	0	0	18
08:45 AM	8	0	0	10	0	0	0	0	0	18
Total	38	0	0	42	0	0	0	0	0	80
Grand Total	103	0	0	82	0	0	0	0	0	185
Apprch %	100	0	0	100	0	0	0	0	0	
Total %	55.7	0	0	44.3	0	0	0	0	0	

	Duchaine Boulevard From North				Exit #100 Eversource Driveway From East				Enter #100 Eversource Driveway From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	19	0	0	19	10	0	0	10	0	0	0	0	29
07:15 AM	**30**	0	0	**30**	5	0	0	5	0	0	0	0	**35**
07:30 AM	9	0	0	9	8	0	0	8	0	0	0	0	17
07:45 AM	7	0	0	7	**17**	0	0	**17**	0	0	0	0	24
Total Volume	65	0	0	65	40	0	0	40	0	0	0	0	105
% App. Total	100	0	0		100	0	0		0	0	0		
PHF	.542	.000	.000	.542	.588	.000	.000	.588	.000	.000	.000	.000	.750

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City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063G
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Trucks & Buses

	Duchaine Boulevard From North			Exit #100 Eversource Driveway From East			Enter #100 Eversource Driveway From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	2	0	0	0	0	0	2
07:15 AM	0	0	0	7	0	0	0	0	0	7
07:30 AM	2	0	0	5	0	0	0	0	0	7
07:45 AM	0	0	0	10	0	0	0	0	0	10
Total	2	0	0	24	0	0	0	0	0	26
08:00 AM	2	0	0	4	0	0	0	0	0	6
08:15 AM	1	0	0	2	0	0	0	0	0	3
08:30 AM	3	0	0	0	0	0	0	0	0	3
08:45 AM	1	0	0	4	0	0	0	0	0	5
Total	7	0	0	10	0	0	0	0	0	17
Grand Total	9	0	0	34	0	0	0	0	0	43
Apprch %	100	0	0	100	0	0	0	0	0	
Total %	20.9	0	0	79.1	0	0	0	0	0	

	Duchaine Boulevard From North				Exit #100 Eversource Driveway From East				Enter #100 Eversource Driveway From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	0	0	0	0	7	0	0	7	0	0	0	0	7
07:30 AM	**2**	0	0	**2**	5	0	0	5	0	0	0	0	7
07:45 AM	0	0	0	0	**10**	0	0	**10**	0	0	0	0	**10**
08:00 AM	2	0	0	2	4	0	0	4	0	0	0	0	6
Total Volume	4	0	0	4	26	0	0	26	0	0	0	0	30
% App. Total	100	0	0		100	0	0		0	0	0		
PHF	.500	.000	.000	.500	.650	.000	.000	.650	.000	.000	.000	.000	.750

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E/W: #100 Site Drive (Exit/Enter Only)
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063G
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Bikes by Direction

	Duchaine Boulevard From North			Exit #100 Eversource Driveway From East			Enter #100 Eversource Driveway From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
07:00 AM	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	
Total %										

	Duchaine Boulevard From North				Exit #100 Eversource Driveway From East				Enter #100 Eversource Driveway From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:00 AM													
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

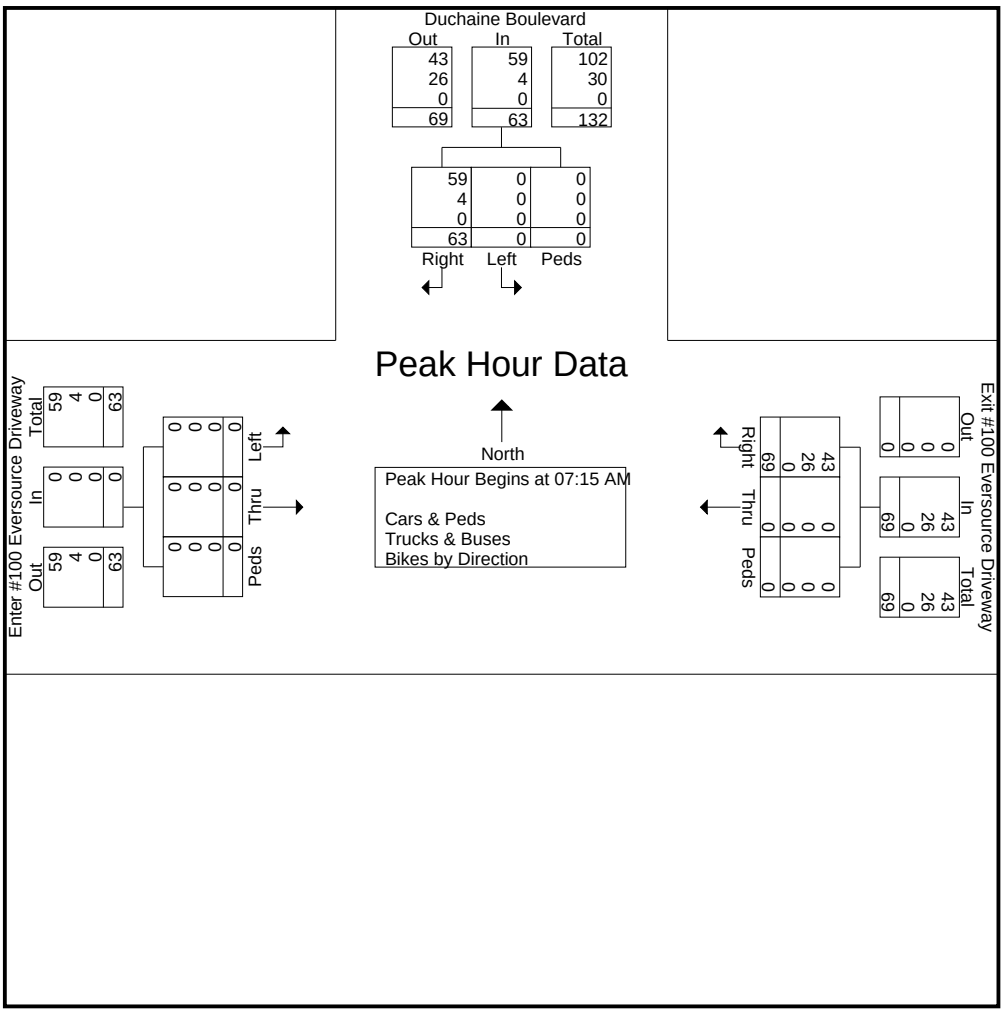
Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N: Duchaine Boulevard
E/W: #100 Site Drive (Exit/Enter Only)
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063G
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

	Duchaine Boulevard From North				Exit #100 Eversource Driveway From East				Enter #100 Eversource Driveway From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 07:15 AM													
07:15 AM	**30**	0	0	**30**	12	0	0	12	0	0	0	0	**42**
07:30 AM	11	0	0	11	13	0	0	13	0	0	0	0	24
07:45 AM	7	0	0	7	**27**	0	0	**27**	0	0	0	0	34
08:00 AM	15	0	0	15	17	0	0	17	0	0	0	0	32
Total Volume	63	0	0	63	69	0	0	69	0	0	0	0	132
% App. Total	100	0	0		100	0	0		0	0	0		
PHF	.525	.000	.000	.525	.639	.000	.000	.639	.000	.000	.000	.000	.786
Cars & Peds	59	0	0	59	43	0	0	43	0	0	0	0	102
% Cars & Peds	93.7	0	0	93.7	62.3	0	0	62.3	0	0	0	0	77.3
Trucks & Buses	4	0	0	4	26	0	0	26	0	0	0	0	30
% Trucks & Buses	6.3	0	0	6.3	37.7	0	0	37.7	0	0	0	0	22.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0



Transportation Data Corporation

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tel (781) 587-0086 cell (781) 439-4999

N: Duchaine Boulevard
E/W: #100 Site Drive (Exit/Enter Only)
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063GG
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Cars & Peds - Trucks & Buses - Bikes by Direction

	Duchaine Boulevard From North			Exit #100 Eversource Driveway From East			Enter #100 Eversource Driveway From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
03:00 PM	10	0	0	7	0	0	0	0	0	17
03:15 PM	15	0	0	20	0	0	0	0	0	35
03:30 PM	6	0	0	22	0	0	0	0	0	28
03:45 PM	7	0	0	16	0	0	0	0	0	23
Total	38	0	0	65	0	0	0	0	0	103
04:00 PM	8	0	1	23	0	0	0	0	0	32
04:15 PM	4	0	0	9	0	0	0	0	0	13
04:30 PM	7	0	0	8	0	0	0	0	0	15
04:45 PM	7	0	1	22	0	0	0	0	0	30
Total	26	0	2	62	0	0	0	0	0	90
05:00 PM	2	0	0	7	0	0	0	0	0	9
05:15 PM	3	0	0	2	0	0	0	0	0	5
05:30 PM	2	0	0	3	0	0	0	0	0	5
05:45 PM	3	0	0	3	0	0	0	0	0	6
Total	10	0	0	15	0	0	0	0	0	25
Grand Total	74	0	2	142	0	0	0	0	0	218
Apprch %	97.4	0	2.6	100	0	0	0	0	0	
Total %	33.9	0	0.9	65.1	0	0	0	0	0	
Cars & Peds	63	0	2	134	0	0	0	0	0	199
% Cars & Peds	85.1	0	100	94.4	0	0	0	0	0	91.3
Trucks & Buses	11	0	0	8	0	0	0	0	0	19
% Trucks & Buses	14.9	0	0	5.6	0	0	0	0	0	8.7
Bikes by Direction	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0

	Duchaine Boulevard From North				Exit #100 Eversource Driveway From East				Enter #100 Eversource Driveway From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:15 PM													
03:15 PM	**15**	0	0	**15**	20	0	0	20	0	0	0	0	**35**
03:30 PM	6	0	0	6	22	0	0	22	0	0	0	0	28
03:45 PM	7	0	0	7	16	0	0	16	0	0	0	0	23
04:00 PM	8	0	**1**	9	**23**	0	0	**23**	0	0	0	0	32
Total Volume	36	0	1	37	81	0	0	81	0	0	0	0	118
% App. Total	97.3	0	2.7		100	0	0		0	0	0		
PHF	.600	.000	.250	.617	.880	.000	.000	.880	.000	.000	.000	.000	.843
Cars & Peds	32	0	1	33	78	0	0	78	0	0	0	0	111
% Cars & Peds	88.9	0	100	89.2	96.3	0	0	96.3	0	0	0	0	94.1
Trucks & Buses	4	0	0	4	3	0	0	3	0	0	0	0	7
% Trucks & Buses	11.1	0	0	10.8	3.7	0	0	3.7	0	0	0	0	5.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N: Duchaine Boulevard
E/W: #100 Site Drive (Exit/Enter Only)
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063GG
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

Groups Printed- Cars & Peds

	Duchaine Boulevard From North			Exit #100 Eversource Driveway From East			Enter #100 Eversource Driveway From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
03:00 PM	9	0	0	7	0	0	0	0	0	16
03:15 PM	15	0	0	19	0	0	0	0	0	34
03:30 PM	5	0	0	22	0	0	0	0	0	27
03:45 PM	6	0	0	14	0	0	0	0	0	20
Total	35	0	0	62	0	0	0	0	0	97
04:00 PM	6	0	1	23	0	0	0	0	0	30
04:15 PM	3	0	0	8	0	0	0	0	0	11
04:30 PM	5	0	0	7	0	0	0	0	0	12
04:45 PM	7	0	1	20	0	0	0	0	0	28
Total	21	0	2	58	0	0	0	0	0	81
05:00 PM	1	0	0	7	0	0	0	0	0	8
05:15 PM	3	0	0	2	0	0	0	0	0	5
05:30 PM	1	0	0	3	0	0	0	0	0	4
05:45 PM	2	0	0	2	0	0	0	0	0	4
Total	7	0	0	14	0	0	0	0	0	21
Grand Total	63	0	2	134	0	0	0	0	0	199
Apprch %	96.9	0	3.1	100	0	0	0	0	0	
Total %	31.7	0	1	67.3	0	0	0	0	0	

	Duchaine Boulevard From North				Exit #100 Eversource Driveway From East				Enter #100 Eversource Driveway From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:15 PM													
03:15 PM	**15**	0	0	**15**	19	0	0	19	0	0	0	0	**34**
03:30 PM	5	0	0	5	22	0	0	22	0	0	0	0	27
03:45 PM	6	0	0	6	14	0	0	14	0	0	0	0	20
04:00 PM	6	0	**1**	7	**23**	0	0	**23**	0	0	0	0	30
Total Volume	32	0	1	33	78	0	0	78	0	0	0	0	111
% App. Total	97	0	3		100	0	0		0	0	0		
PHF	.533	.000	.250	.550	.848	.000	.000	.848	.000	.000	.000	.000	.816

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N: Duchaine Boulevard
E/W: #100 Site Drive (Exit/Enter Only)
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063GG
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Trucks & Buses

	Duchaine Boulevard From North			Exit #100 Eversource Driveway From East			Enter #100 Eversource Driveway From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
03:00 PM	1	0	0	0	0	0	0	0	0	1
03:15 PM	0	0	0	1	0	0	0	0	0	1
03:30 PM	1	0	0	0	0	0	0	0	0	1
03:45 PM	1	0	0	2	0	0	0	0	0	3
Total	3	0	0	3	0	0	0	0	0	6
04:00 PM	2	0	0	0	0	0	0	0	0	2
04:15 PM	1	0	0	1	0	0	0	0	0	2
04:30 PM	2	0	0	1	0	0	0	0	0	3
04:45 PM	0	0	0	2	0	0	0	0	0	2
Total	5	0	0	4	0	0	0	0	0	9
05:00 PM	1	0	0	0	0	0	0	0	0	1
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	1	0	0	0	0	0	0	0	0	1
05:45 PM	1	0	0	1	0	0	0	0	0	2
Total	3	0	0	1	0	0	0	0	0	4
Grand Total	11	0	0	8	0	0	0	0	0	19
Apprch %	100	0	0	100	0	0	0	0	0	
Total %	57.9	0	0	42.1	0	0	0	0	0	

	Duchaine Boulevard From North				Exit #100 Eversource Driveway From East				Enter #100 Eversource Driveway From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:45 PM													
03:45 PM	1	0	0	1	**2**	0	0	**2**	0	0	0	0	**3**
04:00 PM	**2**	0	0	**2**	0	0	0	0	0	0	0	0	2
04:15 PM	1	0	0	1	1	0	0	1	0	0	0	0	2
04:30 PM	2	0	0	2	1	0	0	1	0	0	0	0	3
Total Volume	6	0	0	6	4	0	0	4	0	0	0	0	10
% App. Total	100	0	0		100	0	0		0	0	0		
PHF	.750	.000	.000	.750	.500	.000	.000	.500	.000	.000	.000	.000	.833

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

N: Duchaine Boulevard
E/W: #100 Site Drive (Exit/Enter Only)
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063GG
Site Code : Y1821511
Start Date : 6/13/2018

Groups Printed- Bikes by Direction

	Duchaine Boulevard From North			Exit #100 Eversource Driveway From East			Enter #100 Eversource Driveway From West			
Start Time	Right	Left	Peds	Right	Thru	Peds	Thru	Left	Peds	Int. Total
03:00 PM	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0
Apprch %	0	0	0	0	0	0	0	0	0	
Total %										

	Duchaine Boulevard From North				Exit #100 Eversource Driveway From East				Enter #100 Eversource Driveway From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:00 PM													
03:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0	0	0		0	0	0		0	0	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000

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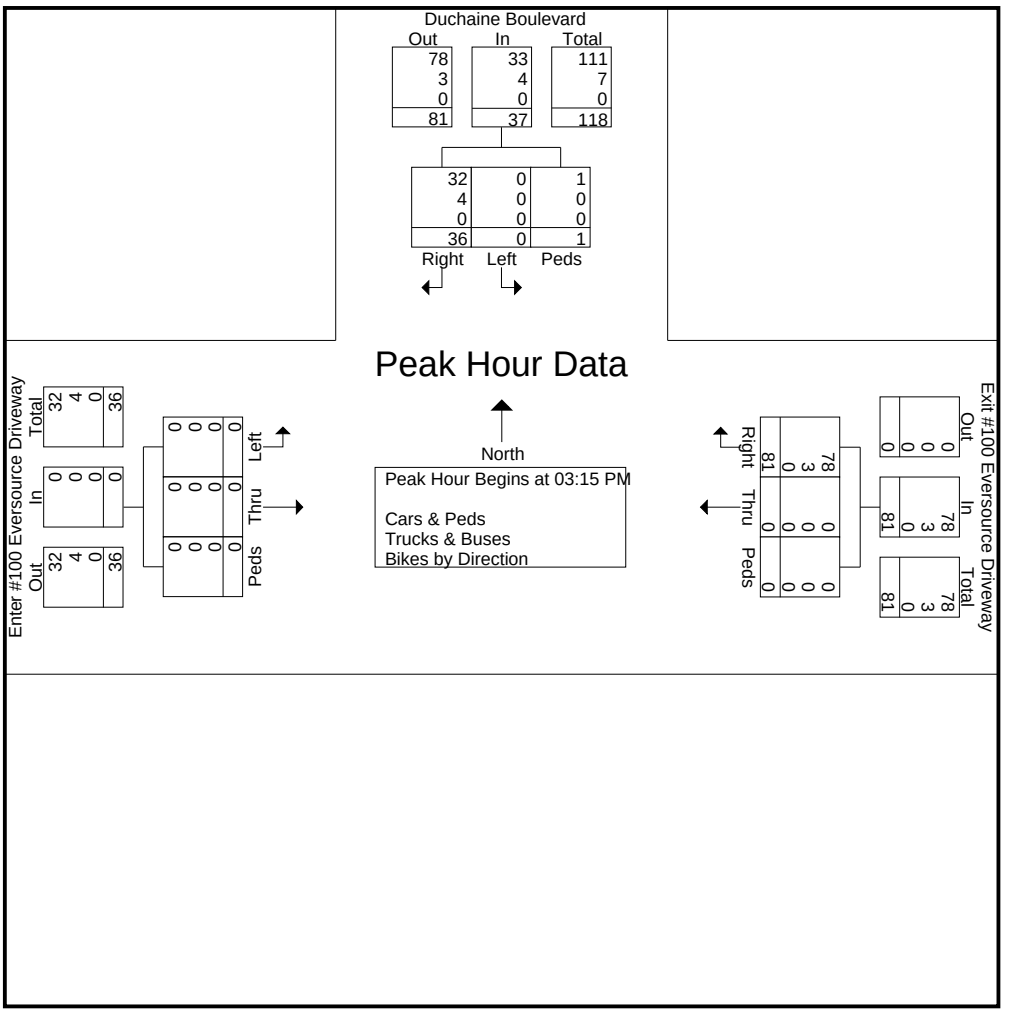
N: Duchaine Boulevard
E/W: #100 Site Drive (Exit/Enter Only)
City, State: New Bedford, MA
Client: McM/S. Hawkins

File Name : 05063GG
Site Code : Y1821511
Start Date : 6/13/2018
Page No : 1

	Duchaine Boulevard From North				Exit #100 Eversource Driveway From East				Enter #100 Eversource Driveway From West				
Start Time	Right	Left	Peds	App. Total	Right	Thru	Peds	App. Total	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1													
Peak Hour for Entire Intersection Begins at 03:15 PM													
03:15 PM	**15**	0	0	**15**	20	0	0	20	0	0	0	0	**35**
03:30 PM	6	0	0	6	22	0	0	22	0	0	0	0	28
03:45 PM	7	0	0	7	16	0	0	16	0	0	0	0	23
04:00 PM	8	0	**1**	9	**23**	0	0	**23**	0	0	0	0	32
Total Volume	36	0	1	37	81	0	0	81	0	0	0	0	118
% App. Total	97.3	0	2.7		100	0	0		0	0	0		
PHF	.600	.000	.250	.617	.880	.000	.000	.880	.000	.000	.000	.000	.843
Cars & Peds	32	0	1	33	78	0	0	78	0	0	0	0	111
% Cars & Peds	88.9	0	100	89.2	96.3	0	0	96.3	0	0	0	0	94.1
Trucks & Buses	4	0	0	4	3	0	0	3	0	0	0	0	7
% Trucks & Buses	11.1	0	0	10.8	3.7	0	0	3.7	0	0	0	0	5.9
Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0
% Bikes by Direction	0	0	0	0	0	0	0	0	0	0	0	0	0



APPENDIX B

Automatic Traffic Recorder Data

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

Duchaine Boulevard north of
U-turn, north of Sam Barnet Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

05063Avolume
Site Code: Y-18215.11

Start Time	13-Jun-18 Wed	NB A.M.	NB P.M.	SB A.M.	SB P.M.	Combined A.M.	Combined P.M.	14-Jun Thu	NB A.M.	NB P.M.	SB A.M.	SB P.M.	Combined A.M.	Combined P.M.
12:00		16	57	4	***41***	20	***98***		16	69	1	***50***	17	***119***
12:15		2	29	0	***48***	2	***77***		2	46	3	***49***	5	***95***
12:30		0	38	2	***44***	2	***82***		0	30	0	***31***	0	***61***
12:45		4	44	0	***47***	4	***91***		1	34	0	***64***	1	***98***
01:00		2	39	1	37	3	76		1	43	1	46	2	89
01:15		1	22	0	27	1	49		1	37	0	36	1	73
01:30		1	26	2	59	3	85		3	35	3	29	6	64
01:45		2	44	2	25	4	69		1	33	0	54	1	87
02:00		1	30	0	48	1	78		6	40	1	37	7	77
02:15		4	46	2	35	6	81		1	36	0	27	1	63
02:30		1	34	3	43	4	77		1	39	2	39	3	78
02:45		4	30	2	51	6	81		0	25	2	40	2	65
03:00		3	66	1	29	4	95		1	56	2	36	3	92
03:15		1	***54***	8	31	9	85		6	***40***	5	25	11	65
03:30		2	***51***	2	31	4	82		5	***42***	5	37	10	79
03:45		9	***31***	7	30	16	61		13	***40***	3	28	16	68
04:00		9	***75***	2	16	11	91		3	***77***	6	25	9	102
04:15		10	36	5	12	15	48		8	36	5	20	13	56
04:30		2	44	16	19	18	63		6	43	14	23	20	66
04:45		14	42	25	16	39	58		5	39	27	20	32	59
05:00		23	49	12	13	35	62		26	59	20	13	46	72
05:15		10	29	10	16	20	45		17	34	23	13	40	47
05:30		19	29	35	12	54	41		8	31	30	21	38	52
05:45		11	16	31	13	42	29		19	19	36	27	55	46
06:00		9	16	17	13	26	29		5	24	18	9	23	33
06:15		16	17	35	4	51	21		9	16	27	8	36	24
06:30		28	8	59	5	87	13		24	18	57	7	81	25
06:45		24	13	84	10	108	23		25	6	92	15	117	21
07:00		44	9	55	8	***99***	17		32	9	54	10	86	19
07:15		23	5	48	15	***71***	20		19	17	46	12	65	29
07:30		27	14	***95***	5	***122***	19		16	8	***68***	7	***84***	15
07:45		42	9	***71***	10	***113***	19		34	10	***93***	7	***127***	17
08:00		27	5	***67***	2	94	7		19	6	***60***	2	***79***	8
08:15		16	3	***57***	0	73	3		23	3	***54***	7	***77***	10
08:30		15	2	31	5	46	7		15	10	55	6	70	16
08:45		41	2	51	4	92	6		49	4	34	5	83	9
09:00		32	1	39	2	71	3		30	2	37	6	67	8
09:15		17	3	27	3	44	6		27	4	22	2	49	6
09:30		32	6	28	6	60	12		26	10	32	5	58	15
09:45		27	12	25	4	52	16		25	2	30	7	55	9
10:00		35	19	28	4	63	23		34	4	24	1	58	5
10:15		28	3	38	6	66	9		22	4	25	6	47	10
10:30		31	10	25	14	56	24		13	7	31	19	44	26
10:45		19	10	30	22	49	32		26	8	31	18	57	26
11:00		***43***	24	37	9	80	33		***42***	25	29	14	71	39
11:15		***27***	6	35	1	62	7		***28***	2	35	0	63	2
11:30		***49***	3	35	2	84	5		***24***	1	20	6	44	7
11:45		***42***	4	44	3	86	7		***48***	6	43	5	91	11
Total		845	1165	1233	900	2078	2065		765	1189	1206	974	1971	2163
Day Total		2010		2133		4143			1954		2180		4134	
% Total		20.4%	28.1%	29.8%	21.7%				18.5%	28.8%	29.2%	23.6%		
Peak	-	11:00	03:15	07:30	12:00	07:00	12:00	-	11:00	03:15	07:30	12:00	07:30	12:00
Vol.	-	161	211	290	180	405	348	-	142	199	275	194	367	373
P.H.F.		0.821	0.703	0.763	0.938	0.830	0.888		0.740	0.646	0.739	0.758	0.722	0.784

ADT	ADT 4,138	AADT 4,138

Transportation Data Corporation

Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

Duchaine Boulevard north of U-turn, north of Sam Barnet Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

05063Avolume
Site Code: Y-18215.11

Start Time	13-Jun-18 Wed	NB Morning	NB Afternoon	Hour Totals Morning	Hour Totals Afternoon	SB Morning	SB Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		16	57			4	41				
12:15		2	29			0	48				
12:30		0	38			2	44				
12:45		4	44	22	168	0	47	6	180	28	348
01:00		2	39			1	37				
01:15		1	22			0	27				
01:30		1	26			2	59				
01:45		2	44	6	131	2	25	5	148	11	279
02:00		1	30			0	48				
02:15		4	46			2	35				
02:30		1	34			3	43				
02:45		4	30	10	140	2	51	7	177	17	317
03:00		3	66			1	29				
03:15		1	54			8	31				
03:30		2	51			2	31				
03:45		9	31	15	202	7	30	18	121	33	323
04:00		9	75			2	16				
04:15		10	36			5	12				
04:30		2	44			16	19				
04:45		14	42	35	197	25	16	48	63	83	260
05:00		23	49			12	13				
05:15		10	29			10	16				
05:30		19	29			35	12				
05:45		11	16	63	123	31	13	88	54	151	177
06:00		9	16			17	13				
06:15		16	17			35	4				
06:30		28	8			59	5				
06:45		24	13	77	54	84	10	195	32	272	86
07:00		44	9			55	8				
07:15		23	5			48	15				
07:30		27	14			95	5				
07:45		42	9	136	37	71	10	269	38	405	75
08:00		27	5			67	2				
08:15		16	3			57	0				
08:30		15	2			31	5				
08:45		41	2	99	12	51	4	206	11	305	23
09:00		32	1			39	2				
09:15		17	3			27	3				
09:30		32	6			28	6				
09:45		27	12	108	22	25	4	119	15	227	37
10:00		35	19			28	4				
10:15		28	3			38	6				
10:30		31	10			25	14				
10:45		19	10	113	42	30	22	121	46	234	88
11:00		43	24			37	9				
11:15		27	6			35	1				
11:30		49	3			35	2				
11:45		42	4	161	37	44	3	151	15	312	52
Total		845	1165			1233	900			2078	2065
Combined Total		2010				2133				4143	
Percentage	0.0%										

Transportation Data Corporation
Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

Duchaine Boulevard north of U-turn, north of Sam Barnet Boulevard
City, State: New Bedford, MA
Client: McM/S. Hawkins

05063Avolume
Site Code: Y-18215.11

Start Time	14-Jun-18 Thu	NB Morning	NB Afternoon	Hour Totals Morning	Hour Totals Afternoon	SB Morning	SB Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		16	69			1	50				
12:15		2	46			3	49				
12:30		0	30			0	31				
12:45		1	34	19	179	0	64	4	194	23	373
01:00		1	43			1	46				
01:15		1	37			0	36				
01:30		3	35			3	29				
01:45		1	33	6	148	0	54	4	165	10	313
02:00		6	40			1	37				
02:15		1	36			0	27				
02:30		1	39			2	39				
02:45		0	25	8	140	2	40	5	143	13	283
03:00		1	56			2	36				
03:15		6	40			5	25				
03:30		5	42			5	37				
03:45		13	40	25	178	3	28	15	126	40	304
04:00		3	77			6	25				
04:15		8	36			5	20				
04:30		6	43			14	23				
04:45		5	39	22	195	27	20	52	88	74	283
05:00		26	59			20	13				
05:15		17	34			23	13				
05:30		8	31			30	21				
05:45		19	19	70	143	36	27	109	74	179	217
06:00		5	24			18	9				
06:15		9	16			27	8				
06:30		24	18			57	7				
06:45		25	6	63	64	92	15	194	39	257	103
07:00		32	9			54	10				
07:15		19	17			46	12				
07:30		16	8			68	7				
07:45		34	10	101	44	93	7	261	36	362	80
08:00		19	6			60	2				
08:15		23	3			54	7				
08:30		15	10			55	6				
08:45		49	4	106	23	34	5	203	20	309	43
09:00		30	2			37	6				
09:15		27	4			22	2				
09:30		26	10			32	5				
09:45		25	2	108	18	30	7	121	20	229	38
10:00		34	4			24	1				
10:15		22	4			25	6				
10:30		13	7			31	19				
10:45		26	8	95	23	31	18	111	44	206	67
11:00		42	25			29	14				
11:15		28	2			35	0				
11:30		24	1			20	6				
11:45		48	6	142	34	43	5	127	25	269	59
Total		765	1189			1206	974			1971	2163
Combined Total		1954				2180				4134	
Percentage	0.0%										
Total		1610	2354			2439	1874			4049	4228
Percent		40.6%	59.4%			56.5%	43.5%			48.9%	51.1%
ADT		ADT 4,138		AADT 4,138							

APPENDIX C

Crash Summary

	Route 140 NB on/off-ramp at Braley Road	Route 140 SB on/off-ramp at Braley Road	Braley Road/ Theodore Rice Blvd/ at Phillips Road	Theodore Rice Blvd at Duchaine Blvd	Duchaine Blvd at Samuel Barnet Blvd	Phillips Road at Samuel Barnet Blvd
2011	2	3	5	2	1	0
2012	3	1	4	1	0	0
2013	5	0	1	5	2	0
2014	0	0	4	3	0	1
2015	3	1	4	0	0	2
Total	13	5	18	11	3	3
Type						
Angle	3	1	5	3	0	1
Rear-end	4	0	5	0	0	1
Head-on	0	0	2	0	0	1
Sideswipe	0	0	1	0	0	0
Bicycle	1	0	0	0	0	0
Pedestrian	1	0	0	1	0	0
Single Vehicle	4	4	5	7	3	0
Total	13	5	18	11	3	3
Severity						
Property Damage	5	4	11	6	3	1
Personal Injury	7	1	7	3	0	2
Fatality	0	0	0	1	0	0
Other	1	0	0	1	0	0
Total	13	5	18	11	3	3
Weather						
Clear	9	4	11	6	3	3
Cloudy	1	0	4	0	0	0
Rain	1	1	2	3	0	0
Snow	1	0	0	1	0	0
Ice	0	0	0	0	0	0
Sleet	0	0	1	1	0	0
Fog	0	0	0	0	0	0
Unknown	1	0	0	0	0	0
Total	13	5	18	11	3	3
Time						
7:00 AM to 9:00 AM	1	0	4	3	0	0
9:00 AM to 4:00 PM	6	2	7	2	0	1
4:00 PM to 6:00 PM	1	2	5	1	2	0
6:00 PM to 7:00 AM	5	1	2	5	1	2
Total	13	5	18	11	3	3
Crash Rate	0.43	0.15	0.62	1.12	0.15	0.18
Statewide Average	0.57	0.57	0.57	0.57	0.57	0.57
District 5 Average	0.57	0.57	0.57	0.57	0.57	0.57

Source: MassDOT

APPENDIX D

Traffic Projection Model

TRAFFIC PROJECTION MODEL

Transfer Station Traffic Study
Weekday Morning Peak Hour
New Bedford, MA

Intersection	Dir.	Turn	2018 Existing Volumes Counted	2018 Existing Volumes Balanced	Background Growth 1 yrs (at 1% per year)	Glass Facility PERCENT ENTER	Glass Facility Trips ENTER	Glass Facility PERCENT EXIT	Glass Facility Trips EXIT	Glass Facility Trips TOTAL	2019 Existing Volumes	Background Growth 7 yrs (at 1% per year)	2026 No-Build Volumes	New Project Trucks PERCENT ENTER	New Project Truck Trips ENTER	New Project Trucks PERCENT EXIT	New Project Truck Trips EXIT	New Project Employee PERCENT ENTER	New Project Employee Trips ENTER	New Project Employee PERCENT EXIT	New Project Employee Trips EXIT	New Project Trips TOTAL	2026 Build Volumes
Route 140 Northbound Ramps	EB	L	54	54	1		0	50%	13	13	68	5	73		0	50%	7		0	50%	0	7	80
at Braley Road		T	164	166	2		0		0	0	168	12	180		0		0		0		0	0	180
	WB	T	576	580	6		0		0	0	586	42	628		0		0		0		0	0	628
		R	62	62	1		0		0	0	63	5	68		0		0		0		0	0	68
	NB	L	327	327	3	50%	1		0	1	331	24	355	50%	8		0	40%	0		0	8	363
		R	330	330	3		0		0	0	333	24	357		0		0		0		0	0	357
Route 140 Southbound Ramps	EB	T	176	178	2		0	50%	13	13	193	14	207		0	50%	7		0	50%	0	7	214
at Braley Road		R	186	189	2		0	50%	13	13	204	15	219		0	50%	7		0	40%	0	7	226
	WB	L	414	414	4		0		0	0	418	30	448		0		0		0		0	0	448
		T	484	493	5	50%	1		0	1	499	36	535	50%	8		0	40%	0		0	8	543
	SB	L	42	42	0		0		0	0	42	3	45		0		0		0		0	0	45
		R	124	124	1	50%	1		0	1	126	9	135	50%	8		0	50%	0		0	8	143
Braley Road/	EB	L	8	8	0		0		0	0	8	1	9		0		0		0		0	0	9
Theodore Rice Boulevard at		T	95	95	1		0	100%	26	26	122	9	131		0	100%	14		0	90%	0	14	145
Phillips Road		R	13	13	0		0		0	0	13	1	14		0		0		0		0	0	14
	WB	L	116	116	1		0		0	0	117	8	125		0		0		0		0	0	125
		T	410	410	4	100%	1		0	1	415	30	445	100%	16		0	90%	0		0	16	461
		R	91	91	1		0		0	0	92	7	99		0		0		0		0	0	99
	NB	L	12	12	0		0		0	0	12	1	13		0		0		0		0	0	13
		T	22	22	0		0		0	0	22	2	24		0		0		0		0	0	24
		R	130	130	1		0		0	0	131	9	140		0		0		0		0	0	140
	SB	L	142	142	1		0		0	0	143	10	153		0		0		0		0	0	153
		T	18	18	0		0		0	0	18	1	19		0		0		0		0	0	19
		R	27	27	0		0		0	0	27	2	29		0		0		0		0	0	29
Theodore Rice Boulevard at	WB	L	312	312	3	100%	1		0	1	316	23	339	100%	16		0	90%	0		0	16	355
Duchaine Boulevard		R	90	90	1		0		0	0	91	7	98		0		0		0		0	0	98
	NB	T	4	4	0		0		0	0	4	0	4		0		0		0		0	0	4
		R	91	91	1		0	100%	26	26	118	9	127		0	100%	14		0	90%	0	14	141
	SB	L	15	15	0		0		0	0	15	1	16		0		0		0		0	0	16
		T	8	8	0		0		0	0	8	1	9		0		0		0		0	0	9
Duchaine Boulevard at	EB	L	52	52	1		0		0	0	53	4	57		0		0		0		0	0	57
Samuel Barnet Boulevard		R	60	60			0		0	0	60		60		0		0		0		0	0	60
	WB	R	204	204	2		0		0	0	206	15	221		0		0	10%	0		0	0	221
	NB	T	30	30			0	100%	26	26	56		56		0	100%	14		0	90%	0	14	70
		R	108	110			0		0	0	110		110		0		0		0	10%	0	0	110
	SB	T	52	52		100%	1		0	1	53		53	100%	16		0	100%	0		0	16	69
		R	391	391	4		0		0	0	395	28	423		0		0		0		0	0	423
Phillips Road at	EB	L	5	5			0		0	0	5		5		0		0		0		0	0	5
Samuel Barnet Boulevard		R	105	105			0		0	0	105		105		0		0		0	10%	0	0	105
	NB	L	196	196	2		0		0	0	198	14	212		0		0	10%	0		0	0	212
		T	131	131	1		0		0	0	132	10	142		0		0		0		0	0	142
	SB	T	109	109	1		0		0	0	110	8	118		0		0		0		0	0	118
		R	8	8	0		0		0	0	8	1	9		0		0		0		0	0	9
Duchaine Boulevard at	EB	L	0	0	0		0		0	0	0	0	0		0		0		0		0	0	0
Site Driveway	WB	R	66	66	1		0	100%	26	26	93	0	93		0	100%	14		0	100%	0	14	107
	SB	R	45	45	0	100%	1		0	1	46	0	46	100%	16		0	100%	0		0	16	62

Peak Hour: 7:30 AM - 8:30 AM

TRAFFIC PROJECTION MODEL

Transfer Station Traffic Study
Weekday Afternoon Peak Hour
New Bedford, MA

Intersection	Dir.	Turn	2018 Existing Volumes Counted	2018 Existing Volumes Balanced	Background Growth 1 yrs (at 1% per year)	Glass Facility PERCENT ENTER	Glass Facility Trips ENTER	Glass Facility PERCENT EXIT	Glass Facility Trips EXIT	Glass Facility Trips TOTAL	2019 Existing Volumes	Background Growth 7 yrs (at 1% per year)	2026 No-Build Volumes	New Project Trucks PERCENT ENTER	New Project Truck Trips ENTER	New Project Trucks PERCENT EXIT	New Project Truck Trips EXIT	New Project Employee PERCENT ENTER	New Project Employee Trips ENTER	New Project Employee PERCENT EXIT	New Project Employee Trips EXIT	New Project Trips TOTAL	2026 Build Volumes
Route 140 Northbound Ramps	EB	L	90	90	1		0	50%	16	16	107	8	115		0	50%	7		0	50%	0	7	122
at Braley Road		T	229	229	2		0		0	0	231	17	248		0		0		0		0	0	248
	WB	T	566	566	6		0		0	0	572	41	613		0		0		0		0	0	613
		R	41	41	0		0		0	0	41	3	44		0		0		0		0	0	44
	NB	L	234	234	2	50%	3		0	3	239	17	256	50%	8		0	40%	0		0	8	264
		R	348	348	3		0		0	0	351	25	376		0		0		0		0	0	376
Route 140 Southbound Ramps	EB	T	270	272	3		0	50%	16	16	291	21	312		0	50%	7		0	50%	0	7	319
at Braley Road		R	416	416	4		0	50%	16	16	436	31	467		0	50%	7		0	40%	0	7	474
	WB	L	398	399	4		0		0	0	403	29	432		0		0		0		0	0	432
		T	399	401	4	50%	3		0	3	408	29	437	50%	8		0	40%	0		0	8	445
	SB	L	47	47	0		0		0	0	47	3	50		0		0		0		0	0	50
		R	94	94	1	50%	3		0	3	98	7	105	50%	8		0	50%	0		0	8	113
Braley Road/	EB	L	22	22	0		0		0	0	22	2	24		0		0		0		0	0	24
Theodore Rice Boulevard at		T	354	357	4		0	100%	31	31	392	28	420		0	100%	14		0	90%	0	14	434
Phillips Road		R	109	109	1		0		0	0	110	8	118		0		0		0		0	0	118
	WB	L	172	174	2		0		0	0	176	13	189		0		0		0		0	0	189
		T	157	159	2	100%	6		0	6	167	12	179	100%	16		0	90%	0		0	16	195
		R	160	162	2		0		0	0	164	12	176		0		0		0		0	0	176
	NB	L	18	18	0		0		0	0	18	1	19		0		0		0		0	0	19
		T	44	44	0		0		0	0	44	3	47		0		0		0		0	0	47
		R	167	169	2		0		0	0	171	12	183		0		0		0		0	0	183
	SB	L	161	162	2		0		0	0	164	12	176		0		0		0		0	0	176
		T	42	42	0		0		0	0	42	3	45		0		0		0		0	0	45
		R	9	9	0		0		0	0	9	1	10		0		0		0		0	0	10
Theodore Rice Boulevard at	WB	L	102	102	1	100%	6		0	6	109	8	117	100%	16		0	90%	0		0	16	133
Duchaine Boulevard		R	29	29	0		0		0	0	29	2	31		0		0		0		0	0	31
	NB	T	11	11	0		0		0	0	11	1	12		0		0		0		0	0	12
		R	242	242	2		0	100%	31	31	275	20	295		0	100%	14		0	90%	0	14	309
	SB	L	84	84	1		0		0	0	85	6	91		0		0		0		0	0	91
		T	18	18	0		0		0	0	18	1	19		0		0		0		0	0	19
Duchaine Boulevard at	EB	L	135	135	1		0		0	0	136	10	146		0		0		0		0	0	146
Samuel Barnet Boulevard		R	224	224			0		0	0	224		224		0		0		0		0	0	224
	WB	R	119	121	1		0		0	0	122	9	131		0		0	10%	0		0	0	131
	NB	T	23	23			0	100%	31	31	54		54		0	100%	14		0	90%	0	14	68
		R	310	310			0		0	0	310		310		0		0		0	10%	0	0	310
	SB	T	63	63		100%	6		0	6	69		69	100%	16		0	100%	0		0	16	85
		R	142	142	1		0		0	0	143	10	153		0		0		0		0	0	153
Phillips Road at	EB	L	34	34			0		0	0	34		34		0		0		0		0	0	34
Samuel Barnet Boulevard		R	273	276			0		0	0	276		276		0		0		0	10%	0	0	276
	NB	L	116	116	1		0		0	0	117	8	125		0		0	10%	0		0	0	125
		T	158	158	2		0		0	0	160	12	172		0		0		0		0	0	172
	SB	T	241	241	2		0		0	0	243	18	261		0		0		0		0	0	261
		R	5	5	0		0		0	0	5	1	6		0		0		0		0	0	6
Duchaine Boulevard at	EB	L	0	0	0		0		0	0	0	0	0		0		0		0		0	0	0
Site Driveway	WB	R	65	65	1		0	100%	31	31	97	0	97		0	100%	14		0	100%	0	14	111
	SB	R	38	38	0	100%	6		0	6	44	0	44	100%	16		0	100%	0		0	16	60

Peak Hour: 3:00 PM - 4:00 PM

APPENDIX E

Trip Generation Calculations

Truck Type	Truck Weight (tons)	No. of Trucks per day	Tons per day
MSW			
Packer	9	27	243
Rolloff Compactor	6.5	4	26
Rolloff	5.5	2	11
Transfer Trailer	28.2	38	1071
C & D (Cat 2)			
Transfer Trailer	30	5	150
Glass			
By others (in)	32	3	96
Route Trucks (in)	3.5	45	157
Outbound	32	5	160
Outbound	24	4	96
Biosolids			
Liquid	24	15	360
Cake	24	5	120
NWD Trucking			
Trucks (Note 1)		-38	
Total Trucks		115	

Note 1: NWD Trucking is currently operating at the site. This operation will leave that site as the proposed project is constructed.

Note 2: The daily distribution of truck trips delivering MSW and C&D residuals is based on the daily distribution of trucks delivering waste to Covanta in Rochester as determined from MassDEP records for 2015. All other truck trips delivering material and for the NWD trucks that currently use the site are assumed to be evenly distributed through the proposed operating hours of 6 AM to 6 PM

.

MSW/C&D Truck Deliveries

Time	No of Trucks-Covanta	Hourly distribution of trucks at Covanta %	No of trucks-Inbound MSW and C&D	Total No of truck trips (MSW and C&D)
5-6 AM	92	8	6	12
6-7 AM	88	7	5	10
7-8 AM	70	6	5	10
8-9 AM	78	6	5	10
9-10 AM	92	8	6	12
10-11 AM	113	10	7	14
11-12 AM	102	9	7	14
12-1 PM	121	10	7	14
1-2 PM	93	8	6	12
2-3 PM	122	10	7	14
3-4 PM	93	8	6	12
4-5 PM	56	5	4	8
5-6 PM	29	2	2	4
6-7 PM	17	1	1	2
7-8 PM	14	1	1	2
8-9 PM	9	1	1	2

Traffic Study Trip Summary for Proposed Project

Time	MSW/CD Trips	Sludge Trips	Glass Trips	NWD Trips Eliminated	Par Prod Trips	Employee Trips	Total Trips
5-6 AM	12		7			25	44
6-7 AM	10	4	7	-6	20	25	60
7-8 AM	10	4	7	-6			15
8-9 AM	10	4	7	-8	5		18
9-10 AM	12	4	7	-8	6		21
10-11 AM	14	4	8	-6	6		26
11-12 AM	14	0	7	-6	6		21
12-1 PM	14	0	7	-6	6		21
1-2 PM	12	4	7	-6	6	25	48
2-3 PM	14	4	8	-6	5	25	50
3-4 PM	12	4	7	-6	10		27
4-5 PM	8	4	7	-6	10		23
5-6 PM	4	4	7	-6			9
6-7 PM	2		7				9
7-8 PM	2		7				9
8-9 PM	2		7				9
9-10 PM						25	25
10-11 PM						25	25
11-12 PM							0
Total Trips	152	40	114	-76	80	150	460

APPENDIX F

Highway Capacity Manual Methodologies

CAPACITY/LEVEL-OF-SERVICE ANALYSES METHODOLOGY

The detailed capacity/level-of-service analysis contained in this traffic impact study was performed in accordance with the standard techniques contained in the *Highway Capacity Manual*.(1) By definition, capacity represents "the maximum rate of flow that can reasonably be expected to pass a point on a uniform section of a lane or roadway under prevailing roadway, traffic, and control conditions." The level of functioning of an intersection or a uniform section of a lane or roadway can be expressed in terms of levels of service. Level of service (LOS) is defined as "a qualitative measure describing operational conditions within a traffic stream, and their perception by motorists and/or passengers". Such measures include "speed and travel time, freedom to maneuver, traffic interruptions, comfort and convenience, and safety."

At unsignalized intersections, a methodology for evaluating the relative functioning of intersections controlled by stop or yield signs has been developed, and is based on several assumptions, including:

- Major street flows are not affected by the minor (stop-sign controlled) street movements.
- Left turns from the major street to the minor street are influenced only by opposing major street through flow.
- Minor street left turns are impeded by all major street traffic plus opposing minor street traffic.
- Minor street through traffic is impeded by all major street traffic.
- Minor street right turns are impeded only by the major street traffic coming from the left.

The concept of stop-controlled or yield-controlled intersection analysis is based on the estimate of average total delay on minor streets. The methodology of analysis relies on three elements: the size and distribution of gaps in the major traffic stream, the usefulness of these gaps to the minor stream drivers, and the relative priority of the various traffic streams at the intersection. The results of the analysis provide an estimate of average total delay for the various critical movements at the unsignalized intersections. Correlation between average total delay and the respective levels of service are provided for unsignalized intersections as follows:

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(1) *Transportation Research Board, Highway Capacity Manual, 6th Edition, published by the Transportation Research Board, Washington, DC, 2016.*

Unsignalized Intersections

Level of Service	Control Delay Per Vehicle (seconds)
A	0 – 10
B	>10 – 15
C	>15 – 25
D	>25 – 35
E	>35 – 50
F	> 50

At signalized intersections, an additional element must be considered: time allocation. Level of service is based on the average control delay per vehicle for various movements within the intersection. Volume/capacity relationships also affect the operations of signalized intersections. Thus, both volume/capacity and delay must be considered to evaluate the overall operation of a signalized intersection. Correlation between average delay per vehicle and the respective levels of service are provided for signalized intersections as follows:

Signalized Intersections

Level of Service	Control Delay Per Vehicle (seconds)
A	$\leq$ 10
B	>10 – 20
C	>20 – 35
D	>35 – 55
E	>55 – 80
F	> 80

APPENDIX G

2019 Existing Capacity/Level-of-Service Analysis

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	105	198	132	110	8
Future Vol, veh/h	5	105	198	132	110	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	20	18	3	3	3	25
Mvmt Flow	6	131	248	165	138	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	804	143	148	0	-	0
Stage 1	143	-	-	-	-	-
Stage 2	661	-	-	-	-	-
Critical Hdwy	6.6	6.38	4.13	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.462	2.227	-	-	-
Pot Cap-1 Maneuver	329	864	1427	-	-	-
Stage 1	842	-	-	-	-	-
Stage 2	481	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	266	864	1427	-	-	-
Mov Cap-2 Maneuver	266	-	-	-	-	-
Stage 1	681	-	-	-	-	-
Stage 2	481	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.6	4.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1427	-	784	-	-
HCM Lane V/C Ratio	0.173	-	0.175	-	-
HCM Control Delay (s)	8.1	0	10.6	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.6	-	0.6	-	-

Intersection	
Int Delay, s/veh	19.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	193	204	418	499	0	0	0	0	42	0	126
Future Vol, veh/h	0	193	204	418	499	0	0	0	0	42	0	126
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	91	91	91	92	92	92	85	85	85
Heavy Vehicles, %	0	12	8	2	4	0	2	2	2	12	0	9
Mvmt Flow	0	224	237	459	548	0	0	0	0	49	0	148

Major/Minor	Major1			Major2				Minor2		
Conflicting Flow All	-	0	0	461	0	0		1809	-	548
Stage 1	-	-	-	-	-	-		1466	-	-
Stage 2	-	-	-	-	-	-		343	-	-
Critical Hdwy	-	-	-	4.12	-	-		6.52	-	6.29
Critical Hdwy Stg 1	-	-	-	-	-	-		5.52	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.52	-	-
Follow-up Hdwy	-	-	-	2.218	-	-		3.608	-	3.381
Pot Cap-1 Maneuver	0	-	-	1100	-	0		82	0	523
Stage 1	0	-	-	-	-	0		201	0	-
Stage 2	0	-	-	-	-	0		697	0	-
Platoon blocked, %		-	-		-					
Mov Cap-1 Maneuver	-	-	-	1100	-	-		~ 33	0	523
Mov Cap-2 Maneuver	-	-	-	-	-	-		~ 33	0	-
Stage 1	-	-	-	-	-	-		201	0	-
Stage 2	-	-	-	-	-	-		279	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	4.8	140.8
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1100	-	33	523
HCM Lane V/C Ratio	-	-	0.418	-	1.497	0.283
HCM Control Delay (s)	-	-	10.6	0$	519.3	14.6
HCM Lane LOS	-	-	B	A	F	B
HCM 95th %tile Q(veh)	-	-	2.1	-	5.5	1.2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	60.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	68	168	0	0	586	63	331	0	333	0	0	0
Future Vol, veh/h	68	168	0	0	586	63	331	0	333	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	94	94	94	94	94	94	92	92	92
Heavy Vehicles, %	26	7	0	0	2	0	4	0	4	2	2	2
Mvmt Flow	76	189	0	0	623	67	352	0	354	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	690	0	-	-	-	0	998	-	189
Stage 1	-	-	-	-	-	-	341	-	-
Stage 2	-	-	-	-	-	-	657	-	-
Critical Hdwy	4.36	-	-	-	-	-	6.44	-	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	5.44	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.44	-	-
Follow-up Hdwy	2.434	-	-	-	-	-	3.536	-	3.336
Pot Cap-1 Maneuver	802	-	0	0	-	-	~ 268	0	848
Stage 1	-	-	0	0	-	-	716	0	-
Stage 2	-	-	0	0	-	-	512	0	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	802	-	-	-	-	-	~ 240	0	848
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 240	0	-
Stage 1	-	-	-	-	-	-	640	0	-
Stage 2	-	-	-	-	-	-	512	0	-

Approach	EB	WB	NB
HCM Control Delay, s	2.9	0	140.7
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	240	848	802	-	-	-
HCM Lane V/C Ratio	1.467	0.418	0.095	-	-	-
HCM Control Delay (s)	269.9	12.3	10	0	-	-
HCM Lane LOS	F	B	A	A	-	-
HCM 95th %tile Q(veh)	20.5	2.1	0.3	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	316	0	91	0	4	118	15	8	0
Future Vol, veh/h	0	0	0	316	0	91	0	4	118	15	8	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	81	92	81	92	82	82	96	96	92
Heavy Vehicles, %	2	2	2	7	2	6	2	25	32	13	13	2
Mvmt Flow	0	0	0	390	0	112	0	5	144	16	8	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	1	0	0	-	781	-	784	781	-
Stage 1	-	-	-	-	-	-	-	1	-	780	780	-
Stage 2	-	-	-	-	-	-	-	780	-	4	1	-
Critical Hdwy	4.12	-	-	4.17	-	-	-	6.75	-	7.23	6.63	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.75	-	6.23	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.75	-	6.23	5.63	-
Follow-up Hdwy	2.218	-	-	2.263	-	-	-	4.225	-	3.617	4.117	-
Pot Cap-1 Maneuver	-	-	-	1589	-	0	0	301	0	298	314	0
Stage 1	-	-	-	-	-	0	0	851	0	372	390	0
Stage 2	-	-	-	-	-	0	0	374	0	990	874	0
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1589	-	-	-	227	-	238	237	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	227	-	238	237	-
Stage 1	-	-	-	-	-	-	-	851	-	372	294	-
Stage 2	-	-	-	-	-	-	-	282	-	984	874	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	8		21.3
HCM LOS			-	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	227	-	-	-	-	1589	-	238	237
HCM Lane V/C Ratio	0.011	-	-	-	-	0.246	-	0.083	0.018
HCM Control Delay (s)	21	-	0	-	-	8	0	21.5	20.5
HCM Lane LOS	C	-	A	-	-	A	A	C	C
HCM 95th %tile Q(veh)	0	-	-	-	-	1	-	0.3	0.1

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	53	0	60	0	0	206	0	56	110	0	53	395
Future Vol, veh/h	53	0	60	0	0	206	0	56	110	0	53	395
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Free	-	-	Free	-	-	Free	-	-	None
Storage Length	0	-	50	-	-	0	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	35	0	13	0	0	3	0	37	19	0	13	5
Mvmt Flow	66	0	75	0	0	258	0	70	138	0	66	494

Major/Minor	Minor2			Major1			Major2			
Conflicting Flow All	383	-	-	-	0	-	-	-	0	
Stage 1	313	-	-	-	-	-	-	-	-	
Stage 2	70	-	-	-	-	-	-	-	-	
Critical Hdwy	7.125	-	-	-	-	-	-	-	-	
Critical Hdwy Stg 1	6.325	-	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.925	-	-	-	-	-	-	-	-	
Follow-up Hdwy	3.8325	-	-	-	-	-	-	-	-	
Pot Cap-1 Maneuver	536	0	0	0	-	0	0	-	-	
Stage 1	637	0	0	0	-	0	0	-	-	
Stage 2	869	0	0	0	-	0	0	-	-	
Platoon blocked, %					-			-	-	
Mov Cap-1 Maneuver	536	0	-	-	-	-	-	-	-	
Mov Cap-2 Maneuver	536	0	-	-	-	-	-	-	-	
Stage 1	637	0	-	-	-	-	-	-	-	
Stage 2	869	0	-	-	-	-	-	-	-	

Approach	EB	NB	SB
HCM Control Delay, s	12.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	536	-	-	-
HCM Lane V/C Ratio	-	0.124	-	-	-
HCM Control Delay (s)	-	12.7	0	-	-
HCM Lane LOS	-	B	A	-	-
HCM 95th %tile Q(veh)	-	0.4	-	-	-

Intersection	
Intersection Delay, s/veh	47.3
Intersection LOS	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	122	13	117	415	92	12	22	131	143	18	27
Future Vol, veh/h	8	122	13	117	415	92	12	22	131	143	18	27
Peak Hour Factor	0.83	0.83	0.83	0.94	0.94	0.94	0.80	0.80	0.80	0.96	0.96	0.96
Heavy Vehicles, %	25	30	0	4	6	1	8	5	2	1	6	7
Mvmt Flow	10	147	16	124	441	98	15	28	164	149	19	28
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	13.2	76.4	13.6	14.3
HCM LOS	B	F	B	B

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	7%	6%	0%	19%	76%
Vol Thru, %	13%	94%	0%	67%	10%
Vol Right, %	79%	0%	100%	15%	14%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	165	130	13	624	188
LT Vol	12	8	0	117	143
Through Vol	22	122	0	415	18
RT Vol	131	0	13	92	27
Lane Flow Rate	206	157	16	664	196
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.369	0.315	0.029	1.059	0.372
Departure Headway (Hd)	6.704	7.505	6.843	5.743	7.119
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	540	482	526	631	509
Service Time	4.704	5.205	4.543	3.816	5.119
HCM Lane V/C Ratio	0.381	0.326	0.03	1.052	0.385
HCM Control Delay	13.6	13.6	9.7	76.4	14.3
HCM Lane LOS	B	B	A	F	B
HCM 95th-tile Q	1.7	1.3	0.1	18.1	1.7

Intersection	
Int Delay, s/veh	8.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	276	117	160	243	5
Future Vol, veh/h	34	276	117	160	243	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	85	85	80	80
Heavy Vehicles, %	6	2	11	4	2	20
Mvmt Flow	43	345	138	188	304	6

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	771	307	310	0	-	0
Stage 1	307	-	-	-	-	-
Stage 2	464	-	-	-	-	-
Critical Hdwy	6.46	6.22	4.21	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.318	2.299	-	-	-
Pot Cap-1 Maneuver	363	733	1201	-	-	-
Stage 1	737	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	317	733	1201	-	-	-
Mov Cap-2 Maneuver	317	-	-	-	-	-
Stage 1	643	-	-	-	-	-
Stage 2	625	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.8	3.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1201	-	641	-	-
HCM Lane V/C Ratio	0.115	-	0.605	-	-
HCM Control Delay (s)	8.4	0	18.8	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.4	-	4.1	-	-

Intersection	
Int Delay, s/veh	38.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	291	436	403	408	0	0	0	0	47	0	98
Future Vol, veh/h	0	291	436	403	408	0	0	0	0	47	0	98
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	94	94	94	92	92	92	86	86	86
Heavy Vehicles, %	0	3	6	3	6	0	2	2	2	2	0	7
Mvmt Flow	0	351	525	429	434	0	0	0	0	55	0	114

Major/Minor	Major1			Major2				Minor2		
Conflicting Flow All	-	0	0	876	0	0		1906	-	434
Stage 1	-	-	-	-	-	-		1292	-	-
Stage 2	-	-	-	-	-	-		614	-	-
Critical Hdwy	-	-	-	4.13	-	-		6.42	-	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-		5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.42	-	-
Follow-up Hdwy	-	-	-	2.227	-	-		3.518	-	3.363
Pot Cap-1 Maneuver	0	-	-	766	-	0		75	0	611
Stage 1	0	-	-	-	-	0		258	0	-
Stage 2	0	-	-	-	-	0		540	0	-
Platoon blocked, %		-	-		-					
Mov Cap-1 Maneuver	-	-	-	766	-	-		~ 20	0	611
Mov Cap-2 Maneuver	-	-	-	-	-	-		~ 20	0	-
Stage 1	-	-	-	-	-	-		258	0	-
Stage 2	-	-	-	-	-	-		141	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	7.7	$ 392.6
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	766	-	20	611
HCM Lane V/C Ratio	-	-	0.56	-	2.733	0.187
HCM Control Delay (s)	-	-	15.5	$	1185.8	12.2
HCM Lane LOS	-	-	C	A	F	B
HCM 95th %tile Q(veh)	-	-	3.5	-	7.2	0.7

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	57.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	107	231	0	0	572	41	239	0	351	0	0	0
Future Vol, veh/h	107	231	0	0	572	41	239	0	351	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	85	85	85	89	89	89	92	92	92
Heavy Vehicles, %	4	2	0	0	3	5	8	0	3	0	0	0
Mvmt Flow	122	263	0	0	673	48	269	0	394	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	721	0	-	-	-	0	1204	-	263
Stage 1	-	-	-	-	-	-	507	-	-
Stage 2	-	-	-	-	-	-	697	-	-
Critical Hdwy	4.14	-	-	-	-	-	6.48	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.48	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.48	-	-
Follow-up Hdwy	2.236	-	-	-	-	-	3.572	-	3.327
Pot Cap-1 Maneuver	872	-	0	0	-	-	~ 198	0	773
Stage 1	-	-	0	0	-	-	593	0	-
Stage 2	-	-	0	0	-	-	483	0	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	872	-	-	-	-	-	~ 166	0	773
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 166	0	-
Stage 1	-	-	-	-	-	-	496	0	-
Stage 2	-	-	-	-	-	-	483	0	-

Approach	EB	WB	NB
HCM Control Delay, s	3.1	0	151.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	166	773	872	-	-	-
HCM Lane V/C Ratio	1.618	0.51	0.139	-	-	-
HCM Control Delay (s)	$ 353	14.4	9.8	0	-	-
HCM Lane LOS	F	B	A	A	-	-
HCM 95th %tile Q(veh)	18.3	2.9	0.5	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	109	0	29	0	11	275	85	18	0
Future Vol, veh/h	0	0	0	109	0	29	0	11	275	85	18	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	92	89	92	80	80	80	80	92
Heavy Vehicles, %	2	2	2	23	2	17	2	27	8	6	11	2
Mvmt Flow	0	0	0	122	0	33	0	14	344	106	23	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	1	0	0	-	245	-	252	245	-
Stage 1	-	-	-	-	-	-	-	1	-	244	244	-
Stage 2	-	-	-	-	-	-	-	244	-	8	1	-
Critical Hdwy	4.12	-	-	4.33	-	-	-	6.77	-	7.16	6.61	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.77	-	6.16	5.61	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.77	-	6.16	5.61	-
Follow-up Hdwy	2.218	-	-	2.407	-	-	-	4.243	-	3.554	4.099	-
Pot Cap-1 Maneuver	-	-	-	1494	-	0	0	616	0	693	642	0
Stage 1	-	-	-	-	-	0	0	848	0	751	688	0
Stage 2	-	-	-	-	-	0	0	660	0	1003	877	0
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1494	-	-	-	565	-	638	589	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	565	-	638	589	-
Stage 1	-	-	-	-	-	-	-	848	-	751	632	-
Stage 2	-	-	-	-	-	-	-	606	-	987	877	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.6		11.9
HCM LOS			-	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	565	-	-	-	-	1494	-	633	589
HCM Lane V/C Ratio	0.012	-	-	-	-	0.082	-	0.186	0.019
HCM Control Delay (s)	11.5	-	0	-	-	7.6	0	12	11.2
HCM Lane LOS	B	-	A	-	-	A	A	B	B
HCM 95th %tile Q(veh)	0	-	-	-	-	0.3	-	0.7	0.1

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	136	0	224	0	0	122	0	54	310	0	69	143
Future Vol, veh/h	136	0	224	0	0	122	0	54	310	0	69	143
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Free	-	-	Free	-	-	Free	-	-	None
Storage Length	0	-	50	-	-	0	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	82	82	82
Heavy Vehicles, %	15	0	1	0	0	12	0	13	2	0	35	12
Mvmt Flow	170	0	280	0	0	153	0	68	388	0	84	174

Major/Minor	Minor2			Major1			Major2			
Conflicting Flow All	239	-	-	-	0	-	-	-	0	
Stage 1	171	-	-	-	-	-	-	-	-	
Stage 2	68	-	-	-	-	-	-	-	-	
Critical Hdwy	6.825	-	-	-	-	-	-	-	-	
Critical Hdwy Stg 1	6.025	-	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.625	-	-	-	-	-	-	-	-	
Follow-up Hdwy	3.6425	-	-	-	-	-	-	-	-	
Pot Cap-1 Maneuver	707	0	0	0	-	0	0	-	-	
Stage 1	808	0	0	0	-	0	0	-	-	
Stage 2	920	0	0	0	-	0	0	-	-	
Platoon blocked, %					-			-	-	
Mov Cap-1 Maneuver	707	0	-	-	-	-	-	-	-	
Mov Cap-2 Maneuver	707	0	-	-	-	-	-	-	-	
Stage 1	808	0	-	-	-	-	-	-	-	
Stage 2	920	0	-	-	-	-	-	-	-	

Approach	EB	NB	SB
HCM Control Delay, s	11.7	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	707	-	-	-
HCM Lane V/C Ratio	-	0.24	-	-	-
HCM Control Delay (s)	-	11.7	0	-	-
HCM Lane LOS	-	B	A	-	-
HCM 95th %tile Q(veh)	-	0.9	-	-	-

Intersection	
Intersection Delay, s/veh	85.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	22	392	110	176	167	164	18	44	171	164	42	9
Future Vol, veh/h	22	392	110	176	167	164	18	44	171	164	42	9
Peak Hour Factor	0.80	0.80	0.80	0.93	0.93	0.93	0.80	0.80	0.80	0.95	0.95	0.95
Heavy Vehicles, %	18	5	2	2	15	2	0	5	4	3	2	33
Mvmt Flow	28	490	138	189	180	176	23	55	214	173	44	9
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	107.6	115.1	26.3	24
HCM LOS	F	F	D	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	8%	5%	0%	35%	76%
Vol Thru, %	19%	95%	0%	33%	20%
Vol Right, %	73%	0%	100%	32%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	233	414	110	507	215
LT Vol	18	22	0	176	164
Through Vol	44	392	0	167	42
RT Vol	171	0	110	164	9
Lane Flow Rate	291	518	138	545	226
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.646	1.185	0.279	1.144	0.555
Departure Headway (Hd)	8.737	8.658	7.676	7.962	9.649
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	416	424	472	458	376
Service Time	6.737	6.358	5.376	5.962	7.649
HCM Lane V/C Ratio	0.7	1.222	0.292	1.19	0.601
HCM Control Delay	26.3	132.7	13.3	115.1	24
HCM Lane LOS	D	F	B	F	C
HCM 95th-tile Q	4.4	19.2	1.1	18.6	3.2

APPENDIX H

2026 No Build Capacity/Level-of-Service Analysis

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	105	212	142	118	9
Future Vol, veh/h	5	105	212	142	118	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	20	18	3	3	3	25
Mvmt Flow	6	131	265	178	148	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	862	154	159	0	-	0
Stage 1	154	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Critical Hdwy	6.6	6.38	4.13	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.462	2.227	-	-	-
Pot Cap-1 Maneuver	303	852	1414	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	240	852	1414	-	-	-
Mov Cap-2 Maneuver	240	-	-	-	-	-
Stage 1	659	-	-	-	-	-
Stage 2	457	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	4.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1414	-	764	-	-
HCM Lane V/C Ratio	0.187	-	0.18	-	-
HCM Control Delay (s)	8.1	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.7	-	0.7	-	-

Intersection	
Int Delay, s/veh	36.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	207	219	448	535	0	0	0	0	45	0	135
Future Vol, veh/h	0	207	219	448	535	0	0	0	0	45	0	135
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	91	91	91	92	92	92	85	85	85
Heavy Vehicles, %	0	12	8	2	4	0	2	2	2	12	0	9
Mvmt Flow	0	241	255	492	588	0	0	0	0	53	0	159

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	496	0	0			1941	-	588
Stage 1	-	-	-	-	-	-			1572	-	-
Stage 2	-	-	-	-	-	-			369	-	-
Critical Hdwy	-	-	-	4.12	-	-			6.52	-	6.29
Critical Hdwy Stg 1	-	-	-	-	-	-			5.52	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.52	-	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.608	-	3.381
Pot Cap-1 Maneuver	0	-	-	1068	-	0			67	0	496
Stage 1	0	-	-	-	-	0			178	0	-
Stage 2	0	-	-	-	-	0			678	0	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1068	-	-			~ 21	0	496
Mov Cap-2 Maneuver	-	-	-	-	-	-			~ 21	0	-
Stage 1	-	-	-	-	-	-			178	0	-
Stage 2	-	-	-	-	-	-			214	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.1	280.9
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1068	-	21	496
HCM Lane V/C Ratio	-	-	0.461	-	2.521	0.32
HCM Control Delay (s)	-	-	11.2	$	1076.9	15.6
HCM Lane LOS	-	-	B	A	F	C
HCM 95th %tile Q(veh)	-	-	2.5	-	6.9	1.4

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	88.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	73	180	0	0	628	68	355	0	357	0	0	0
Future Vol, veh/h	73	180	0	0	628	68	355	0	357	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	94	94	94	94	94	94	92	92	92
Heavy Vehicles, %	26	7	0	0	2	0	4	0	4	2	2	2
Mvmt Flow	82	202	0	0	668	72	378	0	380	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	740	0	-	-	-	0	1070	-	202
Stage 1	-	-	-	-	-	-	366	-	-
Stage 2	-	-	-	-	-	-	704	-	-
Critical Hdwy	4.36	-	-	-	-	-	6.44	-	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	5.44	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.44	-	-
Follow-up Hdwy	2.434	-	-	-	-	-	3.536	-	3.336
Pot Cap-1 Maneuver	767	-	0	0	-	-	~ 243	0	834
Stage 1	-	-	0	0	-	-	697	0	-
Stage 2	-	-	0	0	-	-	487	0	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	767	-	-	-	-	-	~ 214	0	834
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 214	0	-
Stage 1	-	-	-	-	-	-	613	0	-
Stage 2	-	-	-	-	-	-	487	0	-

Approach	EB	WB	NB
HCM Control Delay, s	3	0	206.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	214	834	767	-	-	-
HCM Lane V/C Ratio	1.765	0.455	0.107	-	-	-
HCM Control Delay (s)	$ 401.2	12.9	10.3	0	-	-
HCM Lane LOS	F	B	B	A	-	-
HCM 95th %tile Q(veh)	25.9	2.4	0.4	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	8.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	339	0	98	0	4	127	16	9	0
Future Vol, veh/h	0	0	0	339	0	98	0	4	127	16	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	81	92	81	92	82	82	96	96	92
Heavy Vehicles, %	2	2	2	7	2	6	2	25	32	13	13	2
Mvmt Flow	0	0	0	419	0	121	0	5	155	17	9	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	1	0	0	-	839	-	842	839	-
Stage 1	-	-	-	-	-	-	-	1	-	838	838	-
Stage 2	-	-	-	-	-	-	-	838	-	4	1	-
Critical Hdwy	4.12	-	-	4.17	-	-	-	6.75	-	7.23	6.63	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.75	-	6.23	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.75	-	6.23	5.63	-
Follow-up Hdwy	2.218	-	-	2.263	-	-	-	4.225	-	3.617	4.117	-
Pot Cap-1 Maneuver	-	-	-	1589	-	0	0	278	0	272	290	0
Stage 1	-	-	-	-	-	0	0	851	0	345	367	0
Stage 2	-	-	-	-	-	0	0	351	0	990	874	0
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1589	-	-	-	205	-	213	213	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	205	-	213	213	-
Stage 1	-	-	-	-	-	-	-	851	-	345	270	-
Stage 2	-	-	-	-	-	-	-	258	-	984	874	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	8.1		23.5
HCM LOS			-	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	205	-	-	-	-	1589	-	213	213
HCM Lane V/C Ratio	0.012	-	-	-	-	0.263	-	0.1	0.022
HCM Control Delay (s)	22.8	-	0	-	-	8.1	0	23.8	22.3
HCM Lane LOS	C	-	A	-	-	A	A	C	C
HCM 95th %tile Q(veh)	0	-	-	-	-	1.1	-	0.3	0.1

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	57	0	60	0	0	221	0	56	110	0	53	423
Future Vol, veh/h	57	0	60	0	0	221	0	56	110	0	53	423
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Free	-	-	Free	-	-	Free	-	-	None
Storage Length	0	-	50	-	-	0	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	35	0	13	0	0	3	0	37	19	0	13	5
Mvmt Flow	71	0	75	0	0	276	0	70	138	0	66	529

Major/Minor	Minor2					Major1			Major2		
Conflicting Flow All	401	-	-			-	0	-	-	-	0
Stage 1	331	-	-			-	-	-	-	-	-
Stage 2	70	-	-			-	-	-	-	-	-
Critical Hdwy	7.125	-	-			-	-	-	-	-	-
Critical Hdwy Stg 1	6.325	-	-			-	-	-	-	-	-
Critical Hdwy Stg 2	5.925	-	-			-	-	-	-	-	-
Follow-up Hdwy	3.8325	-	-			-	-	-	-	-	-
Pot Cap-1 Maneuver	522	0	0			0	-	0	0	-	-
Stage 1	623	0	0			0	-	0	0	-	-
Stage 2	869	0	0			0	-	0	0	-	-
Platoon blocked, %							-			-	-
Mov Cap-1 Maneuver	522	0	-			-	-	-	-	-	-
Mov Cap-2 Maneuver	522	0	-			-	-	-	-	-	-
Stage 1	623	0	-			-	-	-	-	-	-
Stage 2	869	0	-			-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	522	-	-	-
HCM Lane V/C Ratio	-	0.136	-	-	-
HCM Control Delay (s)	-	13	0	-	-
HCM Lane LOS	-	B	A	-	-
HCM 95th %tile Q(veh)	-	0.5	-	-	-

Intersection	
Intersection Delay, s/veh	69.9
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	131	14	125	445	99	13	24	140	153	19	29
Future Vol, veh/h	9	131	14	125	445	99	13	24	140	153	19	29
Peak Hour Factor	0.83	0.83	0.83	0.94	0.94	0.94	0.80	0.80	0.80	0.96	0.96	0.96
Heavy Vehicles, %	25	30	0	4	6	1	8	5	2	1	6	7
Mvmt Flow	11	158	17	133	473	105	16	30	175	159	20	30
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	14.3	117.5	14.8	15.5
HCM LOS	B	F	B	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	7%	6%	0%	19%	76%
Vol Thru, %	14%	94%	0%	67%	9%
Vol Right, %	79%	0%	100%	15%	14%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	177	140	14	669	201
LT Vol	13	9	0	125	153
Through Vol	24	131	0	445	19
RT Vol	140	0	14	99	29
Lane Flow Rate	221	169	17	712	209
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.404	0.349	0.032	1.176	0.406
Departure Headway (Hd)	7.067	7.82	7.154	5.947	7.483
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	513	462	503	612	484
Service Time	5.067	5.52	4.854	3.999	5.483
HCM Lane V/C Ratio	0.431	0.366	0.034	1.163	0.432
HCM Control Delay	14.8	14.7	10.1	117.5	15.5
HCM Lane LOS	B	B	B	F	C
HCM 95th-tile Q	1.9	1.5	0.1	24.2	1.9

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	276	125	172	261	6
Future Vol, veh/h	34	276	125	172	261	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	85	85	80	80
Heavy Vehicles, %	6	2	11	4	2	20
Mvmt Flow	43	345	147	202	326	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	826	330	334	0	-	0
Stage 1	330	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Critical Hdwy	6.46	6.22	4.21	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.318	2.299	-	-	-
Pot Cap-1 Maneuver	336	712	1177	-	-	-
Stage 1	720	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	289	712	1177	-	-	-
Mov Cap-2 Maneuver	289	-	-	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.4	3.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1177	-	614	-	-
HCM Lane V/C Ratio	0.125	-	0.631	-	-
HCM Control Delay (s)	8.5	0	20.4	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.4	-	4.4	-	-

Intersection	
Int Delay, s/veh	97.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	312	467	432	437	0	0	0	0	50	0	105
Future Vol, veh/h	0	312	467	432	437	0	0	0	0	50	0	105
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	94	94	94	92	92	92	86	86	86
Heavy Vehicles, %	0	3	6	3	6	0	2	2	2	2	0	7
Mvmt Flow	0	376	563	460	465	0	0	0	0	58	0	122

Major/Minor	Major1			Major2				Minor2		
Conflicting Flow All	-	0	0	939	0	0		2043	-	465
Stage 1	-	-	-	-	-	-		1385	-	-
Stage 2	-	-	-	-	-	-		658	-	-
Critical Hdwy	-	-	-	4.13	-	-		6.42	-	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-		5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.42	-	-
Follow-up Hdwy	-	-	-	2.227	-	-		3.518	-	3.363
Pot Cap-1 Maneuver	0	-	-	726	-	0		62	0	587
Stage 1	0	-	-	-	-	0		232	0	-
Stage 2	0	-	-	-	-	0		515	0	-
Platoon blocked, %		-	-		-					
Mov Cap-1 Maneuver	-	-	-	726	-	-		~ 9	0	587
Mov Cap-2 Maneuver	-	-	-	-	-	-		~ 9	0	-
Stage 1	-	-	-	-	-	-		232	0	-
Stage 2	-	-	-	-	-	-		75	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	9	$ 1062.8
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	726	-	9	587
HCM Lane V/C Ratio	-	-	0.633	-	6.46	0.208
HCM Control Delay (s)	-	-	18.1	$	3268.1	12.7
HCM Lane LOS	-	-	C	A	F	B
HCM 95th %tile Q(veh)	-	-	4.6	-	8.7	0.8

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	85.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	115	248	0	0	613	44	256	0	376	0	0	0
Future Vol, veh/h	115	248	0	0	613	44	256	0	376	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	85	85	85	89	89	89	92	92	92
Heavy Vehicles, %	4	2	0	0	3	5	8	0	3	0	0	0
Mvmt Flow	131	282	0	0	721	52	288	0	422	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	773	0	-	-	-	0	1291	-	282
Stage 1	-	-	-	-	-	-	544	-	-
Stage 2	-	-	-	-	-	-	747	-	-
Critical Hdwy	4.14	-	-	-	-	-	6.48	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.48	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.48	-	-
Follow-up Hdwy	2.236	-	-	-	-	-	3.572	-	3.327
Pot Cap-1 Maneuver	833	-	0	0	-	-	~ 175	0	755
Stage 1	-	-	0	0	-	-	570	0	-
Stage 2	-	-	0	0	-	-	458	0	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	833	-	-	-	-	-	~ 142	0	755
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 142	0	-
Stage 1	-	-	-	-	-	-	464	0	-
Stage 2	-	-	-	-	-	-	458	0	-

Approach	EB	WB	NB
HCM Control Delay, s	3.2	0	227.1
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	142	755	833	-	-	-
HCM Lane V/C Ratio	2.026	0.56	0.157	-	-	-
HCM Control Delay (s)	$ 537.5	15.7	10.1	0	-	-
HCM Lane LOS	F	C	B	A	-	-
HCM 95th %tile Q(veh)	22.9	3.5	0.6	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	9.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	117	0	31	0	12	295	91	19	0
Future Vol, veh/h	0	0	0	117	0	31	0	12	295	91	19	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	92	89	92	80	80	80	80	92
Heavy Vehicles, %	2	2	2	23	2	17	2	27	8	6	11	2
Mvmt Flow	0	0	0	131	0	35	0	15	369	114	24	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	1	0	0	-	263	-	271	263	-
Stage 1	-	-	-	-	-	-	-	1	-	262	262	-
Stage 2	-	-	-	-	-	-	-	262	-	9	1	-
Critical Hdwy	4.12	-	-	4.33	-	-	-	6.77	-	7.16	6.61	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.77	-	6.16	5.61	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.77	-	6.16	5.61	-
Follow-up Hdwy	2.218	-	-	2.407	-	-	-	4.243	-	3.554	4.099	-
Pot Cap-1 Maneuver	-	-	-	1494	-	0	0	602	0	673	627	0
Stage 1	-	-	-	-	-	0	0	848	0	734	675	0
Stage 2	-	-	-	-	-	0	0	648	0	1002	877	0
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1494	-	-	-	549	-	615	572	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	549	-	615	572	-
Stage 1	-	-	-	-	-	-	-	848	-	734	616	-
Stage 2	-	-	-	-	-	-	-	591	-	984	877	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.6		12.3
HCM LOS			-	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	549	-	-	-	-	1494	-	611	572
HCM Lane V/C Ratio	0.014	-	-	-	-	0.088	-	0.206	0.021
HCM Control Delay (s)	11.6	-	0	-	-	7.6	0	12.4	11.4
HCM Lane LOS	B	-	A	-	-	A	A	B	B
HCM 95th %tile Q(veh)	0	-	-	-	-	0.3	-	0.8	0.1

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	0	224	0	0	131	0	54	310	0	69	153
Future Vol, veh/h	146	0	224	0	0	131	0	54	310	0	69	153
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Free	-	-	Free	-	-	Free	-	-	None
Storage Length	0	-	50	-	-	0	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	82	82	82
Heavy Vehicles, %	15	0	1	0	0	12	0	13	2	0	35	12
Mvmt Flow	183	0	280	0	0	164	0	68	388	0	84	187

Major/Minor	Minor2					Major1			Major2		
Conflicting Flow All	246	-	-			-	0	-	-	-	0
Stage 1	178	-	-			-	-	-	-	-	-
Stage 2	68	-	-			-	-	-	-	-	-
Critical Hdwy	6.825	-	-			-	-	-	-	-	-
Critical Hdwy Stg 1	6.025	-	-			-	-	-	-	-	-
Critical Hdwy Stg 2	5.625	-	-			-	-	-	-	-	-
Follow-up Hdwy	3.6425	-	-			-	-	-	-	-	-
Pot Cap-1 Maneuver	700	0	0			0	-	0	0	-	-
Stage 1	802	0	0			0	-	0	0	-	-
Stage 2	920	0	0			0	-	0	0	-	-
Platoon blocked, %							-			-	-
Mov Cap-1 Maneuver	700	0	-			-	-	-	-	-	-
Mov Cap-2 Maneuver	700	0	-			-	-	-	-	-	-
Stage 1	802	0	-			-	-	-	-	-	-
Stage 2	920	0	-			-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.9	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	700	-	-	-
HCM Lane V/C Ratio	-	0.261	-	-	-
HCM Control Delay (s)	-	11.9	0	-	-
HCM Lane LOS	-	B	A	-	-
HCM 95th %tile Q(veh)	-	1	-	-	-

Intersection	
Intersection Delay, s/veh	117.8
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	420	118	189	179	176	19	47	183	176	45	10
Future Vol, veh/h	24	420	118	189	179	176	19	47	183	176	45	10
Peak Hour Factor	0.80	0.80	0.80	0.93	0.93	0.93	0.80	0.80	0.80	0.95	0.95	0.95
Heavy Vehicles, %	18	5	2	2	15	2	0	5	4	3	2	33
Mvmt Flow	30	525	148	203	192	189	24	59	229	185	47	11
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	147.8	165.1	31.7	27.9
HCM LOS	F	F	D	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	8%	5%	0%	35%	76%
Vol Thru, %	19%	95%	0%	33%	19%
Vol Right, %	73%	0%	100%	32%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	249	444	118	544	231
LT Vol	19	24	0	189	176
Through Vol	47	420	0	179	45
RT Vol	183	0	118	176	10
Lane Flow Rate	311	555	148	585	243
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.704	1.311	0.309	1.272	0.606
Departure Headway (Hd)	9.335	9.133	8.147	8.408	10.303
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	389	405	444	439	353
Service Time	7.335	6.833	5.847	6.408	8.303
HCM Lane V/C Ratio	0.799	1.37	0.333	1.333	0.688
HCM Control Delay	31.7	183.2	14.4	165.1	27.9
HCM Lane LOS	D	F	B	F	D
HCM 95th-tile Q	5.2	23.6	1.3	23.3	3.8

APPENDIX I

2026 Build Capacity/Level-of-Service Analysis

Intersection	
Int Delay, s/veh	4.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	105	212	142	118	9
Future Vol, veh/h	5	105	212	142	118	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	80	80	80	80
Heavy Vehicles, %	20	18	3	3	3	25
Mvmt Flow	6	131	265	178	148	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	862	154	159	0	-	0
Stage 1	154	-	-	-	-	-
Stage 2	708	-	-	-	-	-
Critical Hdwy	6.6	6.38	4.13	-	-	-
Critical Hdwy Stg 1	5.6	-	-	-	-	-
Critical Hdwy Stg 2	5.6	-	-	-	-	-
Follow-up Hdwy	3.68	3.462	2.227	-	-	-
Pot Cap-1 Maneuver	303	852	1414	-	-	-
Stage 1	832	-	-	-	-	-
Stage 2	457	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	240	852	1414	-	-	-
Mov Cap-2 Maneuver	240	-	-	-	-	-
Stage 1	659	-	-	-	-	-
Stage 2	457	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.7	4.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1414	-	764	-	-
HCM Lane V/C Ratio	0.187	-	0.18	-	-
HCM Control Delay (s)	8.1	0	10.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.7	-	0.7	-	-

Intersection	
Int Delay, s/veh	37.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	214	226	448	543	0	0	0	0	45	0	143
Future Vol, veh/h	0	214	226	448	543	0	0	0	0	45	0	143
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	91	91	91	92	92	92	85	85	85
Heavy Vehicles, %	0	12	8	2	4	0	2	2	2	12	0	9
Mvmt Flow	0	249	263	492	597	0	0	0	0	53	0	168

Major/Minor	Major1			Major2					Minor2		
Conflicting Flow All	-	0	0	512	0	0			1962	-	597
Stage 1	-	-	-	-	-	-			1581	-	-
Stage 2	-	-	-	-	-	-			381	-	-
Critical Hdwy	-	-	-	4.12	-	-			6.52	-	6.29
Critical Hdwy Stg 1	-	-	-	-	-	-			5.52	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-			5.52	-	-
Follow-up Hdwy	-	-	-	2.218	-	-			3.608	-	3.381
Pot Cap-1 Maneuver	0	-	-	1053	-	0			65	0	490
Stage 1	0	-	-	-	-	0			176	0	-
Stage 2	0	-	-	-	-	0			669	0	-
Platoon blocked, %		-	-		-						
Mov Cap-1 Maneuver	-	-	-	1053	-	-			~ 20	0	490
Mov Cap-2 Maneuver	-	-	-	-	-	-			~ 20	0	-
Stage 1	-	-	-	-	-	-			176	0	-
Stage 2	-	-	-	-	-	-			201	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	5.1	287.2
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	1053	-	20	490
HCM Lane V/C Ratio	-	-	0.468	-	2.647	0.343
HCM Control Delay (s)	-	-	11.4	$	1148.7	16.1
HCM Lane LOS	-	-	B	A	F	C
HCM 95th %tile Q(veh)	-	-	2.5	-	7	1.5

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	100

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	80	180	0	0	628	68	363	0	357	0	0	0
Future Vol, veh/h	80	180	0	0	628	68	363	0	357	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	89	89	89	94	94	94	94	94	94	92	92	92
Heavy Vehicles, %	26	7	0	0	2	0	4	0	4	2	2	2
Mvmt Flow	90	202	0	0	668	72	386	0	380	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	740	0	-	-	-	0	1086	-	202
Stage 1	-	-	-	-	-	-	382	-	-
Stage 2	-	-	-	-	-	-	704	-	-
Critical Hdwy	4.36	-	-	-	-	-	6.44	-	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-	5.44	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.44	-	-
Follow-up Hdwy	2.434	-	-	-	-	-	3.536	-	3.336
Pot Cap-1 Maneuver	767	-	0	0	-	-	~ 237	0	834
Stage 1	-	-	0	0	-	-	686	0	-
Stage 2	-	-	0	0	-	-	487	0	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	767	-	-	-	-	-	~ 206	0	834
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 206	0	-
Stage 1	-	-	-	-	-	-	595	0	-
Stage 2	-	-	-	-	-	-	487	0	-

Approach	EB	WB	NB
HCM Control Delay, s	3.2	0	233.5
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	206	834	767	-	-	-
HCM Lane V/C Ratio	1.875	0.455	0.117	-	-	-
HCM Control Delay (s)	$ 450.5	12.9	10.3	0	-	-
HCM Lane LOS	F	B	B	A	-	-
HCM 95th %tile Q(veh)	27.7	2.4	0.4	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	8.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	355	0	98	0	4	141	16	9	0
Future Vol, veh/h	0	0	0	355	0	98	0	4	141	16	9	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	81	92	81	92	82	82	96	96	92
Heavy Vehicles, %	2	2	2	7	2	6	2	25	32	13	13	2
Mvmt Flow	0	0	0	438	0	121	0	5	172	17	9	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	1	0	0	-	877	-	880	877	-
Stage 1	-	-	-	-	-	-	-	1	-	876	876	-
Stage 2	-	-	-	-	-	-	-	876	-	4	1	-
Critical Hdwy	4.12	-	-	4.17	-	-	-	6.75	-	7.23	6.63	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.75	-	6.23	5.63	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.75	-	6.23	5.63	-
Follow-up Hdwy	2.218	-	-	2.263	-	-	-	4.225	-	3.617	4.117	-
Pot Cap-1 Maneuver	-	-	-	1589	-	0	0	264	0	256	275	0
Stage 1	-	-	-	-	-	0	0	851	0	329	352	0
Stage 2	-	-	-	-	-	0	0	337	0	990	874	0
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1589	-	-	-	191	-	198	199	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	191	-	198	199	-
Stage 1	-	-	-	-	-	-	-	851	-	329	255	-
Stage 2	-	-	-	-	-	-	-	244	-	984	874	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	8.1		25.1
HCM LOS			-	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	191	-	-	-	-	1589	-	198	199
HCM Lane V/C Ratio	0.013	-	-	-	-	0.276	-	0.108	0.024
HCM Control Delay (s)	24.1	-	0	-	-	8.1	0	25.4	23.5
HCM Lane LOS	C	-	A	-	-	A	A	D	C
HCM 95th %tile Q(veh)	0	-	-	-	-	1.1	-	0.4	0.1

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	57	0	60	0	0	221	0	70	110	0	69	423
Future Vol, veh/h	57	0	60	0	0	221	0	70	110	0	69	423
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Free	-	-	Free	-	-	Free	-	-	None
Storage Length	0	-	50	-	-	0	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	80	80	80
Heavy Vehicles, %	35	0	13	0	0	3	0	37	19	0	13	5
Mvmt Flow	71	0	75	0	0	276	0	88	138	0	86	529

Major/Minor	Minor2			Major1			Major2			
Conflicting Flow All	439	-	-	-	0	-	-	-	0	
Stage 1	351	-	-	-	-	-	-	-	-	
Stage 2	88	-	-	-	-	-	-	-	-	
Critical Hdwy	7.125	-	-	-	-	-	-	-	-	
Critical Hdwy Stg 1	6.325	-	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.925	-	-	-	-	-	-	-	-	
Follow-up Hdwy	3.8325	-	-	-	-	-	-	-	-	
Pot Cap-1 Maneuver	493	0	0	0	-	0	0	-	-	
Stage 1	608	0	0	0	-	0	0	-	-	
Stage 2	851	0	0	0	-	0	0	-	-	
Platoon blocked, %					-			-	-	
Mov Cap-1 Maneuver	493	0	-	-	-	-	-	-	-	
Mov Cap-2 Maneuver	493	0	-	-	-	-	-	-	-	
Stage 1	608	0	-	-	-	-	-	-	-	
Stage 2	851	0	-	-	-	-	-	-	-	

Approach	EB	NB	SB
HCM Control Delay, s	13.5	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	493	-	-	-
HCM Lane V/C Ratio	-	0.145	-	-	-
HCM Control Delay (s)	-	13.5	0	-	-
HCM Lane LOS	-	B	A	-	-
HCM 95th %tile Q(veh)	-	0.5	-	-	-

Intersection	
Intersection Delay, s/veh	78.7
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	145	14	125	461	99	13	24	140	153	19	29
Future Vol, veh/h	9	145	14	125	461	99	13	24	140	153	19	29
Peak Hour Factor	0.83	0.83	0.83	0.94	0.94	0.94	0.80	0.80	0.80	0.96	0.96	0.96
Heavy Vehicles, %	25	30	0	4	6	1	8	5	2	1	6	7
Mvmt Flow	11	175	17	133	490	105	16	30	175	159	20	30
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	15	133.8	15.1	15.8
HCM LOS	B	F	C	C

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	7%	6%	0%	18%	76%
Vol Thru, %	14%	94%	0%	67%	9%
Vol Right, %	79%	0%	100%	14%	14%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	177	154	14	685	201
LT Vol	13	9	0	125	153
Through Vol	24	145	0	461	19
RT Vol	140	0	14	99	29
Lane Flow Rate	221	186	17	729	209
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.408	0.385	0.032	1.218	0.41
Departure Headway (Hd)	7.223	7.888	7.224	6.019	7.638
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	502	458	499	605	475
Service Time	5.223	5.588	4.924	4.063	5.638
HCM Lane V/C Ratio	0.44	0.406	0.034	1.205	0.44
HCM Control Delay	15.1	15.4	10.2	133.8	15.8
HCM Lane LOS	C	C	B	F	C
HCM 95th-tile Q	2	1.8	0.1	26.4	2

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	276	125	172	261	6
Future Vol, veh/h	34	276	125	172	261	6
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	85	85	80	80
Heavy Vehicles, %	6	2	11	4	2	20
Mvmt Flow	43	345	147	202	326	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	826	330	334	0	-	0
Stage 1	330	-	-	-	-	-
Stage 2	496	-	-	-	-	-
Critical Hdwy	6.46	6.22	4.21	-	-	-
Critical Hdwy Stg 1	5.46	-	-	-	-	-
Critical Hdwy Stg 2	5.46	-	-	-	-	-
Follow-up Hdwy	3.554	3.318	2.299	-	-	-
Pot Cap-1 Maneuver	336	712	1177	-	-	-
Stage 1	720	-	-	-	-	-
Stage 2	604	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	289	712	1177	-	-	-
Mov Cap-2 Maneuver	289	-	-	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	604	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.4	3.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1177	-	614	-	-
HCM Lane V/C Ratio	0.125	-	0.631	-	-
HCM Control Delay (s)	8.5	0	20.4	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.4	-	4.4	-	-

Intersection	
Int Delay, s/veh	109.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	319	474	432	445	0	0	0	0	50	0	113
Future Vol, veh/h	0	319	474	432	445	0	0	0	0	50	0	113
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	Stop
Storage Length	-	-	-	-	-	-	-	-	-	0	-	75
Veh in Median Storage, #	-	0	-	-	0	-	-	16974	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	94	94	94	92	92	92	86	86	86
Heavy Vehicles, %	0	3	6	3	6	0	2	2	2	2	0	7
Mvmt Flow	0	384	571	460	473	0	0	0	0	58	0	131

Major/Minor	Major1			Major2				Minor2		
Conflicting Flow All	-	0	0	955	0	0		2063	-	473
Stage 1	-	-	-	-	-	-		1393	-	-
Stage 2	-	-	-	-	-	-		670	-	-
Critical Hdwy	-	-	-	4.13	-	-		6.42	-	6.27
Critical Hdwy Stg 1	-	-	-	-	-	-		5.42	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-		5.42	-	-
Follow-up Hdwy	-	-	-	2.227	-	-		3.518	-	3.363
Pot Cap-1 Maneuver	0	-	-	716	-	0		60	0	581
Stage 1	0	-	-	-	-	0		230	0	-
Stage 2	0	-	-	-	-	0		509	0	-
Platoon blocked, %		-	-		-					
Mov Cap-1 Maneuver	-	-	-	716	-	-		~ 8	0	581
Mov Cap-2 Maneuver	-	-	-	-	-	-		~ 8	0	-
Stage 1	-	-	-	-	-	-		230	0	-
Stage 2	-	-	-	-	-	-		65	0	-

Approach	EB	WB	SB
HCM Control Delay, s	0	9.2	$ 1151.7
HCM LOS			F

Minor Lane/Major Mvmt	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	-	-	716	-	8	581
HCM Lane V/C Ratio	-	-	0.642	-	7.267	0.226
HCM Control Delay (s)	-	-	18.6	$	3725.3	13
HCM Lane LOS	-	-	C	A	F	B
HCM 95th %tile Q(veh)	-	-	4.7	-	8.8	0.9

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	97.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	122	248	0	0	613	44	264	0	376	0	0	0
Future Vol, veh/h	122	248	0	0	613	44	264	0	376	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	Stop	-	-	None
Storage Length	-	-	-	-	-	-	0	-	75	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	16965	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	88	88	88	85	85	85	89	89	89	92	92	92
Heavy Vehicles, %	4	2	0	0	3	5	8	0	3	0	0	0
Mvmt Flow	139	282	0	0	721	52	297	0	422	0	0	0

Major/Minor	Major1			Major2			Minor1		
Conflicting Flow All	773	0	-	-	-	0	1307	-	282
Stage 1	-	-	-	-	-	-	560	-	-
Stage 2	-	-	-	-	-	-	747	-	-
Critical Hdwy	4.14	-	-	-	-	-	6.48	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	5.48	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	5.48	-	-
Follow-up Hdwy	2.236	-	-	-	-	-	3.572	-	3.327
Pot Cap-1 Maneuver	833	-	0	0	-	-	~ 171	0	755
Stage 1	-	-	0	0	-	-	560	0	-
Stage 2	-	-	0	0	-	-	458	0	-
Platoon blocked, %		-			-	-			
Mov Cap-1 Maneuver	833	-	-	-	-	-	~ 137	0	755
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 137	0	-
Stage 1	-	-	-	-	-	-	449	0	-
Stage 2	-	-	-	-	-	-	458	0	-

Approach	EB	WB	NB
HCM Control Delay, s	3.4	0	257
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	WBT	WBR
Capacity (veh/h)	137	755	833	-	-	-
HCM Lane V/C Ratio	2.165	0.56	0.166	-	-	-
HCM Control Delay (s)	$ 600.6	15.7	10.2	0	-	-
HCM Lane LOS	F	C	B	A	-	-
HCM 95th %tile Q(veh)	24.5	3.5	0.6	-	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	9.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	0	0	133	0	31	0	12	309	91	19	0
Future Vol, veh/h	0	0	0	133	0	31	0	12	309	91	19	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	Free	-	-	None
Storage Length	-	-	-	-	-	0	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	89	92	89	92	80	80	80	80	92
Heavy Vehicles, %	2	2	2	23	2	17	2	27	8	6	11	2
Mvmt Flow	0	0	0	149	0	35	0	15	386	114	24	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	0	0	0	1	0	0	-	299	-	307	299	-
Stage 1	-	-	-	-	-	-	-	1	-	298	298	-
Stage 2	-	-	-	-	-	-	-	298	-	9	1	-
Critical Hdwy	4.12	-	-	4.33	-	-	-	6.77	-	7.16	6.61	-
Critical Hdwy Stg 1	-	-	-	-	-	-	-	5.77	-	6.16	5.61	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	5.77	-	6.16	5.61	-
Follow-up Hdwy	2.218	-	-	2.407	-	-	-	4.243	-	3.554	4.099	-
Pot Cap-1 Maneuver	-	-	-	1494	-	0	0	574	0	638	598	0
Stage 1	-	-	-	-	-	0	0	848	0	702	651	0
Stage 2	-	-	-	-	-	0	0	624	0	1002	877	0
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	-	-	-	1494	-	-	-	517	-	576	538	-
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	517	-	576	538	-
Stage 1	-	-	-	-	-	-	-	848	-	702	586	-
Stage 2	-	-	-	-	-	-	-	562	-	984	877	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	7.7		13
HCM LOS			-	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1	SBLn2
Capacity (veh/h)	517	-	-	-	-	1494	-	572	538
HCM Lane V/C Ratio	0.015	-	-	-	-	0.1	-	0.22	0.022
HCM Control Delay (s)	12.1	-	0	-	-	7.7	0	13.1	11.8
HCM Lane LOS	B	-	A	-	-	A	A	B	B
HCM 95th %tile Q(veh)	0	-	-	-	-	0.3	-	0.8	0.1

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	146	0	224	0	0	131	0	68	310	0	85	153
Future Vol, veh/h	146	0	224	0	0	131	0	68	310	0	85	153
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Free	-	-	Free	-	-	Free	-	-	None
Storage Length	0	-	50	-	-	0	-	-	0	-	-	-
Veh in Median Storage, #	-	0	-	-	16979	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	80	80	80	80	80	80	82	82	82
Heavy Vehicles, %	15	0	1	0	0	12	0	13	2	0	35	12
Mvmt Flow	183	0	280	0	0	164	0	85	388	0	104	187

Major/Minor	Minor2			Major1			Major2			
Conflicting Flow All	283	-	-	-	0	-	-	-	0	
Stage 1	198	-	-	-	-	-	-	-	-	
Stage 2	85	-	-	-	-	-	-	-	-	
Critical Hdwy	6.825	-	-	-	-	-	-	-	-	
Critical Hdwy Stg 1	6.025	-	-	-	-	-	-	-	-	
Critical Hdwy Stg 2	5.625	-	-	-	-	-	-	-	-	
Follow-up Hdwy	3.6425	-	-	-	-	-	-	-	-	
Pot Cap-1 Maneuver	665	0	0	0	-	0	0	-	-	
Stage 1	783	0	0	0	-	0	0	-	-	
Stage 2	903	0	0	0	-	0	0	-	-	
Platoon blocked, %					-			-	-	
Mov Cap-1 Maneuver	665	0	-	-	-	-	-	-	-	
Mov Cap-2 Maneuver	665	0	-	-	-	-	-	-	-	
Stage 1	783	0	-	-	-	-	-	-	-	
Stage 2	903	0	-	-	-	-	-	-	-	

Approach	EB	NB	SB
HCM Control Delay, s	12.4	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	-	665	-	-	-
HCM Lane V/C Ratio	-	0.274	-	-	-
HCM Control Delay (s)	-	12.4	0	-	-
HCM Lane LOS	-	B	A	-	-
HCM 95th %tile Q(veh)	-	1.1	-	-	-

Intersection	
Intersection Delay, s/veh	129.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	434	118	189	195	176	19	47	183	176	45	10
Future Vol, veh/h	24	434	118	189	195	176	19	47	183	176	45	10
Peak Hour Factor	0.80	0.80	0.80	0.93	0.93	0.93	0.80	0.80	0.80	0.95	0.95	0.95
Heavy Vehicles, %	18	5	2	2	15	2	0	5	4	3	2	33
Mvmt Flow	30	543	148	203	210	189	24	59	229	185	47	11
Number of Lanes	0	1	1	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	2	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	2	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	2
HCM Control Delay	162.2	181.2	31.6	28
HCM LOS	F	F	D	D

Lane	NBLn1	EBLn1	EBLn2	WBLn1	SBLn1
Vol Left, %	8%	5%	0%	34%	76%
Vol Thru, %	19%	95%	0%	35%	19%
Vol Right, %	73%	0%	100%	31%	4%
Sign Control	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	249	458	118	560	231
LT Vol	19	24	0	189	176
Through Vol	47	434	0	195	45
RT Vol	183	0	118	176	10
Lane Flow Rate	311	572	148	602	243
Geometry Grp	2	7	7	5	2
Degree of Util (X)	0.697	1.353	0.31	1.312	0.601
Departure Headway (Hd)	9.462	9.163	8.178	8.43	10.434
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes
Cap	386	401	443	434	348
Service Time	7.462	6.863	5.878	6.43	8.434
HCM Lane V/C Ratio	0.806	1.426	0.334	1.387	0.698
HCM Control Delay	31.6	200.3	14.5	181.2	28
HCM Lane LOS	D	F	B	F	D
HCM 95th-tile Q	5.1	25.2	1.3	25	3.7

APPENDIX J

Capacity/Level-of-Service Analysis

Capacity Analysis Summary
New Bedford Transfer Station
New Bedford, MA

Weekday Morning Peak Hour											
			2019 Existing			2026 No Build			2026 Build		
Intersection	**Movement**		**LOS[1]**	**Delay[2]**	**V/C[3]**	**LOS**	**Delay**	**V/C**	**LOS**	**Delay**	**V/C**
Route 140 Northbound Ramps	EB	LT	A	2.9	0.10	A	3.0	0.11	A	3.2	0.12
at Braley Road	WB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	NB	L	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00
		R	B	12.3	0.42	B	12.9	0.46	B	12.9	0.46
Route 140 Southbound Ramps	EB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
at Braley Road	WB	LT	A	4.8	0.42	A	5.1	0.46	A	5.1	0.47
	SB	L	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00
		R	B	14.6	0.28	C	15.6	0.32	C	16.1	0.34
Braley Road/	EB	LT	B	13.6	0.33	B	14.7	0.67	C	15.4	0.41
Theodore Rice Boulevard at		R	A	9.7	0.03	B	10.1	0.03	B	10.2	0.03
Phillips Road	WB	LTR	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00
	NB	LTR	B	13.6	0.38	B	14.8	0.43	C	15.1	0.44
	SB	LTR	B	14.3	0.39	C	15.5	0.43	C	15.8	0.44
Theodore Rice Boulevard at	WB	LR	A	8.0	0.25	A	8.1	0.26	A	8.1	0.28
Duchaine Boulevard	NB	TR	C	21.0	0.01	C	22.8	0.01	C	24.1	0.01
	SB	L	C	21.5	0.08	C	23.8	0.10	D	25.4	0.11
		T	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Duchaine Boulevard at	EB	LR	B	12.7	0.12	B	13.0	0.14	B	13.5	0.15
Samuel Barnet Boulevard	WB	R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	NB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Phillips Road at	EB	LR	B	10.6	0.18	B	10.7	0.18	B	10.7	0.18
Samuel Barnet Boulevard	NB	LT	A	4.8	0.17	A	4.9	0.19	A	4.9	0.19
	SB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Duchaine Boulevard at	EB	L	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Site Driveway	WB	R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00

1 Level-of-Service
2 Average vehicle delay in seconds
3 Volume to capacity ratio
n/a Not Applicable

Queue Summary
New Bedford Transfer Station
New Bedford, MA

			Weekday Morning Peak Hour					
			2019 Existing		2026 No Build		2025 Build	
Intersection	**Movement**		**50th Queue[1]**	**95th Queue[2]**	**50th Queue**	**95th Queue**	**50th Queue**	**95th Queue**
Route 140 Northbound Ramps	EB	LT	n/a	8	n/a	10	n/a	10
at Braley Road	WB	TR	n/a	0	n/a	0	n/a	0
	NB	L	n/a	513	n/a	648	n/a	693
		R	n/a	53	n/a	60	n/a	60
Route 140 Southbound Ramps	EB	TR	n/a	0	n/a	0	n/a	0
at Braley Road	WB	LT	n/a	53	n/a	63	n/a	63
	SB	L	n/a	138	n/a	173	n/a	175
		R	n/a	30	n/a	35	n/a	38
Braley Road/	EB	LT	n/a	33	n/a	38	n/a	45
Theodore Rice Boulevard at		R	n/a	3	n/a	3	n/a	3
Phillips Road	WB	LTR	n/a	453	n/a	605	n/a	660
	NB	LTR	n/a	43	n/a	48	n/a	50
	SB	LTR	n/a	43	n/a	48	n/a	50
Theodore Rice Boulevard at	WB	LR	n/a	25	n/a	28	n/a	28
Duchaine Boulevard	NB	TR	n/a	0	n/a	0	n/a	0
	SB	L	n/a	8	n/a	8	n/a	10
		T	n/a	0	n/a	0	n/a	0
Duchaine Boulevard at	EB	LR	n/a	10	n/a	13	n/a	13
Samuel Barnet Boulevard	WB	R	n/a	0	n/a	0	n/a	0
	NB	TR	n/a	0	n/a	0	n/a	0
	SB	TR	n/a	0	n/a	0	n/a	0
Phillips Road at	EB	LR	n/a	15	n/a	18	n/a	18
Samuel Barnet Boulevard	NB	LT	n/a	15	n/a	18	n/a	18
	SB	TR	n/a	0	n/a	0	n/a	0
Duchaine Boulevard at	EB	L	n/a	0	n/a	0	n/a	0
Site Driveway	WB	R	n/a	0	n/a	0	n/a	0
	SB	R	n/a	0	n/a	0	n/a	0

1 50th Percentile Queue Length (ft)
2 95th Percentile Queue Length (ft)
n/a Not Applicable

Capacity Analysis Summary
New Bedford Transfer Station
New Bedford, MA

Weekday Afternoon Peak Hour											
			2019 Existing			2026 No Build			2026 Build		
Intersection	**Movement**		**LOS[1]**	**Delay[2]**	**V/C[3]**	**LOS**	**Delay**	**V/C**	**LOS**	**Delay**	**V/C**
Route 140 Northbound Ramps	EB	LT	A	3.1	0.14	A	3.2	0.16	A	3.4	0.17
at Braley Road	WB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	NB	L	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00
		R	B	14.4	0.51	C	15.7	0.56	C	15.7	0.56
Route 140 Southbound Ramps	EB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
at Braley Road	WB	LT	A	7.7	0.56	A	9.0	0.63	A	9.2	0.64
	SB	L	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00
		R	B	12.2	0.19	B	12.7	0.21	B	13.0	0.23
Braley Road/	EB	LT	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00
Theodore Rice Boulevard at		R	B	13.3	0.29	B	14.4	0.33	B	14.5	0.33
Phillips Road	WB	LTR	F	>50.0	>1.00	F	>50.0	>1.00	F	>50.0	>1.00
	NB	LTR	D	26.3	0.70	D	31.7	0.80	D	31.6	0.81
	SB	LTR	C	24.0	0.60	D	27.9	0.69	D	28.0	0.70
Theodore Rice Boulevard at	WB	LR	A	7.6	0.08	A	7.6	0.09	A	7.7	0.10
Duchaine Boulevard	NB	TR	B	11.5	0.01	B	11.6	0.01	B	12.1	0.02
	SB	L	B	12.0	0.19	B	12.4	0.21	B	13.1	0.22
		T	A	0.0	0.02	A	0.0	0.02	A	0.0	0.00
Duchaine Boulevard at	EB	LR	B	11.7	0.24	B	11.9	0.26	B	12.4	0.27
Samuel Barnet Boulevard	WB	R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	NB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Phillips Road at	EB	LR	C	18.8	0.61	C	20.4	0.63	C	20.4	0.63
Samuel Barnet Boulevard	NB	LT	A	3.5	0.12	A	3.6	0.13	A	3.6	0.13
	SB	TR	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Duchaine Boulevard at	EB	L	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
Site Driveway	WB	R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00
	SB	R	A	0.0	0.00	A	0.0	0.00	A	0.0	0.00

1 Level-of-Service
2 Average vehicle delay in seconds
3 Volume to capacity ratio
n/a Not Applicable

Queue Summary
New Bedford Transfer Station
New Bedford, MA

			Weekday Afternoon Peak Hour					
			2019 Existing		2026 No Build		2025 Build	
Intersection	**Movement**		**50th Queue[1]**	**95th Queue[2]**	**50th Queue**	**95th Queue**	**50th Queue**	**95th Queue**
Route 140 Northbound Ramps	EB	LT	n/a	13	n/a	15	n/a	15
at Braley Road	WB	TR	n/a	0	n/a	0	n/a	0
	NB	L	n/a	458	n/a	573	n/a	613
		R	n/a	73	n/a	88	n/a	88
Route 140 Southbound Ramps	EB	TR	n/a	0	n/a	0	n/a	0
at Braley Road	WB	LT	n/a	88	n/a	115	n/a	118
	SB	L	n/a	180	n/a	218	n/a	220
		R	n/a	18	n/a	20	n/a	23
Braley Road/	EB	LT	n/a	480	n/a	590	n/a	630
Theodore Rice Boulevard at		R	n/a	28	n/a	33	n/a	33
Phillips Road	WB	LTR	n/a	465	n/a	583	n/a	625
	NB	LTR	n/a	110	n/a	130	n/a	128
	SB	LTR	n/a	80	n/a	95	n/a	93
Theodore Rice Boulevard at	WB	LR	n/a	8	n/a	8	n/a	8
Duchaine Boulevard	NB	TR	n/a	0	n/a	0	n/a	0
	SB	L	n/a	18	n/a	20	n/a	20
		T	n/a	0	n/a	0	n/a	0
Duchaine Boulevard at	EB	LR	n/a	23	n/a	25	n/a	28
Samuel Barnet Boulevard	WB	R	n/a	0	n/a	0	n/a	0
	NB	TR	n/a	0	n/a	0	n/a	0
	SB	TR	n/a	0	n/a	0	n/a	0
Phillips Road at	EB	LR	n/a	103	n/a	110	n/a	110
Samuel Barnet Boulevard	NB	LT	n/a	10	n/a	10	n/a	10
	SB	TR	n/a	0	n/a	0	n/a	0
Duchaine Boulevard at	EB	L	n/a	0	n/a	0	n/a	0
Site Driveway	WB	R	n/a	0	n/a	0	n/a	0
	SB	R	n/a	0	n/a	0	n/a	0

1 50th Percentile Queue Length (ft)
2 95th Percentile Queue Length (ft)
n/a Not Applicable