

# LL1 Grant Application



Submit completed application to:

Lauren Sampedro

lauren.sampedro@vlawmo.org

## Applicant Information:

Name:	Kristina & Andy Swanson
Address:	35 Robb Farm Road
City/Township, State, Zip:	North Oaks, MN 55127
Phone:	612.239.6751
Email:	kdolejsi@hotmail.com

## Project Summary:

ESTIMATED TOTAL PROJECT COST (\$)	\$10,294
AMOUNT REQUESTED (\$5,000 reg, \$7,500 curb cut)	\$5,000
EXPECTED PROJECT COMPLETION (Month, Year)	Fall 2023

### PROJECT TYPE:

- Raingarden/Infiltration Basin: Curb cut
- Raingarden/Infiltration Basin: Regular
- Shoreline/Streambank Stabilization and/or Restoration
- Filtration
- Other

If other, please describe the proposed project: \_\_\_\_\_

## Project Background:

Describe the project location.	256 Feet of shoreline restoration includes concrete barriers.
Does it connect to a lake, stream, ditch, or wetland in VLAWMO?	Connects to Lake Gilfilan.
What issues will be addressed with this project?	Concrete baracades, erosion control and a large array of invasive plants.

## Project Background: Continued

<p>Describe how your project will support the goals of the Landscape Level 1 Grant Program. (See LL1 policy)</p>	<p>Stabilize and restore actively eroding shoreline/land area.</p> <p>Improve shoreline health and water supply on lake Gilfilan.</p> <p>Reduce stormwater volume.</p> <p>Plant native plants to create a better environment for pollinators and beneficial species.</p>
<p>Briefly describe the planned installation and maintenance activities for your project.</p>	<p>Remove concrete barriers, eradicate invasive plants, restore shoreline.</p> <p>We will maintain by weeding and watering plants, etc. Please see additional details in the proposals attached for additional details.</p>

## Project Specifications:

<p><b>TOTAL PROPERTY AREA (Acres)</b></p>	<p>.66ac</p>	<p><b>Total PROJECT SIZE (Sq Ft)</b></p>	<p>~2,600sq ft Upland buffer+SL</p>
<p><b>IMPERVIOUS (HARD) AREA DRAINING TO PROJECT (Sq Ft):</b></p>	<p>4,874 sq ft</p>	<p><b>PERVIOUS (GRASSY, NON-PAVEMENT) AREA DRAINING TO PROJECT (Sq Ft):</b></p>	<p>14,660</p>
<p><b>DEPTH OF PRACTICE (In):</b> <i>Provide if project includes infiltration/filtration</i></p>	<p>N/A</p>	<p><b>BOTTOM SURFACE AREA (Sq Ft):</b> <i>Provide if project includes infiltration/filtration</i></p>	<p>N/A</p>




## Required Attachments:

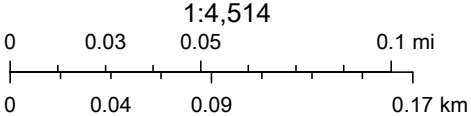
- ⇒ Detailed drawing or plan of the proposed project. If project is complex, VLAWMO may require project final designs to be completed by a qualified professional or engineer. Drawing must include project dimensions that enable VLAWMO staff to model the project for estimated water quality benefits.
- ⇒ At least 2 bids for construction of proposed project.
- ⇒ Detailed project budget estimate with itemized materials and costs that equal the total project cost.

# LL1 2023-05 Swanson Shoreline



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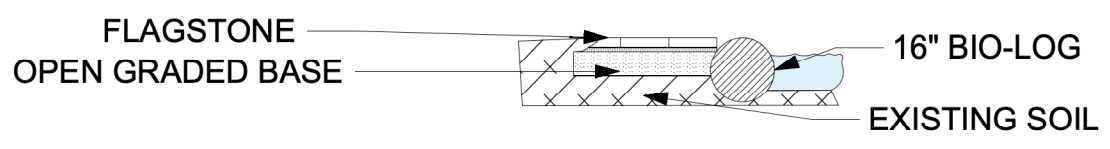
-  VLAWMO Boundary 2020
-  Project Location
-  VLAWMO Lakes





- Sedges/Rushes/Grasses - 110
- Ansie Hyssop - 32
- Blue Flag Iris - 34
- Joe Pye-Weed - 18
- Little Blue Stem - 24
- Cardinal Flower - 32

Upland Buffer Seed Mix BWSR



LAKESHORE PATIO CONSIDERATIONS AND OPTIONS:  
 1. COMPACTED SUB BASE DEPTH MAY VARY DEPENDING UPON SOIL TYPES AND CONDITIONS  
 2. FLAGSTONE ESTIMATES VARY DEPENDING UPON STONE SELECTED AND MAY INCREASE WASTE MATERIAL DEPENDING UPON PATIO SHAPE. DISCUSS THIS WITH YOUR INSTALLER.

**SHOOTING STAR**  
 NATIVE SEEDS  
 20740 County Road 33 • Spring Grove, MN 55574  
 (651) 488-3444 • info@shootingstarnative.com

Description: Mixture W2 (BWSR Native Sedge/Wet Meadow)  
 Seeding Rate: 5 lb/acre (127.9 seeds/square foot)  
 Notes: This mix is designed for mitigation projects.

Common Name	Scientific Name	% of Mix	Seeds/ft <sup>2</sup>	Total
<b>Grasses</b>				
Fringed Brome	Bromus ciliatus	8.10%	1.5	0.405 PLS lb
Bluejoint Grass	Calamagrostis canadensis	1.60%	8.2	0.080 PLS lb
Virginia Wild Rice	Zizania virginica	42.30%	3.3	2.115 PLS lb
American Mann Grass	Glyceria grandis	3.20%	4.1	0.160 PLS lb
Fox Mann Grass	Glyceria striata	1.60%	4.7	0.080 PLS lb
Fox Bluegrass	Poa palustris	7.10%	17.0	0.355 PLS lb
<b>Sedges &amp; Rushes</b>				
Butterbrush Sedge	Carex comosa	4.30%	2.4	0.215 PLS lb
Parish-broom Sedge	Carex scoparia	1.00%	1.5	0.050 PLS lb
Tussock Sedge	Carex viciata	0.80%	0.8	0.040 PLS lb
Common Fox Sedge	Carex stipata	3.20%	2.0	0.160 PLS lb
Brown Fox Sedge	Carex vaginoculata	3.20%	5.9	0.160 PLS lb
Path Rush	Juncus tenuis	0.20%	3.7	0.010 PLS lb
Torre's Rush	Juncus torreyi	0.60%	17.6	0.030 PLS lb
Dark Green Bulrush	Scirpus atrovirens	2.00%	16.9	0.100 PLS lb
Woodgrass	Scirpus cyperinus	0.20%	6.2	0.010 PLS lb
<b>Forbs</b>				
Sheep Milkweed	Asclepias incarnata	5.00%	0.4	0.250 PLS lb
Flat-topped Aster	Diochrysis umbellata	1.20%	1.5	0.060 PLS lb
Flaxweed	Ficaria verna	0.40%	1.7	0.008 PLS lb
Grass-leaved Goldenrod	Euthamia graminifolia	0.20%	1.3	0.010 PLS lb
Joe Pye Weed	Euthocium maculatum	0.40%	0.7	0.020 PLS lb
One-eyed	I. helianthi	0.30%	0.7	0.015 PLS lb
Sawtooth Sunflower	Helianthus grosseserratus	0.60%	0.2	0.030 PLS lb
Small Blue Lobelia	Lobelia spicata	0.30%	2.8	0.015 PLS lb
Monkey Flower	Monarda virginica	0.20%	8.4	0.010 PLS lb
Virginia Mountain Mint	Pycnanthemum virginicum	0.30%	1.2	0.015 PLS lb
Clart Goldenrod	Solidago arguta	0.20%	1.4	0.015 PLS lb
Swamp Aster	Symphoricarpos panicum	4.00%	5.9	0.200 PLS lb
Purple Meadow Rue	Thalictrum dasycarpum	0.40%	0.1	0.020 PLS lb
Blue Vervain	Veronica hastata	1.30%	2.2	0.065 PLS lb
Common Ironweed	Veronica fasciculata	0.50%	0.2	0.025 PLS lb
Culver's Root	Veronica virginicum	0.20%	2.9	0.010 PLS lb
Colden Alexanders	Zizia aurea	5.00%	1.0	0.250 PLS lb

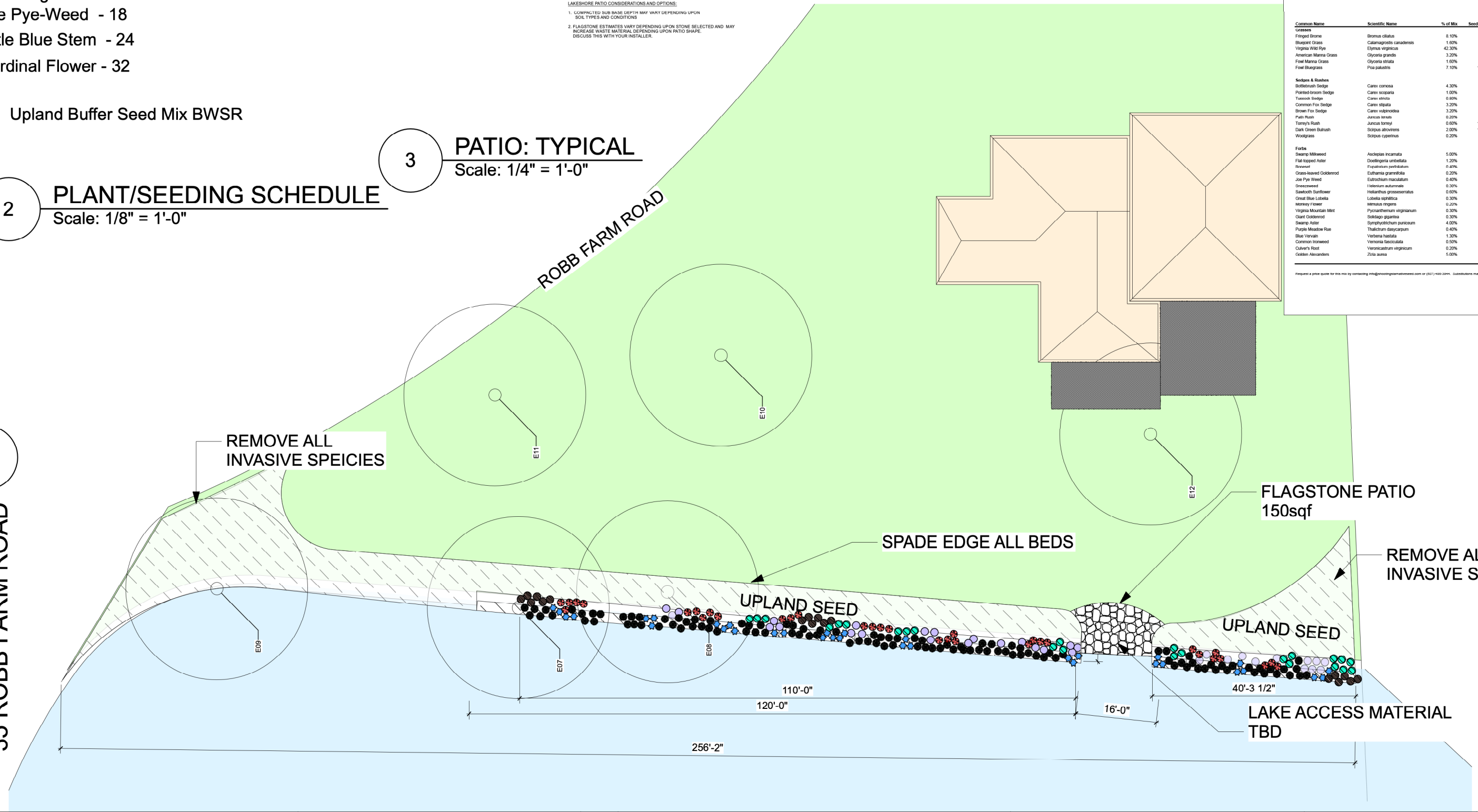
Request a price quote for this mix by contacting info@shootingstarnative.com or (651) 488-3444. Substitutions may be necessary based on availability at the time of order.

Page 1 of 1

**2 PLANT/SEEDING SCHEDULE**  
 Scale: 1/8" = 1'-0"

**3 PATIO: TYPICAL**  
 Scale: 1/4" = 1'-0"

**1**  
 Scale: 1" = 20'-0"  
 35 ROBB FARM ROAD



**SWANSON RESIDENCE**  
 35 ROBB FARM ROAD  
 NORTH OAKS, MN

DATE	REVISIONS

**DAVEY** **Resource Group**  
 1196 7th St E, St. Paul, MN 55106 • 651-202-3662

DRAWN BY	CH
CHECKED	Checked
APPROVED	Approved
SCALE	1" = 20'-0"

Date: 6/1/2023  
**L100**



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## Restoration Proposal for:

Ms. Kristina Dolejsi  
35 Robb Farm Road  
North Oaks, MN

**Proposal Date: August 1, 2023**

**Prepared by:**

Bill Bartodziej M.S., Senior Restoration Ecologist  
Natural Shore Technologies, Inc.  
612.730.1542 [bill.b@naturalshore.com](mailto:bill.b@naturalshore.com)



## ***Project Summary***

1. Project site: shoreland – 200' L x 10' W on average (2,000 SF) – see attached map
2. Site assessment and plan development include: detailed site preparation methods, plant selection, and a project timeline and work schedule for our staff. Because most of projects involve the establishment of natural buffers, site drawings and planting plans are not necessary. We have found that over time, native plants will seek out the optimal micro-habitats and flourish. However, project plan drawings can certainly be provide at an additional cost upon client request.
3. Delineate and verify total restoration project area.
4. Kill selected turf areas with an herbicide appropriate for upland or aquatic use. A licensed herbicide applicator from Natural Shore Technologies will apply the treatment.
5. Cut and remove any weedy plant material from planting area.
6. Install biologs at the base of the shore slope. (seawall will be removed by another contractor or by the landowner)
7. Apply a 2-3" layer of shredded hardwood mulch in areas that will be planted.
8. Plant selections will provide flowering throughout the growing season, with at least 25 native plant species included in the plan.
9. Lay out plants into plant zones per plan specifications and install at approximately 1.5' centers.
10. Mulch will be moved aside, plant containers installed, and a light mulch layer will be returned around the base of the plants to hold moisture.
11. We will use 1,000 – 3-4" containers for your planting.
12. Site monitoring will be conducted and appropriate maintenance will be provided through October, 2024.

**Installation note:** Prior to installation, please let us know of any underground utility lines, sprinkler lines, or other obstacles in the restoration area. It is the owner responsibility to clearly mark lines, and NST will not be held liable for any damages.

# Preliminary Plant Species List

Common Name	Scientific Name	Height (ft)	Color	Bloom Time
<b>EMERGENT</b>				
Spike rush	<i>Eleocharis palustris</i>	1 to 2	Brown	June-July
Broadleaved arrowhead	<i>Sagittaria latifolia</i>	4	White	July - August
Hard Stem Bulrush	<i>Schoenoplectus acutus</i>	4 to 6	Brown	July - August
Soft Stem Bulrush	<i>Schoenoplectus tabernaemontani</i>	4 to 6	Brown	July - August
Giant burreed	<i>Sparganium eurycarpum</i>	3 to 5	Green/Brown	July - August
<b>WET MEADOW</b>				
<b>Grasses, Sedges, Rushes</b>				
Canada Blue Joint	<i>Calamagrostis canadensis</i>	3 to 6	Tan-Green	July - August
Bebb's Sedge	<i>Carex bebbii</i>	2 to 3	Green	May - June
Bottlebrush Sedge	<i>Carex comosa</i>	2 to 3.5	Green	May - June
Porcupine Sedge	<i>Carex hystricina</i>	2 to 3.5	Green	May - June
Tussock Sedge	<i>Carex stricta</i>	2 to 3	Green	May - July
Fox Sedge	<i>Carex vulpinoidea</i>	1.5 to 2.5	Green	May - June
Green Bulrush	<i>Scirpus atrovirens</i>	2 to 5	Green-Brown	July - August
Woolgrass	<i>Scirpus cyperinus</i>	3 to 5	Brown	July-September
<b>Forbs</b>				
Sweet flag	<i>Acorus calamus</i>	2	Green	May - July
Canada Anemone	<i>Anemone canadensis</i>	1 to 2	White	May - July
Swamp Milkweed	<i>Asclepias incarnata</i>	3 to 4	Lavender	June - August
Turtlehead	<i>Chelone glabra</i>	2 to 3	White	August - October
Boneset	<i>Eupatorium perfoliatum</i>	2 to 4	White	June-July
Joe-Pye Weed	<i>Eutriochium maculatum</i>	3 to 6	Purple	June-July
Sneezeweed	<i>Helenium autumnale</i>	4 to 5	Yellow	August - September
Blue Flag Iris	<i>Iris versicolor</i>	2 to 3	Blue	June - July

Meadow Blazing Star	<i>Liatris ligulistylis</i>	2 to 3.5	Purple	June - July
Cardinal Flower	<i>Lobelia cardinalis</i>	3 to 4	Red	June - October
Blue Lobelia	<i>Lobelia siphilitica</i>	1.5 to 2.5	Blue	June - October
Mountain Mint	<i>Pycnanthemum virginianum</i>	2 to 3	White	July - September
New England Aster	<i>Symphyotrichum novae- angliae</i>	3 to 5	Purple	September- October
Blue vervain	<i>Verbena hastata</i>	2 to 5	Purple	July-August
Culvers Root	<i>Veronicastrum virginicum</i>	3 to 5	White	July-August

## PRAIRIE

### Grasses, Sedges

Side Oats Grama	<i>Bouteloua curtipendula</i>	1.5 to 2.5	Red-green	July - September
Blue Grama	<i>Bouteloua gracilis</i>	.5 to 1	Green-purple	July-September
June grass	<i>Koeleria macrantha</i>	1 to 2	Amber	May-June
Little Bluestem	<i>Schizachyrium scoparium</i>	1.5 to 3	Amber	July - September
Indian Grass	<i>Sorghastrum nutans</i>	4 to 6	Amber	July - September
Prairie Dropseed	<i>Sporobolus heterolepis</i>	1.5 to 3	Green	August - October

### Forbs

Anise Hyssop	<i>Agastache foeniculum</i>	2 to 4	Purple	June-October
Prairie Onion	<i>Allium stellatum</i>	1 to 1.5	Pink	July - September
Butterfly Milkweed	<i>Asclepias tuberosa</i>	1 to 2	Orange	June - September
Blue wild indigo	<i>Baptisia australis</i>	4.0	Blue	May-July
Prairie Coreopsis	<i>Coreopsis palmata</i>	1.5 to 2.5	Yellow	June - September
Purple coneflower	<i>Echinacea purpurea</i>	4.0	Purple	July-September
Rattlesnake master	<i>Eryngium yuccifolium</i>	4.0	White	July-September
Oxeye	<i>Heliopsis helianthoides</i>	5.0	Yellow	June-September
Prairie blazing star	<i>Liatris pycnostachya</i>	2 to 5	Purple	August - September
Wild bergamot	<i>Monarda fistulosa</i>	4.0	Pink-Purple	July-September
Foxglove Beardtongue	<i>Penstemon digitalis</i>	3 to 4	White	July-August



Prairie Phlox	<i>Phlox pilosa</i>	1.5 to 2	Pink	May - June
Mountain Mint	<i>Pycnanthemum virginianum</i>	2 to 3	White	July - September
Grey-headed Coneflower	<i>Ratibida pinnata</i>	5.0	Yellow	July-September
Black Eyed Susan	<i>Rudbeckia hirta</i>	2 to 3	Yellow	June - October
Heath aster	<i>Symphyotrichum ericoides</i>	2 to 4	White	August-September
Smooth blue aster	<i>Symphyotrichum laeve</i>	4	Blue	August-October
Aromatic aster	<i>Symphyotrichum oblongifolium</i>	2	Purple	August-November
Sky Blue Aster	<i>Symphyotrichum oolentangiense</i>	2 to 3.5	Purple	August-October
Ohio Spiderwort	<i>Tradescantia ohiensis</i>	2 to 4	Blue	July - October
Hoary vervain	<i>Verbena stricta</i>	1 to 3	Purple	July-August
Golden Alexanders	<i>Zizia aurea</i>	1 to 3	Yellow	May-July

## Project Cost

This bid includes project design and management, all materials, labor, and a two year maintenance plan. This is a comprehensive bid estimate and valid for thirty days. We require a 50% down payment to schedule your project.

### Cost Breakdown

Site Design, Project Management, Mobilization	\$1,400.00
Site preparation, herb. trts, clearing, hauling, fine grading	\$2,210.00
Mulch and/or Erosion Control - installed, Temp. fencing	\$1,770.00
Biologs - 16" dia., soil smoothing behind - install - 100'	\$5,250.00
1,000 Plants - 3" and 4" - containers @ 1.5' spacing	\$4,800.00
Maintenance Plan - 3 visits - 2022	<del>\$540.00</del>
Maintenance Plan - 5 visits - 2023	<del>\$900.00</del>
<b>TOTAL =</b>	<del><b>\$16,870.00</b></del>

*\$15,430 eligible costs  
LA*

(seawall removal conducted by another contractor or landowner)

## Site maintenance

Site maintenance includes at least 5 visits per year during the growing season to monitor and conduct activities that will ensure proper restoration establishment. We use the most appropriate, up-to-date maintenance techniques such as targeted herbicide application, hand pulling, mowing, and spot weed whipping to effectively control invasive weeds. Our lead maintenance supervisor has a B.S. in Biology and 10 years of field experience.

**Watering** – We will thoroughly water your site immediately after plant installation. Any necessary watering after installation is the responsibility of the owner. (Generally, normal rainfall during the growing season is adequate for native plant establishment.)

**\*Note we do offer long-term maintenance contracts. Over 90% of our clients use that service.**

## Staff Qualifications

Our company has over 50 years of combined ecological restoration experience. We are a local company that focuses on quality ecological restoration in the Metro area. Our clients vary from private estates on Lake Minnetonka, to large corporate headquarters in Eden Prairie. We also work with many city and county governments and watershed management organizations. We are fully insured.

Our specialty is lakeshore and wetland restoration. We have restored many miles of lakeshore in Minnesota, more than any other company. Please see our portfolio for examples of our restoration projects that include; shorelines, wetlands, prairies, savannas, and rain gardens.

Please see our **project photo book** at: <http://www.blurb.com/books/6034090-natural-shore-technologies-inc-photobook>

## Natural Shore Technologies Plant Material

We have commercial and retail greenhouses in Maple Plain. Our plants are Minnesota native perennials that will flourish year after year. Utilizing our own plant material in our projects assure quality control. Our wetland and prairie plants are guaranteed to establish during the first growing season. Perennial plants put most of their energy into establishing root systems so please keep in mind that the first year of growth will be mainly underground. You will see some flowering the first year, but significantly more flowering during the second year of establishment.

Information about our **retail native plant greenhouses** located in Maple Plain is also available at: [www.naturalshore.com](http://www.naturalshore.com)



# Guarantee

We stand by our native plant material and our ecological restoration services.

Native plants that we install are guaranteed to establish during the first growing season. Any plant material that does not make it through the first growing season will be replaced at no charge to the client.

On projects that we install and manage, we will guarantee successful establishment of your ecological restoration within three full growing seasons. This proposal provides a plan for accomplishing the restoration of the project site. If successful establishment does not occur within three growing seasons, all necessary steps will be taken to ensure the eventual success of the project, at no additional charge. For purposes of this guarantee, successful establishment is defined as follows: That the presence of at least 80% of the original seeded or planted species can be found on the site, and that the overall density of vegetation is comprised of no less than 80% native species.

The only exceptions to this guarantee have to do with plant death due to acts of God (floods or drought) the actions of others (vandalism), or animal herbivory (e.g., geese, muskrats). Watering by the owner during dry periods is necessary, and the lack of adequate watering in this circumstance may nullify this guarantee.

If these extreme circumstances do happen to occur, we will work with the client at a reduced rate to make all necessary repairs.

Our goal will always be to create successful, long-term partnerships with our clients. Our guarantee is the best in the business, and provides you with a clear understanding that we are here to fully support your ecological restoration endeavor.



# Contract

- A down payment of \$8,400 is required to schedule your project.
- The remainder of the project cost is due at project completion. Any unpaid amount beyond the 30 day period after billing will incur a 3% monthly finance charge.
- *Please note that this proposal is valid for 30 days from the date on this Contract.*

If you would like to proceed with the above outlined project, please sign the contract below.

**Client name:** Ms. Kristina Dolejsi

**Contract Value:** \$16,870.00

**Signed:** \_\_\_\_\_ **Date** \_\_\_\_\_

**Contractor:** *Natural Shore Technologies, Inc.*

**Signed:**

**Contract Date:** Contract Date for 30 Day term



William M. Bartodziej, M.S.

Senior Restoration Ecologist, Natural Shore Technologies

**Please return a signed copy of this contract and a check to:**

Natural Shore Technologies, Inc.  
6275 Pagenkopf Rd.  
Maple Plain, MN 55359





**Corporate Headquarters**  
295 South Water Street, Suite 300  
Kent, OH 44240  
800-828-8312

**Local Office**  
1196 7th St E  
St. Paul, MN 55196  
651-202-3662

June 1, 2023

**Kristina Dolejsi**  
35 Robb Farm Road  
North Oaks, MN 55330

***RE: Shoreline Restoration***

**Dear Kristina**

Thank you for contacting Davey Resource Group, Inc. “DRG” to provide you with this proposal to work with you on your shoreline restoration planting . This proposal is inclusive of all labor, material, and equipment required to perform work described in the RFP.

This proposal can be implemented by either issuing a purchase order, or by signing the Authorization to Proceed below and returning to our office.

If you have any questions or wish to arrange for a meeting to discuss this scope of work and more specifically the treatment methods and areas, please call our office at **651.202.3662** or my cell at **651-253-2157**.

Sincerely,

Chuck Hanna  
Principal Consultant  
Davey Resource Group, Inc.  
[www.daveyresourcegroup.com](http://www.daveyresourcegroup.com)

# Authorization to Proceed

## SHORELINE RESTORATION

- |  |                       |
|--|-----------------------|
| 1. Buckthorn removal and treatment along shoreline as shown on plan: | <del>\$2,000.00</del> |
| 2. Removal and disposal of concrete barriers along shoreline:        | <del>\$3,800.00</del> |
| 3. Installation of 19 - 16" Coconut Fiber Biologs, staked and tied   | \$5,035.00            |
| 4. 230 sqy of sod removal and disposal (Spade Edge )                 | \$1,725.00            |
| 5. Grading with existing soils to back of bio logs                   | \$480.00              |
| 6. Installation of 249 native plugs as per plan                      | \$871.50              |
| 7. Installation of 5 - #5 native shrubs                              | \$300.00              |
| 8. Installation of Upland Seed Mix 2,400 sqf                         | \$390.00              |
| 9. Installation of 255 SQY Category 3 Straw Blanket                  | \$892.50              |
| 10. <u>Site Restoration</u>  | <u>\$600.00</u>       |

Total Project Cost

~~\$16,094.00~~

\$10,294

eligible  
costs  
LX

## SHORELINE PATIO

1. Install 150 sqf Chilton Patio over 6" of open graded rock.

~~\$,9750.00~~

Any additional services requested, outside of the scheduled maintenance as described above shall be invoiced at \$95.00 per hour plus material. Prices above do not include appropriate sales tax, which will be added at the time of invoice. DRG may make recommendations to the client as issues occur. Any additional request for services shall be done in writing or electronically to benjamin.rietz@davey.com.

**By signing this form, I do hereby acknowledge acceptance of the scope of work and associated fee, as well as the terms and conditions and limited warranty contained herein. Furthermore, my signature authorizes the work to be performed.**

Client Name:

Authorizing Signature: \_\_\_\_\_

Title:

Date:

**Davey Resource Group, Inc.**

Name/Title:

Date:

## TERMS AND CONDITIONS

- All pricing is valid for 30 days from the date of this proposal, after which time we reserve the right to amend fees as needed.
- Time and materials (T&M) estimates may fluctuate and will be billed accordingly. Fixed fee contract prices will be billed as shown.
- Invoicing will be submitted monthly for work performed, unless otherwise agreed upon.
- Payment terms are net 30 days.
- If prevailing wage requirements are discovered after the date of this proposal, we reserve the right to negotiate our fees.
- Plant materials are subject to availability and substitutions may be made as necessary.
- All trees and shrubs are warranted for one year from the date of the project completion.
- Warranty does not cover lack of proper care, animal, vehicle, storm, drought, vandalism or human-caused damage.
- The client is responsible for any permit fees, taxes, and other related expenses, unless noted as being included in our proposal.
- The client shall provide 48 hours' notice of any meetings where the consultant's attendance is required.
- Unless otherwise stated, one round of revisions to deliverables is included in our base fee. Additional edits or revisions will be billed on a time and material (T&M) basis.
- All reports are provided only to the client unless otherwise directed.

## LIMITED WARRANTY

Davey Resource Group, Inc. (“DRG”) provides this limited warranty (“Limited Warranty”) in connection with the provision of services by DRG (collectively the “Services”) under the agreement between the parties, including any bids, orders, contracts, or understandings between the parties (collectively the “Agreement”).

Notwithstanding anything to the contrary in the Agreement, this Limited Warranty will apply to all Services rendered by DRG and supersedes all other warranties in the Agreement and all other terms and conditions in the Agreement that conflict with the provisions of this Limited Warranty.



# Stream & Ditch Bank Stabilization Estimator Version 2.1

SOIL =  
sand (1), silt (2)   
clay(3), peat(4)

SD SOIL density  
lbs/ft<sup>3</sup>   
tons/ft<sup>3</sup>

1 110  
2 X  
3 X  
4 X

CF   
P Correction Factor

1 0.85  
2 X  
3 X  
4 X

VOLV  
volume voided (ft3)

**SLB = SD\*VOLV/YR**  
Soil Loss Before (Tons/yr)  
=  
**SLR Soil Loss Reduction**  
Tons/yr

**SEDR =**  
SLB\*SDR = SLB \* 1  
**(= SLR)**   
**Sediment Reduction**  
(Tons/yr)

YR  
number of years  
to erode bank to  
current position

**PR =**  
SEDR \*(1.0 Lb/Ton)\*CF   
**P reduction (Lbs/yr)**

**D = 0** →  **SDR = 1**

= input  
 = calculated value  
 = result

ENTER THIS DATA ON eLINK INDICATORS TAB	
SEDIMENT (TSS) T/yr:	1.41
SOIL (estimated savings) T/yr:	1.41
PHOSPHORUS (est. reduction) lbs/yr:	1.20