



Memorandum

To: Joel Lindsay, Weston Solutions, Inc.
From: Todd Chadwell, Woodlot Alternatives
Cc: Izabela Zapisek, Weston Solutions, Inc.
Date: May 31, 2007
Re: 2007 Spring Vegetation Monitoring Report

On May 14 and May 15, 2007, Woodlot Alternatives, Inc. (Woodlot) established additional permanent monitoring plots in Monitoring Area 4 (South of Pomeroy Avenue Bridge) and conducted annual springtime vegetation monitoring and a meander survey in restored areas of the 1½-Mile Reach—GE Pittsfield/Housatonic River Site.

1.0 METHODS

1.1 Plot Establishment

Using base maps provided by Weston Solutions, Inc. (Weston), Woodlot calculated the surface area of revegetated locations within the final reach of the 1½-mile monitoring area. The final reach is located between the Pomeroy Avenue bridge and the confluence of the East and West Branches of the Housatonic River. Within the reach, surface area estimates were acquired for 10% of the normal revegetation area (700 trees/acre density) and 10% of the Geoweb® cellular confinement area (500 trees/acre density). On the base map, Woodlot placed 3 plots on each bank of the river within the reach. Surface area of the combined plots in the reach was approximately equal to the desired 10% normal and 10% Geoweb® monitoring criteria. Mapped plot locations were approved by Weston and the U.S. Environmental Protection Agency prior to establishment.

Woodlot located the plots in the field and first verified that these areas were representative of the entire planting area. The area of each monitoring plot was measured and two wooden stakes were driven into the ground at the top of bank at each edge of the plot. The upper limit of each plot was established approximately 8 inches above the highest adjacent plantings. The lower limit of each plot extended downslope to the upper limit of the riprap. If an established plot was adjacent to other plantings areas (i.e., power line right of ways, Fred Garner Park plantings, and GE floodplain plantings) the plot was established to encompass only a representative sample of NRD planting areas and not extend into adjacent planting areas. After establishing each plot, photos were taken to assist future location of the plots.

1.2 Vegetation Monitoring

Vegetation monitoring work was performed by Woodlot in the three monitoring areas between the Lyman Street and Pomeroy Avenue bridges and in the new monitoring area between Pomeroy Avenue bridge and the Confluence. These monitoring areas are delimited by the four bridges crossing the 1½-Mile Reach (Lyman Street, Elm Street, Dawes Avenue, and Pomeroy Avenue, respectively, from upstream to downstream) and the confluence of the East and West Branches of the Housatonic River. The four monitoring areas represented by these five delimiters are numbered 1-4, respectively, moving downstream from the Lyman Street Bridge. In addition, each monitoring area is divided into sub-areas defined by the “east” (river-left [looking downstream]) and “west” (river-right) sides of the Housatonic River, with three subplots established on each side of the river within each monitoring area. A total of 24 permanent monitoring plots were evaluated as part of this work.

The 24 permanent monitoring plots were located and marked in the field. If the plot marker stakes could not be located, Woodlot re-established the plot based on construction plans used for plot-establishment in Spring 2006. Trees and shrubs within each plot were tallied by species and noted as “healthy” or “dead.” “Dead” trees and shrubs were those that exhibited no foliage and the inner cambium was dead throughout the entire above ground portion of the plant. Volunteers of species that were planted were included in the tally if they were greater than twelve inches in height and appeared to be likely to survive. Volunteers of other tree and shrub species were recorded separately and not included in the tally.

Herbaceous cover and invasive plant cover percentages were not recorded, as this is not required during spring monitoring. However, notes were made on locations of invasive species populations when occurring within or near planting areas.

A meander survey was performed along both banks of each reach of the river to collect qualitative data on plant survivorship, observe invasive plant populations, and verify that plots were representative of surrounding areas.

2.0 RESULTS

The results of the monitoring plot inspection and meander surveys are summarized in this section. A discussion of the results and comparison to performance standards are provided in Section 3. Table 1 summarizes tree and shrub densities in each monitoring area. Table 2 summarizes tree and shrub densities in each monitoring plot.

2.1 Tree and Shrub Density/Survivorship

Table 1 provides a summary of the results of the Spring 2007 vegetation monitoring event for trees and shrubs, and includes the Summer 2006 results for comparison. Details of plot characteristics are presented in Table 2. The performance standard for trees and shrubs is 80 percent survivorship. In most monitoring areas, exact numbers of planted trees and shrubs were not available, so survivorship was estimated by comparing the current plant density to the expected plant density based on the design. In select areas where the plant count was known (i.e., plots 1-E-3, 3-W-2, 3-W-3, 3-E-3 and 4-E-2), the direct comparison of the current count to the original planted count was made.

Table 1. Comparison summary between Summer 2006 and Spring 2007 Monitoring Events

Monitoring Area	Performance Standard Summary					
	Summer 2006			Spring 2007		
	Shrubs	Trees (non-GeoWeb)	Trees (Geoweb)	Shrubs	Trees (non-GeoWeb)	Trees (Geoweb)
Lyman-Elm (West) (1-W)	85%	125%	NA	103%	152%	NA
Lyman-Elm (East) (1-E)	77%	103%	100%*	102%	137%	100%*
Elm-Dawes (West) (2-W)	102%	146%	287%	188%	140%	152%
Elm-Dawes (East) (2-E)	96%	124%	NA	91%	113%	NA
Dawes-Pomeroy (West) (3-W)	120%	100%*	90%	138%	100%*	60%
Dawes-Pomeroy (East) (3-E)	145%	88%	188%	137%	72%*	212%
Pomeroy-Confluence (West) (4-W)	NA	NA	NA	108%	115%	NA
Pomeroy-Confluence (East) (4-E)	NA	NA	NA	215%	119%*	152%

* Indicates percent survivorship as compared to the number of actual trees and shrubs planted. Applies to one plot or two plots out of the three plots within a monitoring area.

Note: Shaded areas do not meet the Performance Standard

2.2 Meander Survey Results

Lyman Street to Elm Street Reach

Trees in this reach suffered observable damage resulting from beaver herbivory, particularly along the upstream reach of this monitoring area. Tree stumps left by beavers are exhibiting extensive re-sprouting from the base. Many of the protective tree cages are too short to adequately protect trees from beaver herbivory in this location. Approximately 52 trees (all black willow [*Salix nigra*] and box elder [*Acer negundo*]) were impacted by beaver activity or are likely to be impacted by beavers in the future if the height of the protective tree cages is not increased. In general, tree guards on protective cages appeared to be adequately adjusted therefore not restricting tree growth. However, many trees have branches growing through protective tree cages (see photo 1). Such trees will allocate resources to this lateral growth that will eventually die-off from constriction. It is recommended that lateral branches growing through protective tree cages be properly pruned to promote vertical growth of the tree. Several box elders supplied for 2006 supplemental planting are shorter than the protective tree cages and are beginning to grow through the wire mesh. It is recommended that tree guards should be placed around these trees to reduce branching through the protective cages and adjusted as needed afterwards. Several protective cages were observed to be knocked over in the lower section of this reach. It is recommended that these tree cages be either re-staked if still protecting live trees or otherwise removed. High tree mortality was noted on the west bank approximately between STA 513+00 and STA 518+25. The cause of this mortality was not readily apparent. Supplemental planting is recommended in this area.

Minor erosion was noted at the top of bank behind the auto dealership on East Street (see photo 2). Erosion was also noted on the east bank across from the Silver Lake outfall and at STA 502+30. Forest tent caterpillars (*Malacosoma disstria*) were evident on one individual choke cherry shrub on the west bank within this reach. Damage caused by an unknown insect boring into woody growth of larger black willow trees was noted primarily on the east bank within this reach (see photo 3).

It was also observed that grapevine growth adjacent to the parking lot of Harry's Supermarket is encroaching upon planted trees. It is recommended that grapevine be removed from planting areas until sufficient tree growth has occurred. Hedge bindweed (*Calystegia sepium*) was beginning to emerge in sections of this reach. This vine competes with planted trees and shrubs for light. It is recommended that hedge bindweed be removed by hand from planted trees and shrubs to assist the establishment of these species.

Japanese knotweed (*Polygonum cuspidatum*) was observed infrequently on east and west banks of this reach. Other invasive species noted include Norway maple (*Acer platanoides*) and multiflora rose (*Rosa multiflora*).

Elm Street to Dawes Avenue Reach

The emergence of Hedge bindweed was observed in this reach. This vine has previously been a problem within this area, particularly below Elm Street along the west bank. It is recommended that hedge bindweed be removed by hand from planted trees and shrubs to assist the establishment of these species.

Monitoring plot 2-W-3 was reassessed to verify plot dimensions. Dimensions of this plot were originally recorded as 66 feet by 18 feet. Actual plot dimensions are 66 feet by 14 feet.

Several tree cages were lying on the ground on both banks within this reach. It is recommended that these tree cages be either re-staked if still protecting live trees or otherwise removed. High shrub mortality was observed between Elm Street and monitoring plot 2-W-2. The cause of mortality appears to be a result of competition for resources with prolific herbaceous growth in this area. Supplemental plantings of trees only to replace dead shrubs are recommended between monitoring plots 2-W-1 and 2-W-2.

Dawes Avenue to Pomeroy Avenue Reach

Tree and shrub growth was generally healthy in this reach. It was noted that shrubs on the east bank north of the Pomeroy Avenue Bridge are still contained by protective cages. It is recommended that all protective cages be removed from shrubs to allow for proper growth of these plants.

Pomeroy Avenue to Confluence Reach

This reach was planted in 2006 and is demonstrating healthy tree and shrub growth. Shrubs on the east bank within the "GE planting area" are contained within protective cages. In addition to adversely affecting the shrub's growth, shrub cages are likely to be removed by currents and floating debris in this flood-prone area. It is recommended that all protective cages be removed from shrubs. Trees in this location area lacking tree protectors and evidence of damage caused by trees rubbing on tree cages is apparent. Tree protectors should be installed as soon as possible. Bark mulch was utilized instead of fiber mulch mats on trees and shrubs within the "GE planting area". Much of the bark mulch was removed by recent flood conditions. As a result of the current lack of mulch, excessive competition from herbaceous growth as well as water stress under extreme drought conditions is possible. Finally, it was noted that single cable ties were used to attach the tree cages to the wooden stakes in this area. In other bank planting areas two cable ties were used to attach cages to wooden stakes in addition to wire staples anchoring tree cages to the ground. Tree cages that are not firmly affixed to wooden stakes or anchored to the ground will potentially shift in wind/flood conditions, causing harm to trees from the tree cages themselves or by allowing herbivore entry from below.

2.3 Upland Planting Counts

Woodlot also performed inspections of various upland planting locations as requested by Weston to assess total tree numbers as well as tree survival. Below the results of these upland plant counts are summarized. Recommendations relative to upland planting areas are included in Section 4.

Maffucio Property

- 74 live arborvitae, all with moderate level of chlorosis but generally healthy

Harry's Supermarket

- 1 dead balsam fir, all other trees living and apparently healthy

South of Pomeroy Avenue - East Bank (Property 16-1-69)

- 5 live hemlocks, all apparently healthy

South of Pomeroy Avenue - East Bank (Property 16-1-68)

- 15 live hemlocks, all apparently healthy
- 1 dead hemlock
- 14 spirea shrubs, 1 stressed and potentially requiring replacement

South of Pomeroy Avenue - East Bank (Property 16-1-67)

All upland trees and shrubs in this location were apparently healthy. The table below provides a count of all trees and shrubs in this location.

Upland Plants South of Pomeroy Avenue - East Bank (Property 16-1-67)

Trees	Live
Shadbush	3
Green Ash	2
White Birch	3
White Pine	7
Red Oak	2
Balsam Fir	2
Red Maple	2
Total	21
Shrubs	
Red Osier	2
American Cranberry	13
Silky Dogwood	2
Winterberry Holly	4
Chokecherry	4
Northern Arrow-wood	19
Total	44

South of Pomeroy Avenue - East Bank (Property 16-1-66)

A total of 45 living trees and 38 living shrubs were recorded at this location. One red maple and two white birches were included in the living category but noted to be experiencing stress resulting in some dead limbs. The table below provides a count of all trees and shrubs in this location.

Upland Plantings South of Pomeroy Avenue - East Bank (Property 16-1-66)

Trees	Live	Dead	Stressed
Shadbush	6	0	0
Green Ash	6	0	0
White Birch	6	2	2
White Pine	8	0	0
Red Oak	7	0	0
Balsam Fir	4	2	
Red Maple	8	0	1
Total	45	4	3
Shrubs			
Shadbush	1	0	0
American Cranberry	8	0	0
Silky Dogwood	6	0	0
Winterberry Holly	5	0	0
Chokecherry	5	0	0
Northern Arrow-wood	13	0	0
Total	38	0	0

Fred Garner Park

Inspection of large trees at Fred Garner Park revealed 4 dead red oak trees (tagged as "*Quercus borealis*" by tree nursery). One hemlock tree was noted to have 2 main stems, of which one is dead. While the majority of white pines planted in 2006 appeared to be healthy, a form of mealy bug was noted on most of these pines. Mealy bug was also observed on native white pines in the area. Two white pines were moderately stressed with general needle drop observed on one of these. At the time of inspection, new growth was observed on stressed white pines and it is likely that these pines will survive. One sugar maple was also observed to be moderately stressed but will likely survive. Trees recommended for replacement (5 red oaks) were marked with orange flagging. Trees experiencing stress but likely to survive were flagged with pink flagging.

3.0 DISCUSSION

Overall, healthy growth of planted species along with significant contribution from volunteers was observed during the monitoring work. Applicable performance standards for survivability of trees and shrubs were met in all monitoring areas except for two; 3-E and 3-W. The paragraphs below provide more detailed description of how tree and shrub densities were determined, and specific discussion of monitoring areas where tree densities were observed to be below the 80% performance standard. See Table 1 for the summary of tree and shrub densities and counts within monitoring areas. Additional

discussion is also provided below concerning specific areas of tree or shrub mortality noted in the meander survey.

Calculations of tree and shrub densities were based on the presence or absence of shrub clumps. If shrubs were evenly distributed within the monitoring area, shrub density should have been 730 shrubs/acre and tree density should be 700 trees/acre in normal plots or 500 trees/acre in areas with Geoweb[®]. If a defined shrub clump was observed, the area of the shrub clump was delineated and resulting shrub density within the clump should have been 2,723 shrubs/acre if shrubs were planted 4 feet on center. The density of 2,723 shrubs per acre was established by utilizing the shrub clump planting design of shrubs installed 4-foot on center. One shrub occupies 16 square feet. 43,560 feet (1 acre) divided by 16 square feet results in a target density of 2,722.5 shrubs per acre within shrub clumps. Table 2 summarizes tree and shrub densities within monitoring plots.

Several areas within 1.5 Mile Reach, the planting schemes did not follow the standard planting densities due to needs or requests of residential property owners or the physical conditions of the riverbanks. If a monitoring plot was located within the areas that the standard planting densities were not followed, the assessment of the plot was based on the original number of plants planted. Such plots included 1-E-3, 3-W-2, 3-W-3, 3-E-3 and 4-E-2.

Tree density in the Geoweb[®] section of the Dawes to Pomeroy West Monitoring Area (3-W) was below the 80% performance standard. This is due to the apparent loss of 2 box elder trees within Monitoring Plot 3-W-1 since the summer 2006 vegetation monitoring event. Tree density was below the 80% performance standard for the non- Geoweb[®] section of the Dawes to Pomeroy East Monitoring Area (3-E) because 4 fewer trees were recorded in Monitoring Plot 3-E-1 this year. Both 3-W-1 and 3-E-1 are located in residential areas and appear to be negatively affected by human activity. A large compost pile has been created within Monitoring Plot 3-E-1 and a large Norway maple shades much of this plot. Trees and shrubs were tallied in all areas adjacent to these plots, including the trees and shrubs within the plots, and the information was used to assess tree densities within a greater section of this reach and to determine the necessity for supplemental planting. On the west riverbank all plants were counted on Parcels I7-2-46, I7-2-45 and I7-2-44, and on the east riverbank all plants were counted on Parcels I7-3-12 and I7-3-11. Based on the additional information gathered it was recommended that supplemental plantings of 1 box elder and 3 eastern cottonwoods be performed on the east riverbank and supplemental planting of 4 box elders and 2 silver maples (*Acer saccharinum*) on the west riverbank. High shrub density inhibits the ability to plant increased numbers of additional trees.

It was also recommended that the current sample area/plots be modified and enlarged in order to better represent the entire residential area the plots are within. Plot 3-W-1 will be approximately 1,037 square feet and Plot 3-E-1 will be approximately 1,233 square feet. Therefore, the assessment in the future will be based on a larger area with target densities based on the current live number of plants plus the recommended additional trees planted in the Spring 2007. This will be reflected in the Summer 2007 Inspection to be conducted in August 2007.

During the meander survey some areas of apparent increased tree and/or shrub mortality were observed within the west bank of the Lyman Street to Elm Street reach and the west bank of the Elm Street to Dawes Avenue reach. The cause of mortality on the Lyman Street to Elm Street reach was not readily apparent. Mortality in the Elm Street to Dawes Avenue reach was most probably caused by competition for resources with herbaceous species as well as previous herbivory by the forest tent caterpillars. Living shrubs in this area were typically greater than 4 feet in height (above the existing herbaceous layer). A large section of this reach was previously covered with hedge bind-weed in 2005 and 2006. It should also

be noted that trees and shrubs in the area were heavily infested with forest tent caterpillars in 2006 and most of the infested trees and shrubs were completely denuded of foliage last spring. Tree and shrub mortality was likely a combination of factors including herbivory by the forest tent caterpillar and competition for light and water from herbaceous growth (especially hedge bind-weed). In both of the areas that experienced high rates of tree and shrub mortality, dead trees and shrubs should be replaced with eastern cottonwood (*Populus deltoides*) and box elder trees. These replacement species are recommended because of their rapid growth rates and tolerance for drier conditions. In addition, in comparison to summer 2006, a significant decrease of trees was observed in plot 2-W-3. The overall % target density was achieved; however further research was performed to determine the reason for the decrease. Further review of the data sheets and field notes revealed that the increased numbers of trees present in the summer of 2006 was due to a very high number of volunteer trees observed at the time. It was determined that no additional actions were necessary to address this area.

4.0 RECOMMENDATIONS

The following actions are recommended for implementation during the Summer of 2007:

Riverbank Planting Areas

- Continue invasive plant control work, including addressing the presence of Japanese knotweed (*Polygonum cuspidatum*), multiflora rose (*Rosa multiflora*), Norway maple (*Acer platanoides*), garlic mustard (*Alliaria petiolata*), and common reed (*Phragmites australis*). Also it is recommended that false hedge bindweed be periodically removed from tree cages. In addition, perform grapevine removal from the area adjacent to the parking lot of Harry's Supermarket that is encroaching upon planted trees.
- Perform supplemental plantings of trees in areas that have experienced high tree and shrub mortalities on west banks of Monitoring Area 1 (24 trees) and Monitoring Area 2 (57 trees). Recommended species for replacement are box elder and eastern cottonwood.
- Perform supplemental plantings of box elder, eastern cottonwood, and silver maple (52 trees) on west bank of Monitoring area 1 to replace trees that have been impacted or are likely to become impacted by beavers as a result of installation of short protective cages.
- Perform supplemental plantings of 1 box elder and 3 eastern cottonwood on Parcel I7-3-12; 1 box elder on Parcel I7-2-46; 1 box elder and 1 silver maple on Parcel I7-2-45; and 2 box elders and 1 silver maple on Parcel I7-2-44.
- Remove protective cages from all shrubs as soon as possible.
- Perform pruning of tree branches growing through protective cages as soon as possible.
- Place tree guards around box elders that are shorter than tree cages.

Upland Planting Areas

- Prune dead main stem on Hemlock in Fred Garner Park (Parcel 7-1-101)
- Plant 4 Red Oaks as replacements in Fred Garner Park (Parcel 7-1-101)
- Plant 2 Red Oaks and 2 Red Maples on Parcel I6-1-66 to replace the 2 dead White Birch and 2 dead Balsam Fir
- Plant 2 Dark American Arborvitaes on Parcel I9-5-13
- Plant 1 Red Maple on Parcel I8-24-1 to replace the dead Balsam Fir
- Plant 1 Hemlock On Parcel I6-1-68



Photo 1. Silver maple requiring pruning due to lateral branching through protective cage.



Photo 2. Erosion under erosion control mat on west bank south of Lyman Street.



Photo 3. Wounds in black willow caused by insect boring into woody growth.

Woodlot Alternatives, Inc.
WAI PN 104141.03, Spring 2007 Vegetation Monitoring,
1.5 Mile Reach, Housatonic River, Pittsfield, MA
Monitoring Performed by Todd Chadwell, Woodlot Alternatives, Inc.

WAI PN.: 104141
Date: 15-May-07
By: TBC
Checked By:

Reach	Bank	Plot No.	Type	Date	Dimensions				Trees							Shrubs						Total Plants			
					L (ft)	Slope W (ft)	Height (ft) ¹	W (ft)	Area (ft ²)	BW	SM	EC	BE	Total Trees	Tree Density (Regular)	ROD	SD	WH	CC	NA	Total Shrubs		Shrub Density		
Lyman-Elm	West	1-W-1	Regular	5/15/2007	61	10	3	9.5	582	3	4	5	5	17	1273	0	0	0	0	0	0	0	0	17	
Lyman-Elm	West	1-W-2	Regular	5/15/2007	32	31	4.5	30.7	981	5	12	6	6	29	1287	2	0	0	0	1	3	133	32		
Lyman-Elm	West	1-W-3	Regular	5/15/2007	67	22	5	21.4	1435	5	3	8	5	21	637	9	4	5	4	4	26	789	47		
Monitoring Area Average																									
Lyman-Elm	East	1-E-1	Regular	5/15/2007	139	12	2	11.8	1645	8	5	8	7	28	742	15	11	9	6	4	45	1192	73		
Lyman-Elm	East	1-E-2	Regular	5/15/2007	45	34.5	2	34.4	1550	9	8	13	12	42	1180	0	2	0	0	0	2	56	44		
Lyman-Elm	East	1-E-3	Geoweb	5/15/2007	70	22	13	17.7	1242	0	0	0	6	6	210	12	5	0	5	0	22	771	28		
Monitoring Area Average																									
Elm-Dawes	West	2-W-1	Regular	5/15/2007	63	18	6.5	16.8	1057	7	6	6	2	21	865	9	1	0	0	1	11	453	32		
Elm-Dawes	West	2-W-2	Regular	5/15/2007	17	57	19	53.7	914	6	1	8	8	23	1097	1	0	0	0	0	1	48	24		
Elm-Dawes	West	2-W-3	Geoweb	5/15/2007	66	14	11	8.7	572	0	1	1	8	10	762	0	10	0	5	3	18	1372	28		
Monitoring Area Average																									
Elm-Dawes	East	2-E-1	Regular	5/15/2007	33	31	15	27.1	895	2	0	7	3	12	584	7	7	6	2	3	25	1216	37		
Elm-Dawes	East	2-E-2	Regular	5/15/2007	27	35	9	33.8	913	3	3	8	3	17	811	6	0	0	0	0	6	286	23		
Elm-Dawes	East	2-E-3	Regular	5/15/2007	141	11	5	9.8	1382	5	7	12	7	31	977	0	16	0	0	1	17	536	48		
Monitoring Area Average																									
Dawes-Pomeroy	West	3-W-1	Geoweb	5/15/2007	65	9	1	8.9	581	1	2	1	0	4	300	0	11	3	3	1	18	1349	22		
Dawes-Pomeroy	West	3-W-2	Regular	5/15/2007	67	14	0	14.0	938	3	3	1	2	9	418	9	2	2	0	3	16	743	25		
Dawes-Pomeroy	West	3-W-3	Regular	5/15/2007	105	13	0	13.0	1365	6	4	1	1	12	383	15	0	6	6	2	29	925	41		
Monitoring Area Average																									
Dawes-Pomeroy	East	3-E-1	Regular	5/15/2007	78	10	4	9.2	715	1	3	0	1	5	305	0	10	2	3	2	17	1036	22		
Dawes-Pomeroy	East	3-E-2	Geoweb	5/15/2007	38	12	7	9.7	370	1	0	7	1	9	1058	5	0	0	1	0	6	706	15		
Dawes-Pomeroy	East	3-E-3	Regular	5/15/2007	77	10	0	10.0	770	7	3	2	0	12	679	11	0	2	3	3	19	1075	31		
Monitoring Area Average																									
Pomeroy-Confluence	West	4-W-1	Regular	5/15/2007	50	18	0	18.0	900	5	5	3	6	19	920	6	0	0	0	0	6	290	25		
Pomeroy-Confluence	West	4-W-2	Regular	5/15/2007	50	25	0	25.0	1250	1	4	11	6	22	767	6	0	0	0	0	6	209	28		
Pomeroy-Confluence	West	4-W-3	Regular	5/15/2007	74	12	0	12.0	888	3	2	7	3	15	736	10	5	6	6	4	31	1521	46		
Monitoring Area Average																									
Pomeroy-Confluence	East	4-E-1	Geoweb	5/15/2007	50	8	0	8.0	400	2	2	2	1	7	762	6	0	0	0	0	6	653	13		
Pomeroy-Confluence	East	4-E-2	Regular	5/15/2007	50	10	0	10.0	500	2	0	1	0	3	261	0	7	5	1	3	16	1394	19		
Pomeroy-Confluence	East	4-E-3	Regular	5/15/2007	50	10	0	10.0	500	3	5	3	0	11	958	0	6	2	6	6	20	1742	31		
Monitoring Area Average																									

Notes:

- 1: From As-Built CAD Drawing
- 2: 3-W-1 Height based on field observation
- 3: 3-E-1 Height based on field observation

Species Legend

BW = black willow
SM = silver maple
EC = eastern cottonwood
BE = box elder

SD = silky dogwood
ROD = red-osier dogwood
NA= northern arrow-wood
WH = winterberry holly
CC = chokecherry

Woodlot Alternatives, Inc.
WAI PN 104141.03, Spring 2007 Vegetation
1.5 Mile Reach, Housatonic River, Pittsfield
Monitoring Performed by Todd Chadwell, Woodlot Alter

Reach	Bank	Plot No.	Type	Plot Characterization	Shrub Clumps								Trees				Performance Standard Summary		
					Length	Width	Shrub No.	Area*	Shrub D (shrubs/acre)	Target D (shrubs/acre)	% Target D	Area	Tree Density (tree/acre)	Target D (tree/acre)	% Target D or % Survivability	Shrubs	Trees (non-GeoWeb)	Trees (GeoWeb)	
Lyman-Elm	West	1-W-1	Regular	no shrubs clumps or RO band, shrub clump immediately upstream									582	1273	700	182%			
Lyman-Elm	West	1-W-2	Regular	4 shrubs projecting in from clump upstream, RO band incomplete									981	1287	700	184%			
Lyman-Elm	West	1-W-3	Regular	shrub clump approx. 24x14ft at S edge of plot	24	14	17	264	2806	2723	103%	1435	637	700	91%				
Monitoring Area Average													103%	152%	NA				
Lyman-Elm	East	1-E-1	Regular	shrub clump approx. 77x8ft in center of plot, RO band 77 ft in length	77	8	30	484	2701	2723	99%	1645	742	700	106%				
Lyman-Elm	East	1-E-2	Regular	shrub clump immediately upstream								1550	1180	700	169%				
Lyman-Elm	East	1-E-3	Geoweb	all shrubs with interspersed trees, shrubs 4-10ft OC, avg 7 ft OC				1242	771	730	106%	1242	210	NA	100%				
Monitoring Area Average													102%	137%	100%				
Elm-Dawes	West	2-W-1	Regular	2 shrubs projecting in from clump upstream								1057	865	700	124%				
Elm-Dawes	West	2-W-2	Regular	RO band unevenly spaced, shrub clump immed. upstream								914	1097	700	157%				
Elm-Dawes	West	2-W-3	Geoweb	shrubs distributed evenly with trees				572	1372	730	188%	572	762	500	152%				
Monitoring Area Average													188%	140%	152%				
Elm-Dawes	East	2-E-1	Regular	shrub clump approx. 1/2 of plot extending upstream (triangle)			18	316	2484	2723	91%	895	584	700	83%				
Elm-Dawes	East	2-E-2	Regular	no shrub clumps, shrub clump approx. 200 ft upstream & downstream								913	811	700	116%				
Elm-Dawes	East	2-E-3	Regular	no shrub clumps, shrub clump approx. 300 ft upstream								1382	977	700	140%				
Monitoring Area Average													91%	113%	NA				
Dawes-Pomeroy	West	3-W-1	Geoweb	all shrub clump w/ trees interspersed, some area void of plantings				581	1349	730	185%	581	300	500^	60%				
Dawes-Pomeroy	West	3-W-2	Regular	shrubs distributed evenly with trees, GE planting adjacent				938	743	730	102%	938	418	NA	100%				
Dawes-Pomeroy	West	3-W-3	Regular	shrubs distributed evenly, some area void, GE planting adjacent				1365	925	730	127%	1365	383	NA	100%				
Monitoring Area Average													138%	100%	60%				
Dawes-Pomeroy	East	3-E-1	Regular	shrub clump approx. 16x6ft w/ some interspersed shrubs	16	6	6	75	3466	2723	127%	715	305	700^	44%				
Dawes-Pomeroy	East	3-E-2	Geoweb	no shrub clumps, shrub clump approx. 120 ft downstream								370	1058	500	212%				
Dawes-Pomeroy	East	3-E-3	Regular	shrubs distributed evenly with trees, GE planting adjacent				770	1075	730	147%	770	679	NA	100%				
Monitoring Area Average													137%	72%	212%				
Pomeroy-Confluence	West	4-W-1	Regular	Shrubs in adjacent WMECO ROW								900	920	700	131%				
Pomeroy-Confluence	West	4-W-2	Regular	Shrubs in adjacent WMECO ROW								1250	767	700	110%				
Pomeroy-Confluence	West	4-W-3	Regular	Shrub clump approximately 1/2 of plot	40	10	27	400	2940	2723	108%	888	736	700	105%				
Monitoring Area Average													108%	115%	NA				
Pomeroy-Confluence	East	4-E-1	Geoweb	Shrub clump adjacent to plot								400	762	500	152%				
Pomeroy-Confluence	East	4-E-2	Regular	shrubs distributed evenly with trees, predominantly all shrubs				500	1394	730	191%	500	261	NA	100%				
Pomeroy-Confluence	East	4-E-3	Regular	shrubs distributed evenly with trees				500	1742	730	239%	500	958	700	137%				
Monitoring Area Average													215%	118%	152%				

Notes:

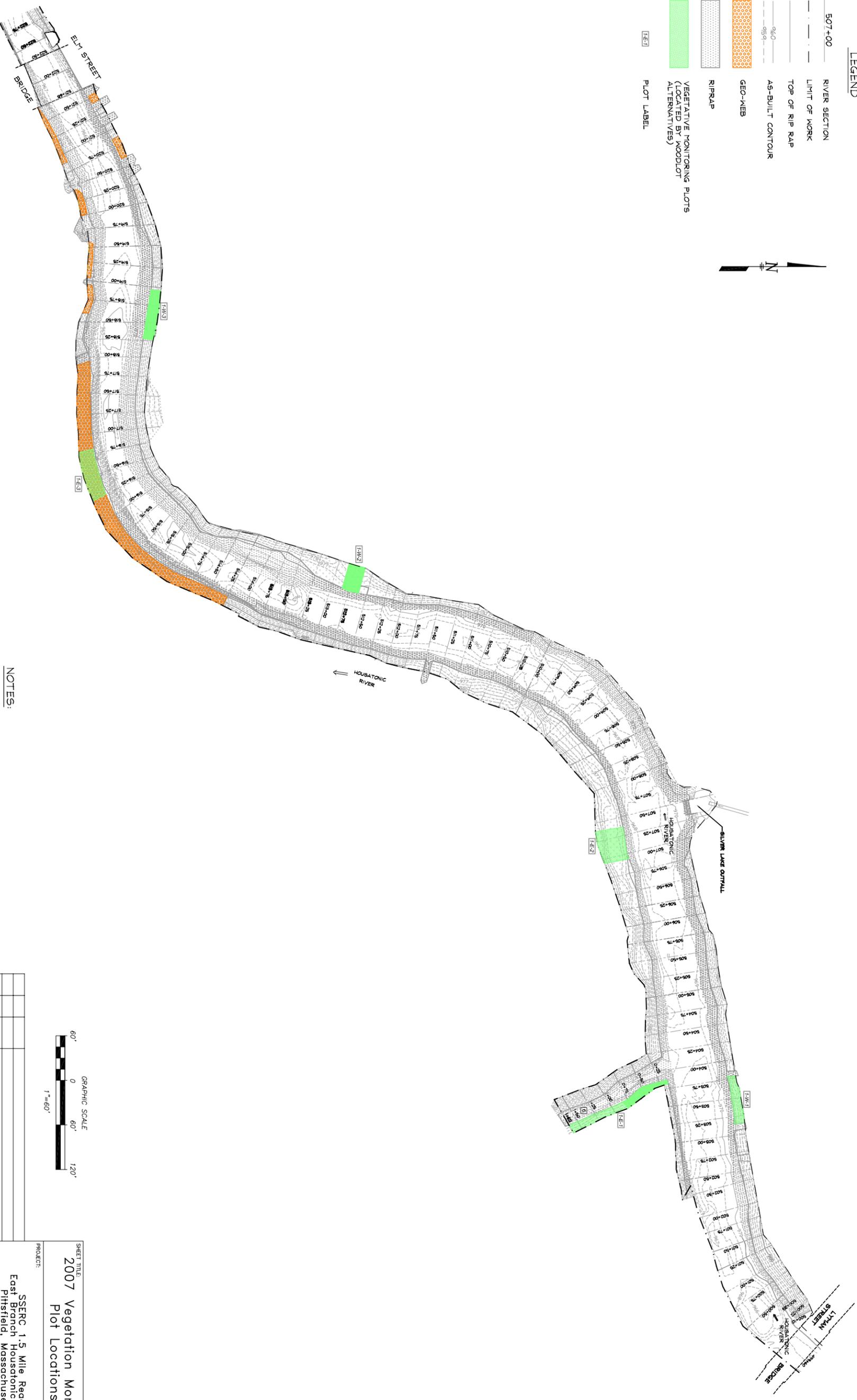
	<u>Target Planting Densities</u>	
	<u>Normal Geoweb</u>	
Trees:	700	500 per acre
Shrubs:	730	730 per acre
Total:	1430	1230 per acre

* area of ellipse or triangle for shrub clumps
shrub clump
denotes plots where survivorship criterion is based on actual number of trees planted.

Assessment of sample area (plot) based on original number of trees planted
Plot #: (1-E-3) - Six trees originally planted within plot, with 100% survivability to date
Plot #: (3-W-2) - Nine trees originally planted within plot, with 100% survivability to date
Plot #: (3-W-3) - Twelve trees originally planted within plot, with 100% survivability to date
Plot #: (3-E-3) - Twelve trees originally planted within plot, with 100% survivability to date
Plot #: (4-E-2) - Three trees originally planted within plot, with 100% survivability to date

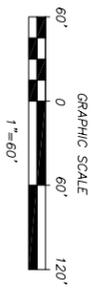
^ - Based on observations made during the 2007 Spring inspection, it was recommended that additional trees be planted within the entire residential area that these sample areas/plots represent. It was also recommended that the current sample area/plots be modified and enlarged in order to better represent the entire residential area the plots are within. Therefore, the assessment in the future will be based on a larger area, and the target density will be based on live number of plants plus the recommended additional trees planted in the Spring 2007. In the future target density for sample area/plot 3-W-1 will be 500 tree/acre and for 3-E-1 will be 388 tree/acre.

- LEGEND**
- 507+00 RIVER SECTION
 - LIMIT OF WORK
 - TOP OF RIP RAP
 - 9%0 AS-BUILT CONTOUR
 - 95-9
 - GEO-MEB
 - RIPRAP
 - VEGETATIVE MONITORING PLOTS (LOCATED BY WOODLOT ALTERNATIVES)
 - 1-E-1 PLOT LABEL



NOTES:

1. AS-BUILT TOPOGRAPHIC SURVEY PERFORMED BY HILL ENGINEERS, ARCHITECTS, PLANNERS, INC. BETWEEN SEPTEMBER 2002 (PHASE #1) AND APRIL 2006 (END PHASE #3).
2. GEO-MEB LOCATIONS ARE BASED ON PLANS PROVIDED BY WESTON SOLUTIONS, INC. AND WERE NOT LOCATED IN THE FIELD (WITH AN INSTRUMENT) BY HILL-ENGINEERS, ARCHITECTS, PLANNERS, INC.



REV.	BY	DATE	STATUS

SHEET TITLE:
2007 Vegetation Monitoring Plot Locations

PROJECT:
SSERC 1.5 Mile Reach
East Branch Housatonic River
Pittsfield, Massachusetts

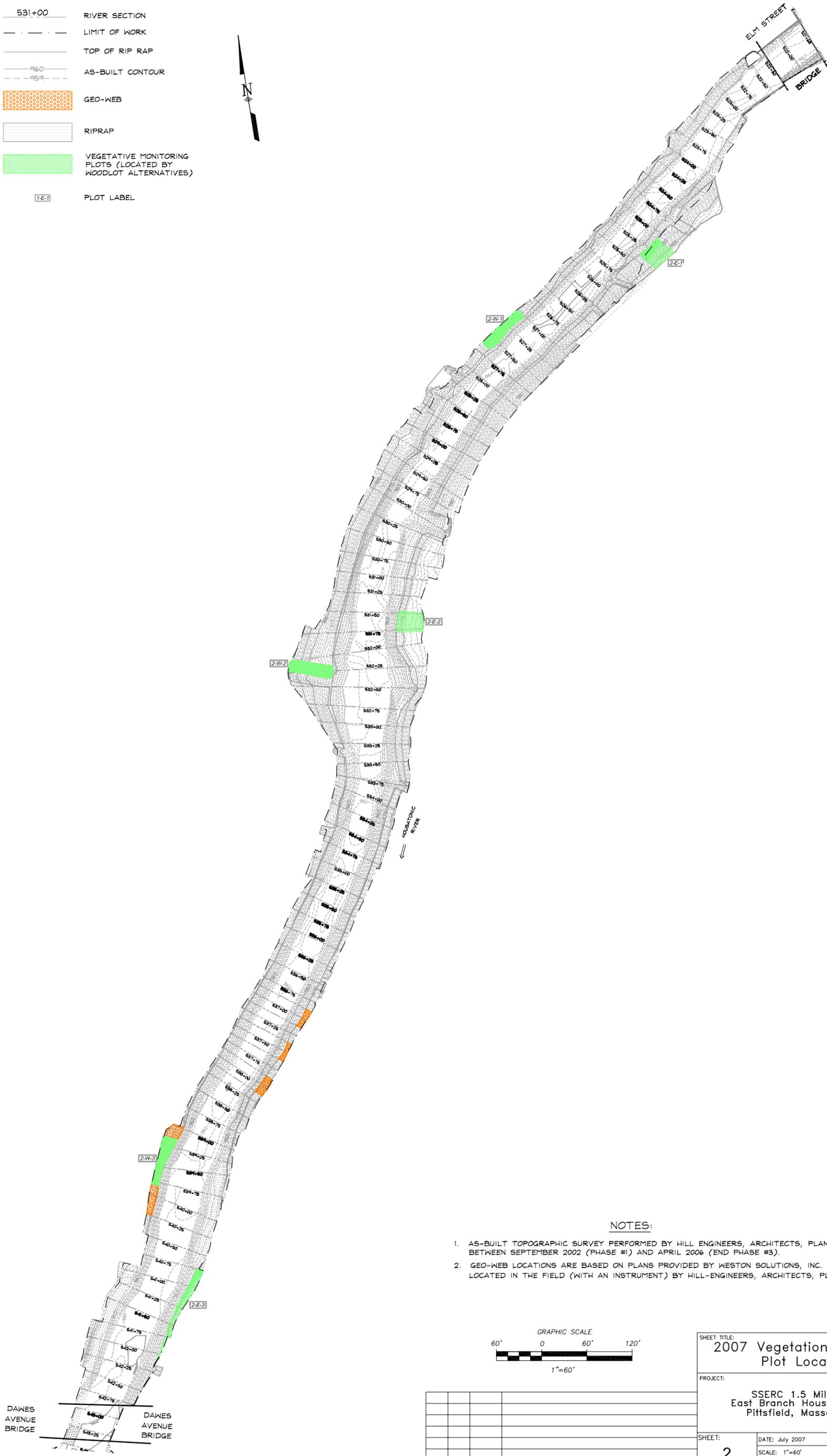
SHEET:
1

DATE: July 2007
SCALE: 1"=60'
PROJ. NO.: 104141.03



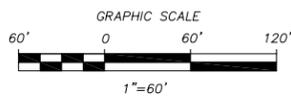
LEGEND

- 531+00 RIVER SECTION
- LIMIT OF WORK
- TOP OF RIP RAP
- 960 AS-BUILT CONTOUR
- 959
-  GEO-WEB
-  RIPRAP
-  VEGETATIVE MONITORING PLOTS (LOCATED BY WOODLOT ALTERNATIVES)
-  PLOT LABEL



NOTES:

1. AS-BUILT TOPOGRAPHIC SURVEY PERFORMED BY HILL ENGINEERS, ARCHITECTS, PLANNERS, INC. BETWEEN SEPTEMBER 2002 (PHASE #1) AND APRIL 2006 (END PHASE #3).
2. GEO-WEB LOCATIONS ARE BASED ON PLANS PROVIDED BY WESTON SOLUTIONS, INC. AND WERE NOT LOCATED IN THE FIELD (WITH AN INSTRUMENT) BY HILL-ENGINEERS, ARCHITECTS, PLANNERS, INC.



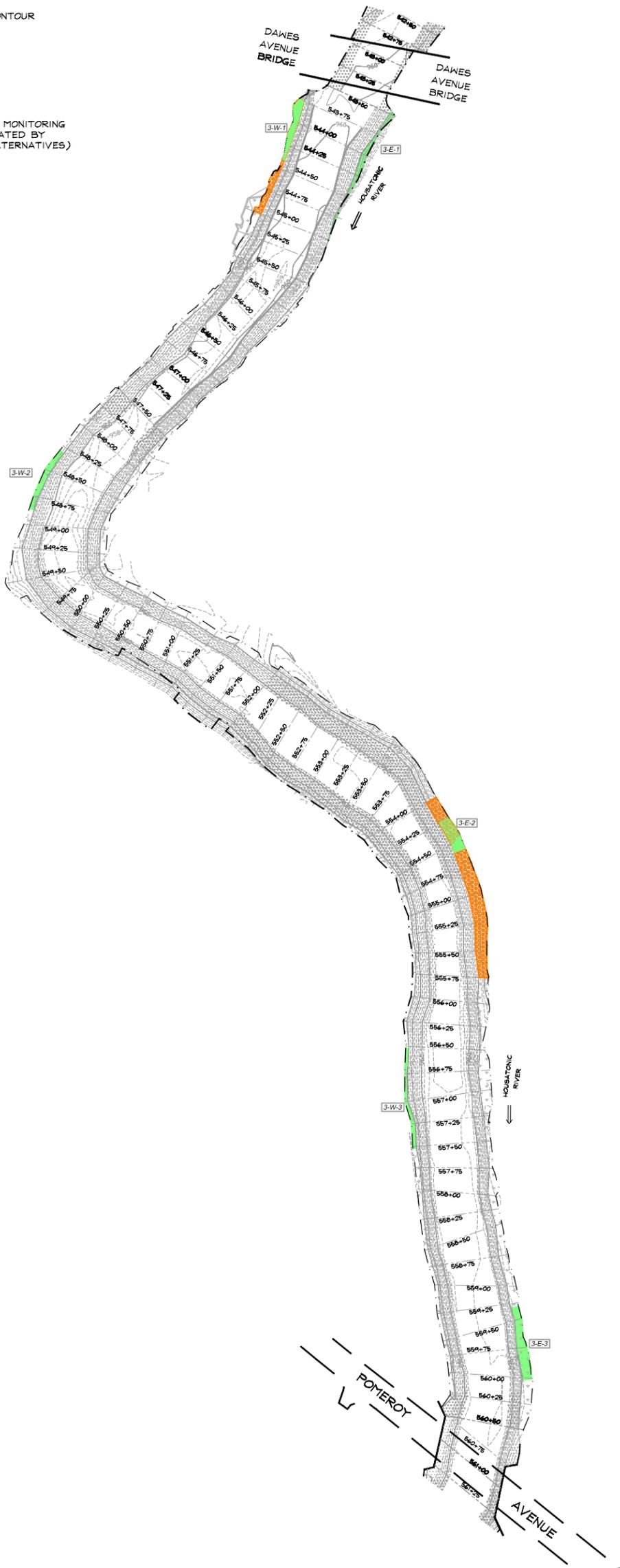
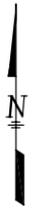
SHEET TITLE: 2007 Vegetation Monitoring Plot Locations	
PROJECT: SSERC 1.5 Mile Reach East Branch Housatonic River Pittsfield, Massachusetts	
SHEET: 2	DATE: July 2007 SCALE: 1"=60' PROJ. NO.: 104141.03
 WOODLOT ALTERNATIVES, INC. ENVIRONMENTAL CONSULTANTS	

REV.	BY	DATE	STATUS

S:\2007\CURRENT\2007\SSERC_1.5_Mile_Reach\104141_03_2006\MapDocs\2007_Veg_Mon_Plots_07-07.dwg

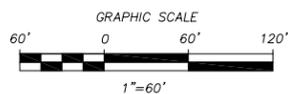
LEGEND

- 531+00 RIVER SECTION
- LIMIT OF WORK
- TOP OF RIP RAP
- 960 AS-BUILT CONTOUR
- 959
- GEO-WEB
- RIPRAP
- VEGETATIVE MONITORING PLOTS (LOCATED BY WOODLOT ALTERNATIVES)
- 1-E-1 PLOT LABEL



NOTES:

1. AS-BUILT TOPOGRAPHIC SURVEY PERFORMED BY HILL ENGINEERS, ARCHITECTS, PLANNERS, INC. BETWEEN SEPTEMBER 2002 (PHASE #1) AND APRIL 2006 (END PHASE #3).
2. GEO-WEB LOCATIONS ARE BASED ON PLANS PROVIDED BY WESTON SOLUTIONS, INC. AND WERE NOT LOCATED IN THE FIELD (WITH AN INSTRUMENT) BY HILL-ENGINEERS, ARCHITECTS, PLANNERS, INC.



REV.	BY	DATE	STATUS

SHEET TITLE: 2007 Vegetation Monitoring Plot Locations	
PROJECT: SSERC 1.5 Mile Reach East Branch Housatonic River Pittsfield, Massachusetts	
SHEET: 3	DATE: July 2007 SCALE: 1"=60' PROJ. NO.: 104141.03

LEGEND

- 562+00 RIVER SECTION
- LIMIT OF WORK
- TOP OF RIP RAP
- 9/6' AS-BUILT CONTOUR
- 9/5' AS-BUILT CONTOUR
- GEO-MEB
- RIPRAP
- VEGETATIVE MONITORING PLOTS (LOCATED BY WOODLOT ALTERNATIVES)
- 40x4 PLOT LABEL



- NOTES:**
1. AS-BUILT TOPOGRAPHIC SURVEY PERFORMED BY HILL ENGINEERS, ARCHITECTS, PLANNERS, INC. BETWEEN SEPTEMBER 2002 (PHASE #1) AND APRIL 2006 (END PHASE #3).
 2. GEO-MEB LOCATIONS ARE BASED ON PLANS PROVIDED BY WESTON SOLUTIONS, INC. AND WERE NOT LOCATED IN THE FIELD (WITH AN INSTRUMENT) BY HILL-ENGINEERS, ARCHITECTS, PLANNERS, INC.

REV.	BY	DATE	STATUS

SHEET TITLE
2007 Vegetation Monitoring Plot Locations

PROJECT:
 SSERC 1.5 Mile Reach
 East Branch Housatonic River
 Pittsfield, Massachusetts

SHEET: 4

DATE: July 2007
SCALE: 1"=60'
PROJ. NO.: 104141.03



Revegetation Monitoring Field Form

1 W1

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

Page ___ of ___

Observer(s): Ryan Emerson

Date: 5/15/07

Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 1-W-1

Riverbank Length (ft): _____ Avg width (ft): _____

Planting Area (sf): _____ 10-20% Area (sf): _____

Comments: _____

Random Sample Location Number: _____ Riverbank length (ft): _____ Width (ft): _____

Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

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

Total Live Trees: 17 Total Live Shrubs: 0

Herbaceous Cover (%): 100 (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 1W2

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA Page ___ of ___

Observer(s): Bryan Emerson Date: 3/15/07
 Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 1-10-2
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): _____ 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: _____ Riverbank length (ft): _____ Width (ft): _____
 Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		5	Red-osier Dogwood		2
Silver Maple	 	12	Silky Dogwood		-
Eastern Cottonwood		6	Winterberry Holly		-
Box Elder		6	Chokecherry		-
			Northern Arrowwood		1

Total Live Trees: 29 Total Live Shrubs: 3

Herbaceous Cover (%): 95% (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 1W3

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA Page ___ of ___

Observer(s): Bryan Emerson Date: 5/15/07
 Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 1W-3
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): _____ 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: _____ Riverbank length (ft): _____ Width (ft): _____
 Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

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

Total Live Trees: 21 Total Live Shrubs: 26

Herbaceous Cover (%): 100 (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form

1 E 1

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

Page ___ of ___

Observer(s): Bryan Lawson & Todd Chudnow Date: 5/15/07
 Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

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

Random Sample Location Number: _____ Riverbank length (ft): _____ Width (ft): _____
 Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	 1	8	Red osier Dogwood	 	15
Silver Maple	①	5	Silky Dogwood	 1	11
Eastern Cottonwood		8	Winterberry Holly		9
Box Elder	 ①	7	Chokecherry		6
			Northern Arrowwood		4

Total Live Trees: 28 Total Live Shrubs: 45

Herbaceous Cover (%): 95% (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form

1 E 2

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

Page ___ of ___

Observer(s): Bryan Emerson & Todd Chadwell

Date: 5/15/07

Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 1-E-2

Riverbank Length (ft): _____ Avg width (ft): _____

Planting Area (sf): _____ 10-20% Area (sf): _____

Comments: _____

Random Sample Location Number: _____ Riverbank length (ft): _____ Width (ft): _____

Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		9	Red-osier Dogwood		-
Silver Maple		8	Silky Dogwood		2
Eastern Cottonwood	 	13	Winterberry Holly		-
Box Elder	 0:1	12	Chokecherry		-
			Northern Arrowwood		-

Total Live Trees: 42 Total Live Shrubs: 2

Herbaceous Cover (%): 100 (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 1E3

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

Page ___ of ___

Observer(s): Bryan Emerson Date: 5/15/07
 Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 1-E-3
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): _____ 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: _____ Riverbank length (ft): _____ Width (ft): _____
 Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		-	Red-osier Dogwood	TTTT 	12
Silver Maple		-	Silky Dogwood		5
Eastern Cottonwood		-	Winterberry Holly		-
Box Elder	1	6	Chokecherry		5
			Northern Arrowwood		-

Total Live Trees: 6 Total Live Shrubs: 22

Herbaceous Cover (%): 95% (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

- One Box Elder has a Willow sp growing in the same cage
 6

Revegetation Monitoring Field Form 2 W 1

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

Page ___ of ___

Observer(s): Bryan Emerson Date: 5/15/07

Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 2-W-1

Riverbank Length (ft): _____ Avg width (ft): _____

Planting Area (sf): _____ 10-20% Area (sf): _____

Comments: _____

Random Sample Location Number: _____ Riverbank length (ft): _____ Width (ft): _____

Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		7	Red-osier Dogwood		9
Silver Maple		6	Silky Dogwood		1
Eastern Cottonwood		6	Winterberry Holly		
Box Elder	 0:	2	Chokecherry		
			Northern Arrowwood		1

Total Live Trees: 21 Total Live Shrubs: 11

Herbaceous Cover (%): 80% (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Cage maintenance needed

Revegetation Monitoring Field Form 2 W 2

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

Page ___ of ___

Observer(s): Bryan Emerson Date: 5/15/07

Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 2-W-2

Riverbank Length (ft): _____ Avg width (ft): _____

Planting Area (sf): _____ 10-20% Area (sf): _____

Comments: _____

Random Sample Location Number: _____ Riverbank length (ft): _____ Width (ft): _____

Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

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

Total Live Trees: 23 Total Live Shrubs: 1

Herbaceous Cover (%): 100% (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Willows are very stressed

Revegetation Monitoring Field Form 2 W 3

1.5 Mile Reach, GE/Housatonic River Site, Pittsfield, MA Page ___ of ___

Observer(s): Bryan Emerson Date: 5/15/07
 Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 2-4-3
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): _____ 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 2W3 Riverbank length (ft): _____ Width (ft): _____
 Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow			Red-osier Dogwood		
Silver Maple		1	Silky Dogwood		10
Eastern Cottonwood		1	Winterberry Holly		
Box Elder	1	6	Chokecherry		5
			Northern Arrowwood		3

Total Live Trees: 8 Total Live Shrubs: 18

Herbaceous Cover (%): NA

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):
Lots of Box Elder seedlings (6"-1" tall) from large Box Elder above plot

Revegetation Monitoring Field Form 2 E 1

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

Page of

Observer(s): Bryan Emerson Date: 5/15/07

Phase: Flow @ Coltsville (cfs) Weather:

Planting Area Location: 2-E-1

Riverbank Length (ft): Avg width (ft):

Planting Area (sf): 10-20% Area (sf):

Comments:

Random Sample Location Number: 2 E 1 Riverbank length (ft): Width (ft):

Slope length (ft): Sample Area (sf):

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		2	Red-osier Dogwood		7
Silver Maple			Silky Dogwood		7
Eastern Cottonwood		7	Winterberry Holly		6
Box Elder		3	Chokecherry		2
			Northern Arrowwood		3

Total Live Trees: 12 Total Live Shrubs: 25

Herbaceous Cover (%): 95% (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 2E2

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

Page ___ of ___

Observer(s): Bryan Emerson Date: 5/19/07

Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 2-E-2

Riverbank Length (ft): _____ Avg width (ft): _____

Planting Area (sf): _____ 10-20% Area (sf): _____

Comments: _____

Random Sample Location Number: 2E2 Riverbank length (ft): _____ Width (ft): _____

Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

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

Total Live Trees: 17 Total Live Shrubs: 6

Herbaceous Cover (%): 100 (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 2E3

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

Page of

Observer(s): Byron Emerson Date: 5/15/07
 Phase: Flow @ Coltsville (cfs) Weather:

Planting Area Location: 2-E-3
 Riverbank Length (ft): Avg width (ft):
 Planting Area (sf): 10-20% Area (sf):
 Comments:

Random Sample Location Number: 2E3 Riverbank length (ft): Width (ft):
 Slope length (ft): Sample Area (sf):

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		5	Red-osier Dogwood		
Silver Maple		7	Silky Dogwood	 	16
Eastern Cottonwood	 	12	Winterberry Holly		
Box Elder		7	Chokecherry		
			Northern Arrowwood		1

Total Live Trees: 31 Total Live Shrubs: 17

Herbaceous Cover (%): 95% (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 3 W 1

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

Page ___ of ___

Observer(s): Bryan Emerson Date: 5/15/07
 Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 3-10-1
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): _____ 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 3W1 Riverbank length (ft): _____ Width (ft): _____
 Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	1	1	Red-osier Dogwood		
Silver Maple	11	2	Silky Dogwood		11
Eastern Cottonwood	1	1	Winterberry Holly		3
Box Elder			Chokecherry		3
			Northern Arrowwood	1	1

Total Live Trees: 4 Total Live Shrubs: 18

Herbaceous Cover (%): 100 (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 3W2

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

Page ___ of ___

Observer(s): Byron Emerson Date: 5/15/07
 Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 3W2
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): _____ 10-20% Area (sf): _____

Comments: _____

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

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		3	Red-osier Dogwood		9
Silver Maple		3	Silky Dogwood		2
Eastern Cottonwood		1	Winterberry Holly		2
Box Elder		2	Chokecherry		
			Northern Arrowwood		3

08/14/07
= serviceberry

Total Live Trees: 9 **Total Live Shrubs:** 16 (14)

Herbaceous Cover (%): 95% (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 3W3

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

Page ___ of ___

Observer(s): Bryan Emerson Date: 5/15/07
 Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 3W3
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): _____ 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 3W3 Riverbank length (ft): _____ Width (ft): _____
 Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		6	Red-osier Dogwood	 	15
Silver Maple		4	Silky Dogwood		
Eastern Cottonwood		1	Winterberry Holly		6
Box Elder		1	Chokecherry		6
			Northern Arrowwood		2

Total Live Trees: 12 Total Live Shrubs: 29

Herbaceous Cover (%): 90 (NA)
 Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 3 E 1

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

Page of

Observer(s): Bryan Emerson Date: 5/15/07
 Phase: Flow @ Coltsville (cfs) Weather:

Planting Area Location: 3-E-1
 Riverbank Length (ft): Avg width (ft):
 Planting Area (sf): 10-20% Area (sf):
 Comments:

Random Sample Location Number: 3 E 1 Riverbank length (ft): Width (ft):
 Slope length (ft): Sample Area (sf):

Plant Survivorship:

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

Total Live Trees: 5 Total Live Shrubs: 17

Herbaceous Cover (%): 100 (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 3E2

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

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Observer(s): Bryan Emerson Date: 5/15/07
 Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 3E2
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): _____ 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 3E2 Riverbank length (ft): _____ Width (ft): _____
 Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	1	1	Red-osier Dogwood		5
Silver Maple			Silky Dogwood		
Eastern Cottonwood		7	Winterberry Holly		
Box Elder	1	1	Chokecherry	1 (in same cage as a rottenwood)	1
			Northern Arrowwood		

Total Live Trees: 9 Total Live Shrubs: 6

Herbaceous Cover (%): 100 (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 3E3

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

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Observer(s): Bryan Emerson Date: 5/15/07

Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 3E3

Riverbank Length (ft): _____ Avg width (ft): _____

Planting Area (sf): _____ 10-20% Area (sf): _____

Comments: _____

Random Sample Location Number: 3E3 Riverbank length (ft): _____ Width (ft): _____

Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		7	Red-osier Dogwood		11
Silver Maple		3	Silky Dogwood		
Eastern Cottonwood		2	Winterberry Holly		2
Box Elder			Chokecherry		3
			Northern Arrowwood		3

Total Live Trees: 12 Total Live Shrubs: 19

Herbaceous Cover (%): 95 (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 4W1

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

Page ___ of ___

Observer(s): Bryan Emerson Date: 5/15/07

Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 4-W-1

Riverbank Length (ft): _____ Avg width (ft): _____

Planting Area (sf): _____ 10-20% Area (sf): _____

Comments: _____

Random Sample Location Number: _____ Riverbank length (ft): _____ Width (ft): _____

Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

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

Total Live Trees: 19 Total Live Shrubs: 6

Herbaceous Cover (%): 100 (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 4W2

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

Page ___ of ___

Observer(s): Bryan Emerson Date: 5/15/07
 Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 4-W-2
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): _____ 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 4W2 Riverbank length (ft): _____ Width (ft): _____
 Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		1	Red-osier Dogwood		6
Silver Maple		4	Silky Dogwood		
Eastern Cottonwood	 	11	Winterberry Holly		
Box Elder		6	Chokecherry		
			Northern Arrowwood		

Total Live Trees: 22 Total Live Shrubs: 6

Herbaceous Cover (%): 75 NA

Invasive Plant Cover (%): (NA)

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 4W3

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

Page ___ of ___

Observer(s): Bryan Eversen & TC

Date: start 7/30/09

Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 4-W-3

Riverbank Length (ft): 74 Avg width (ft): 12

Planting Area (sf): _____ 10-20% Area (sf): _____

Comments: 1st riprap

Random Sample Location Number: 4W3 Riverbank length (ft): _____ Width (ft): _____

Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		X3	Red-osier Dogwood		X6
Silver Maple		X2	Silky Dogwood		5
Eastern Cottonwood	 ①	X7	Winterberry Holly		6
Box Elder		X3	Chokecherry		6
			Northern Arrowwood		4

Total Live Trees: X6 Total Live Shrubs: X31

Herbaceous Cover (%): 90 (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 4E1

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

Page ___ of ___

Observer(s): Bryan Emerson Date: 5/15/07
 Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 4E1
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): _____ 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 4E1 Riverbank length (ft): _____ Width (ft): _____
 Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow	11	2	Red-osier Dogwood	1	6
Silver Maple	11	2	Silky Dogwood		
Eastern Cottonwood	11	2	Winterberry Holly		
Box Elder	1	1	Chokecherry		
			Northern Arrowwood		

Total Live Trees: 7 Total Live Shrubs: 6

Herbaceous Cover (%): 90 (NA)

Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 4E2

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

Page ___ of ___

Observer(s): Bryan Emuson Date: 5/15/07
 Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 4E2
 Riverbank Length (ft): _____ Avg width (ft): _____
 Planting Area (sf): _____ 10-20% Area (sf): _____
 Comments: _____

Random Sample Location Number: 4E2 Riverbank length (ft): _____ Width (ft): _____
 Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		2	Red-osier Dogwood		
Silver Maple		-	Silky Dogwood		7
Eastern Cottonwood		1	Winterberry Holly		5
Box Elder		-	Chokecherry		1
			Northern Arrowwood		3

Total Live Trees: 3 Total Live Shrubs: 16

Herbaceous Cover (%): 80 (NA)
 Invasive Plant Cover (%): NA

Meander Survey Comments (Use Additional Sheets As Necessary):

Revegetation Monitoring Field Form 4E3

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

Page ___ of ___

Observer(s): Ryan Emerson Date: 5/15/07

Phase: _____ Flow @ Coltsville (cfs) _____ Weather: _____

Planting Area Location: 4-E-3

Riverbank Length (ft): _____ Avg width (ft): _____

Planting Area (sf): _____ 10-20% Area (sf): _____

Comments: _____

Random Sample Location Number: 4E3 Riverbank length (ft): _____ Width (ft): _____
 Slope length (ft): _____ Sample Area (sf): _____

Plant Survivorship:

Trees	Quantity (live)	Total	Shrubs	Quantity (live)	Total
Black Willow		3	Red-osier Dogwood		
Silver Maple		5	Silky Dogwood	 1	6
Eastern Cottonwood		3	Winterberry Holly		2
Box Elder			Chokecherry	1	6
			Northern Arrowwood	1	6

Total Live Trees: 13/11 Total Live Shrubs: 20

Herbaceous Cover (%): 85

Invasive Plant Cover (%): _____

Meander Survey Comments (Use Additional Sheets As Necessary):

5 dead trees in plot, either Box Elder or Silver Maple