SKANEATELES CREEK
RESTORATION PLAN
TOWN OF SKANEATELES, ONONDAGA COUNTY
NEW YORK

New York State Department of Environmental
Conservation Site No. 7-34-010

Prepared for:

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1.0 INTRODUCTION

Envirospec Engineering, PLLC, on behalf of Stauffer Management Company, LLC (SMC), proposes to restore two reaches of the Skaneateles Creek that flow through the property of an inactive hazardous waste disposal site that is located in Skaneateles Falls, New York. The two reaches are to be known as Area A and Area B. The property (*i.e.*, project site) is located east of Jordan Road, approximately 0.2 mile south of the intersection of Jordan Road and Stump Road in the Town of Skaneateles, Onondaga County, New York (Figure 1). The property covers approximately 120 acres and is divided into two unequal portions by Skaneateles Creek. Skaneateles Creek is a watercourse regulated by the New York State Department of Environmental Conservation (NYSDEC). The creek reaches proposed for restoration occur within a section of Skaneateles Creek that has been designated by the NYSDEC as Class C with C (T) standards. This designation indicates the potential for the watercourse to support a population of trout. The proposed creek restoration is part of a continuing remediation effort, which began in 2005 at the project site.

The proposed creek restoration effort plans to restore disturbed areas of the creek bed dependent on the extent of excavation and remedial work to be determined by confirmatory samples. It is expected that approximately 170 feet total of creek bed and approximately 534 feet total (covering up to 0.3 acre) of creek bank will be restored. As a result of the creek restoration, stream habitat will be improved. The proposed creek restoration effort is composed of the following three parts 1) the relocation of creek fauna prior to the restoration efforts within the riparian corridor of the targeted reaches; 2) the restoration of the creek bed within the riparian corridor of the targeted reaches; and 3) the restoration of the creek bank within the riparian corridor of the targeted reaches. Restoration measures within the creek bed will utilize methods in accordance with Natural Stream Design Techniques (*e.g.*, Newbury riffles, J-hook vanes, rock clusters, rock cross vanes, *etc.*) (Rosgen 1996, Rosgen 2006 and NRCS 2007). Restoration measures along the creek bank will incorporate the Natural Stream Design Techniques and include extensive establishment of woody plant species (primarily willows) and extensive seeding for typical, riparian herbaceous plant species.

The proposed creek restoration efforts are planned to begin by early July 2012 and be completed by the end of August 2012. This is in accordance with timing conditions given by the NYSDEC Division of Fish, Wildlife, and Marine Resources.

2.0 CREEK RESTORATION OBJECTIVE

The objective of the proposed creek restoration plan is to restore the targeted reaches of Skaneateles Creek using Natural Stream Design Techniques as part of the continuing remediation work at the project site. As a result, the restored reaches will exhibit riparian conditions typical of natural reaches of Skaneateles Creek and the overall quality of the watercourse habitat will increase.

3.0 PROJECT BACKGROUND & BASELINE INFORMATION

Project Background

Skaneateles Creek is a watercourse regulated by the NYSDEC. The portion of Skaneateles Creek that flows through the project site has been designated by the NYSDEC as Class C with C (T) standards. This designation indicates the potential for the watercourse to support a population of trout. Skaneateles Creek was identified by the NYSDEC as an area of environmental concern in a NYSDEC Record of Decision (ROD) and Amended ROD (AROD) due to seeps observed in the vicinity of a former landfill in the 1980s and subsequent sampling of both seeps and Creek sediments during a Remedial Investigation. A remedial action plan was completed and approved by the NYSDEC that required removal of sediments from the Creek in a "surgical" manner to minimize disruption to the Creek habitat. Excavation activities were initially completed in the Creek from July 2005 through September 2005. Creek sediments were excavated along with material around a culvert and under a Creek retaining wall. Approximately 0.85 acre of the Creek was addressed and approximately 13,500 tons of material were removed. During the 2005 effort, creek sediments were excavated and the creek bed and banks were restored using Natural Stream Design Techniques (Rosgen 1996).

Based upon the Supplemental Remedial Activities Work Plan (dated May 2012) and subsequent correspondence with the NYSDEC, the proposed creek restoration effort for Area A and Area B would be additional remedial work as part of the continuing restoration activities that began in 2005.

Baseline Information

The locations of the project site and creek restoration area are shown on the New York State Department of Transportation (NYSDOT) Topographic Map (Figure 1). Topography at the project site is relatively gentle and rolling, which is typical for areas containing a riparian corridor (Figure 3). Elevations within the creek restoration area at the proposed project site range from approximately 700 feet above mean sea level (amsl) to approximately 715 feet amsl. Skaneateles Creek flows in an overall northerly direction throughout its length.

As shown on the 2009 aerial photograph (Figure 2), the riparian corridor of the proposed creek restoration area contains primarily two vegetation cover types. The southern banks of the creek and the west bank of the creek are open fields that are maintained through periodic mowing. The east bank of the stream is predominantly deciduous forest, containing among other species willow (*Salix* sp.) and cottonwood (*Populus deltoides*). Additionally, an access road is shown crossing the culvert that conveys the creek in the upstream portion of the restoration area.

4.0 WORK PLANS

The proposed start date for the creek restoration work is early July 2012 and the completion date is by the end of August 2012. This is in accordance with timing conditions given by the NYSDEC Division of Fish, Wildlife, and Marine Resources.

It is estimated that the creek work could take 2 to 3 weeks using a dedicated site and landscaping crew. However, the progress and rate of the remediation work will dictate the

number of days needed. Additionally, unforeseeable construction constraints (*i.e.*, unsuitable site conditions, *etc.*), can affect the rate and pace of the remediation and creek restoration work.

The proposed creek restoration effort is composed of the following three parts 1) the relocation of creek fauna prior to the restoration efforts within the riparian corridor of the targeted reaches; 2) the restoration of the creek bed within the riparian corridor of the targeted reaches; and 3) the restoration of the creek bank within the riparian corridor of the targeted reaches. This section of the plan provides details of each part of the proposed creek restoration effort.

4.1 Creek Fauna Relocation

The portion of Skaneateles Creek proposed for the restoration efforts has been designated by the NYSDEC as Class C with C (T) standards and is therefore a regulated watercourse. This designation indicates the potential for the watercourse to support a population of trout. Thus specific practices are required and must be followed when conducting activities within the riparian corridor. Dewatering and creek fauna relocation are two required practices that will be utilized during the creek restoration efforts.

The first step of the creek restoration efforts is the dewatering of a 710 foot section of Skaneateles Creek that includes the reaches targeted for restoration. The proposed section of Skaneateles Creek to be dewatered is shown on Figure 3 and consists of the creek portion located between the proposed pump-around impoundment area and the downstream dissipation area. All collected fauna will be relocated downstream of the proposed dissipation area (*i.e.*, the release point). It is projected that the creek fauna relocation activities will be conducted and completed within a 10-hour period.

Pools and saturated substrate of the dewatered section of Skaneateles Creek will be systematically searched moving downstream from the pump-around impoundment area to the downstream dissipation area. Three environmental biologists (minimum) will be employed to conduct this activity. Creek fauna consisting of fish (*e.g.*, trout (*Salmo* sp.), minnows (*e.g.*, Family *Cyprinidae, etc.*) and visible crayfish (*e.g.*, *Cambarus* sp., *Orconectes* sp., *etc.*) will be collected and relocated during dewatering activities. Creek fauna will be collected by hand and/or using dip nets. Electrofishing equipment will be available during the creek fauna relocation effort and used if necessary. However, it is anticipated that the maximum depth of pool areas within the dewatered section of Skaneateles Creek will be 1 foot or less, which should make hand and dip net collection practical. During collection, creek fauna will be temporarily placed in insulated coolers to control water temperature. Battery operated aerators and ice may be used to help minimize possible stress to the collected creek fauna. Collected creek fauna will be transported to the downstream release point using the insulated coolers.

4.2 Creek Bed Restoration

Envirospec Engineering, PLLC has hired Abscope Environmental, Inc. as the site contractor to conduct the creek bed restoration work. Throughout the restoration of the creek bed, standard industry-recognized erosion and sediment control measures and best management practices (BMPs) will be appropriately utilized to protect surrounding areas. A pre-restoration

meeting will be held at the SCRA with the site contractor, NYSDEC and TES to review the creek bed restoration plan and discuss the sequence and methods of restoration.

The creek bed restoration design will restore a stable, natural channel at the creek channel remediation areas. To accomplish this task, Natural Stream Channel Design Techniques are employed (Rosgen 1996, Rosgen 2006 and NRCS 2007). Natural Stream Channel Design uses stable natural channels as a benchmark to develop a plan for the affected reach that allows for the transport of water and sediment while dissipating energy through channel design and in-stream structure.

Creek bed restoration will occur in two areas (Creek Remediation Areas A and B) with a combined length of approximately 170 linear feet (Figure 3). After excavation of Creek Remediation Areas A and B is completed, a one-foot clay liner will be installed followed by two feet of clean river stone (Figure 4). During the placement of the two feet of river stone, the installation of additional in-stream structures will occur. The proposed in-stream structures are: 1) rock cross vane, 2) Bendway weirs, and 3) Newbury riffle (weir).

The rock cross vane is a stone structure in the creek channel which increases energy in the center of the creek while decreasing near bank velocities (Rosgen 2006). The leading edge of the rock cross vane is approximately 25 feet from the upstream end of Area B. Detail drawings for the rock cross vane are shown on Figure 5.

The Bendway weir is a stone structure in the creek designed to move the thalweg away from the outside of a bend in the creek. Bendway weirs improve the lateral creek stability and are used for bank protection (Julien 2003). Bendway weirs are usually used in a series of three to six weirs. Bendway weirs function through altering flow by extending into a watercourse channel one quarter of the mean width of the water course channel within a particular reach. Detail drawings for Bendway weirs are shown on Figure 6.

In Area A, a Newbury riffle (weir) is proposed. Newbury riffles are used to create a pool-riffle profile in-stream and add diversity of habitat to streams (Dodd 2005). Detail drawings for Newbury riffles are shown on Figure 7.

4.3 Creek Bank Restoration

Envirospec Engineering, PLLC has hired Abscope Environmental, Inc. as the site contractor to conduct the creek bank restoration work. A professional landscaper may be subcontracted to conduct the planting and seeding of the creek bank restoration areas. Throughout the restoration of the creek banks, standard industry-recognized erosion and sediment control measures and best management practices (BMPs) will be appropriately utilized to protect surrounding areas. A pre-restoration meeting will be held at the SCRA with the site contractor, landscaper (if subcontracted), NYSDEC and TES to review the creek bank restoration plan and discuss the sequence and methods of restoration.

Creek bank restoration area will include both banks of Creek Remediation Area A and B and approximately 218 linear feet of the east bank south of Creak Remediation Area B (Figure 8). The creek bank restoration may extend up to 25 feet inland from the bank-water edge. If needed, this creek bank restoration plan could also be used for the other on-site restoration areas,

including AOI-3 and AOI-4, located on-site downstream from Creek Remediation Areas A and B.

Techniques proposed include the use of rock along the bank of the creek, shrub plantings inland of the rock, and tree plantings. The bank restoration areas will also be seeded to establish herbaceous plant cover. The proposed plan is for the entire 25-foot ecological buffer. However, the full 25-foot ecological buffer may not be remediated and this plan can be modified to cover the actual extent of the remediated areas.

Rock will be placed along the bank as shown on Figure 4. Shrubs will be planted in two alternating rows two feet apart on three-foot centers (Figure 8, Figure 9 and Table 1). Every ten feet a single row of shrubs will be planted perpendicular to the creek bank, extending ten feet from the two rows of shrubs (Figure 9). Beyond the area planted with shrubs, trees will be planted on 20 foot centers in a random pattern (Figure 8, Figure 9 and Table 1). All disturbed areas outside of the creek channel will be seeded and mulched (Tables 1 and 2).

The restored creek banks contain one vegetation (cover type) or planting zone planned for typical riparian corridor vegetation (Figure 8, Table 1 and Table 2). The restored creek banks planting zone is planned to be dominated by a variety of trees (3 species), shrubs (3 species) and herbaceous plants from the specified seed mix (Table 2). Two species of relatively fast-growing grass will supplement the specified seed mix to establish ground cover and prevent erosion. As further prevention against erosion, the entre planting zone of the creek bank restoration areas will be thoroughly mulched with straw. The intent of the specified plant species for the creek bank restoration areas is to provide habitat and cover for the fauna typically associated with the riparian corridor of watercourses in this region of New York State. To this end, pertinent published material was reviewed to determine the species of plants for inclusion in the creek bank restoration plan (*e.g.*, Edinger, *et al* 2002).

The creek bank restoration areas will be planted with approximately 708 woody plant species, composed of trees and shrubs. Approximately 33 trees, composed of three typical, riparian species are specified. These species are eastern cottonwood (*Populus deltoides*), black willow (*Salix nigra*), and sycamore (*Platanus occidentalis*). All trees to be planted will be of large stature, robust condition, and a more mature age of growth. Approximately 675 shrubs, also composed of three typical, riparian species are specified. All shrubs to be planted are particularly suitable for establishment in riparian conditions subject to fluctuating water levels. The number of plantings will be determined based on the total area of creek bank disturbance which will be determined based on sampling results.

5.0 CREEK RESTORATION MONITORING

Monitoring visits will be conducted regularly during the creek restoration efforts to ensure conformity to the creek restoration plan. At the beginning of the restoration efforts, monitoring visits will occur twice weekly with the frequency of monitoring reduced as restoration work satisfactorily progresses.

6.0 MAINTENANCE AND ADAPTIVE MANAGEMENT

If deficiencies in the restoration are noted according to the specified restoration objective (see Section 2.0), corrective measures may be taken. If deficiencies are noted post-restoration, corrective actions will be completed as necessary to ensure successful creek restoration. The following table provides greater detail concerning possible deficiencies and appropriate corrective actions.

Problem/Deficiency	Corrective Actions
Altered flow pattern around in-stream structures	Modify and/or add in-stream structures
Browsing damage	Install protective measures around plantings and replace lost plantings.
Plant disease/Insect infestation	Identify disease/vector, remove/destroy diseased/infested plantings, apply appropriate treatment, and replace lost plantings.
Insufficient plant cover	Apply more seed of the appropriate mix and/or plant additional woody plant species.

7.0 SUMMARY

Envirospec Engineering, PLLC proposes to restore two reaches of the Skaneateles Creek that flow through the property located in Skaneateles Falls, New York. The two reaches are Area A and Area B. The property (*i.e.*, project site) is located east of Jordan Road, approximately 0.2 mile south of the intersection of Jordan Road and Stump Road in the Town of Skaneateles, Onondaga County, New York (Figure 1). Skaneateles Creek is a watercourse regulated by the New York State Department of Environmental Conservation (NYSDEC). The creek reaches proposed for restoration occur within a section of Skaneateles Creek that has been designated by the NYSDEC as Class C with C (T) standards. This designation indicates the potential for the watercourse to support a population of trout. The proposed creek restoration is part of a continuing remediation effort, which began in 2005 at the project site.

The proposed creek restoration effort plans to restore approximately 170 feet total of creek bed and approximately 534 feet total (covering up to 0.3 acre) of creek bank as well as other areas of the creek bank may be affected during this project, including AOI-3 and AOI-4. As a result of the creek restoration, stream habitat will be improved. The proposed creek restoration effort is composed of the following three parts 1) the relocation of creek fauna prior to the restoration efforts within the riparian corridor of the targeted reaches; 2) the restoration of the creek bed within the riparian corridor of the targeted reaches; and 3) the restoration of the creek bank within the riparian corridor of the targeted reaches. Restoration measures within the creek bed will utilize methods in accordance with Natural Stream Design Techniques.

The proposed creek restoration efforts are planned to begin by early July 2012 and be completed by the end of August 2012. Dewatering of the creek will occur prior to initiating the removal of designated material. TES personnel will conduct a thorough search of the dewatered creek to locate fish or crayfish that are stranded. This fauna will be placed in an insulated cooler

with stream water and then transported downstream for release back into Skaneateles Creek. Ice and an aerating pump will be available if needed.

Once the removal of contaminants is completed, stream restoration techniques will be implemented. Three natural stream design features — rock cross vane, Bendway weirs, and Newbury riffles will be installed to provide a stable, natural channel.

Creek bank restoration will include both banks of Creek Remediation Areas A and B and approximately 218 linear feet of the east bank south of Remediation Area B. The restoration concept is to alternate shrub and tree plantings to provide a 25-foot ecological buffer. An herbaceous seed mix will also be added to the area.

Restoration monitoring will be conducted regularly to ensure conformity to the design plan. If deficiencies are noted during the restoration or post-restoration, they will be addressed as necessary to ensure proper restoration of the creek.

8.0 REFERENCES

Dodd, Hope R. 2005. *Evaluation of Newbury Weirs (Rock Riffles) for Improving Habitat Quality and Biotic Diversity in Illinois Streams*. Center for Aquatic Ecology and Conservation. Illinois Natural History Survey.

Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2002. Ecological Communities of New York State. Second Edition. A Revised and Expanded Edition of Carol Reschke's *Ecological Communities of New York State*. (Draft for review). New York Natural Heritage Program, New York Department of Environmental Conservation, Albany, NY.

Julien, Pierre Y. and Josh R. Duncan. 2003. *Optimal Design Criteria of Bendway Weirs from Numerical Simulations and Physical Model Studies.* Colorado State University – Civil Engineering, Fort Collins, CO.

NRCS. 2007. *Stream Restoration Design – National Engineering Handbook Part 654*. Natural Resources Conservation Service and U.S. Department of Agriculture, Washington, DC.

Rosgen, D.L. 1996. *Applied River Morphology*. Wildland Hydrology, Pagosa Springs, CO.

Rosgen, D.L. 2006. *Cross-Vane, W-Weir, and J-Hook Vane Structures (Updated 2006) – Description, Design and Application for Stream Stabilization and River Restoration*. Wildland Hydrology, Inc., Ft. Collins, CO.

TABLES

Table 1.

Planting Details – Skaneateles Creek Restoration Area (SCRA)

Planting Zone	Plants and/or Seed Mix	Type of Stock	Size of Stock	Planting Method	Coverage	Pattern of Coverage	Quantity
Restored Creek Banks[1] (approx. 0.3 acre)	Trees:						
	Sycamore (*Platanus occidentalis*)	All trees ball and burlap	All trees 10 to 12 feet in height	Hand planted or Mechanically Assisted	All trees as shown[1]	As shown[1]	11
	Cottonwood (*Populus deltoides*)						11
	Black willow (*Salix nigra*)						11
	Shrubs:						
	Silky dogwood (*Cornus amomum*)	#2 container	3-4 ft. in height	All shrubs hand planted	All shrubs as shown[1]	As shown[1]	75
	Pussy willow (*Salix discolor*)	#2 container	3-4 ft. in height				200
	Fish Creek willow (*Salix purpurea*)[6]	cuttings	n/a				400
	ERNMX-178 Riparian Buffer Mix[5] (See Table 2 for contents)	Seed	n/a	Hydroseed	15 lbs./acre	Entire Zone	4.5 lbs.
	Canada wild rye	Seed	n/a	Hydroseed	1.0 lb./acre	Entire Zone	0.3 lbs.
	Annual Rye Grass[2]	Seed	n/a	Hydroseed	10.0 lbs./acre	Entire Zone	3.0 lbs.
	Straw Mulch[3]	Straw	n/a	Mechanical Applicator[4]	1 ton/acre	Entire Zone	0.3 ton

[1] See Figure 8 and Figure 9.

[2] If seed is applied between February 10th and November 1st use Annual Rye Grass. If seed is applied from November 1st to February 10th use Winter Wheat.

[3] DO NOT use Hay as mulch. USE straw mulch or an approved alternative. Hay often contains nuisance plant species that are undesirable and considered invasive and exotic by the Regulatory Agencies.

[4] IF an approved, hydroseed capable, mulch agent alternative to straw is used, a tackifier must be added to and mixed with the mulch material.

[5] ERNMX 178 by Ernst Conservation Seeds of Meadville, PA. Telephone (814) 336-2404

[6] Use Fish Creek willow (*Salix purpurea*), available from Double A Willow (www.doubleawillow.com)

Table 2.

Seed Mix Details - Skaneateles Creek Restoration Area (SCRA)

RESTORED CREEK BANKS PLANTING ZONE

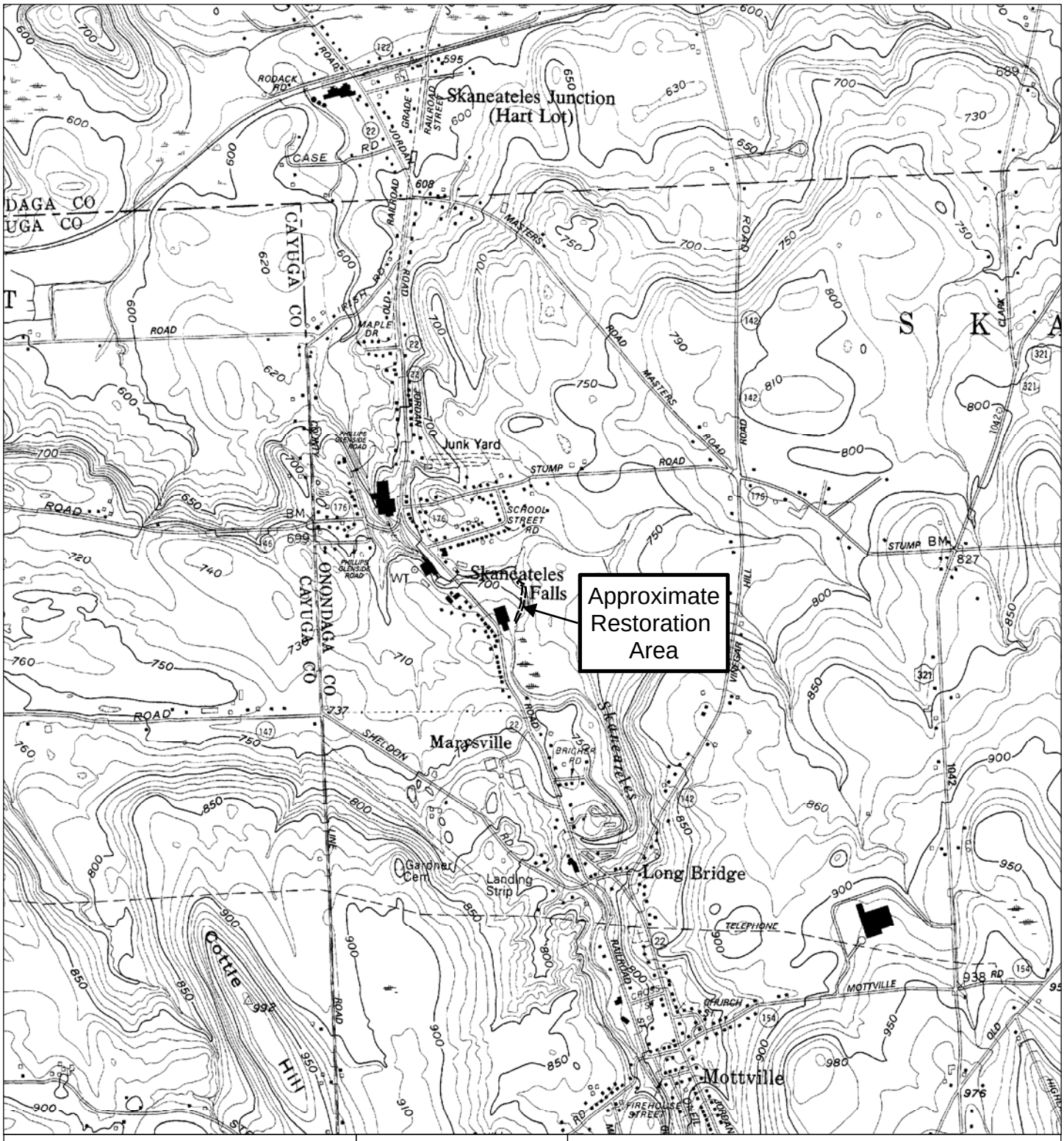
ERNMX-178 Riparian Buffer Mix
Ernst Conservation Seeds (from 2012 print catalogue)

% by Number of Seeds	Scientific Name	Common Name
13.00	*Panicum clandestinum*	Deer Tongue
10.00	*Carex vulpinoidea*	Fox Sedge
8.00	*Elymus riparius*	Riverbank Wildrye
8.00	*Elymus virginicus*	Virginia Wildrye
8.00	*Schizachyrium scoparium*	Little Bluestem
7.00	*Sorghastrum nutans*	Indiangrass
6.00	*Chamaecrista fasciculata*	Partridge Pea
6.00	*Cornus amomum*	Silky Dogwood
5.00	*Andropogon gerardii*	Big Bluestem
4.00	*Panicum virgatum*	Switchgrass
3.00	*Baptisia australis*	Blue False Indigo
3.00	*Rudbeckia hirta*	Black Eyed Susan
3.00	*Verbena hastata*	Blue Vervain
2.00	*Eupatorium perfoliatum*	Boneset
2.00	*Heliopsis helianthoides*	Ox Eye Sunflower
2.00	*Juncus effusus*	Soft Rush
2.00	*Monarda punctata*	Spotted Beebalm
2.00	*Vernonia gigantea*	Giant Ironweed
2.00	*Viburnum dentatum*	Arrow Wood
1.00	*Euthamia graminifolia*	Grass Leaved Goldenrod
1.00	*Helenium autumnale*	Common Sneezeweed
1.00	*Lobelia siphilitica*	Great Blue Lobelia
1.00	*Parthenium integrifolium*	Wild Quinine

plus 1.0 lb./acre of *Elymus canadensis* – Canada wild rye
10.0 lbs./acre of *Lolium multiflorum* – Annual Rye Grass[1]

1 If seed is applied between February 10th and November 1st use Annual Rye Grass. If seed is applied from November 1st to February 10th use Winter Wheat.

FIGURES



Prepared by TERRESTRIAL ENVIRONMENTAL SPECIALISTS, Inc.

0 2,000 Feet

1 inch = 2,000 feet

N

Figure 1. Site Location

NYS DOT Topographic Map

Skaneateles and Jordan Quadrangles

1989 and 1989

TES File: ENV-3761\3761-Fig1.mxd\6-11-2012

N

0 200

Feet

1 inch = 200 feet

Aerial Photograph
obtained from
NYS GIS Clearinghouse

Figure Prepared by
Terrestrial Environmental
Specialists, Inc.

Figure 2.

2009
Aerial Photograph

Skaneateles Creek
Restoratoin Area (SCRA)

TES File: ENV-3761\3761-Aerial-2009.mxd\6-11-2012

NORTH

0' 30' 60'

APPROXIMATE SCALE IN FEET

Base Map provided by Envirospec Engineering, PLLC.

Figure Prepared by Terrestrial Environmental Specialists, Inc.

Figure 3.

Construction Plan, Skaneateles Creek Restoration Area (SCRA)

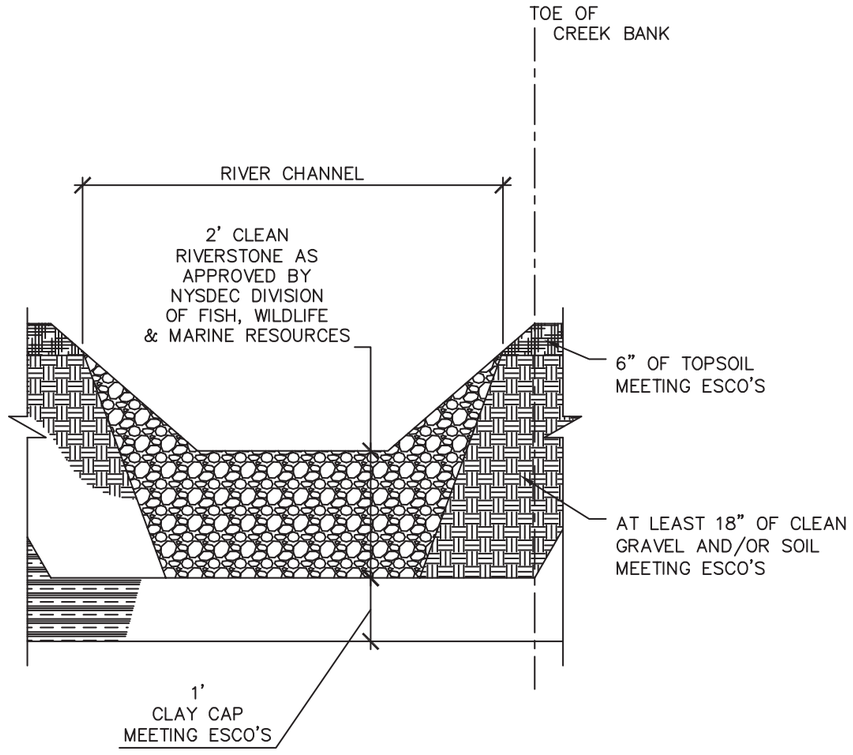
TES File: ENV-3761\3761-Reports\3761-Skaneateles_Creek\3761-Figures\3761-construction.cdr\7-9-2012

Remediation Area A

Remediation Area B

Downstream Dissipation Area

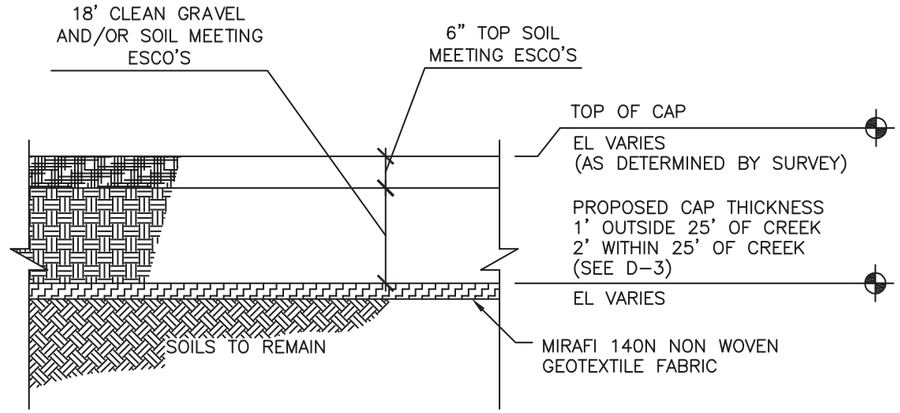
Pump-Around Impoundment Area



TYPICAL CREEK RESTORATION DETAIL (AREAS A&B - SEE D-3)

1 / D-4

NOTES:
1. CLAY CAP SOILS SHOULD HAVE A PLASTICITY INDEX OF 20–30%.
2. BACKFILL SOILS UTILIZED TO RETURN GRADES TO PRE–CAP ELEVATIONS WILL CONSIST OF SAND AND/OR GRAVEL AND MEET ECOLOGICAL SCO'S IN TOP 2'.
3. SOIL COMPACTION SHALL MEET 90–95% AS DETERMINED BY ASTM D698 PROTOR TEST.
4. SOIL CAPS CONSTRUCTED WITHIN ECOLOGICAL ARES AND WITHIN 100 YEAR FLOOD PLAIN ARE TO BE CONSTRUCTED TO PREEXISTING ELEVATIONS AS DETERMINED BY SURVEY.
5. BEDDING MATERIALS SHALL CONSIST OF MATERIALS APPROVED BY NYSDEC DIVISION OF FISH, WILDLIFE & MARINE RESOURCES.



TYPICAL CAPPING DETAIL

2 / D-4

NOTES:
1. CAPPING MATERIALS (GRAVEL AND TOP SOIL) MUST MEET ECOLOGICAL SOIL CLEANUP OBJECTIVES FOR VOC, SVOC'S, PCB'S, AND METALS AS SET FORTH IN 6NYCRR PART 375–6.8(b) WITHIN 25' OF CREEK AND COMMERCIAL SCO'S OUTSIDE 25'.
2. EXCAVATION DEPTHS AND CAP THICKNESS VARIES AND IS DEPENDENT UPON LOCATION:
   A. CAPS WITHIN 25' OF CREEK AREAS REQUIRE A (2) FOOT CAP WITH DEMARCATION LAYER AS SPECIFIED.
   B. CAPS OUTSIDE 25' OF CREEK REQUIRE A (1) FOOT CAP WITH DEMARCATION LAYER AS SPECIFIED.
3. SOIL COMPACTION SHALL MEET 90–95% AS DETERMINED BY ASTM D698 PROCTOR TEST.
4. DEMARCATION LAYERS SHALL CONSIST OF NON WOVEN GEOTEXTILE FABRIC (MIRAFI 140N) OR EQUIVALENT.
5. SOIL CAPS CONSTRUCTED WITHIN 100 YEAR FLOOD PLAINS ARE TO BE RETURNED TO PREEXISTING ELEVATIONS AS DETERMINED BY SURVEY.

Base Drawings provided by Envirospec Engineering, PLLC.

Figure Prepared by Terrestrial Environmental Specialists, Inc.

Figure 4.

Detail, Creek Restoration and Capping, Skaneateles Creek Restoration Area (SCRA)

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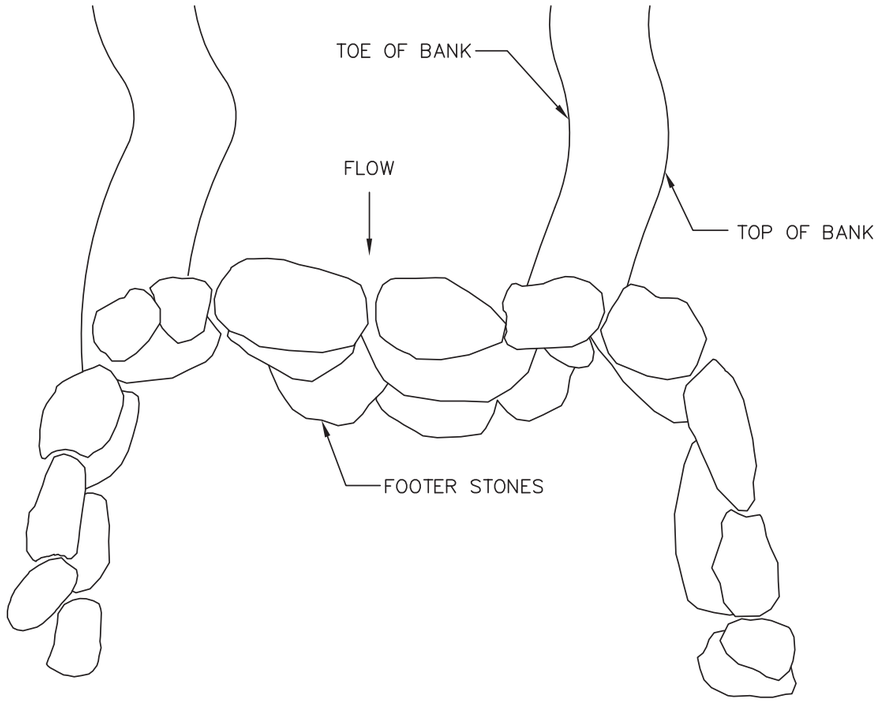
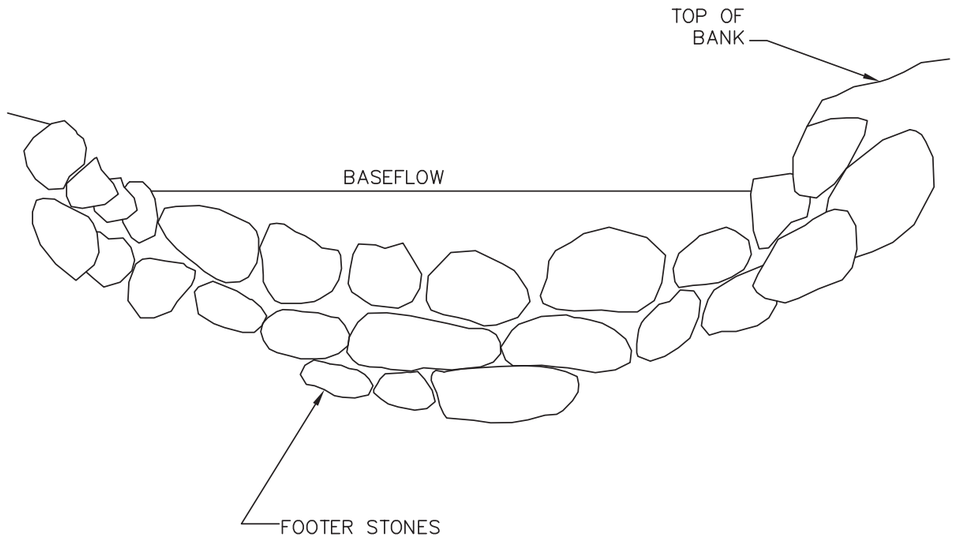
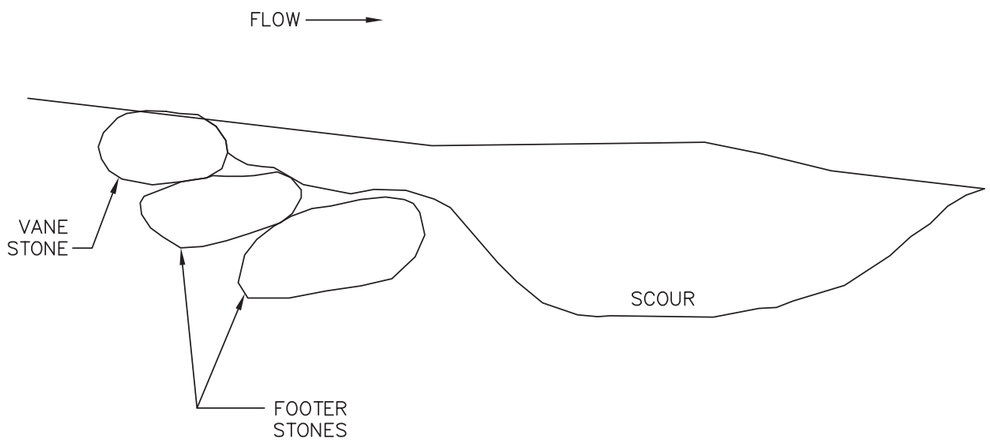


1 T-5 TYPICAL PLAN VIEW ROCK CROSS VANES SCALE: NTS



2 T-5 ELEVATION VIEW ROCK CROSS VANES SCALE: NTS



3 T-5 DETAIL ROCK CROSS VANES SCALE: NTS

Base Drawings provided by Envirospec Engineering, PLLC.

Figure Prepared by Terrestrial Environmental Specialists, Inc.

Figure 5.

Detail, Rock Cross Vane, Skaneateles Creek Restoration Area (SCRA)

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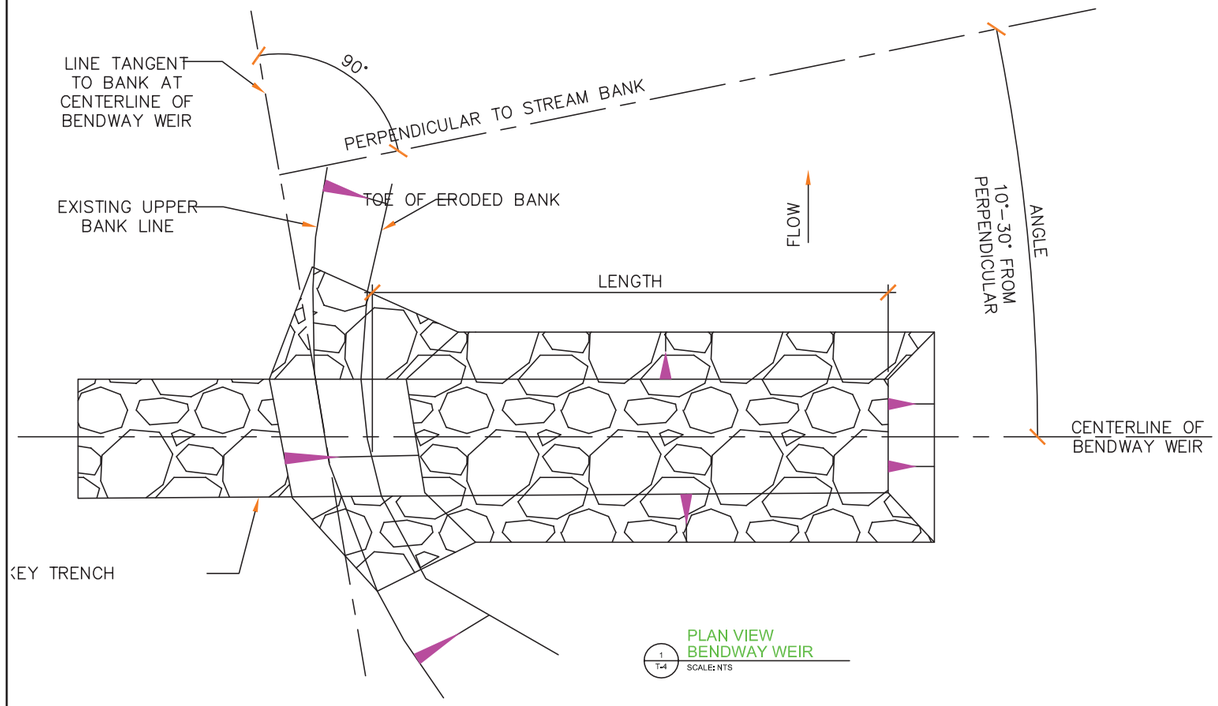
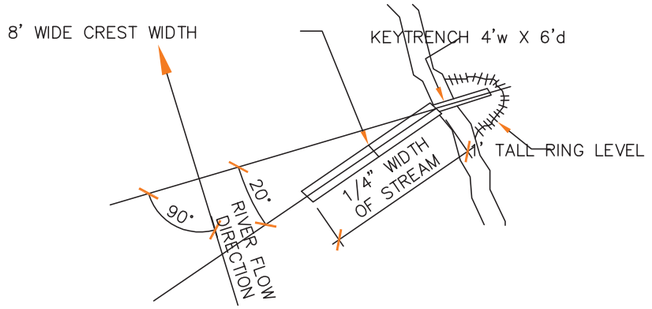
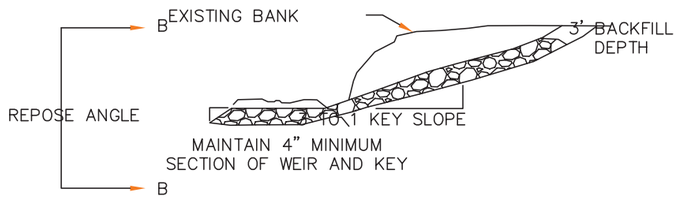
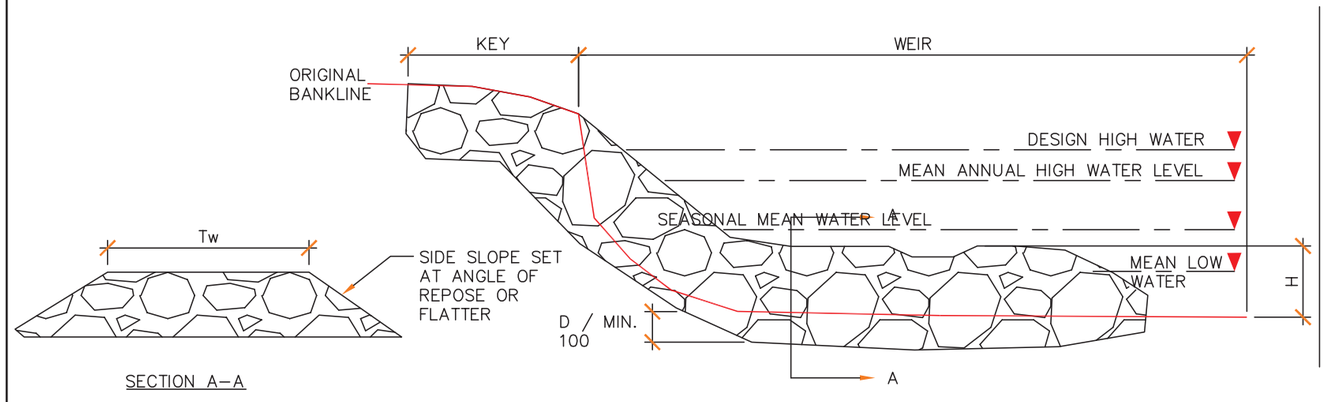


PLAN VIEW
BENDWAY WEIR
1 T-4 SCALE: NTS



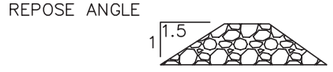
PLAN VIEW
TYPICAL BENDWAY WEIR
2 T-4 SCALE: NTS





SECTION A–A

CROSS SECTION
BENDWAY WEIR
3 T-4 SCALE: NTS



SECTION B–B

LONGITUDINAL CROSS SECTION
TYPICAL BENDWAY WEIR
4 T-4 SCALE: NTS

NOTE:
RED SAMPLE LOCATIONS INDICATE LOCATIONS WITH EXCEDENCES OF APPLICABLE SCOS. SEE TABLES INCLUDED WITH SUPPLEMENTAL REMEDIAL ACTIVITIES WORK PLAN.

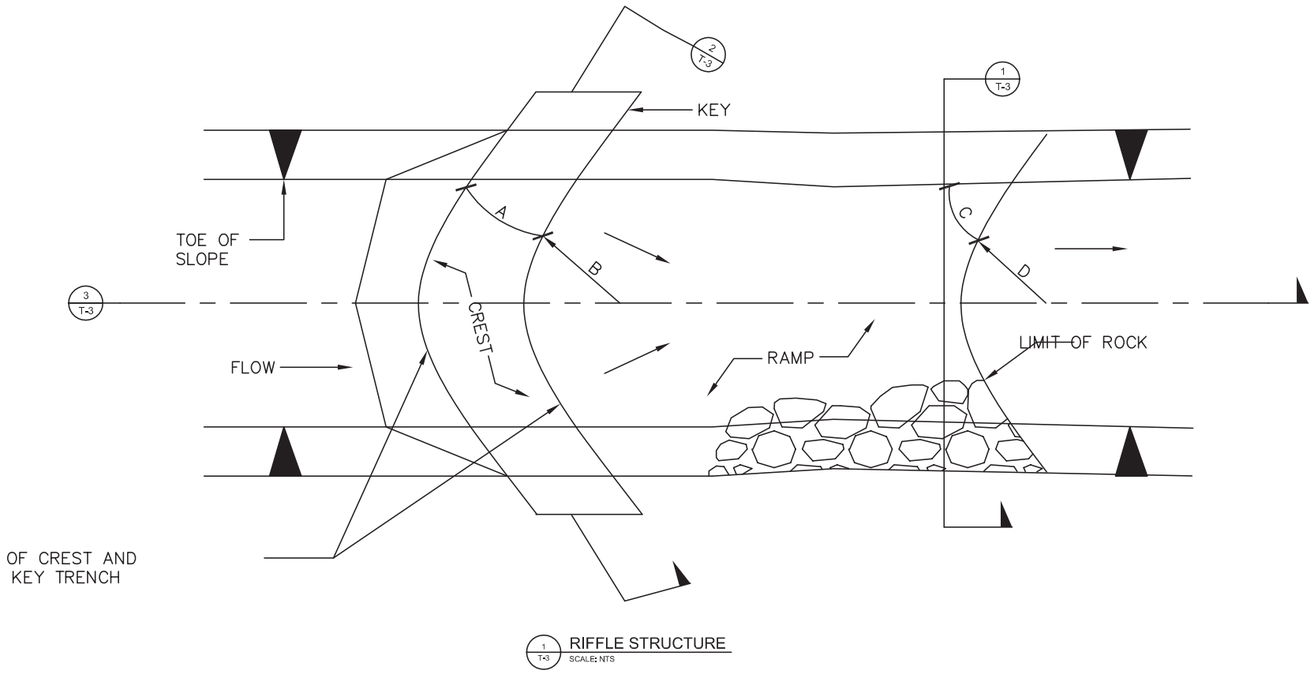
Base Drawings provided by Envirospec Engineering, PLLC.

Figure Prepared by Terrestrial Environmental Specialists, Inc.

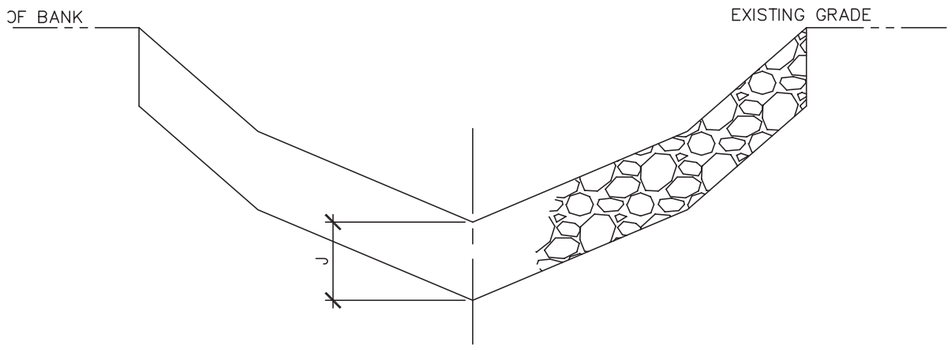
Figure 6.

Detail, Bendway Weir, Skaneateles Creek Restoration Area (SCRA)

TES File: ENV-3761\3761-Reports\3761-Skaneateles_Creek\3761-Figures\3761-bendway-detail.cdr\6-26-12



1 T-3 RIFFLE STRUCTURE
SCALE: NTS

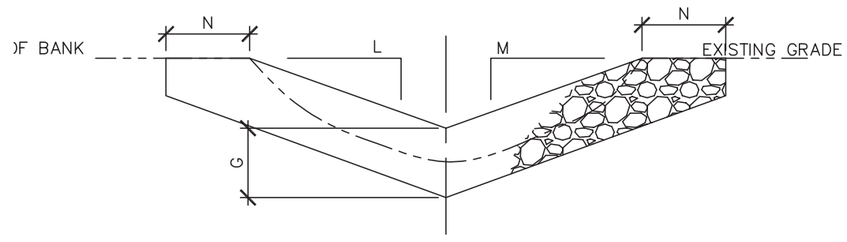


1 T-3 SECTION THROUGH RAMP
SCALE: NTS

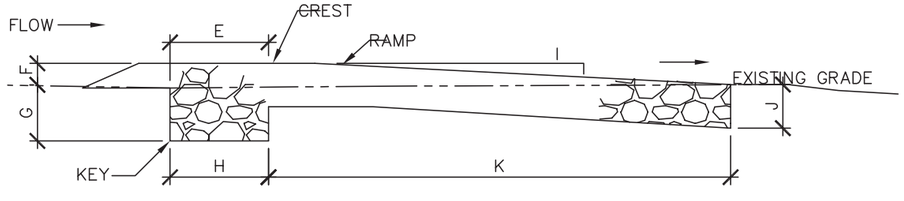
NOTE:
RED SAMPLE LOCATIONS INDICATE LOCATIONS WITH EXCEDENCES OF APPLICABLE SCOS. SEE TABLES INCLUDED WITH SUPPLEMENTAL REMEDIAL ACTIVITIES WORK PLAN.

DIMENSION LEGEND

A	STREAM BANK ANGLE ($50^\circ \leq A \leq 80^\circ$)
B	CREST RADIUS
C	TAIL ANGLE ($50^\circ \leq A \leq 80^\circ$)
D	END OF RAMP RADIUS
E	CREST WIDTH
F	CREST HEIGHT
G	KEY THICKNESS $\geq$ 1.5D90
H	KEY WIDTH $\geq$ 1.5D90
I	RAMP GRADE 20H:1V
J	RAMP THICKNESS $\geq$ 1.5D100
K	RAMP LENGTH
L	CREST SIDE SLOPE
M	CREST SIDE SLOPE
N	EMBANKMENT KEY



2 T-3 SECTION THROUGH KEY
SCALE: NTS



3 T-3 PROFILE
SCALE: NTS

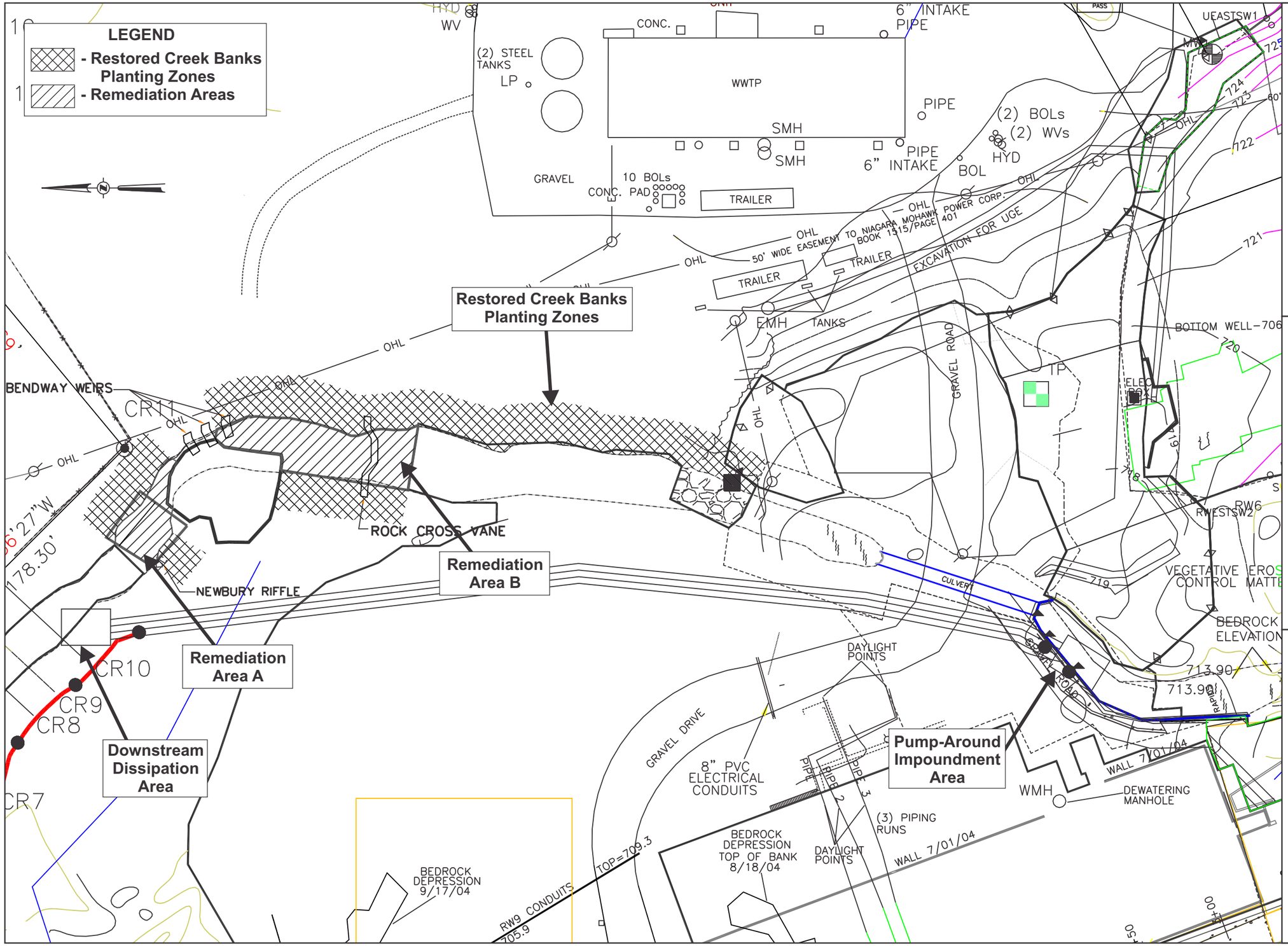
Base Drawings provided by Envirospec Engineering, PLLC.

Figure Prepared by Terrestrial Environmental Specialists, Inc.

Figure 7.

Detail, Newbury Riffle, Skaneateles Creek Restoration Area (SCRA)

TES File: ENV-3761\3761-Reports\3761-Skaneateles_Creek\3761-Figures\3761-newbury-detail.cdr\6-26-12



NORTH

0' 30' 60'

APPROXIMATE SCALE IN FEET

Base Map provided by Envirospec Engineering, PLLC.

Figure Prepared by Terrestrial Environmental Specialists, Inc.

Figure 8.

Planting Plan, Skaneateles Creek Restoration Area (SCRA)

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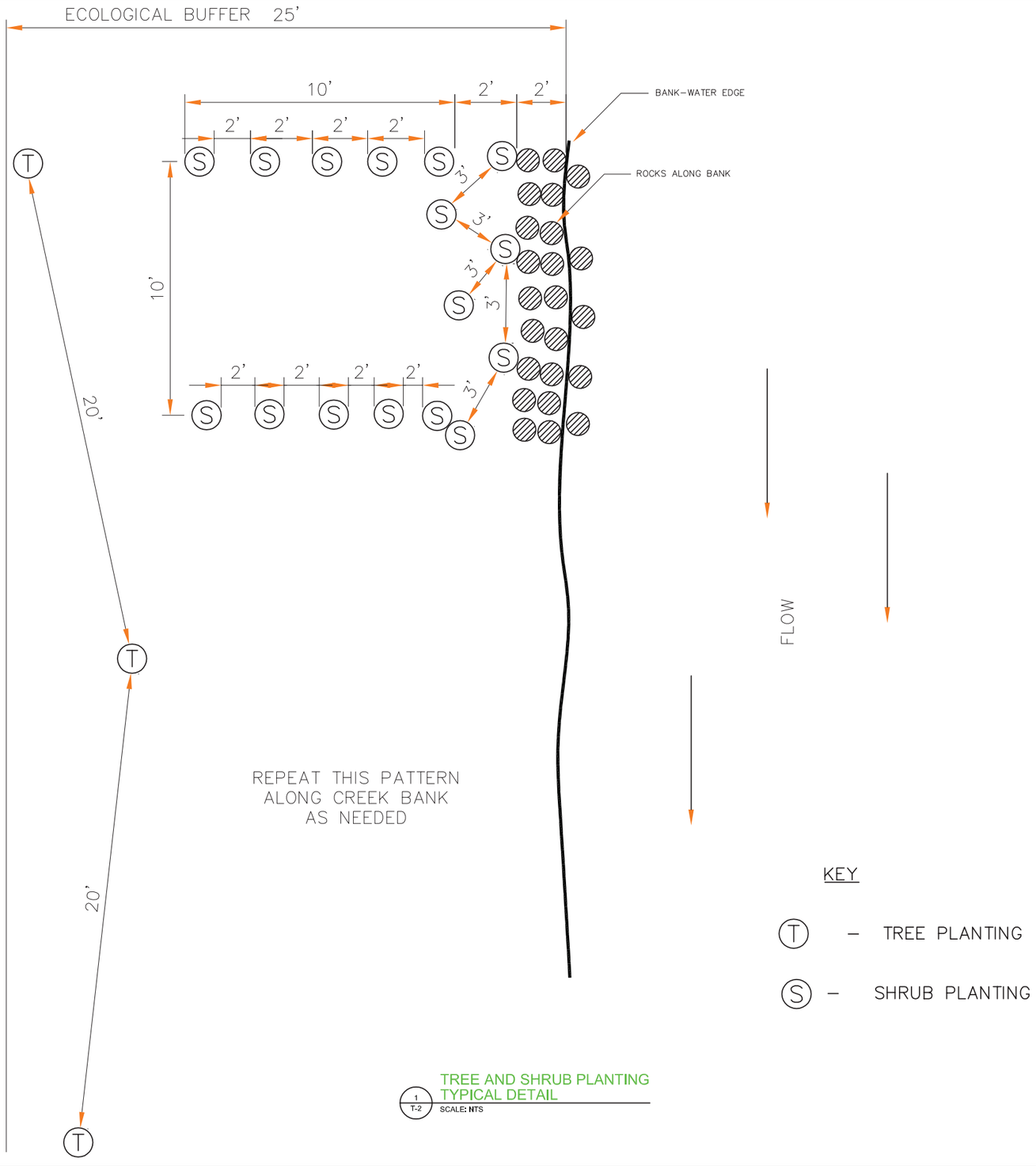

1 T-2 TREE AND SHRUB PLANTING TYPICAL DETAIL
SCALE: NTS

Base Drawings provided by Envirospec Engineering, PLLC.

Figure Prepared by Terrestrial Environmental Specialists, Inc.

Figure 9.

Detail, Tree and Shrub Plantings, Skaneateles Creek Restoration Area (SCRA)

TES File: ENV-3761\3761-Reports\3761-Skaneateles_Creek\3761-Figures\3761-treeshrub-detail.cdr\6-26-12