



LETTER OF TRANSMITTAL

SPS New England, Inc.
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Table with 2 columns: Date: August 17, 2015, Job No: 400. Content: Bruce Freeman Rail Trail (Phase IIA), Acton-Carlisle-Westford, MassDOT Contract No. 84972. RE: IPMS

To: Massachusetts Department of Transportation
403 Belmont Street
Worcester, MA 01604

Attn: David Baker - Area Construction Engineer

- WE ARE SENDING YOU [X] Attached [] Under separate cover via _____ the following items:
[] Shop drawings [X] Prints [] Plans [] Samples [] Specifications
[] Copy of letter [] Certificate of Compliance

Table with 4 columns: COPIES, DATE, Item No., DESCRIPTION. Row 1: 1, 8/17/15, 102.3, Invasive Plant Management Strategy

THESE ARE TRANSMITTED as checked below:

- [X] For approval [] Approved as submitted [] Resubmit _____ copies for approval
[X] As requested [] Returned for corrections [] Return _____ corrected prints

- [] APPROVED WITH CHANGES NOTED
[] RESUBMISSION OF CORRECTED DRAWING IS REQUIRED
[] DISAPPROVED

SIGNED: Brad Lubenau
Brad Lubenau

massDOT District 3 Worcester
8/17/15 DATE BY D. BAKER

Baker, David (DOT)

From: Mitchell, Tara (DOT)
Sent: Monday, August 17, 2015 9:12 AM
To: Baker, David (DOT)
Cc: Marion, Patrick (DOT); Brad Lubenau (bradlubenau@spsnewengland.com)
Subject: RE: Bruce Freeman Rail Trail - IPMS

Hi Dave,

The submittal is approved.

We should also send a copy to Tom Tidman from the Conservation Commission.

Thanks,
Tara

From: Baker, David (DOT)
Sent: Monday, August 17, 2015 8:23 AM
To: Mitchell, Tara (DOT)
Cc: Marion, Patrick (DOT)
Subject: FW: Bruce Freeman Rail Trail - IPMS

Hello Tara, this submittal is for your review and approval. Any questions please call thanks dave

David Baker
MassDOT District 3 Construction
403 Belmont St
Worcester, MA 01604
david.baker@state.ma.us
Office: 508-929-3856

From: Brad Lubenau [<mailto:bradlubenau@spsnewengland.com>]
Sent: Monday, August 17, 2015 6:12 AM
To: Baker, David (DOT)
Cc: Marion, Patrick (DOT); Mitchell, Tara (DOT)
Subject: Bruce Freeman Rail Trail - IPMS

Dave,

Please see attached, Invasive Plant Management Strategy Plan submitted for approval.

Thanks,
Brad

Brad Lubenau - Project Manager
SPS New England, Inc.
98 Elm Street / Salisbury, MA 01952
Cell: 978.423.6326
Office: 978.462.6543
Fax: 978.462.0345



Vegetation Control Service, Inc.

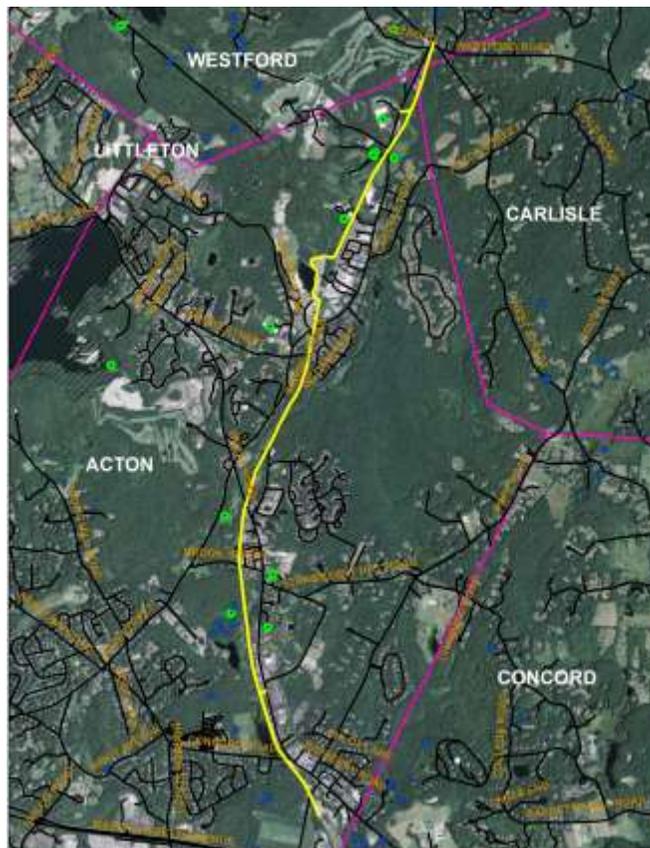
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Invasive Plant Management Strategy for Mass DOT Project #604532 Bruce Freeman Rail Trail Phase 2A Carlisle, Westford, and Acton

Current Site Conditions:

The Bruce Freeman Rail Trail runs from Station 12 + 36 south of Route 225 in Carlisle to Station 268 south of Wetherbee Street in Acton for a total of 4.82 miles. On Wednesday August 5, 2015 a site walk was conducted with representatives from *Vegetation Control Service, Inc.*, *SPS New England Inc.*, and representatives from *Mass. DOT* to identify current site conditions with regards to the presence of invasive plants. The invasive plants present on the site include seventeen species: Tree of Heaven (*Ailanthus altissima*), Japanese Knotweed (*Polygonum cuspidatum*), Black Locust (*Robinia pseudocacia*), Norway Maple (*Acer platanoides*), Autumn Olive (*Elaeagnus umbellata*), Japanese Honeysuckle (*Lonicera japonica*), Purple Loosestrife (*Lythrum salicaria*), Multiflora Rose (*Rosa multiflora*), Shrub Honeysuckle (*Lonicera spp.*), Porcelain Berry (*Ampelopsis brevipedunculata*), Privet (*Ligustrum spp.*), Glossy Buckthorn (*Rhamnus frangula*), Black Swallowwort (*Cynanchum louiseae*), Burning Bush (*Euonymus alatus*), Japanese Barberry (*Berberis thunbergii*), Spotted Knapweed (*Centaurea maculosa*), and Oriental Bittersweet (*Celastrus orbiculatus*). The control of Poison Ivy (*Toxicodendron radicans*) will also be addressed in the plan as it is a poisonous and native invasive plant. .



Invasive Species present on the Bruce Freeman Trail –

The following are the descriptions of the seventeen species of invasive plants in order of occurrence on the Bruce Freeman Trail –

Glossy Buckthorn is a tall deciduous shrub that grows up to 20' in height and 15' wide. It can be identified by the grayish bark with lenticels; twigs are reddish brown; leaves are ovate 4-5" long and 3-4" wide arranged oppositely on the stem; flowers are small, greenish white which appear in mid-June; and the fruits is a fleshy black colored berry that appears in late Summer to Fall. Glossy Buckthorn is a heavy fruit producing plant that spreads fast and grows in dense stands. It is the most dominant species currently on the project and is found throughout the entire length of the rail trail in varying stand densities and sizes of plants.

Multiflora Rose is a hardy shrub and / or climbing vine reaching 15' in height and 10' in width. It can be identified by the long arching stems with thorns; leaves are arranged alternately, compound with 7-9 leaflets and having feather margins; flowers are clusters of white in the summer; and the fruit is in the form of hips that turn red in fall. Multiflora Rose is a very aggressive shrub that over takes native plant populations. The species is found along the entire length of the trail in varying densities.

Oriental Bittersweet is a deciduous vine reaching heights of 40 – 60'. I can be identified by the tannish furrowed bark; alternately, ovate, bluntly toothed leaves 3-4" long by 2-3" wide and tapered at the base; flowers are greenish blooming in the spring; yellow dehiscent capsule surrounding an orange-red aril fruit. This species is found mostly in low growing patches along the ground and in a few instances growing up into native tree species.

Shrub Honeysuckle (Morrow's Honeysuckle and Tatarian Honeysuckle) is a shrub reaching 6-10' tall. The stem is a tannish colored and hollow; leaves are ovate and arranged opposite on the stems; flowers are tubular pink or white in the late Spring; and the fruits are berries with two seeds that are red or orange appearing in late summer to fall. Shrub Honeysuckle rapidly invades sites and will form dense stands that out compete native species. It can be found in limited areas on the project but is still one of the more dominant invasive species.

Japanese Knotweed is a bamboo like perennial that grows to 10' in height. The stems are greenish, hollow and jointed; leaves are alternate, broadly ovate, 3 to 7" long; flowers are small whitish forming panicles in late Summer; seeds are calyx brown and triangular in shape. It spreads rapidly, usually spread by moving the rhizomes of the plants or cutting of the stems. It currently grows in 5 areas on the trail and only 2 are large populations.

Autumn Olive is a weedy, deciduous shrub measuring up to 20' wide and tall. The bark is silvery gray and smooth with whitish lenticels; stems are cinnamon-brown in color; leaves are elliptical, 2-3" long, glossy, green above and silverfish below; flowers are solitary whitish, 4 petaled, in late spring; fruit is a red colored drupe. It is a rapid and aggressive spreading species once it is established. It is currently found in limited populations on the trail.

Japanese Barberry is a deciduous shrub that grows 2 to 4 ½' tall and wide. The leaves are ovate, simple; flowers are yellowish clusters blooming in May; fruit is a drupe that turns red in the fall; and stems are yellow inside when cut. It can form dense thickets where it becomes established. The populations on the rail trail are small in size and scattered in location.

Black Locust is a tree that grows to 50' in height and has a spread of 35' wide. The leaves alternately, odd pinnately, compound with 15 to 20 leaflets; the bark is thick reddish brown and deeply furrowed; twigs are often stipular with thorns; and the fruit is a dark thin pod. It is currently found in three locations on the trail as large dominant trees.

Spotted Knapweed is a tall erect herbaceous perennial living 3-5 years. Leaves are alternate, divided, pale green, 1-3" long; flowers are aster like, terminal, purple, flowering in the summer; and each plant will produce thousands of seeds per year. It is currently very limited in population on the project but can be found in close proximity to the project in three locations and will need to be monitored throughout the project.

Privet is a shrub reaching 12' tall by 10-12 feet wide. The stems are greenish and smooth; leaves are opposite, simple, and elliptic, 1-3" long by half as wide and blunt tipped, light green; flowers are small white panicles, late spring; and the fruits is a blackish drupe. It is currently found in two locations and the populations are limited in size.

Tree of Heaven is a deciduous tree that grows up to 60' tall by 40' wide. The bark is grayish, slightly furrowed; twigs are reddish brown; leaves are compound, 18-24" long with 13-25 leaflets arranged alternately on the stem, lanceolate, 3 to 5" long with 2 to 4 teeth near the base of the leaflet; flowers are panicles, 8-16" long, yellowish green in color, blooming in the summer; and the fruits are samaras. There are currently only two populations of Tree of Heaven located in the project.

Norway Maple is a deciduous tree that grows rapidly to 60' high by 40' wide. The bark is grayish and somewhat furrowed; twigs are smooth, olive-brown; buds are terminal, imbricate, rounded, smooth, greenish-red; leaves are opposite 4-7" wide, 5 lobed, dark green to dark red above, lustrous below; flowers are greenish-yellow in early spring; and the fruit is a samara. The populations identified are small re-sprouts that are located in two locations.

Burning Bush is a deciduous shrub reaching 20' in height and width. The stems are greenish with corky wings; leaves oppositely arranged, simple and elliptic, 1-3" long by half as wide, light green to red in the fall; the flower is inconspicuous greenish-yellow in the spring; and the fruit is fleshy green capsule that turns red in the fall. It is currently only found in one area on the trail.

Purple Loosestrife is a perennial growing 30 to 50" tall by 2/3's as wide. The stems are 4-6 sided, turning woody in summer; leaves are opposite to whorled lanceolate, 2-4" long; flowers are spiked raceme, purple to magenta, flowers starting in the summer into the fall; and the fruit is the form of a capsule. The only population found is growing along the edge of a wetland .

Porcelain Berry is a fast growing vine that spreads rapidly. The bark has lenticels and does not peel; the pith is white and continuous across the nodes; leaves are deeply lobed with 3 to 5 lobes, with toothed edges; the flowers are greenish-yellow fading to white with free petals occurring in cymes opposite the leaves during the summer; and fruits are a hard berry approximately ¼ inch in diameter, berries are colorful, changing from pale lilac, to green, to a bright blue from September through October, all colors may occur at the same time. The only population growing on the trail is located in the park along the edge of the pathway.

Japanese Honeysuckle is a rapidly climbing vine. The stems are reddish-brown, pubescent; leaves are opposite and not clasping the stem; flowers are fragrant, tubular, white or yellow, from spring to early summer; and the fruit is a berry, smooth, black to purple. It is currently growing in a single location on the trail near the Carlisle town line.

Black Swallowwort is herbaceous vine that grows to 6' in length. The leaves are opposite, lanceolate, dark glossy green, simple with a smooth edge, 2 to 4" long; flowers are small ¼", 5 petaled purplish from summer into the fall; seeds are similar to that of milkweed. The only population currently growing on the trail is near the proposed parking lot off Main Street in Acton.

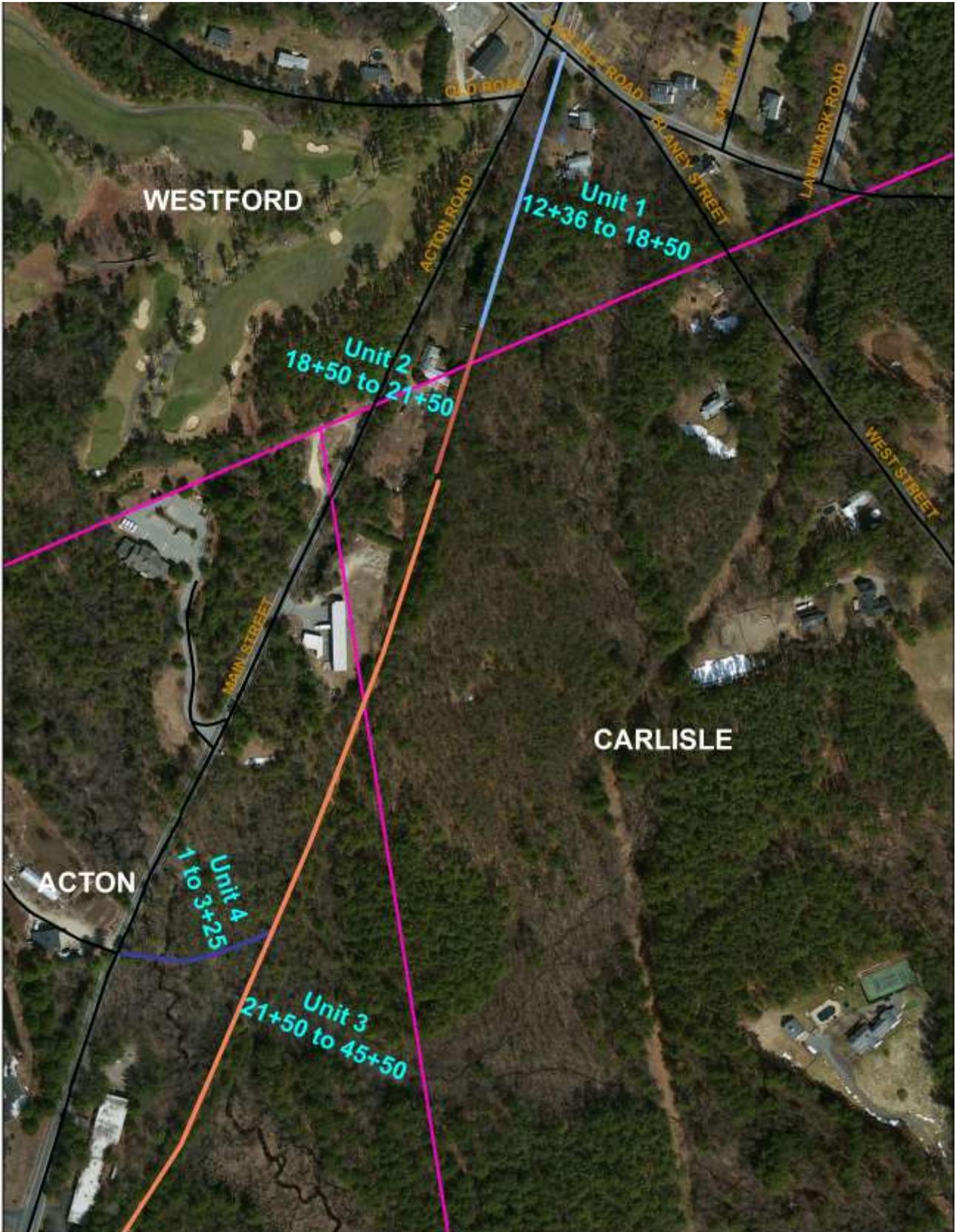
Poison Ivy grows in three forms a climbing vine that grows up into trees, a shrub that grows 3 to 11 feet tall, and a trailing vine that grows 4 to 10" tall. The leaves are light to dark green turning red in the fall, growing in groups of three leaflets, shiny, leaflets are alternate on the vine; the vines are thornless; and the fruit is a white cluster like in the fall. Poison Ivy is a native toxic invasive plant that spreads rapidly. Poison Ivy is being controlled due to its poisonous characteristics that pose threats to worker safety.

The table below shows the invasive plant species present in each of the Units.

Unit #	Station Location	Species #1	Species #2	Species #3	Species #4	Species #5	Species #6
1	12+36 to 18+50	Autumn Olive	Multiflora Rose	Glossy Buckthorn	Privet		
2	18+50 to 21+50	Multiflora Rose	Japanese Knotweed	Japanese Honeysuckle	Glossy Buckthorn		
3	21+50 to 45+50	Oriental Bittersweet	Glossy Buckthorn				
4	Access Trail & Parking Lot	Black Locust	Glossy Buckthorn	Black Swallowwort	Oriental Bittersweet	Multiflora Rose	
5	45+50 to 47	Oriental Bittersweet	Glossy Buckthorn	Autumn Olive	Multiflora Rose		
6	47 to 62+30	Multiflora Rose	Glossy Buckthorn				
7	62+30 to 62+70	Japanese Knotweed	Multiflora Rose	Glossy Buckthorn			
8	62+70 to 68	Glossy Buckthorn	Multiflora Rose				
9	68 to 83+50	Glossy Buckthorn	Oriental Bittersweet	Shrub Honeysuckle			
10	83+50 to 87	Poison Ivy	Multiflora Rose	Glossy Buckthorn	Oriental Bittersweet	Spotted Knapweed	
11	87 to 92+75	Oriental Bittersweet	Glossy Buckthorn	Multiflora Rose	Autumn Olive		
12	92+75 to 100+25	Glossy Buckthorn					
13	100+25 to 103	Tree of Heaven	Porcelain Berry	Black Locust	Oriental Bittersweet	Glossy Buckthorn	Poison Ivy
14	103 to 105+50	Multiflora Rose	Oriental Bittersweet	Autumn Olive	Black Locust	Glossy Buckthorn	Spotted Knapweed
15	105+50 to 113+25	Poison Ivy	Glossy Buckthorn	Shrub Honeysuckle	Oriental Bittersweet		
16	113+25 to 119+50	Purple Loosestrife	Glossy Buckthorn	Norway Maple	Oriental Bittersweet	Japanese Barberry	Multiflora Rose
17	119+50 to 145	Multiflora Rose	Burning Bush	Tree of Heaven	Privet	Japanese Barberry	Glossy Buckthorn

Unit #	Station Location	Species #1	Species #2	Species #3	Species #4	Species #5	Species #6
18	145 to 155	Glossy Buckthorn	Oriental Bittersweet	Shrub Honeysuckle	Japanese Barberry		
19	155 to 167+50	Multiflora Rose	Glossy Buckthorn				
20	167+50 to 170	Poison Ivy	Glossy Buckthorn	Oriental Bittersweet	Multiflora Rose		
21	170 to 194	Norway Maple	Glossy Buckthorn	Oriental Bittersweet	Multiflora Rose		
22	194 to 197	Poison Ivy	Glossy Buckthorn	Multiflora Rose			
23	197 to 204+50	Oriental Bittersweet	Glossy Buckthorn	Shrub Honeysuckle	Multiflora Rose		
24	204+50 to 217	Multiflora Rose	Glossy Buckthorn	Shrub Honeysuckle			
25	217 to 221+50	Japanese Knotweed	Oriental Bittersweet	Shrub Honeysuckle	Glossy Buckthorn		
26	221+50 to 251	Oriental Bittersweet	Multiflora Rose	Glossy Buckthorn	Japanese Barberry		
27	Trail to Great Rd.	Multiflora Rose	Oriental Bittersweet	Shrub Honeysuckle	Glossy Buckthorn		
28	251 to 252	Japanese Knotweed	Glossy Buckthorn	Multiflora Rose			
29	252 to 259+75	Glossy Buckthorn	Multiflora Rose				
30	259+75 to 268	Japanese Knotweed	Spotted Knapweed	Oriental Bittersweet	Poison Ivy		

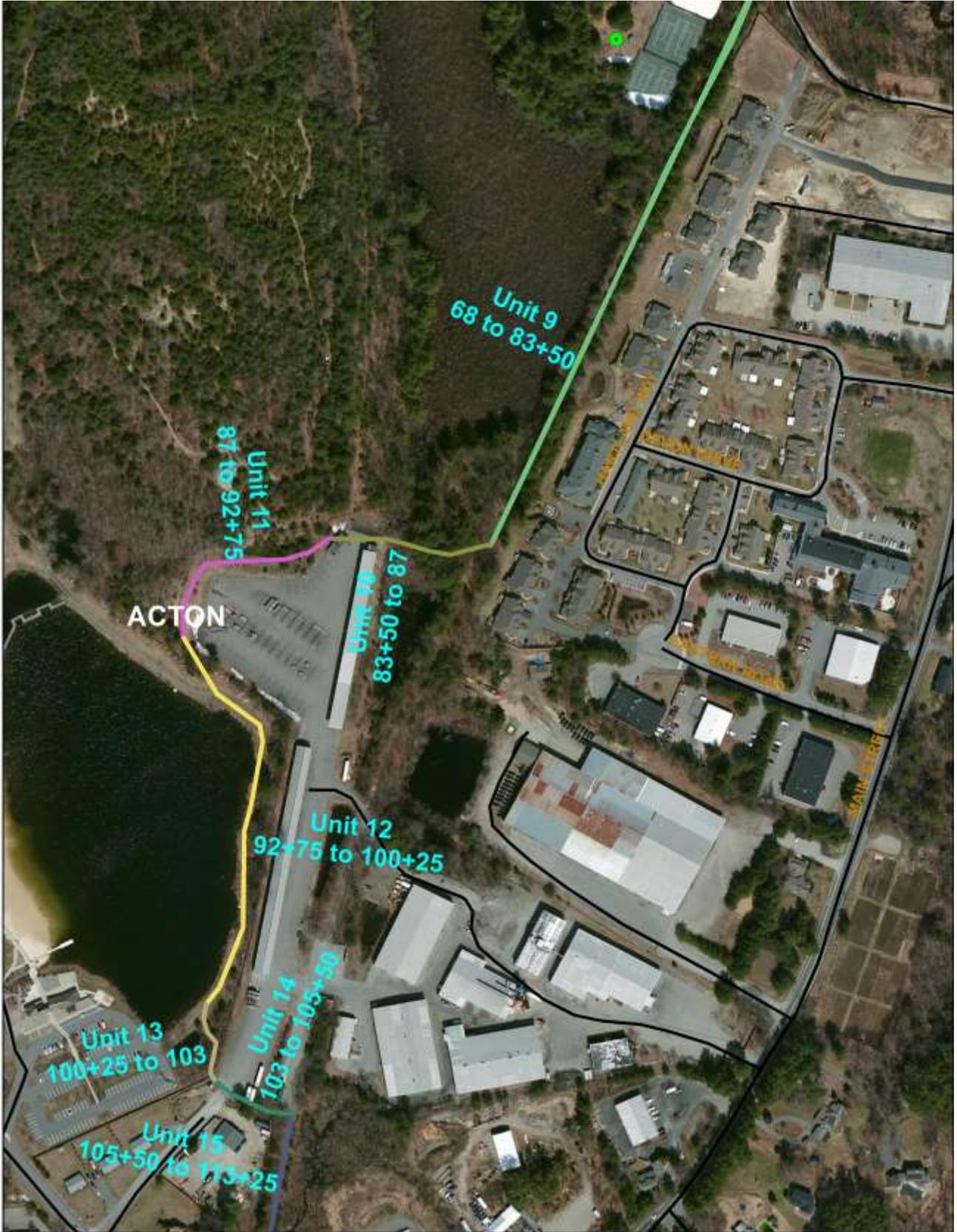
Map #1 – Units #'s 1 to 4



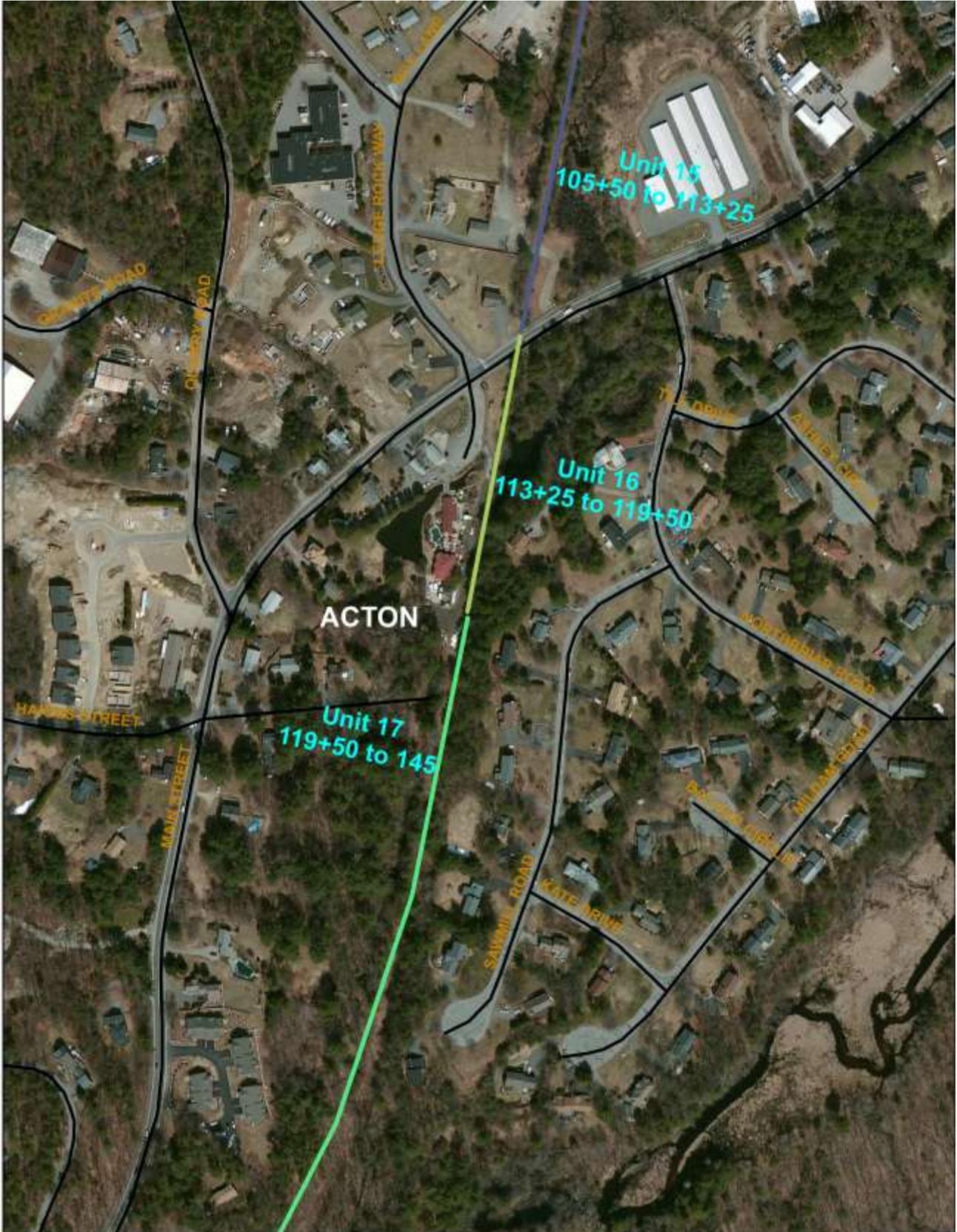
Map #2 – Units #'s 3 to 8



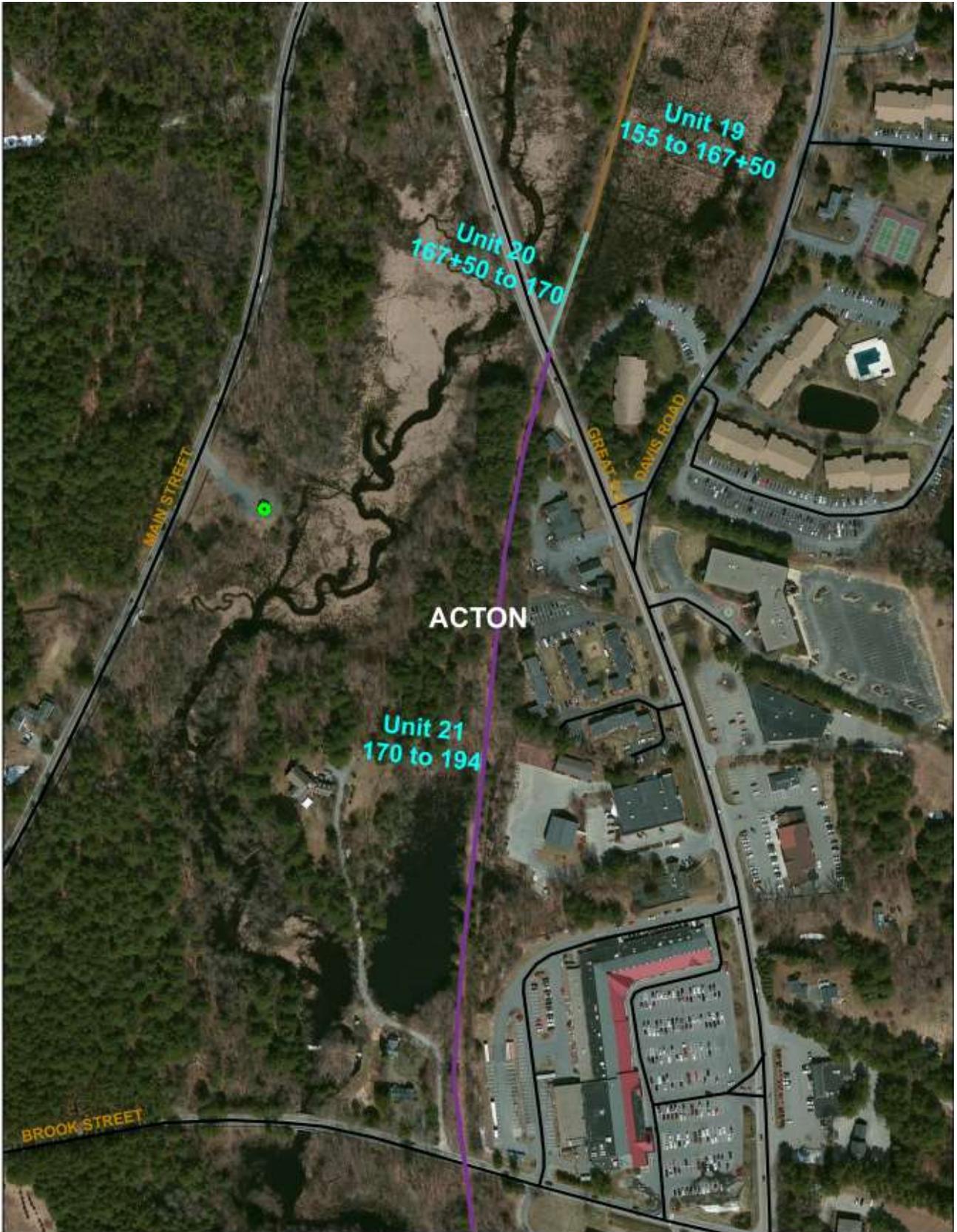
Map #3- Units #'s 9 to 14



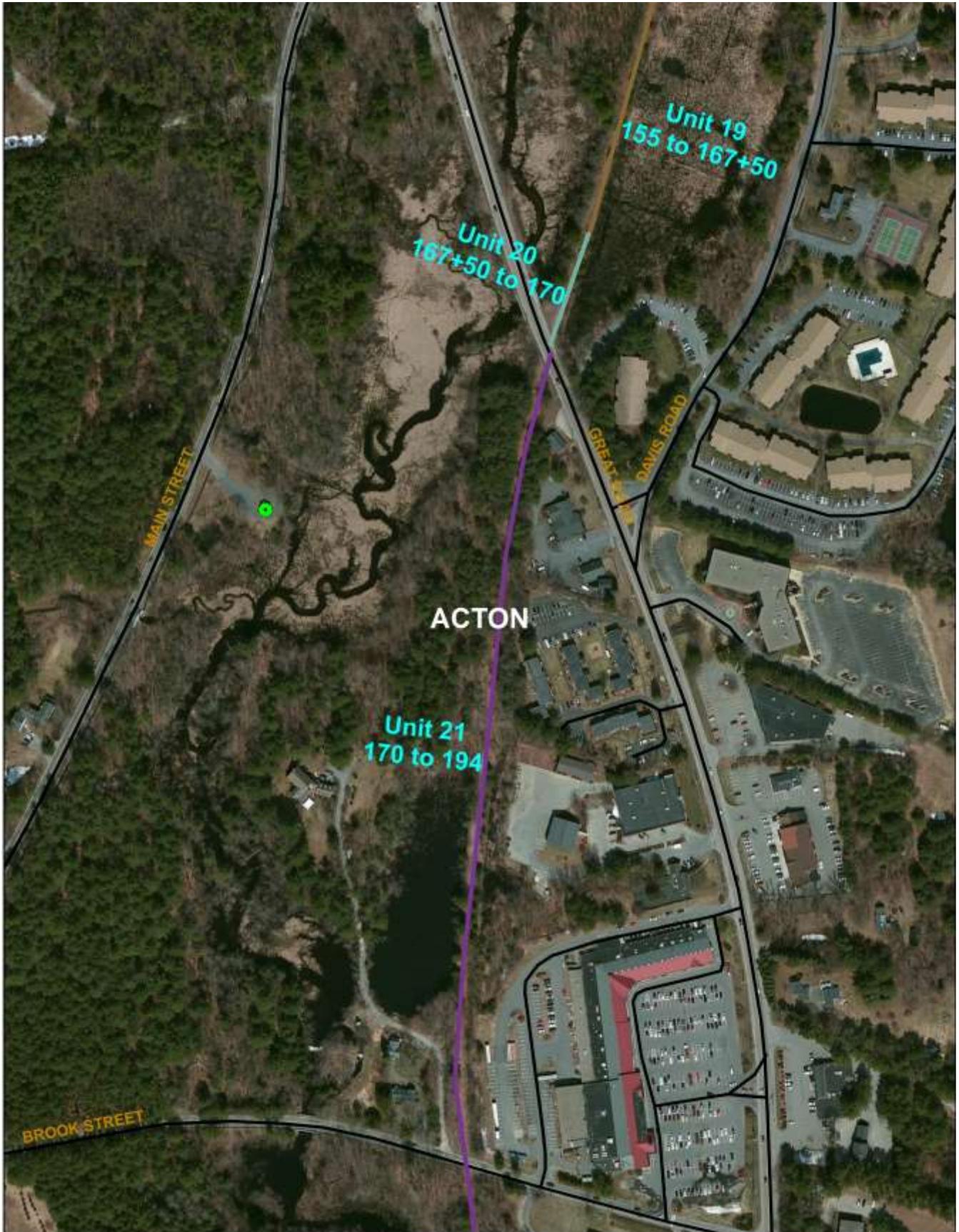
Map #4 – Units #'s 15 to 17



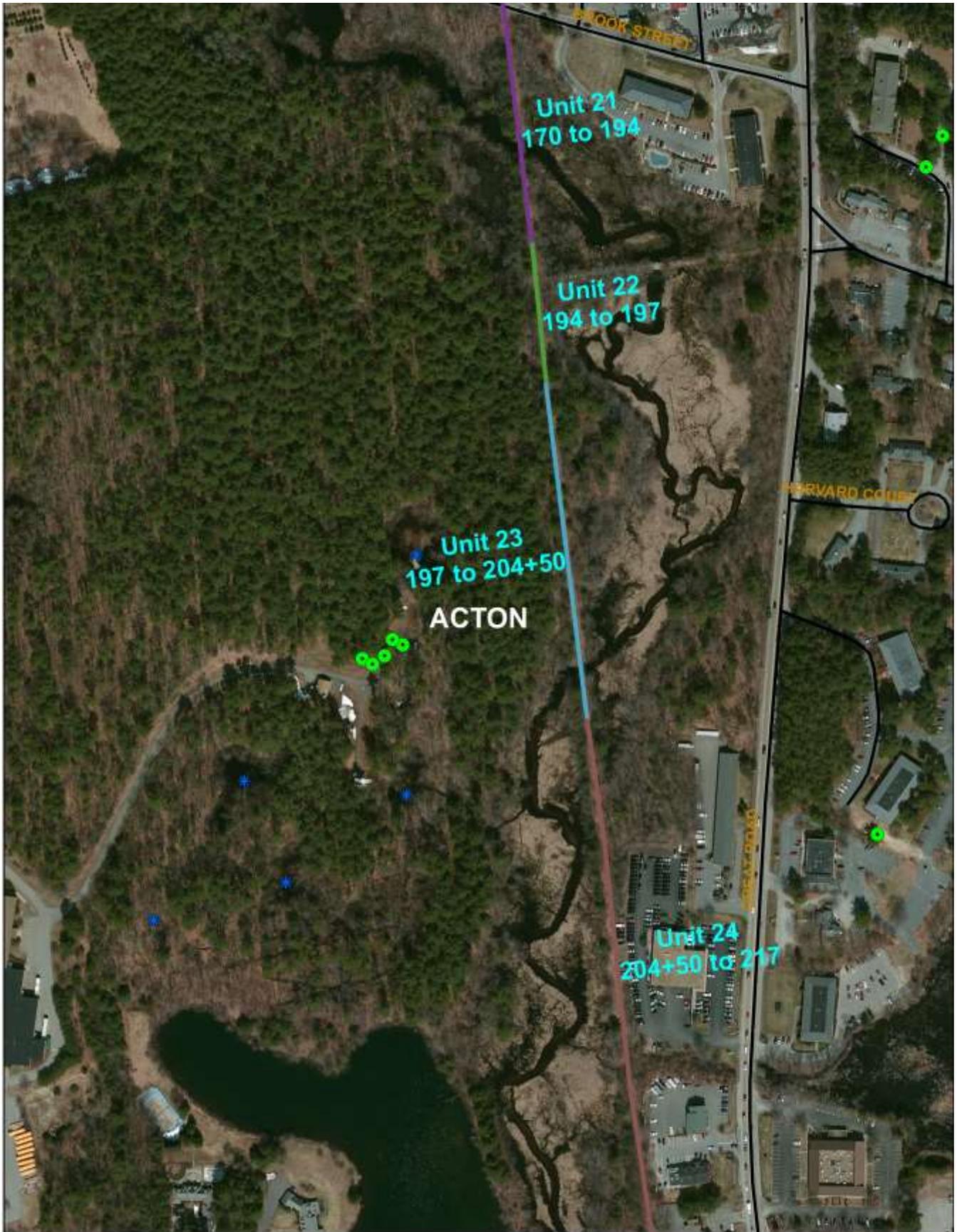
Map #5 – Units #'s 17 to 19



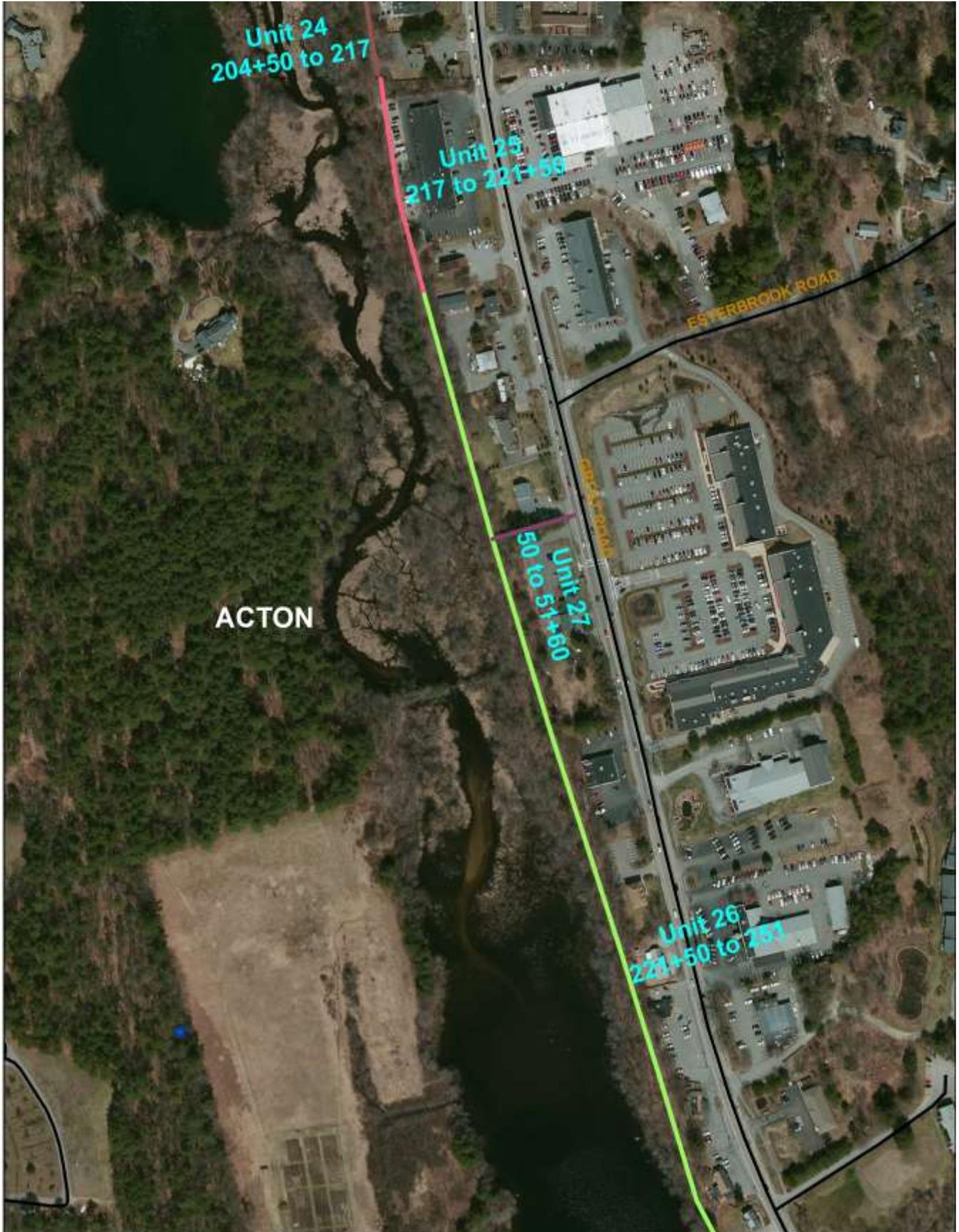
Map #6 – Units #'s 19 to 21



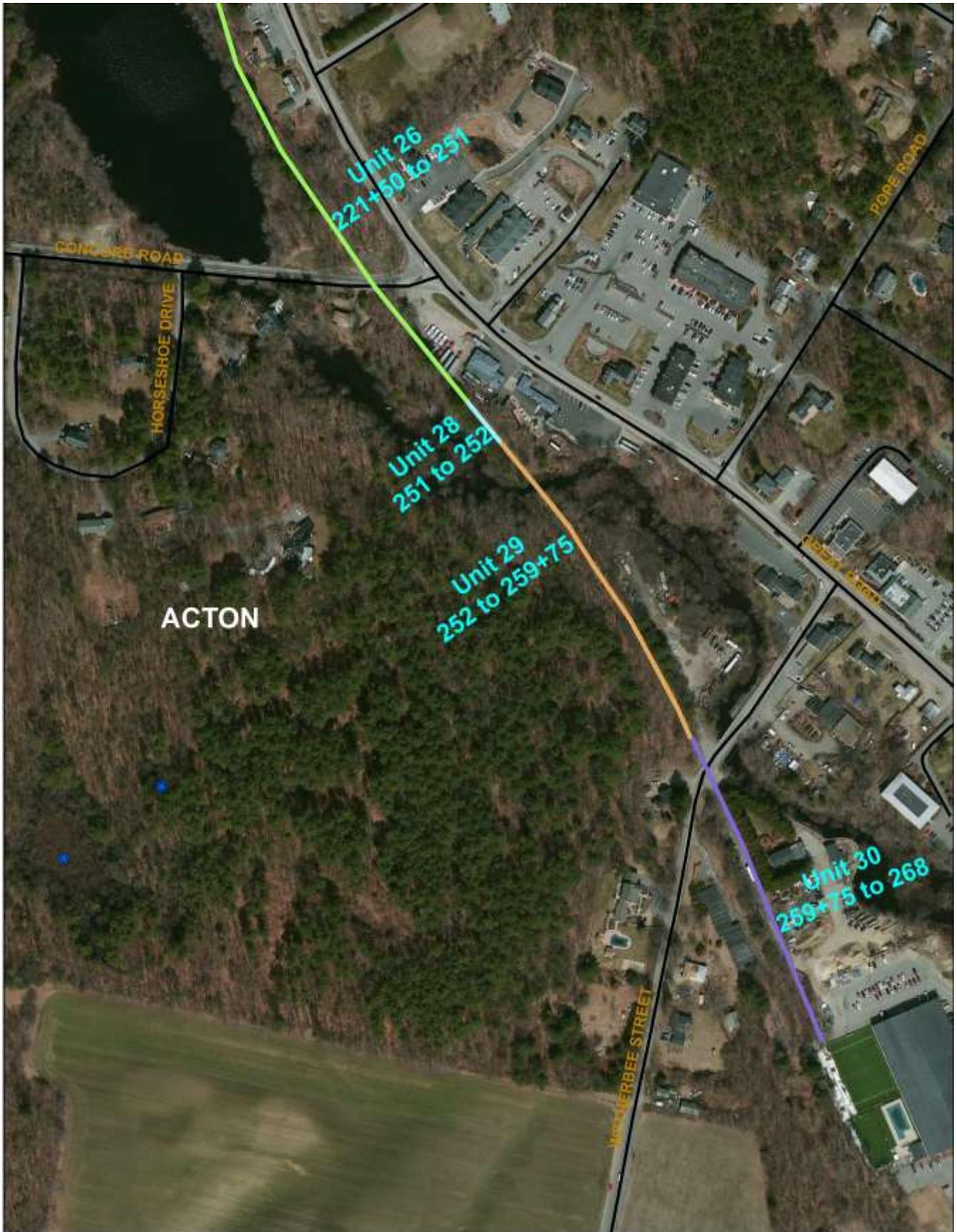
Map #7 – Units #'s 21 to 24



Map #8 – Units #'s 24 to 27



Map #9 – Units #'s 26 to 30



Treatment Methods:

Unit #1

The invasive shrubs and trees in Unit #1 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. The invasive plants in the unit will be treated during the summer of 2016 and 2017 with a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439).

Unit #2

The invasive shrubs and trees in Unit #2 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #2 contains two species including Japanese Knotweed and Japanese Honeysuckle that will be treated in the fall of 2015, prior to the clearing and grubbing, using a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439). The landowner will be contacted to explore the possibility of treating the Japanese Knotweed outside the project limits to prevent the re-infestation of the area that will be treated. The remaining invasive plants in the unit will be treated during the summer of 2016 and 2017 with the same mix as above.

Units #3 and 4

The invasive shrubs and trees in Units #3 and 4 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #4 borders a wetland and chips should not be blown into this area to avoid invasive species being introduced into the wetland. The invasive plants in the unit will be treated during the summer of 2016 and 2017 with herbicide using a mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439).

Unit #5

The invasive shrubs and trees in Unit #5 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #5 contains an area that is along Main Street that will be treated in the fall of 2015 prior to the clearing and grubbing. The unit will be treated with a herbicide mix using Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439). The unit will again be treated during the summer of 2016 and 2017 with the same mix as above.

Unit #6

The invasive shrubs and trees in Unit #6 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. The invasive plants in the unit will be treated during the summer of 2016 and 2017 with a herbicide mix using Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439).

Unit #7

The invasive shrubs and trees in Unit #7 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #7 contains Japanese Knotweed that will be treated in the fall of 2015, prior to the clearing and grubbing, using a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439). The remaining invasive plants in the unit will be treated during the summer of 2016 and 2017 with the same mix as above.

Units #8 and 9

The invasive shrubs and trees in Units #8 and 9 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. The invasive plants in the unit will be treated during the summer of 2016 and 2017 with a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439).

Unit #10

The invasive shrubs and trees in Unit #10 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #10 contains five species including Poison Ivy and Spotted Knapweed that will be treated in the fall of 2015, prior to the clearing and grubbing, using a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439). Poison Ivy which is a poisonous plant is being treated for the safety of the workers and future users of the rail trail. The unit will also be monitored for further spread of the Spotted Knapweed, which will be treated with Milestone VM (EPA Reg. #62719-537). The remaining invasive plants in the unit will be treated during the summer of 2016 and 2017 with Rodeo, Polaris and Escort XP.

Units #11 and 12

The invasive shrubs and trees in Units #11 and 12 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. The invasive plants in the unit will be treated during the summer of 2016 and 2017 with a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439).

Unit #13

The invasive shrubs and trees in Unit #13 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #13 contains six species including Poison Ivy, prior to the clearing and grubbing, using a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439). Poison Ivy which is a poisonous plant is being treated for the safety of the workers and future users of the rail trail. The remaining invasive plants in the unit will be treated during the summer of 2016 and 2017 with the same mix as above.

Unit #14

The invasive shrubs and trees in Unit #14 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #14 contains six species including Spotted Knapweed. The unit will be monitored for the spread of the Spotted Knapweed, which will be treated with Milestone VM (EPA Reg. #62719-537). The remaining invasive plants in the unit will be treated during the summer of 2016 and 2017 with the same mix as above.

Unit #15

The invasive shrubs and trees in Unit #15 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #15 contains four species including Poison Ivy that will be treated in the fall of 2015, prior to the clearing and grubbing, using a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439). Poison Ivy which is a poisonous plant is being treated for the safety of the workers and future users of the rail trail. The remaining invasive plants in the unit will be treated during the summer of 2016 and 2017 with the same mix as above.

Unit #16

The invasive shrubs and trees in Unit #16 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #16 contains six species including Purple Loosestrife and Poison Ivy that will be treated in the fall of 2015, prior to the clearing and grubbing, using a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439). The Purple Loosestrife will need to be monitored throughout the project for the introduction of new populations of Purple Loosestrife. The remaining invasive plants in the unit will be treated during the summer of 2016 and 2017 with the same mix as above.

Unit #17

The invasive shrubs and trees in Unit #17 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. In addition to treating the rail trail, the area around the Pencil Factory Dam will be treated for invasive plant species. The invasive plants in the unit will be treated during the summer of 2016 and 2017 with a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439).

Unit #18

The invasive shrubs and trees in Unit #18 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #18 borders a vernal pool and chips should not be blown into this area to avoid invasive species being introduced into the wetland. The invasive plants in the unit will be treated during the summer of 2016 and 2017 with herbicide using a mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439). No herbicide will be applied closer than the top of the bank on the east side trail near the vernal pool.

Unit #19

The invasive shrubs and trees in Unit #19 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. The invasive plants in the unit will be treated during the summer of 2016 and 2017 with a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439).

Unit #20

The invasive shrubs and trees in Unit #20 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #20 contains four species including Poison Ivy, that will be treated in the fall of 2015 prior to the clearing and grubbing, using a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439). Poison Ivy which is a poisonous plant is being treated for the safety of the workers and future users of the rail trail. The remaining invasive plants in the unit will be treated during the summer of 2016 and 2017 with the same mix as above.

Unit #21

The invasive shrubs and trees in Unit #21 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. The invasive plants in the unit will be treated during the summer of 2016 and 2017 with a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439).

Unit #22

The invasive shrubs and trees in Unit #22 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #22 contains four species including Poison Ivy, that will be treated in the fall of 2015 prior to the clearing and grubbing, using a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439). Poison Ivy which is a poisonous plant is being treated for the safety of the workers and future users of the rail trail. The remaining invasive plants in the unit will be treated during the summer of 2016 and 2017 with the same mix as above.

Units #23 and 24

The invasive shrubs and trees in Units #23 and 24 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. The invasive plants in the unit will be treated during the summer of 2016 and 2017 with a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439). No herbicide will be applied closer than the top of the bank on the east side trail near the vernal pool.

Unit #25

The invasive shrubs and trees in Unit #25 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #25 contains Japanese Knotweed that will be treated in the fall of 2015, prior to the clearing and grubbing, using a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439). The remaining invasive plants in the unit will be treated during the summer of 2016 and 2017 with the same mix as above.

Unit #26

The invasive shrubs and trees in Unit #26 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. The Oriental Bittersweet vines growing up into the trees will be cut and the stumps treated with a mix of Garlon 4 Ultra (EPA Reg. #62719-527) and Polaris (EPA Reg. #228-534). The invasive plants in the unit will be treated during the summer of 2016 and 2017 with a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439).

Unit #27

The invasive shrubs and trees in Unit #27 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. The invasive plants in the unit will be treated during the summer of 2016 and 2017 with a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439).

Unit #28

The invasive shrubs and trees in Unit #28 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #28 contains Japanese Knotweed that will be treated in the fall of 2015, prior to the clearing and grubbing, using a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439). The remaining invasive plants in the unit will be treated during the summer of 2016 and 2017 with the same mix as above.

Unit #29

The invasive shrubs and trees in Unit #29 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. The invasive plants in the unit will be treated during the summer of 2016 and 2017 with a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439).

Unit #30

The invasive shrubs and trees in Unit #30 will be mechanically cleared to project limits. The shrubs and trees will be chipped and chips left on site where appropriate. Unit #30 contains four species including Poison Ivy and Spotted Knapweed that will be treated in the fall of 2015, prior to the clearing and grubbing, using a herbicide mix of Rodeo (EPA Reg. #62719-324), Polaris (EPA Reg. #228-534) and Escort XP (EPA Reg. #352-439). The landowner will be contacted to explore the possibility of treating the Japanese Knotweed outside the project limits to prevent the re-infestation of the area that will be treated. Poison Ivy which is a poisonous plant is being treated for the safety of the workers and future users of the rail trail. The unit will also be monitored for further spread of the Spotted Knapweed, which will be treated with Milestone VM (EPA Reg. #62719-537). The Oriental Bittersweet vines growing up into the trees will be cut and the stumps treated with a mix of Garlon 4 Ultra (EPA Reg. #62719-527) and Polaris (EPA Reg. #228-534). The remaining invasive plants in the unit will be treated during the summer of 2016 and 2017 with Rodeo, Polaris and Escort XP.

To prevent the spread of invasive plant species from this project to other projects all contractor employees and subcontractors shall be made aware of the presence of invasive plant species along the trail corridor. Equipment that comes in contact to with the plant species and soil needs to be cleaned using a compressed air blast prior to being moved to a new project.

No clearing and grubbing should be done for a minimum of two weeks after any herbicide applications are done to ensure the herbicide gets into the root system for best control.

All herbicide applicators will have a current Massachusetts Pesticide License and a minimum of 5 years' experience in invasive plant control. In addition to this there will be a minimum of one Category 40 license holder onsite during all herbicide applications. All herbicides that have been proposed are on the Massachusetts right-of-way sensitive materials list. Specimen labels and Safety Data Sheets can be found at the www.cdms.net. The Massachusetts fact sheets can be found at <http://www.mass.gov/eea/agencies/agr/pesticides/rights-of-way-vegetation-management.html>.

Monitoring Schedule:

A site walk will be done with representatives from *Vegetation Control Service, Inc., SPS New England Inc.* and *Mass. DOT* in the Summer of 2016 to monitor site conditions and determine if any new invasive plant populations are present. The site will be followed up for 2 additional growing seasons as specified in the project specifications. Following each of these site walks an updated IPMS plan will be submitted to include any additional treatments. The project goal is that the invasive plants will contribute to less than 5 percent of the cover in any stratum at the end of the monitoring period. Without continued maintenance the project area has a possibility of being re-infested with invasive species as additional invasive species are located in close proximity to the project limits.