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August 21, 2008

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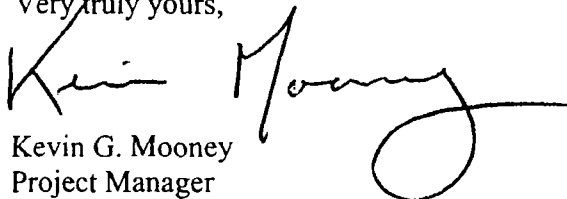
**Re: Summer 2008 Re-Vegetation Monitoring Report
1 ½ Mile Reach Removal Action
GE-Pittsfield/Housatonic River Site, Pittsfield, MA**

Dear Mr. Tagliaferro:

Please find enclosed GE's report entitled *Summer 2008 Re-Vegetation Monitoring Report* for the 1½ Mile Reach of the Housatonic River, which was prepared on GE's behalf by AMEC Earth & Environmental, Inc. This report documents the results of the 2008 quantitative monitoring assessment of riverbank and non-riverbank re-vegetation within the 1½ Mile Reach, which was conducted on July 22 - 23, 2008.

If you have any questions about this report or would like to discuss it further, please contact me at (413) 448-5910.

Very truly yours,


Kevin G. Mooney
Project Manager

Enclosure

cc: John Kilborn, EPA
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August 21, 2008
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Summer 2008 Re-Vegetation Monitoring Report
1½ Mile Reach of Housatonic River
General Electric (GE) – Pittsfield/Housatonic River Site
Pittsfield, MA

Prepared for

Corporate Environmental Programs
General Electric Company
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August 21, 2008

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1.0 INTRODUCTION

This Summer 2008 Re-vegetation Monitoring Report presents the results of the 2008 quantitative monitoring assessment of riverbank and non-riverbank re-vegetation within the 1½ Mile Reach of the Housatonic River, which is part of the General Electric (GE)–Pittsfield/Housatonic River Site (the Site). This monitoring assessment was conducted on July 22-23, 2008 and represents the summer portion of the first year of riverbank and non-riverbank re-vegetation monitoring of the five-year monitoring period for this reach of the Site. The requirements for this monitoring assessment and associated deliverables are presented in the Interim Post-Removal Site Control (PRSC) Plan for the 1½ Mile Reach (Weston, 2008).

1.1 Project Background

The United States Environmental Protection Agency (EPA) conducted a Removal Action for the 1½ Mile Reach of the Housatonic River under the terms of the Consent Decree (CD) for the Site. This reach extends from the Lyman Street Bridge downstream to the confluence of the East and West Branches of the river (the Confluence). The 1½ Mile Reach Removal Action included the excavation and disposal of approximately 91,700 cubic yards (cy) of contaminated sediments and riverbank soil from this reach of the river, followed by the performance of restoration activities. Excavation activities were completed in March of 2006, and restoration activities, including restoration of support areas, were substantially completed by the end of 2006. In 2007, EPA completed restoration and maintenance activities.

In May 2008, EPA developed an Interim PRSC Plan to provide for the monitoring and maintenance of certain aspects of the remediation and restoration activities that were part of the 1½ Mile Reach Removal Action. These activities include monitoring and maintenance of riverbank soils (to prevent erosion), riprap, aquatic habitat enhancement structures, ancillary items constructed as part of remediation (e.g., retaining walls, fences, gates, etc.), and re-vegetation in riverbank and non-riverbank areas, including control of invasive species. Pursuant to the CD, GE is required to carry out these activities under the cost-sharing arrangement with EPA.

1.2 Re-vegetation Monitoring Background and Maintenance Standards

This report addresses monitoring of the vegetation planted as part of restoration activities. This re-vegetation monitoring effort assesses the survival and condition of riverbank and non-riverbank plantings, the areal cover provided by herbaceous vegetation and invasive plant species, and the condition of tree cages.

This work involves two monitoring visits per year, one in May (spring monitoring visit) and the other in July (summer monitoring visit). The spring monitoring visit is qualitative in nature with the purpose of assessing plant conditions and plant survivorship and identifying segments of the planting areas where potential corrective actions or maintenance may be required. The spring 2008 qualitative monitoring visit was conducted on June 3, 2008, and a report on that visit was submitted to EPA on July 3, 2008. The summer monitoring visit is quantitative in nature with the purpose of assessing plant conditions, measuring plant survivorship and areal herbaceous vegetative cover, and assessing achievement of the Maintenance Standards in the PRSC Plan. The summer 2008 quantitative monitoring visit is described in this report.

The Maintenance Standards for the re-vegetation of riverbank and non-riverbank planting areas are as follows:

- **Riverbank Planting Areas** – Survival of planted trees and shrubs shall be equal to or greater than 80% of the number of trees and shrubs originally planted.
- **Non-Riverbank Areas, Excluding Fred Garner Park** – Survival of planted trees and shrubs shall be 100% of the number of trees and shrubs originally planted.
- **Non-Riverbank Fred Garner Park Plantings** – Survival of planted trees and shrubs in Fred Garner Park shall be equal to or greater than 80% of the number of trees and shrubs originally planted, except that the Maintenance Standard for the following trees in Fred Garner Park shall be 100% survival: the eight (8) red maples and the six (6) river birches adjacent to the soccer field at Fred Garner Park, and the sixteen (16) hemlocks along the walking path.
- **Herbaceous Cover** – The Maintenance Standard for herbaceous cover shall be 95% cover outside the foliar coverage of trees. There is no Maintenance Standard for individual species of the herbaceous seed mix.

The Maintenance Standard for invasive species control is defined as areal coverage of species listed in Appendix A of the PRSC Plan that is less than 5% of any monitoring area; any invasive species present in excess of 5% must be removed by appropriate means.

2.0 METHODS

This summer re-vegetation monitoring was conducted on July 22 and July 23, 2008, and was primarily quantitative in nature with the purpose of assessing plant conditions and plant survivorship and identifying segments of the planting areas where potential corrective actions or maintenance may be required. For purposes of the re-vegetation monitoring, the 1½ Mile Reach has been divided into four sub-reaches, commencing at the upstream end and delimited by the four bridge crossings in the 1½ Mile Reach, as shown on Figure 1:

- Phase 1 - Lyman Street Bridge to Elm Street Bridge
- Phase 2 - Elm Street Bridge to Dawes Avenue Bridge
- Phase 3 - Dawes Avenue Bridge to Pomeroy Avenue Bridge
- Phase 4 - Pomeroy Avenue Bridge to the Confluence

For the riverbanks, the PRSC Plan designates each side of the river within each of these sub-reaches as an overall monitoring area, and it designates specific representative monitoring plots within each such area for more intensive, quantitative monitoring (Table 3-1 of PRSC Plan). The designated monitoring plots within the monitoring areas are shown, by sub-reach, on Figures 2 through 5. These figures also show the planting areas (which are designated by number) within the monitoring areas.

Table 3-2 of the PRSC Plan lists the properties where non-riverbank plantings are subject to monitoring as part of the 1½ Mile Reach. At many of these properties only limited monitoring was required and has already been completed by EPA. The listed properties where continued monitoring is required are Parcels I8-24-1 and I9-5-13 (in Phase 1) and Parcels I7-1-101 (Fred Garner Park), I6-1-67, and I6-1-66 (in Phase 4); these properties are shown on Figures 2 and 5. In addition, based on discussions between GE and EPA, GE is required to monitor the plantings along the top of the riverbank at Parcels I9-4-14 and I9-4-19 in Phase 1 (see Figure 2).

2.1 Field Methods

To quantify plant survivorship in the riverbank areas, planted trees and shrubs were counted in each monitoring plot. Plants were counted as either alive or dead, with the live category including stressed plants. Stressed plants were noted based on readily apparent physical characteristics such as leaf wilt, bug infestation, die back, herbicide injury, and/or animal damage. Non-stressed plants were those that were growing vigorously as determined by characteristics such as relative size, annual growth, leaf color, and stem integrity. Best professional judgment was used to assess the apparent stress and/or vigor of the planted specimens.

Natural regeneration of plants can occur from stump sprouts, root sprouts, and from seed dispersion of parent plants. Where natural regeneration of the plant species used in the restoration (listed in Appendix G to the PRSC Plan) has occurred, these plants were included in the overall plant count if such plants were a minimum of two feet tall. When a stump or root had many sprouts extending from its base in excess of two feet, it was tallied as one plant.

The summer monitoring visit also included a qualitative assessment of the riverbank re-vegetation. As was done in the spring, this assessment was conducted using meander surveys in each overall monitoring area, with special attention to the specific monitoring plots. A meander survey involves traversing a study area on foot in a deliberate and sinuous manner to observe overall site conditions. This also included qualitative monitoring of the dogwood band at the bottom of the re-vegetated slope along the entire length of the monitoring areas from the Elm Street Bridge to the Confluence.

The assessment also quantitatively assessed the non-riverbank plantings at the properties identified above – i.e., Parcels I8-24-1, I9-5-13, I7-1-101, I6-1-67, and I6-1-66 – as well as the plantings along the top of the riverbank at Parcels I9-4-14 and I9-4-19.

During these surveys, the general characteristics of each riverbank monitoring area and non-riverbank planting area and any exceptional characteristics, such as concentrations of dead or stressed plants, were noted. The surveys also (1) identified significant areas of bare soil, (2) noted the need for any tree cage maintenance or performed tree cage maintenance as needed,

(3) included photo-documentation of the monitoring plots, (4) estimated the percent areal cover of the herbaceous layer, (5) estimated the percent area cover of invasive plant species, and (6) noted whether any additional invasive plant species should be added to the list presented in Appendix A of the PRSC Plan.

2.2 Data Analysis

At the completion of the monitoring, the results of the quantitative survey were used to determine the number of live and dead plants in each riverbank monitoring plot. Live tree and shrub totals in each monitoring plot were summarized and then divided by the number of trees and shrubs originally planted in each monitoring plot (or the design planting density where the actual number of originally planted trees is unknown) to calculate a percentage of tree and shrub survivorship in each plot. Next, the percentages of tree and shrub survivorship within the representative monitoring plots were averaged together to calculate the tree and shrub survivorship for each riverbank monitoring area. For the non-riverbank areas, the number of trees and shrubs counted in the quantitative survey at each property was compared to the number originally planted to determine percent survivorship for each property. The percent survivorship was then compared to the applicable Maintenance Standard.

In accordance with the PRSC Plan, if the tree and shrub survivorship for a riverbank monitoring area or a non-riverbank property met the Maintenance Standard, then it was determined that no corrective actions were required, unless the meander survey identified an area with substantial tree or shrub mortality. If the tree and shrub survivorship for a riverbank monitoring area or a non-riverbank property did not meet the applicable Maintenance Standard, or if the meander survey identified an area with substantial plant mortality, then GE assessed the need for further action. In such a case, the PRSC Plan requires GE to evaluate survivorship in the entire monitoring area and propose a plan to EPA for approval to quantitatively assess either the entire monitoring area or, if appropriate, a portion of the monitoring area, such as a planting area. That plan states further that, based on this evaluation and assessment, GE will propose additional plantings, if necessary, to EPA for approval, in order to meet the Maintenance Standard.

2.2.1 Calculating Percent Survivorship of Trees

For monitoring plots where the actual number of originally planted trees is not known but is based upon an estimate, the density of live trees counted in the quantitative assessment was compared to the design planting density (target density) of trees. For the GeoWeb[®] riverbanks (as described in the PRSC Plan), the design planting density was 500 trees/acre, and for the non-GeoWeb[®] riverbanks, the design planting density was 700 trees/acre. The density of live trees in monitoring plots was calculated by dividing the number of live trees counted in the quantitative inspection by the area of the plot to obtain a per-acre density of trees. This density was then divided by either 500 trees/acre or 700 trees/acre (as appropriate) to determine the percent survivorship.

For monitoring plots where the actual number of originally planted trees was known, the density of live trees counted in the quantitative assessment was compared to the actual density of planted trees as shown in Table 3-1 of the PRSC Plan. These numbers are footnoted in Table 2. In these monitoring plots, the density of live trees was calculated by dividing the number of live trees counted in the quantitative inspection by the area of the plot to obtain a per-acre density of trees. This density was then divided by the actual “as-built” density of trees (as opposed to the design estimate) to determine the percent survivorship.

2.2.2 Calculating Percent Survivorship of Shrubs

Achievement of the Maintenance Standards for shrubs was determined by comparing the density of counted live shrubs to the actual density of planted shrubs shown in Table 3-1 of the PRSC Plan; these are also footnoted in Table 2. The density of live shrubs was calculated by dividing the number of live shrubs counted in the quantitative inspection by the area of the plot to obtain a per-acre density of shrubs. This density was then divided by the actual “as-built” density of shrubs to determine the percent survivorship. Since shrubs were not planted in all monitoring plots, only the following monitoring plots were used to determine achievement of numerical Maintenance Standards for shrubs:

1-W-3	3-W-3
1-E-1	3-E-1
1-E-3	3-E-3
2-W-3	4-W-3
2-E-1	4-E-2
3-W-1	4-E-3
3-W-2	

2.2.3 Herbaceous Vegetation Cover and Invasive Plant Species Cover

The monitoring for herbaceous vegetation and invasive species cover consisted of visual inspections of planted areas and qualitative assessments of coverage to assess attainment of the Maintenance Standards. Cover was determined by walking through each riverbank monitoring plot as well as the following non-riverbank properties: Parcels I8-24-1, I6-1-66, I6-1-67, and I7-1-101 (Fred Garner Park).

The herbaceous vegetation cover and invasive plant species cover were visually estimated to the nearest 5%. In addition, qualitative monitoring was performed during the riverbank meander survey portion of the effort to determine if the herbaceous vegetation cover and invasive plant species cover recorded in the monitoring plots was representative of the entire monitoring areas and to identify significant areas of bare soil or heavy infestation by invasive plant species.

3.0 RESULTS

Phil Perhamus of AMEC Earth & Environmental, Inc. conducted the quantitative assessment for the summer 2008 monitoring visit. Also present and assisting Mr. Perhamus during this visit were the following personnel:

- Dean Tagliaferro, U.S. Environmental Protection Agency
- Kevin Mooney, General Electric Company
- Izabela Zapisek, Weston Solutions
- Chris Frank, C.L. Frank & Company
- Jeff LaCoy, C.L. Frank & Company

The weather during the monitoring visit ranged from warm (80-85°F) and sunny on July 22nd, to cool (70-75°F) and rainy on July 23rd. The observations made during this monitoring visit are presented below. They are grouped according to the four above-listed phases of the project area:

- Phase 1 - Lyman Street to Elm Street
- Phase 2 - Elm Street to Dawes Avenue
- Phase 3 - Dawes Avenue to Pomeroy Avenue
- Phase 4 - Pomeroy Avenue to the Confluence

The results of these assessments are presented in Tables 1 through 4, as described below. Photographs of these areas are presented in Appendix A of this report. The completed field data forms are included in Appendix B.

3.1 Phase 1 – Lyman Street to Elm Street

Phase 1 includes the following monitoring plots (Figure 2):

- 1-W-1 = Trees only
- 1-W-2 = Trees only

- 1-W-3 = Trees and shrubs
- 1-E-1 = Trees and shrubs
- 1-E-2 = Trees only
- 1-E-3 = Trees and shrubs
- Non-riverbank Parcel I8-24-1
- Non-riverbank Parcel I9-5-13

3.1.1 Riverbank Monitoring Plots

Table 1 presents a summary of the total riverbank trees and shrubs counted in Phase 1. Table 2 presents a summary of the survivorship for riverbank trees and shrubs as percentages of the target density in accordance with the PRSC Plan Maintenance Standards. These results indicate that the trees and shrubs in all of the riverbank monitoring plots exceeded their target densities and met the minimum 80% survival criterion. The individual percent densities for trees, compared to target densities, ranged from 87% (Plot 1-E-1) to 279% (Plot 1-W-1). The average percent-of-target densities for trees in the Phase 1 monitoring areas were 114% for the east side of the river and 171% for the west side, with an overall average of 143% for the entire Phase 1 sub-reach.¹

The individual percent-of-target densities for shrubs ranged from 96% (Plot 1-E-3) to 145% (Plot 1-W-3). The average percent-of-target densities for the Phase 1 monitoring areas were 114% for the east side and 145% for the west side (where Plot 1-W-3 is the only monitoring plot), with an overall average of 125% for Phase 1.

The herbaceous vegetation species cover and invasive species cover results are summarized in Table 4. The herbaceous vegetation cover for all of the monitoring plots was estimated to be greater than 95%, and the invasive plant species cover was estimated to be less than 5%, thus meeting their respective Maintenance Standards.

Plot 1-W-1 contained one silver maple that appeared to be water-stressed (i.e. “scalded”), exhibiting brown edges on its leaves. However, the mid-veins were still a vibrant green, which

¹ Reported percent-of-target densities that exceed 100% indicate plant densities that are higher than the target densities.

suggests that the specimen will likely recover. Plot 1-W-3 exhibited two eastern cottonwood specimens leaning on their cages. Several leaning tree cages were also observed within Planting Area #4, between Plots 1-W-2 and 1-W-3. The leaning cages will be repaired or replaced during routine tree cage maintenance activities as described in Section 4.

The results of the meander survey indicated that the monitoring plots were representative of the monitoring areas, and that the vegetation was generally growing well. It was particularly noted that the black willow specimens on the west side of the river were growing very well.

3.1.2 Non-Riverbank Plots

Table 3 presents a summary of the quantitative assessment results for the non-riverbank plantings. All of the trees planted on Parcel I8-24-1 were alive and in good condition with the exception of two dead sugar maples (of the 11 planted). Some field bindweed (*Convolvulus arvensis*), an invasive plant species, was observed growing on a few of the Fraser firs and eastern Canadian hemlocks. These were removed by hand by the monitoring crew. Table 4 presents a summary of the herbaceous vegetation and invasive species cover findings at this property. As shown there, herbaceous vegetation cover was estimated to be greater than 95%, and the invasive plant species cover was estimated to be less than 5%, meeting their respective Maintenance Standards. At Parcel I9-5-13, all 25 of the dark American arborvitae were found to be alive and in good condition.

Year 2008 is the final year for the scheduled monitoring of the non-riverbank plantings on Parcels I8-24-1 and I9-5-13. Apart from the two dead sugar maple trees on Parcel I8-24-1, the non-riverbank re-vegetation effort for these two properties is deemed successful, and monitoring will be discontinued. However, following replanting of the two sugar maples on Parcel I8-24-1, those two replanted trees will be monitored for an additional two years (2010 and 2011).

3.2 Phase 2 – Elm Street to Dawes Avenue

Phase 2 includes the following monitoring plots (Figure 3):

- 2-W-1 = Trees only
- 2-W-2 = Trees only
- 2-W-3 = Trees and shrubs
- 2-E-1 = Trees and shrubs
- 2-E-2 = Trees only
- 2-E-3 = Trees only

Table 1 presents a summary of the total riverbank trees and shrubs counted in Phase 2. Table 2 presents a summary of the survivorship for riverbank trees and shrubs as percentages of the target density in accordance with the PRSC Plan Maintenance Standards. These results indicate that, with the exception of trees in Plot 2-E-1, the trees and shrubs in the riverbank monitoring plots exceeded their target densities and met the minimum 80% survival criterion. The individual percent-of-target densities for trees ranged from 77% (Plot 2-E-1) to 288% (Plot 2-W-3). However, as provided in the PRSC Plan (p. 3-12), the Maintenance Standards apply to the overall monitoring areas, not to individual monitoring plots. In this case, the average percent densities for trees in the Phase 2 monitoring areas met the 80% Maintenance Standard. These average percent-of-target densities were 111% for the east side of the river and 176% for the west side, with an overall average of 143% for the entire Phase 2 sub-reach.

The individual percent-of-target densities for shrubs ranged from 111% (Plot 2-E-1) to 187% (Plot 2-W-3). Since these two monitoring plots were the only plots on the east and west sides of the river in Phase 2, the average percent-of-target densities for the monitoring areas are the same. The overall average percent-of-target density for the entire Phase 2 sub-reach was 149%.

As shown in Table 4, the herbaceous vegetation cover for all of the monitoring plots in Phase 2 was estimated to be greater than 95%, and the invasive plant species cover was estimated to be less than 5%, thus meeting their respective Maintenance Standards.

Two dead, unidentified, alternate-leaved planted trees were found in Plot 2-W-1; however, numerous volunteer specimens of eastern cottonwood exceeding two feet in height were also observed, increasing the total tree count for this plot. Two black willow tree cages, one box elder tree cage, and one eastern cottonwood tree cage were found to be knocked down within

Planting Areas 13, 13A and 14, located between Plots 2-E-2 and 2-E-3. These cages will be repaired or replaced during routine tree cage maintenance activities as described in Section 4.

The results of the meander survey indicated that the monitoring plots were representative of the monitoring areas, and that the vegetation was generally growing well.

3.3 Phase 3 – Dawes Avenue to Pomeroy Avenue

Phase 3 includes the following monitoring plots (Figure 4):

- 3-W-1 = Trees and shrubs
- 3-W-2 = Trees and shrubs
- 3-W-3 = Trees and shrubs
- 3-E-1 = Trees and shrubs
- 3-E-2 = Trees only
- 2-E-3 = Trees and shrubs

Table 1 presents a summary of the total riverbank trees and shrubs counted in Phase 3. Table 2 presents a summary of the survivorship for riverbank trees and shrubs as percentages of the target density in accordance with the PRSC Plan Maintenance Standards. These results indicate that the trees and shrubs in the riverbank monitoring plots exceeded their target densities and met the minimum 80% survival criterion. The individual percent-of-target densities for trees ranged from 89% (Plot 3-W-2) to 189% (Plot 3-E-2). The average percent-of-target densities for trees in the Phase 3 monitoring areas were 105% for the west side and 145% for the east side, with an overall overage of 125% for the entire Phase 3 sub-reach.

The individual percent target-of-densities for shrubs ranged from 92% (Plot 3-W-2) to 159% (Plot 3-W-1). The average percent-of-target densities for the Phase 3 monitoring areas were 116% for the west side of the river and 138% for the east side, with an overall average of 125% for Phase 3.

As shown in Table 4, with the exception of Plot 3-W-3, the herbaceous vegetation cover for all of the monitoring plots was estimated to be greater than 95%, meeting its Maintenance

Standard. In Plot 3-W-3, approximately 7.5% of the area consisted of bare soil (Photo 28 in Appendix A), which appeared to be the result of a combination of short mowing and high landowner foot traffic into the area. The invasive plant species cover was estimated to be less than 5% in all of the plots, meeting its Maintenance Standard.

A community consisting of Canada thistle (*Cirsium arvense*), bittersweet nightshade (*Solanum dulcamara*), and field bindweed was found in Planting Area 21, situated downstream of Plot 3-W-2. Since this is an area to which access was granted just before the July monitoring event, there was no prior opportunity to control the invasive species in this area.

The results of the meander survey indicated that the monitoring plots were representative of the monitoring areas, and that the vegetation was generally growing well.

3.4 Phase 4 – Pomeroy Avenue to the Confluence

Phase 4 includes the following monitoring plots (Figure 5):

- 4-W-1 = Trees only
- 4-W-2 = Trees only
- 4-W-3 = Trees and shrubs
- 4-E-1 = Trees only
- 4-E-2 = Trees and shrubs
- 4-E-3 = Trees and shrubs
- Non-riverbank Parcel I7-1-101 (Fred Garner Park)
- Non-riverbank Parcel I6-1-66
- Non-riverbank Parcel I6-1-67

3.3.1 Riverbank Monitoring Plots

Table 1 presents a summary of the total riverbank trees and shrubs counted in Phase 4. Table 2 presents a summary of the survivorship for riverbank trees and shrubs as percentages of the target density in accordance with the PRSC Plan Maintenance Standards. These results

indicate that the trees and shrubs in the riverbank monitoring plots exceeded their target densities and met the minimum 80% survival criterion. The individual percent-of-target densities for trees ranged from 105% (Plot 4-W-2) to 224% (Plots 4-E-2 and 4-E-3). The average percent-of-target densities for trees in the Phase 4 monitoring areas were 118% for the west side of the river and 200% for the east side, with an overall average of 159% for the entire Phase 4 sub-reach.

The individual percent-of-target densities for shrubs ranged from 88% (Plot 4-W-3) to 203% (Plot 4-E-3). The average percent-of-target densities for the Phase 4 monitoring areas were 88% for the west side of the river (where Plot 4-W-3 is the only monitoring plot) and 185% for the east side, with an overall average for the entire Phase 4 of 153%.

As shown in Table 4, the herbaceous vegetation cover for all of the monitoring plots in Phase 4 was estimated to be greater than 95%, and the invasive plant species cover was estimated to be less than 5%, thus meeting their respective Maintenance Standards.

The results of the meander survey indicated that the monitoring plots were representative of the monitoring areas, and that the vegetation was generally growing well.

3.3.2 Non-Riverbank Plots

Table 3 presents a summary of the quantitative assessment results for the non-riverbank plantings. On Parcel I7-1-101 (Fred Garner Park), all of the trees with a 100% survival Maintenance Standard were found to be alive and in good condition, thus meeting that standard. For those plantings on Parcel I7-1-101 with an 80% survival Maintenance Standard, the percent survival for trees was consistently 100%, and the percent survival for shrubs ranged from 84% (Area E) to 88% (Area C/D²), thus meeting the applicable standard. On this parcel, a moderate amount of Oriental bittersweet was observed within Area B, and a large number of box elder and eastern cottonwood volunteers was observed in Area E.

² Due to the close proximity of Areas C and D, these two planting areas were combined for the quantitative assessment.

On Parcels I6-1-66 and I6-1-67, which have a 100% survival Maintenance Standard for trees and shrubs, all of the trees on both properties were alive and in good condition, thus meeting the applicable standards. While a few of the white pine specimens on these properties exhibited some herbivory damage from deer, they are expected to continue to survive and grow. For shrubs, all of the shrubs on both parcels met the 100% survival standard.

As shown in Table 4, at each of these non-riverbank properties, the herbaceous vegetation cover was estimated to be greater than 95%, and the invasive plant species cover was estimated to be less than 5%, thus meeting their respective Maintenance Standards.

4.0 CONCLUSIONS AND FOLLOW-UP ACTIONS

The results of the summer 2008 monitoring visit for the 1½ Mile Reach revealed the following major conclusions:

- With the exception of trees in Plot 2-E-1 (Phase 2), all of the riverbank monitoring plots showed a minimum of 80% survival of trees and shrubs and most showed densities exceeding their target densities. Although the trees in Plot 2-E-1 showed a percent-of-target survival of 77%, the trees in the Phase 2 monitoring areas met the Maintenance Standard of 80% survival, because the average percent-of-target densities were 111% for the east side of the river and 176% for the west side.
- With the exception of Plot 3-W-3, the herbaceous vegetation cover for all of the riverbank monitoring plots met the Maintenance Standard by exceeding 95% areal cover. The herbaceous cover for Plot 3-W-3 was estimated at 92.5%.
- All of the riverbank monitoring plots met the Maintenance Standard for invasive plant species by exhibiting less than 5% areal cover.
- For the non-riverbank planting areas, each of the properties examined met the applicable Maintenance Standard for survival of trees and shrubs with the exception of trees at Parcel I8-24-1, which showed 82% survival due to the loss of two sugar maples. In addition, each of these properties met the Maintenance Standards for herbaceous vegetation cover and invasive species cover.

The survey also indicated that the designated riverbank monitoring plots are representative of the overall monitoring areas that they were designed to represent. Further, there were no obvious gaps in the red-osier dogwood band at the bottom of the re-vegetated slope, and no significant areas of bare soil were observed.

Based on the results of the 2008 summer monitoring assessment, the following repair and maintenance actions will be performed:

- The two dead sugar maples in the non-riverbank plot on Parcel I8-24-1 will be replaced.

-
- The leaning and knocked-down tree cages observed in Planting Areas #4, #13, #13A, #14 and within Plot 1-W-3 will be repaired or replaced.
 - The portion of the community of Canada thistle, bittersweet nightshade, and field bindweed near Planting Area 21 will be removed.

In addition to these items, a number of other findings from the 2008 summer monitoring assessment have been reviewed, for which no action is recommended at this time. Specifically:

- No action is recommended for the single silver maple specimen in Plot 1-W-1 which appeared to be suffering from water stress. The percent target density for trees in this plot was calculated to be 279%, far above the Maintenance Standard.
- No action is recommended for the bare soil area within Plot 3-W-3 as this minor condition is merely the result of land use by the property owner and is not expected to cause a major adverse effect on the remainder of the vegetation within this plot.
- No action is recommended for the relatively minor herbivory damage found on some of the white pines on Parcels I6-6-66 and I6-6-67 as these trees are expected to continue to survive and grow.

The PRSC Plan provides that any necessary corrective actions must be performed within 30 days of EPA's approval of the proposed actions or in accordance with a schedule approved by EPA. For the 2008 monitoring year, the repair and maintenance activities identified above will be performed within 30 days of EPA's approval of this report. Further, within 30 days after completion of those corrective actions, as required by the PRSC Plan, GE will submit a report to EPA describing the corrective action and any required follow-up measures. In addition to these activities, GE has implemented an ongoing program of invasive species control and tree cage maintenance in May 2008 and will continue this program until the end of the growing season in October.

The next monitoring visit (i.e., spring monitoring visit) is scheduled for May 2009 and will examine the 1½ Mile Reach qualitatively.

5.0 REFERENCES

Weston. 2008. Interim Post-Removal Site Control Plan, 1½-Mile Removal Reach, General Electric (GE)–Pittsfield/Housatonic River Site. Prepared by Weston Solutions for the U.S. Army Corps of Engineers and the U.S. Environmental Protection Agency. DCN: GE-051908-ADWJ. May 2008.

TABLES

Table 1
Riverbank Plant Counts
Summer 2008 Re-Vegetation Monitoring Report
1½ Mile Reach
GE-Pittsfield/Housatonic River Site, Pittsfield, MA

Date of Monitoring: July 22-23, 2008

Phase No.	Upper & Lower Boundaries	Bank	Plot No.	Dimensions			Trees					Shrubs					Total Plants		
				L(ft)	W (ft)	Area (ft ²)	BW	SM	EC	BE	Total Trees	ROD	SD	WH	CC	NA		Total Shrubs	
1	Lyman-Elm	West	1-W-1	61	9.5	580	3	10	7	6	26							26	
	Lyman-Elm	West	1-W-2	32	30.7	982	1	10	7	4	22							22	
	Lyman-Elm	West	1-W-3	67	21.4	1434	5	3	9	5	22	8	4	4	4	4	24	46	
	Lyman-Elm	East	1-E-1	139	11.8	1640	7	3	8	5	23	16	13	4	2	5	40	63	
	Lyman-Elm	East	1-E-2	45	34.4	1548	8	6	8	12	34							34	
	Lyman-Elm	East	1-E-3	70	17.7	1239	1			6	7	12	4			4		20	27
2	Elm-Dawes	West	2-W-1	63	16.8	1058	3	5	7	5	20							20	
	Elm-Dawes	West	2-W-2	17	53.7	913	3	1	6	8	18							18	
	Elm-Dawes	West	2-W-3	66	8.7	574							10			5	3	18	37
	Elm-Dawes	East	2-E-1	33	27.1	894	1		7	3	11	6	4	5	4	3	22	33	
	Elm-Dawes	East	2-E-2	27	33.8	913		4	12	3	19							19	
	Elm-Dawes	East	2-E-3	141	9.8	1382	2	6	10	10	28							28	
3	Dawes-Pomeroy	West	3-W-1	212	6	1272	2	4	1	8	15	7	21		4	2	34	49	
	Dawes-Pomeroy	West	3-W-2	67	14	938	2	3	1	2	8	6	4	2		3	15	23	
	Dawes-Pomeroy	West	3-W-2	105	13	1365	5	4	1	2	12	11		4	4	2	21	33	
	Dawes-Pomeroy	East	3-E-1	145	10	1450	1	5	4	7	17		23	1	6	3	33	50	
	Dawes-Pomeroy	East	3-E-2	38	9.7	369			7	1	8							8	
	Dawes-Pomeroy	East	3-E-3	77	10	770	5	5	1	3	14	10		2	3	3	18	32	
4	Pomeroy-Confluence	West	4-W-1	50	18	900	5	5	2	6	18							18	
	Pomeroy-Confluence	West	4-W-2	50	25	1250	1	4	10	6	21							21	
	Pomeroy-Confluence	West	4-W-3	74	12	888	2	3	11	2	18	5	8	2	3	4	22	40	
	Pomeroy-Confluence	East	4-E-1	50	8	400	2	1	2	2	7							7	
	Pomeroy-Confluence	East	4-E-2	50	10	500	3	2	4	9	18		5	2	4	3	14	32	
	Pomeroy-Confluence	East	4-E-3	50	10	500	5	4	3	6	18	5	4		4	4	17	35	

Species Legend

BW = black willow

SM = silver maple

EC = eastern cottonwood

BE = box elder

ROD = red-osier dogwood

SD = silky dogwood

WH = winterberry holly

CC = choke cherry

NA = northern arrowwood

Table 2
Riverbank Monitoring Plot Survivorship
Summer 2008 Re-Vegetation Monitoring Report
1½ Mile Reach
GE-Pittsfield/Housatonic River Site, Pittsfield, MA

Date of Monitoring: July 22-23, 2008

Phase No.	Plot No.	Type	Shrub Clumps						Trees				≥80% Survival			
			L (ft)	W (ft)	Area (ft ²)	Target Density (per acre)	2008 Density (per acre)	% of Target Density	Area (ft ²)	Target Density (per acre)	2008 Density (per acre)	% of Target Density	Shrubs	Trees		
1	1-W-1	Regular						580	700	1954	279	Yes	Yes			
	1-W-2	Regular					982	700	975	139	Yes	Yes				
	1-W-3	Regular			264*	2723	3960	145	1434	700	668	95	Yes	Yes		
	Average (west side)							NA				171	Yes	Yes		
	1-E-1	Regular			484*	2723	3600	132	1640	700	611	87	Yes	Yes		
	1-E-2	Regular						1548	700	957	137	Yes	Yes			
	1-E-3	Geoweb	70	17.7	1239	730	703	96	1239	210**	246	117	Yes	Yes		
	Average (east side)											114	Yes	Yes		
Average (Phase 1)											125	143	Yes	Yes		
2	2-W-1	Regular						1058	700	823	118	Yes	Yes			
	2-W-2	Regular					913	700	859	123	Yes	Yes				
	2-W-3	Geoweb	66	8.7	574	730	1366	187	574	500	1441	288	Yes	Yes		
	Average (west side)							NA				176	Yes	Yes		
	2-E-1	Regular			316*	2723	3033	111	894	700	536	77	Yes	No		
	2-E-2	Regular						913	700	907	130	Yes	Yes			
	2-E-3	Regular						1382	700	883	126	Yes	Yes			
	Average (east side)							NA				111	Yes	Yes		
Average (Phase 2)											149	143	Yes	Yes		
3	3-W-1	Geoweb	212	6	1272	730	1164	159	1272	411**	514	125	Yes	Yes		
	3-W-2	Regular	66	14	924	730	707	97	938	418**	372	89	Yes	Yes		
	3-W-3	Regular	105	13	1365	730	670	92	1365	383**	383	100	Yes	Yes		
	Average (west side)											116		105	Yes	Yes
	3-E-1	Regular	145	10	1450	730	991	136	1450	391**	511	131	Yes	Yes		
	3-E-2	Geoweb						369	500	945	189	Yes	Yes			
	3-E-3	Regular	77	10	770	730	1018	139	770	679**	792	117	Yes	Yes		
	Average (east side)											138		145	Yes	Yes
Average (Phase 3)											125		125	Yes	Yes	
4	4-W-1	Regular						900	700	871	124	Yes	Yes			
	4-W-2	Regular					1250	700	732	105	Yes	Yes				
	4-W-3	Regular	40	10	400	2723	2396	88	888	700	883	126	Yes	Yes		
	Average (west side)											NA		118	Yes	Yes
	4-E-1	Geoweb						400	500	762	152	Yes	Yes			
	4-E-2	Regular	50	10	500	730	1220	167	500	700	1568	224	Yes	Yes		
	4-E-3	Regular	50	10	500	730	1481	203	500	700	1568	224	Yes	Yes		
	Average (east side)											185		200	Yes	Yes
Average (Phase 4)											153		159	Yes	Yes	

Notes: * Irregularly-shaped shrub clump.

** Denotes plots where survivorship criterion is based on actual number of trees planted, as shown in the column to the right.

Target Planting Densities

	Normal	Geoweb	
Trees	700	500	per acre
Shrubs	730	730	per acre
Total	1430	1230	per acre

1-E-3: 6 trees originally planted within plot

3-W-1: 13 trees originally planted within plot

3-W-2: 9 trees originally planted within plot

3-W-3: 12 trees originally planted within plot

3-E-1: 14 trees originally planted within plot

3-E-3: 12 trees originally planted within plot

Table 3
Non-Riverbank Re-vegetation Monitoring Summary
Summer 2008 Re-Vegetation Monitoring Report
1½ Mile Reach
GE-Pittsfield/Housatonic River Site, Pittsfield, MA

Date of M July 22-23, 2008

Phase No.	Parcel ID	Quantity of Plants Planted	Plant Type and Species	Common Name	Size/Stock	Comments	Monitoring Requirements	Maintenance Standard	Number of live trees/shrubs	% Survival	Meets Maintenance Standard (YES/NO)			
4	17-1-101	Area E (Trees and Shrubs)												
		5	<i>Pinus strobus</i>	White Pine	8-10 ft.	Area E	2008 to 2011	80%	96	88	YES			
		3	<i>Betula papyrifera</i>	Paper Birch	8-10 ft.	Area E	2008 to 2011	80%						
		40	<i>Acer saccharinum</i>	Silver Maple	1.5"-2" cal	Area E	2008 to 2011	80%						
		30	<i>Acer rubrum</i>	Red Maple	1.5"-2" cal	Area E	2008 to 2011	80%						
		7	<i>Salix nigra</i>	Black Willow	1-gal	Area E	2008 to 2011	80%						
		16	<i>Populus deltoides</i>	Eastern Cottonwood	1-gal	Area E	2008 to 2011	80%						
		8	<i>Acer negundo</i>	Box Elder	1-gal	Area E	2008 to 2011	80%						
		Total	109											
		17-1-101	37	<i>Cornus amomum</i>	Silky Dogwood	1-gal	Area E	2008 to 2011				80%	127	84
		38	<i>Viburnum dentatum</i>	Northern Arrowwood	1-gal	Area E	2008 to 2011	80%						
		38	<i>Ilex verticillata</i>	Winterberry Holly	1-gal	Area E	2008 to 2011	80%						
		38	<i>Prunus virginiana</i>	Chokecherry	1-gal	Area E	2008 to 2011	80%						
	Total	151												
	Parcel I6-1-67													
	16-1-67	3	<i>Amelanchier sp.</i>	Serviceberry (shadbush)	6-8 ft.		2008	100%	3	100	YES			
		2	<i>Fraxinus pennsylvanica</i>	Green Ash	6-8 ft.		2008	100%	2	100	YES			
		3	<i>Betula papyrifera</i>	White Birch	6-8 ft.		2008	100%	3	100	YES			
		7	<i>Pinus strobus</i>	White Pine	5-6 ft.		2008	100%	7	100	YES			
		2	<i>Quercus rubra</i>	Red Oak	6-8 ft.		2008	100%	2	100	YES			
		2	<i>Abies balsamea</i>	Balsam Fir	5-6 ft.		2008	100%	2	100	YES			
	2	<i>Acer rubrum</i>	Red Maple	6-8 ft.		2008	100%	2	100	YES				
Total	21													
16-1-67	13	<i>Vaccinium macrocarpon</i>	American Cranberry	3-4 ft.		2008	100%	44	100	YES				
	14	<i>Viburnum dentatum</i>	Northern Arrowwood	3-4 ft.		2008	100%							
	2	<i>Cornus sericea</i>	Red Osier Dogwood	1-gal		2008	100%							
	2	<i>Cornus amomum</i>	Silky Dogwood	1-gal		2008	100%							
	4	<i>Ilex verticillata</i>	Winterberry Holly	1-gal		2008	100%							
	4	<i>Prunus virginiana</i>	Chokecherry	1-gal		2008	100%							
	5	<i>Viburnum dentatum</i>	Northern Arrowwood	1-gal		2008	100%							
Total	44													
Parcel I6-1-66														
16-1-66	7	<i>Amelanchier sp.</i>	Serviceberry (shadbush)	6-8 ft.		2008	100%	7	100	YES				
	6	<i>Fraxinus pennsylvanica</i>	Green Ash	6-8 ft.		2008	100%	6	100	YES				
	4	<i>Betula papyrifera</i>	White Birch	6-8 ft.		2008	100%	4	100	YES				
	8	<i>Pinus strobus</i>	White Pine	5-6 ft.		2008	100%	8	100	YES				
	9	<i>Quercus rubra</i>	Red Oak	6-8 ft.		2008	100%	9	100	YES				
	4	<i>Abies balsamea</i>	Balsam Fir	5-6 ft.		2008	100%	4	100	YES				
	12	<i>Acer rubrum</i>	Red Maple	6-8 ft.		2008	100%	12	100	YES				
Total	50													
16-1-66	8	<i>Vaccinium macrocarpon</i>	American Cranberry	3-4 ft.		2008	100%	37	100	YES				
	7	<i>Viburnum dentatum</i>	Northern Arrowwood	3-4 ft.		2008	100%							
	6	<i>Cornus amomum</i>	Silky Dogwood	1-gal		2008	100%							
	5	<i>Ilex verticillata</i>	Winterberry Holly	1-gal		2008	100%							
	5	<i>Prunus virginiana</i>	Chokecherry	1-gal		2008	100%							
	6	<i>Viburnum dentatum</i>	Northern Arrowwood	1-gal		2008	100%							
Total	37													

* Planting area located on Western Mass Electric Company (WMECO) Right of Way (ROW). WMECO requirements do not allow tree planting in ROW areas; therefore, only shrubs were planted.

ft. = feet
gal = gallon
" = inches

Table 4
Riverbank and Non-Riverbank Herbaceous and Invasive Plant Cover
Summer 2008 Re-Vegetation Monitoring Report
1½ Removal Reach
GE-Pittsfield/Housatonic River Site, Pittsfield, MA

Date of Monitoring: July 22-23, 2008

Phase No.	Monitoring Plot/Area	Bank	Plot No.	Herbaceous Cover (%)	Invasive Plant Cover (%)
1	Lyman-Elm	West	1-W-1	>95	<5
	Lyman-Elm	West	1-W-2	>95	<5
	Lyman-Elm	West	1-W-3	>95	<5
	Lyman-Elm	East	1-E-1	>95	<5
	Lyman-Elm	East	1-E-2	>95	<5
	Lyman-Elm	East	1-E-3	>95	<5
	Parcel I8-24-1			>95	<5
2	Elm-Dawes	West	2-W-1	>95	<5
	Elm-Dawes	West	2-W-2	>95	<5
	Elm-Dawes	West	2-W-3	>95	<5
	Elm-Dawes	East	2-E-1	>95	<5
	Elm-Dawes	East	2-E-2	>95	<5
	Elm-Dawes	East	2-E-3	>95	<5
3	Dawes-Pomeroy	West	3-W-1	>95	<5
	Dawes-Pomeroy	West	3-W-2	>95	<5
	Dawes-Pomeroy	West	3-W-3	92.5	<5
	Dawes-Pomeroy	East	3-E-1	>95	<5
	Dawes-Pomeroy	East	3-E-2	>95	<5
	Dawes-Pomeroy	East	3-E-3	>95	<5
4					
	Pomeroy-Confluence	West	4-W-1	>95	<5
	Pomeroy-Confluence	West	4-W-2	>95	<5
	Pomeroy-Confluence	West	4-W-3	>95	<5
	Pomeroy-Confluence	East	4-E-1	>95	<5
	Pomeroy-Confluence	East	4-E-2	>95	<5
	Pomeroy-Confluence	East	4-E-3	>95	<5
	Parcel I6-1-66			>95	<5
	Parcel I6-1-67			>95	<5
FGP (Parcel I7-1-101)			>95	<5	

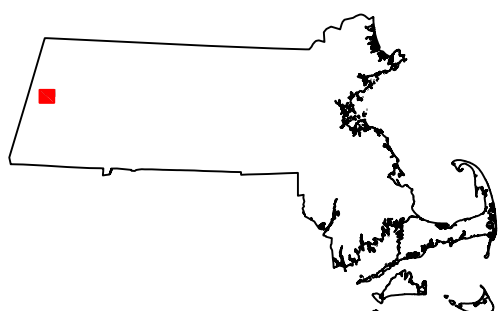
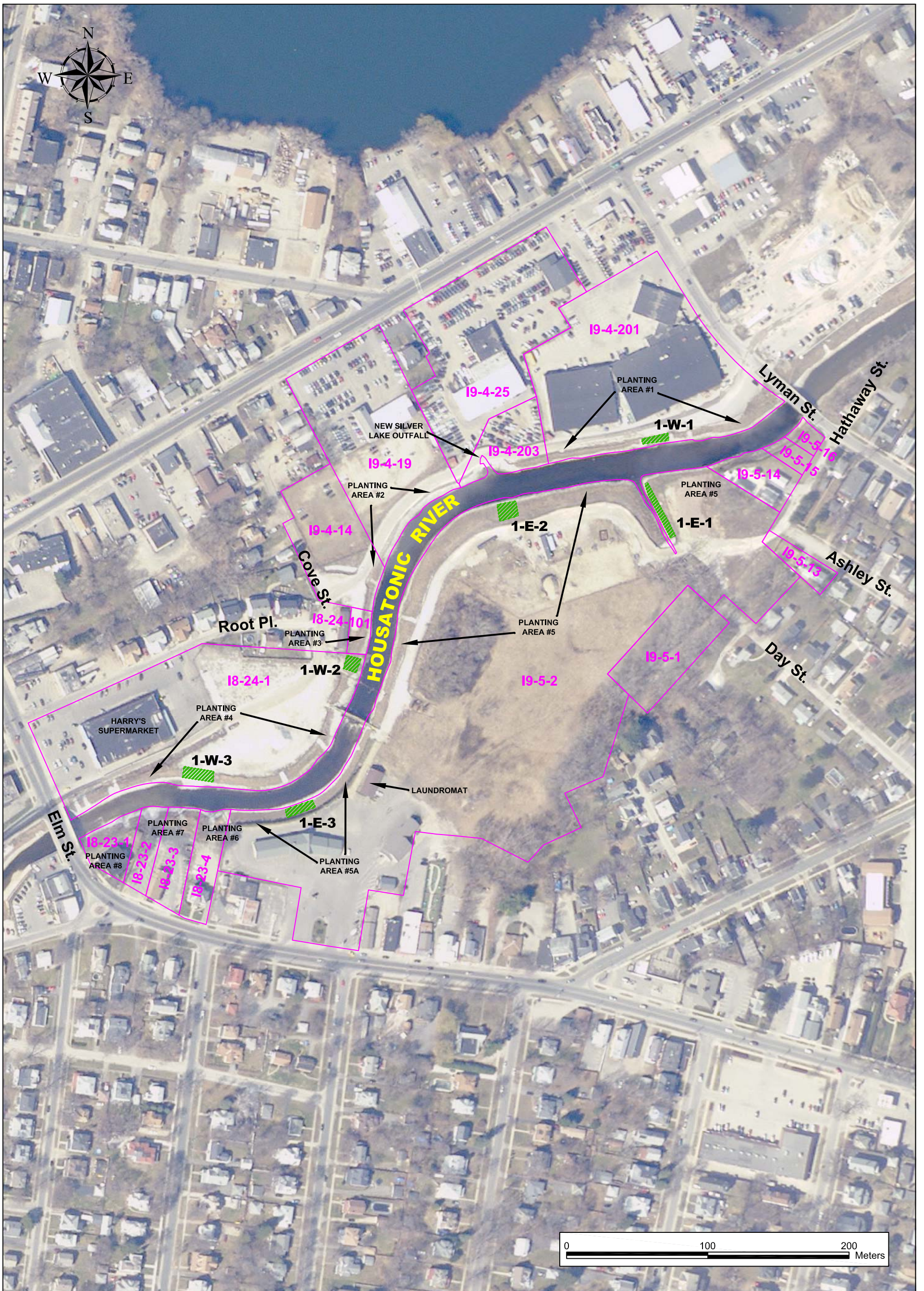
FIGURES



Image Source:
 Office of Geographic and Environmental Information (MassGIS)
 Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs
 1:5000 Color Ortho Imagery, 2005



Figure 1
 Study Area Location Map
 1 1/2 - Mile Reach of the Housatonic River
 Revegetation Monitoring Report
 Pittsfield, MA

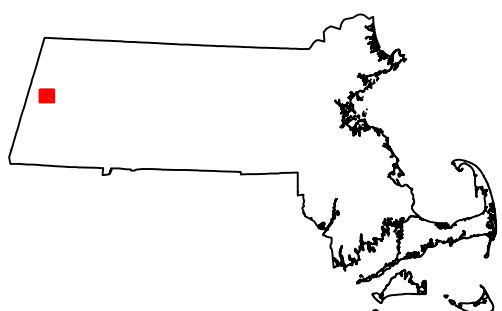
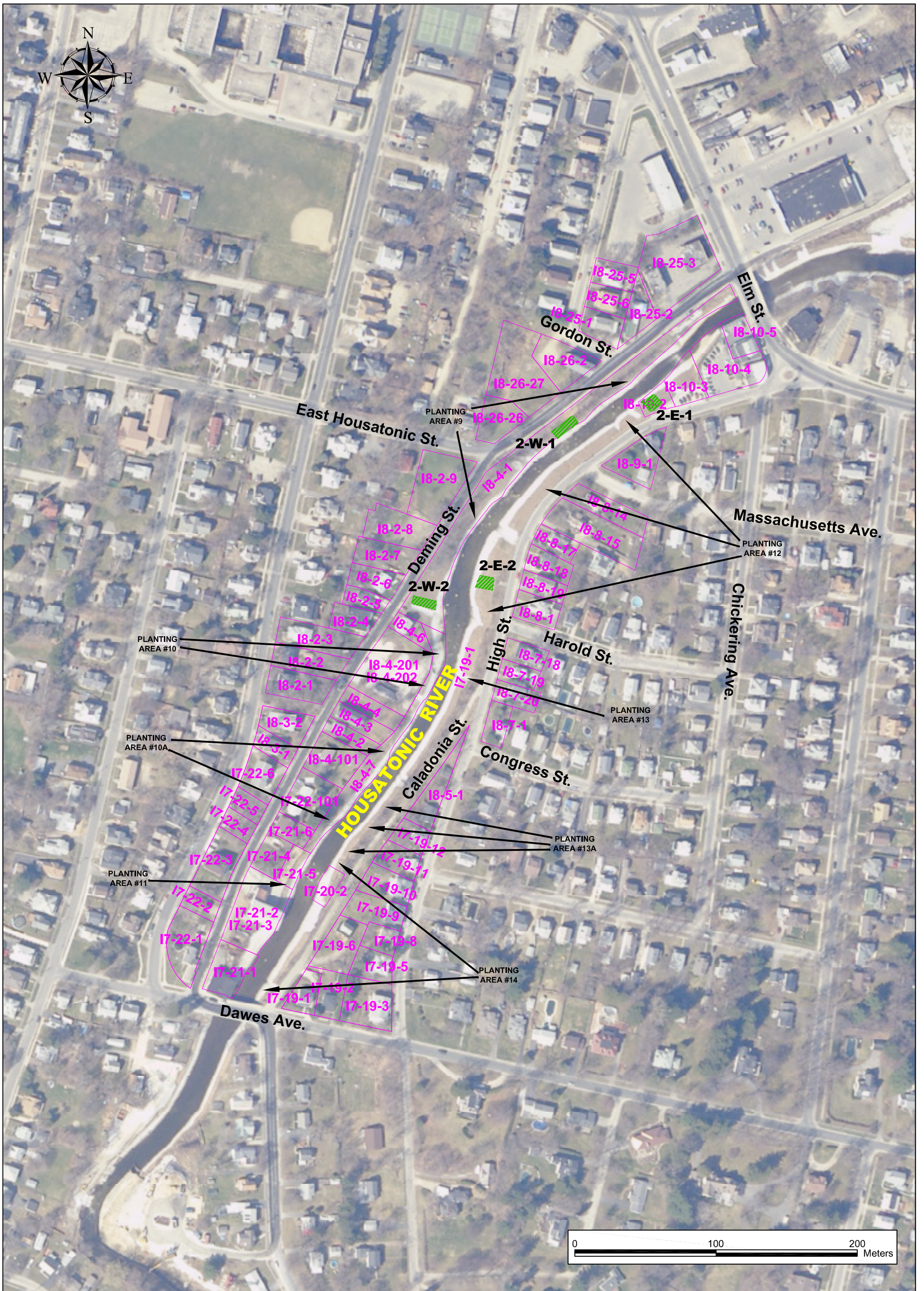


- LEGEND**
- 19-4-19 PARCEL ID
 - APPROXIMATE PROPERTY LINE
 - 1-W-2 VEGETATIVE MONITORING PLOT ID
 - VEGETATIVE MONITORING PLOT

Image Source:
Office of Geographic and Environmental Information (MassGIS)
Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs
1:5000 Color Ortho Imagery, 2005



Figure 2
Phase 1 Study Area Location Map
1 1/2 - Mile Reach of the Housatonic River
Revegetation Monitoring Report
Pittsfield, MA

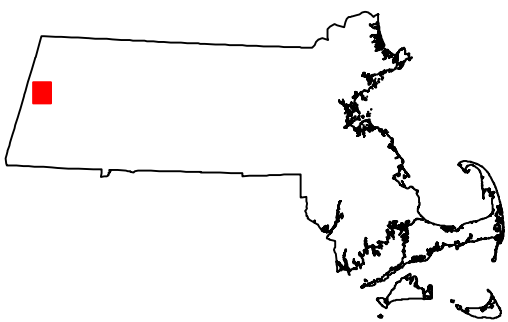
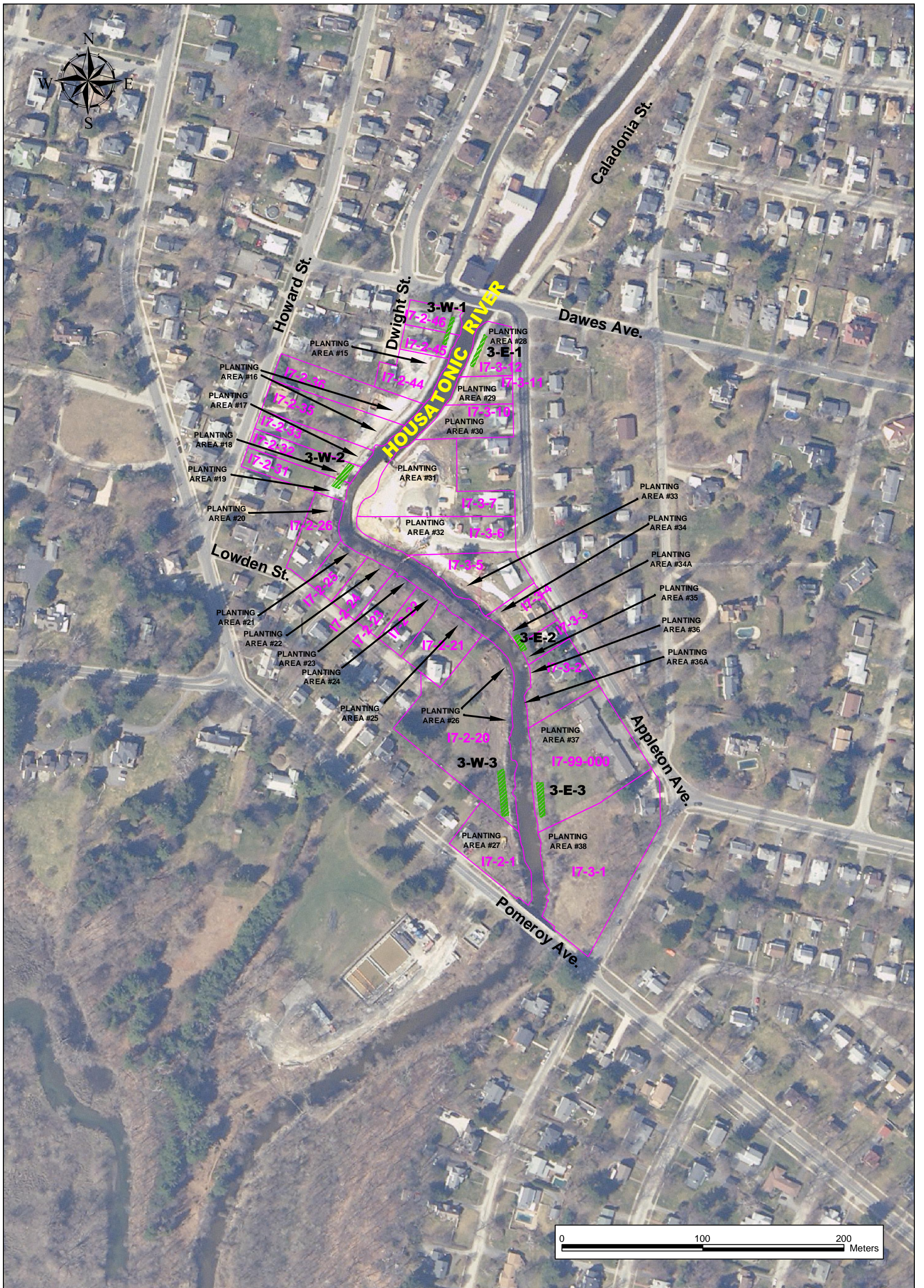


- LEGEND**
- 18-4-19 PARCEL ID
 - APPROXIMATE PROPERTY LINE
 - 1-W-2 VEGETATIVE MONITORING PLOT ID
 - VEGETATIVE MONITORING PLOT

Image Source:
Office of Geographic and Environmental Information (MassGIS)
Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs
1:5000 Color Ortho Imagery, 2005



Figure 3
Phase 2 Study Area Location Map
1 1/2 - Mile Reach of the Housatonic River
Revegetation Monitoring Report
Pittsfield, MA



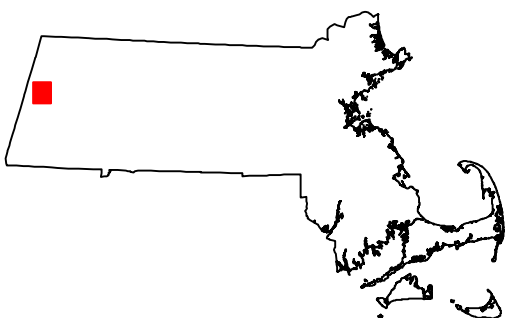
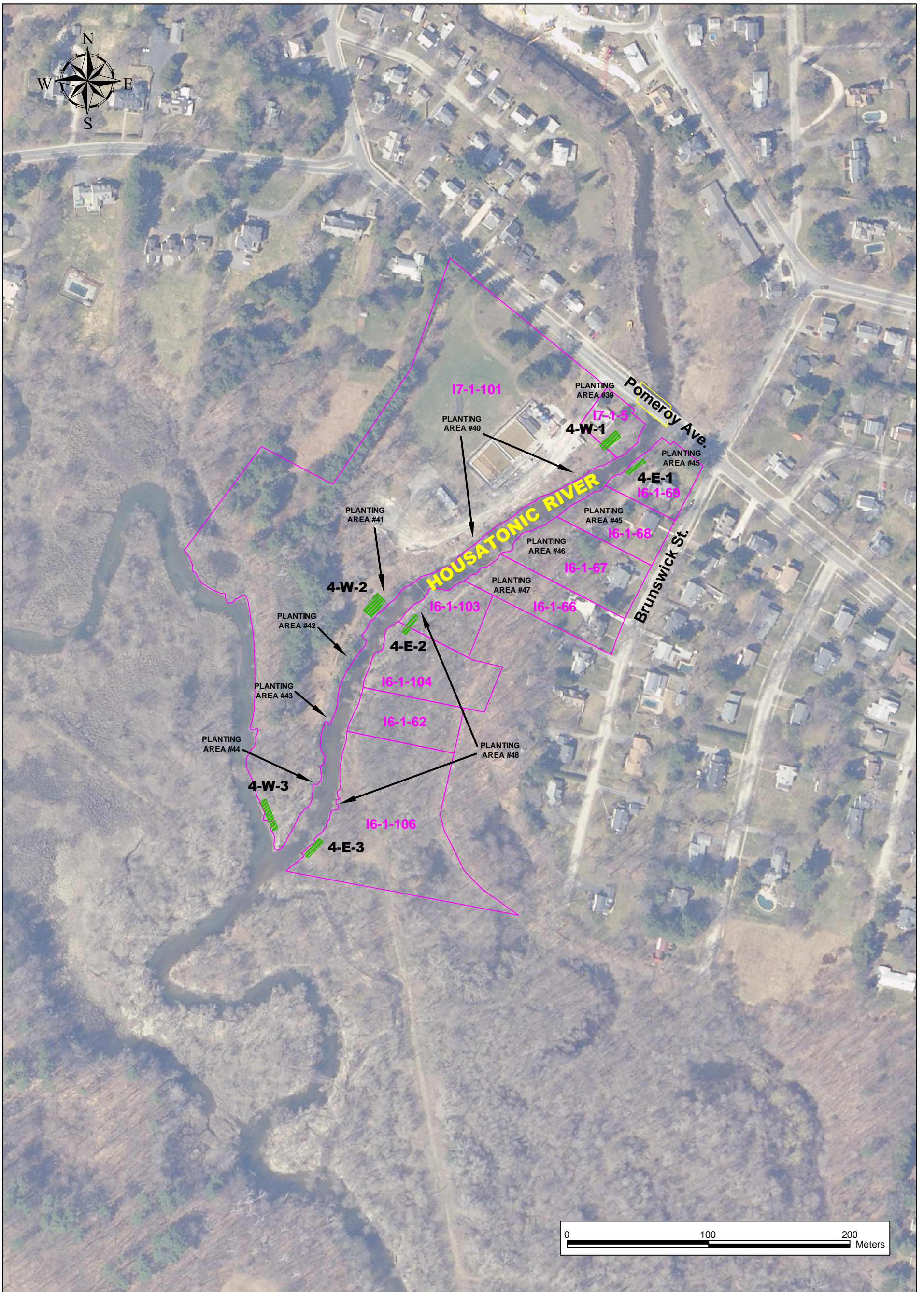
LEGEND

- ▬ 19-4-19 PARCEL ID
- ▬ APPROXIMATE PROPERTY LINE
- ▬ 1-W-2 VEGETATIVE MONITORING PLOT ID
- ▨ VEGETATIVE MONITORING PLOT

Image Source:
Office of Geographic and Environmental Information (MassGIS)
Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs
1:5000 Color Ortho Imagery, 2005



Figure 4
Phase 3 Study Area Location Map
1 1/2 - Mile Reach of the Housatonic River
Revegetation Monitoring Report
Pittsfield, MA



- LEGEND**
- 19-4-19 PARCEL ID
 - APPROXIMATE PROPERTY LINE
 - 1-W-2 VEGETATIVE MONITORING PLOT ID
 - VEGETATIVE MONITORING PLOT

Image Source:
Office of Geographic and Environmental Information (MassGIS)
Commonwealth of Massachusetts Executive Office of Energy and Environmental Affairs
1:5000 Color Ortho Imagery, 2005



Figure 5
Phase 4 Study Area Location Map
1 1/2 - Mile Reach of the Housatonic River
Revegetation Monitoring Report
Pittsfield, MA

APPENDIX A
Photo-Documentation

Phase 1
Lyman Street to Elm Street



Photo 1: Monitoring Plot 1-W-1, viewed from the west, facing east (upstream).



Photo 2: Monitoring Plot 1-W-1, viewed from the east, facing west (downstream).



Photo 3: Monitoring Plot 1-W-2.



Photo 4: Alternate view of Monitoring Plot 1-W-2.



Photo 5: Monitoring Plot 1-W-3, viewed from upslope, facing downhill.



Photo 6: Monitoring Plot 1-W-3, viewed from the southeast, facing northwest.



Photo 7: Monitoring Plot 1-E-1, viewed from the southeast, facing northwest..



Photo 8: Monitoring Plot 1-E-1, viewed from the northeast, facing southwest.



Photo 9: Monitoring Plot 1-E-2.



Photo 10: Alternate view of Monitoring Plot 1-E-2.



Photo 11: Monitoring Plot 1-E-3, viewed from the east, facing west (downstream).



Photo 12: Monitoring Plot 1-E-3, viewed from the west, facing east (upstream).



Photo 13: Non-riverbank monitoring area (Parcel No. I8-24-1).



Photo 14: Alternate view of non-riverbank monitoring area (Parcel No. I8-24-1).



Photo 15: Non-riverbank monitoring area (Parcel No. I9-5-13).



Photo 16: Alternate view of non-riverbank monitoring area (Parcel No. I9-5-13).

Phase 2

Elm Street to Dawes Avenue



Photo 17: Monitoring Plot 2-W-2, viewed from upslope facing downhill.



Photo 18: Alternate view of Monitoring Plot 2-W-2.



Photo 19: Monitoring Plot 2-W-3.



Photo 20: Alternate view of Monitoring Plot 2-W-3.



Photo 21: Monitoring Plot 2-E-1, viewed from the south, facing north (upstream).



Photo 22: Monitoring Plot 2-E-3.

Phase 3

Dawes Avenue to Pomeroy Avenue



Photo 23: Monitoring Plot 3-W-1, viewed from the north, facing south (downstream).



Photo 24: Monitoring Plot 3-W-1, viewed from the south, facing north (upstream).



Photo 25: Monitoring Plot 3-W-2.



Photo 26: Alternate view of Monitoring Plot 3-W-2, viewed from the northeast, facing southwest (downstream).



Photo 27: Monitoring Plot 3-W-3, viewed from the north, facing south (downstream).



Photo 28: Bare ground areas within Monitoring Plot 3-W-3.



Photo 29: Monitoring Plot 3-E-1, viewed from the southwest, facing northeast (upstream).



Photo 30: Monitoring Plot 3-E-2.



Photo 31: Monitoring Plot 3-E-3, viewed from the southeast, facing northwest (upstream).



Photo 32: Alternate view of Monitoring Plot 3-E-3.

Phase 4

Pomeroy Avenue to the Confluence



Photo 33: Monitoring Plot 4-W-1, viewed from the northeast, facing southwest (downstream).



Photo 34: Alternate view of Monitoring Plot 4-W-1, viewed from the southwest, facing northeast (upstream).



Photo 35: Monitoring Plot 4-W-2, viewed from the north, facing south (downstream).



Photo 36: Alternate view of Monitoring Plot 4-W-2, viewed from the southwest, facing northeast (upstream).



Photo 37: Monitoring Plot 4-W-3, viewed from the south, facing north (upstream).



Photo 38: Alternate view of Monitoring Plot 4-W-3, viewed from the north, facing south (downstream).



Photo 39: Monitoring Plot 4-E-1, viewed from the southwest, facing northeast (upstream).



Photo 40: Alternate view of Monitoring Plot 4-E-1, viewed from the northeast, facing southwest (downstream).



Photo 41: Monitoring Plot 4-E-2.



Photo 42: Alternate view of Monitoring Plot 4-E-2.



Photo 43: Monitoring Plot 4-E-3.



Photo 44: Alternate view of Monitoring Plot 4-E-3.



Photo 45: Non-riverbank Monitoring Area A on Parcel No. I7-1-101.



Photo 46: Alternate view of non-riverbank Monitoring Area A on Parcel No. I7-1-101.



Photo 47: Row of 16 eastern hemlocks on Parcel No. I7-1-101.



Photo 48: Alternate view of the row of 16 eastern hemlocks on Parcel No. I7-1-101.



Photo 49: Non-riverbank Monitoring Area B on Parcel No. I7-1-101.



Photo 50: Alternate view of non-riverbank Monitoring Area B on Parcel No. I7-1-101.



Photo 51: Non-riverbank Monitoring Areas C and D on Parcel No. I7-1-101.



Photo 52: Non-riverbank Monitoring Areas C and D on Parcel No. I7-1-101.



Photo 53: Non-riverbank Monitoring Area E on Parcel No. I7-1-101.



Photo 54: Alternate view of non-riverbank Monitoring Area E on Parcel I7-1-101.



Photo 55: Non-riverbank monitoring area on Parcel No. I6-1-66.



Photo 56: Alternate view of non-riverbank monitoring area on Parcel No. I6-1-66.



Photo 57: Non-riverbank monitoring area on Parcel No. I6-1-67.



Photo 58: Alternate view of non-riverbank monitoring area on Parcel I6-1-67.

APPENDIX B

Field Data Forms

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

Page 1 of 24

Observer(s): Phil Pothamus, Chris Frank, Isabela Zepisek Jeff Laloy, Kevin Moore, Dean Tagliarino
 Date: 9/22/08
 Phase: 1 Flow @ Coltsville (cfs) _____ Weather: Sunny, 85°F 75°F
(PB)

Planting Area Location: 1
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 7187 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 101 Riverbank length (ft): 61 Width (ft): 9.5
 Slope length (ft): _____ Sample Area (sf): 582

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		3	Red-osier Dogwood	NA	NA
Silver Maple		10	Silky Dogwood	NA	NA
Eastern Cottonwood		7	Winterberry Holly	NA	NA
Box Elder		6	Chokecherry	NA	NA
	26		Northern Arrowwood	NA	NA

Total Live Trees: 26 Total Live Shrubs: NA

Herbaceous Cover (%): 29%

Invasive Plant Cover (%): (PP) 25% 45%

Meander Survey Comments (Use Additional Sheets As Necessary):

1 silver maple appearing stressed (scalded). Mid-veins still green; edges brown. Might just be drying up. Maples are notorious for this.

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

Page 2 of 24

Observer(s): P. Perhamus I. Zapisek K. Mooney
C. Frank J. LaLoy D. Tagliaterra Date: 7/22/08
 Phase: 1 Flow @ Coltsville (efs) _____ Weather: Sunny ; 75° F

Planting Area Location: 2
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 8843 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 1W2 Riverbank length (ft): 32 Width (ft): 30.7
 Slope length (ft): _____ Sample Area (sf): 981

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	1	1	Red-osier Dogwood	NA	NA
Silver Maple		10	Silky Dogwood	NA	NA
Eastern Cottonwood		7	Winterberry Holly	NA	NA
Box Elder		4	Chokecherry	NA	NA
	22		Northern Arrowwood	NA	NA

Total Live Trees: 22 Total Live Shrubs: NA

Herbaceous Cover (%): > 95%

Invasive Plant Cover (%): 25%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

Page 3 of 24

Observer(s): P. Perhamus I. Zapisek K. Morney
C. Frank J. Lacey D. Tagliaro Date: 7/22/08
 Phase: 1 Flow @ Coltsville (cfs) _____ Weather: Sunny; 78° F

Planting Area Location: 4
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 11800 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 1W3 Riverbank length (ft): 67 Width (ft): 21.4
 Slope length (ft): 1W3 Sample Area (sf): 1,435
(PP)

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		5	Red-osier Dogwood		8
Silver Maple		3	Silky Dogwood		4
Eastern Cottonwood		9	Winterberry Holly		4
Box Elder		5	Chokecherry		4
			Northern Arrowwood		4

Total Live Trees: 22 Total Live Shrubs: 24

Herbaceous Cover (%): >95%

Invasive Plant Cover (%): <5%

Meander Survey Comments (Use Additional Sheets As Necessary):

2 Cottonwood tearing on cages

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, IZ, JL, KM, DT Date: 7/22/08
 Phase: 1 Flow @ Coltsville (cfs) _____ Weather: Sunny; 78°F

Planting Area Location: 5
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 35690 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 131 Riverbank length (ft): 139 Width (ft): 11.8
 Slope length (ft): _____ Sample Area (sf): 1,645

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		7	Red-osier Dogwood		16
Silver Maple		3	Silky Dogwood		13
Eastern Cottonwood		8	Winterberry Holly		4
Box Elder		5	Chokecherry		2
			Northern Arrowwood		5

Total Live Trees: 23 Total Live Shrubs: 40

Herbaceous Cover (%): >95%
 Invasive Plant Cover (%): <5%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

Page 5 of 24

Observer(s): PP, CF, IZ, JL, KM, DT Date: 7/22/08
 Phase: 1 Flow @ Coltsville (cfs) _____ Weather: Sunny; 78°F

Planting Area Location: 5
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 35590 10-20% Area (sf): _____

Comments: _____

Random Sample Location Number: 1E-2 Riverbank length (ft): 45 Width (ft): 34.4
 Slope length (ft): _____ Sample Area (sf): 1,550

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	<u> </u>	<u>8</u>	Red-osier Dogwood	<u>NA</u>	<u>NA</u>
Silver Maple	<u> </u>	<u>6</u>	Silky Dogwood	<u>NA</u>	<u>NA</u>
Eastern Cottonwood	<u> </u>	<u>8</u>	Winterberry Holly	<u>NA</u>	<u>NA</u>
Box Elder	<u> </u>	<u>12</u>	Chokecherry	<u>NA</u>	<u>NA</u>
			Northern Arrowwood	<u>NA</u>	<u>NA</u>

Total Live Trees: 34 Total Live Shrubs: NA

Herbaceous Cover (%): >95%

Invasive Plant Cover (%): <5%

Meander Survey Comments (Use Additional Sheets As Necessary):

1-stressed Cottonwood

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

Page 6 of 24

Observer(s): PP, CF, JZ, JL, KM, DT Date: 7/22/08
 Phase: 1 Flow @ Coltsville (cfs) _____ Weather: Sunny; 78°F

Planting Area Location: 5A
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 4922 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 1E3 Riverbank length (ft): 70 Width (ft): 17.7
 Slope length (ft): 1E3 Sample Area (sf): 1,242

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	1	1	Red-osier Dogwood	12	12
Silver Maple			Silky Dogwood	4	4
Eastern Cottonwood			Winterberry Holly		
Box Elder	4	6	Chokecherry	4	4
			Northern Arrowwood		

Total Live Trees: 7 Total Live Shrubs: 20

Herbaceous Cover (%): >95%
 Invasive Plant Cover (%): <5%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

Page 7 of 24

Observer(s): PP, CF, JL, IZ Date: 7/22/08
 Phase: 2 Flow @ Coltsville (cfs) _____ Weather: Sunny, 85°F

Planting Area Location: 9
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 15900 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: ZW1 Riverbank length (ft): 63 Width (ft): 16.8
 Slope length (ft): _____ Sample Area (sf): 1,057

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	11	3	Red-osier Dogwood	NA	
Silver Maple	5	5	Silky Dogwood	NA	
Eastern Cottonwood	7	7	Winterberry Holly	NA	
Box Elder	5	5	Chokecherry	NA	
			Northern Arrowwood	NA	

Total Live Trees: 20 Total Live Shrubs: NA

Herbaceous Cover (%): >95%
 Invasive Plant Cover (%): <5%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, IZ Date: 7/22/08
 Phase: 2 Flow @ Coltsville (cfs) _____ Weather: Sunny; 85° F

Planting Area Location: 9
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 15900 10-20% Area (sf): _____

Comments: 17x53

Random Sample Location Number: 202 Riverbank length (ft): 17 Width (ft): 53.7
 Slope length (ft): _____ Sample Area (sf): 914

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		3	Red-osier Dogwood	NA	
Silver Maple		1	Silky Dogwood	NA	
Eastern Cottonwood		6	Winterberry Holly	NA	
Box Elder		8	Chokecherry	NA	
			Northern Arrowwood	NA	

Total Live Trees: 18 Total Live Shrubs: NA

Herbaceous Cover (%): >95%

Invasive Plant Cover (%): <5%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, IZ Date: 7/22/08
 Phase: 2 Flow @ Coltsville (cfs) _____ Weather: Sunny, 85°F

Planting Area Location: 11
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 1568 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 2403 Riverbank length (ft): 66 Width (ft): 8.7
 Slope length (ft): _____ Sample Area (sf): 572

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow			Red-osier Dogwood		
Silver Maple	1	1	Silky Dogwood		10
Eastern Cottonwood	1	1	Winterberry Holly		
Box Elder		17	Chokecherry		5
			Northern Arrowwood		3

Total Live Trees: 19 Total Live Shrubs: 18

Herbaceous Cover (%): 79.5%

Invasive Plant Cover (%): 25%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, IZ Date: 7/22/08
 Phase: 2 Flow @ Coltsville (cfs) _____ Weather: Sunny; 85°F

Planting Area Location: 12
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 20120 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 281 Riverbank length (ft): 33 Width (ft): 27.1
 Slope length (ft): _____ Sample Area (sf): 895

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	I	1	Red-osier Dogwood	IIII I	6
Silver Maple			Silky Dogwood	IIII	4
Eastern Cottonwood	IIII II	7	Winterberry Holly	IIII	5
Box Elder	III	3	Chokecherry	IIII	4
			Northern Arrowwood	III	3

Total Live Trees: 11 Total Live Shrubs: 22

Herbaceous Cover (%): > 95%

Invasive Plant Cover (%): 45%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, IZ Date: 7/22/08
 Phase: 2 Flow @ Coltsville (cfs) _____ Weather: Sunny; 85° F

Planting Area Location: 12
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 2020 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 282 Riverbank length (ft): 27 Width (ft): 33.8
 Slope length (ft): _____ Sample Area (sf): 913

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow			Red-osier Dogwood	NA	
Silver Maple		4	Silky Dogwood	NA	
Eastern Cottonwood		12	Winterberry Holly	NA	
Box Elder		3	Chokecherry	NA	
			Northern Arrowwood	NA	

Total Live Trees: 19 Total Live Shrubs: NA

Herbaceous Cover (%): >95%
 Invasive Plant Cover (%): <5%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, JZ Date: 7/22/08
 Phase: 2 Flow @ Coltsville (cfs) _____ Weather: Sunny; 85°F

Planting Area Location: 14
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 1525 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 2E3 Riverbank length (ft): 141 Width (ft): 9.8
 Slope length (ft): _____ Sample Area (sf): 1,382

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	2	2	Red-osier Dogwood	NA	
Silver Maple	6	6	Silky Dogwood	NA	
Eastern Cottonwood	10	10	Winterberry Holly	NA	
Box Elder	10	10	Chokecherry	NA	
			Northern Arrowwood	NA	

Total Live Trees: 28 Total Live Shrubs: NA

Herbaceous Cover (%): >95%

Invasive Plant Cover (%): <5%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, IZ Date: 7/22/08
 Phase: 3 Flow @ Coltsville (cfs) _____ Weather: Partly sunny, 80°F

Planting Area Location: 15
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 1037 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 3-W-1 Riverbank length (ft): 212 Width (ft): 6.0
 Slope length (ft): _____ Sample Area (sf): 1,272

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	11	2	Red-osier Dogwood	4/11	7
Silver Maple	1/11	4	Silky Dogwood	4/11 4/11 4/11 4/11 1	21
Eastern Cottonwood	1	1	Winterberry Holly	1	
Box Elder	4/11	8	Chokecherry	1/11	4
			Northern Arrowwood	1/11	2

Total Live Trees: 15 Total Live Shrubs: 34

Herbaceous Cover (%): > 95%

Invasive Plant Cover (%): < 5%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, IZ Date: 7/22/08
 Phase: 3 Flow @ Coltsville (cfs) _____ Weather: Partly sunny, 80°F

Planting Area Location: 19
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 361.5 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 3W2 Riverbank length (ft): 67 Width (ft): 14.0
 Slope length (ft): _____ Sample Area (sf): 938

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		2	Red-osier Dogwood		6
Silver Maple		3	Silky Dogwood		4
Eastern Cottonwood		1	Winterberry Holly		2
Box Elder		2	Chokecherry		
			Northern Arrowwood		3

Total Live Trees: 8 Total Live Shrubs: 15

Herbaceous Cover (%): >95%
 Invasive Plant Cover (%): <5%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, IZ Date: 7/22/08
 Phase: 3 Flow @ Coltsville (cfs) _____ Weather: Partly sunny, 80°F

Planting Area Location: 26
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 4487 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 3W3 Riverbank length (ft): 105 Width (ft): 13.0
 Slope length (ft): _____ Sample Area (sf): 1,365

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		5	Red-osier Dogwood		11
Silver Maple		4	Silky Dogwood		
Eastern Cottonwood		1	Winterberry Holly		4
Box Elder		2	Chokecherry		4
			Northern Arrowwood		2

Total Live Trees: 12 Total Live Shrubs: 21

Herbaceous Cover (%): PP 9%

Invasive Plant Cover (%): < 5%

Meander Survey Comments (Use Additional Sheets As Necessary):

Somewhat thin as a result of residential mowing ~ 7.5% (bare ground)

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, JZ Date: 7/23/08
 Phase: 3 Flow @ Coltsville (cfs) _____ Weather: Drizzly ; 75°F

Planting Area Location: 28
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 1233 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 3E-1 Riverbank length (ft): 145 Width (ft): 10.0
 Slope length (ft): _____ Sample Area (sf): 1,450

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	1	1	Red-osier Dogwood		
Silver Maple	III	5	Silky Dogwood	III III III III III	23
Eastern Cottonwood	IIII	4	Winterberry Holly	1	1
Box Elder	III II	7	Chokecherry	III 1 (2 off variety)	6
			Northern Arrowwood	4 III	3

Total Live Trees: 17 Total Live Shrubs: 33

Herbaceous Cover (%): > 95%

Invasive Plant Cover (%): 45%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, IZ Date: 7/22/08
 Phase: 3 Flow @ Coltsville (cfs) _____ Weather: Partly cloudy; 78°F

Planting Area Location: 35
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 479.2 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 352 Riverbank length (ft): 38 Width (ft): 9.7
 Slope length (ft): _____ Sample Area (sf): 370

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow			Red-osier Dogwood		
Silver Maple			Silky Dogwood		
Eastern Cottonwood		7	Winterberry Holly		
Box Elder		1	Chokecherry		
			Northern Arrowwood		

Total Live Trees: 8 Total Live Shrubs: NA

Herbaceous Cover (%): >95%

Invasive Plant Cover (%): <5%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, IZ Date: 7/22/08
 Phase: 3 Flow @ Coltsville (cfs) _____ Weather: Drizzling; 75°F

Planting Area Location: 38
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 1960 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 333 Riverbank length (ft): 77 Width (ft): 10.0
 Slope length (ft): _____ Sample Area (sf): 770

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		5	Red-osier Dogwood		10
Silver Maple		5	Silky Dogwood		
Eastern Cottonwood		1	Winterberry Holly		2
Box Elder		3	Chokecherry		3
			Northern Arrowwood		3

Total Live Trees: 14 Total Live Shrubs: 18

Herbaceous Cover (%): > 95%

Invasive Plant Cover (%): 45%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, IE Date: 7/23/08
 Phase: 4 Flow @ Coltsville (cfs) _____ Weather: Showers

Planting Area Location: 39
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 3833 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 4-W-1 Riverbank length (ft): 50 Width (ft): 18.0
 Slope length (ft): _____ Sample Area (sf): 900

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	III	5	Red-osier Dogwood	NA	
Silver Maple	III	5	Silky Dogwood	NA	
Eastern Cottonwood	II	2	Winterberry Holly	NA	
Box Elder	III 1	6	Chokecherry	NA	
			Northern Arrowwood	NA	

Total Live Trees: 18 Total Live Shrubs: NA

Herbaceous Cover (%): > 95%

Invasive Plant Cover (%): < 5%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, IZ Date: 7/23/08
 Phase: 4 Flow @ Coltsville (cfs) _____ Weather: Shows

Planting Area Location: 42
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 6403 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 4-W-2 Riverbank length (ft): 50 Width (ft): 25.0
 Slope length (ft): _____ Sample Area (sf): 1,250

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	1	1	Red-osier Dogwood	NA	
Silver Maple		4	Silky Dogwood	NA	
Eastern Cottonwood		10	Winterberry Holly	NA	
Box Elder	1	6	Chokecherry	NA	
			Northern Arrowwood	NA	

Total Live Trees: 21 Total Live Shrubs: NA

Herbaceous Cover (%): > 95%

Invasive Plant Cover (%): 45%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, IZ Date: 7/23/08
 Phase: 4 Flow @ Coltsville (cfs) _____ Weather: Showers

Planting Area Location: 44
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 4792 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 4-W-3 Riverbank length (ft): 74 Width (ft): 12.0
 Slope length (ft): _____ Sample Area (sf): 888

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	II	2	Red-osier Dogwood	III	5
Silver Maple	III	3	Silky Dogwood	III III	8
Eastern Cottonwood	III III I	II	Winterberry Holly	II	2
Box Elder	II	2	Chokecherry	III	3
			Northern Arrowwood	IIII	4

Total Live Trees: 18 Total Live Shrubs: 22

Herbaceous Cover (%): >95%

Invasive Plant Cover (%): 45%

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, IZ Date: 7/23/08
 Phase: 4 Flow @ Coltsville (cfs) _____ Weather: Showers

Planting Area Location: 45
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 2831 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 4-E-1 Riverbank length (ft): 50 Width (ft): 8.0
 Slope length (ft): _____ Sample Area (sf): 400

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	11	2	Red-osier Dogwood	NA	
Silver Maple	1	1	Silky Dogwood	NA	
Eastern Cottonwood	11	2	Winterberry Holly	NA	
Box Elder	11	2	Chokecherry	NA	
			Northern Arrowwood	NA	

Total Live Trees: 7 Total Live Shrubs: NA

Herbaceous Cover (%): >95

Invasive Plant Cover (%): 45

Meander Survey Comments (Use Additional Sheets As Necessary):

Silver maple appears to be dying.

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

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Observer(s): PP, CF, JL, IZ Date: 7/23/08
 Phase: 4 Flow @ Coltsville (cfs) _____ Weather: showers

Planting Area Location: 48
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 8059 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 4-E-2 Riverbank length (ft): 50 Width (ft): 10.0
 Slope length (ft): _____ Sample Area (sf): 500

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		3	Red-osier Dogwood		
Silver Maple		2	Silky Dogwood		5
Eastern Cottonwood		4	Winterberry Holly		2
Box Elder		9	Chokecherry		4
			Northern Arrowwood		3

Total Live Trees: 18 Total Live Shrubs: 14

Herbaceous Cover (%): 295

Invasive Plant Cover (%): 25

Meander Survey Comments (Use Additional Sheets As Necessary):

RIVERBANK, RE-VEGETATION MONITORING FIELD FORM

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA

Page 24 of 24

Observer(s): PP, CF, JL, IZ Date: 7/23/08
 Phase: 4 Flow @ Coltsville (cfs) _____ Weather: Showers

Planting Area Location: 48
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): 8059 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 4-E-3 Riverbank length (ft): 50 Width (ft): 10.0
 Slope length (ft): _____ Sample Area (sf): 500

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		5	Red-osier Dogwood		5
Silver Maple		4	Silky Dogwood		4
Eastern Cottonwood		3	Winterberry Holly		
Box Elder	1	6	Chokecherry		4
			Northern Arrowwood		4

Total Live Trees: 18 Total Live Shrubs: 17

Herbaceous Cover (%): >95

Invasive Plant Cover (%): 45

Meander Survey Comments (Use Additional Sheets As Necessary):

NON-RIVERBANK RE-VEGETATION MONITORING FIELD FORM

DATE: 4/22/08 4/23/08

Reach	Parcel ID	Quantity of Plants Planted	Plant Type and Species	Common Name	Size/Stock	Comments	Monitoring Requirements	Maintenance Standard	Number of live trees	% Survivability	Meets Maintenance Standard (YES/NO)	
Lyman St. Bridge to Elm St. Bridge	18-24-1	6	<i>Betula nigra</i>	River Birch Clump	8-10 ft.		2008	100%				
		12	<i>Acer rubrum</i>	Red Maple	1.75"-2" cal		2008	100%				
		6	<i>Quercus alba</i>	White Oak	1.75"-2" cal		2008	100%				
		11	<i>Acer saccharum</i>	Sugar Maple	1.75"-2" cal		2008	100%				
		8	<i>Fraxinus americana</i>	White Ash	1.75"-2" cal		2008	100%				
		6	<i>Fraxinus pennsylvanica</i>	Green Ash	1.75"-2" cal		2008	100%				
		6	<i>Quercus palustris</i>	Pin Oak	1.75"-2" cal		2008	100%				
		7	<i>Pinus strobus</i>	White Pine	5-6 ft.		2008	100%				
		7	<i>Abies fraseri</i>	Fraser Fir	5-6 ft.		2008	100%				
	6	<i>Tsuga canadensis</i>	Eastern Canadian Hemlock	5-6 ft.		2008	100%					
	19-5-13	13	<i>Thuja occidentalis</i>	Dark American Arborvitae	12 ft.		2008	100%				
		12	<i>Thuja occidentalis</i>	Dark American Arborvitae	4 ft.		2008	100%				
	Pomeroy Ave. Bridge to Confluence	17-1-101	8	<i>Acer rubrum</i>	Red Maple	2" cal	Soccer Field Area	2008 to 2011	100%	✓		
6			<i>Betula nigra</i>	River Birch Clump	8-10 ft.	Soccer Field Area	2008 to 2011	100%	✓			
16			<i>Tsuga canadensis</i>	Eastern Canadian Hemlock	8-10 ft.	Top of bank along walk path	2008 to 2011	100%	✓			
17-1-101		5	<i>Pinus strobus</i>	White Pine	8-10 ft.	Area A*	2008 to 2011					
		10	<i>Acer saccharum</i>	Sugar Maple	1.5"-2" cal	Area A*	2008 to 2011					
		10	<i>Quercus rubra</i>	Red Oak	1.5"-2" cal	Area A*	2008 to 2011					
		5	<i>Betula papyrifera</i>	Paper Birch	8-10 ft.	Area A*	2008 to 2011					
		4	<i>Acer saccharinum</i>	Silver Maple	1.5"-2" cal	Area A*	2008 to 2011					
Total		34	Area A* TOTAL TREES						80%			
17-1-101		13	<i>Pinus strobus</i>	White Pine	8-10 ft.	Area B*	2008 to 2011					
		16	<i>Acer saccharum</i>	Sugar Maple	1.5"-2" cal	Area B*	2008 to 2011					
		15	<i>Quercus rubra</i>	Red Oak	1.5"-2" cal	Area B*	2008 to 2011					
		10	<i>Betula papyrifera</i>	Paper Birch	8-10 ft.	Area B*	2008 to 2011					
Total		54	Area B* TOTAL TREES						80%			
17-1-101		23	<i>Cornus amomum</i>	Silky Dogwood	1-gal	Area B*	2008 to 2011					
		23	<i>Viburnum dentatum</i>	Northern Arrowwood	1-gal	Area B*	2008 to 2011					
		23	<i>Ilex verticillata</i>	Winterberry Holly	1-gal	Area B*	2008 to 2011					
		23	<i>Prunus virginiana</i>	Chokecherry	1-gal	Area B*	2008 to 2011					
Total		92	Area B* TOTAL Shrubs						80%			
17-1-101		14	<i>Cornus amomum</i>	Silky Dogwood	1-gal	Area C^*	2008 to 2011					
	13	<i>Viburnum dentatum</i>	Northern Arrowwood	1-gal	Area C^*	2008 to 2011						
	13	<i>Ilex verticillata</i>	Winterberry Holly	1-gal	Area C^*	2008 to 2011						
	13	<i>Prunus virginiana</i>	Chokecherry	1-gal	Area C^*	2008 to 2011						
Total	53	Area C* TOTAL Shrubs						80%				
17-1-101	2	<i>Pinus strobus</i>	White Pine	8-10 ft.	Area D*	2008 to 2011						
	2	<i>Acer saccharum</i>	Sugar Maple	1.5"-2" cal	Area D*	2008 to 2011						
	2	<i>Betula papyrifera</i>	Paper Birch	8-10 ft.	Area D*	2008 to 2011						
Total	6	Area D* TOTAL TREES						80%				
17-1-101	3	<i>Cornus amomum</i>	Silky Dogwood	1-gal	Area D*	2008 to 2011						
	3	<i>Viburnum dentatum</i>	Northern Arrowwood	1-gal	Area D*	2008 to 2011						
	3	<i>Ilex verticillata</i>	Winterberry Holly	1-gal	Area D*	2008 to 2011						
	3	<i>Prunus virginiana</i>	Chokecherry	1-gal	Area D*	2008 to 2011						
Total	12	Area D* TOTAL Shrubs						80%				

65 shrubs (C & D)

44
Σ = 78

11 Σ = 57

NON-RIVERBANK RE-VEGETATION MONITORING FIELD FORM

DATE: _____

Reach	Parcel ID	Quantity of Plants	Plant Type and Species	Common Name	Size/Stock	Comments	Monitoring Requirements	Maintenance Standard	Number of live trees	% Survivability	Meets Maintenance Standard (YES/NO)	
Pomeroy Ave. Bridge to Confluence	17-1-101	5	<i>Pinus strobus</i>	White Pine	8-10 ft.	Area E*	2008 to 2011					
		3	<i>Betula papyrifera</i>	Paper Birch	8-10 ft.	Area E*	2008 to 2011					
		40	<i>Acer saccharinum</i>	Silver Maple	1.5"-2" cal	Area E*	2008 to 2011					
		30	<i>Acer rubrum</i>	Red Maple	1.5"-2" Cal	Area E*	2008 to 2011					
	Total	78	Area E* TOTAL Trees					80%			E=96	
	17-1-101	7	<i>Salix nigra</i>	Black Willow	1-gal	Area E*	2008 to 2011					
		16	<i>Populus deltoides</i>	Eastern Cottonwood	1-gal	Area E*	2008 to 2011					
		8	<i>Acer negundo</i>	Box Elder	1-gal	Area E*	2008 to 2011					
	Total	31	Area E* TOTAL Trees					80%				
	17-1-101	37	<i>Cornus amomum</i>	Silky Dogwood	1-gal	Area E*	2008 to 2011					
		38	<i>Viburnum dentatum</i>	Northern Arrowwood	1-gal	Area E*	2008 to 2011					
		38	<i>Ilex verticillata</i>	Winterberry Holly	1-gal	Area E*	2008 to 2011					
		38	<i>Prunus virginiana</i>	Chokecherry	1-gal	Area E*	2008 to 2011					
	Total	151	Area E* TOTAL Shrubs					80%				
	Trees	16-1-67	3	<i>Amelanchier sp.</i>	Serviceberry (shadbush)	6-8 ft.		2008	100%			
2			<i>Fraxinus pennsylvanica</i>	Green Ash	6-8 ft.		2008	100%				
3			<i>Betula papyrifera</i>	White Birch	6-8 ft.		2008	100%				
7			<i>Pinus strobus</i>	White Pine	5-6 ft.		2008	100%				
2			<i>Quercus rubra</i>	Red Oak	6-8 ft.		2008	100%				
2			<i>Abies balsamea</i>	Balsam Fir	5-6 ft.		2008	100%				
2			<i>Acer rubrum</i>	Red Maple	6-8 ft.		2008	100%				
13			<i>Vaccinium macrocarpon</i>	American Cranberry	3-4 ft.		2008	100%				
14			<i>Viburnum dentatum</i>	Northern Arrowwood	3-4 ft.		2008	100%				
2			<i>Cornus sericea</i>	Red Osier Dogwood	1-gal		2008	100%				
Shrubs		16-1-66	2	<i>Cornus amomum</i>	Silky Dogwood	1-gal		2008	100%			
			4	<i>Ilex verticillata</i>	Winterberry Holly	1-gal		2008	100%			
			4	<i>Prunus virginiana</i>	Chokecherry	1-gal		2008	100%			
			5	<i>Viburnum dentatum</i>	Northern Arrowwood	1-gal		2008	100%			
			7	<i>Amelanchier sp.</i>	Serviceberry (shadbush)	6-8 ft.		2008	100%			
Trees	16-1-66	6	<i>Fraxinus pennsylvanica</i>	Green Ash	6-8 ft.		2008	100%				
		4	<i>Betula papyrifera</i>	White Birch	6-8 ft.		2008	100%				
		8	<i>Pinus strobus</i>	White Pine	5-6 ft.		2008	100%				
		9	<i>Quercus rubra</i>	Red Oak	6-8 ft.		2008	100%				
		4	<i>Abies balsamea</i>	Balsam Fir	5-6 ft.		2008	100%				
		12	<i>Acer rubrum</i>	Red Maple	6-8 ft.		2008	100%				
		8	<i>Vaccinium macrocarpon</i>	American Cranberry	3-4 ft.		2008	100%				
		7	<i>Viburnum dentatum</i>	Northern Arrowwood	3-4 ft.		2008	100%				
Shrubs	16-1-66	6	<i>Cornus amomum</i>	Silky Dogwood	1-gal		2008	100%				
		5	<i>Ilex verticillata</i>	Winterberry Holly	1-gal		2008	100%				
		5	<i>Prunus virginiana</i>	Chokecherry	1-gal		2008	100%				
		6	<i>Viburnum dentatum</i>	Northern Arrowwood	1-gal		2008	100%				

E=

109

Trees

Shrubs

Trees

Shrubs

E=37

n/a - not available

^ - Planting Areas located on Western Gas Electric Company (WMECO) Right of Away (ROW). WMECO requirements do not allow tree planting in ROW areas, therefore only shrubs were planted.

* - Different Areas are displayed on the non-riverbank planting as-builts

ft. = feet

gal = gallon

" = inches

* Added Note by Phil Perhamus 8/20/08: The shrub count appearing above for Parcel 16-1-66 represents the initial shrub count for the area. Subsequent re-counts of the area revealed a total of 37 shrubs.

NON-RIVERBANK RE-VEGETATION MONITORING FIELD FORM

DATE: _____

PERCENT HERBACEOUS COVER AND PERCENT INVASIVE PLANT SPECIES INSPECTION

Monitoring Area	Bank	Date Monitored	Plot	Herbaceous Cover (%)	Invasive Plant Cover (%)	Invasive Species
Parcel I8-24-1	West	7/22/08	N/A	75	25	
Parcel I6-1-66	East	7/23/08	N/A	11	11	
Parcel I6-1-67	East	7/23/08	N/A	11	11	
FGP (Parcel I7-1- 101)	West	7/23/08	N/A	75	25	

Notes:

N/A - not applicable

*last photo
✓ 3-E-1 next*