



Lake Virginia

Aeration Upgrade Proposal



Created by: Nathan W. Zickert - Fountain and Aeration Technician
James Scharl - Senior Biologist - Lakes Services Manager

March 6, 2025



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 Pond Design and Development

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Lake Virginia Management District
 c/o Erik Larson
 W3246 Lake Virginia Rd
 Reedsburg, WI 53959

Dear Erik and Board Members,

On February 6, our staff from WLPR went out to look at the southern aeration system at Lake Virginia. Upon arrival, we saw and heard that the system was not operating. Our staff diagnosed that the Kaeser pump's motor was completely seized up. As I am still waiting to hear from Kaeser on a replacement pump, here are the details of other options for upgrades/replacements.

After further discussions, we have come up with three different options to upgrade or replace the system. The first option is just replacing the Kaeser pumps with Rocking Piston Compressors while keeping the diffusers and lines the same. The second option is to rip out both systems completely and start over with the three power locations with new diffusers, lines, and compressor pumps. The third option is the replacement of the entire system with the current power locations, including all airline, diffusers, and compressors. Costs and descriptions of both options are included below.

Option 1 – Replace existing Kaeser pumps only

Option 1 includes replacing the old Kaeser pumps only. All diffuser locations and airlines would stay the same. When consulting with our aeration equipment provider, we agreed on the recommendation of two 2HP Rocking Piston Compressors to replace one Kaeser pump. The 2HP compressors are going to be equivalent or slightly greater in airflow than the old pump while significantly reducing electricity costs. The cost below is broken down for the southern and northern ends of the lake. All costs include labor and shipping costs to our facility but does not include tax.

• Custom System – (x2) DCS210HPLD	\$14,899.98
o Includes:	
▪ (2) 2HP Rocking Piston Compressors, 220v	
▪ (2) SC28N Powder Coated steel cabinets, 220v	
▪ (2) Blower vans per cabinet	
• Sound Dampening (x2)	\$279.98
• Labor (3 People)	\$2,500.00
• Shipping	\$500.00
	Total Investment Per System
	\$18,179.97 plus tax
	Total Investment for Both Systems
	\$36,359.94 plus tax



Option 2 – Complete system upgrade/replacement with 3 different systems

In this option, we would upgrade the entire aeration system. When this aeration system was installed between '98-'00, the company installed a 4" mainline with splitters to each diffuser throughout the mainline for each system. The 4" mainline is weighted and, due to size, would need an excavator to remove the lines. Instead, we would follow each splitter line to the main 4" line and cut off each line and diffuser. Once completed, we will run all the new lines with your current diffusers (and replace the old ones as we go). Each diffuser will get their own separate line to ensure that we can shut that diffuser off with the remote manifold if need be. Currently there are 42 diffusers in Lake Virginia. With this proposed plan we can go down to 36 more evenly spaced diffusers. We would also be adding a 3rd location for a system that would be on the west shoreline towards the middle of the lake.

Upgrading the entire system will provide additional benefits to the Lake. First, all diffusers will be evenly spaced with the capability to shut off each diffuser individually. This allows more of the lake to be frozen with certain locations of diffusers running throughout winter as you don't need to run a full system anymore. Remote manifolds for each system allow for even distribution of air to each diffuser, ensuring your system is running as smoothly as possible. Second, upgrading to rocking piston compressors allows for quicker and easier maintenance, reducing downtime and costs. WLPR maintains stocks of all maintenance items, including rebuild kits, if one of the compressors fails mid-season. Each compressor comes with a 2-year warranty if anything would wrong. Third, upgrading the systems would lower the cost of electricity per month, as each compressor is pulling 8 running amps (which is 10x less than the current Kaeser pumps).

Each system is broken down by color and by all components per system. Labor includes the removal of the old system and installation of all three new systems. Installation can be staggered by system, but the lake may not be properly aerated if only one system is installed at a time.

- White System (Southern)
 - Est. 6,000' of 3/8" Self-Sinking Airline \$6,900.00
 - Custom System – DCS210HPLD \$7,449.99
 - Includes:
 - (1) 2HP Rocking Piston Compressor – 220v
 - (1) SC28N Cabinet w/ blower fans, 220v
 - Cabinet setup for remote manifold
 - Sound Dampening \$139.99

- Orange System (New system to be installed)
 - Est. 7,250' of 3/8" Self-Sinking Airline \$8,337.50
 - Custom System – DCS210HPLD \$7,449.99
 - Includes:
 - (1) 2HP Rocking Piston Compressor – 220v
 - (1) SC28N Cabinet w/ blower fans, 220v
 - Cabinet setup for remote manifold
 - Sound Dampening \$139.99



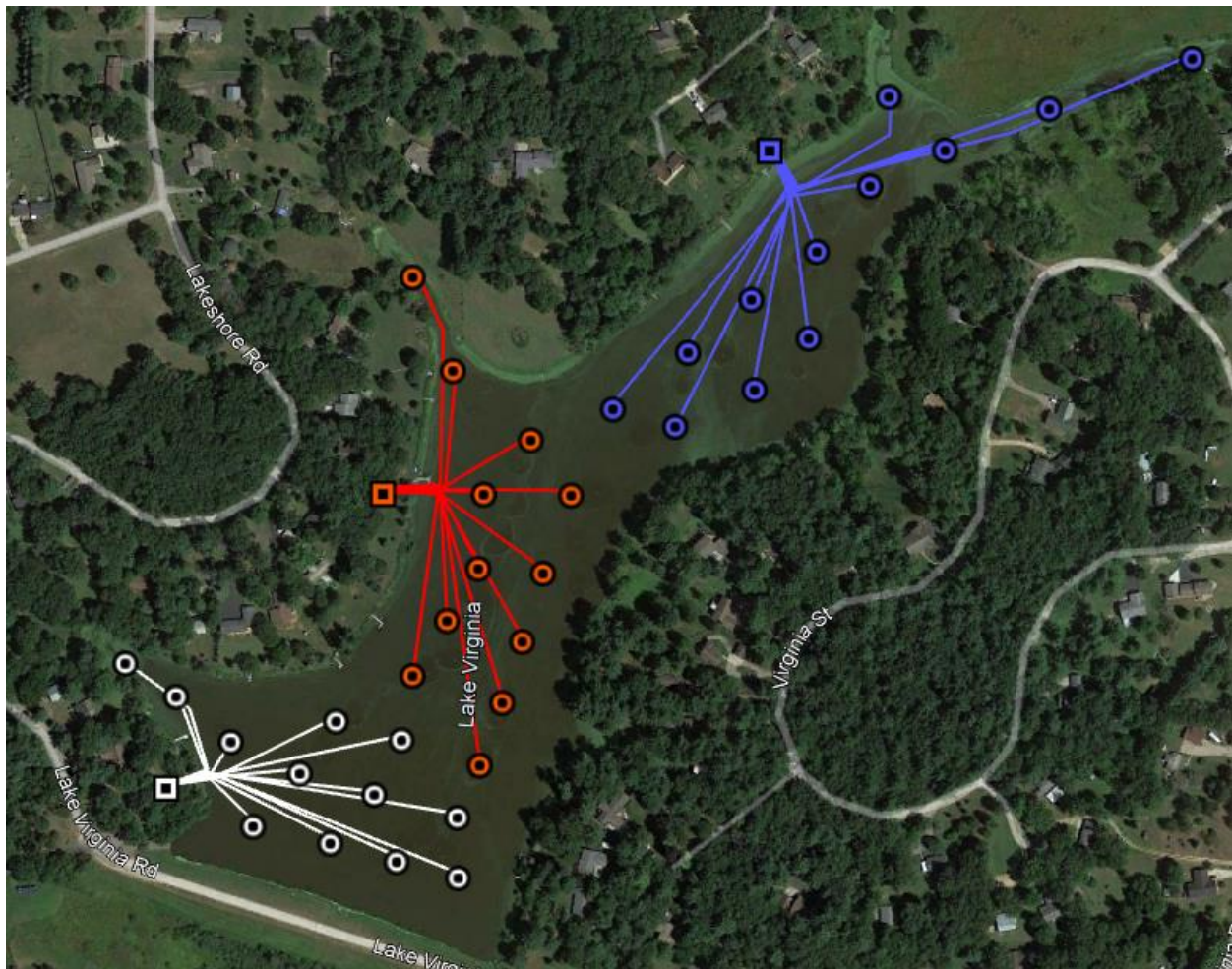
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- Blue System (Northern)
 - Est. 7,000' of 3/8" Self-Sinking Airline \$8,050.00
 - Custom System - DCS210HPLD \$7,449.99
 - Includes:
 - (1) 2HP Rotary Vane Compressors - 220v
 - (1) SC28N Cabinet w/ blower fans, 220v
 - Cabinet setup for remote manifold
 - Sound Dampening \$139.99

Systems and Airline Subtotal = \$46,057.44
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 - Airline is estimated and will not be billed until after installation
 - Total Labor Charges (5 people, 5 days, 3 vehicles) \$30,255.00
 - Shipping Freight (to WLPR facility) \$2,000.00
- Total Investment \$78,312.44 plus tax**





Option 3 – Replace existing system using both power source locations

In this option, we would upgrade the entire aeration system, while sticking with both power source locations. This option would still allow each diffuser to be shut off individually, while still using both power locations and not trenching a new location. This option would be 40 diffusers in total, with all being evenly spaced. This option would be very similar to the current system, but with much needed upgrades and spacing within the diffuser placements. The labor portion is broken down if each system is removed/installed at different times in the first two costs, third cost is if both systems are performed at once.

- White System (Southern)
 - Est. 12,250' of 3/8" Self-Sinking Airline \$14,087.50
 - Custom System – (2) DCS210HPLD \$14,889.98
 - Includes:
 - (2) 2HP Rocking Piston Compressors – 220v
 - (2) SC28N Cabinets w/ blower fans, 220v
 - Cabinets setup for remote manifold
 - Sound Dampening (2) \$279.98
 - Labor (3 days, 3 trucks, 5 people) \$18,500.00
 - Freight (to WLPR facility) \$1,500.00
 - Southern Aeration System Investment \$49,257.46 plus tax**

- Blue System (Northern)
 - Est. 14,500' of 3/8" Self-Sinking Airline \$16,675.00
 - Custom System – (2) DCS210HPLD \$14,889.98
 - Includes:
 - (2) 2HP Rocking Piston Compressors – 220v
 - (2) SC28N Cabinets w/ blower fans, 220v
 - Cabinets setup for remote manifold
 - Sound Dampening (2) \$279.98
 - Labor (3 days, 3 trucks, 5 people) \$18,500.00
 - Freight (to WLPR facility) \$1,500.00
 - Northern Aeration System Investment \$51,844.96 plus tax**

- Both Systems Installed at Once
 - Est. 26,750' of 3/8" Self-Sinking Airline \$30,762.50
 - Custom System – (4) DCS210HPLD \$29,779.96
 - Includes:
 - (4) 2HP Rocking Piston Compressors – 220v
 - (4) SC28N Cabinets w/ blower fans – 220v
 - Cabinets setup for remote manifold
 - Sound Dampening (4) \$559.96
 - Labor (5 days, 3 trucks, 5 people) \$30,255.00
 - Freight (to WLPR facility) \$3,000.00
 - Whole Lake Aeration System Investment \$94,357.42 plus tax**

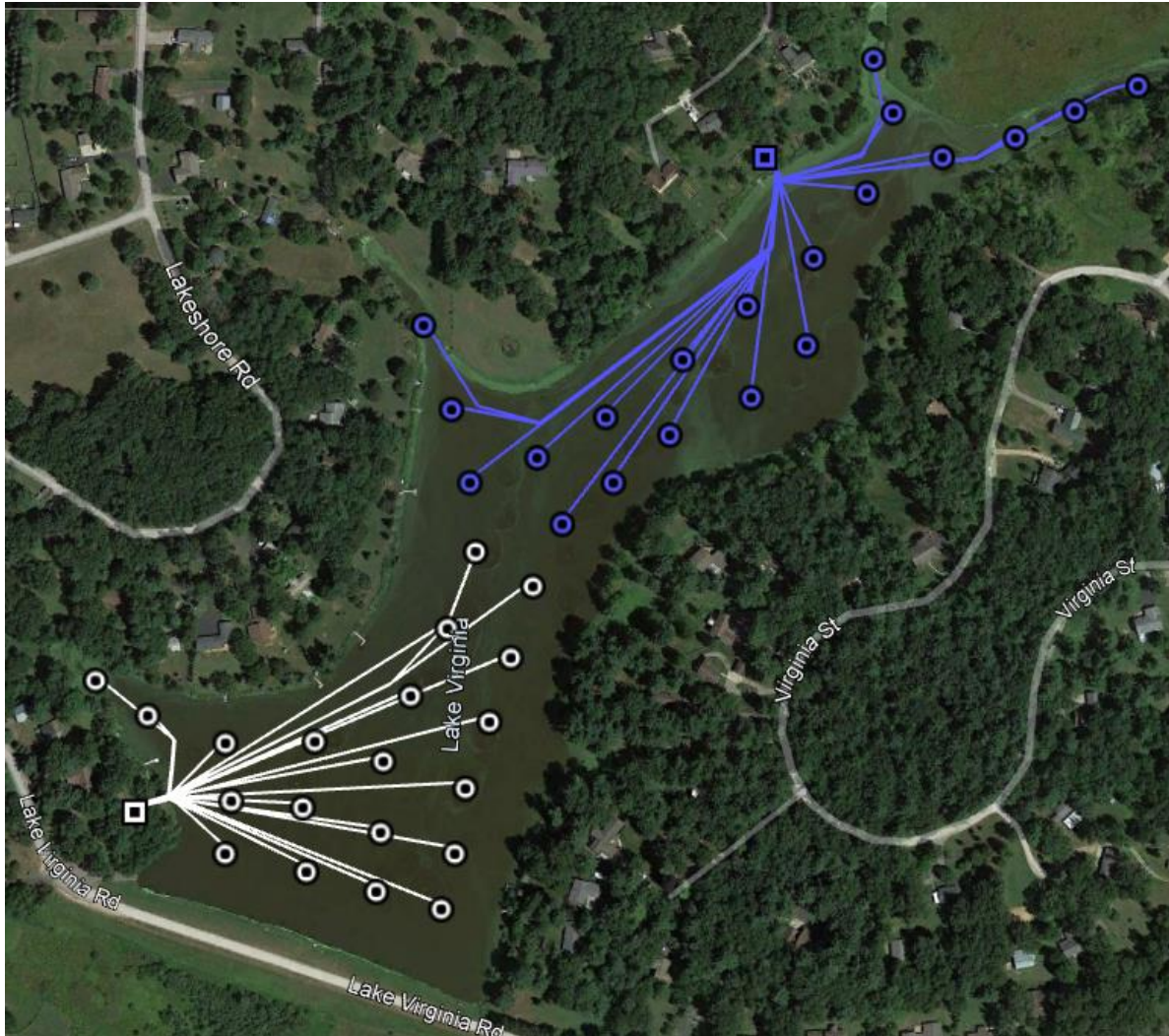


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If you have any further questions regarding the two options for the aeration system, please let Jim (jim@wisconsinlpr.com, 920-979-3072) or Nathan (nzickert@wisconsinlpr.com, 920-872-0264) know. We look forward to working with you. Thank you!

Sincerely,

Nathan W. Zickert – Fountain and Aeration Technician

James Scharl – Senior Biologist – Lake Services Manager