



May 15, 2020

Ms. Karen M. Mullins, Conservation Director  
Town of Lexington  
1625 Massachusetts Avenue  
Lexington, MA 02420

**RE: Technical Review  
91 Hartwell Avenue, Lexington, Massachusetts**

Dear Ms. Mullins,

This letter is to advise that we have reviewed the revised application materials submitted regarding the proposed project located at 91 Hartwell Avenue in Lexington, Massachusetts for consistency with local stormwater and floodplain regulations, the Massachusetts Stormwater Management Standards, and standard engineering practice. Specifically we reviewed the materials submitted for consistency with the following local regulations as they pertain to stormwater management and floodplain protection only:

- Lexington Wetland Protection Code, C. 130 and associated Rules; specifically Section 5 – Performance Standards
- Lexington Zoning Bylaws C. 135, S. 7.1 and the Planning Board Zoning Regulations C. 176
- Lexington Stormwater Management Code C, 114 and associated regulations C. 181

The revised materials submitted for review include:

- Plans entitled "Lexington Planning Board Site Plan Review & Special Permit Application, 91 Hartwell Avenue," (27 sheets) prepared by Paul Finger Associates, LLC with subconsultants, revised through May 11, 2020.
- Report entitled "Stormwater Report for 91 Hartwell Avenue, Lexington, Massachusetts," prepared by Nitsch Engineering, revised through May 11, 2020.
- Letter describing site plan changes and waiver requests prepared by Paul Finger Associates, dated April 8, 2020.
- Memorandum from Nitsch Engineering dated May 14, 2020 regarding Stormwater Management Standards.
- Additional test holes logs submitted May 14, 2020.

## **BACKGROUND**

The project includes the construction of a two-story 93,250 square foot laboratory office building and a four story parking garage containing 499 parking spaces at 91 Hartwell Avenue in Lexington,

Massachusetts. The proposed building and parking garage will be constructed within an existing parking lot. The property is currently developed and contains an existing three story 121,000 square foot office building and 388 surface parking spaces. The existing parking lot is located to the north of the existing building and is located almost entirely within the 100-year floodplain. The 100-year floodplain elevation is identified at elevation 118.5. There is a small wetland pocket identified within the existing parking islands. The parking lot is entirely surrounded by wetland resources. The proposed project will occur within the existing parking lot and is therefore, located within the 100-year floodplain.

In general, the site is extremely difficult to develop. The site is substantially located within the 100-year floodplain, which limits the amount of fill that can be placed on the site. The site also contains high groundwater, which impacts the siting, design, and ultimately effectiveness of stormwater management best management practices. It is highly likely that the existing parking lot was once a wetland resource, although we have no documentation to that effect.

Environmental Partners participated in a conference call on March 26, 2020 and attended a site visit with Paul Finger, the project's landscape architect, on March 27, 2020. We subsequently issued a letter regarding completeness of the proposed submittal information on April 6, 2020. Subsequent letters have been issued by Paul Finger Associates on April 8 and April 20, 2020 and additional sketches were issued by Nitsch Engineering on May 7, 2020. Conference calls have occurred regarding this project with the project team including April 29 and May 7, 2020.

EP has reviewed the project for compliance with local regulations and standard engineering practice pertaining to stormwater management and floodplain impacts. Below are our comments:

#### **Lexington General Bylaws Chapter 114 Stormwater Management**

No comments at this time.

#### **Rules adopted by the Lexington Conservation Commission Pursuant to the Code of the Town of Lexington Wetlands Protection Code, Chapter 130**

1. Section 5 (2) requires that all projects will not result in an increase in runoff during the 2-year, 10-year, and 100 year storms and shall not increase in an increase in total volume of surface runoff for the 1-year storm. The submitted calculation show a decrease in peak runoff for the 2, 10, and 100 year storms. However, we disagree with many of the assumptions and approaches in the drainage calculations that will impact whether this standard is met. The submitted hydrologic calculations show an increase in volume for the 1-year storm. The narrative describes this increase in volume being mitigated by a proposed blue roof. See comments below requesting additional information for the proposed blue-roof.

**Additional EP Comments 5/14/20:** The revised calculations show an increase in volume of runoff during the 1-year storm. The blue roof has been replaced with storage areas located beneath the office building and garage that will collect water from the roof of the office building and garage, detain it, and release it. Both of these storage areas are at an elevation below the 10 year and 100-year flood elevations and could flood during lesser storm events, would render them ineffective. Also, we understand that the applicant is performing test holes in these areas to determine if seasonal high groundwater elevations may impact their storage capacity.

2. Section 5 (2) requires that design points for evaluating runoff be at the furthest downstream property boundary or location of a discharge to a protected resource area, whichever is further upstream. The proposed project does not evaluate flows at discharge to a protected resource area. We would expect that the analysis would include upland areas only and evaluate discharges to the wetlands on site. The proposed analysis includes wetlands resources in the watershed areas. The project should be evaluated for its discharges to wetlands and the wetland areas be removed from the watershed analysis.

**Additional EP Comments 5/14/20: Item closed.**

3. Section 5 (3) requires that no building be constructed below the 10-year flood level. The entire site is located within the 100-year floodplain which is at elevation 118.5. The application states that the 10-year floodplain is at elevation 117.25. It is unclear how this elevation was determined.

**Additional EP Comments 5/14/20: Item closed.** The applicant submitted a sheet from the FEMA Lexington Brook Flood Study showing these elevations.

4. Section 5 (3) requires that no building be constructed below the 10-year flood level. The proposed parking garage first floor elevation is 117.5. The first floor elevation of the proposed building is 123. The proposed project includes flood storage below the proposed building. We are comfortable with that approach.

**Additional EP Comments 5/14/20:** No further comment necessary.

5. Section 5 (3) does not refer specifically to the location of stormwater management facilities within the floodplain. The proposed stormwater basins, as well as portions of the proposed pervious asphalt, are located below both the 10-year and 100-year flood elevations. Therefore, these facilities will likely be inundated with water during these storms which will limit their effectiveness to detain stormwater as well as provide adequate stormwater treatment.

**Additional EP Comments 5/14/20:** All stormwater management facilities are located below the 10 and 100 year storm elevations, including the storage areas below the office building and garage. During the coordination call on May 7, we discussed whether any additional information was available regarding flood elevations for the 2-year or 1-year storm. EP believes it is important to understand flooding impacts by lesser storms on site and how they may impact the proposed stormwater management facilities if this information is available.

6. Section 5 (5) A. provides buffer zones for New Construction elements.
  - a. Section (5) A. 2 includes a buffer zone of 25 – 100 feet for roads, driveways, and retaining walls. The proposed project includes a reinforced lawn access strip within the 25 foot buffer zone.
  - b. Section (5) A. 3 includes a 50-100 foot buffer zone for commercial buildings. The proposed parking garage and building are located within the 50 foot buffer zone.

**Additional EP Comments 5/14/20: Item closed.** We understand the locations of the proposed buildings have been generally endorsed by the Conservation Commission.

7. Section 5 (5) C.2.c states that within 25 feet of wetlands, areas disturbed by construction must be planted with a continuous groundcover requiring no fertilizers or pesticides for maintenance. The edge of the wetlands located north of the proposed building and north and west of the proposed garage proposes some plantings and are to be seeded with erosion control/restoration mix.

**Additional EP Comments 5/14/20: No additional comments.**

8. Section 5 (6) requires existing condition hydrologic models to model existing impervious areas as open space in good condition. The existing condition hydrologic model includes .69 acres of area as paved parking. It appears that all existing impervious surfaces will be reconstructed, and should be modelled as open space in good condition to be consistent with this section.

**Additional EP Comments 5/14/20: Item closed.** The applicant has revised the drainage analysis and modelled all exiting impervious spaces as open space.

9. Section 7 (B) requires the Commission to allow the alteration of up to 5000 square feet of wetlands. The Notice of Intent describes the alteration of 1885 square feet of wetlands. In order to provide a hydrologic connection between the wetlands and the compensatory storage provided beneath the proposed building and to the garage, additional disturbance to the wetlands north of the building may be necessary, which would increase the amount of wetlands disturbed and therefore the amount of replication needed. See additional comments below.

**Additional EP Comments 5/14/20:** The revised plans show additional work in the wetlands associated with providing a hydraulic connection between the floodplain compensation areas located below the office building and garage and wetlands as well as a connection between the wetlands compensation areas and wetlands. We recommend these additional areas of disturbance be quantified. Also, the grading near the connection between the floodplain compensation area located below the garage and the wetlands may create a low area that will collect water.

10. Section 7 (B) 7 regarding wetlands compensation area provides guidance regarding using materials from wetlands that are filled to be used in wetlands replication areas. The wetlands replication area is shown as 6,000 square feet on the plans. However, only half of the area shown as wetlands replication includes the excavation of material and the lowering of existing grades. We recommend that the wetlands replication area be designed by a Professional Wetlands Scientist and the area be designed to an elevation that will support wetlands vegetation growth. We recommend that the Professional Wetlands Scientist provide a narrative on the plans that describes the sequence for constructing the wetlands replication area.

**Additional EP Comments 5/14/20:** See note above. We recommend that the final areas of wetlands disturbance be quantified to insure that the appropriate amount of floodplain compensation areas are provided. Appropriate notes regarding the construction of the wetlands replication area have been added to the plans.

### **Lexington Zoning Bylaws Section 135 -7.1 National Flood Insurance District**

1. Section 7.1.6. 3 prohibits encroachments in the regulatory floodway that result in any increase in flood levels. The Applicant has provided floodplain compensation calculations. However, it does not appear that the floodplain compensation areas located below the building is hydraulically connected to the lower wetlands areas. Specifically, the floodplain compensation area has been designed to an elevation of 115. However, the spot grades adjacent to the edge of the building which contains a significant compensatory floodplain volume are approximately 115.8. We recommend providing an adequate hydrologic connection at or below elevation 115 to the floodplain compensation area beneath the building. We recommend that this connection allow water to recede from the floodplain compensation areas so that standing water is not contained underneath the building. This could result in additional disturbance to the wetlands. We recommend that a detailed grading plan be provided to demonstrate the connection.

**Additional EP Comments 5/14/20:** Improved hydraulic connections between the floodplain compensation areas and adjacent wetlands has been provided. The plans and details show a 7 foot wide bridge that will allow water to flow from the wetlands area to the floodplain compensation area. The bridge detail does not show the thickness of the stone grate/bridge platform. However, based on the grading provided there is approximately 6-8 inches between the proposed finished grade and the top of the bridge platform. We assume the bridge platform will be 4-6 inches thick. Therefore, the amount of water that will pass under the bridge will be limited and there will need to be consistent maintenance to make sure this opening is not clogged. We are concerned about this designs ability to let water flow unrestricted as well as the maintenance that will be required to insure this opening does not become obstructed.

### **Lexington Zoning Bylaws Section 176 Planning Board Zoning Regulations**

1. Section 5.2.2.1.e requires a site analysis plan show the location and results of any soil, percolation, and water table test using the Department of Environmental Protection Soil Evaluation procedures under Title V. Soil borings were provided. Soil testing was not performed in accordance with Title V. We recommend that soil testing be performed consistent with Title V by a Licensed Soil Evaluator in the vicinity of the stormwater management facilities.

**Additional EP Comments 5/14/20:** Three test holes were performed on April 18 in the vicinity of the stormwater management facilities. Four additional test holes were excavated on May 13. The test holes excavated on May 13 showed groundwater elevations slightly below those shown on April 18, which is expected since groundwater elevations fluctuate throughout the year. Stormwater management facilities need to be designed consistent with estimated seasonal high groundwater and we expect that these designs would be based on the highest elevations.

2. Section 5.3.2 requires a Hydrologic Drainage Analysis be submitted. This analysis has been submitted. However, we have extensive comments regarding the preparation of the analysis. Please see additional comments throughout this letter.

**Additional EP Comments 5/14/20:** Many of the comments outlined in this letter have been addressed. Some remain and there are some new comments as described below.

3. Section 5.3.2.3 requires estimates of flood elevations, groundwater, and surface water elevations. The site's 10-year and 100 year flood elevations will result in significant flooding of substantial areas of the site. The 10-year flood elevation is 117.25, which is over two feet higher than the top of Stormwater Treatment areas 3 and 4. This elevation is over one foot higher than the top of Stormwater Treatment areas 1 and 2. Much of the proposed pervious asphalt is below elevation 117.25. The 100 year storm elevation is 118.5. Seasonal high groundwater elevation is shown as 115, which means during wet times the stormwater management facilities will be substantially filled with water.

**Additional EP Comments 5/14/20:** Comment remains. This is an existing on-site condition. As described above and discussed on the May 7 coordination call, any other existing information that could be used to determine flood elevations for lesser storms – if it exists – is relevant to understand how often the stormwater management facilities may flood.

4. Section 5.3.3 requires soil surveys, test pits and test borings. As described above, soil borings were done in the vicinity of the proposed building and parking garage. We recommend that test holes be performed by a Title V Licensed Soil Evaluator in the vicinity of the stormwater management facilities to determine seasonal high groundwater.

**Additional EP Comments 5/14/20:** See comments above regarding test holes.

5. Section 6.4.2.10.b requires the submittal of hydrologic and drainage analysis for projects requiring a Special Permit. This analysis has been submitted. However, we have extensive comments regarding the preparation of the analysis. Please see comments below.

**Additional EP Comments 5/14/20:** Many of the comments outlined in this letter have been addressed. Some remain and there are some new comments as described below.

6. Section 6.4.2.10.c requires soil surveys, test pits and test borings. As described above, soil borings were done in the vicinity of the proposed building and parking garage. We recommend that test holes be performed by a Title V Licensed Soil Evaluator in the vicinity of the stormwater management facilities to determine seasonal high groundwater.

**Additional EP Comments 5/14/20:** See comments above regarding test holes.

7. Section 9.5.5 requires projects seeking site plan review to meet the stormwater management standards described in Section 114 of the Code of Lexington and their rules and regulations, the Board of Health Regulations, and the Massachusetts Department of Environmental Protection's Stormwater Management Standards. Please see portions of this letter regarding specific comments pertaining to those requirements.

**Additional EP Comments 5/14/20: No additional comment.**

### **Lexington General Bylaws Chapter 181, Department of Public Works**

1. Section 181-71 A (1) (a) regarding regulation of stormwater management practices states that "Any activity that results in a land disturbance greater than once acre of land..." is subject to the requirements of the stormwater bylaw. Although Section 181-71 A (2)

regarding exemptions states that “Stormwater discharges that are wholly subject to jurisdiction under the Wetlands Protection Act ..... and demonstrate compliance with the Massachusetts Storm Water Management Standards” are exempt from this bylaw, we feel that review under the requirements of this bylaw are appropriate and necessary. The intent of this review is to determine compliance with the Massachusetts Storm Water Management Standards. Therefore, EP’s approach to this review is to review the project for all applicable – or possibly applicable – standards and bylaws.

**Additional EP Comments 5/14/20: Item closed.** We understand that a decision was made to accept the Conservation Commission’s decision on this project in lieu of requiring the applicant to comply with this requirement.

2. Section 181-72 B requires a number of items be submitted in order to obtain a stormwater management permit. We have not received any specific items regarding the project required by the stormwater management permit as described in this section including the following:
  - a. Section 181-72 B. (1) (a) Application form.
  - b. Section 181-72 B. (1) (b) Projected dates of commencement and completion of construction activities.
  - c. Section 181-72 B. (1) (d) List of abutters.
  - d. Section 181-72 B. (1) (e) List of waivers.
  - e. Section 181-72 B. (1) (i) [1] Copy of notice of intent to comply with the Construction General Permit. Typically this would be submitted closer to the time of construction.
  - f. Section 181-72 B. (1) (i) [2] Copy of receipt of EPA authorization letter. This is issued by EPA following the filing of a notice of intent.
  - g. Section 181-72 B. (1) (j) A surety bond.
  - h. Section 181-72 D. (1) (a) Notice of fee submittal for the stormwater management permit.
  - i. Section 181-72 E. (2) Notice of abutter notification.

**Additional EP Comments 5/14/20: Item closed.**

3. Section 181-73 A. requires the project meet the Massachusetts Department of Environmental Protection Stormwater Management Standards. Please see additional comments pertaining directly to these Standards.

**Additional EP Comments 5/14/20:** Please see additional comments regarding the Stormwater Management Standards.

4. Section 181-73 B. (2) (a) requires evaluation and implementation of Low Impact Development practices. The stormwater management practices proposed as part of the project are Low Impact Development practices.

**Additional EP Comments 5/14/20: Item closed.**

5. Section 181-73 B. (2) (e) requires velocities in gutters to be not more than 5 feet per second. The Applicant should provide information regarding stormwater velocities in gutters.



**Additional EP Comments 5/14/20:** Item remains open. We have not received any information regarding gutter velocities.

6. Section 181-74 A. (8) requires that stormwater management facilities that are used as a BMP after construction cannot be used as BMP's during construction. The Sediment and Erosion Control plans show two sediment bays. One is located in the same area, and same general configuration, as stormwater treatment area 2. The other is located in the same location as the wetlands replication area and stormwater treatment area 4.

**Additional EP Comments 5/14/20:** Item remains open.

7. Section 181-74 contains numerous notes that should be added to the Sediment and Erosion Control plans. Generally, notes should be added to the plans similar to the requirements stated in items (9) through (22) of this section.

**Additional EP Comments 5/14/20:** Item remains open. We recommend the notes be added to the Sediment and Erosion Control Plans.

8. Section 181-75 B (3) (b) requires a completed SWPPP be submitted as part of its Stormwater Permit application. The SWPPP that was submitted was an early draft with significant information missing.

**Additional EP Comments 5/14/20:** Item remains open.

9. Section 181-75 B (4) (b) [1] requires the name, address, and contact information of the owner in the Operations and Maintenance Plan. This should be provided in the Operation and Maintenance Plan.

**Additional EP Comments 5/14/20:** Item remains open. An Operations and Maintenance Plan was not re-submitted.

10. Section 181-75 B (4) (b) [2] requires the signature of the owner in the Operations and Maintenance Plan. This should be provided in the Operation and Maintenance Plan.

**Additional EP Comments 5/14/20:** Item remains open. An Operations and Maintenance Plan was not re-submitted.

11. Section 181-75 B (4) (b) [3] requires the name, address, and contact information of the persons responsible for site operations in the Operations and Maintenance Plan. This should be provided in the Operation and Maintenance Plan.

**Additional EP Comments 5/14/20:** Item remains open. An Operations and Maintenance Plan was not re-submitted.

12. Section 181-75 B (4) (b) [5] requires descriptions of all easements – if any – be provided regarding stormwater management. We assume that no easements are being created for the stormwater management facilities since this is a private development project. However, there is a 20 foot wide drain easement shown on the site in the existing conditions plan. The purpose of this easement is unclear. We recommend the applicant provide details regarding



the existing drain easement. The applicant should confirm that the proposed project do not preclude the development of the proposed project.

**Additional EP Comments 5/14/20:** Item remains open. We understand the existing 20-foot wide drain easement will be extinguished and/or relocated.

13. Section 181-75 B (4) (b) [6] requires an inspection and maintenance schedule be provided for all stormwater management facilities. The Operations and Maintenance Plan should include the proper stormwater management practices. For instance, the Operations and Maintenance Plan includes Deep Sump and Hooded Catch Basins. It does not appear that these structures are proposed as part of the project. Also, the proposed project includes a wet basin. An Operations and Maintenance Plan should be provided for a wet basin. The schedule should include who will be performing the inspections as well as who the results will be reported to.

**Additional EP Comments 5/14/20:** Item remains open. A revised Operations and Maintenance Plan was not re-submitted.

14. Section 181-76 A. requires the posting of a stormwater completion surety.

**Additional EP Comments 5/14/20:** Item remains open.

15. Section 181-76 B and C requires preconstruction meetings, inspections, etc. We recommend that the requirements of this section be added to the Sediment and Erosion Control Plan.

**Additional EP Comments 5/14/20:** Item remains open.

16. Section 181 Attachment VI-C (7) (e) [10] requires a calculation of directly connected impervious area. This should be provided.

**Additional EP Comments 5/14/20:** The stormwater report includes a table of disconnected and connected areas as required by the Bylaws. We understand connected area to mean surfaces that are piped directly to a closed storm drain system or waterway. The applicant should confirm the calculations are consistent with that definition.

17. Section 181 Attachment VI-C (7) (e) [10] requires a calculation of disconnected impervious area. This should be provided.

**Additional EP Comments 5/14/20:** Item remains open. See comment above.

18. Section 181 Attachment VI-C (7) (f) requires a summary table showing existing and proposed impervious areas draining to each stormwater management facility. This should be provided.

**Additional EP Comments 5/14/20:** Item remains open.

19. Section 181 Attachment VI-C (7) (g) requires soils and test pit information consistent with the Massachusetts Stormwater Handbook. As described elsewhere in this letter, this information should be provided.

**Additional EP Comments 5/14/20:** Item remains open. See comments above regarding test holes.

20. Section 181 Attachment VI-D (1) (l) requires the sequence and timing of soil disturbing activities and the general construction sequence. This information should be provided.

**Additional EP Comments 5/14/20:** Item remains open.

### **Massachusetts Department of Environmental Protection Stormwater Management Standards**

1. Standard 1 – The proposed project is routing all stormwater generated by impervious surfaces that will be travelled by motor vehicles to stormwater management facilities. However, as described in other sections of this letter, we have concerns regarding the effectiveness of those facilities given the floodplain elevations and estimated seasonal high groundwater elevations. Also, we recommend that sized rip-rap pads be placed at the pipe end of the pipe connecting stormwater treatment basin 1 and 2. We also recommend that a rip-rap pad be placed at the end of the existing pipe that is proposed to include a wye connection from stormwater treatment area 1.

**Additional EP Comments 5/14/20:** Item remains open. We remain concerned about the frequency with which the proposed stormwater management facilities will flood. Rip-rap pads were added to the plans with the exception of the existing pipe.

2. Standard 2 – The proposed calculations show a decrease in peak flows when comparing the existing and proposed peak flows. We have a number of comments regarding these calculations which will impact meeting the requirements of this Standard as follows:
  - a. As described in Chapter 130 Section 5 (2) above, the design points for evaluating runoff should be at the furthest downstream property boundary or location of a discharge to a protected resource area, whichever is further upstream. The proposed project does not evaluate flows at discharge points to a protected resource area. We would expect that the analysis would include upland areas only and evaluate discharges to the wetlands on site. The proposed analysis includes wetlands resources in the watershed areas. The project should be evaluated for its discharges to wetlands and the wetland areas be removed from the watershed analysis.

**Additional EP Comments 5/14/20: Item closed.** The hydrologic analysis has been revised consistent with this requirement.

- b. As described in Chapter 130 Section 5 (6) above, the existing condition hydrologic model is required to model existing impervious areas as open space in good condition. The existing condition hydrologic model includes .69 acres of area as paved parking. It appears that all impervious surfaces will be reconstructed, and should be modelled as open space in good condition.

**Additional EP Comments 5/14/20: Item closed.** The hydrologic analysis has been revised consistent with this requirement.

- c. The existing condition includes a landscaped island in the existing parking lot that contains a delineated wetland resource as well as a depression. This area will collect

stormwater and detain it during lower flows, before the depression fills and stormwater flows across the parking lot into the existing wetlands. We suspect this landscaped area was designed to provide stormwater mitigation when this parking lot was designed and constructed. The existing conditions model does not account for the water that is detained in the landscaped islands. We believe this should be accounted for in the existing conditions model.

**Additional EP Comments 5/14/20: Item closed.** The hydrologic analysis has been revised consistent with this requirement.

- d. As described above, the estimated seasonal high groundwater elevation is described as elevation 115. Therefore, we believe the stormwater treatment areas should be modelled to include inundation by estimated seasonal high groundwater. Stormwater Treatment Area 3 did not account for seasonal high groundwater and storage in the basin was modelled to elevation 112.75. Also, the outlet control device for Stormwater Treatment Area 3 is modelled as two 18" culverts. The plans show one 12" pipe exiting Stormwater Treatment Area 3. Given the poor soils, high groundwater, and lack of infiltration, we would expect that storage modelled for Stormwater Treatment Area 3 would begin at the outlet pipe elevation, 114.5, and not 112.75 as shown in the model.

**Additional EP Comments 5/14/20:** Item remains open. The hydrologic analysis has been revised consistent with the test holes performed on April 16, 2020. Additional test holes were performed May 13. See comments described above.

- e. As described above, the 10-year flood elevation is at elevation 117.25. During this storm event, all stormwater facilities will be submerged. Therefore, the modelling provided is not accurate.

**Additional EP Comments 5/14/20:** Item remains open.

- f. The calculations generally show less than one foot of freeboard for all stormwater management facilities for all storms, implying that the facilities are undersized as modelled.

**Additional EP Comments 5/14/20:** Item remains open.

- 3. Standard 3 – Groundwater recharge calculations are provided which describes the porous asphalt system in the emergency truck access driveway providing the required groundwater recharge volume. We have the following comments regarding compliance with Standard 3.
  - a. The Standards state that porous asphalt should be used in appropriate soil conditions and the bottom of the reservoir course should have two feet of separation between the bottom of the infiltration facilities and estimated seasonal high groundwater. As described above, estimated seasonal high groundwater will encroach on the reservoir course. Soil conditions, although not yet verified, appear to be of low permeability material which are generally not appropriate for porous asphalt. We do not feel that the proposed conditions on site are appropriate for

porous asphalt and the applicant – and the Commission – should consider whether porous asphalt is the right application for this site.

**Additional EP Comments 5/14/20:** Item remains open. Although the revised location for porous asphalt and permeable pavers is better than the previous location, soils and groundwater conditions on site do not meet the performance standards described in the Stormwater Management Guidelines with regards to separation to seasonal high groundwater. We estimate that in some areas there may be less than one foot of separation between the bottom of the reservoir course and seasonal high groundwater. The Guidelines require two feet of separation. Also, soils conditions in the test holes show silt loam soils which typically have low infiltration capacities. The drainage calculations have not accounted for any groundwater infiltration due to the low porosity of the soils. During the coordination call on May 7, EP expressed that although the west side of the site is better than the east side, the site is not ideal for porous pavers. We also recommended that an underdrain be added to make sure water can move through the system.

- b. The groundwater recharge calculations in the stormwater narrative describes recharge occurring via the porous asphalt. However, there are no infiltration rates included in the modelling of the porous asphalt. The submitted narrative states that “the on-site soils are not conducive to infiltration” in the section describing groundwater recharge. Although the Applicant is contending that the porous asphalt is the practice providing the groundwater recharge, they are not accounting for it in the model, nor do they believe the soils are conducive to infiltration.

**Additional EP Comments 5/14/20:** Item remains open. See comments above.

4. Standard 4 – During lesser storms, adequate water quality treatment will be attained. During higher storms when the site experiences flooding, the water quality elements of the stormwater management system could be flooded, possibly resulting in resuspension of solids.

**Additional EP Comments 5/14/20:** Item remains open.

5. Standard 5 – We feel the proposed use is a Land Use with Higher Potential Pollutant Loads (LUHPPL). The Standards state that land uses that generate over 1,000 vehicle trips per day are considered LUHPPL. According to the traffic study, the proposed project will generate 1,050 vehicle trips per day. Therefore, it meets the definition of a LUHPPL.

**Additional EP Comments 5/14/20: Item closed.**

6. Standard 6 – No comments.

**Additional EP Comments 5/14/20: Item closed.**

7. Standard 7 – We agree that the site is a redevelopment site and needs to meet the Standards to the maximum extent practicable. However, the standard of ‘extent practicable’ is subjective. Therefore, we have performed this review to demonstrate compliance with each section of the Standards.

**Additional EP Comments 5/14/20:** Item remains open.

8. Standard 8 – Please see comments regarding the SWPPP and construction related impacts as outlined in the Town of Lexington’s regulations.

**Additional EP Comments 5/14/20:** Item remains open. No appreciable changes were made to the submitted SWPPP.

9. Standard 9 – We have made comments regarding the submitted Operations and Maintenance Plans as outlined in the Town of Lexington’s regulations.

**Additional EP Comments 5/14/20:** Item remains open. A new Operations and Maintenance Plan was not submitted for review.

10. Standard 10 – No comments.

## General

1. As discussed during the conference call on March 26, 2020, additional information on the design of the ‘Blue Roof’ should be submitted. The figures submitted with the Notice of Intent show an area of Blue Roof on the garage and office building, but there are no details regarding how water will be contained and released from these areas. The letter submitted by Paul Finger Associates dated April 8, 2020 includes a cross section of the blue roof. We request that calculations be provided that show the volume of storage provided by the blue roof. Also, it is unclear if there are outlets from the blue roof and how water will be released. Details for outlets from this facility should be provided.

**Additional EP Comments 5/14/20:** Item remains open. The ‘blue roof’ has been replaced with stormwater storage located beneath the building and garage. We have concerns related to this approach including consistency of the design between the plans and calculations, the fact that these areas may flood during significant storm events, and how these areas are being handled with regards to compensatory flood storage. The latest submittal does not include updated information regarding how compensatory flood storage accounts for the revised design.

2. As discussed on the conference call on March 26, 2020, additional information should be submitted regarding the routing of stormwater from the first story of the parking garage to the stormwater management system. The letter from Paul Finger Associates dated April 8, 2020 includes a quote from the 248 CMR 10.00 Section 10.09 (1) (b) (2) c that states that “Buildings or structures whose floor is unfinished or paved such that the surface is sufficiently porous that any gas, oil, or other petroleum distillates would be absorbed by the surface prior to reaching any separation or containment systems.” We interpret this to mean that the first floor surface material would need to be porous in order for this area to not be connected to an oil/water separator. Our understanding is that traditional pavement is proposed for the first floor. If that is the case than this area would need to be routed to the oil/water separator.

**Additional EP Comments 5/14/20:** Item remains open. We understand that drains in the first floor of the garage are routed to the stormwater management system – rather than the sanitary sewer system – to prevent water from infiltrating the sanitary sewer system when the first floor of the garage floods. This is a valid concern. However, we believe that routing drains located on the first floor of the garage to the stormwater management system is inconsistent with state building and plumbing codes as well as the Municipal Separate Storm Sewer System (MS4) permit. We believe that routing these drains to a stormwater management system is effectively an illicit discharge under the permit. The revised plans include a water quality structure in the first floor of the garage. It is unclear whether this structure is intended to treat drains from the first floor of the garage or the top floor of the garage – or both.

3. The Stormwater Pollution Prevention Plan (SWPPP) that was submitted is a very rough draft. The SWPPP is basically a boiler plate document with extensive information left to be included.

**Additional EP Comments 5/14/20:** Item remains open.

4. Additional information is needed regarding the design of the wetlands replication area. The plans show a wetland replication area of 6,500 square feet. However, it appears that only half of the area includes excavation to a lower elevation that may sustain the development of wetlands vegetation. We recommend that a Professional Wetland Scientist prepare a planting plan for the wetlands replication area as well a narrative – to be included on the plan set - that describes the process and procedures for constructing the wetlands replication area.

**Additional EP Comments 5/14/20: Item closed.**

5. More detail is needed regarding the floodplain compensation areas located below the garage and the building. We recommend a more detailed grading plan be provided with abundant spot elevations to show the limit of work associated with performing this grading work as well as insuring there is a hydrologic connection between the wetland areas and the floodplain areas located beneath the proposed office building and the parking garage. A more detailed grading plan may indicate that in order to establish a hydrologic connection to the floodplain compensation areas located beneath the parking garage and building, additional work may result in additional excavation in the wetlands, which would impact the Notice of Intent process.

**Additional EP Comments 5/14/20:** Item remains open. A better hydrologic connection has been provided, although we do have concerns regarding the design of the bridge structure. It does appear that there will be additional wetlands impacts to establish this connection that need to be quantified. We are also unclear how the newly proposed berm detention areas impact the flood compensation calculations. We recommend that additional documentation be provided.

6. The site construction plans show permeable asphalt sidewalks. It does not appear that the permeable asphalt sidewalks were included in the stormwater model. We have similar concerns regarding the construction of the permeable asphalt sidewalks as we do the permeable asphalt driveway, given the elevation of groundwater on the site.

**Additional EP Comments 5/14/20:** Item remains open. See previous comments regarding permeable pavers and porous asphalt designs.

7. The site details include permeable pavers. It is unclear where the permeable pavers are located on the project.

**Additional EP Comments 5/14/20:** Item remains open. There seems to be inconsistency between the Site Construction Plan and the stormwater calculations with regard to the location of permeable pavements. The calculations indicate that porous asphalt is proposed from Hartwell Avenue to the garage entrance. The site plans indicate this area to be bituminous concrete pavement.

8. The stormwater report describes an impermeable liner beneath the sediment forebay. The sediment forebay detail should be revised to include an impermeable liner.

**Additional EP Comments 5/14/20: Item closed.** The liner has been removed.

9. The porous asphalt is described in the Hydrocadd model as including check dams. Check dams are typically installed to allow water to infiltrate down rather than breaking out of the pavement when it is on a slope. However, due to the soils conditions and high groundwater, water will not infiltrate down. Infiltration has not been included in the model. Therefore, it could potentially break out of the pavement. Although it is described as porous asphalt with check dams, there are no check dams shown on the plans or details. There is no information provided regarding spacing, material, or installation of the check dams. If check dams are included, additional information regarding number, spacing, material, should be included.

**Additional EP Comments 5/14/20: Item closed.** It appears the check dams have been removed.

10. We recommend that additional backup information be provided regarding how the Time of Concentration was calculated for the porous asphalt.

**Additional EP Comments 5/14/20: Item closed.**

11. We recommend that the porous asphalt be cleaned with a vacuum truck. This requirement should be added to the Operations and Maintenance Plan.

**Additional EP Comments 5/14/20:** Item remains open.

12. We cannot verify the cut/fill plans in the vicinity of the garage. The garage is shaded so we cannot see the existing topographic information.

**Additional EP Comments 5/14/20: Item closed.**

13. It appears the cut and fill plans that accompany the memorandum dated November 14, 2019 are based on previously prepared grading plans. These plans should be updated.

**Additional EP Comments 5/14/20:** Item remains open. We recommend that updated floodplain compensation plans and calculations be provided.

14. We recommend that the coir log detail be revised to include the height of the coir logs.



**Additional EP Comments 5/14/20:** Item remains open.

15. The level spreader detail should be revised to show the level spreader dimensions.

**Additional EP Comments 5/14/20: Item closed.** Level spreaders have been removed.

16. The plans show level spreaders along the north side of the proposed office building and parking garage. We understand that the stormwater generated by the office building will be routed to the porous asphalt and stormwater generated by the parking garage to the stormwater treatment areas located to the south of the building. The stormwater narrative states that the level spreaders will dissipate flow from the proposed office building and parking garage. This discrepancy should be resolved.

**Additional EP Comments 5/14/20: Item closed.** Level spreaders have been removed.

17. We recommend a concrete sill be added to the spillway detail to set the spillway elevation.

**Additional EP Comments 5/14/20:** Item remains open.

18. We recommend sizing calculations be provided for all rip-rap pads.

**Additional EP Comments 5/14/20:** Item remains open.

19. The 12" reinforced concrete pipe discharging from Stormwater Treatment area 1 has inverts that range from 115.25 to 115.5. The proposed grade in this area is approximately 117. This pipe will have less than one foot of cover. The applicant may want to consider a ductile iron pipe at this location because of minimal cover.

**Additional EP Comments 5/14/20: Item closed.**

20. We recommend that rip-rap pads be placed at the pipe end of the pipe connecting stormwater treatment basins 1 and 2.

**Additional EP Comments 5/14/20: Item closed.**

21. High groundwater elevations may impact the stability of the emergency access path that is located north of the parking garage and office building. Grades in these areas are within one foot of the estimates seasonal high groundwater elevation.

**Additional EP Comments 5/14/20:** Item remains open.

#### **Additional General Comments 5/14/19**

The additional comments below are based on the revised information submitted for review.

1. The utility plan includes a label to a sediment forebay for water treatment area 2. However, this looks to be a gravel diaphragm. We recommend that the applicant confirm this is in fact intended to be a sediment forebay and provide elevations – and contours or spot grades – on the grading plans.

2. In the existing conditions calculations, the outflow is greater than the inflow for the 100-year storm for island depression 6. This likely results in a higher existing conditions flow for the site for the 100 year storm.
3. The proposed conditions drainage area plan shows one area for drain area 2. The Model shows 3 areas for drainage area 2. We recommend the plan be revised to be consistent with the calculations.
4. The proposed conditions calculations show the outlet control structure from the storage area below the garage as elevation 115.5. The grading plans appear to indicate the berm outlet is at elevation 115.3. The plans show the top of berm at elevation 115.5. The calculations show the top of berm elevation at 115.75. The orifices should be labelled on the plans and the berm elevations should be consistent between the calculations and the plans.
5. The grading plans show the storage area under the Lab/Office areas with a bottom elevation of 115, outlet weir elevation at 115.3, and overflow elevation at 115.5. The calculations show the outlet weir at elevation 115.5, and the overflow weir elevation at 115.75. The weir elevations should be consistent between the calculations and the plans.
6. The grading plans should clearly indicate the overflow elevation of Stormwater Treatment Area 4. The calculations show the outlet weir at elevation 114. We recommend rip-rap be added to the overflow. We also think the applicant should consider installing a sill to set the weir elevation.

Our review is based on the information that has been provided. As noted above, additional review will be required to verify comments have been incorporated into the revised submission.

We appreciate the opportunity to be able to assist you with this important project. Please feel free to contact me at (617) 657-0280 or [sdt@envpartners.com](mailto:sdt@envpartners.com) with any questions or comments.

Very Truly Yours,

A handwritten signature in blue ink, appearing to read "S.D. Turner", with a long horizontal flourish extending to the right.

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