

MEMORANDUM

Subject: Birch Meadow Master Plan Report

Project: **Town of Reading**
Birch Meadow Master Plan

Project No. 20009.00

Date: 26 January 2021

To: Geneveive Fiorente
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Jenna and Kevin:

The following memorandum summarizes existing condition analyzes, needs assessment review, design approach and recommended project implementations for the 2020 – 2021 Birch Meadow Master Plan Update. The Town of Reading's directive for this project (and previous master planning efforts) is to create a community-based recreation and open space plan for the acres of land within the Birch Meadow footprint. With this in mind, we have categorized sections of this report into the following areas:

- Project Timeline
- Geographic Focus
- Site Analysis and Initial Planning Considerations
- Community Engagement
- Design Approach
- Project Implementation Recommendations

Project Timeline

2007 – The Reading Select Board formed the Birch Meadow Master Plan Subcommittee. The plan has been revisited and reviewed multiple times in the capital planning process (2007 – 2009 and 2014 – 2015).

2018 – The Reading Recreation Committee appointed a new Birch Meadow Master Plan Subcommittee to review the pre-existing Master plan for the Birch Meadow Complex and make recommendations based on recreational trends and community input. A community survey was sent out in December of 2018 and in excess of 1,000 responses were received in 2019.

2020-2021 – Activitas Inc. was retained by the Town of Reading to update the Master Plan for Birch Meadow. Working with the Birch Meadow Master Plan Subcommittee, the following memorandum highlights the findings from the master planning process

Geographic Focus

Birch Meadow is defined as the Reading Memorial High School (RMHS) site, the parks, athletic fields and playgrounds surrounding the RMHS site, the Coolidge Middle School site, the Higgins Conservation property including the property extending along the Aberjona River to and including town-owned property on Grove Street.

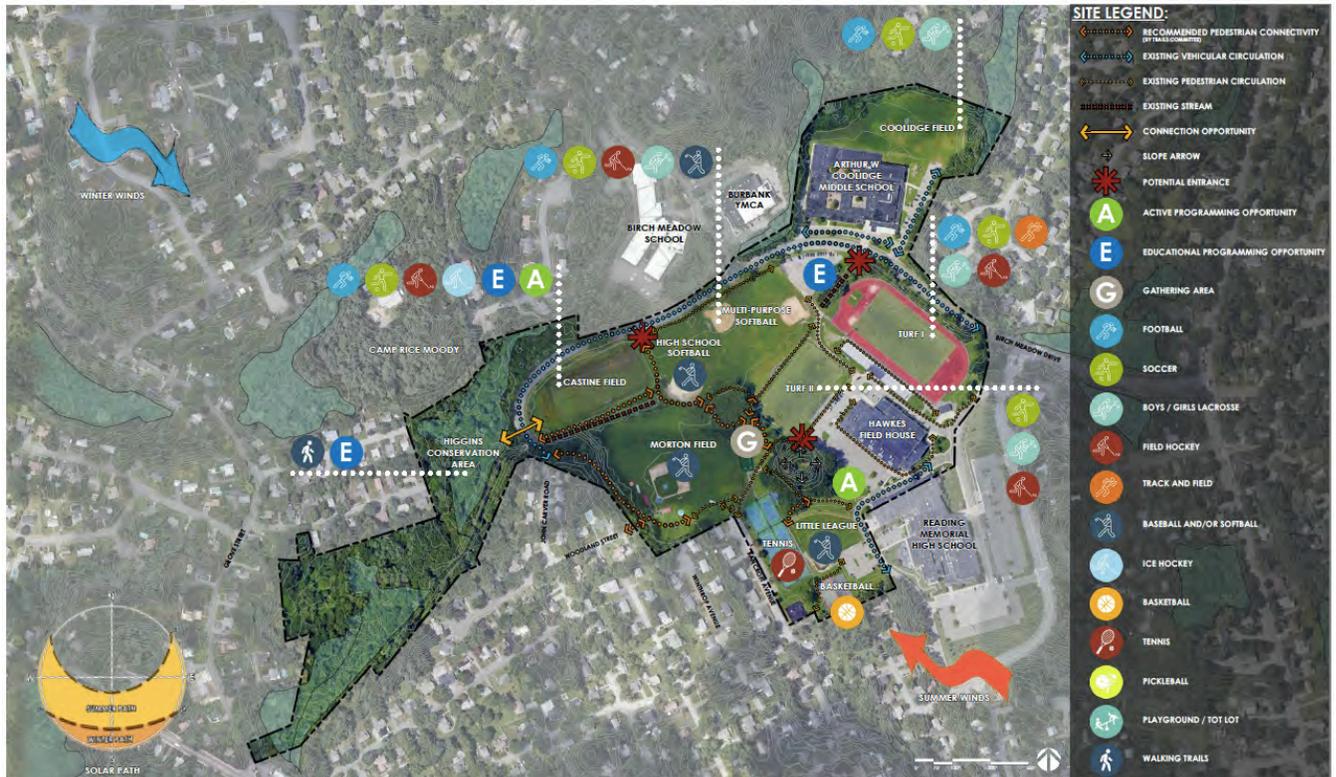


The area of focus for the master plan includes the following:

- Parking area across from Coolidge Middle School ("Imagination Station Parking Lot")
- Coolidge Middle School athletic field
- Three softball/multi-purpose athletic fields ("Street Field")
- Grove of mature deciduous trees with circle of benches ("Welch's Island")
- Castine Field (athletic field, skating area and delineated conservation area)
- Higgins Conservation Property
- Morton Field at Moscariello Ballpark
- Reading Community Tennis Courts
- Tot Lot/Playground at Bancroft Avenue
- Basketball Court
- Little League baseball field
- Hill and ropes course
- Track and Turf I (High School Stadium)
- Turf II

Site Analysis and Initial Planning Considerations

A detailed existing conditions and associated site analysis was performed. Elements that were reviewed, but not limited to, included resource areas, vehicular and pedestrian circulation, access points, parking, athletic fields and court conditions, solar orientation and usage, walking trails and pathways, fencing conditions, storage elements, lighting, existing topography, handicap accessibility and signage/wayfinding.



Resource Areas. As part of the site analysis the following resource areas were identified at Birch Meadow: Castine Field, Aberjona River, tributary to the Aberjona River west of Morton Field, Higgins Property. Castine Field and the portion of the Aberjona River between Birch Meadow Drive and the softball fields was delineated as part of the project by Epsilon Associates of Maynard, MA. Epsilon's Wetland Delineation Report, dated July 16, 2020, is included as an attachment to this memorandum.



Initial planning consideration: The resource areas at Birch Meadow are a natural elements of the park that should be protected, highlighted, enhanced and used as educational opportunities for RMHS students and the Reading community.

Athletic Field Conditions. Due to varying levels of use and maintenance, there is a large discrepancy in quality of the fields at Birch Meadow. Some fields have synthetic turf surfaces. Some fields are largely maintained by volunteers (i.e., Morton and the Reading Babe Ruth baseball organization). The primary cultural maintenance practices of other fields only includes mowing of grass and grooming of skinned infield surfacing, while realizing more use than other fields. The layout and close proximity of the existing softball fields presents an issue for scheduling (multiple events are not comfortably/safely run at the same time).

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Initial planning consideration: A standard maintenance program is recommended for all athletic fields. This includes the synthetic turf surfaces within Birch Meadow as synthetic fields require routine maintenance as well.

Court Conditions. The Reading Community Tennis Courts have recently been renovated and are in proper orientation and good condition. The existing basketball court is oriented properly but the surface is severely cracked and failing. Foundations at the basketball goal standards are heaving slightly as are the foundations of the perimeter chain link fence.

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Initial planning consideration: The Town should consider renovating (and potentially relocating the basketball courts). With the recent and dramatic increase in popularity of pickle ball, a separate pickle ball court facility should also be considered in the master plan.

Fencing. Materials, heights and conditions of fencing vary significantly at Birch Meadow. Some of the newer facilities utilize black chain link fence while others have galvanized fencing that is rusting and post foundations are heaving. Fencing and backstops at the softball fields also have supports for backstop overhangs located within the field of play and chain link fence mesh is experiencing a high degree of bowing due to lack of proper support.



Initial planning consideration: The Town should consider developing a schedule for various types of fencing and/or protective netting systems in various situations. Black powder coated fence post and black vinyl coated chain link fence mesh would be consistent with the materials used on recently developed and renovated projects. Types of chain link fence mesh should also be considered (i.e.: higher gauge for high use areas like lower portions of backstops). At park gateways and high profile, non-athletic portions of the park other types of ornamental fencing may be more appropriate.

Lighting. The quality of sports lighting and pedestrian level lighting systems vary significantly across the site. New LED sports lighting technology has been installed at the recently renovated Turf II facility. The LED sports lighting technology is not only efficient in terms of energy consumption requirements, it is also the most advanced system in terms of light control (spill and glare). Other systems on the site range from shielded and reflectorized incandescent fixtures at tennis and the high school stadium to incandescent flood lights mount to telephone poles. The latter system is currently used at the three softball fields ("Street Fields"). It is a highly inefficient lighting system; the fixtures have no control over spill and glare and the light produced is not consistent. In addition to challenges with spill and glare, the hot and cold spots of light over the playing surface create a potential safety issue when the facility is used at night.



Initial planning consideration: All proposed lighting should be LED technology. With the exception of tennis, Turf II and the track and Turf I, new sports lighting should be considered for all existing and proposed athletic fields courts. Appropriate pedestrian level LED lighting with full cut-off fixtures should be considered for walkways within Birch Meadow.

Storage. Most facilities within Birch Meadow have their own specific “storage areas”. These storage elements range from permanent structures to portable sheds to small storage boxes. Considering the high volume of use by multiple organizations, it is understandable that storage space is in such demand. There is no consistency in the storage elements.



Initial planning consideration: A standardized method of storage and storage unit selection should be considered for installation at the facilities within the park. Storage units should be in close proximity to the facility they serve but should be in the same color and material palette.

Parking. Parking is currently located at RMHS, along Bancroft Avenue and across from Coolidge Middle School (Imagination Station parking lot). There is also parallel parking along Birch Meadow Drive. Spectators and athletes visiting Birch Meadow for athletic events are encouraged to use the parking lots at RMHS. The parking at Bancroft Avenue is frequently used by tennis groups but the adjacent neighborhood has cited concerns with traffic on Bancroft associated with other Birch Meadow uses, specifically bus and passenger vehicle traffic for games at Morton Field.

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Initial planning consideration: A turn-around/drop-off at the end of Bancroft should be considered to help address some of the neighborhood's current traffic concerns. The "Imagination Station" parking lot should be considered for renovation to structure the parking area and provide appropriate stormwater management and treatment. Additional opportunities for parking should be explored to increase access to elements within Birch Meadow (i.e., Higgin's Conservation Property and facilities along Birch Meadow Drive).

Handicap Accessibility. Although Activitas noted a number of accessibility improvements have recently been made at Birch Meadow, equal access is an on-going challenge at the park. Accessible parking spaces, routes and seating opportunities are provided at some of the Birch Meadow facilities while others are lacking.

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Initial planning consideration: Activitas reviewed all the facilities and noted that accessible routes are not provided at all team areas and spectator seating opportunities. A number of the portable bleacher units at the site are not code compliant and do not provide seating for individuals with accessibility challenges and their companion(s). Each implementation project recommendations should include addressing these challenges and providing universal access from parking to walkways to all elements within the park.

Signage and Wayfinding. Activitas noted that there is a number of signs and dedication plaques at various site elements but the graphic palette is inconsistent. There is little wayfinding signage to help users/visitors navigate the site. There is no gateway signage that defines entrances, signifies one has arrived or is leaving Birch Meadow or speaks to the history and/or educational significance of park elements.



Initial planning consideration: The Town should consider a coordinated signage program at Birch Meadow including parks rules, wayfinding, facility rules and restrictions, gateway signs and interpretive (educational) signage. This is a relatively simple and cost-effective way of providing park users and visitors with necessary and/or relevant information while providing a Town of Reading branding opportunity.

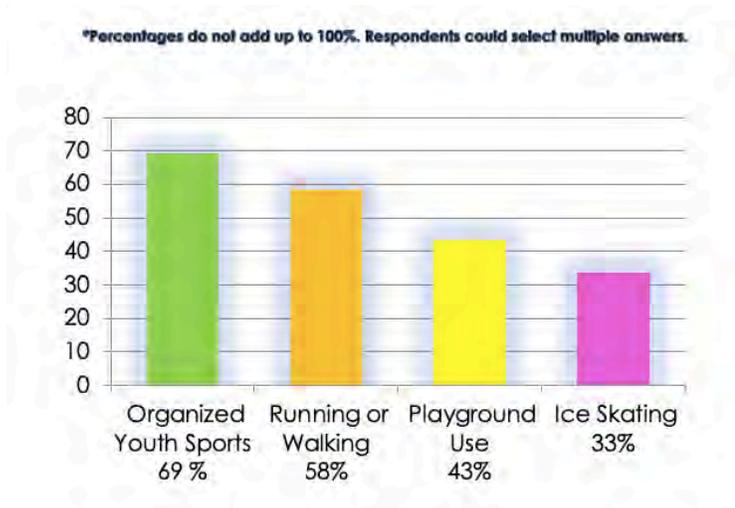
Community Engagement

Encouraging and gathering public input and opinions was a critical aspect of the master plan process for Birch Meadow. The Recreation Department and the Birch Meadow Master Plan Subcommittee have been actively participating in a two-way engagement with Birch Meadow users, stakeholders and the greater Reading community for over a decade. A community survey was originally performed in 2009, again in 2015 and a third was recently conducted in 2019. Over 1,000 residents responded to the 2019 survey with their opinions on Birch Meadow and desired improvements to the park.

2019 Community survey results:

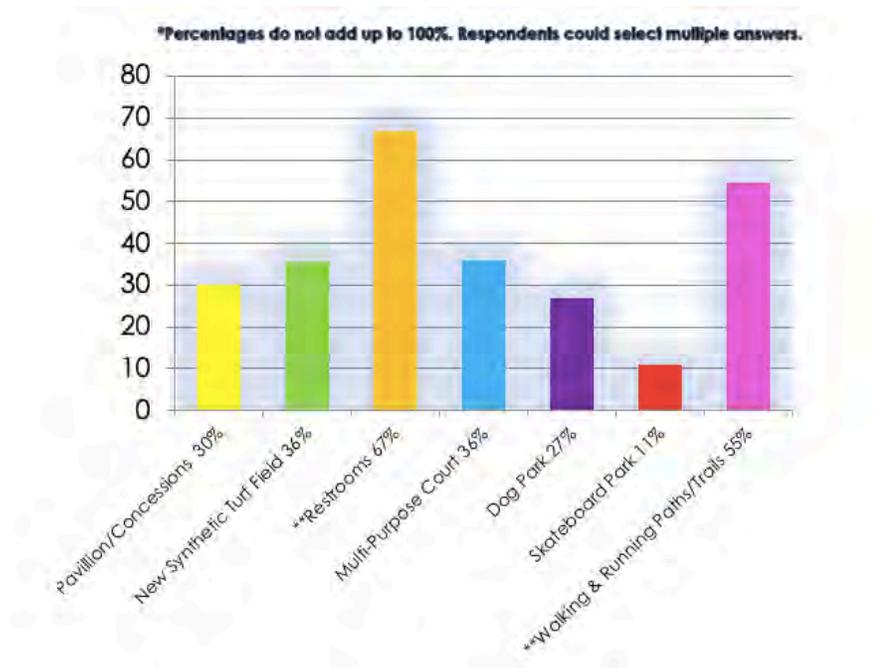
Highest Usage:

- Active recreation (specifically organized youth sports) – 69%
- Passive recreation (running and/or walking) – 58%
- Playground use – 43%
- Ice Skating – 33%



Most Desired Improvements:

- Upgraded and new lighting systems – 80%
- Restrooms – 67%
- Passive recreation paths/trails for walking and running – 55%
- New synthetic turf field – 36%
- Multi-purpose court – 36%
- Pavilion/concessions – 30%
- Dog park – 27%
- Skateboard park – 11%



In the spring of 2020, numerous stakeholders and user groups were identified and interviewed about their opinions on the existing condition of Birch Meadow and their visions for the future of the park. These groups included, but are not limited to, the following:

- Town Administration
- Reading Public Works
- Reading Public Schools
- Reading Community Services
- Reading Recreation
- Reading United Soccer Club
- Reading Lacrosse Association
- Reading Little League
- Reading Softball Little League
- Reading Babe Ruth League
- Reading High School Athletics
- Various Town Boards and Committees

The results of the stakeholder and user group interviews largely reinforced the desires expressed in the 2019 community survey. The top reoccurring focus areas were lighting (more lighting at fields and walkways), more passive recreation opportunities (walkways, path and unprogrammed space), a restrooms/concessions building and more synthetic turf.

INTERVIEWS & FOCUS GROUPS

Activitas conducted individual interviews with the following user groups/stakeholders:

- TOWN ADMINISTRATION
- READING PUBLIC WORKS
- READING PUBLIC SCHOOLS
- READING COMMUNITY SERVICES
- READING RECREATION
- READING UNITED SOCCER CLUB
- READING LACROSSE ASSOCIATION
- READING LITTLE LEAGUE
- READING SOFTBALL LITTLE LEAGUE
- READING BABE RUTH LEAGUE
- READING HIGH SCHOOL ATHLETICS
- VARIOUS TOWN BOARDS & COMMITTEES

STRENGTHS

- Central location
- Stadium
- Proximity to surrounding schools
- Existing tennis courts

CHALLENGES

- Drainage issues site-wide
- Castine has extremely short window of effective use during summer
- Inadequate storage for all teams
- Parking is an issue for bigger games and when park is in full use
- Older field lighting
- Lack of formal entrances
- Wayfinding signage for both vehicular and pedestrian circulation
- Trails conditions and access points at Higgins Conservation Area
- Circulation and access from neighborhood

KEY FOCUS AREAS

- More fields with lighting
- More passive recreation opportunity
- Restrooms/concessions building
- More turf
- Lacrosse wall
- More storage throughout complex
- More pickleball courts
- Make the park more inviting
- More defined team areas
- More landscaping for park like feel
- Better maintenance plan by Town or others
- Scoreboards and PA systems with modern technology capabilities

ACTIVITAS

In addition to regular master plan updates during public Recreation Committee meetings, a virtual Community Presentation was held on November 18, 2020. The presentation was publicly advertised as part of a regularly scheduled Recreation Committee meeting. 192 people registered for the virtual presentation and 129 people attended the live presentation (67% attendance rate). This does not include people that viewed the presentation on Reading Community Television (RCTV).

As part of the community presentation, Activitas provided a review of the purpose/goal of the master plan, baseline understanding of the site (detailed site analysis and historical information), findings from needs assessments and user group interviews, site plan development and recommendations for potential future projects. Activitas fielded questions from the public on the virtual call. Attendees who did not get to have their input heard, were asked to email their questions and comments. Activitas compiled all emails into a single document that responded to all submitted comments and questions. The Community Presentation Follow-Up Questions and Comments Memorandum was issued to the Recreation Department on December 17, 2020. For reference, the file is also attached to this memorandum. Based on some comments and questions from the community, minor adjustments were made to the conceptual site plan.

Design Approach

After a complete analysis of the park was completed, stakeholder interview results were analyzed and general needs assessments were identified, design opportunities for improving park elements, programmability and user experiences were explored. Activitas used a couple of contrasting design approaches to understand the dynamic and impact of proposing various changes to Birch Meadow. This resulted in a conceptual plan that highlights the importance of the community's stated needs and desires, addresses current shortcomings and sets the stage for future improvements to dramatically change the park's programmability and on-site experiences of its users.

Communities like Reading are constantly evolving and the needs and desires of the average Birch Meadow user will change over time. Understanding these basic facts dictate that the master plan for Birch Meadow needs to be flexible and to allow for some level of organic change. This is intended to be a conceptual framework which highlights possible park improvements over the next +/- 10 years.



Highlights of the proposed conceptual site plan include the following:

Improved circulation and passive recreation opportunities throughout the park:

- Central circulation spine from Birch Meadow Drive to the High School and from Imagination Station parking lot to the High School
- Secondary pathways to provide stronger connections to park elements and accessible pathways to all team and spectator seating areas
- The walkways define edges of unprogrammed spaces for passive recreation
- Development of a circulation loop of approximately 1 miles for walkers/joggers to track their distances while recreating within Birch Meadow

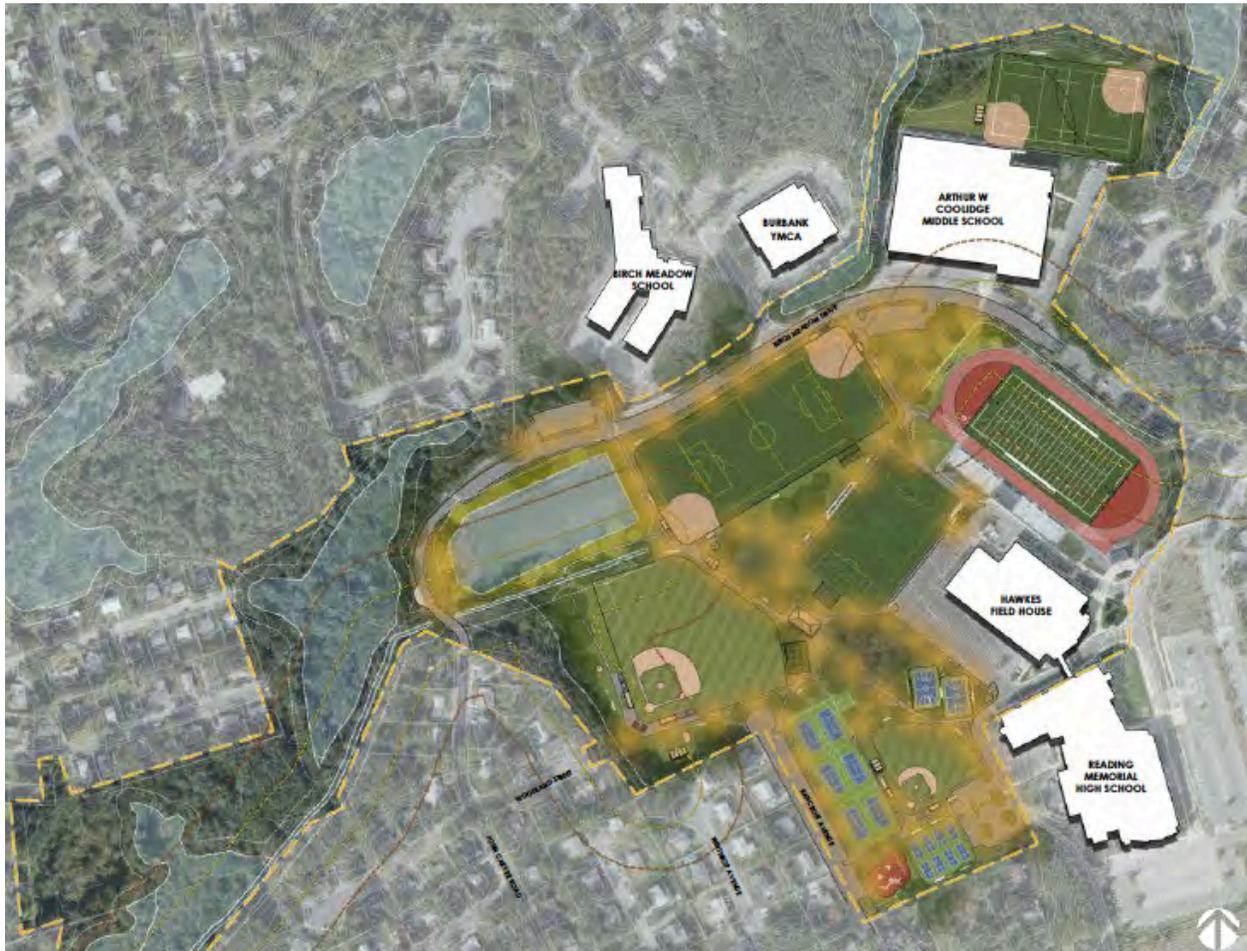


Standardized and increased quantity of services elements within the park:

- Restrooms and pavilion structure centrally located within the park
- Storage units adjacent to competitive athletic facilities
- Materials of these elements should be drawn from the same material palette and speak to each other. This will create a greater sense of place and will reinforced a positive Birch Meadow identity

Proposed energy efficient, LED lighting systems:

- Pedestrian scale lighting for safe passage within the park after dark
- Sports lighting systems to increase programmability and align with peer towns (from a high school athletics standpoint)
- Scheduling of lighting systems can be arranged on a clock, light sensor, or via a web-based application that allows control of the lighting systems from remote locations via a smart phone or tablet



Protect and enhanced resource areas of the Aberjona River and associated wetlands:

- Provide clear delineation between programmed spaces and enhance educational opportunities at resource areas
- Utilize pervious pavement walkways to the extent practicable within resource area buffers
- Enhance the resource areas with native wetland vegetation
- Improve trailhead, trails and associated wayfinding and educational signage at the Higgins Conservation Property
- Increase naturalized landscape buffers at abutting residential properties (specifically behind and adjacent to Morton Field)

Additional synthetic turf surfaces:

- Provides higher utility, lower maintenance requirements
- Ability to utilize the base of the fields to promote infiltration of stormwater or as stormwater storage
- Addition of synthetic turf softball/multi-purpose field behind Coolidge Middle School enables conversion of the softball/multi-purpose fields off of Birch Meadow Drive. It also provides a layout which allows for three softball events (including adult softball) simultaneously.

- Addition of a synthetic turf lacrosse wall area immediately west of Turf II
- From a utility perspective - one, lit synthetic turf field equals approximately three natural grass fields when you consider the amount of increased use that can be placed on a synthetic surface
- Like the synthetic turf field at Turf II, all proposed synthetic turf field systems should consider including a resilient underlayment. Additionally, alternative, organic options for infill materials should be reviewed and considered

Renovate and/or improved cultural maintenance practices at natural grass fields:

- A comprehensive review of cultural maintenance practices for all natural grass athletic fields should be performed and a minimum standard should be established that includes annual soil testing, core and/or deep-tine aerification, topdressing, fertilization, verti-cutting, overseeding, routine mowing, and periodic periods of rest for grass plant recovery.
- Skinned infield surfaces should also be reviewed on a regular basis. Maintenance should include aggressive grooming, topdressing with calcined clay and/or additional infield mix, repair of mounds and batter/catcher's boxes, etc.
- Head-to-head in-ground irrigation systems at natural grass fields should also be reviewed on a regular basis to confirm heads are operational and pressure is sufficient for designed coverages.

Improved parking:

- Add/formalize parking opportunities at the perimeter of the park to reduce walking distances to various park elements
- Add a turn-around drop at the end of Bancroft to facilitate the flow of vehicles
- Add signage directing park users/visitors to RMHS parking and satellite parking lots to reduce potential negative traffic impacts on residential roads



Playground improvements to provide additional safety:

- Perimeter fencing to reduce concerns associated with kids in close proximity to Bancroft traffic. The intent is to design perimeter fencing beyond the edge of the resilient playground surfacing and hide portions for the fence with trees and other landscaping. The goal is to have the playground securely enclosed without giving the sense of a “playground in a fenced cage.”
- New edging and pour-in-place resilient surfacing should be explored
- Updated equipment that supports safe play for the 2-5 and 5-12 age groups

Sustainable and eco-friendly park enhancements:

- Electric vehicle charging stations should be considered at two of the parking lots within the Birch Meadow complex
- The use of photo-voltaic cells on the roof of the pavilion/restroom building should be explored

All the items noted above are included in the final conceptual master plan site plan. While some elements of Birch Meadow are slated for renovation or re-development, other elements only require some enhancements. It is important to note that the conceptual site plan either meets the existing park’s programming capacity or improves programmability. The chart below is a

summary of park features with highly desirable items (from the community comments) highlighted.

SUMMARY OF FEATURES

ATHLETIC CAPACITY/AMENITIES	EXISTING	PROPOSED
SYNTHETIC TURF FIELDS	2	4
NATURAL GRASS FIELDS	4	2
FOOTBALL	1-2	2-3
SOCCER	1-3	2-3
BASEBALL	1	1
SOFTBALL	3	4
BATTING TUNNELS	2	5
YOUTH BASEBALL	1	1
BOYS LACROSSE	3	3
GIRLS LACROSSE	1	2
LACROSSE WALL	✘	✓
FIELD HOCKEY	2	3
BASKETBALL COURTS	1	2
PICKLEBALL COURTS	3	8
TENNIS COURTS (EXISTING TO REMAIN)	6	6
ROPES COURSE (UPGRADE/CERTIFY EXISTING)	✓	✓
SPORTS LIGHTING* (# OF LIGHTED FIELDS)	3	6
SCOREBOARDS*	4	7

SITE AMENITIES	EXISTING	PROPOSED
SPECTATOR SEATING**	389	478
STORAGE***	826 SF	1,663 SF
RESTROOMS/CONCESSIONS	✘	3,024 SF
PLAYGROUND/TOT-LOT	5,024 SF	7,624 SF
MEASURED WALKING PATH	✘	1 MILE
ADDITIONAL PARKING	N/A	87
PARK "GATEWAY" ENTRANCES	2	5
PICNIC/GATHERING SPACE	✓	✓

* Includes existing elements/fixtures at Stadium and Turf II

** Not including existing Stadium Seating

*** Not including existing storage at Stadium

Project Implementation Recommendations

Activitas recommends a three-tiered approach for considering the implementation of potential master plan projects. The three tiers are as follows:

- **Critical.** These projects are typical funded and perform first. They are required to address immediate needs, community desires and/or issues that impact public safety or accessibility.
- **Sustainable.** These projects can be small or large and help to improve the overall function of the park, enhance user experiences and addressed deferred maintenance concerns.
- **Visionary.** These are transformational projects that will increase programmability within the park and the Town's recreational system. They are often the most expensive project types due to the larger scale and scope of the developments. If, however, financing can be secured, a significant positive impact to the Town's recreational system (not just the Birch Meadow Park) can justify the project cost.

CRITICAL

PROJECT	COST	POTENTIAL FOR PHASING	POTENTIAL FOR OUTSIDE FUNDING
Central Spine & Restrooms <i>Circulation Improvements and New Support Structure</i>	\$\$	YES	YES
Lacrosse Wall <i>New Wall and Site Improvements</i>	\$	NO	YES
Imagination Station Parking Lot <i>Parking Renovation and Wetland Restoration</i>	\$\$	YES	YES
Stadium <i>Track and Field Renovations</i>	\$\$\$\$	NO	YES

\$ Low Cost (\$0 - 250K)
 \$\$ Low to Moderate Cost (\$250K - 750K)
 \$\$\$ Moderate Cost (\$750K - 1.5M)
 \$\$\$\$ Moderate to High Cost (\$1.5M - 2.5)
 \$\$\$\$\$ High Cost (\$2.5M +)



SUSTAINABLE

PROJECT	COST	POTENTIAL FOR PHASING	POTENTIAL FOR OUTSIDE FUNDING
Higgins Farm Conservation Area <i>Trail and Wayfinding Improvements</i>	\$	YES	YES
Birchmeadow Drive <i>Parking and Accessibility Improvements</i>	\$\$	YES	YES
Casline Field <i>Wetland Restoration</i>	\$	NO	YES
Morfon Field <i>Fencing, Circulation, Team Areas, Lights, and Accessibility Improvements</i>	\$\$\$	YES	YES
Adventure Ropes Course <i>Equipment and Safety Improvements</i>	\$	NO	YES
Basketball Courts <i>New Courts and Lighting</i>	\$\$\$	YES	YES
Little League Field <i>Lights, Storage, and Team Area Improvements</i>	\$\$	YES	YES
Playground <i>Equipment and Safety Improvements</i>	\$\$	NO	YES
Pickleball Courts <i>New Courts and Lighting</i>	\$\$\$	YES	YES
Administration/Rise Parking Lot <i>Expansion and Improvements</i>	\$	NO	YES

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 \$\$\$\$ Moderate to High Cost (\$1.5M - 2.5)
 \$\$\$\$\$ High Cost (\$2.5M +)



VISIONARY

PROJECT	COST	POTENTIAL FOR PHASING	POTENTIAL FOR OUTSIDE FUNDING
Softball/Multi-Purpose Field New Synthetic Turf Field, Lights, Team Areas, Storage, and Site Improvements	\$\$\$\$\$	YES	YES
Coolidge Middle School Field New Synthetic Turf Field, Lights, Team Areas, Storage, and Site Improvements	\$\$\$\$	YES	YES

\$ Low Cost (\$0 - 250K)
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 \$\$\$\$\$ High Cost (\$2.5M +)



When the proposed project implementation slides are compared to the comments from the community engagement, it is clear that a number of the high priority desires from the community are included in the recommended "Critical" projects.

Based on reviews and discussions with the Birch Meadow Master Plan Subcommittee and the Reading Recreation Committee, the central spine walkway with lighting and a restroom/pavilion structure is considered an appropriate first implementation project. This project is being recommended due to the fact that it improves circulation, increases opportunities for passive recreation, adds service amenities in restrooms and a pavilion and enhances safety by adding pedestrian scale lighting in the middle of the park.

The image below, combines the three tiers to show how the communities needs/desires are addressed in the three-tiered approach.

KEY FOCUS AREAS

1. More fields with lighting
2. More passive recreation opportunity
3. Restrooms/concessions building
4. More turf
 - Lacrosse wall
 - Make the park more inviting
 - Better maintenance plan by Town or others
 - More storage throughout complex
 - More pickleball courts
 - More defined team areas
 - More landscaping for park like feel
 - Scoreboards and PA systems with modern technology capabilities



If you have any questions or comments on the enclosed information, please do not hesitate to contact me directly at (781) 355-7043 or by email at mjn@activitas.com.

Respectfully,

ACTIVITAS

Mark Novak, RLA
Design Principal

Distribution: Ryan Percival, Town of Reading Stephen Crisafulli, Activitas

Attachments: Community Presentation Follow-up Questions and Comments Memorandum,
December 17, 2020

Birch Meadow Wetland Delineation Summary, Epsilon Associates, July 16, 2020

MEMORANDUM

Subject: Community Presentation Follow-up Questions and Comments

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Birch Meadow Master Plan**

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Date: 17 December 2020

To: Jenna Fiorente
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Recreation Department
16 Lowell Street
Reading, MA 01867

By: Mark Novak
Design Principal

Delivery: via email (gfiorente@ci.reading.ma.us)

Activitas facilitated a virtual community presentation on November 18, 2020 to update interested members of the Reading Community on the Birch Meadow Master Plan project. At the end of the presentation, Activitas fielded and responded to comments and questions from presentation attendees.

Due to time constraints, Activitas could not address all questions and comments. The following memorandum lists additional questions and comments submitted by presentation attendees and Reading residents who did not have an opportunity to vocalize their thoughts on November 18th. For ease of reference, the questions and comments have been grouped into the following topics:

- General
- Bike Friendly Accommodations
- Batting Cages
- Stormwater
- Softball
- Bancroft Avenue/Woodland Street/Morton Field
- Birch Meadow Drive Parking
- Sustainable Design Recommendations

GENERAL

Question/Comment: *Hope you are well and safe. I missed this. Is there a link to a recording of it? Please let me know. Thanks, ahatutale@aol.com*

Response: The presentation was recorded and has been provided to Reading Recreation so they can post it for public viewing. RCTV has posted the [video of the meeting](#) as well.

Question/Comment: *What are the next steps here? Will there be more community outreach and what is the approval process for the proposed ideas?*
Question asked by: caitlin0621@yahoo.com

Response: Based on the feedback from the Community Presentation on November 18th, Activitas is making some adjustments to the Master Plan and associated conceptual site plan. The next step will be a presentation of the updated version of the Master Plan, incorporating community comments and suggestions, to the Reading Select Board.

All Master Plan recommendations are a conceptual vision for Birch Meadow. Individual projects, whether they be new walkways, new lighting systems, installation of lacrosse wall, etc., will need to be approved by the Town and receive all necessary regulatory approvals (including the opportunity for public comment) prior to actual construction/installation.

Question/Comment: *Where was community input acquired from? I live here at the end of Bancroft Ave and know none of my neighbors were asked for input.*
Question asked by: caitlin0621@yahoo.com

Response: Community surveys were performed in 2007, 2014 and 2019. The three primary results in all of the community survey indicated the desire for the same type of elements within Birch Meadow: lighting (sports field and pedestrian), more passive recreation in the form of walkways and trails, and a support structure for concessions and restrooms.

Stakeholder and user group interviews with Town Administration, Community Services, High School Athletics, Youth Lacrosse, Little League, Pop Warner Football, Reading Soccer, Base Ruth Baseball, etc., were also performed. Notes from the stakeholder meetings and Master Plan Working Group meetings have been posted on the Recreation website. Regular updates on the master plan process have also been given at Recreation Committee meetings (which are open to the public).

BIKE FRIENDLY ACCOMODATIONS

Question/Comment: *Does the master plan include parking for bicycles in an equally convenient way as for vehicles?* Question asked by: ericarodrigues04@gmail.com

Response: The final master plan report will call for the standardization of site furnishings (benches, trash and recycling receptacles, bike racks, etc.) Birch Meadow. Maintenance planning and implementation is much more efficient for site furnishings when replacement parts for standardized elements can be purchased. Included in the recommendations for site furnishings will be multiple bike racks to be strategically located throughout the park and specifically adjacent to major park elements.

Question/Comment: *I didn't get to ask my question and was hoping you could pass it on. Has any thought been given to those folks and kids who ride bicycles in and around the park complex? Thanks in advance. Dan LeLacheur*

Response: The path surfaces proposed would be appropriate for bike riders. This excludes pathways immediately adjacent to environmentally sensitive resource areas that would require a more permeable surface. The two primary paths linking Birch Meadow Drive to the southern portion of the site will be wide enough to support biking and walking simultaneous.

BATTING GAGES

Question/Comment: *Jenna, I hope you are well. Looking at where the batting cages are proposed to moving, I do have concerns as I wasn't realizing they would move down towards the 1st base line of Morton. What makes them so great today is the central location, allowing RLL, RBRL, RSL, RMHS, and the general public to use them in an open area. Often times they are used when RMHS or RBRL is having a game and the current location of the cages doesn't interfere with their games, spectators, etc. If they were moved, I am not sure if the grassy area adjacent to the tennis courts and hit wall would be an option. Funny, as I type this Pete Mosc. is saying something similar. Thanks, Mike Wondolowski*

Response: The updated site plan will adjust the location of the baseball batting cages. The proposed softball batting cages will remain adjacent to the softball/multi-purpose field but the location of the baseball batting cages will be relocated back to the approximate location of the existing cages to allow for access/use by both baseball and little league.

STORMWATER

Question/Comment: *Overall I think the plan is pretty good but still have questions regarding flooding:*

- 1.) The area is prone to flooding and it also stores a lot of water that prevents flooding downstream. I wanted to ask if they had calculated the volume of run off from their plan vs what is there now.*
- 2.) They have the opportunity to store a lot more and mitigate downstream flooding but I don't think they have taken advantage. The synthetic turf fields might produce more runoff and less infiltration than natural fields but they did not address this concern.*

3.) *They did make reference to "storing" water under the fields but groundwater is within a couple of inches of the surface during much of the year so I am not sure how they would do this.*

Jamie Maughan

Response:

The goal of this master plan is to provide a spacial analysis and recommendations for potential future developments within Birch Meadow. A detailed stormwater analysis of the entire site was not part of the consultant's scope of work. The project team, however, has had multiple conversations about enhancing stormwater management measures within the park and the potential for mitigating downstream stormwater challenges.

Synthetic turf fields, when properly designed, do not produce more run-off and less infiltration. They are designed and modeled as high performing natural grass fields that are required (per stormwater standards) to match existing runoff rates and volumes. As mentioned in the presentation, synthetic turf fields can also be designed to utilize the engineered base of the field for stormwater storage and the promotion of infiltration.

Groundwater elevations at Birch Meadow vary significantly depending on location. Based on comprehensive subsurface exploration program conducted by CDM Smith in 2015, ground water elevations vary from 3.3' to over 9' below the existing ground surface. Borings in the location of the proposed softball/multi-purpose synthetic turf field indicate that groundwater elevations ranged from 4' to 9' below existing ground surface. The reported depth of groundwater would provide opportunities for the development of a synthetic turf field with low profile stormwater chambers. If the elevation of the proposed field was raised to be level with the elevation of Birch Meadow Drive, additional stormwater storage could be achieved.

This master plan recommends that all potential future projects associated with Birch Meadow (especially those immediately adjacent to Birch Meadow Drive – Imagination Station Parking Lot and Softball/Multi-Purpose Field) explore opportunities to improve upon existing stormwater management practices within the park.

SOFTBALL

Question/Comment: *I have a question about the phasing of all this. What are the dates that these plans will be approved/not approved? Will there be more webinars? I remember you going through pricing levels for all the changes and noticed that the Coolidge sport field was part of the highest pricing level. Is there a possibility that that part of the design concept won't be approved and therefore not get done? And if the multipurpose area gets approved where there is only TWO softball fields, does that mean we really do lose a*

softball field? I ask because I have a daughter who plays in the RSL and as was noted in the meeting, there is already limited time and field space for the girls.

Thank you for your time, Lianne Stoddard, Reading resident

Response:

As previously mentioned, each project (or portion of a recommended project) needs to have funding approved and allocated, detail design performed and regulatory approvals and community consensus secured prior to breaking ground for actual construction. The master plan is a planning tool to develop recommendations for potential future projects. If the master plan is approved, it does not necessarily mean that all of the projects will move forward. This question, however, raises a good question about the recommended phasing of the two visionary projects (Coolidge Field and the Softball/Multi-purpose Field). It is recommended that the Coolidge Field be constructed first in order to maintain softball field access and reduce negative scheduling/permitting impacts during construction.

Question/Comment: *We play three games at a time now without a problem. Why do we need to change that layout? Men's softball does not overlap with RLLS or HS softball. Question asked by: audrahart@me.com*

Response:

Based on statements from Reading Recreation and Reading High School, the location of the existing softball fields presents a number of scheduling challenges including high school softball and men's softball requesting the fields for similar times. Additionally, in our professional opinion the current locations and orientation of the softball infields presents a legitimate safety concern if all three fields are in use at the same time. Expanding the area between the fields creates more multi-purpose space and facilitates safer softball venues. The addition of one softball field (or potentially two youth softball fields) at Coolidge, further increases the Town's potential programmability at the Birch Meadow complex.

Question/Comment: *As it stands now, we can have 3 softball games playing at Birch Meadow, while youth soccer games are happening. So, while we still have 3 softball fields, it seems we can't play as many games at one. Question asked by: audrahart@me.com*

Response:

This statement contradicts the information that was provided by numerous groups during the data collection portion of the master plan. As previously stated, the Master Plan promotes safe play with increased function. The soccer field illustrated on the conceptual site plan is a regulation field. Multiple youth soccer pitches could be painted (or coned-off) between the two softball fields proposed just south of Birch Meadow Drive.

BANCROFT AVENUE/WOODLAND STREET/MORTON FIELD

Question/Comment: *I'd like some feedback on the idea behind placing lighting around local neighborhoods on Morton Field. Is the plan to start games later?*

The non-sports related gatherings tend to occur under the current lights. I don't see this as a benefit when it is light out until 8:30 PM in the summers. Question asked by: caitlin0621@yahoo.com

Mike Lucey - 246 Bancroft Ave - Additional Lighting at Morton Field will be an enormous issue for local neighborhoods. Currently the field at night is quiet and safe, Additional lighting will draw crowds and gatherings. This area is immediately adjacent to houses, unlike the other fields adding lighting. Question asked by: caitlin0621@yahoo.com

I am concerned about the proposed lighting at Morton field. Baseball games already create a huge parking issue on Bancroft Ave. As someone who lives directly next to this field, I am worried about the safety issue late night games will cause in this neighborhood. I am sure that the teams playing late at night will not be our local youth teams. Question asked by: caitlin0621@yahoo.com

Response:

The Master Plan provides recommendations for improvements and enhancements to Birch Meadow facilities and user experiences. The subject of installing additional sports lighting systems at Birch Meadow is not a new recommendation. In fact, the lighting of Birch Meadow athletic fields (including Morton Field) was approved at the 2016 Town Meeting. The funding, however, was rescinded when bids came in too high for the desired scope of work.

Regarding Morton Field specifically, approximately 50% of the other high schools in Reading Memorial High's baseball league currently play at facilities with sports lighting. The image below is from Lexington High School's Center Playing Fields. Lexington is a peer institution in Reading High School's baseball and softball leagues. Please note the light control and cut-off at the edges of the field.



The proposed sports lighting system at the athletic fields will increase programmability and utility of the Birch Meadow facilities, especially in the shoulder seasons of spring and fall. The sports lighting technology recommended is the same as the LED system recently installed at Turf II. The ability to control spill and glare is unparalleled and the lighting system design can guarantee that zero light spill occurs from Birch Meadow onto abutting properties. The master plan also called for planting additional vegetation behind the backstop and down the first and third baselines to create an additional visual barrier from abutting properties to the field.

Due to Morton Field's proximity to resource areas, a new lighting system design would require, at a minimum, Conservation Commission approval prior to awarding a contract and installation. Funding for the lighting, if it were to be a Capital Improvement Project, would also need approval at Town Meeting.

Question/Comment: *Is there consideration of how over-crowded the parking situation is on Bancroft Avenue during games on Morton Field? It always overflows so there is too much crowded parking with the tennis courts and playground. Question asked by: nelson1lau@gmail.com*

Response: Yes, consideration was given to the parking and traffic flow at Bancroft Avenue. Expansion of the RISE parking lot at the high school and the addition of the turn-around/drop-off at the end of Bancroft will help to improve the current situation. Reading Recreation also currently requests that users of Morton Field park at the high school. A recommendation for improved signage and increased communication regarding parking at the high school for Morton users will be noted in the master plan report.

Question/Comment: *The baseball dugouts were paid for with private fundraising by Reading Babe Ruth not paid for by the town. Question asked by: japierce1@comcast.net*

Response: Thank you for the clarification.

Question/Comment: *We strongly oppose the creation of a formal pedestrian access point to Morton Field from Woodland St. This would significantly impact all the neighbors on the street, creating traffic and parking problems we believe the town would be unable to adequately enforce. It would also impact our property directly. Walker Larsen, 6 Woodland Street.*

Response: The pedestrian connection from Woodland to Birch Meadow via a pedestrian bridge at the end of Woodland was requested by several groups as an additional access point to the park. The addition of the bridge would protect the resource area that is currently walked through and would eliminate the use wooden pallets or other materials placed in the resource area (a clear violation of the Wetland Protection Act) to facilitate crossing. The original intention was to install "No Parking for Birch

Meadow Users" signs on Woodland to assist with enforcement of non-resident parking.

Upon further review with members of the Working Group, the pedestrian connection at the end of Woodland will be removed from the master plan recommendations and conceptual site plan. The master plan report, however, will recommend that the Town continue to explore opportunities to provide additional pedestrian connectivity from adjacent neighbors to Birch Meadow via boardwalks over protected resource areas.

Question/Comment: *We also strongly oppose the addition of sports lighting and a PA system at Morton Field. Morton Field is close to the surrounding houses, and the addition of lights and nighttime sports activities would be a substantial impact to all the neighbors. A PA system would likewise be a substantial negative impact. We have had conversations with other neighbors and believe there is widespread opposition to these master plan potential projects. Walker Larsen, 6 Woodland Street*

Response: The objection to the sports lighting system was addressed in a previous response. Regarding the proposed PA system, this item was mentioned in error during the Community Presentation. Recommendations for upgraded, energy-efficient scoreboard systems should be considered but the addition of a PA system was not discussed during the master plan design and development of plan recommendations. Addition of PA systems will not be included in the final master plan report.

Question/Comment: *We strongly approve of the proposal to add to the vegetative barrier between Morton Field and the surrounding houses to mitigate the impact of existing activities. We do suggest that an evergreen barrier is considered, so that fall through early spring the barrier is maintained even when foliage is gone. These are heavy-use times for Morton field. Walker Larsen, 6 Woodland Street*

Response: The recommendation for the vegetative barrier will include a heavy concentration of evergreen trees. Deciduous trees and shrubs, however, will also be included in the recommendation (albeit at a lower concentration) to create a "naturalized" edge.

BIRCH MEADOW DRIVE PARKING

Question/Comment: *Parking at the end of Castine field is not feasible given the sight lines and S-curve approach. Question asked by: richard.williams@ibigroup.com*

Response: Upon further review and consideration, the "head-in" parking on both sides of Birch Meadow Drive at the western end of Castine Field have been removed from the conceptual site plan. Parking to access the Higgins Conservation Area trails will be via the proposed off-street parking

lot south of the Birch Meadow School. Development of a trail head is now proposed instead of the originally proposed spots on the Higgins Conservation Area side of Birch Meadow Drive. Permeable surfacing is proposed with a vehicle control gate to allow for periodic off-street maintenance access to the trail head and associated trails.

Question/Comment: *We also agree with comments during the presentation about head-in parking on John Carver/Birch Meadow being unsafe given the curvature of the road. It does not seem necessary to have "trail head" parking for Higgins, unless this is an ADA compliance need. Walker Larsen, 6 Woodland Street.*

Response: This item has been addressed in a previous response.

SUSTAINABLE DESIGN RECOMMENDATIONS

Question/Comment: *I would like to echo Select Board Member Vanessa Alvarado's comments about planning for EV chargers and solar use in any future improvement plans for Birch Meadow. I would love to see the potential for a solar structure that could dually power lights and other maintenance tools or cars and that could also serve as shade or rain cover. What seems aspirational today - is well on its way to becoming a climate preserving reality. I have already spoke to the RMLD Board about "sponsoring" an EV initiative and the feedback was positive. Karen Gately Herrick, Reading Select Board.*

Response: Recommendations for electric vehicle charging stations and photovoltaic panels will be explored in more detail and incorporated in the final design/report.

If you have any questions or comments on the enclosed information, please do not hesitate to contact me directly at (781) 355-7043 or by email at mjn@activitas.com.

Respectfully,

ACTIVITAS



Mark Novak, RLA
Design Principal

Distribution: Ryan Percival, Town of Reading
(via email) Charles Tirone, Reading Conservation

Kevin Bohmiller, Town of Reading
Stephen Crisafulli, Activitas

Attachments: Walker Larsen Letter, 24 Nov. 2020
Revised Conceptual Site Plan

Hi Jenna,

Thank you again for making sure we were aware of the Recreation Committee community presentation of the proposed Birch Meadow Master Plan. Overall, the design and concept have some nice updates and enhancements. While we have some thoughts on the complete plan, we will focus our comments on those proposals that would directly impact us and our property.

First, we understand that this is a master plan, not an actual proposed project. That said, if any of the projects that directly affect our property are ever proposed as actual projects we will need the opportunity to provide more detailed comments and engage with the Town as appropriate to mitigate potential impacts.

We live at the end of Woodland St (#6); our property abuts Morton Field. It was not mentioned during the presentation, but the design drawing appears to indicate the creation of a formal pedestrian entry point to Birch Meadow from Woodland St to the back of the Morton Field backstop.

We strongly oppose the creation of a formal pedestrian access point to Morton Field from Woodland St. This would significantly impact all the neighbors on the street, creating traffic and parking problems we believe the town would be unable to adequately enforce. It would also impact our property directly.

We also strongly oppose the addition of sports lighting and a PA system at Morton Field. Morton Field is close to the surrounding houses, and the addition of lights and nighttime sports activities would be a substantial impact to all the neighbors. A PA system would likewise be a substantial negative impact. We have had conversations with other neighbors and believe there is widespread opposition to these master plan potential projects.

We strongly approve of the proposal to add to the vegetative barrier between Morton Field and the surrounding houses to mitigate the impact of existing activities. We do suggest that an evergreen barrier is considered, so that fall through early spring the barrier is maintained even when foliage is gone. These are heavy-use times for Morton field.

We know we live next to a high use recreational area that is a public amenity for the town. But there is a big difference between living next to a daytime recreation area and living next to a sports field with lights and a PA system, and being on a dead end street versus a street with formal access to the recreation area.

Please find below additional detail of our comments and concerns that we hope could be more fully addressed if these projects are ever proposed:

- **Field lighting for Morton**
 - If sports lighting is installed at Morton Field there will be a significant impact to us and the other houses surrounding the field, both in terms of light spill and the noise associated with sports activities taking place at night. Enhancements to the vegetated barrier around Morton Field will help but will not fully block the light or sound. If such lighting is ever installed, we strongly request it operate on a timer and shut off by 10pm like the tennis lighting. The manual lights at the current softball field are often on well past 10pm, contributing to both light and noise from the men's softball. We understand

there may be a need to accommodate the timing of games in progress, but if this comes to pass we would request games be started with the intention of finishing before 10pm. **Morton Field is closer to residential houses than the other fields**, and the impact of sports lighting should be strongly considered before proceeding with any installations. Please also keep in mind that very often (as reported to you by my wife) the manually controlled lights on the softball field have been turned on when they are not supposed to be, or left on all night. If the proposed Morton field lights are not on a timer, or if multiple groups are allowed access codes to turn them on, there will undoubtedly be many nights when lights are on well past 10pm, on when they shouldn't be, or left on overnight inadvertently.

- **Enhanced PA capabilities**

- As just stated, Morton Field is very close to houses. If it were equipped with a PA system that could be used for any baseball games held on the field, that would result in a substantial increase in noise for the surrounding houses. Whereas football is played on occasional Friday nights during the fall, baseball is played on Morton Field daily for much of the year, something like 7-8 months of the year, often with multiple games per day, warmups beginning before 8am, and not ending until well after 6pm or later. The cumulative impact of a PA system used for baseball would be substantial, and we would argue against its regular use if ever installed.

Whether or not enhanced PA capabilities are added to Birch Meadow fields, we strongly request the Recreation Department and Select Board consider the cumulative impacts of amplified sound on the neighborhood surrounding Birch Meadow—consider the events as a whole, not singly. There are often multiple amplified sound events over a weekend, leaving almost zero undisturbed time in our neighborhood. Also consider that the geography of Birch Meadow further amplifies sound in specific ways, meaning that sound carries over distances, and can be heard farther than one may think based on the placement of the sound system. Adding PA capabilities on top of existing conditions will exacerbate the impact on the neighborhood.

- **Pedestrian lighting for walking paths/access**

- The plan drawing appeared to show pedestrian lighting along a new pathway on the right field side of Morton, going behind the backstop to access both dugouts. This pathway would be directly behind our house. If there is lighting, we would wonder about the timing of its use and whether these lights would be on all night. This would have a significant light spill impact for us and other houses along the lit route.

- **Batting cage location**

- This was discussed during the presentation, and we agree with the concerns expressed about the proximity of the proposed location to houses. Further, the batting cage is currently used extensively, often starting before or around 7am, and moving it closer to houses would lead to conflicts.

- **Improved vegetation barrier around Morton Field**

- We were very happy to hear the proposed plan recognizes the need for enhanced vegetation to screen Morton Field use from the houses that surround it. We strongly support this regardless of other projects, and request that it include both additional deciduous trees and evergreen cover. A wall of arborvitae would be great, but so would

some evergreen tree options like eastern white pines. While the deciduous cover is good in the summertime, both sound and light from Birch Meadow are much more impactful in the early spring and late fall when there are few or no leaves on the trees. If the town adds vegetation around Morton Field, please consider adding evergreen options, and also the size of the trees planted, since young trees would have no immediate mitigation effects.

We strongly support the town adding additional vegetated cover to enhance the barrier between Morton Field and the surrounding houses regardless of other Birch Meadow or Morton Field projects. Vegetation helps to mitigate sound and light impacts, and the trees slow and divert the trajectory of foul balls, which regularly land in our yard and might otherwise land in our driveway.

- **Location and design of a formal pedestrian access from Woodland St to Morton Field**

- Based on the master plan drawing, the access point would be at the end of our driveway and go along the edge of our property line. Currently there is no formal access at this location. There is a chain link fence in the tree line that runs the length of the Birch Meadow property, perpendicular to the proposed walkway. Directly at the end of Woodland St, an approximate 15-foot section of the fence's top bar has been removed by someone, and the chain link is bent to allow people to step over it. At various times I have considered fixing the fence but assume it will only be taken apart again. Some people do cut through this way by creating a path through the vegetation and stepping over the broken fence. At various times they have also laid logs or other debris in the stream bed at the edge of Morton Field in order to cross the stream. This blocks the water flow, so I tend to remove such debris when I notice it.
- If a formal pedestrian access point is created, we assume it will be a crushed stone or paved pathway with a small bridge over the critical stream bed. If this project is ever proposed, we would like to work with the town on the location of the pathway, and request the town add both vegetative and structural privacy screening to block views into our yard and prevent trespassing. Trash receptacles would also need to be installed at both ends of the pathway. If a formal access point is created, we anticipate it would be heavily used, leading to a significant change in use for all four houses on our small street, and our driveway and yard in particular.

- **Vehicle and pedestrian traffic concerns associated with a formal access point**

- Most of the current cut through traffic is kids. However, adults occasionally attempt the cut through, and they park their cars on Woodland St to cut through and attend sporting events. As mentioned above, if a formal access point is created, we anticipate it would be heavily used, resulting in a substantial increase in foot traffic, parking problems, and dangerous traffic conditions. The current dead end is used extensively by neighborhood children for relatively safe bike riding and similar play.
- If a formal access point is ever created, the town would need to add signage at the top of Woodland St (intersection with John Carver), at the bottom by the access point, and potentially at appropriate other spots along the street approved by the neighbors, clearly stating that there is no parking on Woodland St for access to Birch Meadow. It may also be necessary to post such signage along John Carver and on the other side of

Woodland St. Restrictions would need to be enforced and neighbors would need to have a way to notify the appropriate authority of violations.

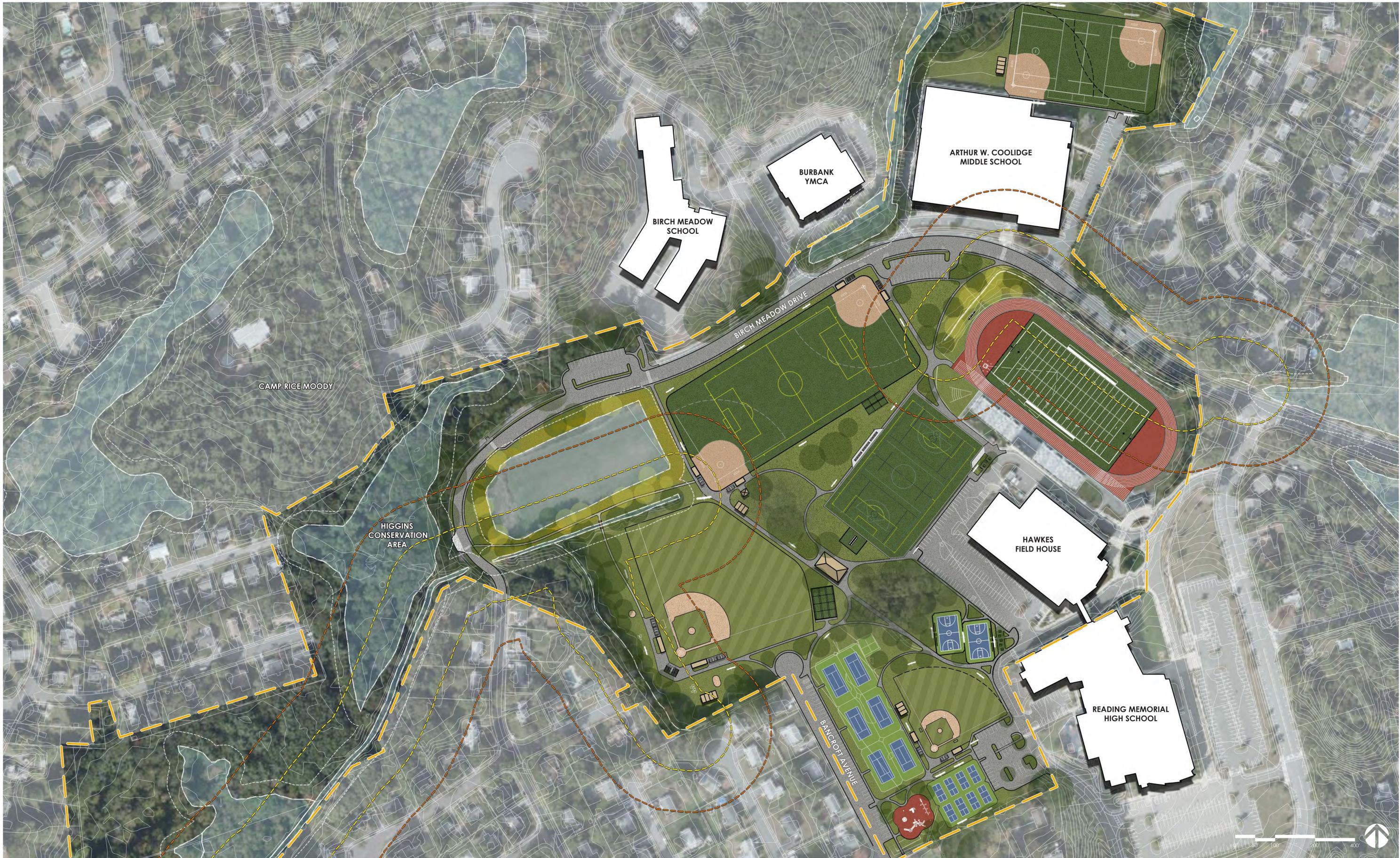
Regardless of whether or not a formal access point is created on Woodland St we would appreciate the town adding signage at the top and bottom of Woodland St stating there is no parking for access to Birch Meadow and directing spectators to appropriate parking locations.

- **Town Day firework considerations associated with a formal access point**
 - Town Day fireworks are launched from the Morton outfield. If a formal access point is created we assume the town would take the necessary precautions to avoid unsafe access to the launch area, and consider crowd control measures from the likely high capacity use of the access point before and after the show.

Again, we strongly oppose the creation of a formal pedestrian access point to Morton Field from Woodland St.

Comments on other parts of the plan

- We agree with the comments during the presentation that parking around Birch Meadow is a problem for sporting event attendees and also leads to problems for the surrounding neighborhoods. However, adding a few spaces along Birch Meadow Drive does not seem like a solution. Rather, we suggest signage and wayfinding to direct event spectators to park at the high school, which has a large parking lot that does not appear to be heavily used by field sport attendees currently.
- We also agree with the comments during the presentation about head-in parking on John Carver/Birch Meadow being unsafe given the curvature of the road. It also doesn't seem necessary to have "trailhead parking" for Higgins, unless this is an ADA compliance need.



Birch Meadow Complex Master Plan

Town of Reading | Reading, Massachusetts

ACTIVITAS
landscape architecture | civil engineering

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DECEMBER 2020



Projects:\5886\Wetland Delineation

PRINCIPALS

July 16, 2020

Mr. Mark Novak
Activitas, Inc.
70 Milton Street
Dedham, MA 02026

Subject: Field Completion Memo – Castine Field (Birch Meadow Park) – Reading, MA

Dear Mr. Novak,

Epsilon Associates, Inc. (“Epsilon”) has prepared this “Wetland Delineation Completion Summary” to document the wetland resource areas identified and delineated at and adjacent to Castine Field in Birch Meadow Park, Reading, MA (the “Study Area”). This memo describes the resource areas identified and delineated within the Study Area on July 6 & 8, 2020. See Attachment A, Figure 1 for a depiction of the site location. Representative site photographs are provided in Attachment B; wetland determination forms are provided in Attachment C.

It is important to note that the Study Area site visit was conducted during a Level 2 - Significant Drought issued on June 24, 2020 by the Executive Office of Energy and Environmental Affairs (EEA). This declaration was based on dry conditions present in the Northeast region in May and June 2020. On July 10, 2020 the EEA declared a Level 1 – Mild Drought in the Northeast Region. There are six drought indices used to determine the drought level: precipitation, streamflow, groundwater levels, lakes & impoundments, fire danger and evapotranspiration. Epsilon presumes that the Study Area water table was lower at the time of the site visit compared to non-drought conditions.

Study Area Description

Castine Field (the “field”) is bordered by Meadow Birch Drive to the north and west; the Aberjona River to the south; and a baseball field to the east. The field sits at a lower elevation compared to the surrounding land. Most of the field appears to be nearly level and can be characterized as a concave/depression (somewhat bowl-shaped) landform. A narrow swale is located around the perimeter of the field. The swale is located at lower elevations compared to the nearly level field. Two culvert inlets, located at the western end of the field, appear to provide a hydrological connection with the Aberjona River and a Massachusetts Department of Environmental Protection (MassDEP) mapped wetland located to the west of Birch Meadow Drive.

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MassDEP wetland datalayers, available on MassGIS, does not identify Castine Field as a wetland (see Figure 2), but the Federal Fish & Wildlife Service National Wetlands Inventory identifies Castine Field as a Palustrine (“P”) Emergent (“EM”) Persistent (“1”) Seasonally Flooded/Saturated (“C”) Excavated (“x”) wetland. The area is mapped as Udorthents, wet substratum by the Natural Resource Conservation Service (“NRCS”) Web Soil Survey (see Figure 4).

The entirety of the field was identified as previously disturbed Bordering Vegetated Wetland (“BVW”). Wetland flags WF-100 through WF-131 were established around the perimeter of the field. Hydrophytic vegetation, hydric soil indicators and wetland hydrology indicators were present within the perimeter swale described above. These strong wetland indicators extended beyond the swale and into portions of the western and northern field perimeter. Dominant hydrophytic vegetation species within the swale include cattail (*Typha latifolia*), arrow-arum (*peltandra virginica*), arrow-leaved tearthumb (*Persicaria sagittate*), tussock sedge (*Carex stricta*), jewelweed (*Impatiens capensis*), sensitive fern (*Onoclea sensibilis*), purple loosestrife (*Lythrum salicaria*), pointed broom sedge (*Carex scoparia*), lake sedge (*Carex lacustris*), blunt spikesedge (*Eleocharis obtusa*), *Poa sp.*, *Solidago sp.*, and curly dock (*Rumex crispus*).

Castine Field is routinely mowed, and it is Epsilon’s understanding that the field has experienced historic alterations and is used periodically for recreational purposes. Due to historic and recurring vegetation disturbances, most of the field lacks strong evidence of hydrophytic vegetation. Vegetation identification was limited within the field due to recent mowing. Dominant vegetation species identified within the field include plantain (*Plantago rugelii*), *Poa sp.*, and clover (*Medicago sp.*). To determine if the field exhibited indicators of hydric soil and wetland hydrology, Epsilon augured and/or dug eight soil observation test pits. The observation pits were conducted in a north to south alignment across the center of the field and along the eastern end of the field. Hydric soil and wetland hydrology indicators were observed within each observation pit. Water table observations in each pit ranged from depths of 9” (within the perimeter swale/lower elevations) to 16” (in the center of the field/higher elevations). The wetland hydrology indicators observed provide evidence that the site has a continuing wetland hydrologic regime and that observed hydric soils are not relicts of a past hydrologic regime. Wetland Determination Data Forms (Attachment C) were completed for one wetland-upland transect within the Study Area. The wetland data plot was conducted in an area that appeared to be the “driest” portion of the field, and/or where the hydroperiod and soils may be more problematic. The approximate location of the data plots are identified on an aerial map in Attachment C.

Recorded soil observations were made from the undisturbed wall/floor of small hand dug pits. A typical soil profile within the field consisted of a ± 6 ” ^A horizon with a fine sandy loam texture. The underlying ^Bg1 horizon appears to be Human Transported Material (“HTM”) consisting of a gravelly fine to medium sand. Gravel was subangular and ranged from 0-4” in diameter. The ^Bg1 layer generally extended for ~ 6 ” and was very dense/well compacted. The Bg2 horizon extended beyond depths of 18” and consisted of a fine sand material. Horizon boundary distinctness (i.e., the vertical distance through which the bottom of one horizon grades (transitions) into the next) throughout the field was abrupt to clear. Horizon boundary topography (i.e., the lateral undulation

and continuity of the boundary between horizons) throughout the field was clear. Based on the observations noted above it appears that the field has experienced significant disturbance in the past.

The USGS mapped perennial Aberjona River (the "river") flows in a westerly direction from an underground culvert outlet, near the baseball field to the east of Castine Field, to the river's culvert crossing at Birch Meadow Drive. The riverbanks are located nearly parallel to the field and appear to have experienced historical straightening. The frame of a water control structure was noted east of the Birch Meadow Drive culvert crossing. Perceptive water flow was noted within western reaches of the channel, while stagnant pools appeared to be present within the eastern reaches of the channel. The riverbank was delineated with Top of Bank ("TOB") flags TOB-1 through TOB-18.

The current Federal Emergency Management Agency ("FEMA") Flood Insurance Rate Map ("FIRM") dated 6/4/2010 Community Panel Number 25017C0311E indicates that Castine Field is not located within the 100-year floodplain (see Attachment A, Figure 3). According to the current FEMA FIRM the area is mapped as Zone X - 0.2% annual chance flood hazard.

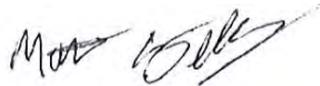
State and town regulated wetland resource areas identified by Epsilon within the Study Area include:

- Inland Bank ("Bank"),
- Riverfront Area ("RFA"),
- Bordering Vegetated Wetland ("BVW"), and
- Land under Water Bodies and Waterways ("LUW").

According to the Natural Heritage and Endangered Species Program (Natural Heritage Atlas, 2017), there is no mapped Priority and Estimated Habitats within or adjacent to the Study Area. There are no mapped certified or potential vernal pools within the Study Area (see Attachment A, Figure 2). There are two certified vernal pools and one potential vernal pool mapped within 1,000 feet southwest of the Study Area.

If you have any questions regarding this wetland delineation summary, please do not hesitate to contact me at (978) 461-6237 or via email at mkelly@epsilonassociates.com

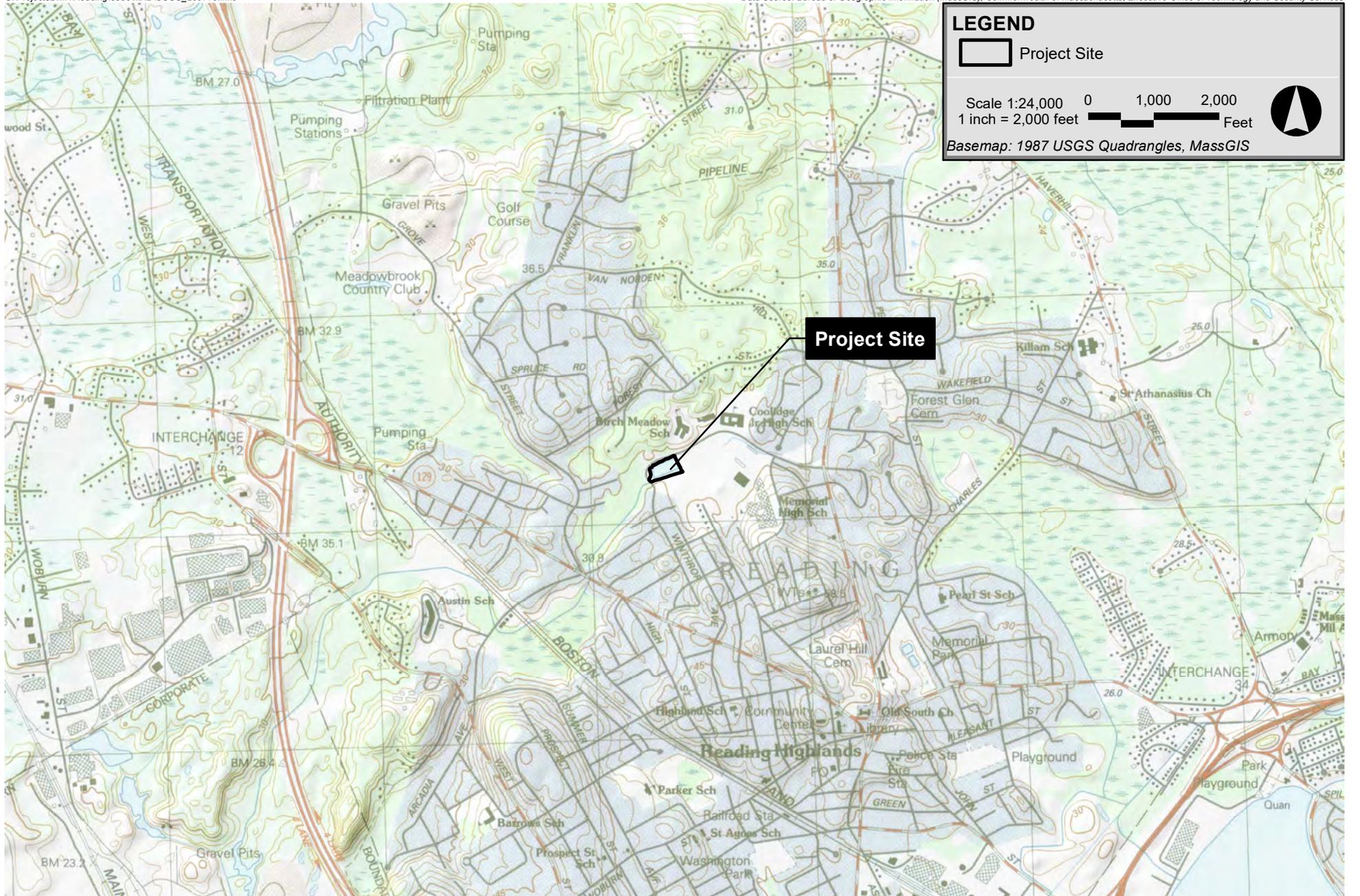
Sincerely,
EPSILON ASSOCIATES, INC.



Matthew Kelly
Senior Scientist

Attachment A

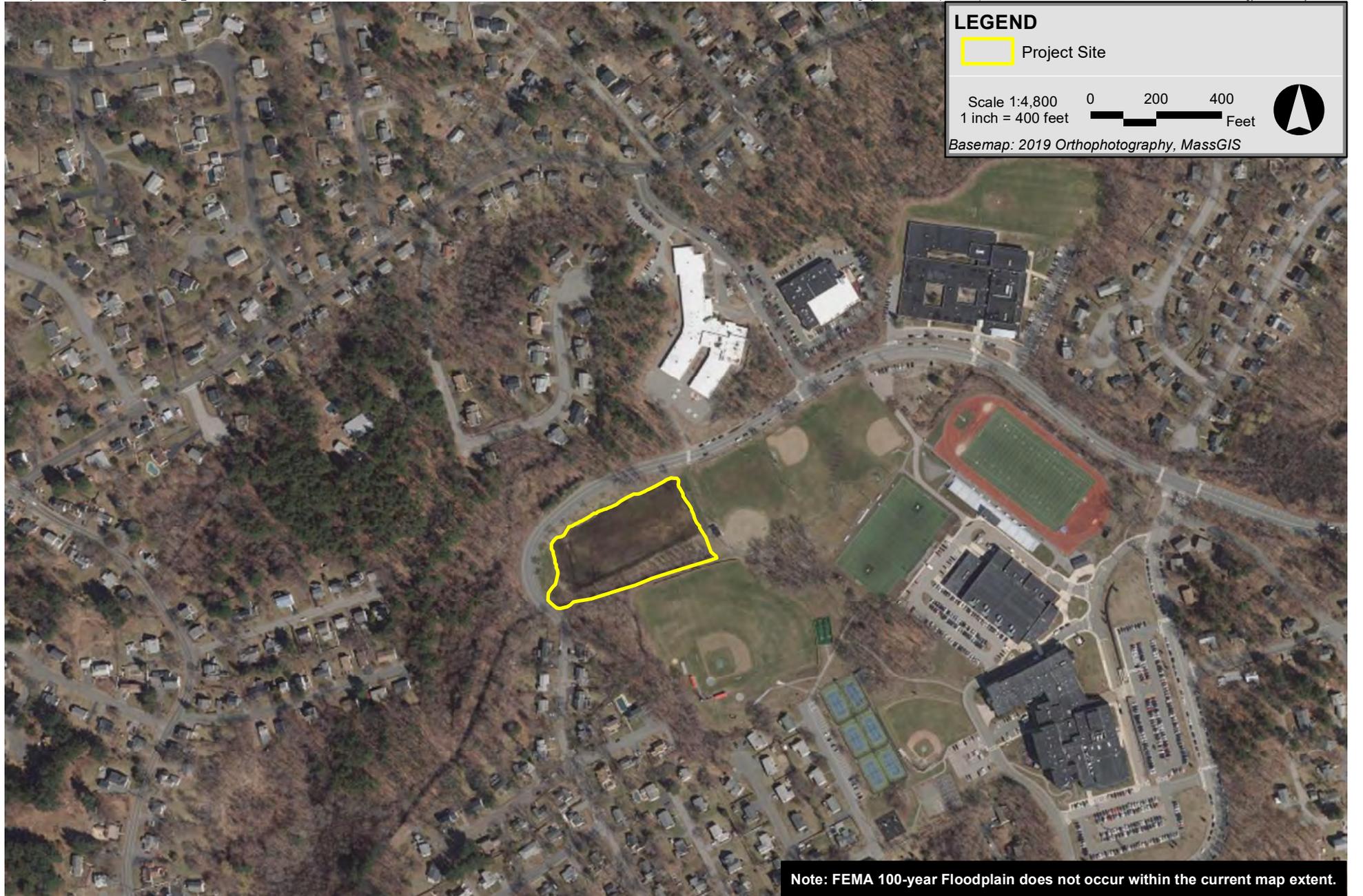
Figures



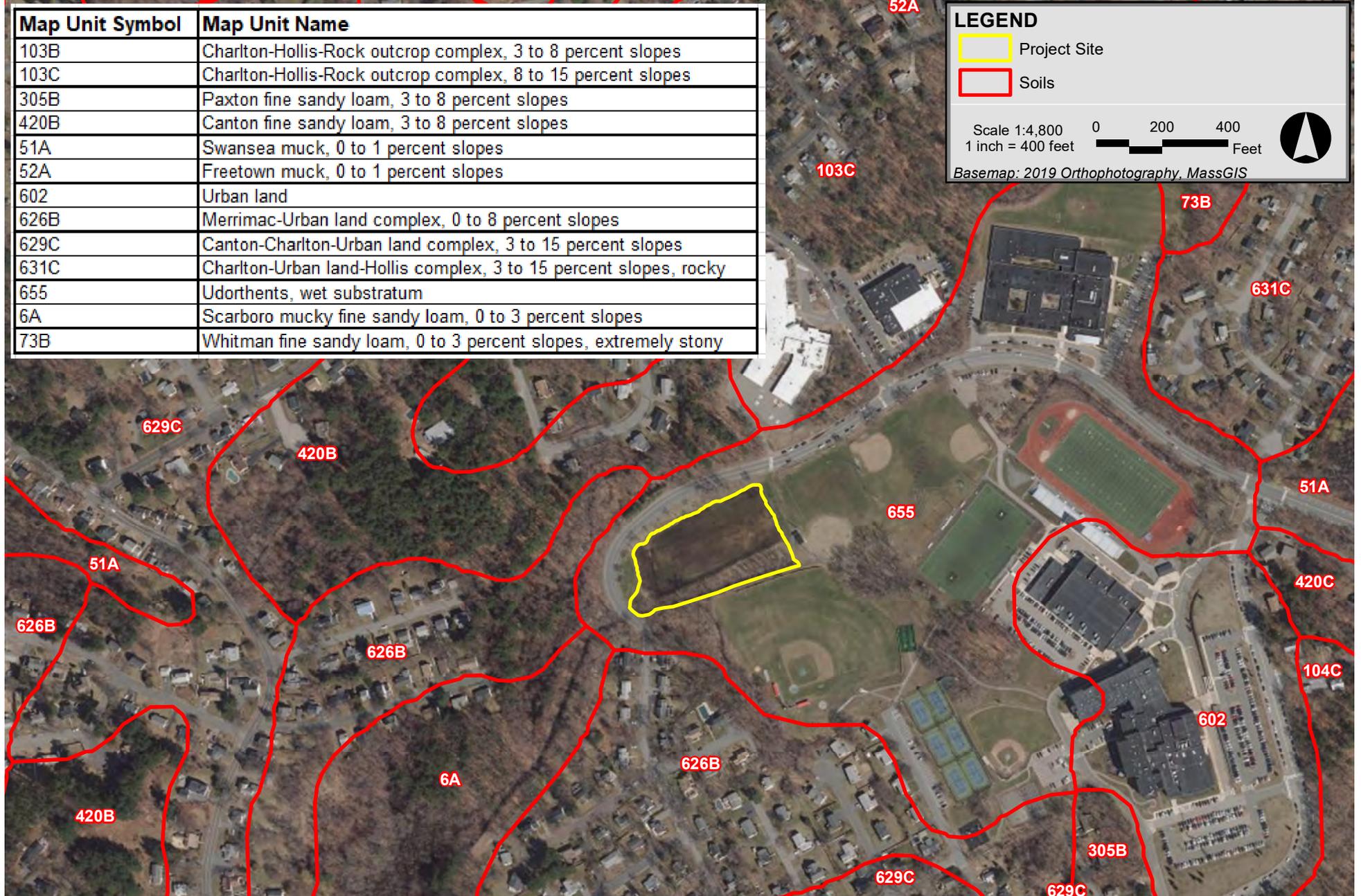
Castine Field – Birch Meadow Park Reading, MA



Castine Field – Birch Meadow Park Reading, MA



Castine Field – Birch Meadow Park Reading, MA



Castine Field – Birch Meadow Park Reading, MA

Attachment B

Site Photographs



Photo 1: View southwest from northeast corner of the field. Wetland vegetation is obvious within the northern perimeter swale.



Photo 2: View southeast of Castine Field from the northern perimeter. Wetland vegetation is present within the northern perimeter swale.



Photo 3: View of culvert outlet located in the northwest corner of the Study Area. Wetland vegetation is obvious from this view.



Photo 4: View of culvert outlet located in the southwest corner of the Study Area. Wetland vegetation is obvious from this view.

Reading, MA



Photo 5: View northeast from the southwest corner of the field. Wetland vegetation is obvious in this corner of the field.



Photo 6: View of the northeast corner of the field. Wetland vegetation is obvious in this corner of the field

Reading, MA



Photo 7: View west from the eastern perimeter of the field. Arrow pointing to shovel located in observation test pit.



Photo 8: View northwest from southern perimeter of the field. Lawn mower tire ruts were observed within the southern perimeter swale.

Reading, MA



Photo 9: View of soil profile from augured observation pit #1. This pit was located along the south central perimeter of the field. Hydric soil indicators were observed within 12" of the soil surface and the water table was measured at 13" below the soil surface.



Photo 10: View of soil profile from augured observation pit #2. This pit was located towards the center of the field. Hydric soil indicators were observed within 12" of the soil surface and the water table was measured at 16" below the soil surface.



Photo 11: View of soil profile from augured observation pit #3. This pit was located towards the center of the field. Hydric soil indicators were observed within 12" of the soil surface and the water table was measured at 14" below the soil surface.



Photo 12: View of soil profile from augured observation pit #4. This pit was located along the north central perimeter of the field. Hydric soil indicators were observed within 12" of the soil surface and the water table was measured at 16" below the soil surface.

Reading, MA



Photo 13: View of A-horizon from soil observation pit #7 located in the east central portion of the field.



Photo 14: Soil observation pit #7. Standing water was observed at 16" below the soil surface at this location. Hydric soil indicators were present within the upper 12" of mineral soil.



Photo 15: View of upland soil observation plot located along eastern slope above Castine Field.



Photo 16: View of material augured at depths between 21 and 27 inches..



Photo 17: Aberjona River at culvert outlet near southeast corner of Castine Field.



Photo 18: Typical view of Aberjona River located south of Castine Field.

Attachment C

U.S. Army Corps of Engineers Wetland Determination Data Forms

WETLAND DELINEATION DATA FORM - Northcentral and Northeast Region

Upland Plot

Project/Site: Castine Field - Birch Meadow Park City/County: Reading/Middlesex Sampling Date: 7/8/2020
 Applicant/Owner: Activitas Inc. State: MA Sampling Point: Upland
 Investigator(s): Epsilon (MK) Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Slope Local relief (concave, convex, none): slope Slope (%): 0-5
 Subregion (LRR or MLRA): LRR R Lat: 42.536501 Long: -71.113351 Datum: NAD83
 Soil Map Unit Name: Udorthents, wet substratum NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland? Yes _____ No <u>X</u> If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes _____ No <u>X</u>	

Remarks: (Explain alternative procedures here or in a separate report.)
 The Northeast drought region of Massachusetts was in a Level 2 - Significant Drought at the time of the site visit. The sampling point is located in an area that is routinely mowed and soils are presumed to have been previously disturbed as part of the park creation.

HYDROLOGY

Wetland Hydrology Indicators: Primary Indicators (minimum of one is required; check all that apply) <input type="checkbox"/> Surface Water (A1) <input type="checkbox"/> Water-Stained Leaves (B9) <input type="checkbox"/> High Water Table (A2) <input type="checkbox"/> Aquatic Fauna (B13) <input type="checkbox"/> Saturation (A3) <input type="checkbox"/> Marl Deposits (B15) <input type="checkbox"/> Water Marks (B1) <input type="checkbox"/> Hydrogen Sulfide Odor (C1) <input type="checkbox"/> Sediment Deposits (B2) <input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3) <input type="checkbox"/> Drift Deposits (B3) <input type="checkbox"/> Presence of Reduced Iron (C4) <input type="checkbox"/> Algal Mat or Crust (B4) <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) <input type="checkbox"/> Iron Deposits (B5) <input type="checkbox"/> Thin Muck Surface (C7) <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) <input type="checkbox"/> Other (Explain in Remarks) <input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	Secondary Indicators (minimum of two required) <input type="checkbox"/> Surface Soil Cracks (B6) <input type="checkbox"/> Drainage Patterns (B10) <input type="checkbox"/> Moss Trim Lines (B16) <input type="checkbox"/> Dry-Season Water Table (C2) <input type="checkbox"/> Crayfish Burrows (C8) <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) <input type="checkbox"/> Stunted or Stressed Plants (D1) <input type="checkbox"/> Geomorphic Position (D2) <input type="checkbox"/> Shallow Aquitard (D3) <input type="checkbox"/> Microtopographic Relief (D4) <input type="checkbox"/> FAC-Neutral Test (D5)
---	--

Field Observations: Surface Water Present? Yes _____ No <u>X</u> Depth (inches): _____ Water Table Present? Yes _____ No <u>X</u> Depth (inches): _____ Saturation Present? Yes _____ No <u>X</u> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <u>X</u>
--	---

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 See photos in Attachment B. Plot location is identified on the attached aerial map.

VEGETATION Upland

Sampling Point: Upland

Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>30'</u> radius)																					
1.	_____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ <u>1</u> (A) Total Number of Dominant Species Across All Strata: _____ <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ <u>50.0%</u> (A/B)																
2.	_____	_____	_____	_____																	
3.	_____	_____	_____	_____																	
4.	_____	_____	_____	_____																	
5.	_____	_____	_____	_____																	
6.	_____	_____	_____	_____																	
7.	_____	_____	_____	_____																	
		<u>0</u>	= Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15'</u> radius)																					
1.	_____	_____	_____	_____	Prevalence Index worksheet: <table style="width:100%; border:none;"> <tr> <td style="width:50%; text-align: right;">Total % Cover of:</td> <td style="width:50%; text-align: left;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																				
OBL species _____	x 1 = _____																				
FACW species _____	x 2 = _____																				
FAC species _____	x 3 = _____																				
FACU species _____	x 4 = _____																				
UPL species _____	x 5 = _____																				
Column Totals: _____	(A) _____ (B) _____																				
Prevalence Index = B/A = _____																					
2.	_____	_____	_____	_____																	
3.	_____	_____	_____	_____																	
4.	_____	_____	_____	_____																	
5.	_____	_____	_____	_____																	
6.	_____	_____	_____	_____																	
7.	_____	_____	_____	_____																	
		<u>0</u>	= Total Cover																		
Herb Stratum (Plot size: <u>5'</u> radius)																					
1.	plaintain	<i>Plantago rugelii</i>	10	yes	FAC																
2.	clover	<i>Medicago sp.</i>	30	yes	N/A																
3.	_____	<i>Poa sp.</i>	5	No	N/A																
4.	_____	_____	_____	_____	_____																
5.	_____	_____	_____	_____	_____																
6.	_____	_____	_____	_____	_____																
7.	_____	_____	_____	_____	_____																
8.	_____	_____	_____	_____	_____																
9.	_____	_____	_____	_____	_____																
10.	_____	_____	_____	_____	_____																
11.	_____	_____	_____	_____	_____																
12.	_____	_____	_____	_____	_____																
		<u>45</u>	= Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u> radius)																					
1.	_____	_____	_____	_____	Hydrophytic Vegetation Present? <table style="width:100%; border:none;"> <tr> <td style="width:50%;"></td> <td style="width:25%; text-align: center;">Yes <u>X</u></td> <td style="width:25%; text-align: center;">No _____</td> </tr> </table>		Yes <u>X</u>	No _____													
	Yes <u>X</u>	No _____																			
2.	_____	_____	_____	_____																	
3.	_____	_____	_____	_____																	
4.	_____	_____	_____	_____																	
		<u>0</u>	= Total Cover																		

Remarks: (Include photo numbers here or on a separate sheet.)
 See attached photos. Plot location is identified on the attached aerial map.

SOIL Upgradient

Sampling Point: Upland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-11	10YR2/2	100					lfs	A HTM Horizon
11-15	10YR2/1	100					fsl	Ab Horizon
15-21	2.5Y5/3	100					fs	B1 Horizon
21-27	5Y5/1	95	10YR4/4	5	C	M	fs	Bg Horizon

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR R, MLRA 149B)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Loamy Mucky Mineral (F1) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Redox Depressions (F8)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
	<input type="checkbox"/> Red Parent Material (TF2)
	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
	<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u> X </u>
---	--

Remarks:
 See attached photos. Plot locatoon is identifeid on the attached aerial map.

WETLAND DELINEATION DATA FORM - Northcentral and Northeast Region

Wetland Plot

Project/Site: Castine Field - Birch Meadow Park City/County: Reading/Middlesex Sampling Date: 7/6/2020
 Applicant/Owner: Activitas Inc. State: MA Sampling Point: Wetland
 Investigator(s): Epsilon (MK) Section, Township, Range: N/A
 Landform (hillslope, terrace, etc.): Depression Local relief (concave, convex, none): nearly flat Slope (%): 0-1
 Subregion (LRR or MLRA): LRR R Lat: 42.536441 Long: -71.11358 Datum: NAD83
 Soil Map Unit Name: Udorthents, wet substratum NWI classification: N/A
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology X significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation X, Soil X, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area Within a Wetland? Yes <u>X</u> No _____ If yes, optional Wetland Site ID: _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	

Remarks: (Explain alternative procedures here or in a separate report.)
 The Northeast drought region of Massachusetts was in a Level 2 - Significant Drought at the time of the site visit. The sampling point is located in an area that is routinely mowed and soils are presumed to have been previously disturbed as part of the park creation.

HYDROLOGY

Wetland Hydrology Indicators:		Secondary Indicators (minimum of two required)	
Primary Indicators (minimum of one is required; check all that apply)			
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Surface Soil Cracks (B6)	
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Aquatic Fauna (B13)	<input type="checkbox"/> Drainage Patterns (B10)	
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Marl Deposits (B15)	<input checked="" type="checkbox"/> Moss Trim Lines (B16)	
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input checked="" type="checkbox"/> Dry-Season Water Table (C2)	
<input type="checkbox"/> Sediment Deposits (B2)	<input checked="" type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	<input type="checkbox"/> Crayfish Burrows (C8)	
<input type="checkbox"/> Drift Deposits (B3)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input checked="" type="checkbox"/> Saturation Visible on Aerial Imagery (C9)	
<input type="checkbox"/> Algal Mat or Crust (B4)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Stunted or Stressed Plants (D1)	
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Geomorphic Position (D2)	
<input checked="" type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> Shallow Aquitard (D3)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)		<input type="checkbox"/> Microtopographic Relief (D4)	
		<input type="checkbox"/> FAC-Neutral Test (D5)	

Field Observations:			Wetland Hydrology Present? Yes <u>X</u> No _____
Surface Water Present? Yes _____ No <u>X</u>	Depth (inches): _____		
Water Table Present? Yes <u>X</u> No _____	Depth (inches): <u>16</u>		
Saturation Present? Yes <u>X</u> No _____ (includes capillary fringe)	Depth (inches): <u>13</u>		

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
 See photos in Attachment B. Plot location is identified on the attached aerial map.

VEGETATION Upland

Sampling Point: Wetland

Common Name	Scientific Name	Absolute % Cover	Dominant Species?	Indicator Status																	
Tree Stratum (Plot size: <u>30'</u> radius)																					
1.	_____	_____	_____	_____	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: _____ <u>1</u> (A) Total Number of Dominant Species Across All Strata: _____ <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: _____ <u>50.0%</u> (A/B)																
2.	_____	_____	_____	_____																	
3.	_____	_____	_____	_____																	
4.	_____	_____	_____	_____																	
5.	_____	_____	_____	_____																	
6.	_____	_____	_____	_____																	
7.	_____	_____	_____	_____																	
		<u>0</u>	= Total Cover																		
Sapling/Shrub Stratum (Plot size: <u>15'</u> radius)																					
1.	_____	_____	_____	_____	Prevalence Index worksheet: <table style="width:100%; border: none;"> <tr> <td style="width: 50%;">Total % Cover of:</td> <td style="width: 50%;">Multiply by:</td> </tr> <tr> <td>OBL species _____</td> <td>x 1 = _____</td> </tr> <tr> <td>FACW species _____</td> <td>x 2 = _____</td> </tr> <tr> <td>FAC species _____</td> <td>x 3 = _____</td> </tr> <tr> <td>FACU species _____</td> <td>x 4 = _____</td> </tr> <tr> <td>UPL species _____</td> <td>x 5 = _____</td> </tr> <tr> <td>Column Totals: _____</td> <td>(A) _____ (B) _____</td> </tr> <tr> <td colspan="2" style="text-align: center;">Prevalence Index = B/A = _____</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species _____	x 1 = _____	FACW species _____	x 2 = _____	FAC species _____	x 3 = _____	FACU species _____	x 4 = _____	UPL species _____	x 5 = _____	Column Totals: _____	(A) _____ (B) _____	Prevalence Index = B/A = _____	
Total % Cover of:	Multiply by:																				
OBL species _____	x 1 = _____																				
FACW species _____	x 2 = _____																				
FAC species _____	x 3 = _____																				
FACU species _____	x 4 = _____																				
UPL species _____	x 5 = _____																				
Column Totals: _____	(A) _____ (B) _____																				
Prevalence Index = B/A = _____																					
2.	_____	_____	_____	_____																	
3.	_____	_____	_____	_____																	
4.	_____	_____	_____	_____																	
5.	_____	_____	_____	_____																	
6.	_____	_____	_____	_____																	
7.	_____	_____	_____	_____																	
		<u>0</u>	= Total Cover																		
Herb Stratum (Plot size: <u>5'</u> radius)																					
1.	plaintain	<i>Plantago rugelii</i>	10	yes	FAC																
2.	clover	<i>Medicago sp.</i>	30	yes	N/A																
3.		<i>Poa sp.</i>	5	No	N/A																
4.	_____	_____	_____	_____	_____																
5.	_____	_____	_____	_____	_____																
6.	_____	_____	_____	_____	_____																
7.	_____	_____	_____	_____	_____																
8.	_____	_____	_____	_____	_____																
9.	_____	_____	_____	_____	_____																
10.	_____	_____	_____	_____	_____																
11.	_____	_____	_____	_____	_____																
12.	_____	_____	_____	_____	_____																
		<u>45</u>	= Total Cover																		
Woody Vine Stratum (Plot size: <u>30'</u> radius)																					
1.	_____	_____	_____	_____	Hydrophytic Vegetation Present? <table style="width:100%; border: none;"> <tr> <td style="width: 50%;"></td> <td style="width: 25%;">Yes <u>X</u></td> <td style="width: 25%;">No _____</td> </tr> </table>		Yes <u>X</u>	No _____													
	Yes <u>X</u>	No _____																			
2.	_____	_____	_____	_____																	
3.	_____	_____	_____	_____																	
4.	_____	_____	_____	_____																	
		<u>0</u>	= Total Cover																		

Remarks: (Include photo numbers here or on a separate sheet.)
 See attached photos. Plot location is identified on the attached aerial map.

SOIL Upgradient

Sampling Point: Wetland

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
1-0								Oi - Slightly decomposed organic matter
0-6	10YR2/1	100					fsl	A Horizon with Oxidized rhizospheres
6-12	2.5Y4/2	70	10YR4/4	30	C	M	s	Bg1 gravelly fine to medium sand
12-18	5Y5/1	100	10YR4/4	5	C	M	fs	Bg2

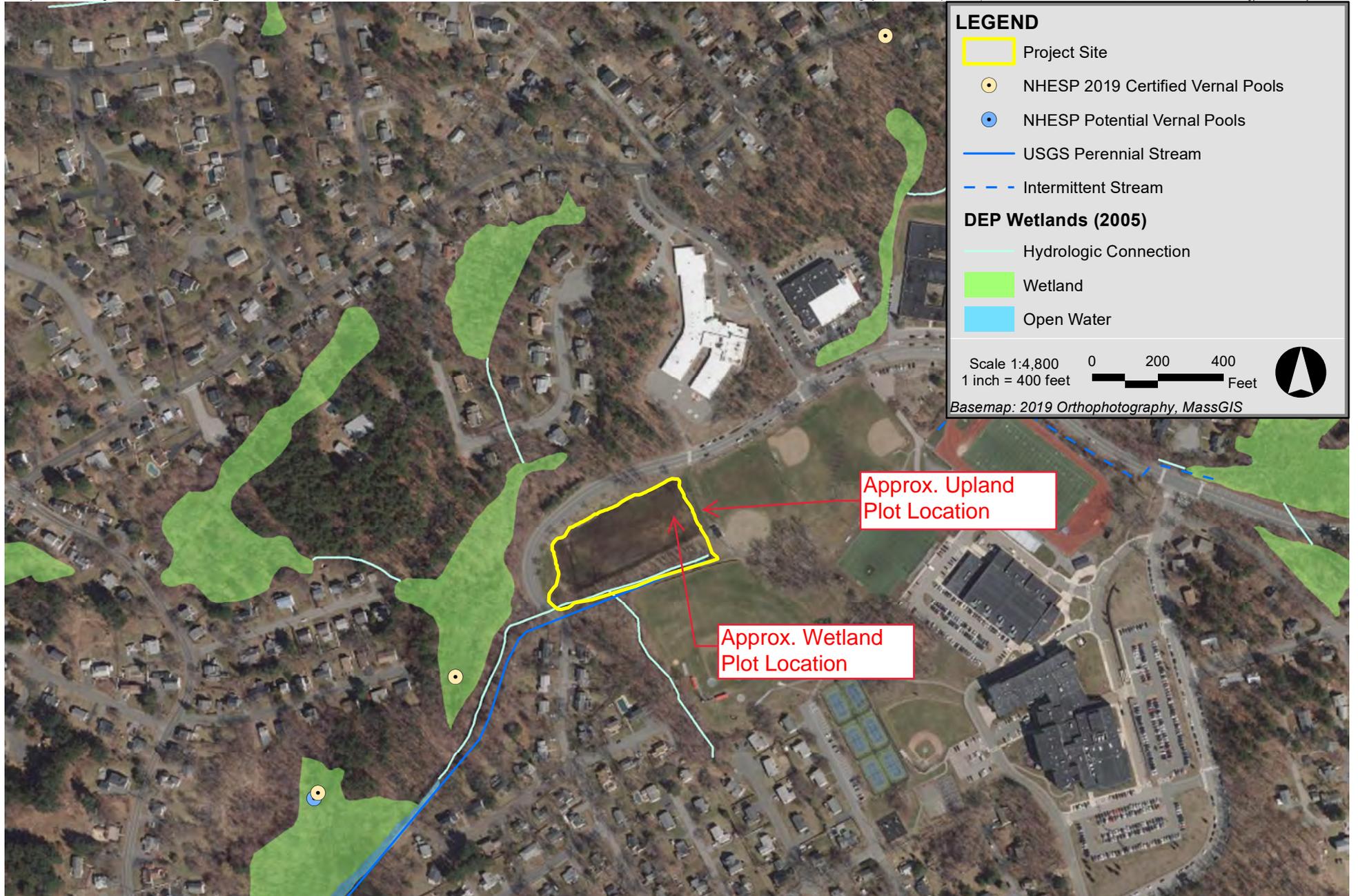
¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M-Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR R, MLRA 149B)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> 2 cm Muck (A10) (LRR K, L, MLRA 149B)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Coast Prairie Redox (A16) (LRR K, L, R)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3) (LRR K, L, R)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Dark Surface (S7) (LRR K, L)
<input checked="" type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Polyvalue Below Surface (S8) (LRR K, L)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Thin Dark Surface (S9) (LRR K, L)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Iron-Manganese Masses (F12) (LRR K, L, R)
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	<input type="checkbox"/> Piedmont Floodplain Soils (F19) (MLRA 149B)
<input type="checkbox"/> Sandy Redox (S5)	<input type="checkbox"/> Mesic Spodic (TA6) (MLRA 144A, 145, 149B)
<input type="checkbox"/> Stripped Matrix (S6)	<input type="checkbox"/> Red Parent Material (TF2)
<input type="checkbox"/> Dark Surface (S7) (LRR R, MLRA 149B)	<input type="checkbox"/> Very Shallow Dark Surface (TF12)
	<input type="checkbox"/> Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
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Remarks:
 See attached photos. Plot location is identified on the attached aerial map. Bg1 horizon had subangular gravel with diameters ranging between 0-4". This horizon was very dense with redoximorphic accumulation.



Castine Field – Birch Meadow Park Reading, MA