HOBSON CREEK CORRIDOR RESTORATION PROJECT, PHASE 2
TRIBUTARY 6 TO THE EAST BRANCH DUPAGE RIVER
Section 319 Project Report

Illinois EPA Agreement No. 3190325

Illinois Environmental Protection Agency
Bureau of Water
Watershed Management Section

November 2005

HOBSON CREEK CORRIDOR RESTORATION PROJECT, PHASE 2
TRIBUTARY 6 TO THE EAST BRANCH DUPAGE RIVER
SECTION 319 FINAL REPORT

ILLINIOS EPA FAA # 3190325
NOVEMBER 2005

Prepared For:

ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF WATER – WATERSHED MANAGEMENT SECTION
1021 NORTH GRAND AVENUE EAST
SPRINGFIELD, IL 62702

Prepared by:

TED GRAY & ASSOCIATES, INC.
1 SOUTH 132 SUMMIT AVENUE, SUITE 304
OAKBROOK TERRACE, IL 60181
Ph: 630-261-1133 Fax: 630-261-1144

This report was prepared using United States Environmental Protection Agency funds under Section 319 of the Clean Water Act distributed through the Illinois Environmental Protection Agency. The findings and recommendations contained herein are not necessarily those of the funding agencies.

HOBSON CREEK CORRIDOR RESTORATION PROJECT

TABLE OF CONTENTS

Summary:
The Hobson Creek Community Council completed the Hobson Creek Corridor Restoration Project, Phase 2 in order to protect against severe streambank erosion, to provide nonpoint source pollution control along Hobson Creek and to improve water quality of the downstream East Branch DuPage River. Installed stream stabilization techniques have provided effective and environmentally sound bank protection and channel stability for the Phase 2 reach. The Hobson Creek Community Council will provide long-term maintenance for the project site. Public involvement to date includes awareness of adjacent homeowners, numerous trail and parkway visitors near existing signage, a project description and site tour for the River Restoration Principles and Practices Conference sponsored by IL-IN Sea Grant, and publication of three newspaper articles, one environmental newsletter article, and three professional trade magazine publications.

Introduction:
The Hobson Creek Corridor Restoration Project is located on common space owned by the Hobson Creek Community Council in unincorporated Naperville, DuPage County, Illinois. Hobson Creek has a 1.71 square mile watershed. The watershed is primarily comprised of single family and multi-family residential areas. Hobson Creek has also been identified as Tributary #6 to the East Branch DuPage River. The East Branch DuPage River is located approximately 1,100 linear feet downstream of the project site. The entire Hobson Creek Corridor has been divided into 3 reaches for construction implementation purposes:

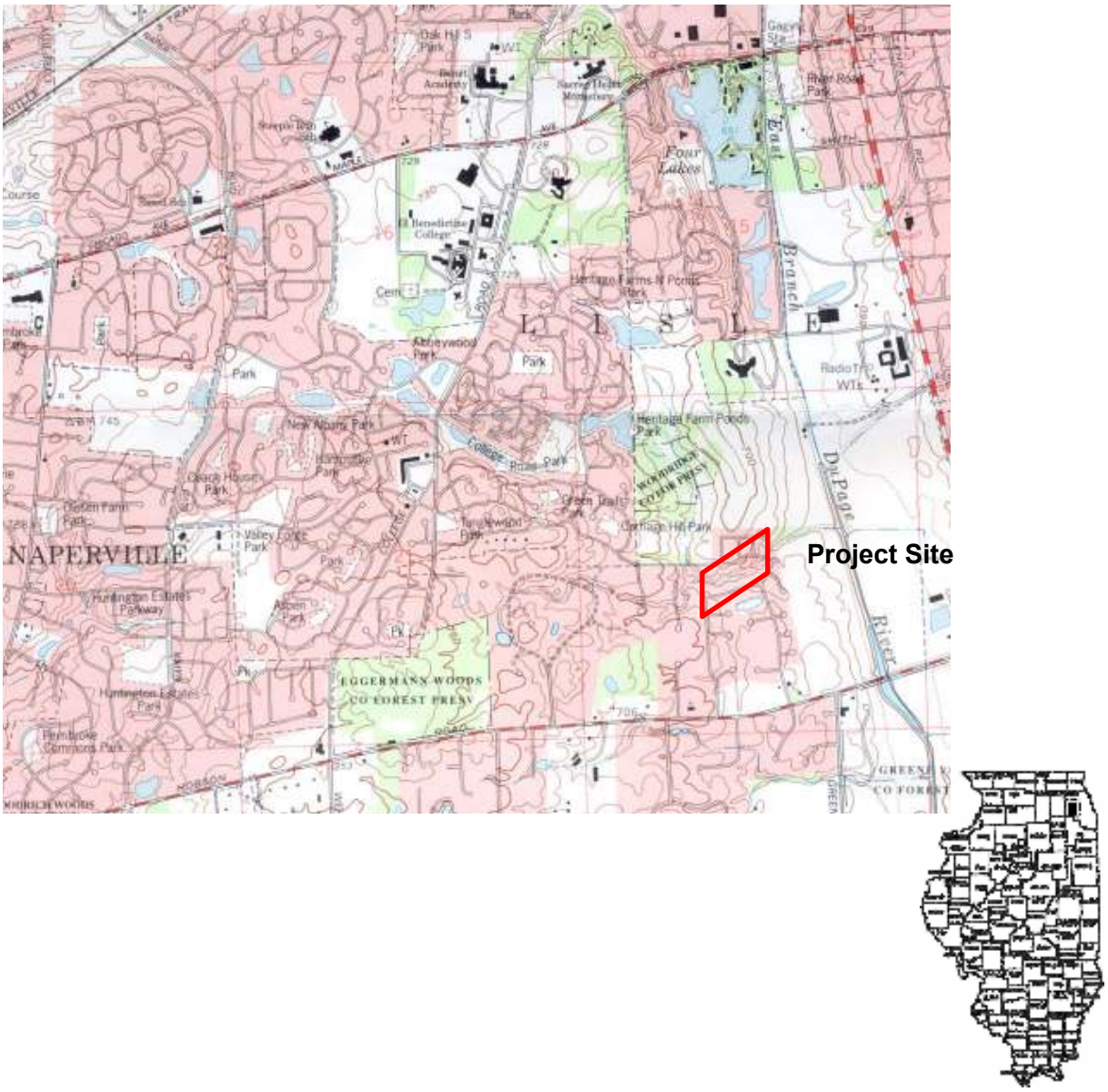
Phase 1 – Upstream project boundary downstream to stream station 10+00 (Sta. 17+50 to 10+00)
Phase 2 – Stream station 10+00 downstream to Green Trails Drive (Sta. 10+00 to 3+50)
Phase 3 – Green Trails Drive downstream to Woodridge Park District (Sta. 3+50 to 0+00) and also the Hobson Creek Inlet Channel (additional 250 linear feet)

The Phase 2 project area is the subject of this Final Report. Phase 2 included a 650 linear-foot length of stream which had severely eroded streambanks and 1.31 acres of degraded riparian corridor. Severe streambank erosion was due several factors. Most of the watershed was developed prior to the enforcement of stormwater detention ordinances, resulting in the rapid discharge of large volumes of urban runoff. The streambank riparian corridor was impacted by a dense canopy of invasive shrubs including Buckthorn (Rhamnus cathartica) and Honeysuckle (Lonicera tatarica). The highly eroded streambanks contain little to no ground-stabilizing vegetation. This provided little functional benefit and contributed to site degradation. The stream channel has incised approximately one to two feet into the landscape, particularly the upstream portion of the project reach. Moreover, significant channel widening has occurred. There is one location in the Phase 2 project reach (Station 6+00) where streambank erosion is within 10 feet of migrating out of the common open space area into private property of the adjacent townhome structures. Several large trees have nearly fallen into the eroding stream channel. The severe streambank erosion has resulted in significant sediment delivery to the East Branch of the DuPage River. Moreover, the streambank riparian corridor has become

encroached with a dense canopy of invasive, exotic shrubs including Buckthorn (Rhamnus cathartica). This has provided little functional benefit to the site, and has contributed to site degradation as discussed below (under Proposed Stabilization Plan). The Illinois EPA Load Reduction Spreadsheet was utilized to quantify the significant sediment delivery to the East Branch of the DuPage River as described below under Project Benefits.

A primary objective of the Hobson Creek Corridor Restoration Project was to improve the water quality in the project area and to reduce the sediment loading caused by streambank erosion into Hobson Creek and the East Branch DuPage River. This objective was accomplished by extensive streambank stabilization, installation of a channel grade control structure, removal of invasive shrub species in the riparian area, and installation of native plantings along the stabilized streambanks and within the riparian area.

Location Map



Project Schedule

Table 1 below indicates the project schedule and completion requirements. Permits for the Phase 1 and Phase 2 Project Sites were received on September 24, 2003. Phase 2 project construction began September 20, 2004 and native planting installations (native shrub live stakes and herbaceous plant plugs) were completed June 2, 2005 according to approved Plans and Specifications.

Table 1: Project Schedule.
Hobson Creek Corridor Restoration Project, Phase 2.
IEPA FAA 3190325.

Action Item	Start Date	Completion Date *
FAA 3190325 Award	May 1, 2004	April 30, 2006
Design Engineering	March 1, 2003	May 26, 2003
Permitting	May 27, 2003	Sept. 24, 2003
Bidding	August 1, 2004	August 19, 2004
Construction Contract Award	N/A	August 20, 2003
Riparian Invasive Species Removal	Sept. 20, 2004	Oct. 15, 2004
Streambank Stabilization Construction	Oct. 10, 2004	Oct. 25, 2004
Native Plantings	Oct. 15, 2004	June 2, 2005
Project Final Report		**Dec. 15, 2005**

* Items in **Bold** are expected completion dates.

Project Description and Stabilization Techniques

The Hobson Creek Corridor Restoration Project, Phase 2 included lead engineering, surveying and drafting by Patrick Engineering, Inc. Stream stabilization design, native planting selection, construction observation, and maintenance assistance was provided by Ted Gray & Associates, Inc. Landscape Resources, Inc. provided construction services and was contracted to provide a minimum of 3-years of site maintenance. However, Landscape Resources, Inc. (LRI) declared bankruptcy in fall 2005. Therefore, HCCC is currently seeking Performance Bond payment for native plant maintenance services from the insurance carrier that was contracted by LRI. The best management practices described below were utilized to restore the riparian corridor and to stabilize the streambanks of the mainstem of Hobson Creek.

Restoration of Riparian Corridor

Hobson Creek Corridor Restoration included vegetation management with replacement of 1.31 acres of dense stands on non-native and invasive shrubs and trees (such as Buckthorn) with 44 native tree-shrub clusters, along with native herbaceous species. The replacement of undesirable vegetation with native species prevents loss of bank soils and promotes bank stability. This will reduce non-point source pollutant loadings to the downstream East Branch DuPage River. Replacement of invasive species with native tree and shrub clusters, grasses, and

forbs will also promote filtration and assimilation of nutrients as well as contaminated runoff that can be discharged from surrounding upland areas. Aquatic habitat along the Hobson Creek riparian corridor will be enhanced and diversified.

Table 2: Streambank Stabilization Practices.

Stabilization Practice	Left Bank (LF)	Right Bank (LF)	Total (LF)
1-Row A-Jacks / Vegetated Geogrid	80	0	80
3-Row A-Jacks / Vegetated Geogrid	0	75	75
Fiber Roll / Re-Shaped Slope	50	0	50
Fiber Roll / Vegetated Geogrid	100	130	230
Rock Riffles (1 @ 25 LF per bank)	25	25	50
Re-Shaped Slope / Native Plantings	29	27	56
Toe-of-Slope Native Plantings Only	0	175	175
Rock Placement At Storm Pipe Outfalls	15	0	15
Total (LF)	**299**	**432**	**731**

Rock Riffle Structure

Channel downcutting has been controlled with the installation of one (1) rock riffle grade control structure. The constructed riffle structure not only controls and prevents further channel downcutting but also dissipates excess stream energy and reduces extremely high erosive forces against the streambanks. Materials utilized ranged from 0.5-inch subsurface gravel to 18-inch surface boulders. The rock riffle structures also diversify and improve in-stream habitat, diversify stream substrate materials, and enhance aesthetics.

A-Jacks and Vegetated Geogrid

Streambank stabilization was the most important feature to prevent additional soil pollutant transport throughout Hobson Creek and the downstream East Branch DuPage River. In the more severely eroded areas, the streambanks were graded to a flatter slope (excess cut removed), seeded and planted using native vegetation (described below), stabilized with vegetated geogrid (Bio-D Block), with toe of slope protection using 1 row or 3 rows of A-jacks. The permanent A-Jacks structures have a high energy-dissipation capability. The vegetated geogrid provided biodegradable erosion control along tall slopes as steep as 2.5:1 (H:V). These techniques were suited for areas that could be stabilized with vegetation alone, such as areas with high flow velocities along erodible soils, and where high bank shear stresses and sharp meander bends occur. Approximately 75 linear feet of 3-rows a-jacks were installed, as well as 80 linear feet of 1-row a-jacks. All of the a-jacks were installed with bio-d block vegetated geogrid above the a-jacks.

Fiber Roll and Re-Shaped Slopes

Streambanks with moderate erosion were lightly graded back, on a cut-and-fill balance, seeded and planted with native plant vegetation, covered with an erosion control blanket, with toe

(base) stabilization using coconut (coir) fiber roll. Areas exhibiting only minor erosion were stabilized by re-shaping bank slopes, seeding and planting with native vegetation, and installing erosion control blanket. Plant communities were improved by removing the non-native / invasive vegetation, as well as introducing rooted plant materials. Approximately 280 linear feet of fiber roll were installed with re-shaped slopes above the fiber roll.

Rock Placement At Storm Pipe Outfall

One existing storm pipe outfall was stabilized by re-placing rock that had previously been removed by the erosive force of the flowing stream. The left bank contained a storm pipe outlet near stream station 5+50. The pipe outfall was stabilized by installing a rock toe. The total length of streambank protected by rock placement near storm pipe outfall was 15 linear feet.

Re-Shaped Slope / Native Plantings

Areas exhibiting low erosion were stabilized by re-shaping bank slopes, seeding and planting with native vegetation, and installing erosion control blanket. Plant communities were improved by removing the non-native / invasive vegetation, as well as introducing rooted plant materials. Approximately 56 linear feet of re-shaped slopes were installed with native plantings.

Native Plantings

Proper selection and installation of native plantings and seed is instrumental to project success. Native seed and plantings were installed along all stabilized streambank areas. Effective native plant installations improve long-term streambank stabilization, pollutant filtration, wildlife habitat, dissipation flow energy, and improvement of site aesthetic values. Toe-of-slope (Type 1) native seed and plug lists, and mid-slope to upper slope native seed (Type 2) plug lists are provided in Tables 3 and 4 below. Native shrub live stakes (cut live stems) were utilized in shaded areas with high erosive forces (Table 5). Approximately 175 linear feet of stream channel was stabilized using native plantings alone without other streambank stabilization treatments. Also, as described above under Restoration of Riparian Corridor, forty-four (44) native tree-shrub clusters were installed throughout the riparian area. The ball-and-burlap tree and shrub species used for the tree-shrub clusters are described in Table 6.

Table 3. Native Herbaceous Plant Plugs Species List.

Scientific Name	Common Name	Percent of Total
Type 1 Native Plant Plugs		
ACORUS CALAMUS	SWEET FLAG	4%
ASCLEPIAS INCARNATA	MARSH MILKWEED	2%
ASTER SIMPLEX	MARSH ASTER	2%
CAREX EMORYII	RIVERBANK TUSSOCK SEDGE	5%
CAREX JAMESII	GRASS SEDGE	3%
CAREX SPARGANOIDES	BURRED SEDGE	1%
CAREX STIPATA	COMMON FOX SEDGE	2%
CAREX VULPINODEA	FOX SEDGE	2%
HYSTRIC PATULA	BOTTLEBRUSH GRASS	2%
IRIS VIRGINICA	BLUE FLAG IRIS	5%
JUNCUS TORREYI	TORREY'S RUSH	1%
LEERSIA ORYZIODES	RICE CUTGRASS	2%
PANICUM VIRGATUM	SWITCHGRASS	10%
		100%
Type 2 Native Plant Plugs		
ALLIUM CERNUM	NODDING WILD ONION	2%
ANDROPOGON GERARDII	BIG BLUESTEM	2%
AQUILEGIA CANADENSIS	COLUMBINE	3%
ASTER CORDIFOLIUS	HEART-LEAVED BLUE WOOD ASTER	2%
ASTER LATERIFLORUS	SIDE-FLOWERING ASTER	2%
ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	2%
CEANOTHUS AMERICANUS	NEW JERSEY TEA	3%
ECHINACIA PURPURIA	PURPLE CONEFLOWER	5%
ELYMUS CANADENSIS	PRAIRIE WILD RYE	3%
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	3%
EUPATORIUM PURPUREUM	SWEET JOE-PYE WEED	1%
GERANIUM MACULATUM	WILD GERANIUM	2%
HELIANTHUS GROSSESERATUS	SAWTOOTH SUNFLOWER	5%
LOBELIA CARDINALIS	CARDINAL FLOWER	1%
LOBELIA SIPHILITICA	GREAT BLUE LOBELIA	3%
PENSTEMON CALYCOSUS	SMOOTH PENSTEMON	3%
PENSTEMON DIGITALIS	FOXGLOVE PENSTEMON	3%
PYCNANTHEMUM VIRGINIANUM	MOUNTAIN MINT	1%
SOLIDAGO OHIENSIS	OHIO GOLDENROD	3%
SOLIDAGO GIGANTEA	LATE GOLDENROD	2%
SOLIDAGO PATULA	SWAMP GOLDENROD	1%
SOLIDAGO SPECIOSA	SHOWY GOLDENROD	3%
SPARTINA PECTINATA	PRAIRIE CORD GRASS	4%
		100%

Table 4. Native Plant Seed List.

Scientific Name	Common Name	Percent of Total
Type 1 Native Plant Seed		
ASTER LAEVIS	SMOOTH ASTER	3%
ASTER NOVAE-ANGLIAE	NEW ENGLAND ASTER	3%
ANDROPOGON GERARDII	BIG BLUESTEM	3%
ANDROPOGON SCOPARIUS	LITTLE BLUESTEM	5%
AVENA SATIVA	SEED OATS	10%
CAREX VULPINOIDEA	FOX GRASS	3%
CAREX STIPATA	COMMON FOX SEDGE	5%
ELYMUS CANADENSIS	CANADA WILD RYE	5%
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	3%
GENTIANA ANDREWSII	BOTTLE GENTIAN	3%
GILARDIA PULCHELLA	INDIAN BLANKET	5%
IRIS VIRGINICA	BLUE FLAG IRIS	5%
LOLIUM MULTIFLORUM	ANNUAL RYE	12%
PANICUM VIRGATUM	SWITCH GRASS	6%
PHLOX DIVARTICA	BLUE PHLOX	2%
RUDBECKIA HIRTA	BLACK-EYED SUSAN	6%
SCIRPUS ACUTUS	HARDSTEM BULRUSH	6%
SORGHASTRUM NUTANS	INDIAN GRASS	3%
SPARTINA PECTINATA	PRAIRIE CORD GRASS	6%
TRADESCANTIA OHIENSIS	SPIDERWORT	3%
VERNENA HASTATA	BLUE VERVAIN	3%
		100%
Type 2 Native Plant Seed		
ALLIUM CERNUUM	NODDING WILD ONION	3%
ANDROPOGON SCOPARIUS	LITTLE BLUESTEM	6%
AQUILEGIA CANADENSIS	COLUMBINE	3%
AVENA SATIVA	SEED OATS	10%
CASSIA FASCICULATA	PARTRIDGE PEA	3%
ECHINACEA PURPUREA	PURPLE CONEFLOWER	5%
ELYMUS CANADENSIS	WILD CANADA RYE	5%
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	6%
EUPATORIUM PERFOLIATUM	BONESET	4%
LOLIUM MULTIFLORUM	ANNUAL RYE	10%
PANICUM VIRGATUM	SWITCH GRASS	6%
PARTHENIUM INTEGRIFOLIUM	QUININE	5%
RATIBIDA PINNATA	YELLOW CONEFLOWER	5%
RUDBECKIA HIRTA	BLACK-EYED SUSAN	8%
SOLIDAGO SPECIOSIA	SHOWY GOLDENROD	5%
SOLIDAGO PATULA	SWAMP GOLDENROD	5%
SPOROBOLOUS HETEROLEPSIS	PRAIRIE DROPSEED	5%
VERONIA FASCICULATE	IRONWEED	3%
		100%

Table 5. Native Shrub Live Stakes.

Scientific Name	Common Name	Percent of Total
Cornus stolonifera	Red-Osier Dogwood	40%
Cornus racemosa	Gray Dogwood	10%
Salix Interior	Sandbar Willow	20%
Viburnum dentatum	Arrowwood Viburnum	15%
Viburnum lentago	Nannyberry Viburnum	15%
		100%

Table 6. Native Tree-Shrub Clusters.

Scientific Name	Common Name	Percent of Total
Trees		
Acer nigrum	Black Maple	5%
Catalpa speciosa	Catalpa	20%
Platanus occidentalis	American Sycamore	25%
Quercus bicolor	Swamp White Oak	25%
Quercus macrocarpa	Burr Oak	25%
		100%
Shrubs		
Cephalanthus occidentalis	Button Bush	25%
Cornus stolonifera	Red-Osier Dogwood	15%
Salix Interior	Sandbar Willow	15%
Sambucus canadensis	Elderberry	15%
Viburnum dentatum	Arrowwood Viburnum	15%
Viburnum lentago	Nannyberry Viburnum	15%
		100%

Project Costs and Quantities

A summary of quantities and costs are listed below.

Table 7: Summary of Quantities.

BASE BID SCHEDULE OF QUANTITIES AND PRICES

Item No.	Stream Restoration Practice	Quantity	Units	Unit Cost	Extended Cost
1	**Selective Removal of Invasive Species**	**1.31**	ACRES	$8,216.00	$10,762.96
2	**Tree Removal, 6" to 12" Diameter**	**11**	EA	$128.00	$1,408.00
3	**Tree Removal, Over 12" Diameter**	**2**	EA	$407.00	$814.00
4	**Rock Riffle Structures**	**1**	EA	$3,362.00	$3,362.00
5	**Fiber Roll**	**280**	LF	$35.00	$9,800.00
6	**1-Row A-Jacks**	**80**	LF	$52.00	$4,160.00
7	**3-Row A-Jacks**	**73**	LF	$95.00	$6,935.00
8	**Vegetated Geogrid (Bio-D Block)**	**696**	LF	$32.00	$22,272.00
9	**Re-Shaped Slope / Erosion Control Blanket**	**56**	LF	$28.00	$1,568.00
11	**Rip-rap Installation**	**5**	CY	$249.00	$1,245.00
12	**Native Tree / Shrub Clusters in Riparian Corridor**	**48**	EA	$314.00	$15,072.00
15	**Native Plant Plugs (2-in. potted plants) at 2 per 1 LF**	**175**	LF	$6.20	$1,085.00
15	**Native Plant Plugs**	**200**	EA	$3.10	$620.00
18	**Rooftop Downspout Management**	**1**	LS	$1,385.00	$1,385.00
16	**Post-Project Construction Fence**	**390**	LF	$2.30	$897.00
17	**Erosion Control & Maintenance**	**1**	LS	$4,390.00	$4,390.00
20	**Construction Access & Restoration**	**1**	LS	$2,088.00	$2,088.00
	Owners and Contractors Insurance Policy	**1**	LS	$2,575.00	$2,575.00
21	**3-Year Vegetative Perf. Standards and Guarantee**	**1**	LS	$12,368.00	$2,473.60
C01	Rip-rap credit on a-jacks	**2**	EA	($495.00)	($990.00)
C02	Bio D changed to erosion blanket	**1**	LS	($684.00)	($684.00)
C03	Black plastic pipe replaced PVC	**1**	LS	($885.00)	($885.00)
C04	Additional stone credit on rip-rap	**1**	EA	($450.00)	($450.00)
C05	Outlet Pipe Repair	**1**	LS	$1,130.00	$1,130.00
C06	Wildflower seeding & blanket	**1**	LS	$300.00	$300.00
C07	Credit for plantings	**1**	LS	($2,887.09)	($2,887.09)
			Total		**$88,446.47**

Total Contractor Costs to Date: $88,446.47

Table 8: Project Cost Summary.
Hobson Creek Corridor Restoration Project, Phase 2.
IEPA FAA 3190325.

Project Cost Summary	Total Cost to Date	Local Match Share	Grant Assistance Amount
Clerical	$0.00	$0.00	$0.00
Supervisor	$0.00	$0.00	$0.00
DIRECT LABOR	$0.00	$0.00	$0.00
Fringe Benefits	$0.00	$0.00	$0.00
Overhead Costs	$0.00	$0.00	$0.00
INDIRECT COSTS	$0.00	$0.00	$0.00
EQUIPMENT, MATERIALS, SUPPLIES	$0.00	$0.00	$0.00
Engineering	$31,517.50	$13,207.00	$18,310.50
Streambank Stabilization	$82,797.20	$35,970.70	$46,826.50
SUBCONTRACTS	$114,314.70	$49,177.70	$65,137.00
Totals	$114,314.70	$49,177.70	$65,137.00

IEPA Grant Award: $72,374.00
Balance of Award: $7,237.00

Operation and Maintenance Plan

Maintenance of native plantings along the stabilized streambanks and within the riparian corridor is critical to project success. The Hobson Creek Community Council will take responsibility for the EPA Section 319 grant 10-year Operations & Maintenance agreement for streambank bioengineering protection measures and plant maintenance. The following are provisions for this Agreement.

Bioengineering Materials Inspections

Bioengineering materials inspections for the constructed streambank stabilization area will occur at least two times per year according to the attached schedule in Table 9. Repairs will be made as necessary, as determined by the Owner and their designated Representative.

1. A-Jacks: Inspections will occur for dislodgement or relocation of A-Jacks components if any, broken pieces, or other indications of potential stabilization concerns.
2. Fiber Roll: Inspections will occur for the staking, undercutting, cord fasteners, and integrity of the Fiber Roll.
3. Rock Riffles: Some rock displacement at the riffle is expected, but significant relocation of larger rock materials is not desirable. Major relocation of rock will be inspected and noted.
4. Re-Shaped Slopes and Vegetated Geogrid: The performance of the re-shaped slopes and vegetated geogrid to stabilize the site slopes will be inspected. Growth of vegetation and locations requiring additional planting will be inspected. Eventually, the vegetated geogrid will biodegrade presumably within a few years. The capability of plantings to stabilize the resulting angle of repose will be noted.

Native Plant Maintenance

Conditions will be monitored and maintenance will be performed as described in the attached schedule. Native plant maintenance will occur using spot herbicide applications, hand removal of nuisance weeds, and related activities performed at least three times per year per the attached schedule. Tree / shrub clusters which contain dead trees will be replaced according to the 3-year Vegetative Performance Standards in the Specifications plan sheet. Non-native species will be removed from the streambank stabilization area.

Maintenance Costs

We estimate that the annual site maintenance budget will be approximately $5,000 annually, primarily to control re-introduced invasive species such as Buckthorn (Rhamnus cathartica), and Tartarian Honeysuckle (Lonicera tatarica) from taking over the newly establishing native plants. Expenditures may be higher expenditures during the first three years for native plant maintenance and nuisance weed control as the native plantings become established. Costs for Operations and Maintenance shall be paid by the Owner, the Hobson Creek Community Council.

Table 9. Site Maintenance Schedule.

Post-Construction through 2013

Activity	late March	mid-May	mid-June	mid-July	mid-August
Mow and/or Cut Natives	X				
Spot Herbicide / Remove Weeds		X	X		X
Bioengineering Materials Inspection	X		X		

Responsibilities

The Hobson Creek Community Council Board and their designated Representative shall be responsible for project site maintenance. Participating parties will include the Owner's Representative, professional Contractor services support, or possibly volunteers of the Hobson Creek Community.

Project Benefits

Water Quality

Most of the Phase 2 streambank stabilization construction was completed by October 25, 2004. Final planting installations were completed by June 2, 2005. We observed rapid establishment of temporary cover crop following slope stabilization. The banks remained protected and erosion was greatly reduced. However, severe drought conditions through summer 2005 necessitated watering of streambank plantings to prevent a reduction in vegetative coverage. Several site watering applications were performed by Hobson Creek Community Council and the Contractor which helped to maintain vegetative growth. Selected replacement of invasive trees and shrubs with native species in the 1.31-acre riparian area will also substantially reduce the loss of bank soils and promote bank soils stability. Native riparian plantings will reduce sheet erosion and mass wasting within the flood zone. This will significantly reduce non-point source pollutant loadings to the downstream East Branch DuPage River. Based on site observations, there is minimal sediment delivered to the stream from the restoration site.

The Illinois EPA Load Reduction Spreadsheet was used to calculate pollutant loading rates from the project site. Input data included a combined streambank (left and right bank) length of 1,379 linear feet (see Table 2). We included 450 linear feet of severe erosion with a bank height of 5 feet and an erosion rate of 0.55 ft/yr. We also included 281 linear feet of moderate streambank erosion with a bank height of 3 feet and an erosion rate of 0.40 ft/yr. Based on these assumptions, the project site had previously contributed approximately 53 tons of sediment, 53 pounds of phosphorus, and 106 pounds of nitrogen annually to Tributary # 6. These estimates do not include historic sediment loss due to severe channel downcutting which has also occurred at this site. Due to stream stabilization, these pollutant loading rates to Hobson Creek have been dramatically reduced at the project site.

Habitat and Riparian Function

- Selected replacement of invasive species with native tree and shrub clusters, grasses, and forbs will protect and diversify wildlife habitat corridor along Hobson Creek, as well as diversity the native plant understory which is an indicator of a healthy ecosystem. The proposed plant species will also increase the diversity of foraging opportunities for wildlife. Selected dead woody debris in the riparian corridor was not removed, as this provides habitat for invertebrates, amphibians, birds, and mammals.

- Selected removal of invasive species will allow more desirable and beneficial species to flourish. There were numerous impacts to ecological integrity caused by the previously existing invasive plant species in the riparian zone. Dense stands of invasive shrubs such as common buckthorn and Tartarian honeysuckle previously shaded and out-competed growth of seedlings of black walnut (Juglans nigra) and bur oak (Quercus macrocarpa) which occur in limited number in the riparian area. Indeed, few seedlings of these desirable tree species

were previously observed in the existing riparian area. Riparian restoration will increase sunlight penetration and increase the density of desirable tree and shrub species.

- The proposed riparian planting restoration will enhance the function of interception of rainfall. Deep-rooted trees and plants have increased absorption properties over the existing riparian species.

- The proposed density of trees, shrubs, forbs and grasses will enhance pollutant filtration and assimilation of nutrients as well as contaminated runoff discharged from surrounding upland areas, or through the project site. Native groundcover such as grasses and forbs are particularly efficient at trapping sediment in the uptake of phosphorus and nitrogen nutrients which otherwise cause pollution within the waterway. The proposed planting plan will significantly increase the abundance of groundcover species. Deep-rooted trees will increase the uptake of nitrogen from shallow groundwater, improving water quality of the stream.

- The proposed planting plan will help restore in-stream vegetative cover by encouraging partial sunlight penetration into the water column to enhance growth of shoreline forbs and grasses, as well as potentially allowing in-stream aquatic macrophytes. This will enhance the function of in-stream habitat conditions.

Public Outreach / Education

Project Signage (per project plans) placed at strategic locations at Green Trails Drive and at Green Briar Drive are being utilized to notify motorists, pedestrians, and visitors regarding the project, funding sources, and proposed improvements and activities. The project site adjoins a walking trail and outdoor athletic facilities at Seven Bridges Park owned by the Woodridge Park District that receives thousands of visitors annually. This park is located immediately downstream of Green Trails Drive. In addition, Caddy Corner Park is located adjacent to the upstream end of the project site, along the Hobson Creek corridor. Many of these park visitors use trails and sidewalks along the Hobson Creek stream corridor which will further enhance community educational outreach from the project site.

The Hobson Creek Community Council (HCCC) Board and members have been active over the last several years in acquiring Phase 2 Section 319 Clean Water Act grant funding through the Illinois EPA and U.S. EPA, acquiring DuPage County Water Quality Improvement Program funding, completing final engineering design, obtaining regulatory permit approvals for the Phase 1 and Phase 2 project areas, educating homeowners, acquiring landowner signoffs for the proposed work in the common area, setting aside matching funds to complete portions of this project, contracting with stream consultants, and other activities. Over 20 landowners along the project site have been contacted by HCCC regarding the project for easement agreements associated with the proposed work. Additional HCCC education includes Board meetings, quarterly newsletter updates, and announcements in meetings of the Conservation Foundation.

According to Mr. Bob Longacre of HCCC, in part as a result of these efforts and a successful project, the residents of HCCC have been pleased with the project results to date.

A project description was presented and a site tour conducted in September 2005 for the River Restoration Principles and Practices Conference sponsored by IL-IN Sea Grant and hosted at Illinois Institute of Technology. Ted Gray served as the presenter and tour guide.

Various newsletter, newspaper and periodical articles have been published regarding the Hobson Creek Corridor Restoration Project. The Conservation Foundation newsletter Watershed Currents published a project article in 2003, Vol. 2, Issue 2. Three newspaper articles have been published regarding the project. Meg Dedolph published "Homeowners Work to Restore Creek" in The Naperville Sun in mid-November, 2003. A letter to the editor of the Naperville Sun was published in response to the newspaper article was submitted by the Commissioner of the Forest Preserve District of DuPage County, entitled "Hobson Creek Restoration Lifts Quality of Life." One pre-construction newspaper article was published in the Daily Herald, Section 1. This newspaper article was entitled "Your Actions May Be Key to Water Quality, County Says." One professional publicist published three professional journal articles featuring the Hobson Creek Corridor Restoration Project. An article entitled "Hobson Creek Restoration Project" was published in the November / December 2004 Land & Water Magazine by Greg Northcutt including interviews with Ted Gray. An article entitled "Stable Streams" was published by Mr. Northcutt in December 2004 Civil Engineering News Magazine. November 2004. An article titled "Stabilizing an Urban Streambank" was published by Mr. Northcutt in the November, 2004 Landscape Architect and Specifier News.

ATTACHMENT 1: PROJECT PHOTOS

ATTACHMENT 2: PROJECT ARTICLES

A) LAND & WATER MAGAZINE SEPT./ OCT. 2004

B) WATERSHED CURRENTS (CONSERVATION FOUNDATION)