



Eagle Scout Service Project Proposal



BOY SCOUTS OF AMERICA®

Eagle Scout candidate's full legal name Colin Michael Cooper

Eagle Scout Service Project Name Floating Wetlands: Water Quality and Education

Eagle Scout Requirement 5

While a Life Scout, plan, develop, and give leadership to others in a service project helpful to any religious institution, any school, or your community. (The project must benefit an organization other than the Boy Scouts of America.) The project proposal must be approved by the organization benefiting from the effort, your unit leader and unit committee, and the council or district before you start. You must use the *Eagle Scout Service Project Workbook*, No. 512-927, in meeting this requirement.

Project Description and Benefit

Briefly describe your project.

I will build six floating wetlands, two at McClennan park, two at Spy pond, and two at the Hills pond at Mentotomy rocks park. These are floating platforms with plants on them which can help take excess nutrients from the water. I will also create a poster to put up at each location to help educate people about what the floating wetlands are and how it benefits the environment and ecosystem. These floating wetlands are made out of 4" diameter Corrugated Polyethylene pipes filled with 1 liter plastic soda bottles, Polyethylene mesh with 1 inch square holes, burlap to hold the soil in place, and zip ties for holding it all together. First the pipe is made into a big circle and the ends of the pipe are zip tied together. The mesh gets folded around the pipe. The edges get zip tied together after the burlap is put in between. This creates two layers of mesh. The mesh is like a big bag holding the pipe and the burlap. The pipe gives the whole wetland its shape, but the mesh gives the pipe its shape by containing it. If there is not enough flotation milk jugs can be placed in between the mesh. I will have two different shapes of floating wetlands. The wetlands at McClennan Pond and Hills Pond will have dimensions of 3' x 4'. The wetlands at spy pond will have dimensions of 3' by 6'. These islands will be anchored to the bottom of the pond with a cinder block and polypropylene rope. The rope will be tied to the cinder block and the bottom of the floating island, either tied through the mesh in multiple places or tied to one of the milk jug handles inside the mesh. To prevent the rope from getting torn up on the cinder block, sections of old garden hose will be put around the rope where it would touch the cinder block. Plants will be installed on this floating wetland by cutting a small hole in the top layer of netting to put the plants in. A number of native wetland plants will be installed on this floating wetland. These plants are Swamp Milkweed, Marsh Marigold, Joe-Pye weed, Swamp Rosemallow, Northern Blue Flag Iris, Cardinal Flower, and Sensitive Fern. There are pictures below. I also have the proposed locations pictured below. I will also put posters up at Hills pond and at Spy Pond. These posters will educate people on what a floating wetland is and how it is benefiting the ponds. This poster will also be a place to acknowledge any companies that may make a donation of materials or money. These posters will be located on preexisting sign boards. The above plan is the ideal situation for my project but these plants are expensive and it may be somewhat difficult to get a donation or discount. I have a number of options on how to get the most floating wetland out of the money I end up raising. I have considered two different options for the cost of only the materials, not including the plants. This is before seeing if anyone has these items to donate. The materials cost for having six floating wetlands would be \$201, the materials cost for having only four would be \$184. On top of that I have considered eight different options for purchasing the plants. There are two things I can change that will bring the cost down that wouldn't affect the project too much. One is changing how many plants per island there are, the other is whether or not to include the Swamp Rosemallow. A more major change to the project would be whether to include the wetlands on Hills pond or not. The cost of having 10 plants on the small islands and 16 plants on the larger islands, having four small islands and two large islands, and including all types of plants would be \$1,111. The cost of this same configuration but without the Swamp Rosemallow would be \$960. The cost of having 10 plants on the smaller islands and 16 on the larger islands, having two of each island, and including the Swamp Rosemallow would be \$802. This same configuration without the Swamp Rosemallow would be \$694. The next prices will show the cost when there is 10 plants on the larger islands and 6 on the smaller islands. This will likely be the best solution for saving money because having less plants on the island will mean that the island will take a little more time to establish, but it may also benefit by leaving more room for the plants to expand sideways. The cost with less plants per island, four small islands and two larger islands, and including all types of plants is \$679. The cost of this same configuration, excluding the Swamp Rosemallow is \$587. With two small islands and two larger islands, with the same plant configuration, and including the Swamp Rosemallow, the cost is \$494. The cost of this same configuration, but excluding the Swamp Rosemallow is \$427. I will choose on of these configurations based on the funding I can get. There will be at least four floating wetlands at the end of the project, hopefully more.

Attach sketches or "before" photographs if these will help others visualize the project.

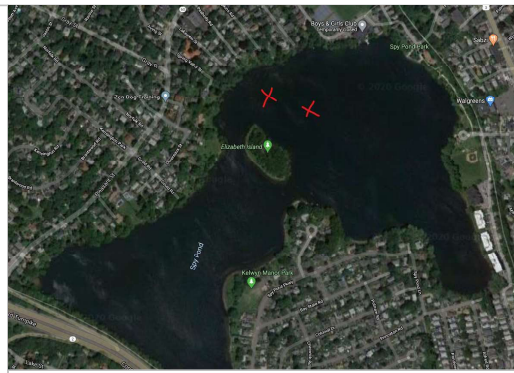
Please click below to add images (JPEG, JPG, BMP, GIF, TIF, PNG, etc.)

 <p>Plants provide shelter for birds, dragonflies, bees, and more.</p> <p>Plants use the nutrients in the water that used to be excess nutrients and grow, taking carbon from the air at the same time.</p> <p>Roots provide habitat for fish and other aquatic animals.</p> <p>The Wetland is anchored with a cinderblock and marine rope.</p>	<div>Netting</div> <div>Burlap</div> <div>Plastic Pipe</div> <div>Netting</div> <div> Zip tie</div> <div> Plastic Bottle</div> <div> Pipe Filled With Bottles</div>
Wetland	Design Side View

<div data-bbox="102 96 186 241"> <ul style="list-style-type: none"> Pipe Netting Burlap Zip Ties </div> <div data-bbox="224 163 643 369"> </div>		
<p>Design Top View</p>	<p>Swamp Milkweed</p>	
<p>Cardinal Flower</p>	<p>Joe Pye weed</p>	
<p>Northern Blue Flag Iris</p>	<p>Swamp Rosemallow</p>	
<p>Sensitive Fern</p>	<p>Marsh Marigold</p>	



McClennan Floating Wetland Locations (north is up)



Spy pond Floating Wetland Locations (north is up)



Hills Pond Floating Wetland Locations (north is up)

Tell how your project will be helpful to the beneficiary. Why is it needed?

These Floating Wetlands will be helpful to our community by strengthening pond ecosystems. The plants will grow using excess nutrients in the water from yard and road run-off, for example goose droppings or yard fertilizers. One negative effect of excess nutrients can be harmful because they encourage algae blooms. These algae blooms are unhealthy for people when the algae is fed with toxic nutrients from yards and roads. The wetlands can also help remove heavy metals from the water, and provide habitats for many animals both above and below water. These animals include fish, turtles, butterflies, bees, dragonflies, and birds. All of these plants and animals encourage biodiversity in the ecosystems. Many of the plants attract specific animals. Swamp milkweed is an important plant to many butterflies especially the monarch butterfly. Joe Pye weed can attract butterflies and birds, especially hummingbirds. Swamp Rosemallow attracts bees and birds. The Northern Blue Flag Iris also attracts bees and hummingbirds. Cardinal flowers also attract hummingbirds. The posters will help educate the community about water quality and other issues.

When do you plan to begin carrying out your project? As soon as I get council approval

When do you think your project will be completed? Within 3 weeks of approval (time for collecting materials and construction)

Giving Leadership

Approximately how many people will be needed to help on your project? 10

Where will you recruit them (unit members, friends, neighbors, family, others)? Explain:

I will recruit some unit members, as well as some members of my ecology class, for the constructing and launching of the project. I have also had some help from my ecology teacher for researching the plants for the project.

What do you think will be most difficult about leading them?

It may be difficult to lead my Ecology class in building the wetlands because they may have strong opinions on how they think it should be done. It may also be difficult to get them to take their time on the project and not rush anything. For leading the scouts I think it should be smooth as long as I have a list of tasks that need to be done and always have enough work to do.

Materials

Materials are things that become part of the finished project, such as lumber, nails, and paint.

What types of materials, if any, will you need? You do not need a detailed list or exact quantities, but you must show you have a reasonable idea of what is required. For example, for lumber, include basic dimensions such as 2 x 4 or 4 x 4.

Burlap, 1 inch plastic mesh, plastic corrugated piping, plastic bottles, zip-ties, plants, Cinder-blocks, garden hose, and

polypropylene rope. All of these materials are pretty common materials so I will solicit donations of all of these to bring down the cost.

Plants: Swamp Milkweed, Marsh Marigold, Joe-Pye weed, Swamp Rosemallow, Northern Blue Flag Iris, Cardinal Flower, and Sensitive Fern.

Supplies

Supplies are things you use up, such as food and refreshments, gasoline, masking tape, tarps, safety supplies, and garbage bags.

What kinds of supplies, if any, will you need? You do not need a detailed list or exact quantities, but you must show you have a reasonable idea of what is required.

Chip Bags, Water cooler, Hand Sanitizer

Tools

Include tools, and also equipment, that will be borrowed, rented, or purchased.

What tools or equipment, if any, will you need? You do not need a detailed list, but you must show you have a reasonable idea of what is required.

Scissors, Lighter, First aid kit, Canoe for Launching, Canoe/Kayak for buddy boat, Life jackets, Canoe/Kayak Paddles.

Other Needs

Items that don't fit the above categories; for example, parking or postage, or services such as printing or pouring concrete, etc.

What other needs do you think you might encounter?

Printing and Lamination for Signs.

Permits and Permissions

Note that property owners should obtain and pay for permits.

Will permissions or permits (such as building permits) be required for your project? Who will obtain them? How long will it take?

I have talked with the town engineer and the only permissions I need is to submit a plan to the Arlington Conservation Commission.

Preliminary Cost Estimate

You do not need exact costs yet. Reviewers will just want to see if you can reasonably expect to raise enough money to cover an initial estimate of expenses. Include the value of donated material, supplies, tools, and other items. It is not necessary to include the value of tools or other items that will be loaned at no cost. Note that if your project requires a fundraising application, you do not need to submit it with your proposal.

Enter estimated expenses below: (Include sales tax if applicable)		Fundraising: Explain how you will raise the money to pay for the total costs. If you intend to seek donations of actual materials, supplies, etc., then explain how you plan to do that, too.
Materials:	\$1,312.00	I will solicit donations from both individuals and from companies. I would like to ask native plant nursery's if they would give us a discount or donate plants for the project. I will try and get individual donations of materials and money by posting on the Arlington list. I will start a GoFundMe to collect money donations. The current cost estimate is with buying all the plants and materials at retail cost. The main cost is the plants. More information is in the Project Description
Supplies:	\$17.00	
Tools:	\$0.00	
Other:	\$10.00	
Total costs:	\$1,339.00	

Project Phases

Think of your project in terms of phases, and list what they might be. The first may be to prepare your project plan. Other phases might include fundraising, preparation, execution, and reporting. You may have as many phases as you want, but it is not necessary to become overly complicated; brief, one line descriptions are sufficient.

1.	Consult with town recycling coordinator and town engineer on feasibility
2.	Prepare project plan
3.	Obtain Conservation Committee approval
4.	Fundraising/Solicit donations
5.	Accumulate supplies
6.	Off-site construction of platforms
7.	On-site assembly and deployment (acquire plants from nursery just before this phase)
8.	Monitoring/Install signs

Logistics

How will you handle transportation of materials, supplies, tools, and helpers?

I will transport materials, tools, and supplies, using our car. I will transport the finished product to the pond the same way if the wetland platform will fit in the back. If not I will try and borrow a pickup truck or a trailer. I would expect helpers to get to each location on their own. I will have three locations on separate days. This would mean no transporting of people.

Safety Issues

The Guide to Safe Scouting is an important resource in considering safety issues.

Describe the hazards and safety concerns you and your helpers should be aware of.

We will be using scissors so they should make sure not to cut themselves. In case they do we will have a First aid kit available. For the few scouts who will be helping launch the wetlands, we will have to be aware of water safety. We will wear life jackets and not go out to launch if it is stormy. In order to ensure a safety while launching there will be two boats in case on tips over while trying to launch. The boat that is carrying the cinder block, and has the floating wetland trailing behind during launch, should be extra careful about tipping when lowering the anchor. That boat should contain two older scouts in the front and back paddling and one younger scout who has the swimming merit badge to lower the cinder block over the side of the canoe. This is so the older scouts can balance the weight and prevent tipping. The buddy boat can also help with that by putting weight on the boat on the opposite side of where the cinder block will be. Another unique safety issue I have to deal with is COVID 19. I will have the scouts work in small groups, with their siblings if they have any, and keep those small groups mostly separate. I will have the people who will help me launch also be a separate group. I will also make sure to have hand sanitizer for people. I will ask people to bring their own masks

Project Planning

You do not have to list every step, but it must be enough to show you have a reasonable idea of how to prepare your plan.

List some action steps you will take to prepare your project plan. For example "Complete a more detailed set of drawings."

Find a final location for the posters, find the depth of the water at the wetland locations, Polish the drawings, make a draft for the educational poster.