



September 26, 2018

Wayland Conservation Commission
Town of Wayland
c/o Ms. Linda Hansen
41 Cochituate Road
Wayland, Massachusetts 01778

33 Waldo Street
Worcester, MA 01608

Tel: 508-792-4500
800-288-8123

www.bscgroup.com

**RE: Wayland Loker Conservation and Recreation Area Multi-Purpose Athletic Field
Wayland, MA
Notice of Intent
Second Peer Review**

Dear Conservation Commission Members and Ms. Hansen:

BSC Group, Inc. (BSC) has completed a second peer review of supplemental materials provided in support of Wetlands Notice of Intent submission for proposed Athletic Facilities at Loker Conservation and Recreation Area.

BASIS OF CURRENT REVIEW

For our original peer review, BSC reviewed the following documents:

- *Notice of Intent, Loker Conservation and Recreation Area, Wayland, MA*, dated July 2018, prepared for Town of Wayland, prepared by Weston and Sampson, including Stormwater Management Report, Site Plans and Attachments for Appendix A through Appendix F.
- *Response Letter to Loker Field Submission*, submission to Conservation Commission for the August 23, 2018 meeting, prepared by Willow Brook Condominium Association (Abutters)
- *Response to Comments, Wayland High School Athletic Facilities NOI, Wayland, MA* dated August 16, 2018, prepared by Weston & Sampson, including attachments.
- *Various e-mails*, through August 30, 2018, between Linda Hansen, the Conservation staff, and BSC Group, including attachments

For this second peer review, BSC reviewed the following revised site plans, reports and supplemental documents:

- *Response Letter to BSC Group Notice of Intent Peer Review, Loker Conservation and Recreation Area Improvement Project* dated the September 10, 2018, prepared by Weston and Sampson.
- *Site Plans Improvements to Loker Conservation and Recreation Area, Bidding Documents*, dated September 17, 2018, prepared by Weston and Sampson.
- *Stormwater Report, Conservation Commission, Wayland, Massachusetts, Loker Field Improvements*, dated July 11, 2018, revised September 10, 2018, prepared by Weston and Sampson.

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- **Wayland MA, Synthetic Turf Infill Options Report**, undated, prepared by Weston and Sampson.
- **Loker Plan DOW Overlay**, undated, prepared by Weston and Sampson.
- **Memorandum, Response to comments received concerning Turf Athletic Fields**, dated September 13, 2018, prepared by Weston and Sampson, with attachments.
- **Memorandum, Proposed Recreation Field – Loker Conservation and Recreation Area Focused Environmental Records Review and Soil Assessment**, dated April 4, 2018, prepared by Weston and Sampson.
- **E-mail**, dated September 18, 2018 from John Sax, a concerned resident, expressing “Concerns about the Loker field drainage design.”
- **Various e-mails**, through September 18, 2018, between Linda Hansen, the Conservation staff, and BSC Group, including attachments

PROJECT REVIEW COMMENTS

BSC offers the Conservation Commission the following comments based on our review of the revised site plans, reports and supplemental information detailed above. To provide consistency with our first peer review comments, the same organization and numbering system is maintained from our August 31 peer review in the following responses. A copy of BSC’s original peer review is attached for reference.

I. Procedural Items and/or misc. comments

- a. Item addressed in a satisfactory manner.
- b. A DEP File number has been issued for this project.
- c. Item addressed in a satisfactory manner.
- d. Item addressed in a satisfactory manner.
- e. The Stormwater Report has been revised to include calculations for the 0.5” rainfall, 1” rainfall, 2-year storm event) 10-year, 25-year storm events and 100-year events. These calculations indicate that there is no increase in peak flow rates for these design storm events. With regards to compliance with no increases in stormwater volume, please see comments under Section II a. regarding BSC’s concerns regarding the proposed infiltration system.
- f. Site Plans – The references to “R&S” and “R&D” occur on Sheet 12.00, Overall Site Preparation and Demolition Plans plan. These abbreviations should be noted within the legend.
- g. Item addressed in a satisfactory manner.



- h. Please see comments under Section IV regarding additional and supplemental materials submitted in response to questions raised during the Public Hearing for this project on September 13, 2018.
- i. The testing results for the leachate sampling was conducted at the existing High School artificial turf have been provided and are attached to *Memorandum, Response to comments received concerning Turf Athletic Fields*, dated September 13, 2018, by prepared by Weston and Sampson, noted above.
- j. Item addressed in a satisfactory manner.
- k. Item addressed in a satisfactory manner.

II. Technical Items

- a. W&S suggests that a condition could be included within the Order of Conditions that would require “the contractor perform confirmatory test pits at the time of construction to verify that the soils conditions assumed during design are consistent with actual conditions.” BSC respectfully disagrees with W&S.

If a test pit (-s) are undertaken during construction, and groundwater or bedrock is located 2’ or more below the bottom of the proposed infiltration system, the design as proposed would be acceptable.

If the test pit (-s) find groundwater or bedrock less than 2’ below the proposed infiltration system, the system will need to be redesigned, resulting in a delay in construction as the redesign will need to be reviewed by the Commission. This redesign would also likely increase overall project costs. BSC has seen conditions like the one suggested by W&S used on other projects where adequate soils information has been previously obtained, but not within the exact area of the infiltration system.

Additional test pit (-s) undertaken in the near future could confirm whether the proposed infiltration system will meet the DEP Stormwater regulations prior to construction.

- b. As shown on Sheet L5.02, Grading, Drainage & Utilities Enlargement Plans, dated September 17, 2018, W&S has added vertical granite curbing along the southerly side of the entrance driveway up to and just to the west of that drive’s intersection with the proposed access drive to the new parking area. The granite curbing will act to contain runoff from the entrance driveway within that roadway and direct it to the existing catch basins near the site entrance. For lower frequency storm events, this granite curbing will also act as a barrier for stormwater runoff flowing down the access drive to the new



parking area. For more intense storm events, it is possible that runoff from the driveway will overtop the curb and eventually flow into the West Pond.

- c. The W&S response noted that the existing drive in this area does not have a guard rail or barrier. They also note that the addition of such a barrier does not serve to improve stormwater management or quality. BSC notes that the existing drive has a slope of between 8 to 9%, as taken from the existing topographic information shown on the site plans. BSC understands that there are no specific regulations requiring the guardrail, however we still believe it is worth having at this location.
- d. In referencing the proposed grading shown on Site Plans Sheets L5.01 and L5.02, Grading, Drainage & Utilities Enlargement Plans, which would impact and necessitate the removal of a number of existing trees, and understanding the sensitivity to the removal of existing trees within the Loker Recreation and Conservation area, BSC asked if the reduction of required grading in on the site by the use of retaining walls been evaluated. W&S response noted "The use of retaining walls was investigated and it was determined that the Town of Wayland does not have the budget to include extensive retaining walls within the current scope." Considering the project's budget constraints, we encourage the applicant to only remove those trees that are absolutely necessary for construction.
- e. Stormwater Report Narrative, Standard 3: Recharge – see comment IV a. above.
- f. Item addressed in a satisfactory manner.

III. Turf Design

- a. The W&S response has indicated that virgin crumb rubber will be specified as the infill material. Our turf designer reviewed the Synthetic Turf Infill Options Report. He noted the coated crumb rubber may be considered as an alternate infill. He also noted that the option report did not include all viable options.
- b. Item addressed in a satisfactory manner.



IV. New and Additional information and Submittals

a. In his e-mail dated September 18, 2018 John Sax expressed “Concerns about the Loker field drainage design.” Specifically, his concern related to infiltration of stormwater runoff from both the proposed athletic field and the parking area. BSC’s concerns relative to the parking area have been noted under our response II a. above. For the proposed athletic field, BSC evaluated Mr. Sax’s concern and notes the following:

- A review of the design details contained within the site plans for the subsurface drainage system proposed for the athletic field indicates that this system is intended to collect runoff falling onto the field and infiltrating below its surface. It is not intended to provide groundwater recharge. The stormwater collected is then conveyed to a stormwater collection system and eventually discharged into the site stormwater management system.
- Four test pits and four borings were undertaken by W&S within and adjacent to the proposed athletic field. In the observations for the test pits, it is noted “bedrock” was encountered at depths of between 4.8 to 7.6 feet below the existing ground surface. Refusal was observed in the borings at depths ranging from 0.5 to 8 feet.
- With one exception, the estimated depth to bedrock or refusal as encountered in the above soils investigations was below the bottom of the proposed subsurface collection system under the athletic field. In TP – 4, the encountered bedrock would be at or close to the bottom of the subsurface collection system.
- Based upon our review of the proposed athletic field, it is clear that the construction of this facility will result in significant earth work with an excess of removed soil materials. Acknowledging that some of the excavated materials are proposed to be reused onsite, it appears that at least several thousand cubic yards of excess soil will remain after the athletic field is constructed.
- BSC suggests that the Commission request the applicant to provide information on the amount of excess soil materials resulting from the construction of the proposed athletic field, the specific plans for the temporary storage and sediment controls for this material, and its ultimate disposal.

b. A detailed review of the Environmental Engineering and MCP issues associated with this site is beyond the scope of this peer review. However, BSC did take a look at the recent submittal of Loker Plan DOW Overlay, updated and Memorandum, Proposed Recreation Field – Loker Conservation and Recreation Area Focused Environmental Records Review and Soil Assessment, dated April 4, 2018, both prepared by Weston and Sampson.

BSC provides the following observations of these supplemental materials:

- The Loker Plan Dow Overlay indicates that the upper septic system is completely located within the proposed athletic field.



- The Overlay plan also indicates that there are ten borings located within upper septic system distribution area, with another 3 borings located adjacent to this area.
- On page 2 of the Loker Conservation and Recreation Focused Environmental Records Review and Soils Assessment memo, in the paragraph located about one half way down that page, the memo notes, "Additional Site closure activities were also conducted in 2000 and included the abatement of asbestos containing material within the building and demolition of building and structures on the Site. According to previous reports, the Upper and Lower Septic tanks were removed. The Upper Septic system distribution status is unknown and appears to remain in place. No distribution system was listed to be associated with the Lower Septic tank." [highlighting added by BSC].
- Considering the significant amount of earth removal and potential excess soil materials to be removed from the project site as noted under IV a. above, it is possible that, if the Upper Septic System distribution area is still in place, it will be encountered during the site work associated with the construction of the athletic field.
- Given the extensive number of soils investigations shown on the Dow Overlay plan, some indication of the extent of the distribution field and possibly environmental testing information from these soils investigations should be able to be provided from a review of this record information.
- BSC suggests that the Commission request that applicant provide information on any specific record information regarding the status of the Upper Septic System distribution area available, as shown the Dow Overlay plan or referenced in the Loker memo, contingencies that might be implemented should the distribution area be encountered during construction, especially as these relate to the potential to encounter any residual contaminants within this area, and the protocols to be followed should this occur.

Should you have any questions regarding our review and provided comments, please do not hesitate to contact me at (617) 896-4471 or fdipietro@bscgroup.com.

Sincerely
BSC Group, Inc.

Frank DiPietro, P.E.,
Sr Project Manager/Engineer

Attachments

August 31, 2018

Wayland Conservation Commission
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**RE: Wayland Loker Conservation and Recreation Area Multi-Purpose Athletic Field
Wayland, MA
Notice of Intent Peer Review**

Dear Conservation Commission Members and Ms. Hansen:

BSC Group, Inc. (BSC) has completed a peer review of the Wetlands Notice of Intent submission for proposed Athletic Facilities at Loker Conservation and Recreation Area. This work is being undertaken under BSC's contract dated August 10, 2018, as approved by the Town of Wayland on August 17, 2018.

BASIS OF CURRENT REVIEW

For this peer review, BSC reviewed the following documents:

- *Notice of Intent, Loker Conservation and Recreation Area, Wayland, MA*, dated July 2018, prepared for Town of Wayland, prepared by Weston and Sampson, including Stormwater Management Report, Site Plans and Attachments for Appendix A through Appendix F.
- *Response Letter to Loker Field Submission*, submission to Conservation Commission for the August 23, 2018 meeting, prepared by Willow Brook Condominium Association (Abutters)
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Engineers

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PROJECT REVIEW COMMENTS

BSC offers the Conservation Commission the following comments based on our review of the project and information detailed above.

I. Procedural Items and/or misc. comments

- a. While the NOI application includes the WPA Form 3 application, the Wayland Wetlands Bylaw Application, as well as the Storm Water Management and Land Disturbance Bylaw application, none of these applications are signed by the applicant.
- b. Was the NOI submitted to the DEP? It does not appear a file number has been generated by the DEP for this project as of 8/30/18.
- c. Item 6 on the Wayland Wetlands Bylaw application requires a reference to the Title/Date of Plans submitted with the application. No information is provided. This information should be provided.
- d. The cover letter notes two copies of NOI application required. The Wayland Wetlands Bylaw requires 8 copies to be submitted.
- e. The Wayland Wetlands Regulations note “The Conservation Commission does not permit an increase in the rate or volume of runoff for frequent storm events (0.5” rainfall, 1” rainfall, 2-year storm event) and generally requires no increase in volume for 10-year, 25-year storm events and generally for 100-year events.” These regulations also require runoff calculations for 1” rainfall, 10-year and 100-year storm events...” No calculations are included within the NOI for 0.5” and 1” storm events.
- f. Site Plans – The references to “R&B” and “R&R” occur throughout these plans. These abbreviations should be noted within the legend.
- g. Site Plans, Sheet L1.00 Overall Existing Conditions Plan - The three ponds are labelled as North, East and West Ponds. These are unlabeled on the other Site plan sheets, and identified as Ponds 1, 2 and 3 in Wetlands Report. It would be helpful to consistently label these ponds within the NOI submittal plans and materials.
- h. NOI application, Project Description, Project Location - notes “There is currently a paved access drive at Commonwealth Road that is remnant of the sites previous use as a Dow company facility.” Based upon my discussion with Town staff during our site visit, I understand that the Dow company conducted testing on this site, and that a Phase I site investigation under the MCP was conducted for the property after Dow left the site. This information



should be reviewed by the appropriate Wayland agencies, as there will be excavations and earth moving operations undertaken as part of the proposed athletic field construction.

- i. NOI application, Project Description, Water Quality, page 2 references leachate sampling was conducted at the existing High School artificial turf, and that these studies indicated no significant water quality impacts resulted from the use of artificial turf. It would be useful to be provided these testing results, both for this project and for the proposed new turf field at the Wayland High School.
- j. Stormwater Management and Land Disturbance Bylaw Chapter 193 Application, Additional Information, page 3 – indicates “grass swales constructed.” The locations of these grassed swales are not indicated on the site plans sheets.
- k. Stormwater Report/ Stormwater Modeling – while test pit information is provided, there is no mention as to how the infiltration rate used within the proposed infiltration areas has been determined.

II. Technical Items

- a. Site Plans, Sheets L5.02, Grading Drainage & Utility Enlargement Plans, and L7.02 Construction Details, as well as Attachment C, Test Pit Summary and Logs – The proposed construction of a new parking lot to serve the athletic field will include the construction of an underground infiltration system to mitigate the increase of runoff from the new impervious area created by the parking area. The logs for test pits TP-5 and TP-6 near the edge of the proposed parking area ended at 5.6’ to 7.3’ below existing grade respectively. Boring B-5-L, located directly within the proposed infiltration area was ended at a depth of 6’ below existing grade. The existing grade at Boring B-5-L is approximately 199.4, which puts the bottom of the excavation for this boring at elevation approximately 193.4. The bottom elevation of Test Pits TP-5 and TP-6 are approximately 194.4 and 194.7, respectively. No groundwater was observed in any of these excavations. It is standard practice to assume the groundwater elevation is at the bottom of the excavation if none is encountered above the depth of maximum excavation. In this case, a groundwater elevation of 193.4 would be used for design.

The proposed design of the infiltration system in this area will have a surface grade of approximately elevation 200, with the bottom of stone within these infiltration chambers at elevation 193.5. Per the MassDEP Stormwater regulations, the minimum distance from the anticipated groundwater elevation to the bottom of an infiltration system is 2.0’. Based upon the current available soils information, the proposed design does not meet the DEP groundwater separation criteria.



- b. Stormwater Report Standard 1: No New Untreated Discharges/Site Plans Sheet L5.02, Grading, Drainage & Utilities Enlargement Plans – report indicates that no new untreated stormwater discharges will be created as a result of this proposed project. However, a review of the proposed grading as shown on Site Plan Sheet L5.02 indicates that untreated runoff from a portion of the proposed parking area will flow as sheet flow down the proposed very steep access driveway (a 13% driveway grade is noted on this plan). At least a portion of the sheet flow down a drive with this slope will bypass the catch basin grates, even if special high inlet capacity grates are used on these catch basins structures. As there is no curb proposed on the new drive at the bottom of this driveway, it is likely that untreated stormwater will flow across the lower driveway and flow into the wetlands area around and eventually into the West Pond. In a similar manner, except for the first 160 feet or so, the site access drive from Commonwealth Road to the driveway accessing the proposed parking area and which continues to the proposed athletic field does not have curbing along either side of this paved drive. This driveway is crowned in the middle for most of its length, except where it meets the parking lot access drive. Runoff from the crown will flow off the edge of this drive along its length and into the wetlands and the West Pond as noted above.
- c. Site Plans Sheet L5.02, Grading, Drainage & Utilities Enlargement Plans – Due to the steep 13% grade proposed for the access drive to the new parking area for the Loker Field, it is suggested that a vehicle barrier such as a guard rail be placed on the southern side of the driveway from Commonwealth Road opposite the parking lot drive. This barrier would act to prevent vehicles coming down the parking lot access drive from leaving the lower driveway.
- d. Site Plans Sheets L5.01 and L5.02, Grading, Drainage & Utilities Enlargement Plans - Understanding the sensitivity to the removal of existing trees within the Loker Recreation and Conservation area, considerable grading requiring the removal of existing trees is proposed off of the southwestern end of the parking lot, and at the southwestern end of the athletic field. Understanding that construction cost is an important consideration, has the potential of reducing the grading in these two areas by the use of retaining walls been evaluated?
- e. Stormwater Report Narrative, Standard 3: Recharge – see comment IV a. above regarding lack of separation from bottom of system to bottom of soils excavations and assumed high groundwater elevation. Based upon this information, it is not certain that adequate recharge will take place.
- f. Stormwater Report Narrative, Standard 4: Water Quality – see comment IV a. above regarding lack of separation from bottom of system to bottom of soils excavations and assumed high groundwater elevation, as well as comment IV b. above indicating portions of the driveways serving the site will allow direct runoff of untreated stormwater into the West Pond and its surrounding wetlands. Based upon this information, it is not certain that “All stormwater



from impervious areas on the site will undergo treatment to bring TSS levels within regulated limits (>80% removal).”

III. Turf Design

- a. The infill material is not specified in the NOI or site plans. BSC assumes traditional SBR crumb rubber infill will be used based on the comment on page 2 of the NOI, regarding studies performed on crumb rubber infill material leaching. Alternative infill materials are available for consideration such as acrylic coated crumb rubber, sand and Thermo Plastic Elastomer (TPE).
- b. Based on the proposed synthetic turf system design and the size of the crumb rubber granules, it is unlikely that crumb rubber infill will migrate through the synthetic turf, the stone drainage layer under the field, the stormwater drainage system and discharge into the adjacent wetlands. Infill migration could occur through tracking from athletes' shoes or maintenance equipment. However, these activities are not expected to discharge to or occur in or around the wetlands.

Should you have any questions regarding our review and provided comments, please do not hesitate to contact Melissa at (617)-896-4517 or mkaplan@bscgroup.com or Frank at (617) 896-4471 or fdipietro@bscgroup.com.

Sincerely
BSC Group, Inc.

Melissa Kaplan, PWS
Sr. Project Manager/Wetlands Scientist

Frank DiPietro, P.E.,
Sr Project Manager/Engineer