Horsley Witten Group
Sustainable Environmental Solutions
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Peabody Zielski Field Conceptual Design Project

June 2018

Prepared for:
Brendan Callahan, Asst. Director of Planning
Community Development and Planning Department
Peabody City Hall
24 Lowell Street
Peabody, MA 01960

Prepared by:
Horsley Witten Group, Inc.

Peabody Zielski Field
Conceptual Design Project

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1. Introduction

This report summarizes the work performed by HW between March 2017 and June 2018 to develop design concepts for combined passive recreation and stormwater management uses at the Zielski Field, a property acquired by the City for open space and passive recreation purposes at 182 Lynnfield Street. This work included a public meeting to hear from the public about their design preferences, desires, hopes and concerns for the use of the Zielski Field property by the City of Peabody. Following the public meeting, HW evaluated the regulatory constraints and design opportunities on the site as a result of the wetland resources and observed flooding on the property. We then developed 2 potential concepts that incorporate feedback from the public meeting and consideration of the wetland resources on the site. Following discussion of these preliminary concepts with the City, HW also performed a field investigation of the existing drainage system, with the assistance of the Public Services Department, to try to observe and document the drainage connections from the upgradient neighborhood through the site in order to confirm our understanding and proper accommodation within our proposed designs of the existing drainage contributing to the flooding at the rear of the Zielski Field property.

This report includes a discussion of the April 26, 2017 Public Meeting, including the presentation, survey of preferences and discussion, followed by the two concepts designs developed by HW as a result of input from the meeting, preliminary cost estimates for implementing each design, and two additional memoranda that document: 1) the wetland resources and regulatory implications of those wetlands at the site, and 2) the drainage infrastructure connected to the detention basin at the rear of the property and the culvert and catch basin in Lynnfield Street at the front of the property. These memoranda were developed by HW as part of the effort to better understand the flooding and wetland constraints at the site.

2. Public Meeting

HW assisted the City in hosting a public input meeting to begin discussions with the neighbors and the public at large about how the City might consider using the Zielski Field property for a combination of stormwater management and passive recreation uses. The meeting was held on April 26, 2017 at the Public Services Building conference room, and over 20 residents attended the meeting, including many neighbors, Mrs. Zielski and family members, City staff and elected officials. In preparation for the meeting, HW walked the site with City staff, talked with Mrs. Zielski and her niece, obtained historic photos documenting the earlier uses of the property, and prepared a presentation that included a preferences survey to understand the types of settings and recreational uses that meeting participants could evaluate and react to.

Neighbors were vocal about a variety of concerns for the property, including whether the project would exacerbate existing flooding for neighbors of the property and neighbors located across Lynnfield Street adjacent to Goldthwaite Brook, and the fear that people coming to use the property would create problems with drug use, illicit behavior, noise and parking. Some attendees were interested in the potential for a public space for passive recreation and interested in the possibility that the property might help alleviate localized flooding issues. There was a strong preference for more passive recreation

and less formal design at the park, and a desire for less parking available to avoid use of the park by large parties and groups outside of those within walking distance.

The meeting agenda, presentation and preferences survey results are presented in Attachment 1 for reference.

3. Design Options

Based on the feedback gained from the public meeting, HW developed two concept designs for Zielski Field, both of which combine the goals of passive recreation and stormwater management at the site. These designs are described below, and are presented graphically in Attachment 2 in both a 'wet' (stormwater storage) condition and a 'dry' condition. Each plan presents the various elements of the site concept, as well as representative photos of the elements and list of design highlights. In addition, HW prepared a Preliminary Site Analysis which presents the existing conditions on the site and the opportunities and concerns that were indentified through the public meeting and design process, as well as a Site Cleanup design, which shows the steps required for the preparation of the site prior to construction.

Preliminary Concept 1. Nature and Habitat

This concept includes the renovation of the existing stormwater detention basin within the easement at the rear of the property, which would then discharge into a large irregularly shaped stormwater basin within the eastern half of the Zielski property, which would provide both stormwater storage and treatment. A mowed grass path would provide passive walking access around the basin, as well as maintenance access. An open area on the central portion of the property near Lynnfield Street would be available for picnicking or could be used for a community garden for neighbors primarily within walking distance to the park. The apple orchard that once existed just west of the house and barn near Lynnfield Street would be restored and enhanced, and the woodland area on the western portion of the property would be maintained and enhanced as needed to provide habitat and a buffer. An attractive wooden fence would be maintained along the eastern edge of the property and a small earthen berm is proposed to direct surface runoff away from these properties and toward the stormwater basin. A small buffer would be created and maintained around the existing wetland, which is a potential vernal pool. Much of the site would be maintained as vegetated buffer to the wetland and stormwater basin to enhance the habitat value of the site.

Preliminary Concept 2. Lawn and Open Space

This concept also includes a series of stormwater basins for temporary storage and treatment of the stormwater interwoven with a network of mowed grass paths for walking and maintenance access. In this concept, the stormwater basins would cover a larger proportion of the property compared to Concept 1. The design also includes the restoration and expansion of the apple orchard, as well as the restoration of the birch grove with central green space near the road just west of the apple orchard. A mowed open space would be nestled in to the northwest corner of the property behind a woodland

buffer to the road, providing an informal area for picnicking or educational experiences. A wildflower pollinator garden would provide a backdrop to an open lawn area between the barn and the apple orchard. As with Design 1, a small buffer would be created and maintained around the existing wetland, which is a potential vernal pool. Much of the site would be maintained as vegetated buffer to the wetland and stormwater basin to enhance the habitat value of the site.

4. Cost Estimates

HW prepared preliminary planning level cost estimates for construction of each of the two design concepts, as a means of comparing the relative costs of each option. The cost estimate details are provided in Attachment 3. The preliminary cost estimate for concept 1 is $296,500 +/- and the preliminary cost for concept 2 is $351,000 +/-. These costs are in 2018 dollars and include a 40% contingency and 4% construction administration.

5. Attachments

Attachment A. Public Meeting Materials

Agenda

Presentation and Preferences Survey

Preferences Survey Results and Discussion

ZIELSKI FIELD (182 LYNNFIELD ST.) PROJECT
PUBLIC MEETING AGENDA

Wednesday, April 26, 2017
6:00 – 8:00 PM
Peabody Public Services Building, 50 Farm Avenue, Peabody

6:00 Welcome and Introductions
(City of Peabody Staff)

6:10 Overview of the Zielski Field site
(Horsley Witten Group)

6:20 What is passive recreation? What is stormwater management?
(Horsley Witten Group)

6:35 Hopes and Dreams - Round table brainstorming and drawing session
(Facilitated by Horsley Witten Group)

7:30 Report Out and Discussion

7:50 Wrap Up and Next Steps
(Horsley Witten Group and City of Peabody Staff)

8:00 Meeting Conclusion

ZIELSKI FIELD PROJECT
(182 LYNNFIELD ST.)

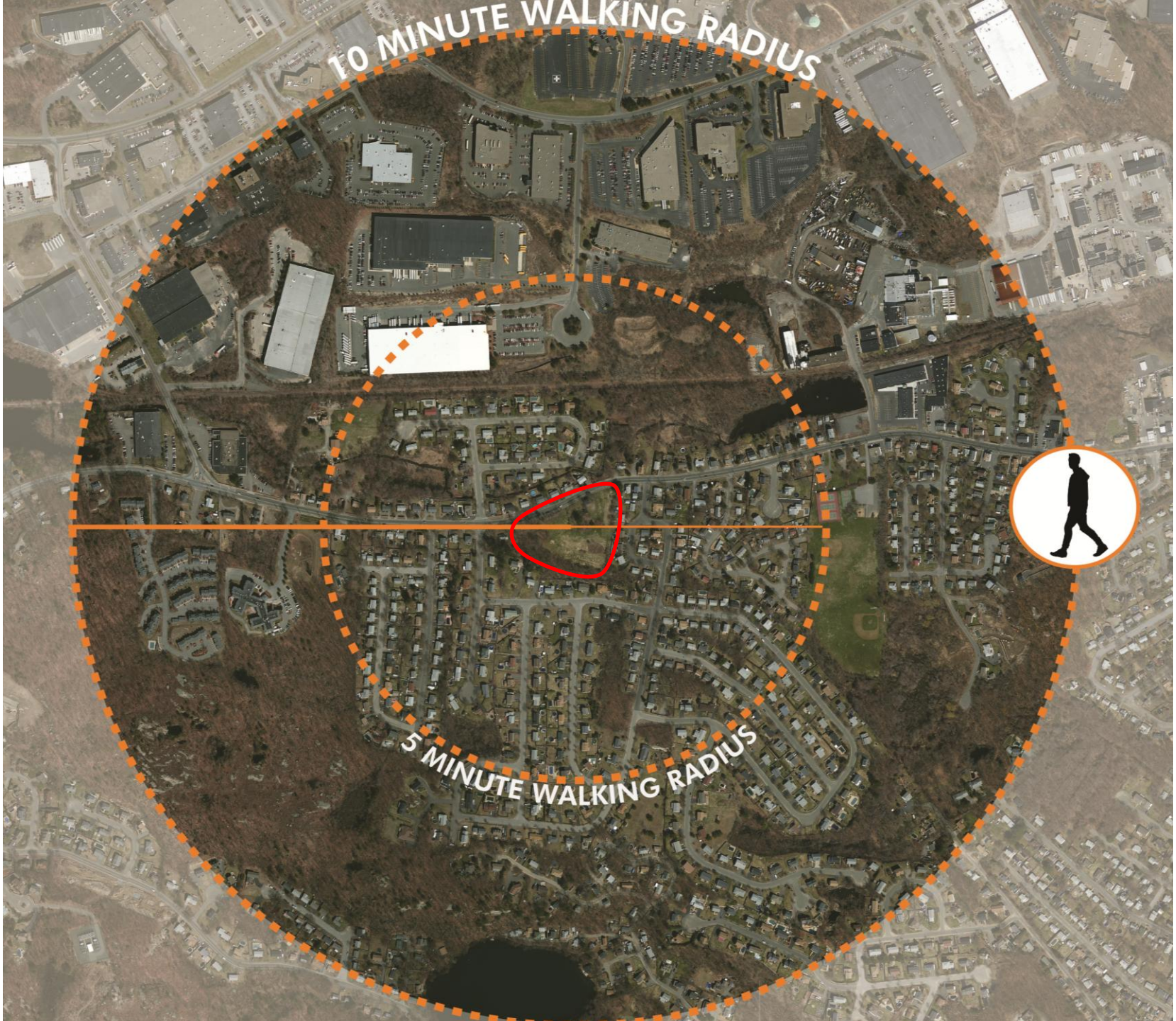
April 26, 2017
6:00 – 8:00 PM

Zielski Field

APRIL 5, 2017

APRIL 5, 2017

Previous Stormwater Improvement Concept


10 MINUTE WALKING RADIUS
5 MINUTE WALKING RADIUS

What the Deed Says

"… any use of the premises other than that of open space or any activity which would impair the open space or the conservation interests that are the subject of this Condition and Restriction shall not be allowed."

Explicitly allowed:

- Passive unrestricted recreational purposes
- Informal (non organized) games/sports not requiring special fields or courses
- Hiking
- Nature study
- Bird-watching
- Community gardens
- Picnicking

OUR TASK: Draw From Your Ideas

Public Meeting:
We Listen

FINAL REPORT:
Design Concepts

Today

Mid June

June 30

. . .

Public Meeting:
Design Concepts
"What do you think?"

Next Steps:
Up to YOU
and the CITY

1

2

4

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Passive Recreation

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Horsley Witten Group

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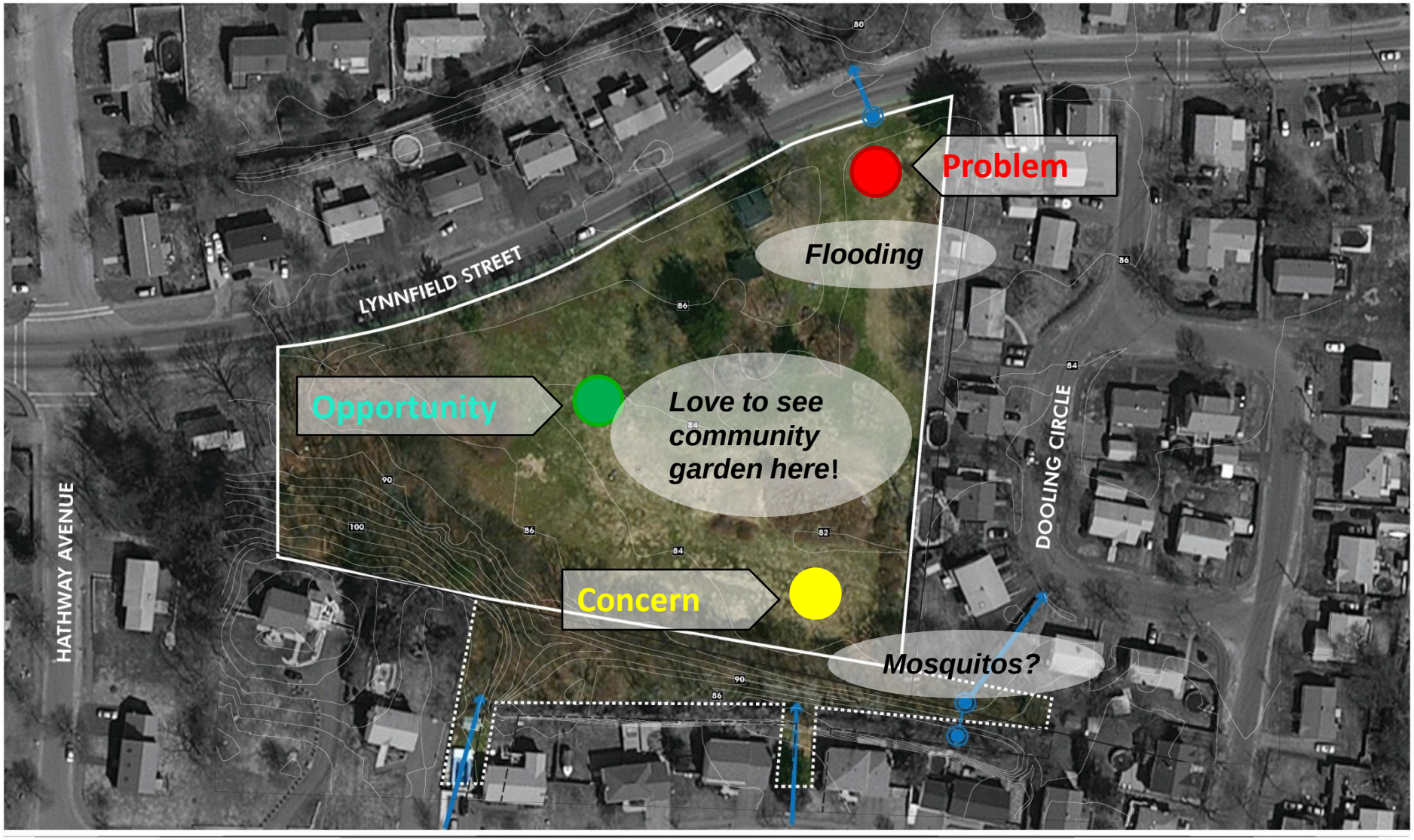
©by SO

Tabletop Exercise



ZIELSKI FIELD
EXISTING CONDITIONS BASE MAP
APRIL 2017

0 30 FEET

Horsley Witten Group
Sustainable Environmental Solutions

OUR TASK: Draw From Your Ideas

Public Meeting:
We Listen

FINAL REPORT:
Design Concepts

Today

Mid June

June 30

. . .

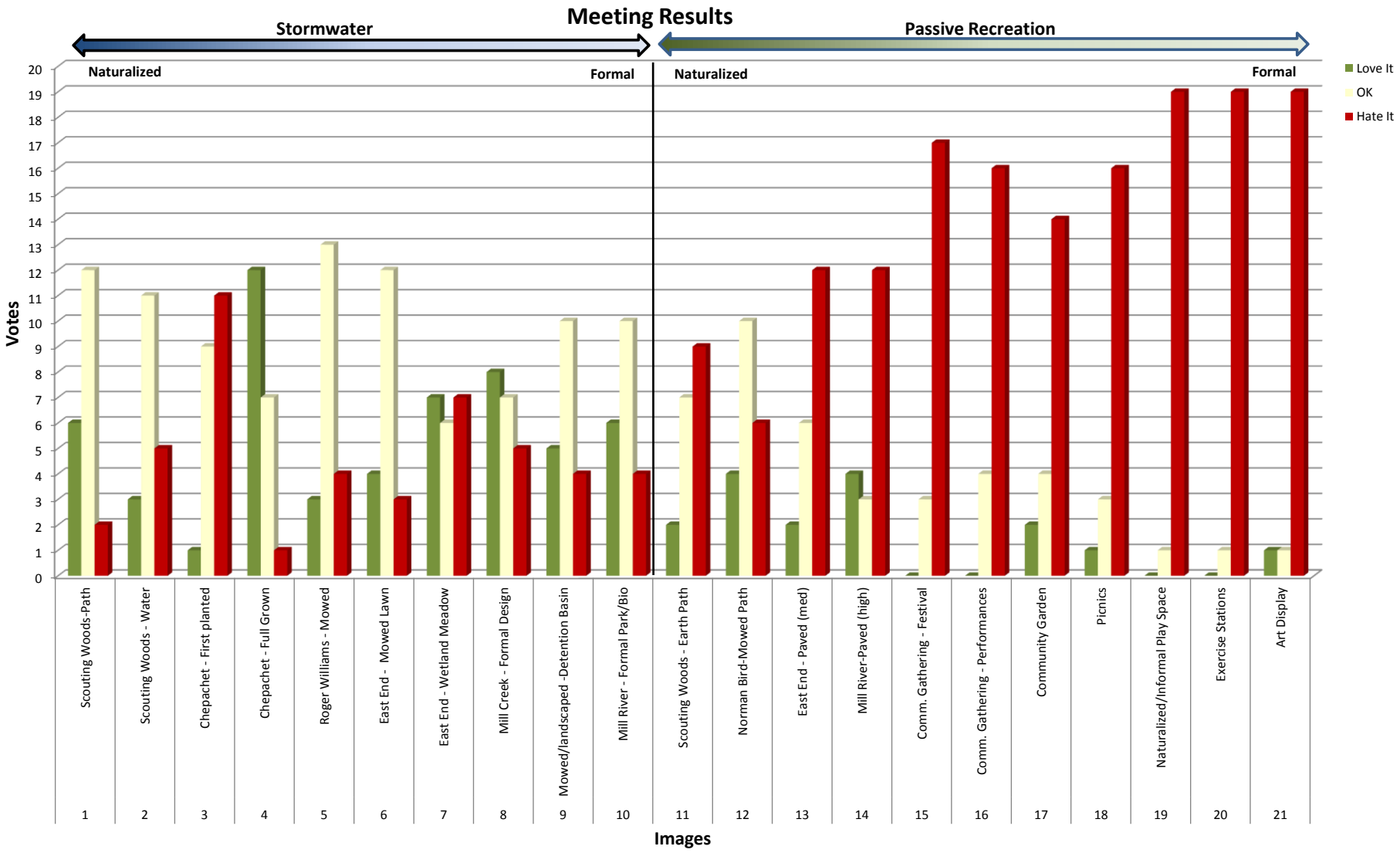
Public Meeting:
Design Concepts
"What do you think?"

Next Steps:
Up to YOU
and the CITY

Thank You!

Project Contact
City of Peabody

Pedro Soto, City Planner
Office of Community Development & Planning
24 Lowell Street
Peabody, MA 01960
(978) 538-5783
pedro.soto@peabody-ma.gov


Meeting Results
Stormwater
Passive Recreation
Naturalized
Formal
Naturalized
Formal
Love It
OK
Hate It
Votes
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4
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6
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Scouting Woods-Path
Scouting Woods - Water
Chepachet - First planted
Chepachet - Full Grown
Roger Williams - Mowed
East End - Mowed Lawn
East End - Wetland Meadow
Mill Creek - Formal Design
Mowed/landscaped -Detention Basin
Mill River - Formal Park/Bio
Scouting Woods - Earth Path
Norman Bird-Mowed Path
East End - Paved (med)
Mill River-Paved (high)
Comm. Gathering - Festival
Comm. Gathering - Performances
Community Garden
Picnics
Naturalized/Informal Play Space
Exercise Stations
Art Display
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Images

Attachment B. Zielski Field Concept Designs

Preliminary Site Analysis Plan

Site Cleanup Plan

Preliminary Concept Design 1. Nature and Habitat

Preliminary Concept Design 2. Lawn and Open Space

ZIELSKI FIELD

ADDRESS = 182 LYNNFIELD STREET

LOT AREA = 3.98 ACRES +/-

PROPERTY ID = 100-062A

IDENTIFIED CONCERNS

- FLOODING IN GOLDTHWAITE BROOK
- FLOODING TO SURROUNDING NEIGHBORS
- CLOGGED PIPES, POOR DRAINAGE
- PROTECT TURKEY HABITAT IN SOUTHWEST WOODLAND
- TRASH AND UNSIGHTLY VIEWS
- PRESERVE WETLAND & HABITAT
- SPACE IS UNUSEABLE DURING RAIN EVENTS
- INVASIVE PLANTS

IDENTIFIED OPPORTUNITIES

- AVAILABLE OPEN SPACE
- RESTORE HISTORIC BIRCH GROVE
- POTENTIAL FUTURE COMMUNITY GARDEN
- FLOOD STORAGE
- OPEN WOODLAND / INFORMAL PICNIC SPACE
- EXPAND APPLE ORCHARD
- CENTRAL LOCATION WITHIN NEIGHBORHOOD
- PROTECTION / ENHANCEMENT OF WETLAND

ZIELSKI FIELD
PRELIMINARY SITE ANALYSIS
JUNE 2017

0 30 FEET

N

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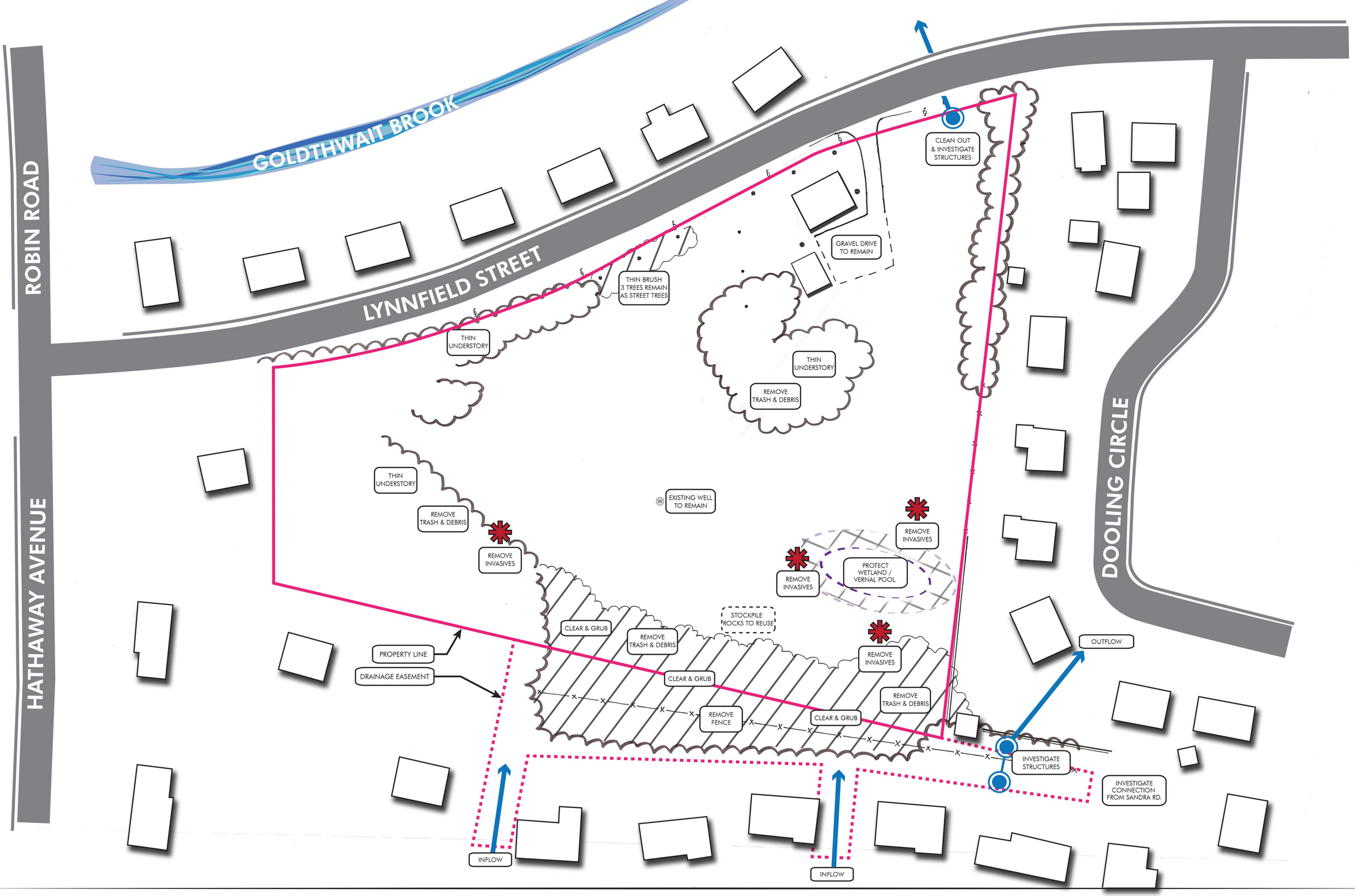

ZIELSKI FIELD
SITE CLEAN UP
JUNE 2017

0 30 FEET

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GOLDTHWAIT BROOK

LYNNFIELD STREET

DOOLING CIRCLE

ENGRAVED PARK BOULDER

GRAVEL DRIVEWAY
MAINTENACE ACCESS

APPLE ORCHARD

OPEN WOODLAND
INFORMAL ACCESS
PICNIC SPACE

POTENTIAL FUTURE
COMMUNITY GARDEN
4,800 +/- SF

MOWED PATH

ECOLOGICALLY
SENSITIVE
AREA (ESA)

SOLID BOARD
FENCE

PROTECT
WETLAND /
VERNAL POOL

MAINTAIN
WOODLAND

TEMPORARY
STORMWATER
STORAGE &
TREATMENT

SOLID BOARD
FENCE

MAINTENANCE
ACCESS

OUTLET

PROPERTY LINE

DRAINAGE EASEMENT

MOWED PATH

SEDIMENT TRAP

DESIGN HIGHLIGHTS

- OPEN LAWN SPACE
- PROTECT EXISTING APPLE ORCHARD
- CREATE WILDLIFE HABITAT
- UNSTRUCTURED WOODLAND PICNIC SPACE
- POTENTIAL FUTURE COMMUNITY GARDEN
- NECKLACE WALKING PATH AROUND ESA
- PRIVACY FOR DOOLING CIRCLE HOMES

ZIELSKI FIELD

PRELIMINARY CONCEPT ONE: NATURE & HABITAT

JUNE 2018

0 30 FEET

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DESIGN HIGHLIGHTS

- OPEN LAWN SPACE
- PROTECT EXISTING APPLE ORCHARD
- CREATE WILDLIFE HABITAT
- UNSTRUCTURED WOODLAND PICNIC SPACE
- POTENTIAL FUTURE COMMUNITY GARDEN
- NECKLACE WALKING PATH AROUND ESA
- PRIVACY FOR DOOLING CIRCLE HOMES

ZIELSKI FIELD

PRELIMINARY CONCEPT ONE: NATURE & HABITAT

JUNE 2018

0 30 FEET

N

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GOLDTHWAIT BROOK

LYNNFIELD STREET

DOOLING CIRCLE

ENGRAVED PARK BOULDER

TEMPORARY STORMWATER STORAGE & TREATMENT

GRAVEL DRIVEWAY
MAINTENACE ACCESS

EXPAND APPLE ORCHARD

WILDFLOWER / POLLINATOR GARDEN

RESTORE BIRCH GROVE

OPEN WOODLAND
OPEN SPACE
INFORMAL PICNICKING

EDUCATIONAL OPPORTUNITIES

TEMPORARY STORMWATER STORAGE & TREATMENT

MOWED PATH

SOLID BOARD FENCE

TEMPORARY STORMWATER STORAGE & TREATMENT

EDUCATIONAL OPPORTUNITIES

ECOLOGICALLY SENSITIVE AREA (ESA)

PROTECT WETLAND / VERNAL POOL

MAINTAIN WOODLAND

MAINTENANCE ACCESS

MOWED PATH

SOLID BOARD FENCE

PROPERTY LINE

DRAINAGE EASEMENT

OUTLET

OUTFLOW

SEDIMENT TRAP

CONVERT TO OUTLET CONTROL

INFLOW

INFLOW

STORMWATER HIGHLIGHTS

- REDUCED FLOODING FOR NEIGHBORING RESIDENTS
- SHALLOW STORMWATER STORAGE BASINS
- BOARDWALK CROSSINGS
- MAINTANENCE ACCESS & SERVICE CIRCLES
- WOODLAND PICNIC SPACE

ZIELSKI FIELD

PRELIMINARY CONCEPT TWO: LAWN & OPEN SPACE

JUNE 2018

0 30 FEET

N

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GOLDTHWAIT BROOK

LYNNFIELD STREET

DOOLING CIRCLE

ENGRAVED PARK BOULDER

TEMPORARY STORMWATER STORAGE & TREATMENT

GRAVEL DRIVEWAY
MAINTENACE ACCESS

EXPAND APPLE ORCHARD

WILDFLOWER / POLLINATOR GARDEN

RESTORE BIRCH GROVE

OPEN WOODLAND
OPEN SPACE
INFORMAL PICNICKING

EDUCATIONAL OPPORTUNITIES

TEMPORARY STORMWATER STORAGE & TREATMENT

MOWED PATH

SOLID BOARD FENCE

TEMPORARY STORMWATER STORAGE & TREATMENT

EDUCATIONAL OPPORTUNITIES

ECOLOGICALLY SENSITIVE AREA (ESA)

PROTECT WETLAND / VERNAL POOL

MAINTAIN WOODLAND

MAINTENANCE ACCESS

MOWED PATH

SOLID BOARD FENCE

PROPERTY LINE

DRAINAGE EASEMENT

OUTLET

OUTFLOW

SEDIMENT TRAP

CONVERT TO OUTLET CONTROL

INFLOW

INFLOW

STORMWATER HIGHLIGHTS

- REDUCED FLOODING FOR NEIGHBORING RESIDENTS
- SHALLOW STORMWATER STORAGE BASINS
- BOARDWALK CROSSINGS
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- WOODLAND PICNIC SPACE

ZIELSKI FIELD

PRELIMINARY CONCEPT TWO: LAWN & OPEN SPACE

JUNE 2018

0 30 FEET

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Attachment C. Preliminary Cost Estimates

Project: Zielski Field
Location: Peabody, MA
Project #: 17032

Horsley Witten Group
Sustainable Environmental Solutions

Submission: 30% Design - Opinion of Probable Costs
Date: June 2018 **Estimator:** BAL **Checked By:** BRK

The opinion of probable costs is preliminary only and based on concept plans for Zielski Field, June 2017, prepared by Horsley Witten Group. All costs are in 2018 dollars.

OPINION OF PROBABLE COSTS

	Unit	Quantity		Unit Cost		Total Cost
CONCEPT ONE					**$**	**256,000.00**
Site Preparation[1]					**$**	**16,000.00**
12" Sediment Silt Sock	LF	1400	$	6.00	$	8,400.00
Temporary Construction Entrance	LS	1	$	1,200.00	$	1,200.00
Silt Sack (Catch Basin Insert)	EA	1	$	200.00	$	200.00
Remove Sediment and Clean Drainage Structure	EA	1	$	250.00	$	250.00
Staking & Layout	LS	1	$	5,000.00	$	5,000.00
Site Clearing and Earthworks[1]					**$**	**83,000.00**
Litter Removal	LS	1	$	500.00	$	500.00
Clear & Grub	SF	29000	$	0.50	$	14,500.00
Clear & Grub Sediment Trap	LS	1	$	25,000.00	$	25,000.00
Remove & Dispose of Excess Material	CY	80	$	28.50	$	2,280.00
Invasive Species Removal	SF	6300	$	3.50	$	22,050.00
Rough Grading	SF	64200	$	0.25	$	16,050.00
Remove Fence	LF	300	$	8.50	$	2,550.00
Landscaping[1]					**$**	**86,000.00**
Small Tree Plantings	EA	10	$	500.00	$	5,000.00
Native Boulders (Edge of Parking)	EA	10	$	250.00	$	2,500.00
Loam & Seed (Ecologically Sensitive Areas)	SF	29900	$	0.35	$	10,465.00
Loam & Seed (Mowed Areas)	SF	34300	$	0.35	$	12,005.00
Fine Grading	SF	64200	$	0.75	$	48,150.00
Additional Plantings (Buffer Enhancements)	ALLOW	1	$	7,000.00	$	7,000.00
Boardwalk Crossing[1,2]					**$**	**7,000.00**
6' Wide Accessible Boardwalk Crossing	EA	1	$	5,000.00	$	5,000.00
Diamond Piers	EA	4	$	300.00	$	1,200.00
Emergency Spillway Crossing	LF	1	$	150.00	$	150.00
Site Elements[1]					**$**	**37,000.00**
Solid Board Fence	LF	250	$	50.00	$	12,500.00
Turf Reinforced Matting (Maintenance Access Path)	SF	3000	$	5.00	$	15,000.00
Native Boulders (Edge of Parking)	EA	9	$	250.00	$	2,250.00
Engraved Park Boulder	EA	1	$	5,000.00	$	5,000.00
Picnic Tables	EA	3	$	500.00	$	1,500.00
Drainage[1]					**$**	**9,000.00**

OPINION OF PROBABLE COSTS

	Unit	Quantity		Unit Cost		Total Cost
Overflow Structure	EA	1	$	1,500.00	$	1,500.00
8" HDPE	LF	200	$	15.00	$	3,000.00
Turf Reinforced Matting (Spillways)	LF	900	$	5.00	$	4,500.00
Stormwater Storage and Treatment Areas[1]					**$**	**18,000.00**
Shallow Depression (Clean Loam)	CY	200	$	50.00	$	10,000.00
Granite Curb	LF	50	$	42.00	$	2,100.00
Plantings	ALLOW	1	$	2,500.00	$	5,000.00
TOTAL					**$**	**256,000.00**
Contingency [3]	30%				$	77,000.00
PROBABLE CONSTRUCTION COSTS					**$**	**333,000.00**
Construction Administration [4]	4%				$	14,000.00
TOTAL PROBABLE COST [2]					**$**	**347,000.00**

Long Term Operation and Maintenance Annual Costs

	Unit	Quantity		Unit		Estimated Cost
Invasive Species Management (Bittersweet and Multiflora Rose)	LS	1	$	10,000.00	$	10,000.00
Park Maintenance (Annual)	LS	1	$	7,000.00	$	7,000.00
Restoration Monitoring (Active and Passive)[5]	LS	1	$	12,000.00	$	12,000.00
Thinning Vegetation (along Spring Bars and Scenic Resource Areas)	LS	0	$	2,000.00	$	-

NOTES:

[1] Division Total Costs rounded up to the nearest $1,000.

[2] It is assumed the boardwalk is no more than 2' off the ground and does not include a railing.

[3] Price does not include general conditions, mobilization, management and contractor overhead.

[4] The contingency is provided based upon the conceptual design plans and for variability in design, quantities and actual pricing.

[5] Construction Administration cost includes full administration services by the design engineer during all construction phases of the project. Services include project oversight, meetings, shop drawing review, field visits and periodic observations of construction. This cost will vary significantly based upon the amount work services to be provided. As-built plans and other project closure services are not included.

Qualifications:

The following items are not included in the scope of work:

1. Street Opening Permits / Bonds For Off Site Work
2. Police /Traffic details
3. Lighting
4. Dewatering
5. Cuts and Fills
6. Temporary Water
7. Preparation of NPDES SWPPP
8. Soil Management Plan
9. Removal of contaminated soil and debris

Project: Zielski Field
Location: Peabody, MA
Project #: 17032

Horsley Witten Group
Sustainable Environmental Solutions

Submission: 30% Design - Opinion of Probable Costs
Date: June 2018 **Estimator:** BAL **Checked By:** BRK

The opinion of probable costs is preliminary only and based on concept plans for Zielski Field, June 2017, prepared by Horsley Witten Group. All costs are in 2018 dollars.

OPINION OF PROBABLE COSTS

	Unit	Quantity		Unit Cost		Total Cost
CONCEPT TWO					**$**	**322,000.00**
Site Preparation[1]					**$**	**20,000.00**
12" Sediment Silt Sock	LF	2200	$	6.00	$	13,200.00
Temporary Construction Entrance	LS	1	$	1,200.00	$	1,200.00
Silt Sack (Catch Basin Insert)	EA	1	$	200.00	$	200.00
Remove Sediment and Clean Drainage Structure	EA	1	$	250.00	$	250.00
Staking & Layout	LS	1	$	5,000.00	$	5,000.00
Site Clearing and Earthworks[1]					**$**	**95,000.00**
Litter Removal	LS	1	$	500.00	$	500.00
Clear & Grub	SF	29000	$	0.50	$	14,500.00
Clear & Grub Sediment Trap	LS	1	$	25,000.00	$	25,000.00
Remove & Dispose of Excess Material	CY	100	$	28.50	$	2,850.00
Invasive Species Removal	SF	6300	$	3.50	$	22,050.00
Rough Grading	SF	85400	$	0.25	$	21,350.00
Remove Fence	LF	1000	$	8.50	$	8,500.00
Landscaping[1]					**$**	**117,000.00**
Apple Orchard Expansion	EA	4	$	750.00	$	3,000.00
Birch Grove Restoration	EA	12	$	750.00	$	9,000.00
Loam, Seed & Plugs (Pollinator Garden)	SF	6600	$	1.00	$	6,600.00
Loam & Seed (Mowed & Stormwater Areas)	SF	77600	$	0.35	$	27,160.00
Fine Grading	SF	85400	$	0.75	$	64,050.00
Additional Plantings (Buffer Enhancements)	ALLOW	1	$	7,000.00	$	7,000.00
Boardwalk Crossing[1,2]					**$**	**13,000.00**
6' Wide Accessible Boardwalk Crossing	EA	2	$	5,000.00	$	10,000.00
Diamond Piers	EA	8	$	300.00	$	2,400.00
Emergency Spillway Crossing	LF	3	$	150.00	$	450.00
Site Elements[1]					**$**	**48,000.00**
Solid Board Fence	LF	300	$	50.00	$	15,000.00
Turf Reinforced Matting (Maintenance Access Path)	SF	4500	$	5.00	$	22,500.00
Native Boulders (Edge of Parking)	EA	9	$	250.00	$	2,250.00
Engraved Park Boulder	EA	1	$	5,000.00	$	5,000.00
Picnic Tables	EA	3	$	500.00	$	1,500.00
Educational / Interpretive Signage	EA	2	$	500.00	$	1,000.00

OPINION OF PROBABLE COSTS

	Unit	Quantity		Unit Cost		Total Cost
Drainage[1]					**$**	**14,000.00**
Overflow Structure	EA	1	$	1,500.00	$	1,500.00
8" HDPE	LF	110	$	15.00	$	1,650.00
Turf Reinforced Matting (Spillways)	LF	2000	$	5.00	$	10,000.00
Stormwater Storage and Treatment Areas[1]					**$**	**15,000.00**
Shallow Depression (Clean Loam)	CY	200	$	50.00	$	10,000.00
Plantings	ALLOW	1	$	2,500.00	$	5,000.00
TOTAL					**$**	**322,000.00**
Contingency[4]	30%				$	97,000.00
PROBABLE CONSTRUCTION COSTS					**$**	**419,000.00**
Construction Administration[5]	4%				$	17,000.00
TOTAL PROBABLE COST[3]					**$**	**436,000.00**

Long Term Operation and Maintenance Annual Costs

	Unit	Quantity		Unit		Estimated Cost
Invasive Species Management (Bittersweet and Multiflora Ro	LS	1	$	10,000.00	$	10,000.00
Park Maintenance (Annual)	LS	1	$	7,000.00	$	7,000.00
Restoration Monitoring (Active and Passive)[5]	LS	1	$	12,000.00	$	12,000.00

NOTES:

[1] Division Total Costs rounded up to the nearest $1,000.

[2] It is assumed the boardwalk is no more than 2' off the ground and does not include a railing.

[3] Price does not include general conditions, mobilization, management and contractor overhead.

[4] The contingency is provided based upon the conceptual design plans and for variability in design, quantities and actual pricing.

[5] Construction Administration cost includes full administration services by the design engineer during all construction phases of the project. Services include project oversight, meetings, shop drawing review, field visits and periodic observations of construction. This cost will vary significantly based upon the amount work services to be provided. As-built plans and other project closure services are not included.

Qualifications:

The following items are not included in the scope of work:

1. Street Opening Permits / Bonds For Off Site Work
2. Police /Traffic details
3. Lighting
4. Dewatering
5. Cuts and Fills
6. Temporary Water
7. Preparation of NPDES SWPPP
8. Soil Management Plan
9. Removal of contaminated soil and debris
10. Protect Existing Trees to Remain

Attachment D. Wetlands Report

Horsley Witten Group
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MEMORANDUM

To: File

From: Ellie Baker, Sr. Project Manager, and Amy Ball, Sr. Wetlands Scientist

Date: May 31, 2017

Re: Wetland Resources at Zielski Property, 182 Lynnfield St., Peabody, MA

cc: HW and City of Peabody Project Team

As we begin to develop concepts for a combination of stormwater management/flood mitigation and passive recreation uses at the Zielski Field property, we need to consider the existence of regulated wetland resources at the site and evaluate the potential constraints and opportunities that they provide. At this time, Horsley Witten Group has not performed a wetland delineation in the field (this is not within our current scope of work), and to our knowledge, no such delineation has been performed by others.

Resource Area Discussion

The wetland areas under consideration are described below, along with an opinion as to whether the area would be a regulated resource area under the state Wetlands Protection Act Regulations (310 CMR 10.00) or the local Peabody Wetlands and River Protection Regulations (Chapter 32 of the Peabody Code of Regulations). We have also included two attachments that present the estimated boundaries of the areas described below and photos documenting the extent of flooding on April 5, 2017 (as one observation in time).

Vernal Pool

A small, apparently isolated wet area is located toward the rear corner of the property in the southeast sector of the property. As seen in aerial photographs, the small wet area is vegetated with a combination of scrub shrub vegetation, a few tall deciduous trees, and cattails. This area, which is approximately 2500 sf in area, reportedly supports standing water all or almost all year long. This area is not identified by the Massachusetts Natural Heritage and Endangered Species Program (NHESP) as a certified vernal pool under Massachusetts Endangered Species Act (M.G.L. Ch. 131A; MESA).

It is our opinion that this wet area would likely be regulated under the MA Wetlands Protection Regulations as vernal pool habitat as the definition is largely based on the ability of the area to hold water (310 CMR 10.04[1]). However, there are no applicable performance standards or

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[1] Definition: "Vernal Pool Habitat means confined basin depressions which, at least in most years, hold water for a minimum of two continuous months during the spring and/or summer, and which are free of adult fish populations, as well as the area within 100 feet of the mean annual boundaries of such

restrictions because the vernal pool habitat does not appear to be located within the confines of another protected resource area, and because the vernal pool habitat is not certified in accordance with state verification procedures. Further, we do not believe that there is a 100-foot regulated buffer (vernal pool habitat) that extends beyond the wetland area because the buffer is limited "to the extent that such habitat is within an Area Subject to Protection under M.G.L. c. 131 Section 40 as specified in 310 CMR 10.02(1)." This vernal pool habitat does not appear to be located within another area subject to protection, as further described in item 2 below.

It is our opinion that this wet area would also likely be regulated under the local wetlands regulations as a vernal pool (Sec 32-2, definitions of Resource Area and Vernal Pool[1]). In addition, the area within 200 feet of the mean annual boundary of the vernal pool depression would also be regulated as Vernal Pool (Sec 32-2, definition of Vernal Pool). We have not performed any habitat assessment of this vernal pool nor have we formally delineated the boundary (this is not within our current scope of work), but we have estimated the boundary on the attached figure for reference.

Under Section 32-33, the Commission "may require that the applicant maintain a strip or buffer of continuous, undisturbed vegetative cover within 200 feet of the resource area…unless the applicant convinces the Commission by a preponderance of the credible evidence that the area or part of it may be disturbed without harm to the wetland values protected by this ordinance. Said buffer shall be known as the 'No Disturb Zone.'" The existing 200 foot buffer around the Vernal Pool is already disturbed as it is regularly mowed and has been actively mowed and maintained as agricultural field or mowed lawn for over 100 years.

The purpose of the proposed project would be to improve the flood storage capacity of the surrounding area, as well as to enhance the vegetation and habitat surrounding the vernal pool. HW believes that a project that enhances stormwater management, flood storage and habitat within the 200 foot buffer to the vernal pool would be able to overcome the constraints of the "No Disturb Zone" because it would improve the ability of the buffer to protect the resource area.

Land Subject to Flooding

The extent of the standing or flooded water within the wetland area described above expands significantly in size several times a year during and immediately following significant rain events. We understand that on multiple occasions in a given year, the flooding extends from Lynnfield

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depressions, to the extent that such habitat is within an Area Subject to Protection under M.G.L. c. 131, § 40 as specified in 310 CMR 10.02(1).

[1] Definition: "Vernal Pool: Shall include a confined basin depression which, at least in most years, holds water for a minimum of two continuous months during the spring, and/or summer, and which is free of adult fish populations, as well as the area within two hundred (200) feet of the mean annual boundary of such a depression, regardless of whether the site has been certified by the Massachusetts Division of Fisheries and Wildlife."

Street in the northeast portion of the property back to the southeast corner and west beyond the existing well at the center of the property.

The attached photos provided by City Planner, Pedro Soto, from April 5, 2017 document such flooding (it rained approximately 3 inches in the 4 days prior to April 5). There is a network of stormwater drainage infrastructure at the rear (south) of the property that discharges onto this site from the West Diane neighborhood, as a result of failing infrastructure. There is also a pipe at the front (northeast) of the property that hydraulically connects this site to Goldthwaite Brook and the roadway drainage along Lynnfield Street. As a result, this flooded area does not constitute an isolated depression or closed basin because of these drainage connections.

It is our opinion that this observed flooded area would not be considered an Isolated Land Subject to Flooding under the MA Wetland Regulations (310 CMR 10.57(1)(b)), as the definition precludes this infrastructure:

> *1. Isolated Land Subject to Flooding is an isolated depression or closed basin without an inlet or an outlet. It is an area which at least once a year confines standing water to a volume of at least ¼ acre-feet and to an average depth of at least six inches* [310 CMR 10.57(2)(b)1].

In contrast, we believe that this area would be considered "Land Subject to Flooding" under the local wetlands regulations (Section 32 of the Peabody Code[1]), because the definition is slightly more broad than the state regulations and is not limited to isolated or confined areas. Alteration of this Land Subject to Flooding as well as the area within 100 foot of this area would be regulated. A primary intention of the proposed project at the Zielski field is to improve the flood storage capacity at the site, which is the interest served by the Land Subject to Flooding. Therefore, there is reason to believe a flood storage enhancement project would meet the performance standards and be permitable within the limits of the regulated area.

Furthermore, the 100 foot buffer currently consists of mowed lawn which has been maintained for agricultural uses or lawn for the past 100 years, as well as neighboring residences and associated yards that constitute altered areas. The proposed project can and should be designed to maintain the buffering capacity provided on the Zielski property, while protecting the nearby residences from flooding to the extent possible. Indeed, this is a primary purpose of the project.

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[1] Definition: "Lands Subject to Flooding: Depressions or closed basins which serve as ponding areas for runoff, snow- melt, heavy precipitation, or high ground water which has risen above the ground surface, and areas which flood from a rise in a bordering resource area as defined in Sec. 32-2 Definitions Resource Area."

Isolated Wetlands and Seasonal Wetlands (Local regulations only)

The local wetlands regulations (Section 32 of Peabody Code) also identify Isolated Wetlands and Seasonal Wetlands[1] as a regulated resource area. These wetlands must be capable of containing at last 5000 cubic feet of water, without connecting to a specified inlet or outlet. The vernal pool habitat described above is approximately 2500 square feet in area, based on aerial photography of the site. That vernal pool habitat would have to be an average of 2 feet deep to contain 5000 cubic feet of water. Based on general observations, rather than field measurements, the vernal pool habitat does not appear to be that deep and that volume of water would spill over onto the adjacent grass area. Once the water overtops the vernal pool habitat and ponds on the field, we contend that the ponding area is no longer contained in a closed basin; water is delivered to the site from upgradient drainage infrastructure, and is drained from the site via a culvert under Lynnfield Street and via drainage infrastructure in the rear corner of the property that connects to the Dooling Circle drainage system. However, without more detailed field survey measurements and engineering calculations to determine the extent of a 5000 cubic foot pond, we cannot draw a clear conclusion about whether this serves as a regulated Isolated or Seasonal Wetland resource area.

Summary of Regulated Resource Areas

We do not believe that the flooded isolated wetland at this site would be regulated under the jurisdiction of the MA Wetlands Protection Regulations. However, we believe that the local Peabody Wetlands and Rivers Protection Regulations would consider the site to contain Vernal Pool Habitat with a 200 foot regulated area from the mean annual high water boundary of the depression, and as Land Subject to Flooding with a 100 foot buffer. The area may also be regulated at the local level as an Isolated or Seasonal Wetland. The purpose of the project being considered at the site is to enhance stormwater and flood storage combined with access and use for passive recreation. We contend that a project of this type can be designed to meet the requirements of the local regulations (Section 32).

Applicable Performance Standards and Requirements

Following is an excerpt from the local Peabody regulations (Chapter 32. Wetlands and Rivers Protection Regulations) presenting the performance standards for wetland resources and the

[1] Definition: "Freshwater wetlands that do not border on creeks, rivers, streams, ponds, and lakes, isolated depressions which hold standing water for extended periods of time, such as kettle holes which are too small to be called ponds; and isolated depressions or closed basins which are subject to flooding during periods of high water table and high input from spring runoff, snow- melt, or heavy precipitation. Isolated wetlands shall include any isolated depression with no inlet or outlet which serves as a ponding area for run-off or high groundwater which has risen above the ground surface, and shall be capable of containing at least 5,000 cubic feet of water. Isolated and seasonal wetlands include temporary ponds and pools and vernal ponds and pools."

restrictions applicable to the 'No Disturb Zone' (100-foot buffer) around the wetland resources at this site.

ARTICLE VI. PERFORMANCE STANDARDS

Sec. 32-28. Generally

A. The applicant shall demonstrate a plan to preserve existing drainage and vegetative cover to the maximum extent possible.
B. Temporary vegetative cover and mulching shall be used on all disturbed and exposed slopes during construction.
C. Permanent vegetative cover shall be planted within the first growing season.
D. Plans shall demonstrate protection and preservation of all healthy trees to the maximum extent possible on the site, and when this is not possible, revegetation plans shall include replacement with suitable plantings.
E. Wherever possible, brooks and streams shall remain as open waterways.

Sec. 32-33. No Disturb Zone Presumption

Lands within two hundred (200) feet of rivers, streams, creeks, and brooks, and lands within one hundred (100) feet of all other resource areas, are presumed important to the protection of these resources because activities undertaken in close proximity to resource areas are presumed to result in alteration of the resource area and to have adverse impact upon the wetland values protected by this ordinance, either immediately, as a consequence of construction, or over time, as a consequence of daily operation or existence of the activities. These adverse impacts from construction and use can include, without limitation, erosion, siltation, loss or impairment of groundwater recharge or flood control, poor water quality, and loss of wildlife habitat. The Commission, therefore, may require that the applicant maintain a strip or buffer of continuous, undisturbed vegetative cover within *200* feet of resource areas defined in *Sec. 32-2 Definitions Resource Area (I)*, and within *100* feet of resource areas defined in *Sec. 32-2 Definitions Resource Area (A-H)*, respectively, unless the applicant convinces the Commission by a preponderance of the credible evidence that the area or part of it may be disturbed without harm to the wetland values protected by this ordinance. Said buffer shall be known as the "No Disturb Zone." Within the No Disturb Zone established by the Commission, no grading, planting, site work, construction, or storage of materials is allowed. Vegetation in the No Disturb Zone shall not be cut or trimmed in any manner.

In the review of proposed work within *200* feet of resource areas defined in *Sec. 32-2 Definitions Resource Area (I)*, and within *100* feet of resource areas defined in *Sec. 32-2 Definitions Resource Area (A-H)*, no permit issued hereunder shall permit any activities unless the applicant, in addition to meeting the otherwise applicable requirements of this ordinance, has proved by a preponderance of the evidence that 1) there is no technically demonstrated feasible alternative to the project with less adverse effects and that 2) such activities, including proposed mitigation measures, will have no significant adverse impact on the wetland values protected by this ordinance. The closer an activity is proposed to a resource area, the more scrutiny will be given to the potential impacts of a proposed project.

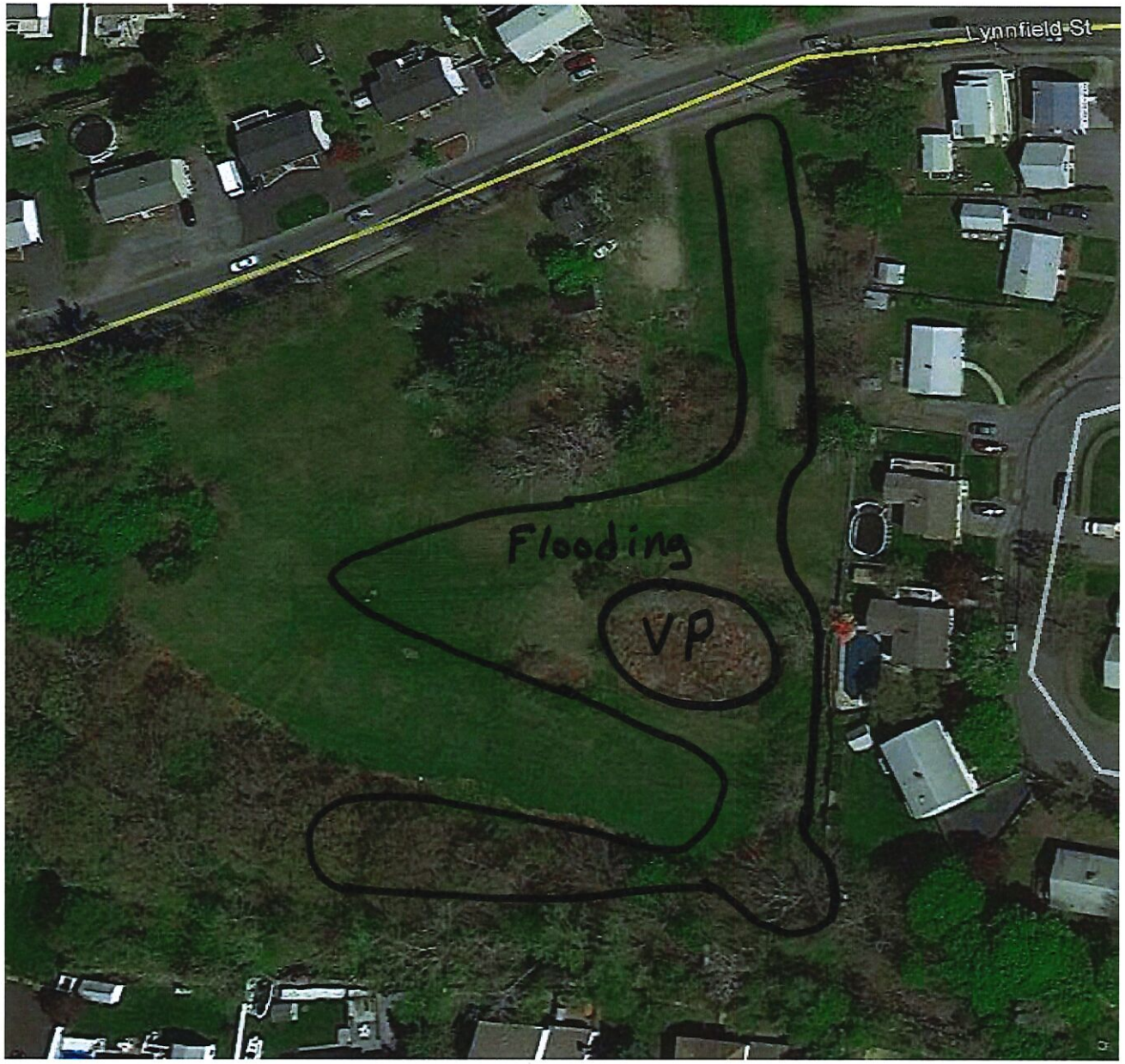
No activity which will result in the alteration of land within the presumptive No Disturb Zone shall be permitted by the Conservation Commission with the following exceptions:

A. Planting of native vegetation or habitat management techniques designed to enhance the wetland values protected by the Bylaw;
B. Construction and maintenance of unpaved pedestrian access paths not more than 4' in width;
C. Maintenance of existing structures, utilities, stormwater management structures and paved areas;
D. Construction and maintenance of water dependent structures and uses;
E. Vista pruning and removal of dead and diseased vegetation consistent with Conservation Commission standards;
F. Construction of new utility lines where the proposed route is the best environmental alternative;
G. Septic system maintenance and, if a system has failed, repair/replacement meeting state/local standards where the maximum feasible buffer is maintained;
H. Construction of accessory structures/uses associated with lawfully existing single family houses where the Conservation Commission finds that alternatives outside the buffer area are not available; the size and impacts of the proposed structure/use have been minimized; and the structure/use is located as far from the resource as possible;
I. Where a buffer zone is already altered such that the required buffer cannot be provided without removal of structures and/or pavement, this requirement may be modified by the Conservation Commission provided that it finds that the proposed alteration will not increase adverse impacts on that specific portion of the buffer area or associated wetland and that there is no technically demonstrated feasible construction alternative;
J. Where a lot is located entirely within buffer area, the Commission may permit activities within the buffer area when the applicant has demonstrated that the proposed work has been designed to minimize impacts to the buffer area. As mitigation, the Commission may require the applicant to plant or maintain a naturally vegetated buffer of the maximum feasible width given the size, topography, and configuration of the lot.

Conclusion

We contend that this project, which is a combination of flood storage mitigation project accompanied by public access/passive recreation and vegetation enhancement, would be designed to protect and enhance the vernal pool habitat and enhance the flood storage capacity and flood damage mitigation services provided by the wetland resources at the site. Therefore, it could be designed to meet the general performance standards in Section 32-28 and the exceptions A through C for activities in the No Disturb Zone described in Section 32-33.

Attachment A. Estimated Resource Areas



APRIL 5, 2017

APRIL 5, 2017

Attachment E. Drainage Investigation

Horsley Witten Group
Sustainable Environmental Solutions
113 R2 Water Street • Exeter, NH • 03833
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MEMORANDUM

To: Brendan Callahan, Assistant Director of Planning, City of Peabody, MA

From: Ellie Baker, Senior Project Manager

Date: December 15, 2017

Re: Drainage Investigation for Zielski Field Property

The purpose of this memorandum is to document the results of a drainage investigation performed by Horsley Witten Group, Inc. (HW) for areas on or adjacent to the Zielski Field Property owned by the City of Peabody at 182 Lynnfield Street. Specifically, in developing concepts for stormwater and flood mitigation improvements at the site, HW identified several drainage structures at or near the site that could not be fully understood from existing available mapping or field observation, and which required further investigation.

These were:

1. **Lynnfield Street Culvert or Pipe**. There was a question about whether there is a culvert or pipe under Lynnfield Street connecting the Zielski Field property to Goldthwaite Brook, and whether a catch basin in Lynnfield Street is tied into this system. It was unclear whether the structure, shown on City infrastructure maps, is actually a culvert, whether it flows toward or away from the Zielski Field property, and whether it is functioning as designed or is currently clogged or otherwise blocked.

2. **Inflow to and Outflow from Detention Basin in Rear of Zielski Field**. It was unclear where water discharged from the detention basin in the drainage easement at the back of the Zielski Field property, and how the various manhole and catch basin structures in that easement and the adjacent easement on 9 Dooling Circle were connected. In addition, it was unclear if stormwater from the Sandra Road neighborhood was flowing into the detention basin, as was presented on earlier subdivision plans for that neighborhood. The structures and interconnections at the eastern end of the detention basin were unclear based on prior field observation, the City's drainage infrastructure GIS mapping that had been provided to us, and several engineering site plans from the initial development of the Sandra Road subdivision and the West Diane Rd subdivision.

3. **Investigation of Detention Basin at the Rear of Zielski Field Property.** It was unclear how stormwater actually flowed through the existing detention basin at the rear of the Zielski Field property. The basin has two sections divided by a concrete wall, and it was unclear whether and how water actually travelled from the upper basin to the lower basin and then out to the City's drainage system.

To further investigate these structures, two HW staff members, Renee Bourdeau, PE, **a**nd Ellie Baker, Senior Project Manager, spent a half day in the field on September 19, 2017 with two Peabody Department of Public Services (DPS) Staff and Brendan Callahan, Assistant Director of Planning. The weather was dry, with the threat of rainfall, following 3 days without rainfall and a relatively dry prior two weeks. Our investigations and observations are described below.

1. Lynnfield Street Culvert

There is a single catch basin in the southern side of Lynnfield Street adjacent to the Zielski Field property, and it was unclear prior to this site visit where the catch basin drains (north to Goldthwaite Brook or south to the Zielski property). DPS staff removed the catch basin grate and shoveled out the excessive buildup of sediment in the catch basin, revealing that the catch basin is indeed connected by a pipe to the edge of the Zielski Field property. By observing the elevations on Zielski Field compared to the catch basin pipe invert (revealed when significant sediment was removed) as well as observing a pattern of apparent flow through the accumulated sediment in the catch basin, we understand that water drains from the catch basin toward Goldthwaite Brook. The pipe from Zielski Field into the catch basin is blocked on the Zielski property by a cement block, a board and a buildup of debris, and appears to have been blocked for a long time (on the scale of years). However, it does appear from the patterns in the accumulated sediment in the catch basin that some small volume of water does flow from time to time between the catch basin and Zielski Field, in both directions, depending on water elevations. Because we know that water ponds on Zielski Field following significant rain events, we can presume that the blocked pipe from Zielksi Field to the catch basin is preventing a significant flow of water from Zielski Field toward Goldthwaite Brook. As a result of this investigation, we believe that opening the pipe from Zielski Field and cleaning the catch basin would likely allow water to drain off Zielski Field following large rain events (as long as the water elevation in Goldthwaite Brook is lower than Zielski Field).

See photos 1 through 4 attached for additional information.

Photo 1. The pipe draining water from Zielski Field toward the catch basin has been blocked by a board, a cement block and sediment and grass buildup.

Photo 2. The catch basin in Lynnfield Street was severely clogged with sediment. The sediment pattern in the basin indicates that water is still managing to flow from the catch basin north toward Lynnfield Street (see opening to outlet pipe below rim of basin). This view is north toward Goldthwaite Brook. Sediment and vegetation buildup along the southern curb can be seen at the bottom of the picture.

Photo 3. Peabody DPS staff shoveled sediment from the catch basin on Lynnfield Street to uncover the pipe connection from Zielski Field into the catch basin.

Photo 4. This is Lynnfield Street, looking eastbound, with the Zielski Property on the right and Goldthwaite Brook on the left.

2. Inflow to and Outflow from Detention Basin in Rear of Zielski Field.

HW and DPS investigated several manholes along Sandra Road to look for possible connections to the detention basin in the City easement at the rear of the Zielski field property. We did not observe any such connections, and therefore, we conclude that the drainage from the Sandra Road, Louis Road and Diane Road neighborhood does not discharge into the drainage easement and basin at the rear of the Zielski Field property.

HW and the City also accessed the drainage easement on the property at 9 Dooling Circle to observe two catch basins in the rear of the property. One catch basin is located next to the small shed on the property, and the other is a catch basin with a raised rim, located in the rear corner of the property outside the fence at 9 Dooling Circle. The catch basin next to the shed appears to drain surface runoff from a portion of the back yard and discharges it toward Dooling Circle. There was also an inflow pipe from the direction of the drainage easement at the rear of the property. The other raised catch basin actually functioned as a manhole due to a large cement stopper below the catch basin grate, preventing water from draining directly into the system. The use of a catch basin grate on the structure was peculiar and could not be explained. DPS removed the cement stopper from the structure and we could observe that the structure drained toward the catch basin described above next to the small shed in the rear of 9 Dooling Circle, and then out to Dooling Circle. As a result, we believe that the water from the detention basin in the rear of the Zielski property discharges to the manhole cover with the raised rim and cement stopper, and then to the catch basin in the yard of 9 Dooling Circle, and then out to Dooling Circle.

See photos 5 through 8 for more information.

Photo 5. Catch basin located behind the small shed on a City easement at 9 Dooling Circle. Peabody DPS staff removed the catch basin grate for investigation. The catch basin appears to drain toward Dooling Circle (Dooling Circle is located to the left in this picture).

Photo 6. The catch basin next to the shed at 9 Dooling Circle was heavily clogged with sediment.

Photo 7. Manhole with cement stopper (removed for investigation) and catch basin grate with raised rim (removed for investigation), located behind 9 Dooling Circle, outside of the property fence. Water appears to discharge into the manhole from the drainage basin at the rear of the Zielksi field property and then discharge out of the manhole toward the catch basin in the rear of 9 Dooling Circle and then out to Dooling Circle.

Photo 8. Our investigation confirms the City's updated drainage mapping (yellow) prepared by New England Civil Engineering for the City, which was provided to HW following the site visit. This photo provides an excerpt of that mapping.

3. Investigation of Detention Basin at the Rear of Zielski Field property

HW walked through the basin and observed the relative elevations of the side berm and concrete wall separating the upper and lower portions of the basins, and observed pipes flowing in and out of the basin. Water flows in to the upper basin (the western section of the basin) from West Diane Road via two pipes, one located just west of 4 West Diane Rd. and one between 8 and 10 West Diane Rd. Water is then, presumably, supposed to flow over the concrete wall in the basin so that it can then flow out a pipe that flows toward the manhole with raised grate, described earlier. We searched for and did not find any weir or hole in the concrete wall, or other outlet structure, that would allow water to otherwise flow from the upper portion of the basin to the lower portion of the basin (eastern end). However, we noted that the elevation of the northern side berm of the upper basin is at the same elevation as the top of the concrete wall, suggesting that if water were to rise to that elevation, it would overtop the side berm, flowing north onto the Zielski field property, at the same time it would flow east into the lower drainage basin.

It is unclear why the basin is built that way, or how it actually functions during a heavy rain event. There was significant evidence of people gathering and making fires in the bottom of the lower (eastern) basin, and very little evidence of flow or ponding in the basin. HW concludes that the basins may not actually direct stormwater flows through the basins but instead the

upper basin may detain water, allow it to infiltrate and essentially contribute to a localized rise in groundwater during and following storm events. We suspect that water escapes the upper basin primarily via the ground, and contributes to localized ponding in the back (southeast) corner of the Zielski field property.

See photos 9 through 11 for more information.

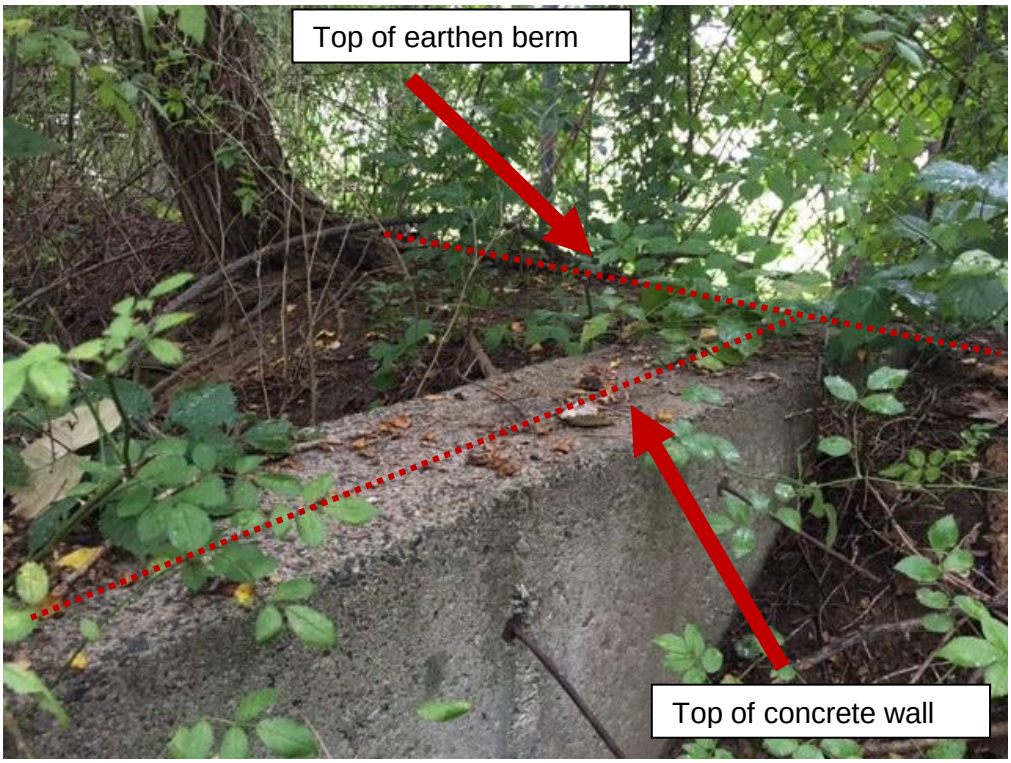

Photo 9. This photo shows the intersection of the concrete wall and the northern berm of the drainage basin at the rear of the Zielski Field property. As you can see, the top of the concrete wall is at the same elevation as the top of the vegetated soil berm. The concrete wall has no weir or outlet built into it, indicating that the only way for water to flow from one side to the other is via groundwater or by flowing over the top of the wall. Zielski Field is in the far background of this photo, through the trees and chain link fence.

Photo 10. Trash and charred firewood indicate that people are using the lower basin as a gathering spot. There is limited indication of water flow through this basin. The concrete wall through the basin can be observed in the back of the photo.

Photo 11. This is the outlet pipe from the lower basin toward the manhole with the raised catch basin grate and cement plug, presented in Photo 7.