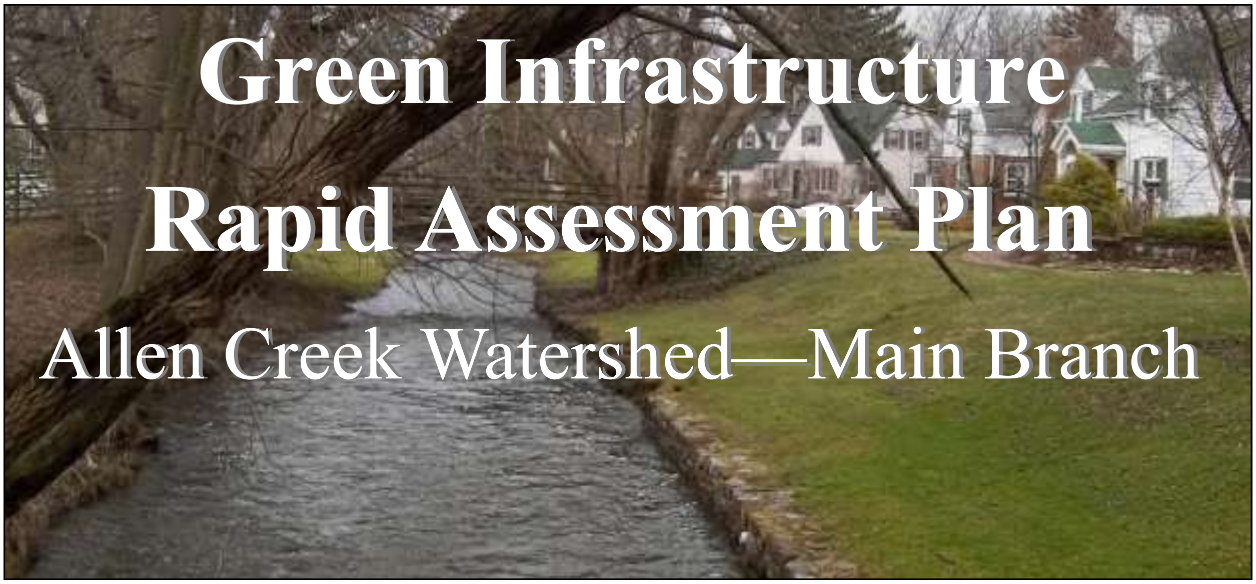


Green Infrastructure Rapid Assessment Plan

Allen Creek Watershed—Main Branch

Prepared by:

The Stormwater Coalition of Monroe County and

Monroe County Department of Environmental Services

Prepared for:

New York State Environmental Protection Fund — Round 10

Cover Photos: Upper -Storybook Drive; Lower- Corbett's Glen Park—Town of Brighton NY

Special acknowledgement needs to be given to the Center for Watershed Protection. Staff conducting this Report relied heavily on the concepts and strategies provided by the Center in its Urban Subwatershed Restoration Manual Series (CWP, 2004) and other reports and studies conducted by the Center

Table of Contents

List of Abbreviations

cfs	cubic feet per second
CWP	Center for Watershed Protection
EPA	US Environmental Protection Agency
GI	Green Infrastructure
GIS	Geographic Information System
GPS	Global Positioning System
IC	Impervious Cover
NYS	New York State
NYSDEC	New York State Department of Environmental Conservation
POC	Pollutant of Concern
SWAAP	Stormwater Assessment and Action Plan
Wq	Water Quality
WS	Watershed
USGS	US Geological Survey

Section 1. Assessment Overview

1.1 PROBLEM STATEMENT:

Similar to many developing areas, growth in Monroe County has caused some unfortunate consequences to water quality. One consequence is that developed areas shed larger volumes of stormwater from impervious surfaces (roads, buildings and parking lots) than natural landscapes. Because there is more volume, there is more pollution. Typical pollutants include: petroleum products and heavy metals from vehicles; fertilizers, chemicals and animal waste from lawns; and, sediment from eroded streambanks, construction sites and roadways.

A second consequence is that streams more frequently flow full or overtop their banks. High stormwater flows can cause flooding, damage property, and harm fish and wildlife habitat. Common damages from high flows include eroded stream banks, wider and deeper stream channels, and excessive sediment deposition. This degradation results in poor water quality and added maintenance costs to municipalities and property owners. In Monroe County, stormwater pollution and associated wet weather flows have harmed virtually all urban streams, the Genesee River and Lake Ontario's shoreline.

1.2 PURPOSE:

Developing plans to improve our impacted water resources is the objective of this the Rapid Green Infrastructure Assessment Plan (Plan). A streamlined method was devised to quickly evaluate multiple watersheds for stormwater retrofit potential. The main product is a ranked inventory of retrofit projects that, if constructed, could improve water quality and stream health and also provide flow attenuation to reduce erosive storm flows and localized drainage problems. A second significant product is the creation of multiple, electronic data files and maps that lay the foundation for future, more in-depth studies. The Plan is a simplified version of more detailed Stormwater Assessment and Action Plans being done in other parts of Monroe County. These larger studies include water quality sampling as well as modeling the effects of the current watershed's condition and the potential improvement from proposed retrofits. The field work completed for this report was kept to a minimum and only a summary report is produced (herein). The project was conducted with funding from New York's Environmental Protection Fund, the Monroe County Department of Environmental Services, and the Stormwater Coalition of Monroe County.

1.3 SETTING:

The main branch of Allen Creek begins at the southern end of the Town of Henrietta and flows north into the Towns of Brighton, Pittsford and Penfield. Allen Creek consists of two significant and diverse subwatersheds, Main branch and East branch (Figure 1). After merging with the East branch in Pittsford, the Creek flows through Brighton and then discharges into Irondequoit Creek in Panorama Valley (Penfield). Because of their size and diversity, the two branches were assessed separately (see also "Green Infrastructure Rapid Assessment Plan Allen Creek Watershed—East Branch"). A middle branch of the creek, referred to as West Brook, drains into the Erie Canal at lock 32 near Clover Street. Retrofits for that tributary area of approximately 1000 acres were considered in this report.

The watershed is dominated by residential land cover in the southern and northeastern areas with approximately 12,000 single family homes. A dense commercial and industrial area in the middle and western portion of the watershed includes a portion of Jefferson Road (Figure 2). Table 1 shows key watershed characteristics of the Main branch which spans

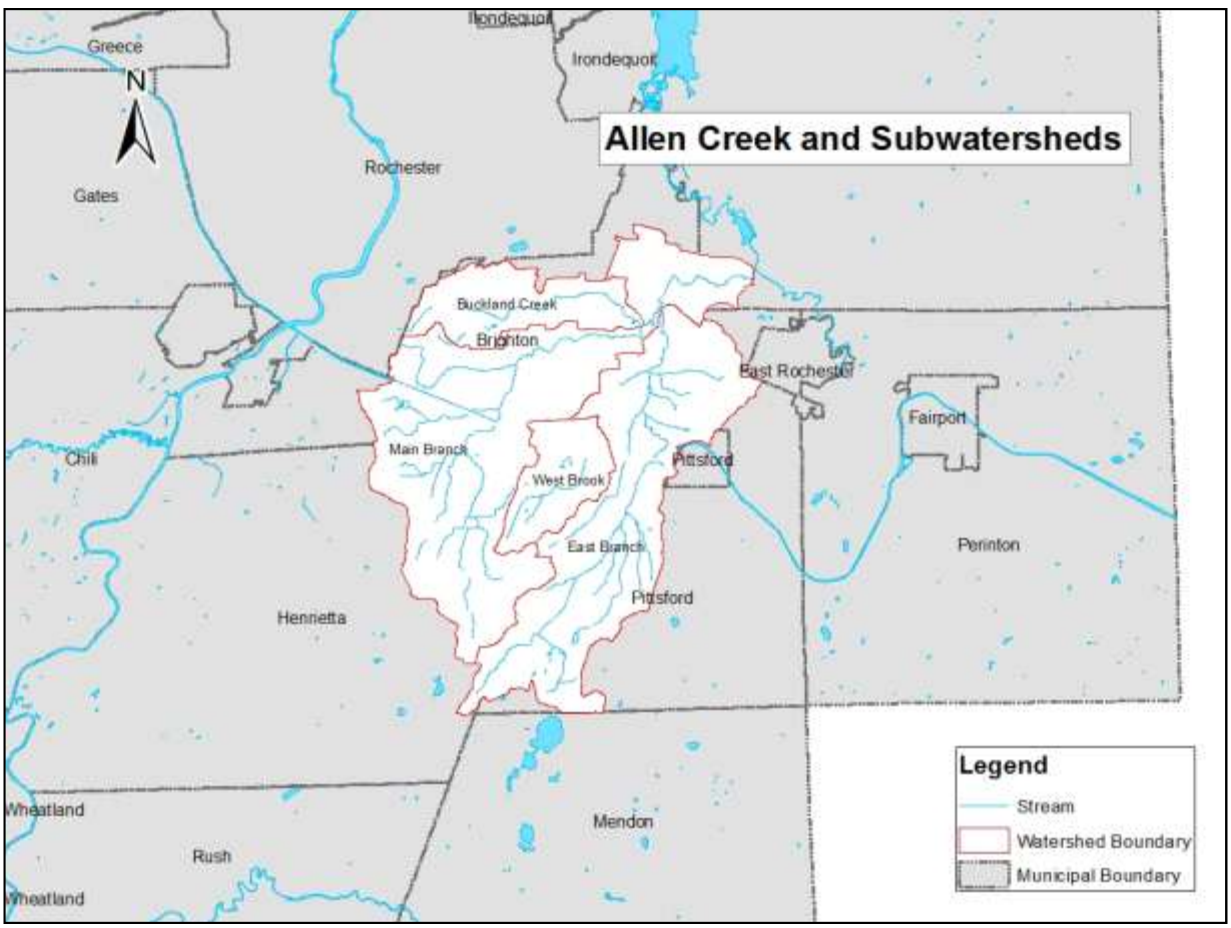


Figure 1: Allen Creek Watershed.

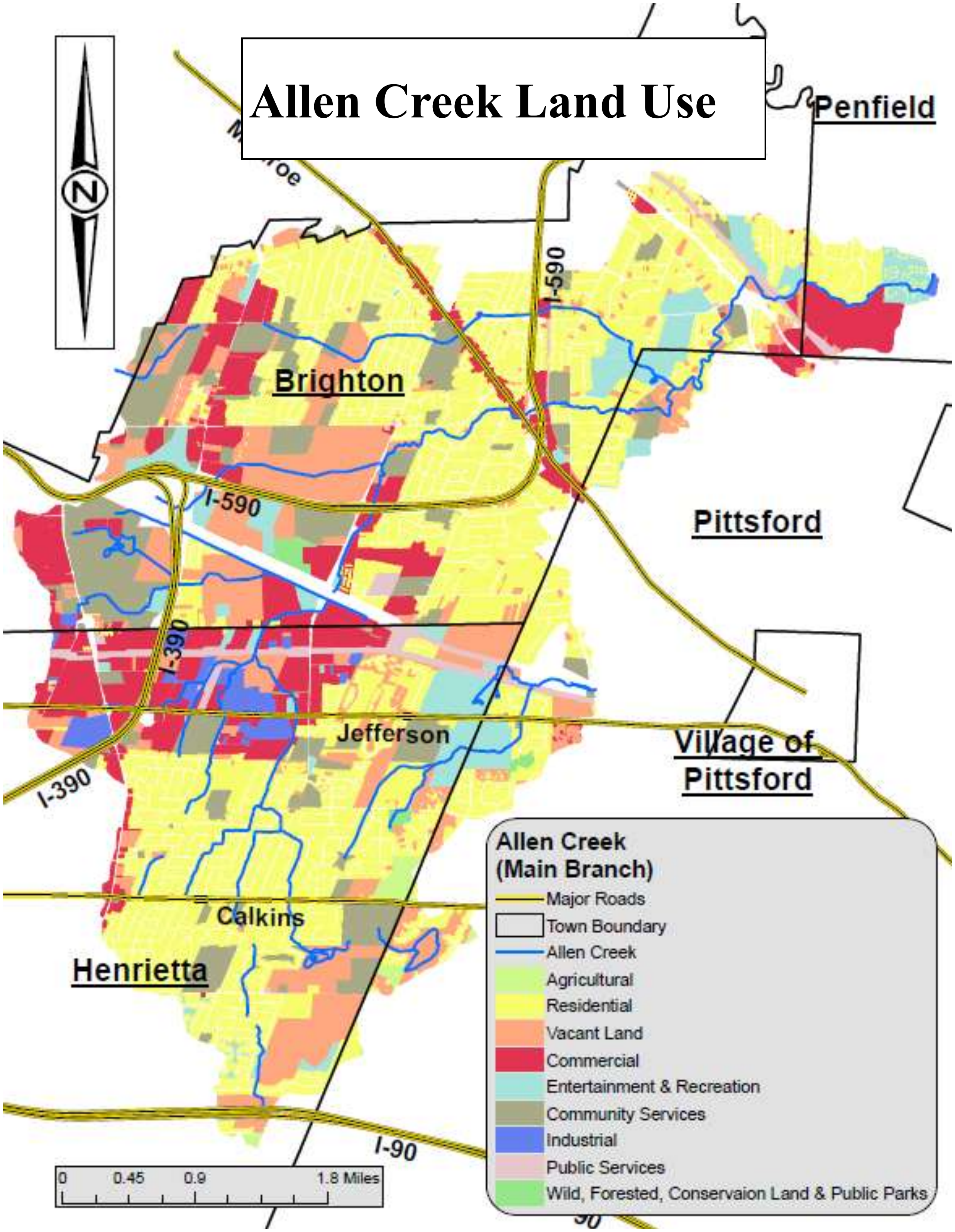


Figure 2: Land use within Allen Creek watershed.

Table 1. Watershed Data	
Metric	**Value**
Area	11,853(Acres)
Mapped Stream Length	29.4 Miles
Percent of Stream Channelized	33%
Primary/secondary land use	Residential/Commercial
Land Use (percent of watershed)	
Agricultural	2.5
Residential	40.9
Vacant Land	15.4
Commercial	14.3
Recreation & Entertainment	6..2
Community Service	14.9
Industrial	1.8
Public Services	3.6
Wild, Forested, Conservation Lands & Public	0.4
# of Stormwater Treatment Ponds	43
# of Stormwater Outfalls	548
Current Impervious Cover (%)	33
Estimated Future Impervious Cover (%)*	37
Wetland acres	1382
Municipal Jurisdiction	Brighton 53%,Henrietta 37%, Pittsford 7%, Pen-field 3%

*Based on current zoning, future impervious cover (over the next 10 years) will increase by 4 percent.

1.4 WATERSHED CHARACTERISTICS:

1.4.1 Water Quality Concern According to the New York State Department of Environmental Conservation's "Lake Ontario Basin Waterbody Inventory and Priority Waterbodies List" (NYSDEC 2004), Allen Creek and its tributaries have minor impairments. The waterbody datasheet states that *"Aquatic life support, public bathing and various recreational uses (fishing, boating, etc) in Allen Creek are affected by impacts from various urban/stormwater sources and other nonpoint sources in the watershed...Urban and stormwater runoff related to the high degree of impervious surface area (shopping plazas, parking lots, roadways, etc.) has been identified as the primary source of nutrients and other pollutants (pathogens, oil and grease, floatables) to the creek. A significant portion of one tributary (Buckland Creek) is enclosed and serves primarily as a storm sewer for Elmwood Avenue. Agricultural activities in the upper watershed, impacts from failing and/or inadequate on-site septic systems, tributary stream erosion and residential and commercial development throughout the watershed are also thought to contribute to nutrient and silt/sediment loadings."*

The full (two-page) waterbody datasheet is included in Appendix B. Buckland Creek (the tributary mentioned above), has had a detailed Stormwater Assessment and Action Plan completed (Stormwater Coalition, 2010).

Allen Creek is part of the larger, Irondequoit Creek watershed which has been the focus of numerous water quantity and quality studies conducted by the U.S. Geological Survey (USGS) in cooperation with Monroe County. USGS has written extensive reports and updates that describe streamflow, examine water-quality trends and report annual loads of selected constituents to Allen Creek, Irondequoit Creek and Bay (USGS, multiple years).

The west-to-east flowing Erie Canal intersects many north flowing streams in Monroe County, with most being conveyed underneath the Canal via aqueducts. The Canal has siphon discharges to several streams in Monroe County including both the Main and East Branches of Allen Creek. Since Canal water quality is generally very poor, these discharges contribute significant pollutant loads to the receiving streams. Sampling the Creek above the Canal, from the siphon and below the Canal for about 15 years has shown concentrations of suspended material, such as turbidity, suspended solids, and phosphorus, were higher in water from the siphon than above the siphon and generally resulted in elevated concentrations and overall higher pollutant loads in the receiving streams. Removing these discharges, especially to smaller streams like Allen Creek, is a recommendation of this report.

USGS also developed a precipitation-runoff model of Irondequoit Creek watershed to simulate the effects of land-use changes and stormflow-detention basins on flooding and stormwater pollution. Results of model simulations indicated that peak flows and loads of sediment and total phosphorus would increase in the upper (rural) watershed if it became developed. Discussions between Monroe County and USGS to update the model took place in late 2012 and are a recommendation of this report as well.

1.4.2 Impervious Cover Analysis The Center for Watershed Protection created the "Impervious Cover Model" (ICM) to predict a typical stream's health using the relationship between subwatershed impervious cover and stream quality indicators. This relationship has have been confirmed by nearly 60 peer-reviewed stream research studies (Figure 5). The ICM shows stream quality decline becomes evident when the watershed impervious cover exceeds ten percent. The Main Branch has an average of 33 percent impervious cover identifying stream quality somewhere between poor and fair and non-supporting of aquatic

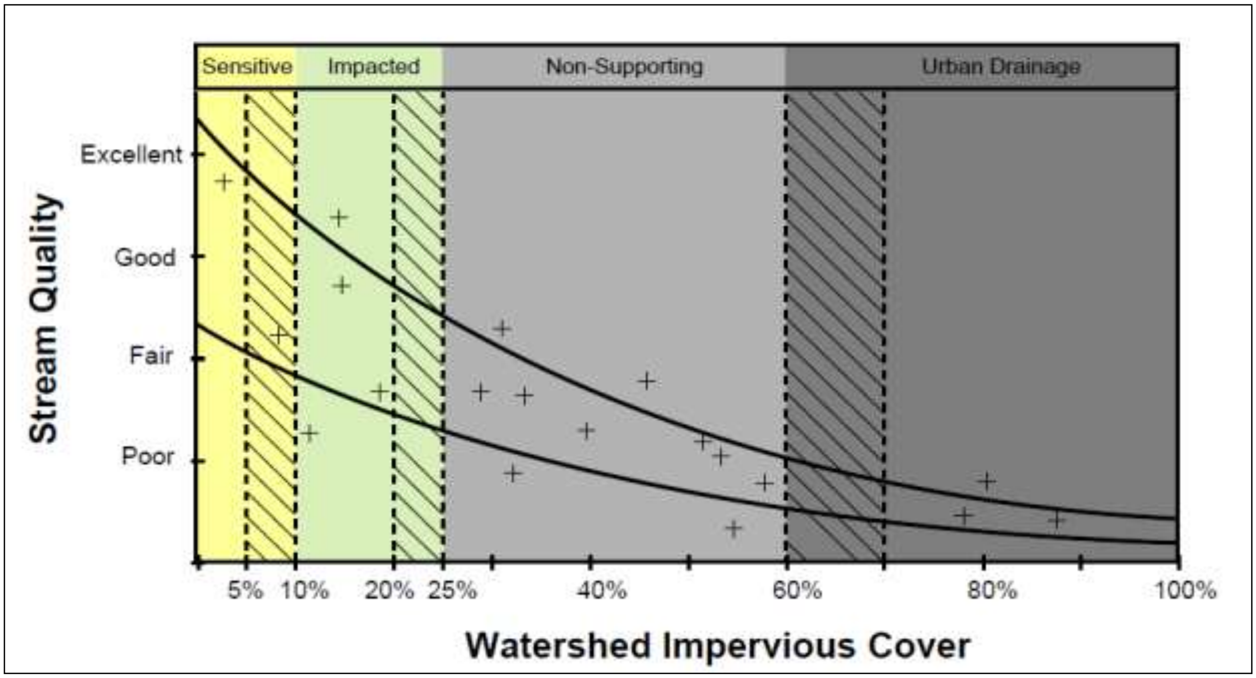


Figure 3: Impervious Cover Model

Drainage Concerns Typical of land development in the 1950's and 60's, extensive channelizing and piping of the Creek has caused adjacent neighborhoods to flood during larger storm events. This is true of a large area of older residential neighborhoods in the Southern portion of the watershed, south of Castle Road. The Town of Henrietta commissioned studies of this area (Lu Engineers 2009) which identify remedial measures, some of which ranked well in this assessment.

Due to the extensive urban development of the watershed, the Creek experiences continual flooding issues at the intersections of Calkins Road and Farnsworths Road South, Calkins Road and Barnsfield Road, and Calkins Road and Thompson Road. Drainage concerns in the Town of Brighton include some flooding of yards in the Evans Farm Subdivision Idlewood Road (east of Winton Road and South of Westfall Road).

Streambank Erosion The Creek has numerous locations of eroding stream banks and has been armored through most of the developed portions of the watershed, but is most severe in its lower reach (Figure 4). Here the Creek moves from an upper plain elevation near the intersection of NYS 490 and 441, 390 feet down into the Irondequoit Creek valley to the confluence of Irondequoit Creek at elevation 275 feet. This section contains open space with waterfalls that the Town of Brighton purchased creating the Corbett's Glen Nature Park with residential and commercial land uses downstream in the Town of Penfield.

Figure 3: Severe streambank erosion above Corbett's Glen (note railroad embankment at top of bank)

The Town of Penfield commissioned a study of this area, *Preliminary Geomorphic Assessment of Allen Creek* (Barton & Loguidice 2011). Excerpts related to the dynamic nature of stream channels and how the rate of erosion is affected by adjacent and upstream land use are copied below:

If left unaddressed, the ongoing destabilization of the Allen Creek channel will continue... These changes in channel form will result in continued erosion of streambanks and development of areas of excessive streambed scour and deposition. Likewise, excessive deposition of these eroded bed and bank materials through various portions of the channel will lead to more frequent and intense flooding in these areas, as continued sediment deposition continually reduces flood capacity of the channel. This process will also lead to continued streambank erosion as the channel continues to widen in an attempt to reestablish adequate bankfull flood capacity...Consequentially if left unaddressed, the condition of the stream corridor will lead to continued flooding, bank erosion, and streamside property loss...Allen Creek will continue to result in a decline in the quantity and quality of instream habitats and populations of fish and other aquatic organisms, directly impacting the quality of the recreational fishery provided by this stream...The best results will be achieved if the stream management plan is approached at the watershed or systemic scale, addressing issue areas that have the most significant impact on adjacent downstream areas.

Doing so will require the establishment of a broader-based entity (such as a multi-municipality stormwater coalition) or collaborative partnership between neighboring municipalities contained within the watershed...Reducing the impact of developed areas of the watershed upon stream performance is another avenue by which erosion and channel destabilization problems along Allen Creek can be minimized. Existing stormwater management features, such as detention basins, retention ponds, etc. can be retrofitted to increase infiltration and reduce stormwater runoff to the Creek. This approach not only works to better attenuate the high volume of stormwater runoff entering the stream during storm events (which tends to exacerbate bed and bank erosion problems), but also provides the ecological benefits of recharging the groundwater aquifer (resulting in more available streamflow during dryer, low-flow periods of the year) and also reduces the temperature of stormwater discharged to the Creek (an important consideration in maintaining the character of a cold-water fishery like Allens Creek). Even smaller-scale efforts, such as retrofitting existing storm gutter and storm drain systems, and creating bio-retention swales and rain gardens in areas with high runoff rates can have a positive effect upon increasing infiltration and groundwater recharge, reducing the impact of the watershed's existing stormwater infrastructure upon the stability of Allens Creek.

Soils A simplistic yet useful way to define how much stormwater runs off the pervious land surface is to determine soils' infiltration capabilities, their ability to absorb stormwater. Soil scientists have categorized soils into four categories, A through D. "A" and B soils are well drained and absorb much of the stormwater that drains on or over them. C and D soils are more poorly drained. However, the soils in some parts of this watershed are not categorized, denoting areas that have been so altered by land development that grouping a specific soil type is not feasible. The amount of each soil type in Allen Creek Main Branch is: A soils 5%; B soils 37%; C soils 42%; D soils or not verified 15% (Figure 5).

The large percentage of B soils will allow for infiltration-type stormwater retrofits. These practices installed in the upper parts of the watershed can prevent and reduce flooding, drainage problems, and streambank erosion as well as greatly improving water quality in Allen Creek.

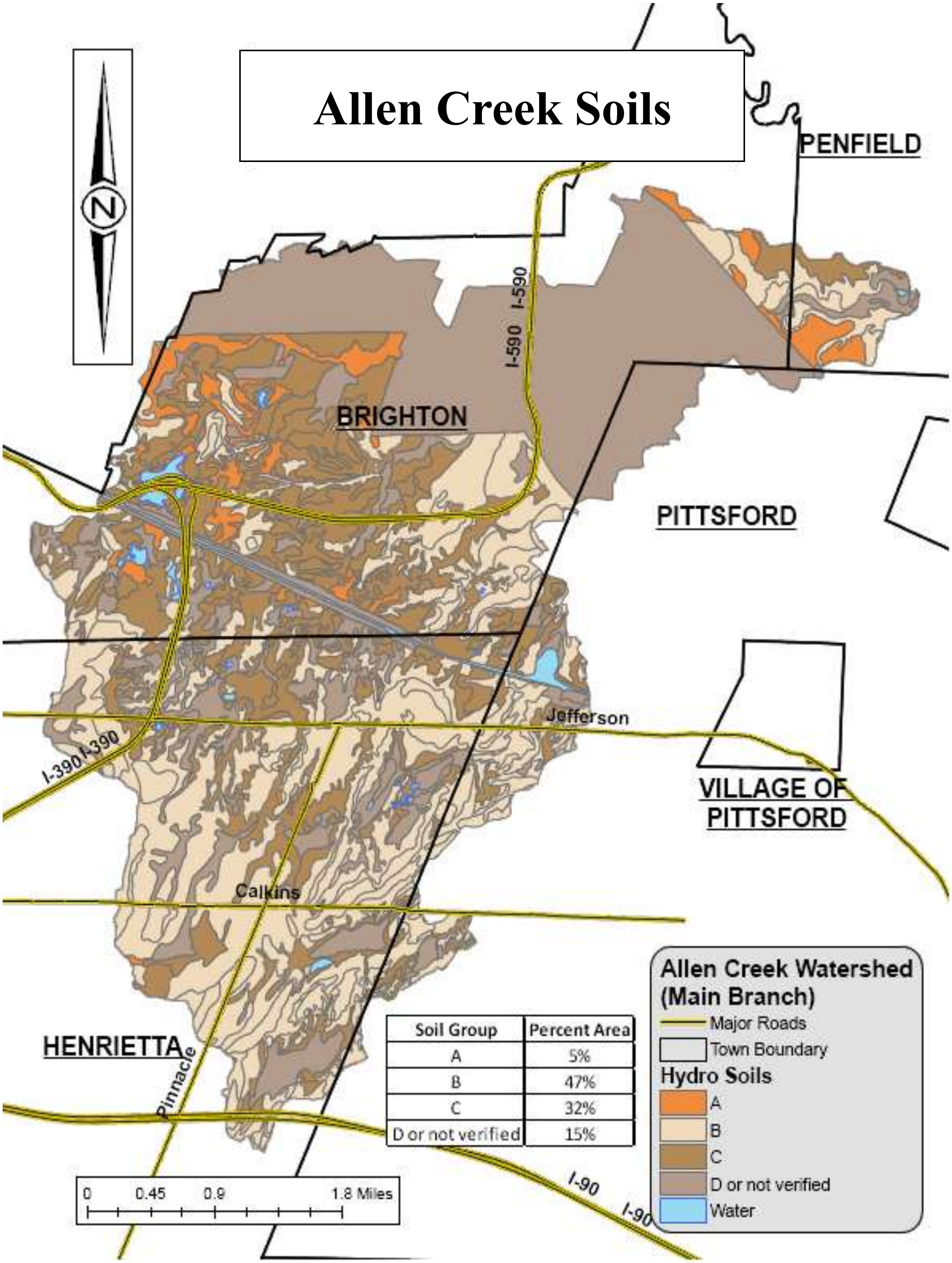


Figure 5: Hydric Soils Map of Allen Creek Main Branch

Section 2. Retrofit Inventory

An inventory of potential retrofit sites was generated using GIS mapping tools to locate public properties, stormwater practices like ponds, old urban areas (built before stormwater management requirements) and, pervious soil areas. Next, the appropriate stormwater management practice was determined for the properties identified and those were ranked based on their feasibility, how much they would improve water quality and, cost effectiveness. While the stormwater management practice types focused on green infrastructure (stormwater volume-reducing practices such as infiltration), project types include retrofitting stormwater ponds as a highly cost-effective practice. Stormwater pond projects rank well and are a recommended component of watershed restoration. Complete details of methods used to complete the rapid assessment and retrofit ranking is explained in a reference document titled "Assessment Methodology, Project Descriptions, and Retrofit Ranking Criteria For Monroe County Green Infrastructure Rapid Assessment Plans".

Two broad categories of retrofit project types were considered:

1) New stormwater ponds, upgrades to existing stormwater ponds and adding stormwater storage to existing drainage channels.
2) Green Infrastructure (GI). This category was divided and ranked by where a GI project might be installed and includes:
   - Public Right of Ways,
   - Older Residential Neighborhoods, and
   - Other Locations (such as areas with large impervious surfaces ie shopping malls)

Green infrastructure projects can be installed on private property as well as in the right of way on neighborhood streets, major roadways, and highways. These types of projects involve the modification of concrete channels and stormwater conveyance systems. Green infrastructure projects on private property involve the installation of rain gardens to capture and retain roof runoff.

Other watershed retrofitting that would help meet water quality goals include the investigation and remediation of any stormwater hotspots (Appendix C) and dechannelization and revegetation of straightened and degraded stream corridors (Appendix D). However these projects are outside the scope of this report and therefore were not ranked. Figure 6 shows project locations and project numbers within the watershed. Table 2 lists project addresses and how they scored. Diagrams of the top scoring projects follow the table.

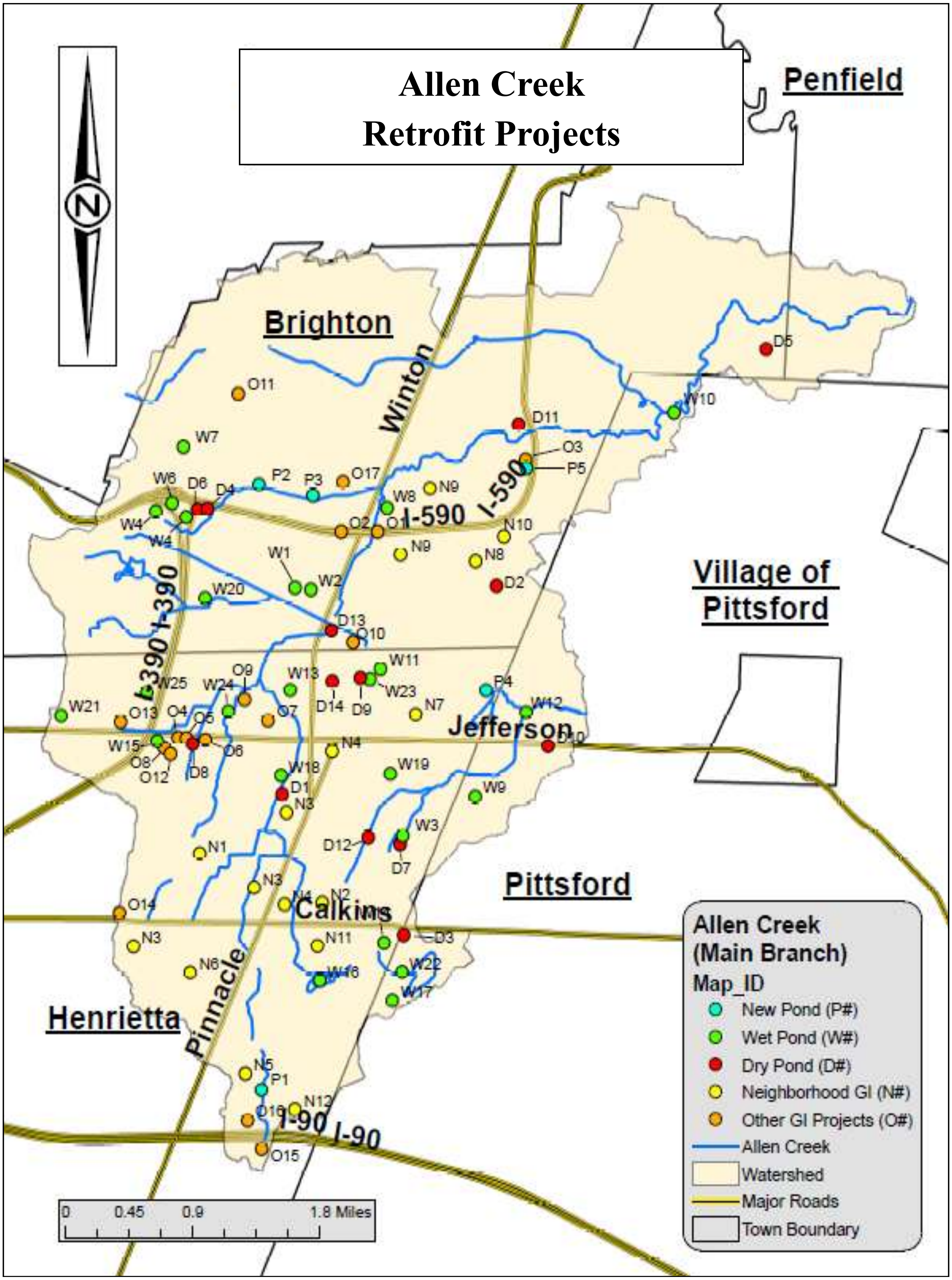


Figure 6: Map of potential projects within the Allen Creek main branch watershed.

Table 2. Allen Creek Main Branch Retrofit Ranking List

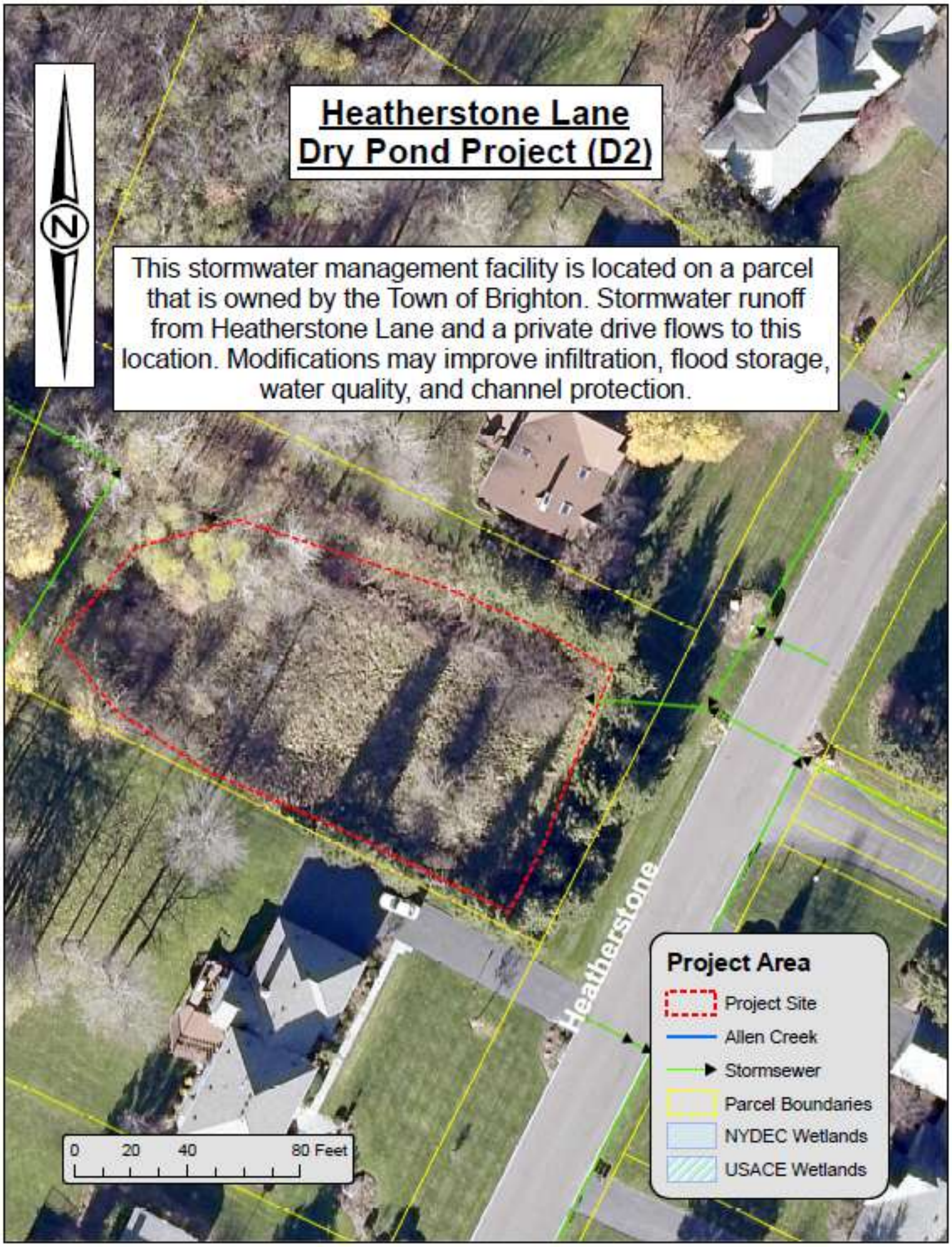
Map I.D.	Project Type	Overall Rank	Project Location	Feasability	Watershed Benefits	Cost Effective-ness	Score
D2	Dry Pond	1	Heatherstone Lane - Brighton	5	I, FS, WQ, CP	3	13
D3	Dry Pond	2	Pittsford-Henrietta Town Line Road and Calkins	5	I, FS, WQ, CP	3	13
P2	New Pond	3	1435 Westfall Road	5	I, FS, WQ, CP	3	13
P3	New Pond	4	1149 Westfall Rd	5	I, FS, WQ, CP	3	13
W20	Wet Pond	5	Woodsmeadow off Clinton South	5	I, FS, WQ, CP	3	13
D7	Dry Pond	6	High Stone Circle	5	I, FS, WQ	3	12
D6	Dry Pond	7	B/w I-390 N and I-390 to NB I-590 (Fed. WL)	4	I, FS, WQ, CP	3	12
P1	New Pond	8	Gate House Trail	4	I, FS, WQ, CP	3	12
W8	Wet Pond	9	1890 Winton Rd South	4	I, FS, WQ, CP	3	12
D4	Dry Pond	10	B/w I-390 to NB I-590 ramp and I-590	4	I, FS, WQ	3	11
O3	Bioretention	11	I-590 and Monroe Ave junction	4	I, AB, FS, WQ	2	11
P5	New Pond	12	I-590 and Monroe Ave junction	4	I, FS, WQ	3	11
D10	Dry Pond	13	West Jefferson Road (behind 160 Office Park Way)	3	I, FS, WQ, CP	3	11
D13	Dry Pond	14	3450 Winton Place	3	I, FS, WQ, CP	3	11
D5	Dry Pond	15	Corner of Route 441 and Linden Ave.	3	I, FS, WQ, CP	3	11
D8	Dry Pond	16	1215 Jefferson Road	3	I, FS, WQ, CP	3	11
D9	Dry Pond	17	90 Goodway Drive	3	I, FS, WQ, CP	3	11
W13	Wet Pond	18	3111 Winton Road South	3	I, FS, WQ, CP	3	11
W1	Wet Pond	19	Meridian Centre off Winton Rd South (Park)-1	5	FS, WQ, CP	3	10
W2	Wet Pond	20	Meridian Centre off Winton Rd South (Park)-2	5	FS, WQ, CP	3	10
O1	Bioretention	21	Winton on ramp to I-590 (East side)	4	I, WQ, SC	2	10
O2	Bioretention	22	Winton on ramp to I-590 (West side)	4	I, WQ, SC	2	10
D1	Dry Pond	23	Behind 32 Running Creek Circle	3	I, FS, WQ	3	10
D12	Dry Pond	24	289 Tumbleweed Drive	3	I, FS, WQ, CP	3	10
D14	Dry Pond	25	3100 Winton Rd South	3	I, FS, WQ	3	10
O11	ICR	26	1900 S. Clinton Ave.	3	I, AB, WQ, SC	2	10
O13	ICR	27	Corner Jefferson and E Henrietta	3	I, AB, WQ, SC	2	10
O14	ICR	28	2559 E. Henrietta Rd	3	I, AB, WQ, SC	2	10

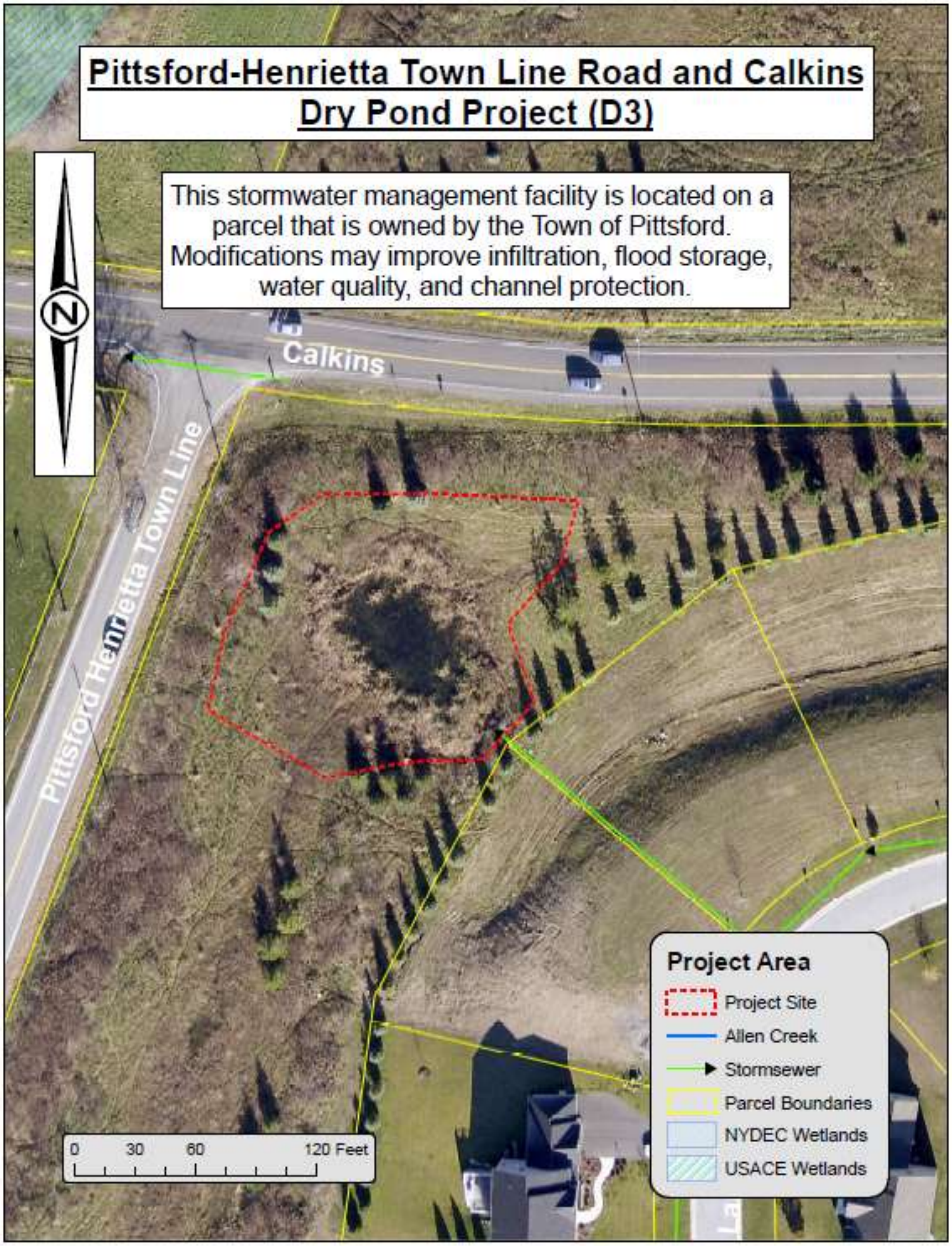
Table 2. Allen Creek Main Branch Retrofit Ranking List

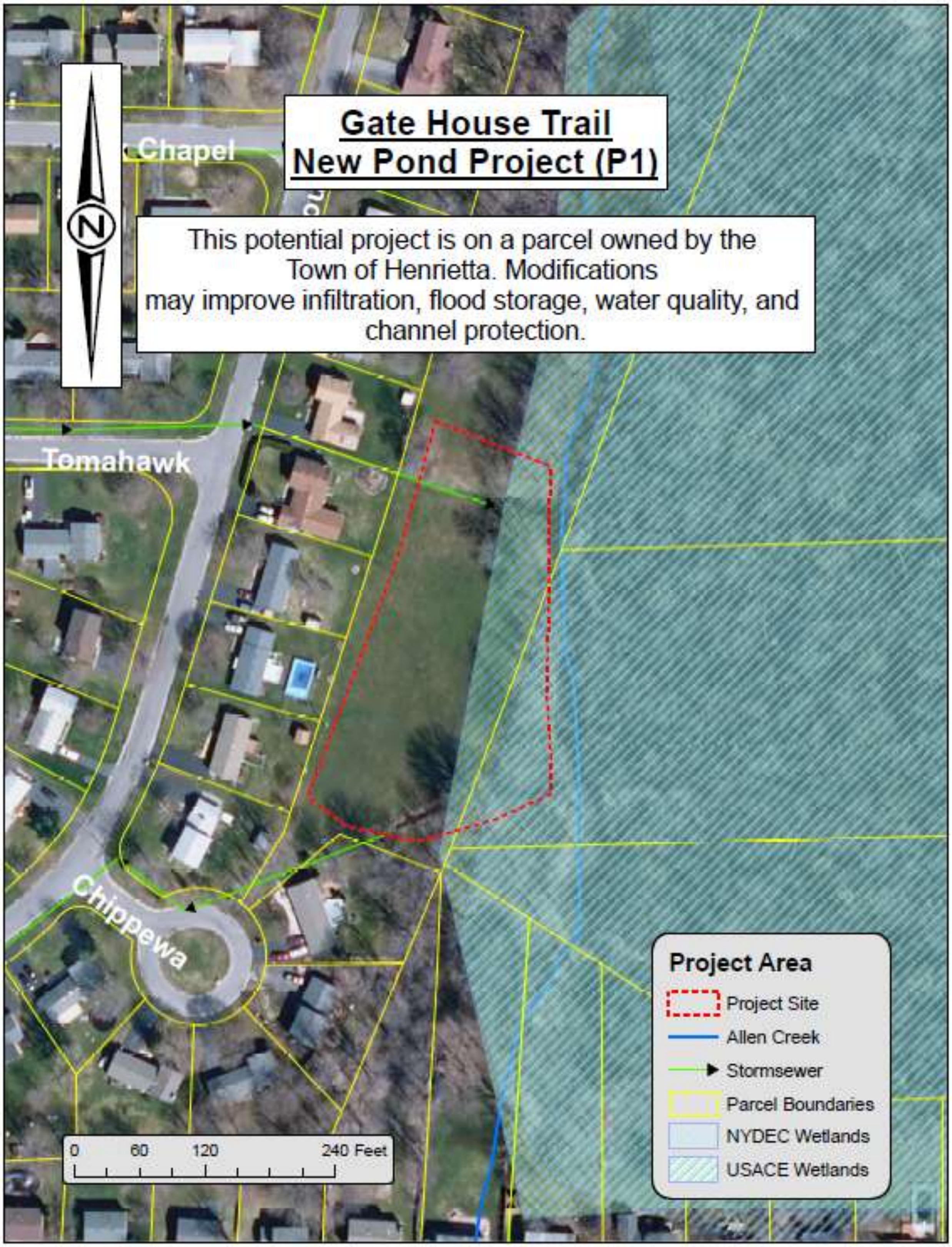
Map I.D.	Project Type	Overall Rank	Project Location	Feasability	Watershed Benefits	Cost Effective-ness	Score
O9	ICR	29	1350 Jefferson Rd (Harris Corp.)	3	I, WQ, CP, SC	2	10
W19	Wet Pond	30	New London Rd - Henrietta	3	I, FS, WQ	3	10
P4	New Pond	31	End of Karenlee Drive	2	I, FS, WQ, CP	3	10
W7	Wet Pond	32	Schilling Lane - Brighton	5	WQ	3	9
W15	Wet Pond	33	Jefferson to I-390 on ramp (behind 1175 Jefferson)	4	FS, CP	3	9
W4	Wet Pond	34	I-590 to SB I-390 (Fed. WL)	4	FS, CP	3	9
W5	Wet Pond	35	B/w I-390 N and I-390 S (Fed. WL)	4	S, WQ	3	9
W6	Wet Pond	36	B/w I-590 and I-390 on/off ramp to I-590 (Fed. WL)	4	S, WQ	3	9
O10	ICR	37	3450 Winton Place	3	I, WQ, SC	2	9
O12	ICR	38	1225 Jefferson Rd	3	I, WQ, SC	2	9
O6	Bioretention	39	1335 Jefferson Road	3	I, WQ, SC	2	9
O7	Bioretention	40	1400 Jefferson Rd (Harris Corp.)	3	I, WQ, SC	2	9
W12	Wet Pond	41	33 Eaglewood Circle	3	FS, WQ, CP	3	9
W24	Wet Pond	42	1300 Jefferson Road	3	FS, WQ, CP	3	9
D11	Dry Pond	43	Monroe Ave near I-590 East bound ramp	2	I, FS, WQ	3	9
O4	Bioretention	44	1205 Jefferson Road	3	FS, WQ, SC	2	8
O5	Bioretention	45	1215 Jefferson Road	3	FS, WQ, SC	2	8
O8	Bioretention	46	1225 Jefferson Rd	3	FS, WQ, SC	2	8
W11	Wet Pond	47	3559 Winton Place	3	FS, WQ	3	8
W21	Wet Pond	48	790 Jefferson Rd	3	FS, WQ	3	8
W25	Wet Pond	49	150 Jarley Road	3	FS, WQ	3	8
N1	Neighborhood	50	Suburban Heights	2	WQ, CR, E, SC	2	8
N10	Neighborhood	51	Warren Park	2	WQ, CR, E, SC	2	8
N11	Neighborhood	52	Glen Acre Heights	2	WQ, CR, E, SC	2	8
N12	Neighborhood	53	Southview Estates	2	WQ, CR, E, SC	2	8
N2	Neighborhood	54	Trout Spring Farm	2	WQ, CR, E, SC	2	8
N3	Neighborhood	55	Royal Meadow	2	WQ, CR, E, SC	2	8

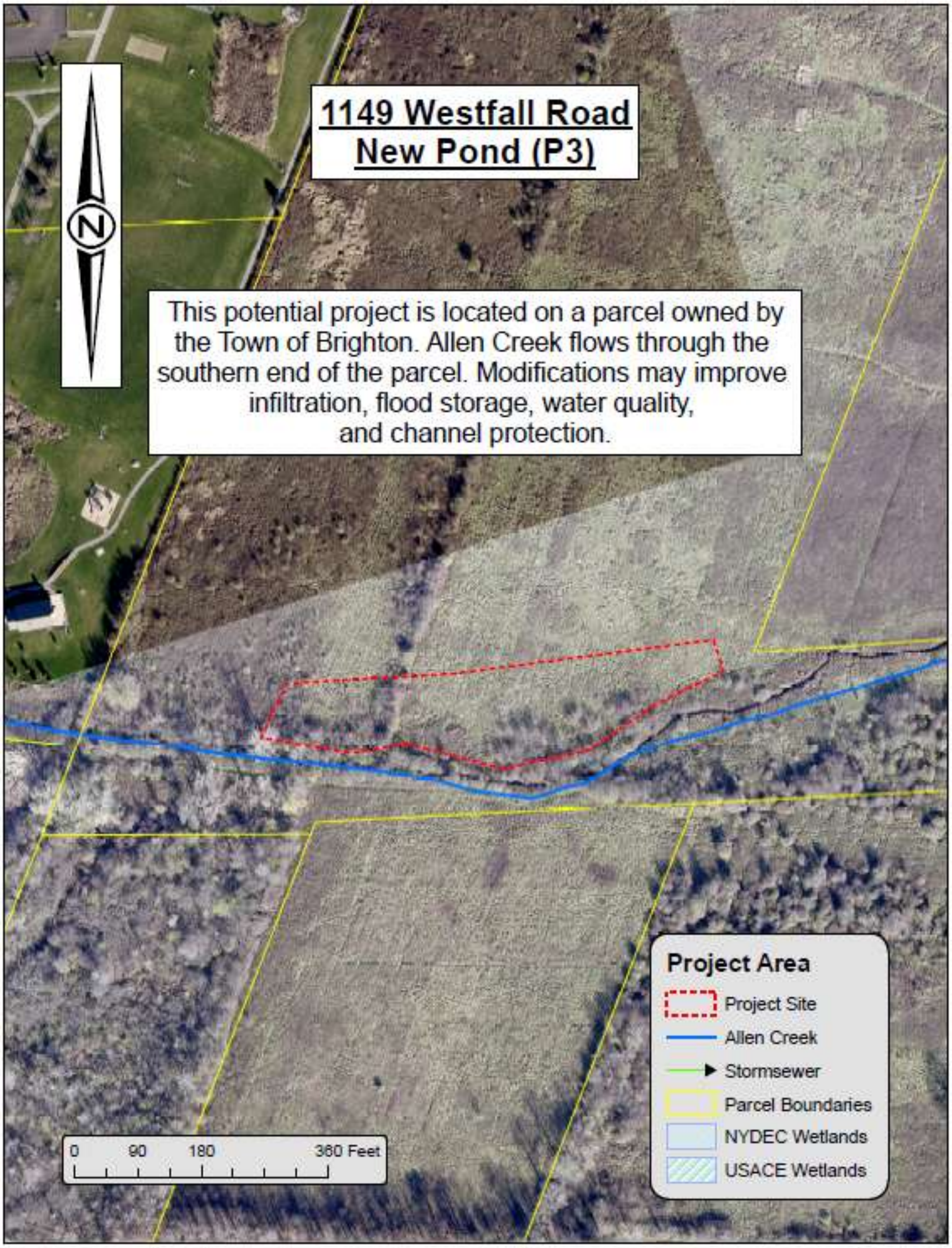
Table 2. Allen Creek Main Branch Retrofit Ranking List

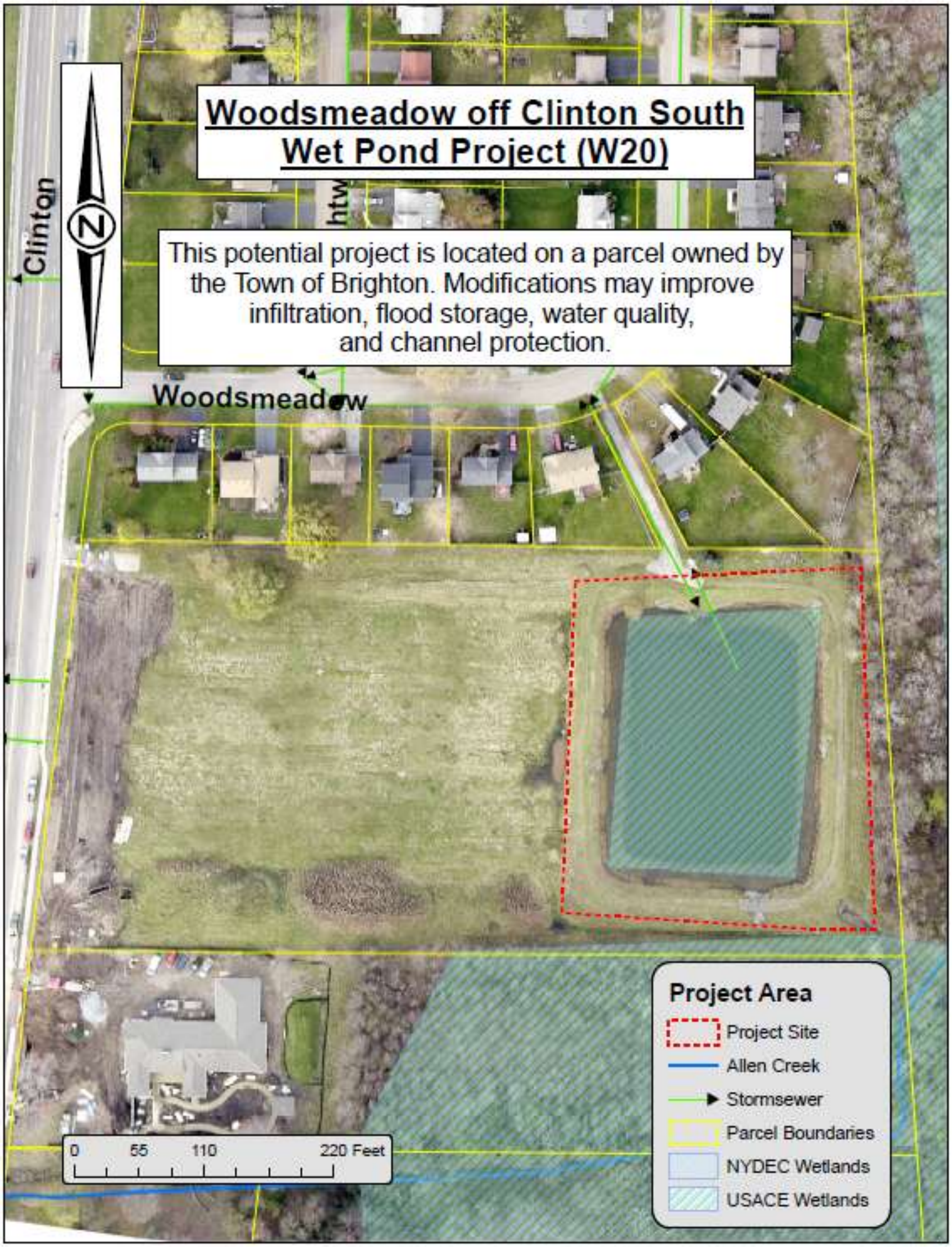
Map I.D.	Project Type	Overall Rank	Project Location	Feasability	Watershed Benefits	Cost Effective-ness	Score
N4	Neighborhood	56	Pinnacle Heights	2	WQ, CR, E, SC	2	8
N5	Neighborhood	57	Indian Hills	2	WQ, CR, E, SC	2	8
N6	Neighborhood	58	Lamplighter Colony	2	WQ, CR, E, SC	2	8
N7	Neighborhood	59	Locust Hill View	2	WQ, CR, E, SC	2	8
N8	Neighborhood	60	Alaimo Park	2	WQ, CR, E, SC	2	8
N9	Neighborhood	61	Evans Farm	2	WQ, CR, E, SC	2	8
W14	Wet Pond	62	1585 Calkins Road	3	S, WQ, E	3	7
O16	Zero Order	63	Behind 129 Blackwell Lane	2	I, SC	2	7
W10	Wet Pond	64	Woodbury Place (behind 25 Woodbury Place)	2	FS, WQ	3	7
W18	Wet Pond	65	1565 Jefferson Rd	2	FS, WQ	3	7
W23	Wet Pond	66	Surrey Hill Way	2	FS, WQ	3	7
W9	Wet Pond	67	West Jefferson Road (4 Hogan Court)	2	FS, WQ	3	7
O15	Zero Order	68	256-258 Reeves Road	1	I, AB, SC	2	7
O17	Zero Order	69	Across road from 1666 Winton Road S	1	I, CP, SC	2	7
W16	Wet Pond	70	Hillside Children's Center (behind 249 Parkmeadow)	0	S	3	4

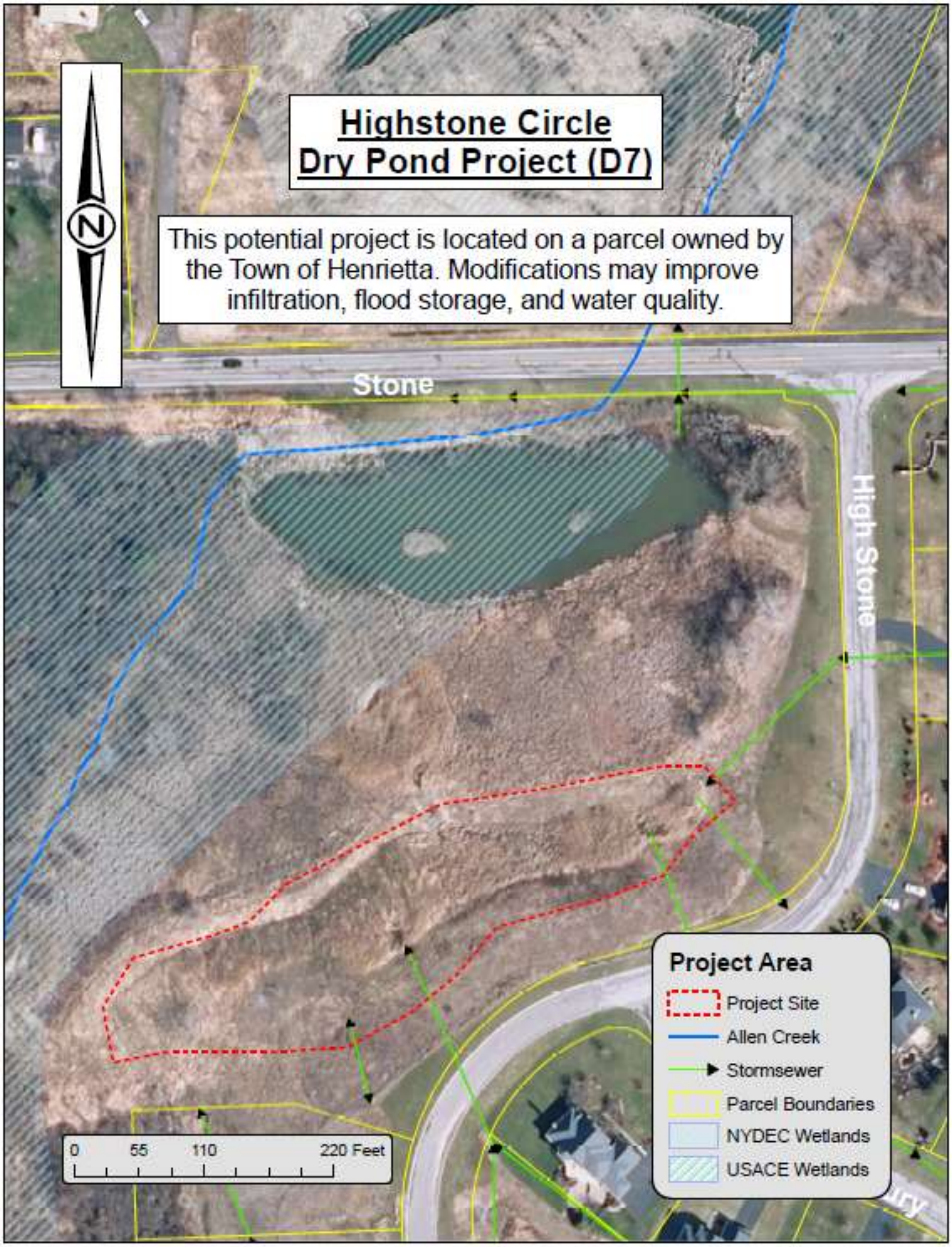

Heatherstone Lane
Dry Pond Project (D2)
N
This stormwater management facility is located on a parcel that is owned by the Town of Brighton. Stormwater runoff from Heatherstone Lane and a private drive flows to this location. Modifications may improve infiltration, flood storage, water quality, and channel protection.
Heatherstone
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
20
40
80 Feet

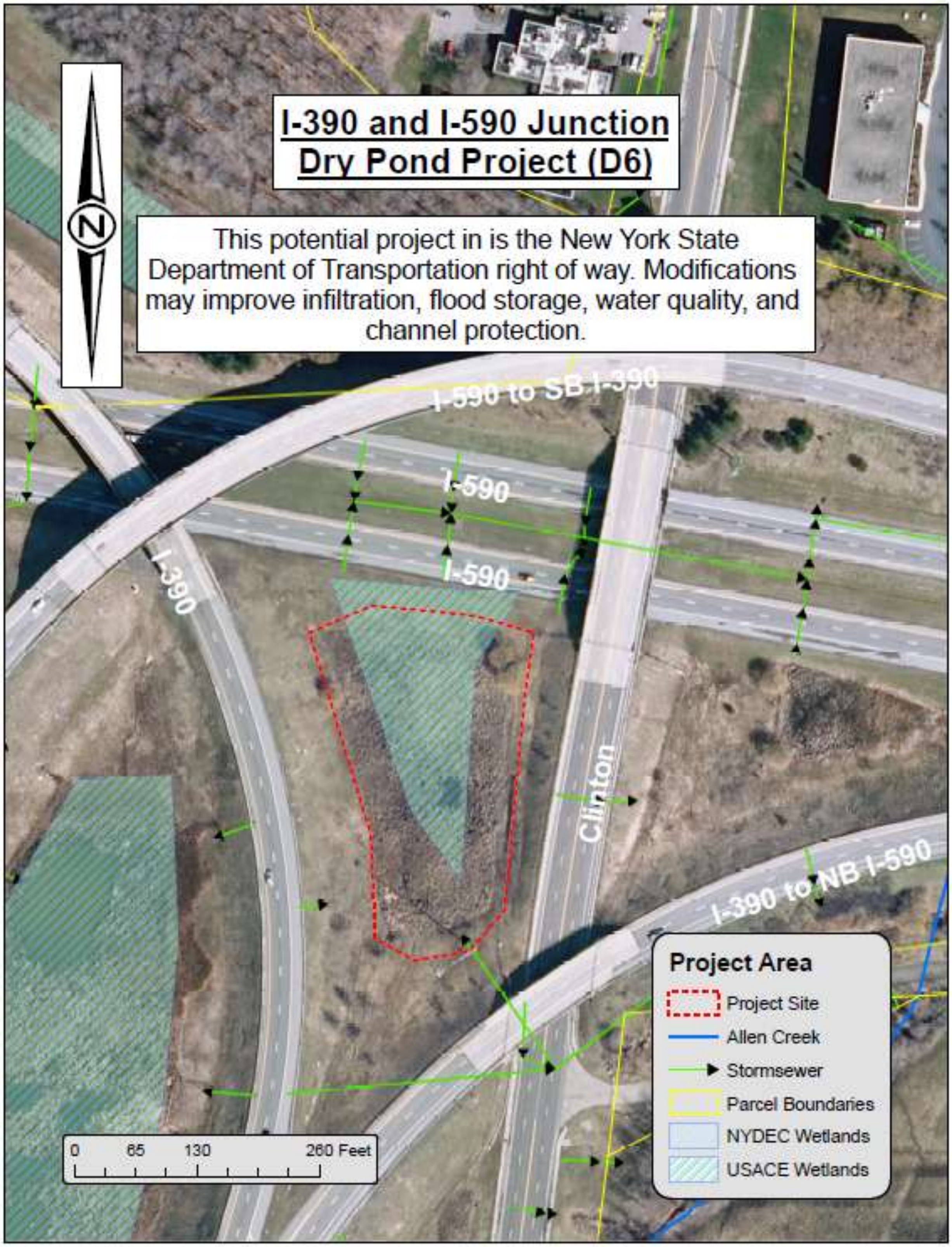

Pittsford-Henrietta Town Line Road and Calkins
Dry Pond Project (D3)
This stormwater management facility is located on a parcel that is owned by the Town of Pittsford. Modifications may improve infiltration, flood storage, water quality, and channel protection.
N
Calkins
Pittsford-Henrietta Town Line
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
30
60
120 Feet


Gate House Trail
New Pond Project (P1)
This potential project is on a parcel owned by the Town of Henrietta. Modifications may improve infiltration, flood storage, water quality, and channel protection.
N
Chapel
Tomahawk
Chippewa
0 60 120 240 Feet
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands

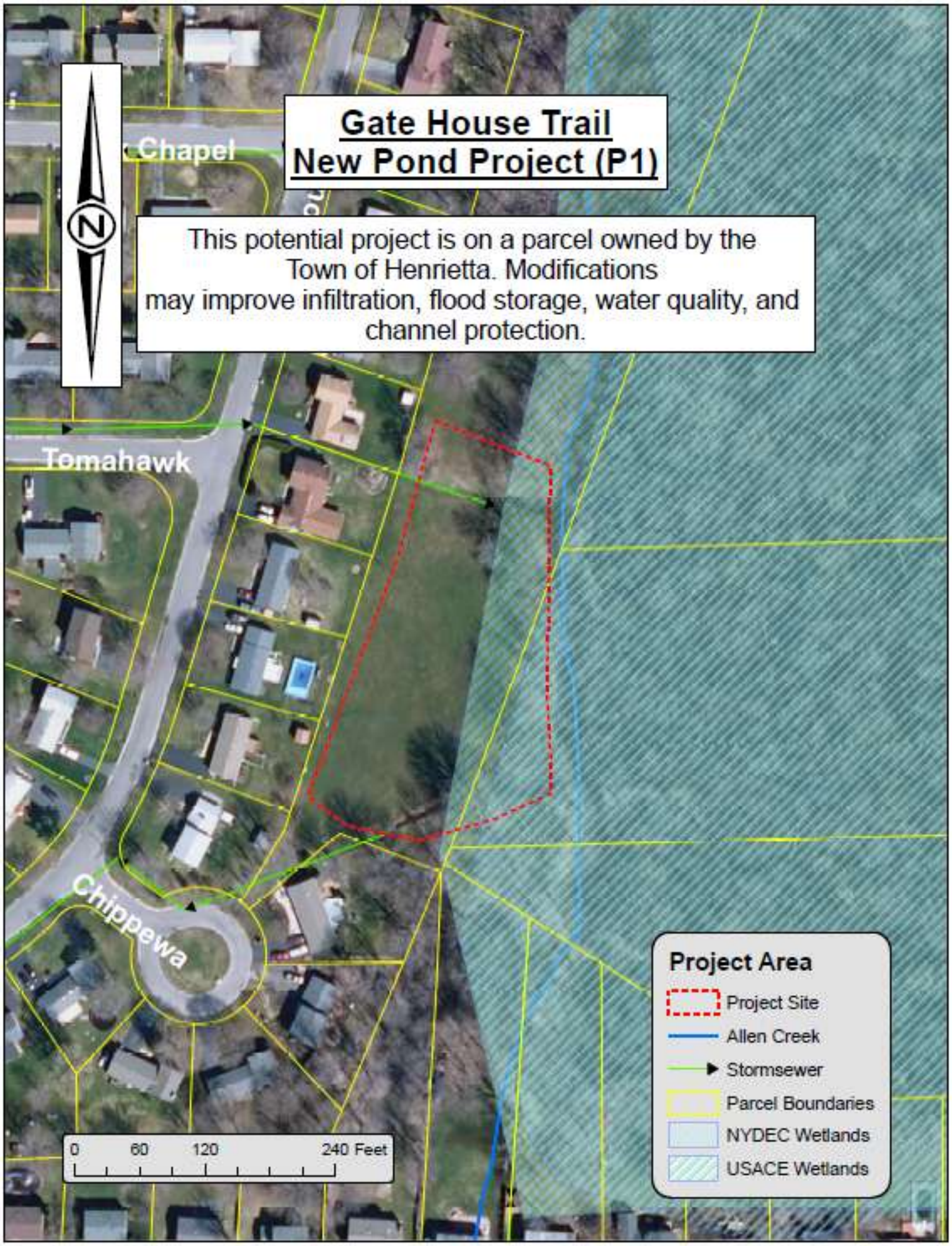

1149 Westfall Road
New Pond (P3)
N
This potential project is located on a parcel owned by the Town of Brighton. Allen Creek flows through the southern end of the parcel. Modifications may improve infiltration, flood storage, water quality, and channel protection.
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
90
180
360 Feet

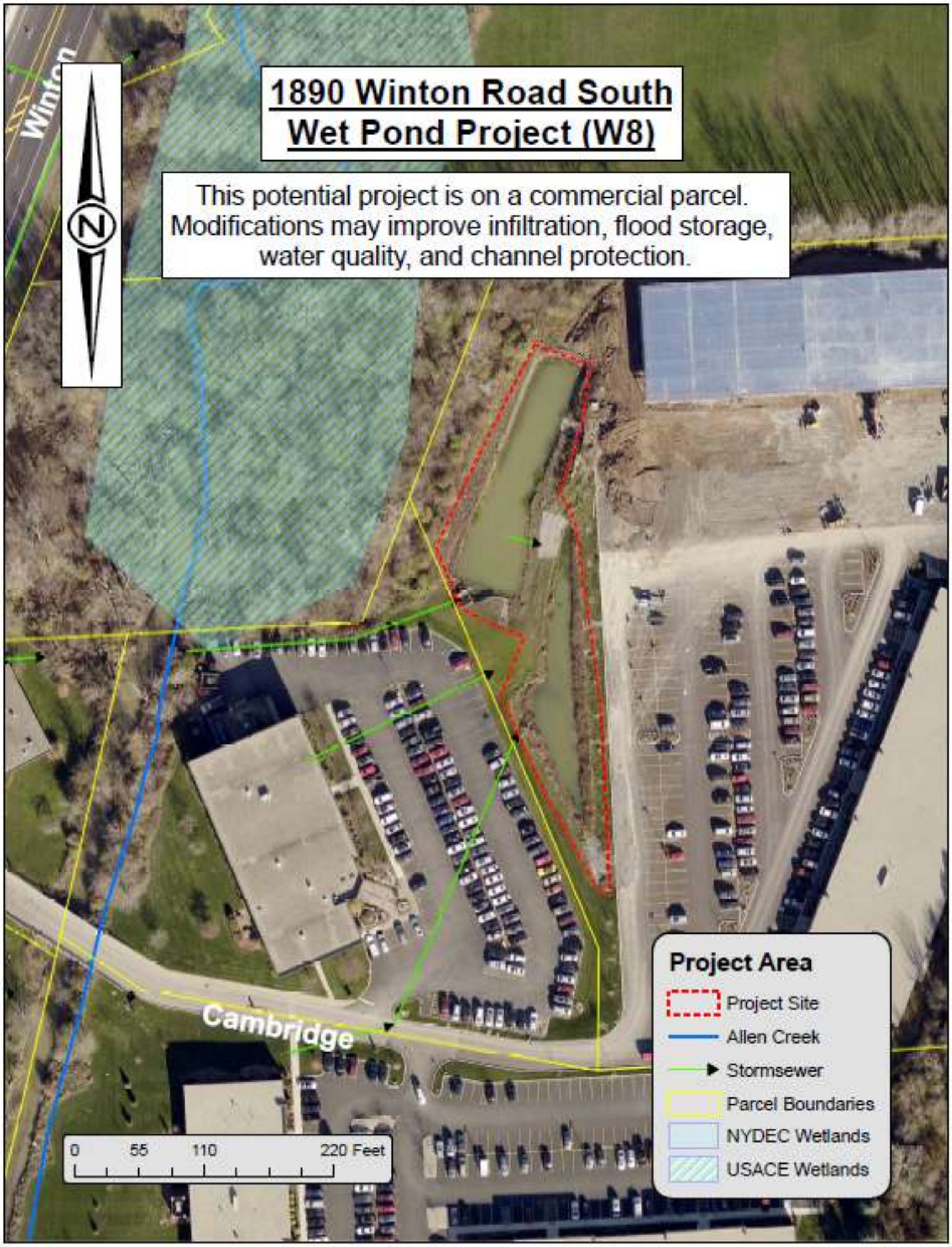

Woodsmeadow off Clinton South
Wet Pond Project (W20)
This potential project is located on a parcel owned by the Town of Brighton. Modifications may improve infiltration, flood storage, water quality, and channel protection.
Clinton
Woodsmeadow
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0 55 110 220 Feet

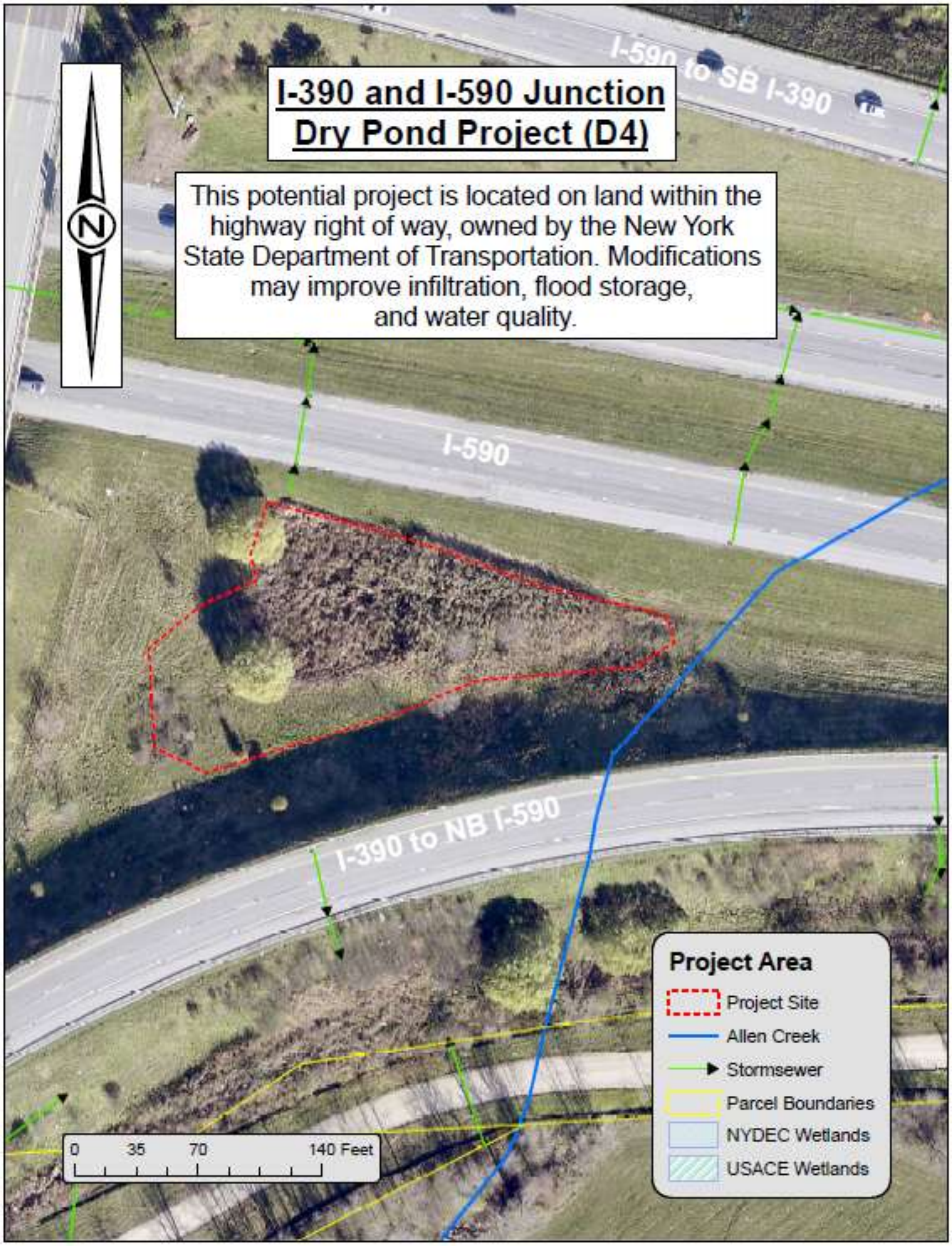

Highstone Circle
Dry Pond Project (D7)
This potential project is located on a parcel owned by the Town of Henrietta. Modifications may improve infiltration, flood storage, and water quality.
Stone
High Stone
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
55
110
220 Feet

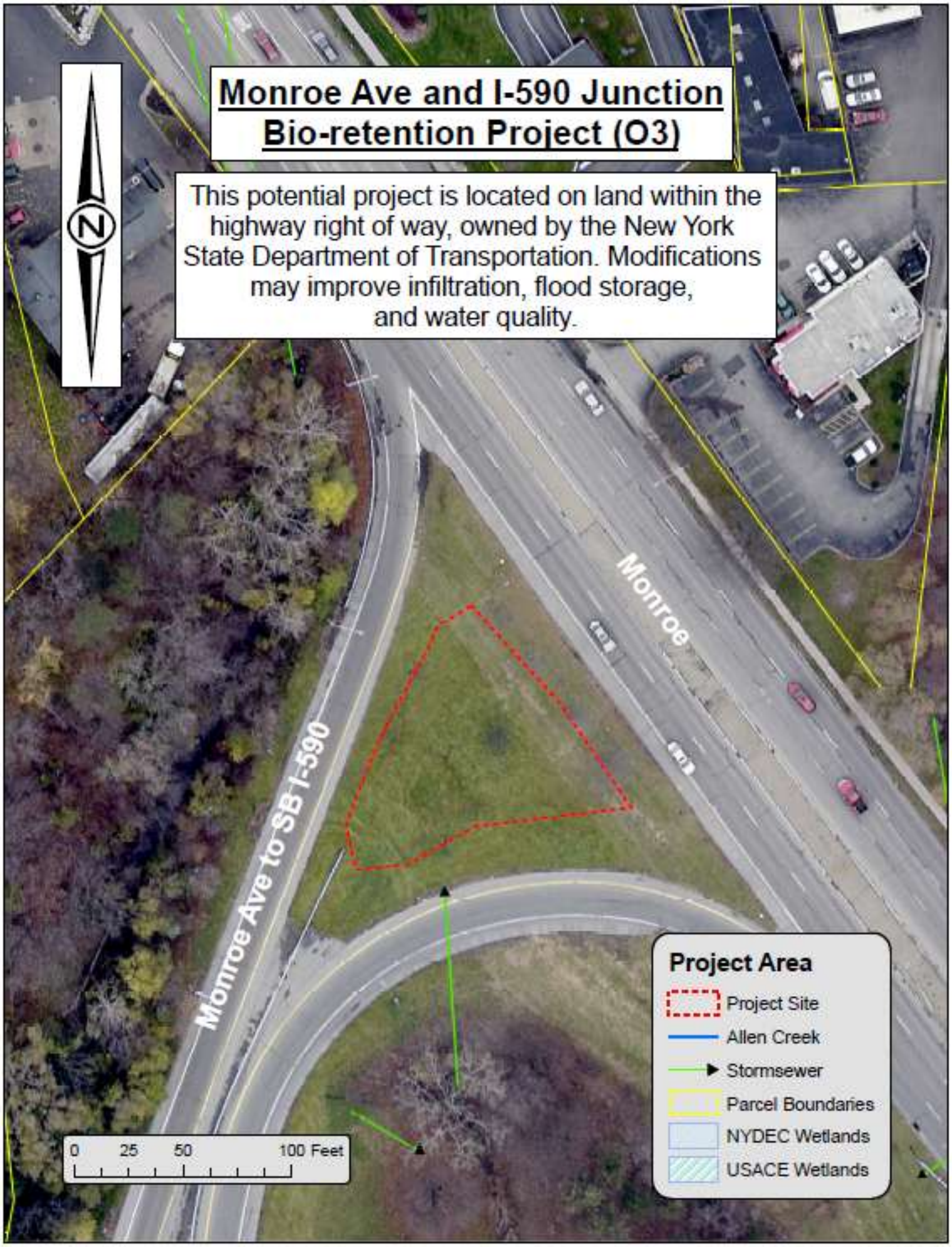


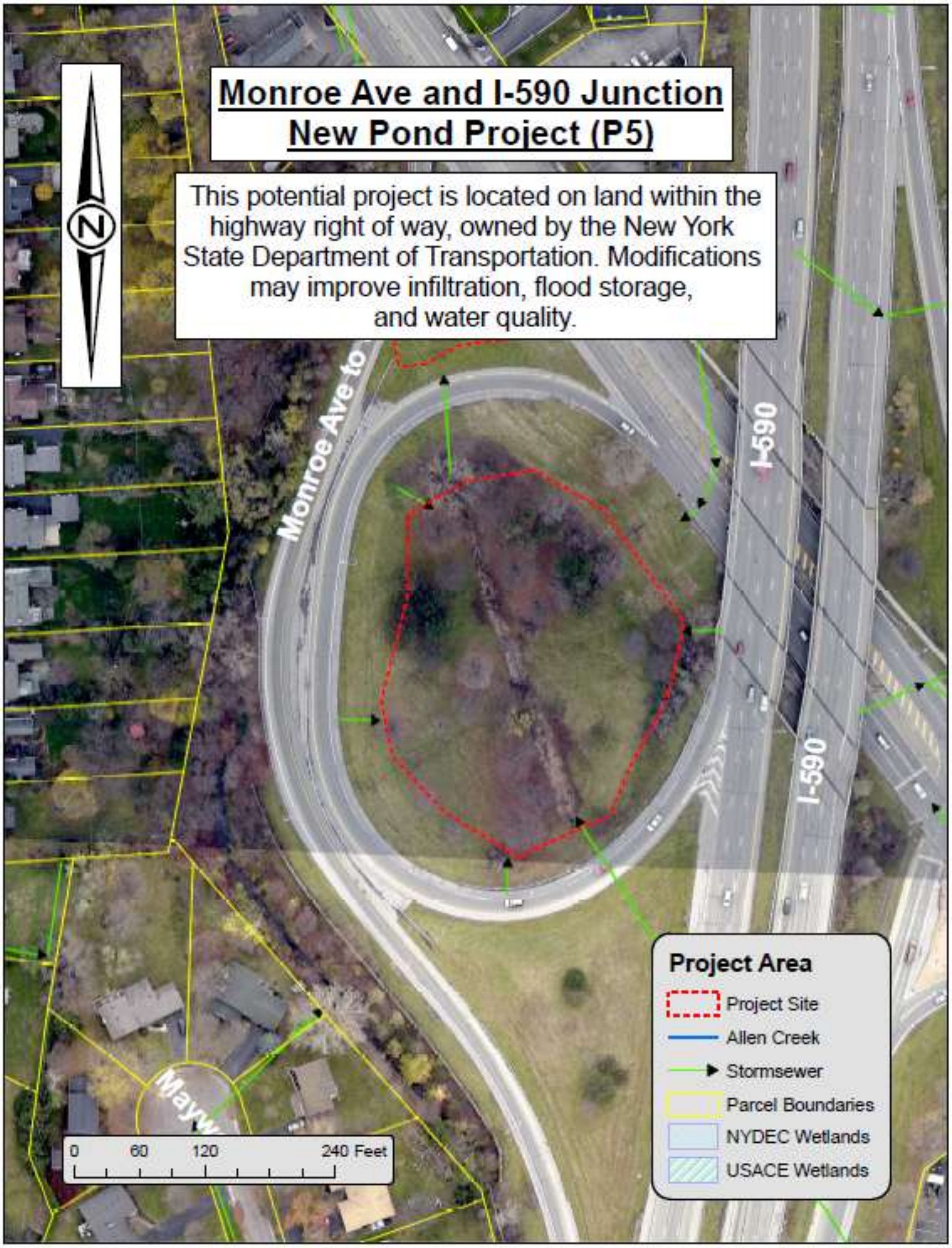
I-390 and I-590 Junction
Dry Pond Project (D6)
This potential project in is the New York State Department of Transportation right of way. Modifications may improve infiltration, flood storage, water quality, and channel protection.
N
I-590 to SB I-390
I-590
I-590
I-390
Clinton
I-390 to NB I-590
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
65
130
260 Feet

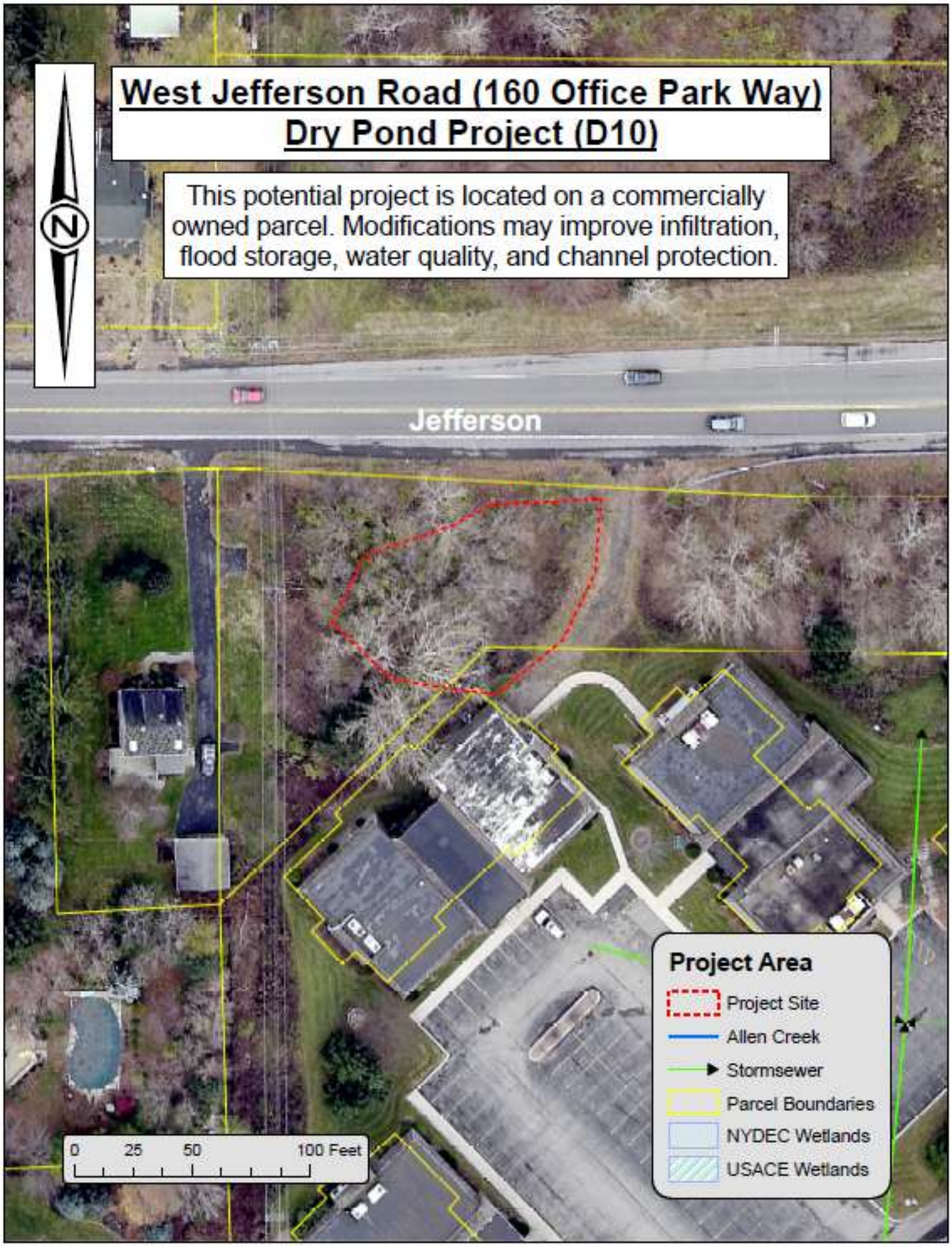

Gate House Trail
New Pond Project (P1)
This potential project is on a parcel owned by the Town of Henrietta. Modifications may improve infiltration, flood storage, water quality, and channel protection.
N
Chapel
Tomahawk
Chippewa
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
60
120
240 Feet

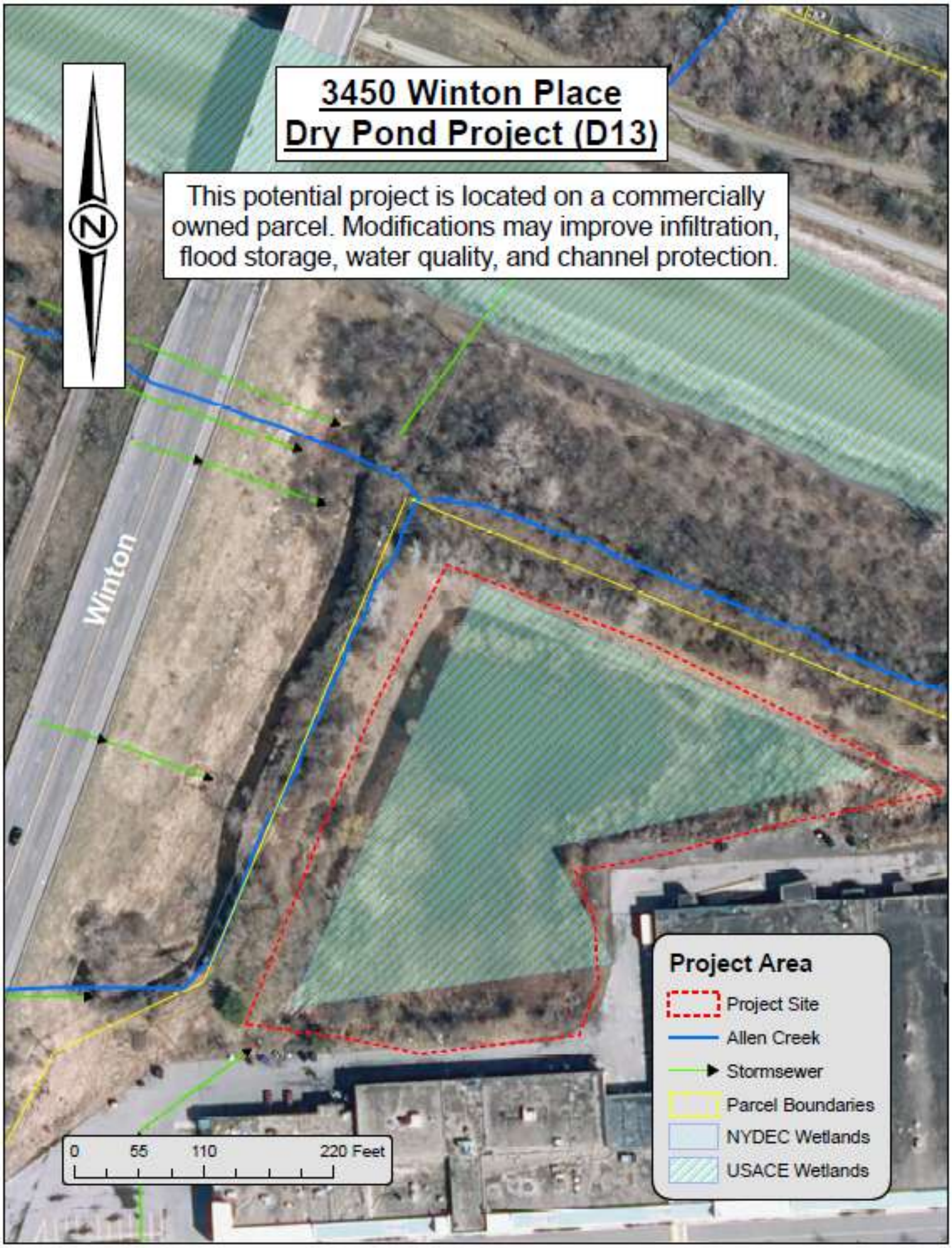

1890 Winton Road South
Wet Pond Project (W8)
This potential project is on a commercial parcel. Modifications may improve infiltration, flood storage, water quality, and channel protection.
N
Winton
Cambridge
0
55
110
220 Feet
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands


I-390 and I-590 Junction
Dry Pond Project (D4)
This potential project is located on land within the highway right of way, owned by the New York State Department of Transportation. Modifications may improve infiltration, flood storage, and water quality.
N
I-590 to SB I-390
I-590
I-390 to NB I-590
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
35
70
140 Feet

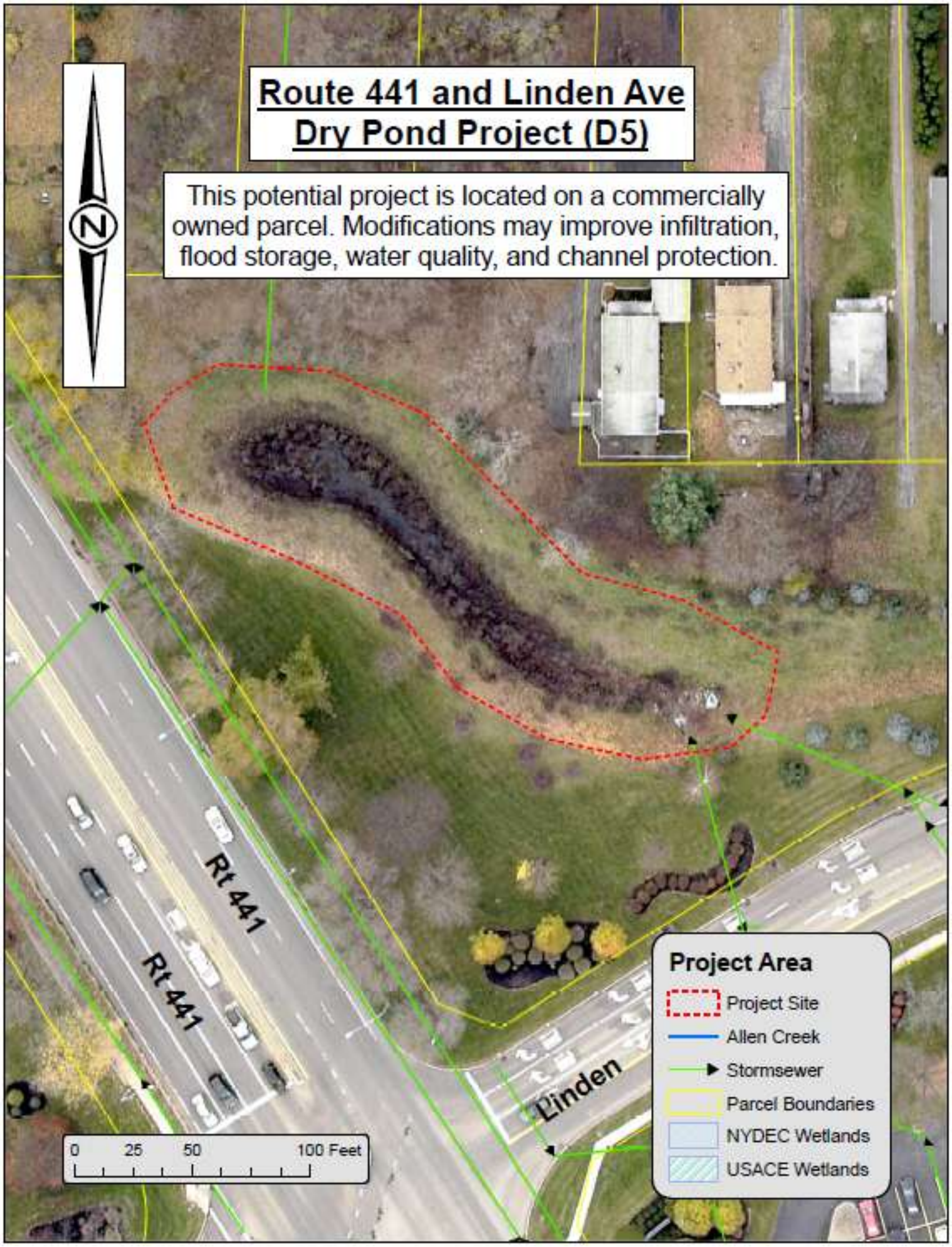

Monroe Ave and I-590 Junction
Bio-retention Project (O3)
This potential project is located on land within the highway right of way, owned by the New York State Department of Transportation. Modifications may improve infiltration, flood storage, and water quality.
N
Monroe
Monroe Ave to SB I-590
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
25
50
100 Feet

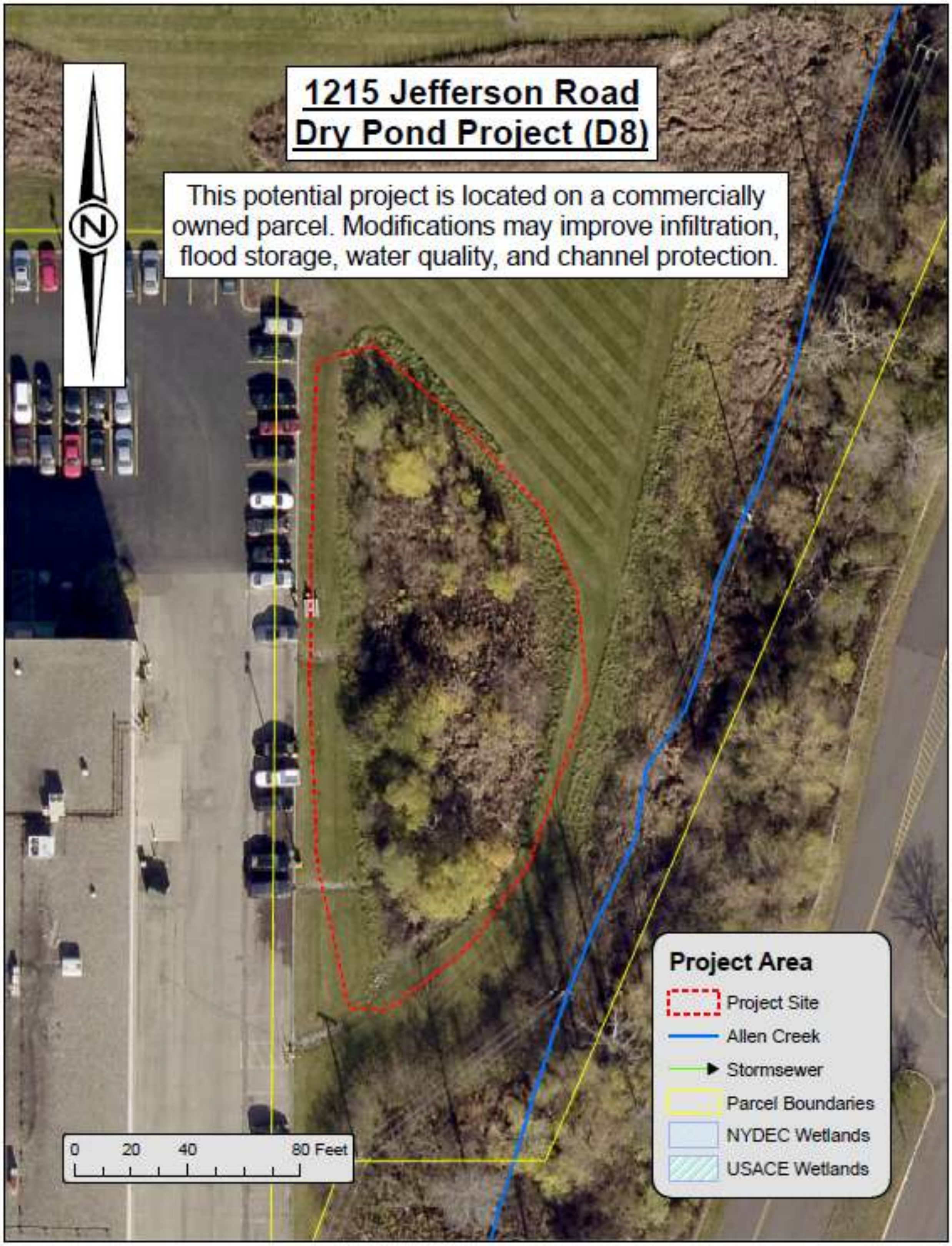

Monroe Ave and I-590 Junction
New Pond Project (P5)
This potential project is located on land within the highway right of way, owned by the New York State Department of Transportation. Modifications may improve infiltration, flood storage, and water quality.
N
Monroe Ave to
I-590
I-590
Mayw
0
60
120
240 Feet
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands

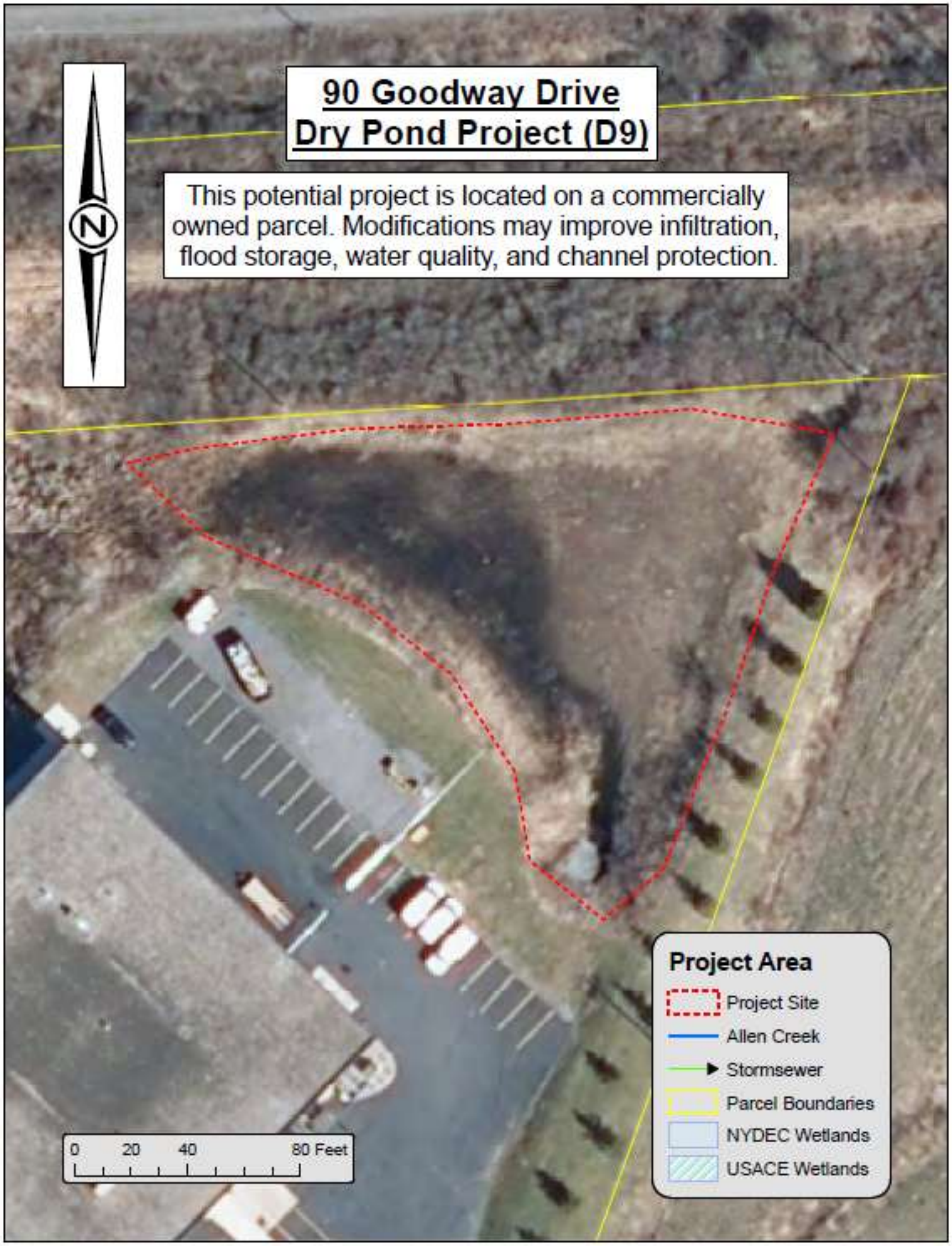

West Jefferson Road (160 Office Park Way)
Dry Pond Project (D10)
This potential project is located on a commercially owned parcel. Modifications may improve infiltration, flood storage, water quality, and channel protection.
N
Jefferson
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
25
50
100 Feet

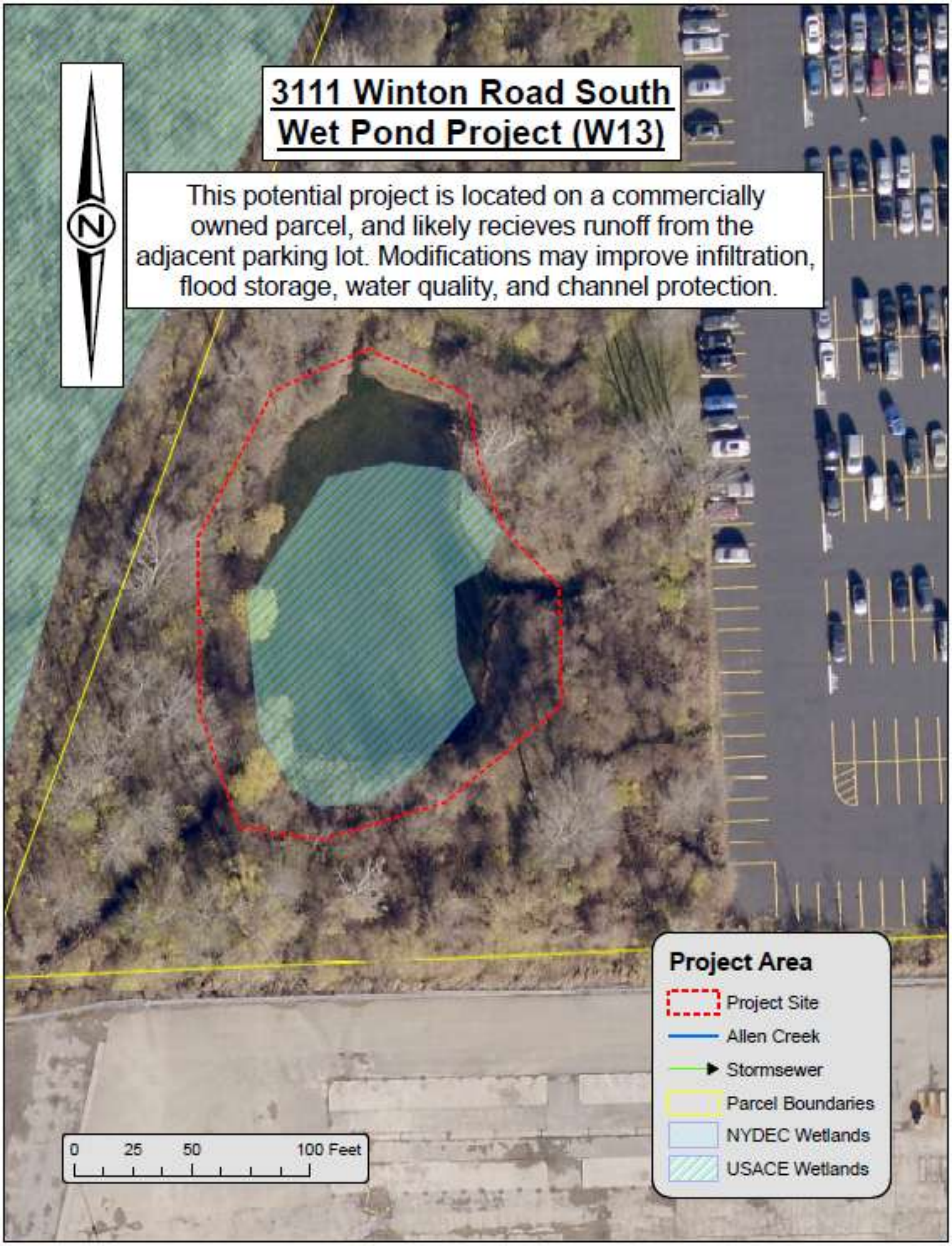


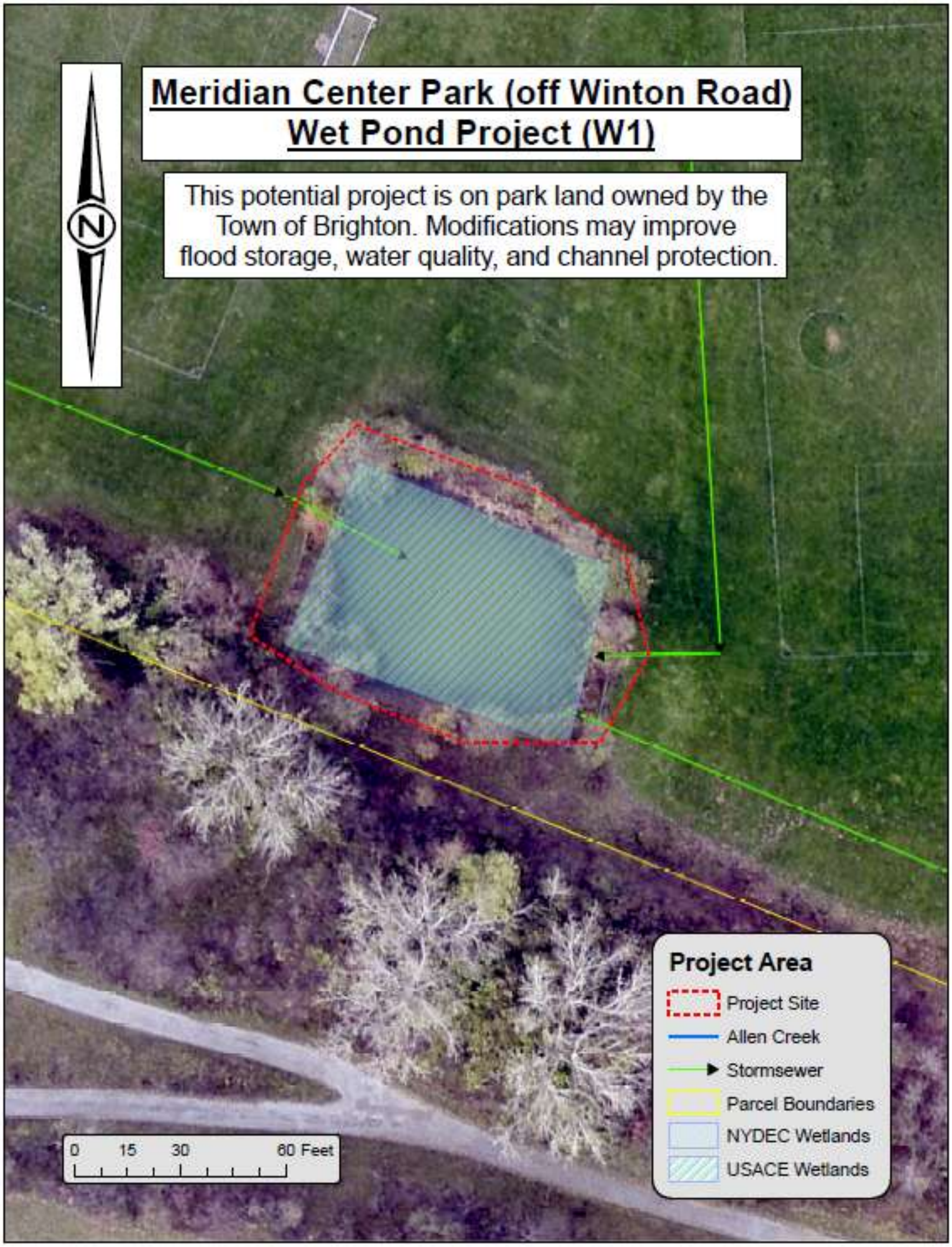
3450 Winton Place
Dry Pond Project (D13)
This potential project is located on a commercially owned parcel. Modifications may improve infiltration, flood storage, water quality, and channel protection.
N
Winton
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
55
110
220 Feet

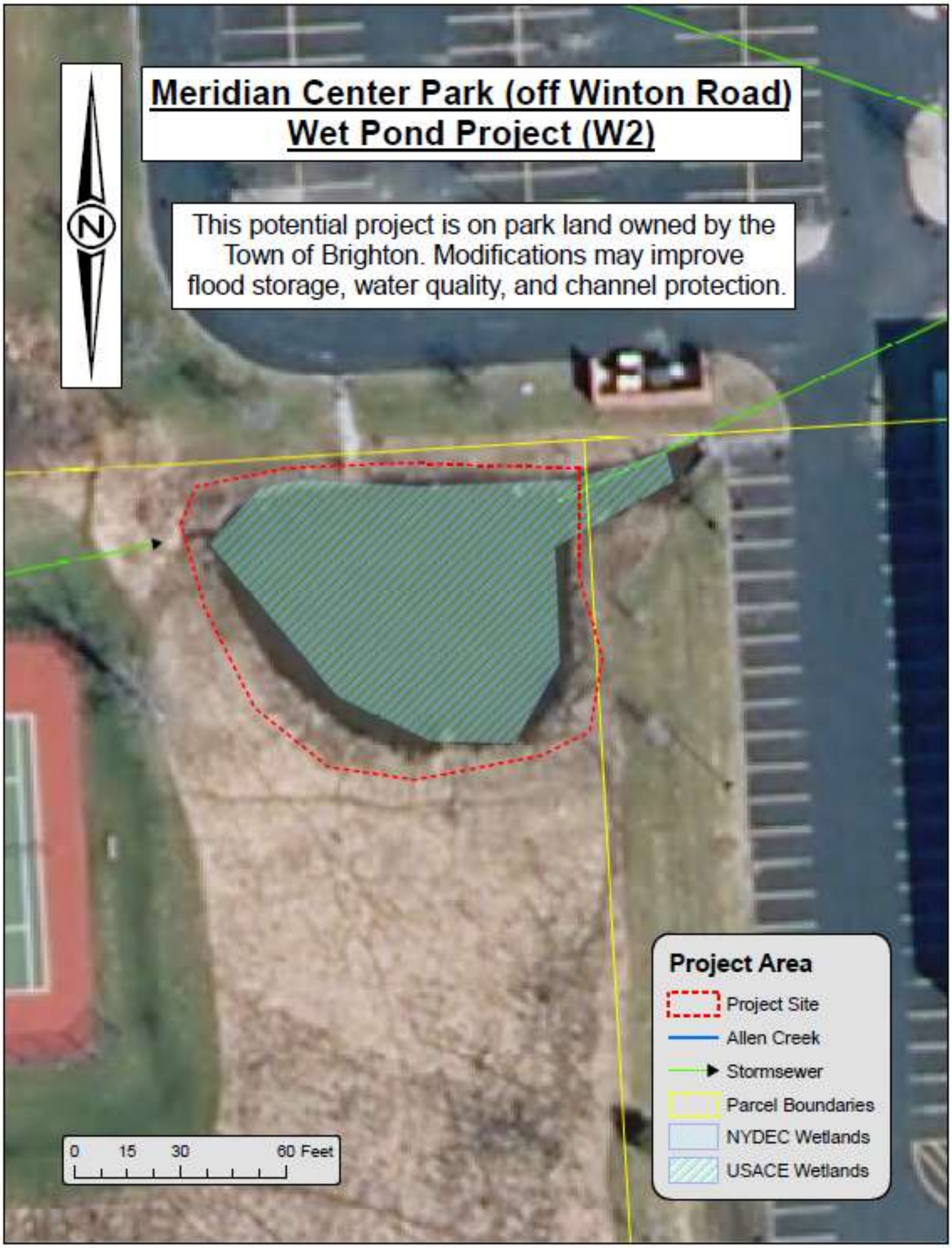

Route 441 and Linden Ave
Dry Pond Project (D5)
This potential project is located on a commercially owned parcel. Modifications may improve infiltration, flood storage, water quality, and channel protection.
N
Rt 441
Rt 441
Linden
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0 25 50 100 Feet

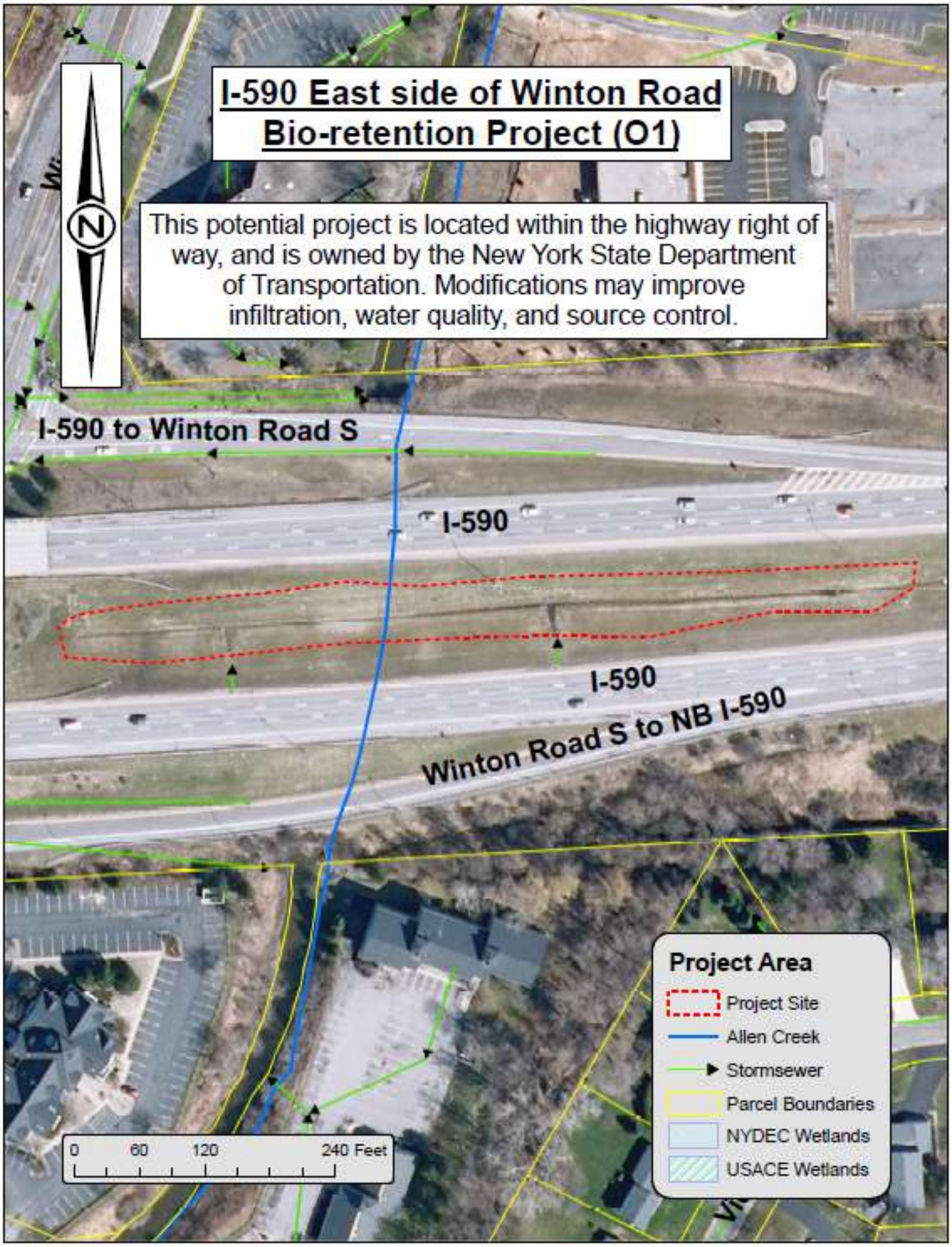

1215 Jefferson Road
Dry Pond Project (D8)
This potential project is located on a commercially owned parcel. Modifications may improve infiltration, flood storage, water quality, and channel protection.
N
0
20
40
80 Feet
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands

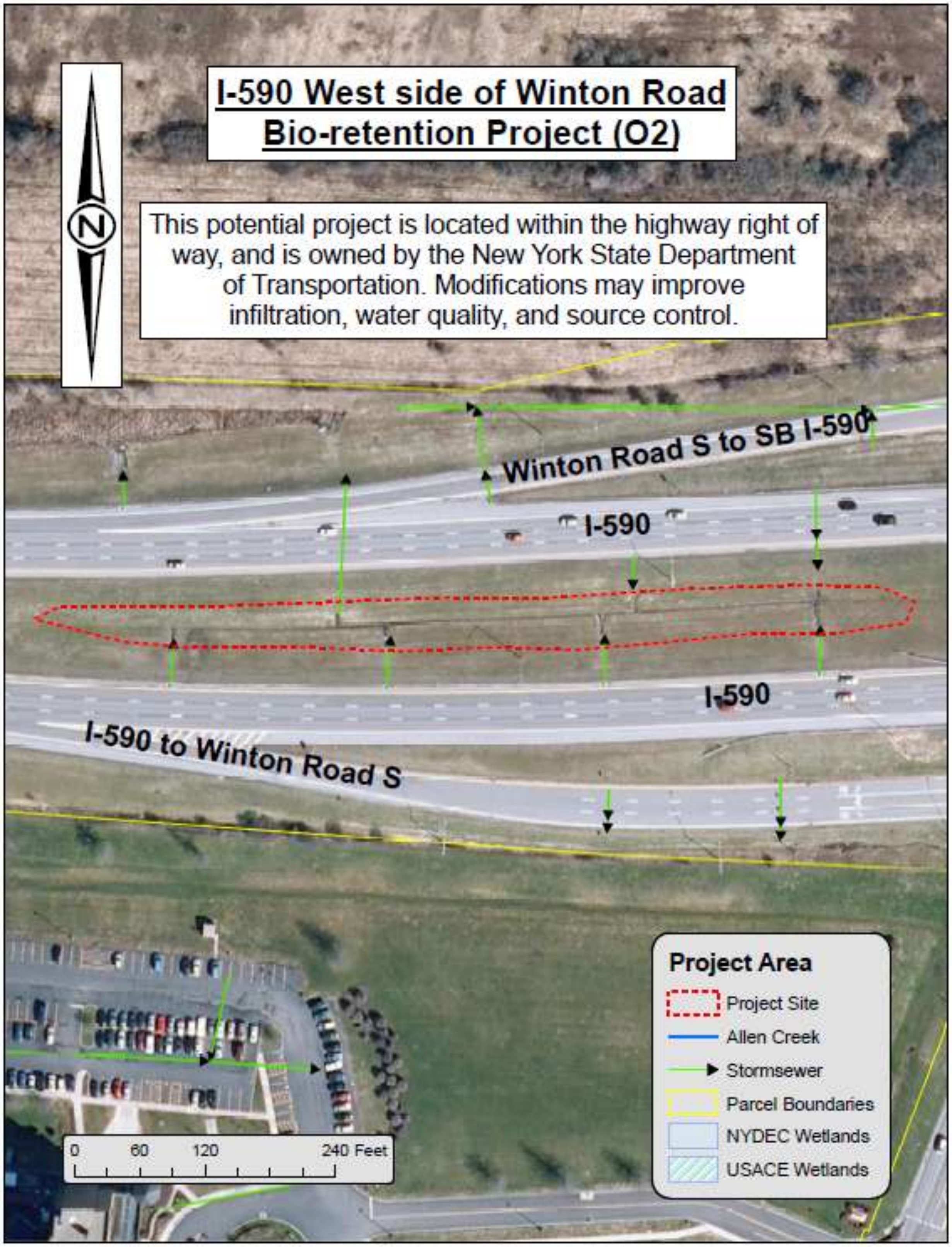

90 Goodway Drive
Dry Pond Project (D9)
This potential project is located on a commercially owned parcel. Modifications may improve infiltration, flood storage, water quality, and channel protection.
N
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0 20 40 80 Feet

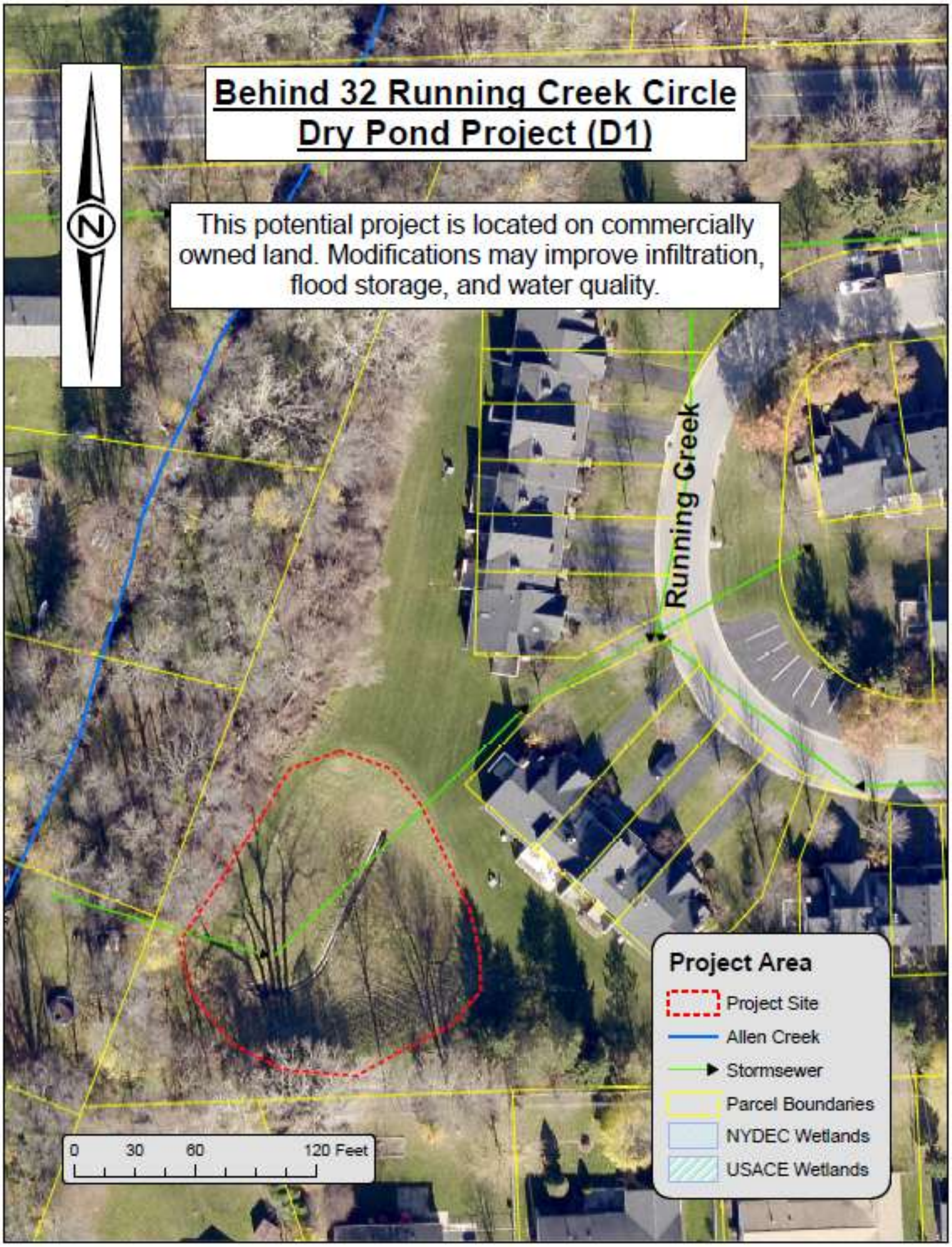

3111 Winton Road South
Wet Pond Project (W13)
This potential project is located on a commercially owned parcel, and likely recieves runoff from the adjacent parking lot. Modifications may improve infiltration, flood storage, water quality, and channel protection.
N
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
25
50
100 Feet

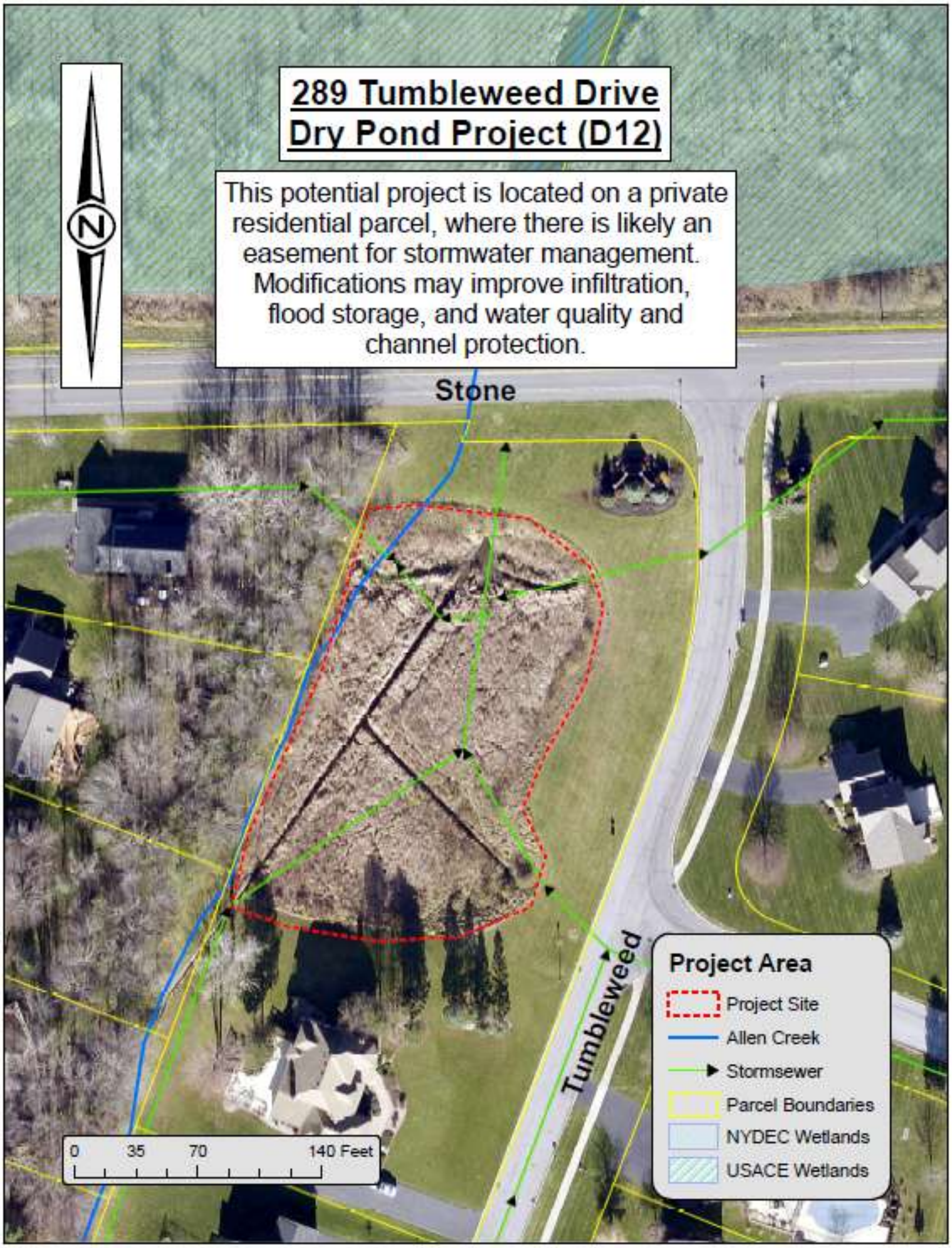

Meridian Center Park (off Winton Road)
Wet Pond Project (W1)
This potential project is on park land owned by the Town of Brighton. Modifications may improve flood storage, water quality, and channel protection.
N
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0 15 30 60 Feet


Meridian Center Park (off Winton Road)
Wet Pond Project (W2)
This potential project is on park land owned by the Town of Brighton. Modifications may improve flood storage, water quality, and channel protection.
N
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0 15 30 60 Feet


I-590 East side of Winton Road
Bio-retention Project (O1)
This potential project is located within the highway right of way, and is owned by the New York State Department of Transportation. Modifications may improve infiltration, water quality, and source control.
N
I-590 to Winton Road S
I-590
I-590
Winton Road S to NB I-590
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
60
120
240 Feet


I-590 West side of Winton Road
Bio-retention Project (O2)
N
This potential project is located within the highway right of way, and is owned by the New York State Department of Transportation. Modifications may improve infiltration, water quality, and source control.
Winton Road S to SB I-590
I-590
I-590
I-590 to Winton Road S
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
60
120
240 Feet


Behind 32 Running Creek Circle
Dry Pond Project (D1)
This potential project is located on commercially owned land. Modifications may improve infiltration, flood storage, and water quality.
N
Running Creek
0 30 60 120 Feet
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands


289 Tumbleweed Drive
Dry Pond Project (D12)
This potential project is located on a private residential parcel, where there is likely an easement for stormwater management. Modifications may improve infiltration, flood storage, and water quality and channel protection.
N
Stone
Tumbleweed
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
35
70
140 Feet

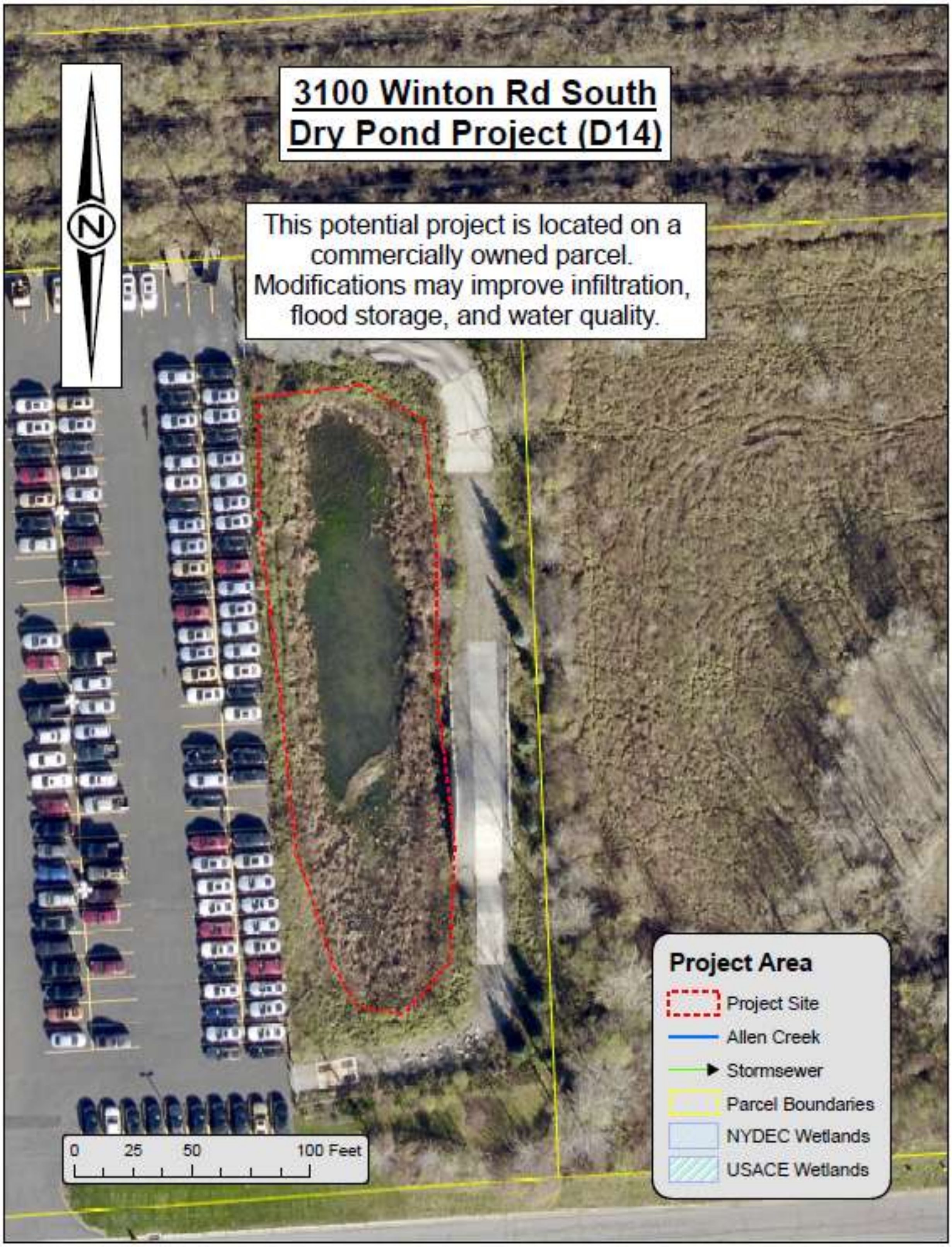
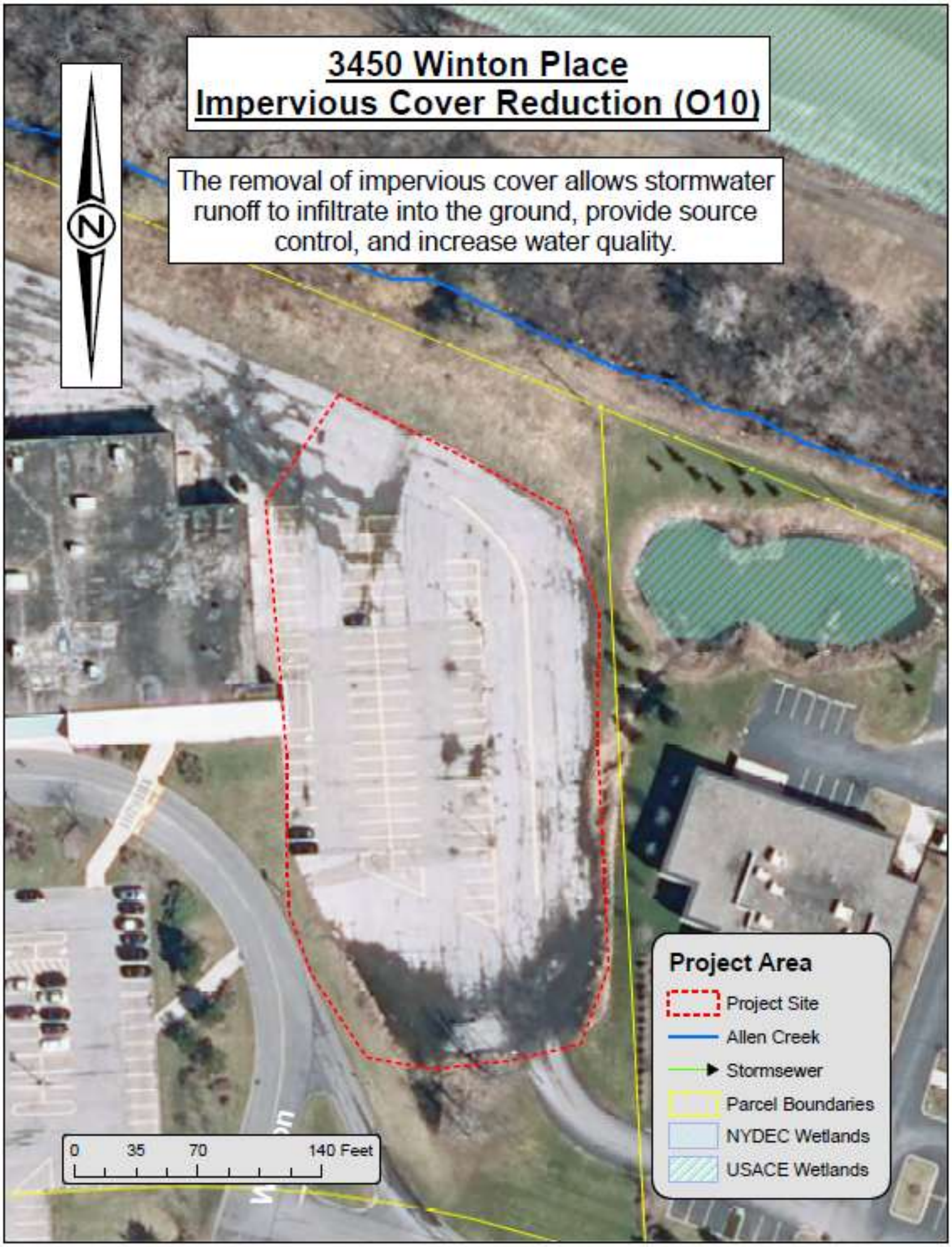
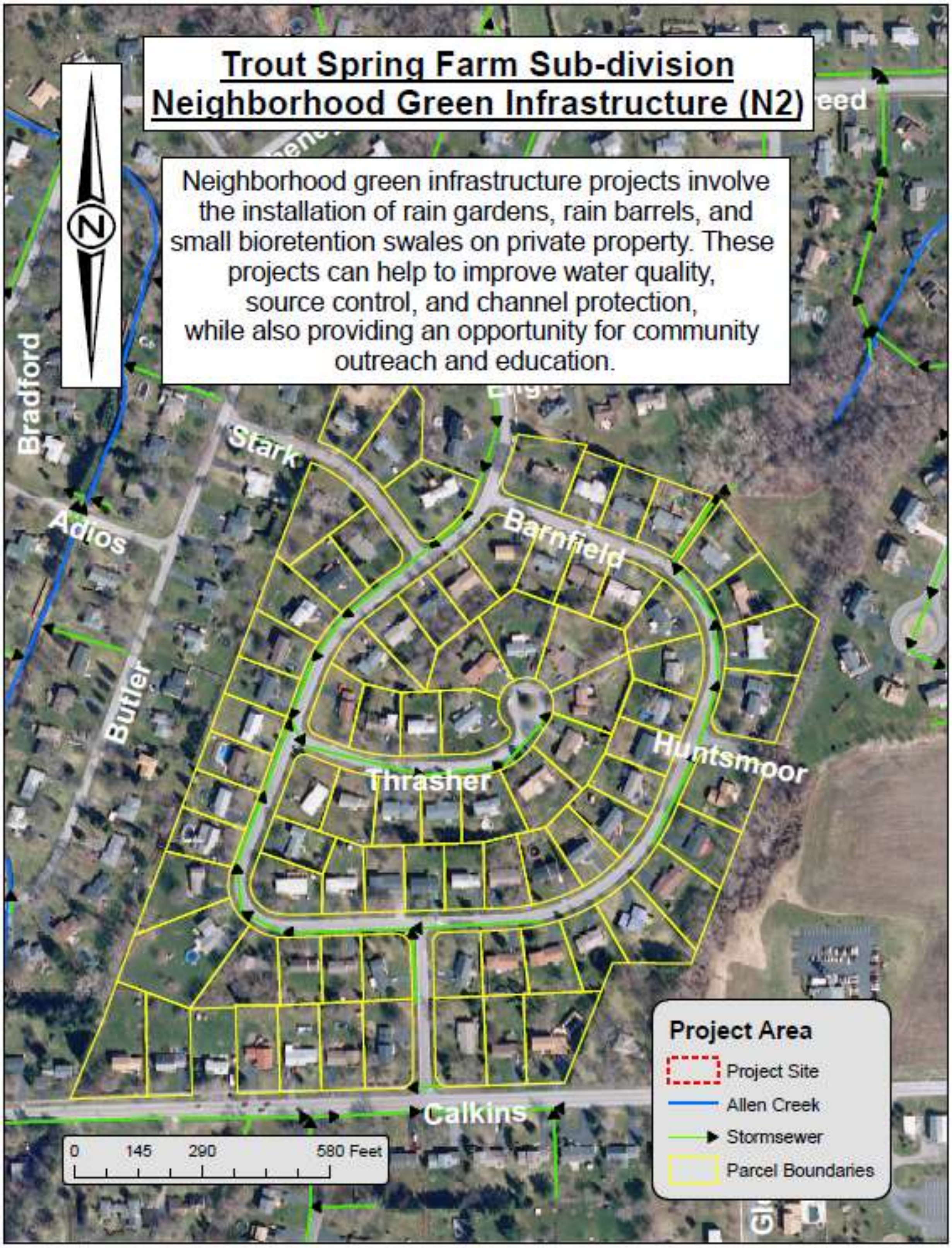

3100 Winton Rd South
Dry Pond Project (D14)
This potential project is located on a commercially owned parcel. Modifications may improve infiltration, flood storage, and water quality.
N
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
25
50
100 Feet

Figure 7: Above is an example typical residential street. Stormwater runoff is channeled into the concrete gutters along the sides of the road and conveyed to the stormwater sewer system through the storm inlets (red arrows). In order to reduce runoff into the stormwater sewer system and increase infiltration, bio-retention swales could be installed. These green infrastructure retrofits would replace the concrete gutter and contain stormwater runoff and allow it to infiltrate back into groundwater.

Figure 8: Above is a example of a neighborhood with standard stormwater management practices i.e. concrete gutters along the streets which connect to the stormwater sewer, fair amounts of impervious cover, and roof top connections to the stormwater sewer. Replacing the concrete gutter with bio-retention swales and diverting roof top runoff to rain gardens provide source control and infiltration for stormwater runoff.


3450 Winton Place
Impervious Cover Reduction (O10)
The removal of impervious cover allows stormwater runoff to infiltrate into the ground, provide source control, and increase water quality.
N
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries
NYDEC Wetlands
USACE Wetlands
0
35
70
140 Feet


Trout Spring Farm Sub-division
Neighborhood Green Infrastructure (N2)
Neighborhood green infrastructure projects involve the installation of rain gardens, rain barrels, and small bioretention swales on private property. These projects can help to improve water quality, source control, and channel protection, while also providing an opportunity for community outreach and education.
N
Bradford
Stark
Adios
Butler
Barnfield
Huntsmoor
Thrasher
Calkins
0
145
290
580 Feet
Project Area
Project Site
Allen Creek
Stormsewer
Parcel Boundaries

References

Barton & Loguidice. 2011. *Preliminary Geomorphic Assessment of Allen Creek (Corbett's Glen Nature Park to Mouth)*

2012. *Conceptual Restoration Design & Engineering Report – Allens Creek at Burrows Hills Drive*

Center for Watershed Protection. 2004a. *Unified Stream Assessment: A User's Manual*. Manual 10 in the Urban Subwatershed Restoration Manual Series. Center for Watershed Protection, Inc. Ellicott City, MD.

2004b. *Unified Subwatershed and Site Reconnaissance: A User's Manua*l. Manual 11 in the Urban Subwatershed Restoration Manual Series.

2005. *An Integrated Framework to Restore Small Urban Streams User's Manua*l. Manual 1 in the Urban Subwatershed Restoration Manual Series.

2007. *Stormwater Retrofit Practices*. Manual 3 in the Urban Subwatershed Restoration Manual Series.

Lu Engineers, 2009, *Town of Henrietta Calkins-Farnsworth Drainage Analysis*

And, *Town of Henrietta Allen's Creek—Town Park Detention Ponds*

New York State Department of Environmental Conservation. 2004. *Ontario Basin Waterbody Inventory and Priority Waterbodies List, Revised 2007*

O'Brien and Gere, 1978, *Brighton Town-wide Drainage Study*.

Stormwater Coalition of Monroe County. 2010. *Buckland Creek Stormwater Assessment and Action Plan*

USGS. Coon, W.F., 2003, Simulating Land-Use Changes and Stormwater-Detention Basins and Evaluating their Effect on Peak Streamflows and Stream-Water Quality in Irondequoit Creek Basin, New York

References….. Cont.

Sherwood, D.A., 2003, Water Resources of Monroe County, New York, Water Years 1997-99, with Emphasis on Water Quality in the Irondequoit Creek Basin--Atmospheric Deposition, Ground Water, Streamflow, Trends in Water Quality, and Chemical Loads to Irondequoit Bay

Sherwood, D.A., 2006, Water resources of Monroe County, New York, water years 2000-02: Atmospheric deposition, ground water, streamflow, trends in water quality, and chemical loads in streams

APPENDIX A

Rapid Assessment Compiled Data

Appendix A Data and Files Developed

Allen Creek Main Branch Compiled Data

All file are located in the following directory if not otherwise stated: H:\IW\Stormwater\Asmnt\Allen Creek\Main Branch\Resource Directory

Item #	Description	File Name	Data Origin
GIS Data			
G1	Parcel data clipped to the extent of the watershed boundary	AllenCrMain_Parcels.shp	Monroe County
G2	Diplays soil types and the drainage characteristics of the soils. An "A" soil has the highest drainage rate and "D" soils the lowest.	AllenCrMain_HydroSoils.shp	Monroe County
G3	Points show the location of all the new pond, pond ret-rofit, impervious cover, and storage projects.	Allen-CrMain_Project_Sites.shp	Monroe County
G4	Shapefile of the Allen Creek main branch watershed from the USGS StreamStats website. The boundary was reshaped to reflect the influence of stormwater and combined sewer system.	Allen-CrMain_Watershed_Bounda ry.shp	Originally from USGS StreamStats and then edited.
G5	An incomplete shapefile from the Town of Henrietta stormwater management facilities.	Allen-CrMain_Henrietta_SWMF.sh p	Town of Henrietta
G6	A mostly complete shapefile from Town of Pittsford stormwater management facilites.	Allen-CrMain_Pittsford_SWMF.shp	Town of Pittsford
G7	Indicates the basic stream channel path through the watershed.	AllenCrMain_Streams.shp	Monroe County
G8	Indicates the basic stream channel path through the watershed.	Allen-CrMain_Middle_Streams.shp	Monroe County
Maps			
M1	A map of the watershed displaying the hydric soils pre-	Al-	Monroe County
M2	A map of the watershed displaying the different land	Al-	Monroe County

Item #	Description	File Name	Data Origin
Retrofit Diagrams			
RD1	Parcel is owned by the Town of Brighton and currently receives stormwater runoff from Heatherstone Lane. Site investigation shows that this a prime location for possible retrofit projects.	HeatherstoneDC.pdf	Monroe County
RD2	Site investigation revealed that the dry pond was filled with sediment and would be a prime location for retrofit.	High Stone Circle DC.pdf	Monroe County
RD3	One of the branches of Allens Creek flows through this parcel owned by the Town of Brighton. There is room to create a new pond on this parcel.	Johnsarbor off Elmwood NP.pdf	Monroe County
RD4	Parcel is owned by the Town of Brighton. A branch of Allens Creek runs through the south end of the parcel. There is a large area that is available for new pond construction.	1149 Westfall NP.pdf	Monroe County
RD5	Area recieves stormwater via sewer system from a large parking lot and from road way.	Corner of Route 441 and Linden Ave DC.pdf	Monroe County
RD6	Bio-retention swales provide infilatration and stormwater storage for more localized sites, such as parking lots or individual buildings.	70 Ridgeland RD_ST.pdf	Monroe County
RD7	Bio-retention swales provide infilatration and stormwater storage for more localized sites, such as parking lots or individual buildings.	3100 East Ave_ST.pdf	Monroe County
RD8	Pond recieves stormwater from the surrounding park. Room to increase pond size and flood storage.	Meridian Centre (Park) WC.pdf	Monroe County
RD9	Pond recieves stormwater from the surrounding park. Room to increase pond size and flood storage.	Meridian Centre (Park) WC_2.pdf	Monroe County
RD10	Retention area recieves stormwater from residential sub-division.	Rollins Xing DC.pdf	Monroe County
RD11	Town of Brighton owned pond that recieves stormwater from Schilling Lane. Retrofit changes to the flow path of input stormwater would greatly improve water quality.	Schilling Lane WC.pdf	Monroe County
RD12	Project area within the following streets: Calkins, Pinnacle, Lehigh, Henrietta	Neighborhood GI Projects (N1).pdf	Monroe County
RD13	Project area within the following streets: Lehigh, Foxchapel, Blackwell, Roundhill, Pinnacle	Neighborhood GI Projects (N3).pdf	Monroe County

Item #	Description	Description	File Name
RD14	Project area within the following streets: Calkins, Pittsford Henrietta Town-line Rd, Lehigh, Pinnacle	Neighborhood GI Projects (N4).pdf	Monroe County
RD15	Project area within the following streets: Viennawood, Chadwick, Dunbarton	Neighborhood GI Projects (N6).pdf	Monroe County
RD16	Project area within the following streets: Edgewood, Warren, Hibiscus, Dun-rovln	Neighborhood GI Projects (N7).pdf	Monroe County
RD17	Project area within the following streets: Westfall, Edgewood, Dartford, Hunters, Idlewood	Neighborhood GI Projects (N8).pdf	Monroe County
RD18	Project area within the following streets: Westfall, Willowbend, Willowcrest, Edgewood	Neighborhood GI Projects (N9).pdf	Monroe County
RD19	Project area within the following streets: Monroe, Edgewood, Westfall, Win-ton	Neighborhood GI Projects (N10).pdf	Monroe County
RD20	Project area within the following streets: Elmwood, Winton, Westfall	Neighborhood GI Projects (N11).pdf	Monroe County
RD21	This site is owned by the Town of Brighton and provides a largeamount of area for pond construction along Allen Creek. A new pond could provide flood storage as well as water quality and channel protection down stream.	1435 Westfall Road NP.pdf	Monroe County
RD22	Dry pond stormwater management facilities are ideal retrofit projects. Dry pond conversions other increased flood storage and water quality as well as infiltration.	Bw I-390 to NB I-590 ramp and I-590 DC.pdf	Monroe County
RD23	This site is owned by the Town of Henrietta and would be good location for a possible new pond project. Allen Creek flows through the parcel and there-fore a new pond could be constructed for flood storage.	End of Karenlee Drive NP.pdf	Monroe County
RD24	A new pond project in this location would provide stormwater retention and infiltration. The land is owned by the Town of Henrietta.	Gate House Trail NP.pdf	Monroe County
RD25	This site is in the highway right of way and serves as the outfall location for the stormsewer systme in the area. A pond in this loca-tion could retain stormwater and allow for infiltration.	I-590 and Monroe Ave Junction NP.pdf	Monroe County
RD26	An example neighborhood for curb removal, bio-swale installation and rain garden placement.	NeighborhoodGI_Area.jpg	Monroe County
RD27	An example neighborhood for curb removal and bio-swale installation.	NeighborhoodGI_Area2.jpg	Monroe County
Documents			
D1	A list of the streets that make up the boundaries for each of the neighbor-hood GI project areas.	Allen Creek Main Branch Neighbor-hood GI Practice Quads	Monroe Coun-ty

APPENDIX B

NYSDEC PWL Datasheet

Allen Creek and tribs (0302-0022) — MinorImpacts

Waterbody Location Information

Revised: 03/19/2002

Water Index No:	Ont 108/P113-3-8	**Drain Basin:**	Lake Ontario
Hydro Unit Code:	04140101/010 **Str Class:** B		Irondequoit/Ninemile
Waterbody Type:	River	**Reg/County:**	8/Monroe Co. (28)
Waterbody Size:	59.8 Miles	**Quad Map:**	ROCHESTER EAST (I-10-2)
Seg Description:	entire stream and tribs		

Water Quality Problem/Issue Information

(CAPS indicate MAJOR Use Impacts/Pollutants/Sources)

Use(s) Impacted	Severity	Problem Documentation
Public Bathing	Stressed	Suspected
Aquatic Life	Stressed	Known
Recreation	Stressed	Known

Type of Pollutant(s)

Known:	NUTRIENTS
Suspected:	Salts, Silt/Sediment
Possible:	Pathogens

Source(s) of Pollutant(s)

Known:	URBAN/STORM RUNOFF, Construction, Other Sanitary Disch
Suspected:	Agriculture, Deicing (stor/appl), Streambank Erosion
Possible:	- - -

Resolution/Management Information

Issue Resolvability: 1 (Needs Verification/Study (see STATUS))
Verification Status: 4 (Source Identified, Strategy Needed)
Lead Agency/Office: ext/WQCC
TMDL/303d Status: n/a

Resolution Potential: Medium

Further Details

Aquatic life support, public bathing and various recreational uses (fishing, boating, etc) in Allen Creek are affected by impacts from various urban/stormwater sources and other nonpoint sources in the watershed.

A biological (macroinvertebrate) assessment of Allen Creek near Penfield was conducted in 1999 and again in 2004. Field sampling results indicated slightly impacted water quality conditions in 1999. The field assessment was verified by laboratory-sorting of the sample to order level. In 2004 the stream was found to have been significantly altered - perhaps relocated - due to construction in the area. Moderate impacts were indicated, but these results may have been influenced by habitat conditions. Additional monitoring to verify the impacts is recommended. A 1998 assessment conducted by Dr. William Sutton in cooperation with NYSDEC found slight to moderate impacts. Both assessments indicate the presence of nutrient enrichment in the stream. (DEC/DOW, BWAM/SBU, January 2001)

Urban and stormwater runoff related to the high degree of impervious surface area (shopping plazas, parking lots, roadways, etc) has been identified as the primary source of nutrients and other pollutants (pathogens, oil and grease, floatables) to the creek. A significant portion of one tributary (Buckland Creek) is enclosed and serves primarily as a storm sewer for Elmwood Avenue. Agricultural activities in the upper watershed, impacts from failing and/or inadequate on-site septic systems, tributary stream erosion and residential and commercial development throughout the watershed are also thought to contribute to nutrient and silt/sediment loadings. (Monroe County WQCC, May 2001)

Considerable bay and watershed water quality management and monitoring efforts are continuing. Municipalities within the watershed have formed the Irondequoit Watershed Collaborative. IWC activities have focused on comprehensive stormwater management efforts and (with USGS) hydrologic modeling to predict the impact of land use changes. Efforts within Monroe County include the establishment of a collaborative to assist with the implementation of phase II stormwater regulations. The Monroe County WQCC has evaluated road salt use and conducted a residential lawn care education project. A town highway facility is the focus of a pollutant removal demonstration project being conducted with NYS DEC funding. (Monroe County WQCC, May 2001)

The Monroe County Environmental Health Laboratory has maintained a cooperative monitoring program with USGS which grew out of a Nationwide Urban Runoff Program effort on Irondequoit Basin in 1980s. Subsequent USGS reports on water quality in the basin have been published in 1996, 1997 and 1999. (Monroe County Environmental Health Laboratory, May 2001)

This segment includes the entire stream and all tribs. The waters of the stream are primarily Class B, B(T); the upper reaches are Class C. Tribs to this reach/segment, including West Brook (-1), are Class B, B(TS) and C. (May 2001)

APPENDIX C

Potential Stormwater Hotspots in the Allen Creek Main Branch Watershed

Stormwater hotspots are defined as commercial, municipal, industrial, institutional or transport related operations that produce higher levels of stormwater pollutants, and may present a higher than normal risk for spills, leaks, or illicit discharges. In many cases, a hotspot exists on private property where a change in how the facility is managed is all that is required to prevent water pollution. Pollution prevention is a term commonly used for hotspots and refers to reducing or eliminating the generation of pollutants where they are generated. Another term used is "good housekeeping", meaning a practical and cost-effective way to maintain a clean and orderly facility, in order to prevent potential pollution sources from coming into contact with stormwater. Good housekeeping practices also help to enhance safety and improve the overall work environment. An example in Allen Creek is the Concrete Batch Plant that is adjacent to the creek. The plants operation involves sand that is stored in the open for easy access (Figure C-1).

Using the watershed parcel records and the parcel property class description, potential hotspots were identified, mapped and listed (Figure C-2 and Table C-1 respectively). Property uses include trucking, gas stations, auto washing, storage, repair and recyclers, minimarts, and fast food restaurants.

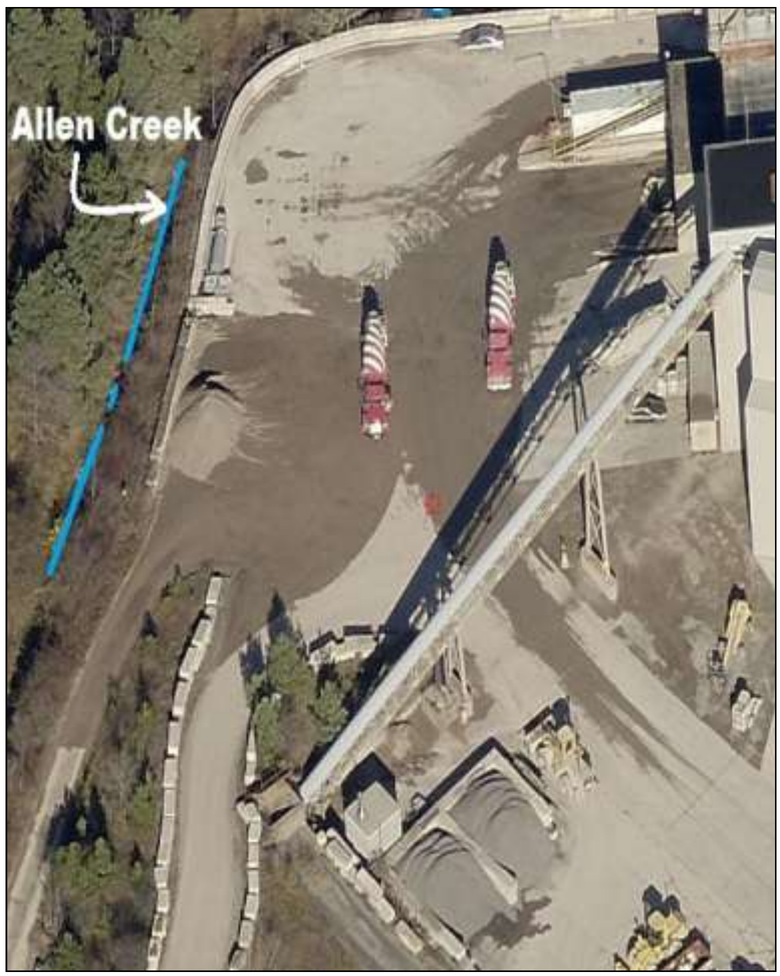


Figure C-1: A concrete plant is a potential

Pollution prevention methods will vary greatly depending on the type of facility, but could include better handling of automotive fluids at an auto recycling yard or installing a canopy over a gas station's fueling island. The goal is to have the facility owners implement site specific practices to treat the quality of runoff from all severe stormwater hotspots using existing authority under industrial and/or municipal stormwater permits, since hotspot runoff may violate water quality standards and warrants abatement.

When funding becomes available, the sites listed need to be visited and evaluated by technical staff in order to a) determine if and how stormwater pollutants are being generated and exported from the site and, b) from the site evaluation, define the specific needed retrofit project.

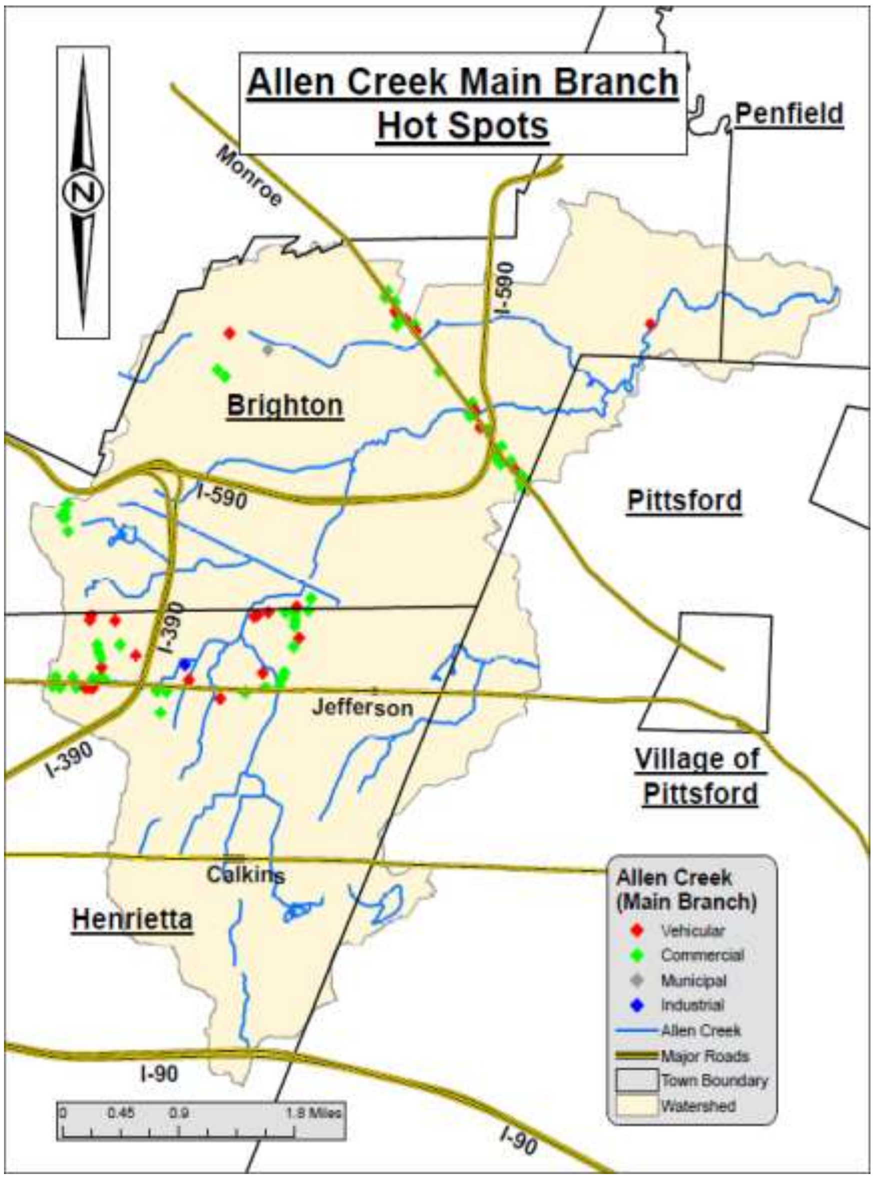


Figure C-2: Locations for potential hotspot within the Allen Creek

Table C-1. List of Potential Hotspot Locations - Allen Creek main branch watershed		
Location	**Property Class**	**Property Description**
1760 MONROE AVE	421	Restaurant
1205 JEFFERSON ROAD	421	Restaurant
945 JEFFERSON ROAD	421	Restaurant
2735 MONROE AVE	421	Restaurant
2185 MONROE AVE	421	Restaurant
869 E HENRIETTA ROAD	421	Restaurant
1690 MONROE AVE	421	Restaurant
749 E HENRIETTA ROAD	421	Restaurant
2717 MONROE AVE	421	Restaurant
3020 WINTON ROAD S	421	Restaurant
3423 WINTON PL	421	Restaurant
2600 ELMWOOD AVE	421	Restaurant
2740 MONROE AVE	421	Restaurant
2430 MONROE AVE	421	Restaurant
3010 WINTON ROAD S	421	Restaurant
3110 WINTON ROAD S	421	Restaurant
125 WHITE SPRUCE BLVD	421	Restaurant
942 JEFFERSON ROAD	421	Restaurant
2775 MONROE AVE	421	Restaurant
935 JEFFERSON ROAD	421	Restaurant
2450 MONROE AVE	421	Restaurant
780 JEFFERSON ROAD	421	Restaurant
2800 MONROE AVE	421	Restaurant
1175 JEFFERSON ROAD	421	Restaurant
245 CLAY ROAD	421	Restaurant
830 JEFFERSON ROAD	421	Restaurant
1890 S CLINTON AVE	421	Restaurant
950 JEFFERSON ROAD	426	Fast food
1580 JEFFERSON ROAD	426	Fast food
2545 MONROE AVE	426	Fast food
2951 MONROE AVE	426	Fast food
3050 WINTON ROAD S	426	Fast food
2600 MONROE AVE	426	Fast food
955 JEFFERSON ROAD	430	Mtor veh srv
3100 WINTON ROAD S	431	Auto dealer
1803 MONROE AVE	432	Gas station
2852 MONROE AVE	432	Gas station
1886 MONROE AVE	432	Gas station
2555 MONROE AVE	432	Gas station
2500 WINTON ROAD S	432	Gas station
3108 EAST AVE	432	Gas station
1677 ELMWOOD AVE	432	Gas station

APPENDIX D

Potential Stream Repair Projects in the Allen Creek Main Branch Watershed

Stream Repairs include physical modifications to stream channels, banks, and in-stream habitat to repair and improve degraded or unstable conditions. The project objectives are to reduce streambank erosion, recover biological diversity of a naturalized stream, protect threatened infrastructure such as adjacent homes or roads, and to add community resources, aesthetics and recreation opportunities (Figure 1).

In 2000, the Monroe County Soil & Water Conservation District began a streambank and shoreline erosion assessment program (SEAP) to inventory, assess, and prioritize erosion sites with the expertise of SUNY Geneseo's Dr. Richard Young and local knowledge of town and village highway superintendents, who were asked to identify their most severe erosion sites. The severity of each site was evaluated by measuring its physical properties such as area of eroded bank, stream hydrology, and geology. Limited grant funding over the years has allowed some of these sites to be repaired. The data from this program has been entered into the County's GIS database and was used to identify potential projects in this watershed.

Using aerial photos and SEAP data, potential sites were identified, mapped and listed (Figure 2 and Table 1 respectively). When funding becomes available, the sites listed need to be visited and evaluated by technical staff in order to a) determine the extent of the repair needed, b) from the site evaluation, define the specific needed repair project and cost, and c) rank projects according to an agreed prioritization criteria.

Potential Stream Repairs Project Types:

- Stream Channel Modification-As areas become more urbanized, stream channels are frequently straightened and stream banks are armored in order to accommodate additional growth. Channel modification projects attempt to restore a natural meandering path, gently sloped banks and strategically placed obstructions within the stream channel to create variable habitat.
- Stream Buffers-Urbanized streams frequently are disconnected from their flood plain or have development, such as pavement or lawns, right up to the stream bank. These factors have negative effects on the stability of the stream in terms of bank erosion, and stream health (as a result of runoff and lack of shade). Stream buffer projects create a vegetated zone along a length of stream that acts as a filter for incoming runoff and add space for the stream to meander and rise to minimize erosion and property damage.
- Streambank Stabilization—There are numerous streambank erosion sites in Monroe County which deliver significant quantities of sediment and associated pollutants to our local water resources. Streambank stabilization projects can help reduce the delivery of sediment and nutrients from bank erosion and include both hard armoring the banks but can also include bioengineered practices on smaller streams and tributaries.

Figure 1 . Streams need naturalized buffers to protect aquatic habitat and maintain water quality (Source, Philadelphia Water Department).

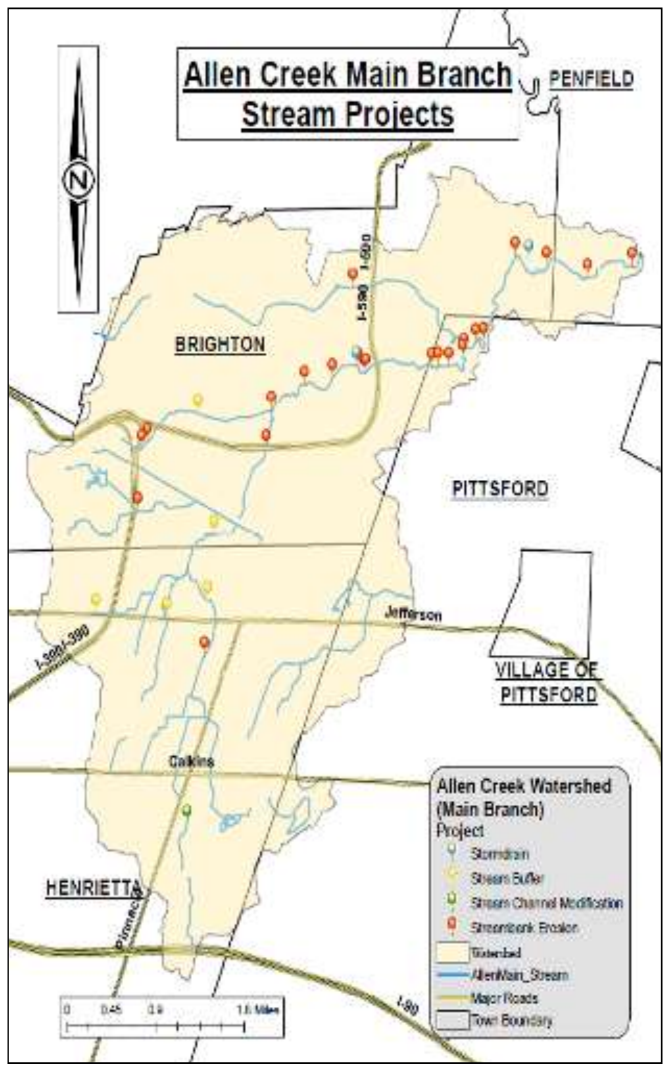


Figure 2. Locations of Potential Stream Repair Projects

Table 1. Potential Streambank Repair Projects - Allen Creek main branch watershed	
Location	**Repair Type**
29 Hillsboro Road (Behind)	Streambank Erosion
84 Chelmsford Road	Streambank Erosion
2545 Monroe Ave	Streambank Erosion
2545 Monroe Ave (ROW)	Streambank Erosion
66 Edgewood Ave	Streambank Erosion
795 Allen Creek Road	Streambank Erosion
474 Allen Creek Road	Streambank Erosion
1915 Westfall Road	Streambank Erosion
299 Dale Road	Stormdrain
66 Edgewood Ave	Stormdrain
3000 Clinton Ave	Streambank Erosion
S Clinton Ave near radio towers	Streambank Erosion
Across S Clinton Ave	Streambank Erosion
1666 Winton Road S	Streambank Erosion
Westfall East of Roosevelt	Streambank Erosion
B/w I-590 E and W at Winton	Streambank Erosion
Across from 455 Castle Road	Streambank Erosion
43 Knollwood Dr	Streambank Erosion
Crossing of Woodbury over Allen Creek	Streambank Erosion
South of Woodbury bridge over Allen Creek	Streambank Erosion
Next to 519 Allen Creek Road	Streambank Erosion
At entrance to 519 Allen Creek Road	Streambank Erosion
130 Burrows Hills Dr	Streambank Erosion
Behind 69 Water View Cir	Streambank Erosion
1100 Jefferson Road (ROW)	Stream Buffer
1350 Jefferson Road	Stream Buffer
3131 Winton Road S	Stream Buffer
200 Canal View Blvd	Stream Buffer
Westfall Road (Brighton Park)	Stream Buffer
Behind 141 Glen Road	Streambank Erosion
Next to 33 Parkmeadow Dr	Stream Channel Modification