

Restoring a Kansas Farm Pond: Controlling Algae Through Dredging

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Introduction

Having grown up around farming since I was 6 years old and having gone through this restoration process firsthand, I understand the challenges that rural property owners face when a pond turns green. This document explains the process of restoring a small farm pond that had become covered with algae. The pond was last rebuilt in 1963 and had accumulated more than sixty years of silt, fertilizer runoff, and organic material. Shallow water and warmer weather patterns contributed to rapid algae growth, making the pond unsightly and less functional. This project documents the dredging process, explains why dredging was the most effective long-term solution, and shows the results using original photographs. The goal is to help new rural property owners understand why ponds turn green and what is involved in restoring them.

Section 1: Why the Pond Turned Green

The pond turned green because several long-term environmental factors combined to create ideal conditions for algae growth. Over more than sixty years, fertilizer runoff from surrounding fields added nutrients that feed algae. Warmer weather patterns have also increased water temperatures, which accelerates algae reproduction. The most important factor, however, was the buildup of silt that made the pond increasingly shallow. As shown in Table 1, shallow water allows more sunlight to reach the bottom, which significantly increases algae growth. Of the three causes, dredging to restore depth was the only factor an owner could directly control.

Table 1. Causes of Algae Growth in Kansas Ponds.

Cause	How It Contributes	Can the Owner Control It?
Fertilizer runoff	Adds nutrients (nitrogen & phosphorus) that feed algae growth	Partially — depends on surrounding land use
Climate warming	Warmer water increases algae reproduction rates	No (not by him/herself)
Shallow depth from silt buildup	More sunlight reaches the pond bottom, accelerating algae growth	Yes — by dredging (rebuilding)

Section 2: Why Dredging Was the Best Solution

There are several methods available to control algae in small ponds, but most of them are temporary and require repeated maintenance. Chemical treatments can clear the water quickly, but the algae usually return once the chemicals wear off. Aeration improves water quality but does not remove the silt that causes shallow conditions. Barley straw and skimming offer only minor or short-term improvements. As shown in Table 2, dredging was the only method that

addressed the root cause of the problem by removing decades of accumulated silt and restoring the pond’s depth. Although dredging is the most expensive option, it provides the most effective and long-lasting solution.

Table 2. Comparison of Algae Control Methods.

Method	Cost	Effectiveness	Temporary or Long-Term	Notes
Chemical treatments	Moderate	High at first, but algae may return	Temporary	Requires repeated applications
Aeration	Moderate to high	Helps long-term water quality	Long-Term	Needs electricity and maintenance
Barley straw	Low	Mild effectiveness	Temporary	Works slowly; not reliable for heavy blooms
Skimming	Very low	Removes surface algae only	Temporary	Labor-intensive; doesn’t fix root causes
Dredging	High	Very high	Long-Term	Removes silt, deepens pond, reduces sunlight penetration

Section 3: The Pond Clean-Out Process

The following photos document the major stages of the pond clean-out process (See Figures 1–5). Over several days, the bulldozer removed decades of accumulated silt, reshaped the pond edges, and restored the original clay bottom. Figure 1 shows the pond before dredging began, when algae had overtaken the surface. Figures 2 and 3 capture the excavation in progress, showing the bank cuts and the removal of accumulated silt. Figure 4 documents the pond immediately after excavation, revealing the restored clay bottom. Figure 5 shows the fully refilled pond, demonstrating the dramatic improvement in water depth and clarity. Together, these images illustrate how dredging directly addresses the root causes of algae growth by increasing depth and improving water quality.

The total out-of-pocket cost for the dredging work was \$4,500.00 in bulldozer operator fees. Property owners considering a similar project should also be prepared for one outcome I was not: the very large mound of dirt the bulldozer pushed out of the pond and left in the adjacent field. The excavated silt and clay have to go somewhere, and on a project of this scale the resulting pile is substantial — in my case, larger than a two-car garage — large enough to become its own ongoing management consideration. Landowners should plan in advance for where the spoil will be placed, whether the mound will be graded out over time, and whether the material can be put to productive use as fill dirt elsewhere on the property or offered to neighbors who need it.



Figure 1. Pond before dredging. (Photo by author.)



Figure 2. Cutting the bank. (Photo by author.)



Figure 3. During excavation. (Photo by author.)



Figure 4. After excavation. (Photo by author.)



Figure 5. Full pond. (Photo by author.)

Section 4: Estimated Increase in Pond Volume

No measurement of the pond depth was conducted prior to the start of the project, but reasonable estimates based on the pond's dimensions and standard farm-pond volume formulas show a significant increase in water capacity after dredging. As shown in Table 3, the pond held an estimated 3,768 cubic feet of water before dredging and approximately 13,846 cubic feet afterward. This represents an increase of more than 10,000 cubic feet, or roughly 75,000 gallons of additional water. The deeper basin reduces sunlight penetration and improves long-term water quality, making the pond far less susceptible to algae growth.

Table 3. Estimated Pond Volume Before and After Dredging. (Volume calculations based on Kansas State University Research and Extension, “Estimating Pond Volume.”)

Condition	Estimated Avg Depth	Estimated Volume (cubic ft)	Estimated Volume (gallons)	Notes
Before dredging	2.5 ft	3,768 cu ft	~28,000 gallons	Shallow, algae-prone
After dredging	7 ft	13,846 cu ft	~103,000 gallons	Restored depth, improved water quality
Increase	—	+10,078 cu ft	+75,000 gallons	Much larger water capacity

Conclusion

Restoring the pond required addressing the long-term environmental factors that caused excessive algae growth. Fertilizer runoff, warmer weather patterns, and decades of silt buildup created shallow conditions that allowed algae to thrive. Dredging was the most effective solution because it removed the accumulated silt, restored the pond’s depth, and increased its overall water capacity. The photos and volume estimates demonstrate how the project improved water quality and reduced the likelihood of future algae problems. This restoration provides a long-term solution that will keep the pond healthier and more functional for years to come.

Works Cited

Kansas State University Research and Extension. “Estimating Pond Volume.” K-State Research and Extension Publications, Kansas State University.

Kansas State University. “Testing and Management Options for Blue-Green Algae in Farm Ponds.” Agronomy eUpdates, 27 July 2018.

Kansas State University Research and Extension, Sedgwick County. “Aquatic Plants/Algae: Managing ‘Pond Moss’ and Aquatic Weeds.” K-State Extension, 24 March 2026.