



## STAFF REPORT

To: East Hampton IWWA  
Re: Lake Aeration Project  
Date: April 29, 2020

I had the opportunity to speak with Darcy Winther at the Connecticut Department of Energy and Environmental Protection, Wetlands and Water Resources Division regarding the upcoming aeration system installation by EverBlue. The purpose of my conversation was threefold; first, to determine with whom jurisdiction lies for the permitting of activities on the Lake; second, to determine whether or not the lake aeration project can be completed as-of-right; and third, if it can be completed as-of-right, how that determination should be made.

First, it has historically been the understanding of the DEEP that Lake Pocotopaug is not State owned, and is therefore under the jurisdiction of the IWWA, not the DEEP. If the Lake were to be State owned, DEEP would have sole jurisdiction over permitting, even in the event of a Town sponsored project, such as the Aeration Project.

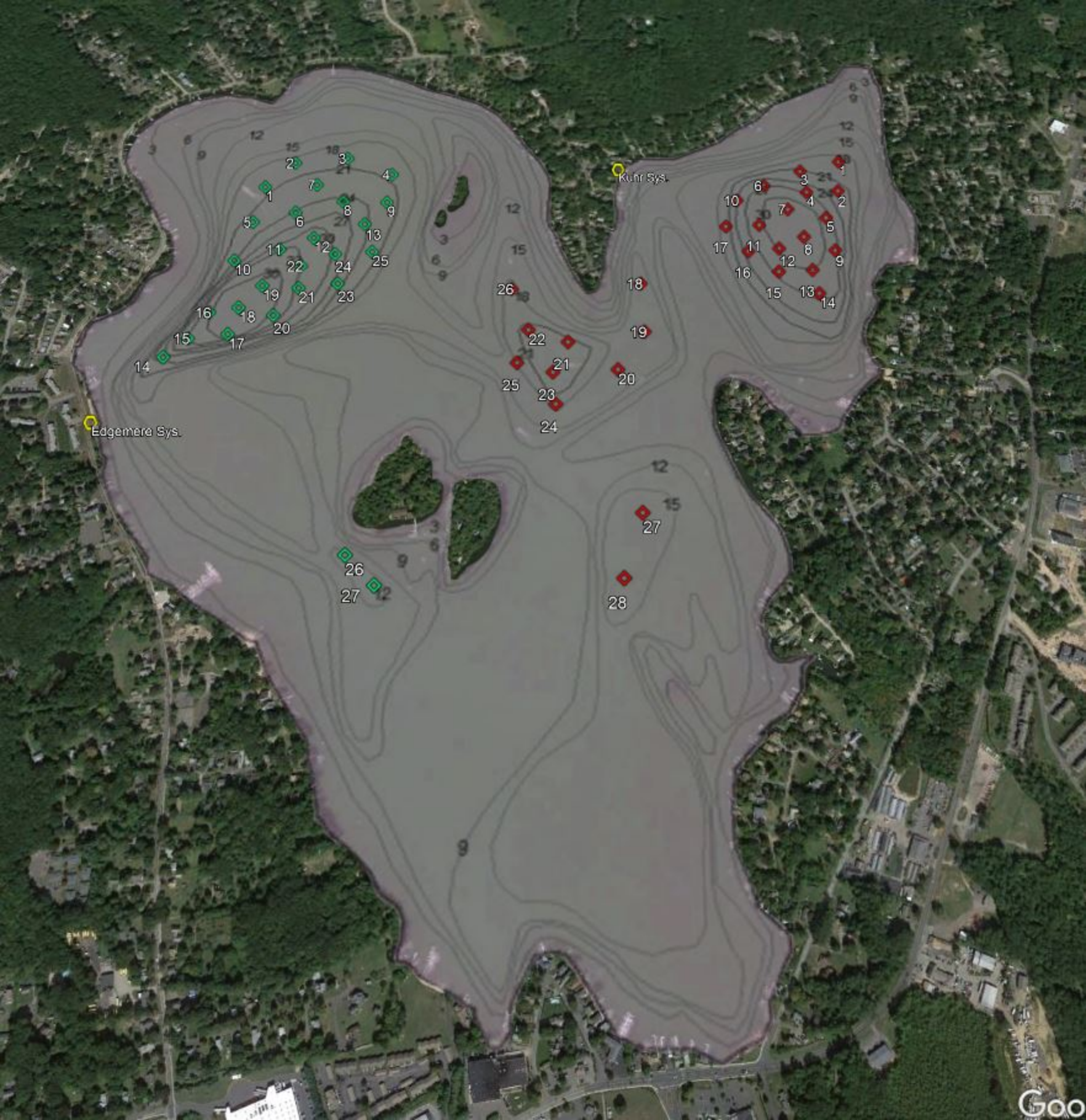
Next, we discussed the project goals and whether it can be carried out as-of-right. It is important to know that this project is being initiated due to the fact that during the summer months, the deepest portions of the lake become anoxic (oxygen depleted). This anoxic state is thought to be tied to the yearly cyanobacteria (blue-green algae) bloom leading to closures of the lake. Air diffusers will be sunk to the bottom of the lake in an effort to mix the water column and prevent the deep areas from becoming anoxic. There are two main components to this project. The first is the air compressor and associated electrical equipment which will be housed in a small shed. The second is the in-lake portion of the system which is comprised of self-sinking air lines leading air to diffusers in the deepest portions of the lake. Specifications are attached. There are two separate aeration systems, one in the Oakwood area with its compressor unit being located on the Edgemere Condo beach along North Main Street, the second in Markham Bay with its compressor unit located on private property on Spellman's Point road.

After discussing the project with Ms. Winther, it was determined that it would be both acceptable for the Agency to consider this an as-of-right use under our local regulations. In considering whether to allow this project to proceed as-of-right, the Agency should first determine whether or not the installation of air lines and water diffusers in the lake constitutes the deposition of materials or alteration of the indigenous character of the lake. The regulation defines material as *"any substance, solid or liquid, organic or inorganic, including, but not limited to: soil, sediment, aggregate, land, gravel, clay, bog, mud, debris, sand, refuse or waste."* Deposit *"includes, but shall not be limited to fill, grade, dump, place, discharge or emit."* If the determination is that the placement of the air lines and diffusers is not a deposition of material, then the in-lake portion of the project can inherently move forward as-of-right. If the Agency determines that this is a deposition of materials, it should then consider the purpose of the project and if it meets the test of Section 4.2.a, *"conservation of soil, vegetation, water fish, shellfish,*

*and wildlife.*” The agency should consider that this project is intended to be temporary in nature. Although there is no set timeline for its presence, the general consensus is that this equipment will be in place for approximately ten years. The system will be used seasonally, only being turned on during summer months when oxygen levels begin to drop. Finally, the Agency should consider whether or not the project will alter the indigenous character of the lake. If the Agency determines that the project is in support of conservation of one of the above, it can allow the project as-of-right.

Next, the Agency should consider the compressor and electrical sheds. Although the Agency had previously determined that the upland agent could issue a permit for these units, it was Ms. Winther’s suggestion that the Agency discuss and consider the possibility of allowing these units as-of-right as well, as they are integral to the in-lake portion. Undoubtedly, there will be deposition and removal of material in the upland review area for the installation to occur. The Edgemere location will require a small cut in the hill and a short retaining wall (approximately two feet). The Spellman’s Point location will require minor leveling for the installation of the shed base. Both locations will require trenching for the electrical connections within the upland review area. The agency should consider the language in Section 4.2 in considering an as-of-right determination. If it is determined that the compressor units should be permitted, the Town is prepared to submit an application for each location for submission to the Agent.

The following pages are specification of the project, including easement draft site plans for the locations of the compressor sheds, proposed diffuser locations, and installation information.



Edgemere Sys.

Kuhn Sys.

Kuhn Sys.

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## **EverBlue Lakes EBC-300 Aeration System Installation/Construction Process**

### **General**

- Target completion time-line is two weeks from arrival of equipment to project site.
- Best practice is to have the Electrical Installed prior to arrival of Compressors, Airline and Diffusers.

### **Electrical Installation**

Electrical Installation for the EverBlue EBC-300 Aeration System typically consists of the following activities:

- Confirmation that the Transformer in proximity to the installation site can support an additional 200 Amp Single Phase Service. Upgrade/addition of transformer at the pole if needed.
- Meter and socket can be installed at pole or integrated into the “H” Frame provided by EverBlue Lakes.
- Trenching or underground boring of the electric service to the compressor location.
- Installation of the “H” Frame supplied by EverBlue Lakes by a licensed Electrical Contractor who installs according to local code. Typically, the 3” Rigid Conduit is driven 4’ into the ground and a concrete or similar material is used to hold it in place.
- Wiring to breaker box, VFD unit, 110-volt service outlet completed by Electrical Contractor.
- Wiring to Compressor completed by Electrical Contractor.
- Programming of VFD completed by EverBlue Lakes.
- Start-up Process completed by EverBlue Lakes.

### **EBC-300 Compressor Station Installation**

- A small Skid Steer will be used to create a maximum 14-foot x14-foot level area at each of the two Compressor Stations. We anticipate minimal excavation of this area and will select and adjust each compressor site to require as minimal excavation as possible.
- Any removed material will be spread and utilized on-site.
- A 10-foot x 9-foot landscaped pad will be constructed using landscape timbers or other preferred material, landscape weed barrier and up to 3 inches of river stone will be added as top fill over the weed barrier. Not more than .8 cubic yards of stone will be applied per Compressor Station.
- The remaining area within the 14-foot x 14-foot fenced in area weed barrier can be installed with mulch or river rock applied over the weed barrier as preferred. Generally, using river rock in this area reduces maintenance.
- Six 16-inch diameter by 6-inch thick concrete footer blocks will be set and placed under each of six legs of the compressor unit.
- The Skid Steer will be used to move the compressor into place.

- Post holes for a 12-foot x 12-foot perimeter fence will be dug, and a fence will be constructed of out of wood selected. Fence posts will be set in quick-set concrete.
- Once completed, any disturbance of soil or vegetation around the Compressor Station will be restored. Appropriate erosion control measures, such as straw matting and reseeded and/or silt fencing, will be taken as needed during and after construction. It will remain in place until vegetation is re-established.
- Site will be seeded and/or planted as needed to restore native vegetation as soon as possible.

### **Manifold Stations**

- Directional boring or trenching of the main airline to the Manifold Stations will be done from the Compressor Station Locations to the location of the manifold box at the shoreline. For distances less than 50 feet, trenching is typically the preferred method. Trench will be dug using a small excavator, ditch witch trencher or hand dug as needed.
- A maximum 7-foot x 7-foot landscape pads will be prepared at the shoreline for the manifold box. A border of landscape timbers or other preferred material will be installed and weed barrier and up to a 3-inch layer of natural river stone or other preferred material will be used as top cover over the weed barrier. Less than .6 cubic yards of stone will be used for each Manifold Station. Silt fencing will be used during and after the trenching process until vegetation is re-established.
- Airlines will be connected to the manifold in the manifold box and run into the lake. The lines will be buried at the shoreline or similarly protected with existing rock/riprap. Silt fence will be used throughout the installation.

### **Airlines and Diffusers**

- Airline will be run by specialized boat and crew that enables the “unrolling” of the lines in 500-foot reels at the surface of the lake. As the line is fed off the back of the boat it sinks to the bottom. Every 500-feet the next roll is spliced to the previous roll using a brass hose coupler and 100% stainless steel hose clamps.
- Diffuser locations are mapped using a GPS/Sonar Depth Finder marking system prior to installation of the lines. Each diffuser site is also marked with a temporary physical buoy so that the spacing and placement can be visually checked and confirmed prior to installation. The marking is typically completed the day before diffuser installation begins.
- During installation this same system is used to guide the boat to the designated diffuser location for each diffuser. The physical buoy is used as a cross-check. Once at the diffuser location, a diffuser is attached to the end of the airline using a stainless-steel hose clamp. A drop line is fed through the center I-ring of the diffuser and the diffuser is slowly lowered into place at the designated location. Once on the bottom, the drop line is used to set the diffuser properly to ensure it is flat on the lake-bottom. One end of the drop line is then released, and the drop line is retrieved back into the boat. Once the diffuser is placed, the temporary buoy is removed from the lake.

- The specialized installation boat is equipped to carry multiple rolls of airline with a draft of less than 18-inches. This allows the boat to maneuver close to shore without disturbing the lake-bottom. A shore-based crew member assists in making a hand-off of each line so that the boat can remain 20 to 25 feet from shore at the start of each run.
- The lines will be run straight out for 100 to 200 feet from the point on shore where they enter the water. This keeps the lines in a “bundle” for the first 100 – 200 feet. Once all lines are run for a system, we will use the crew and boat to complete the assembly of the lines into a bundle and secure the bundle with rope approximately every 20 feet.

**Figure 5: Airline Bundling**

### **Airlines Bundled From Shore**



Once bundling is complete, the bundled lines will be buried by hand for as far as possible into the lake. Typically, the lines can be buried until water depth is 4 – 5 feet. On most installations, this allows us to bury the lines 25 – 50 feet from shore.

## Lake Pocotopaug Aeration Project Aeration System Enclosure Specifications

### General

EverBlue Lakes will construct custom built equipment enclosure for the purpose of housing the Lake Aeration Compressor Systems for the Lake Pocotopaug Aeration Project. The purpose of the enclosure is as follows:

- Create a sound reducing weatherproof enclosure to protect the Aeration Compressor, Variable Frequency Drive Unit and Electrical Panel and wiring required for the system.
- Construct an enclosure that fits with the Residential Character of the area around the lake.

The enclosures are designed as wood construction enclosures with a peaked roof with the top of the peak 8.5' tall with 6' walls. Standard dimension of the enclosure is 8'x8', however, the enclosure located on 60 Spellman Drive may be expanded to 10'x16' per property owner request.

This document will provide details for the construction of the "base" 8'x 8' enclosure with an additional detail on the planned modifications for the larger enclosure for the 60 Spellman Point Enclosure at the end of the document.

### Foundation/ Base Construction

- The enclosure site shall be excavated as needed to create a level area approximately 12'x 12' for an 8'x 8' Enclosure. (see diagrams)
- A 12" base of ¾" Processed Gravel will be laid down in the leveled area.
- Landscape timbers will be used to create a border to contain the base layer Processed Gravel. The height of this structure will vary depending on the need for a retaining wall. For example, the Edgemere site will require approximately a 2-foot retaining wall on the road-side of the structure.
- The floor will be constructed using 2"x 6" T&G Treated floor joists. A 14" diameter by 6" thick concrete deck footer will be used on each corner of the structure. 2 Layers of T&G treated ¾" plywood will be used for the flooring with 1" sound batting installed between the two layers.
- Tiedown anchors will be used on each corner to secure the structure to the ground.

### Wall Construction

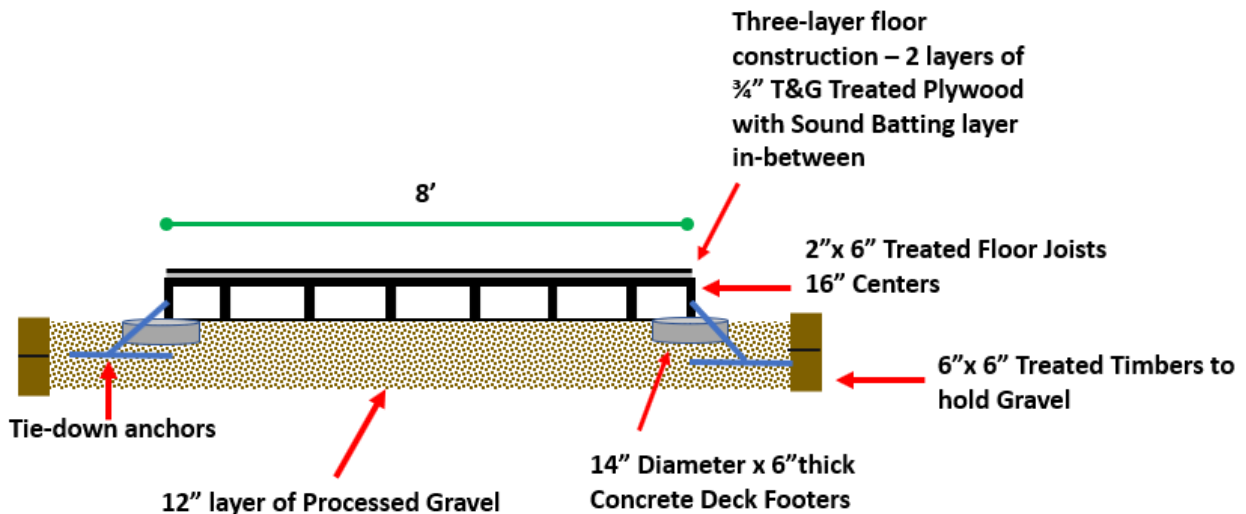
- Structure walls will be constructed using 2"x 6" Studs at 16" centers. (See diagram)
- Six inches of blown foam insulation will be applied and trimmed to studs.

- Exterior walls will be constructed using T-1-11 Siding which can be painted or stained to match existing structures and character of the respective neighborhoods.
- Interior walls will be ¾” plywood fastened to studs. Additional “egg carton” sound panels will be used if necessary, to achieve noise level targets for the systems.
- 1”x 6” Cedar Trim will be used on exterior finishes.

### Door Wall and Ceiling/Roof Construction

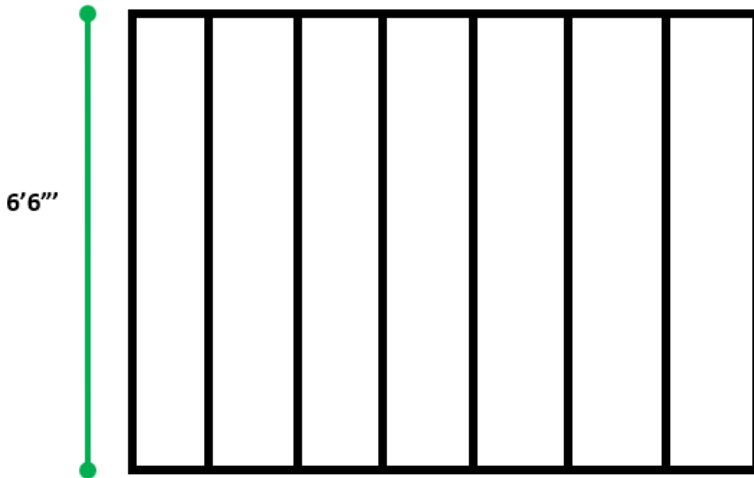
- Walls and trim same as above.
- Two 28” doors will be constructed creating a 56” opening for installing and maintaining equipment. Doors will be constructed, and sound insulated the same as the walls of the structure.
- 2”x 6” ceiling joists will be used to create a pitched roof. 6” fiberglass insulation and vents will be installed. (see diagram)
- 7/16” OSB roof decking will be used for exterior roof with either a steel or shingled roof as preferred.
- ¾” plywood will be used for interior ceiling and “egg carton” sound panels will be used if needed to achieve sound targets.

### Base & Floor Construction Section View



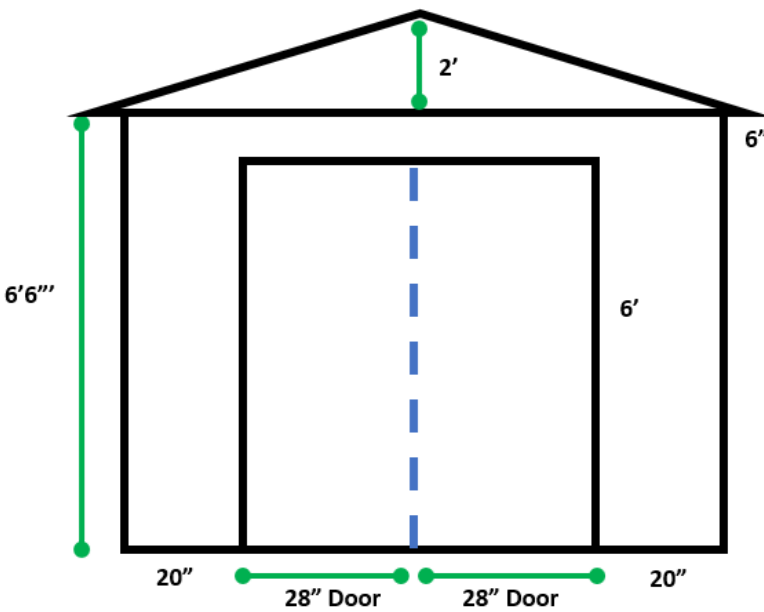


**Wall Construction**  
2 Side Walls 1 Back Wall



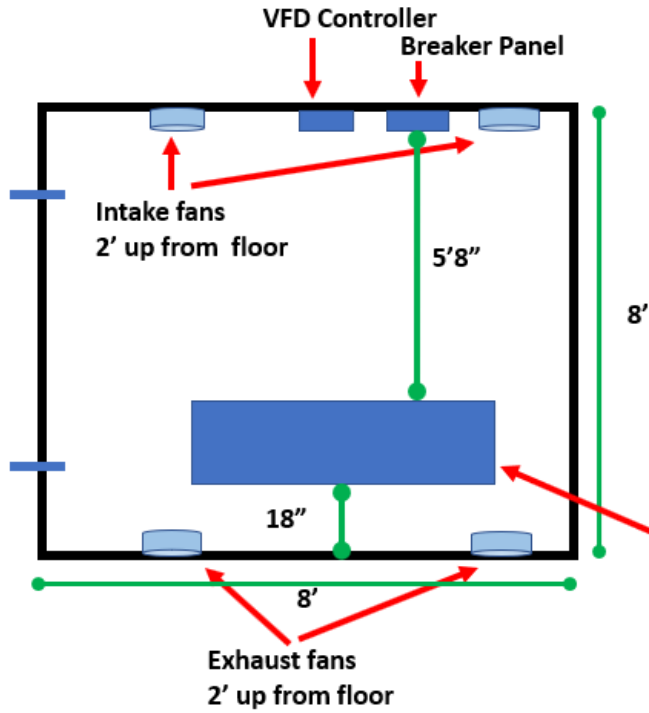
- 2"x6" Wall Studs spaced at 16" Centers
- 6" Foam blown Insulation
- T-1-11 exterior Wall
- 3/4" Plywood Interior Walls fastened to studs
- 1"x 6" Cedar Trim on exterior Walls

**Door Wall and Roof**



- 2"x6" Wall Studs spaced at 16" Centers
- 6" Foam blown Insulation
- T-1-11 exterior Wall
- Sound Board Interior Walls fastened to studs
- 1"x 6" Cedar Trim on exterior Walls
- 28" Double Doors. Doors will sound proofed same as walls.
- 2"x6" Ceiling joists 16" Centers with 6" fiberglass insulation and vents.
- 7/16" OSB Roof Decking
- Ceiling will be 3/4" plywood fastened to Joists.

### Equipment Layout Plan View

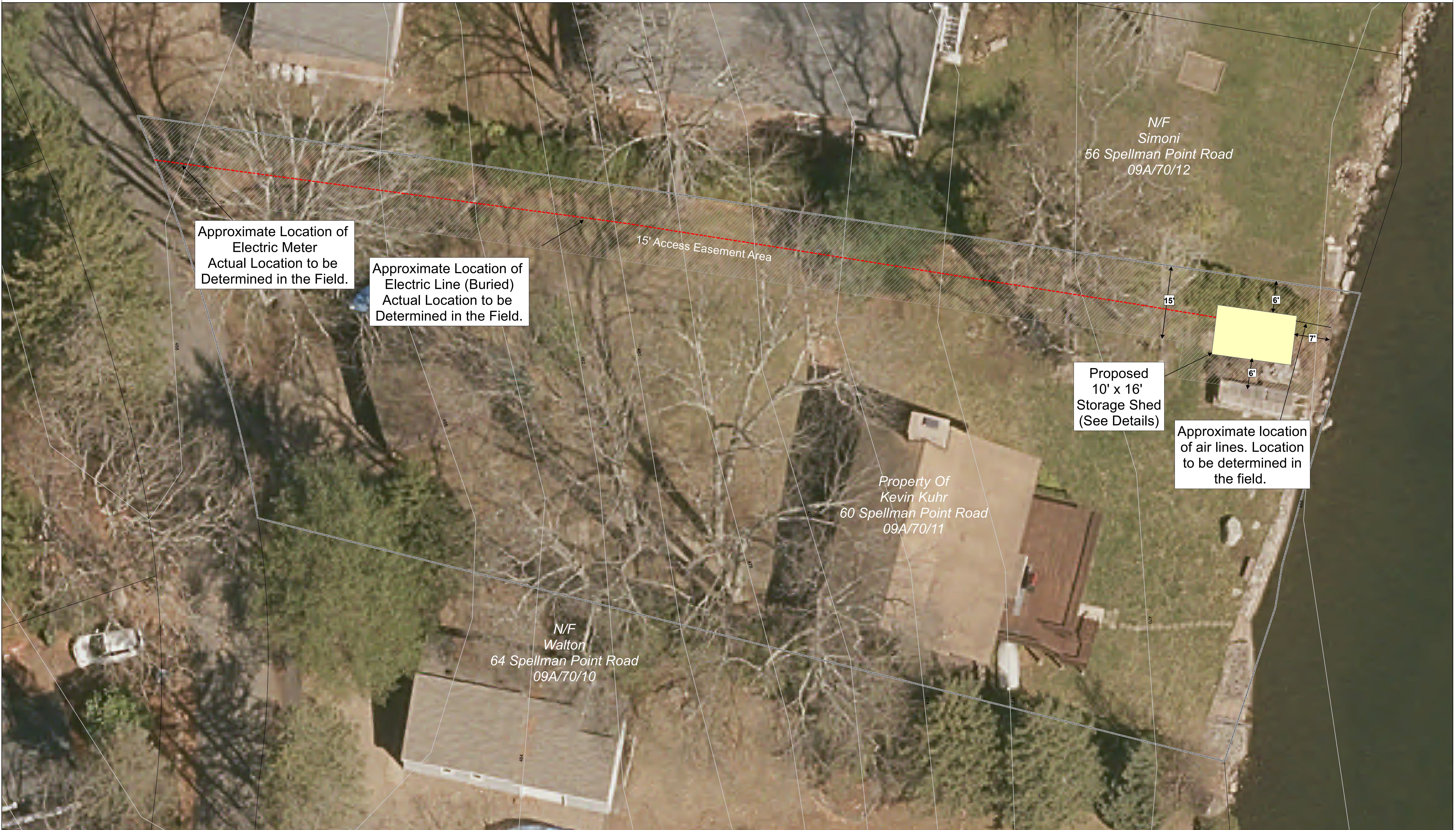


- Location of Intake and Exhaust may be adjusted at each site to optimize sound reduction performance.
- All fans will be ducted and fitted with Sound Mufflers
- One Exhaust and one intake fan will run continuously and one each will be activated by thermostat

Compressor



# Lake Aeration Compressor Easement - 60 Spellman's Point



Approximate Location of Electric Meter  
Actual Location to be Determined in the Field.

Approximate Location of Electric Line (Buried)  
Actual Location to be Determined in the Field.

15' Access Easement Area

N/F  
Simoni  
56 Spellman Point Road  
09A/70/12

Proposed  
10' x 16'  
Storage Shed  
(See Details)

Approximate location  
of air lines. Location  
to be determined in  
the field.

Property Of  
Kevin Kuhr  
60 Spellman Point Road  
09A/70/11

N/F  
Walton  
64 Spellman Point Road  
09A/70/10



This map has been produced by the Town of East Hampton for the purpose of depicting the location of the easement. It is not a class A-2 survey and was not prepared by a licensed Land Surveyor. The scale is accurate, but the property lines have not been located. Actual easement area and location of shed must be located in the field. Property lines are taken from the GIS map produced by Tighe and Bond. Topography data is taken from the State of Connecticut.

Map Created: April 21, 2020  
Drawing By: JDD

