

STRAIGHT LINES

Summer 2026





Since 1944, Spicer Group has helped communities manage, maintain, and improve surface water infrastructure. Among the firm’s most specialized services is dam safety, a practice that combines engineering expertise, environmental permitting, regulatory knowledge, and client coordination to protect public safety and natural resources.

Dams play an essential role in many communities by providing flood control, maintaining lake levels, supporting recreation, and managing water resources. As these structures age, however, ongoing inspections, maintenance, and rehabilitation become increasingly important. Ensuring a dam continues to operate safely requires a comprehensive understanding of both the structure itself and the watershed systems that influence its performance.

Spicer Group’s dam safety practice area serves clients throughout the United States, including Michigan, Ohio, Georgia, and beyond. The firm’s multidisciplinary approach brings together professionals from other practice areas as well, including surveyors, structural, geotechnical, and environmental engineers, and hydrology, hydraulics, and surface water specialists to evaluate, plan, rehabilitate, remove and manage dams of varying sizes and complexities.

Over the past two decades, Spicer Group has completed hundreds of dam safety inspections, lake level studies, emergency action plans, and engineering evaluations. These projects have helped private owners, municipalities, counties, watershed organizations, and state agencies navigate complex regulatory requirements while preserving the long-term safety and functionality of their infrastructure.

Dam projects often involve much more than evaluating concrete, steel, or earthen embankments. Each site presents unique challenges that require careful analysis and coordination. Hydraulic evaluations, sediment transport assessments, fish passage considerations, and stability investigations, wetland impacts, environmental contamination concerns, and aesthetic considerations can all influence project outcomes.

Whether the objective is constructing a new dam, rehabilitating an aging structure, removing a dam that has reached the end of its useful life, or modifying an existing facility to meet current standards, successful projects depend on balancing engineering requirements with environmental and community needs.



Flook Dam

Key Services

One of the most important services Spicer Group provides is dam safety inspections. During an inspection, engineers evaluate a dam’s structural

integrity, spillway capacity, operational adequacy, and overall condition. The resulting reports identify deficiencies that could contribute to future failures and provide recommendations for maintenance, repair, rehabilitation, or replacement. These evaluations allow owners to make informed decisions about their infrastructure and prioritize improvements before problems become emergencies.

Evaluating Risk

Emergency preparedness is another critical component of dam safety. Many dams have homes, businesses, roads, utilities, or other critical infrastructure located downstream. In these situations, Emergency Action Plans (EAPs) are often required to help communities prepare for potential incidents.

Spicer Group assists dam owners by conducting dam breach analyses and downstream flood mapping to identify areas that could be impacted by a failure. Beyond regulatory compliance, Emergency Action Plans provide valuable insight into potential risks and help owners develop proactive maintenance strategies that reduce the likelihood of future problems.

Unique Use of Technology

Technology continues to play an increasingly important role in dam safety evaluations, and Spicer Group remains committed to utilizing advanced tools that improve the quality and accuracy of inspections. One example is the firm’s use of the CHASING M2 remotely operated vehicle (ROV), an underwater inspection system designed specifically for professional applications.



Chasing M2 underwater inspection system

The CHASING M2 is an underwater drone featuring eight thrusters that allow precise maneuvering in all directions, enabling inspectors to access areas that are difficult or impossible to evaluate through traditional methods. Equipped with a 4K camera, 12-megapixel image stabilization technology, and 4,000-lumen LED

lighting, the system provides high-resolution imagery even in low-visibility underwater environments.

Communication is Key

While engineering expertise and technology are critical components of dam projects, successful outcomes often depend just as heavily on communication and collaboration. Dam rehabilitation, modification, and removal projects frequently involve numerous stakeholders, including property owners, environmental organizations, regulatory agencies, local governments, and community members. Balancing these interests requires transparency, responsiveness, and a commitment to building consensus throughout the project process.

Spicer Group places a strong emphasis on maintaining open communication with clients and stakeholders from project initiation through construction and completion. Our experience working within local, state, and federal regulatory frameworks helps streamline permitting processes while ensuring project goals remain aligned with

community needs and environmental considerations.

Sustainable Objectives

As infrastructure continues to age and regulatory requirements evolve, dam owners face increasing challenges in maintaining safe and reliable facilities.

Through decades of experience, multidisciplinary expertise, advanced technology, and commitment to client service, Spicer Group continues to help communities address these challenges with practical, sustainable solutions.

Successful dam projects depend on balancing engineering requirements with environmental and community needs

Specialized Services Include:

- DAM REMOVAL
- DAM REHABILITATION
- LAKE LEVEL STUDIES
- DAM BREACH MODELING
- EMERGENCY ACTION PLANS
- DAM INSPECTIONS
- DAM DESIGN

Refilling Sanford Lake

A major milestone in one of Michigan's largest lake restoration efforts signals progress, resilience, and renewed opportunity for the Four Lakes communities.



Finished Sanford Lake Dam

After nearly six years of planning, surveying, engineering, environmental permitting (local, state and federal), construction, and collaboration, Sanford Lake has officially returned to its normal summer court-ordered legal water level. This milestone marks a significant achievement for residents, local communities and stakeholders, engineers, contractors, and the Four Lakes Task Force (FLTF) as restoration efforts continue following the catastrophic Edenville Dam and Sanford Dam failures of May 2020.

The refilling of Sanford Lake began on April 15, 2026, following the completion of repairs to Sanford Dam. Less than a month later, on May 8th, the lake reached its legal lake level, restoring a waterbody that has been gone for nearly six years. For the approximate 944 waterfront property owners surrounding Sanford Lake, the return of the lake represents progress, recovery, and a renewed sense of community.

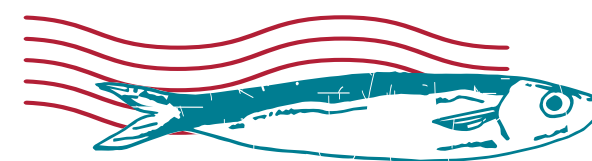


Work completed along the shoreline of Sanford Lake in 2022 as part of the interim stabilization project to reduce erosion and continued damage.

The restoration of the Sanford Dam is part of a much larger effort led by the Four Lakes Task Force, Delegated Authority of Midland, and Gladwin Counties, under Part 307 of the Natural Resource and Environmental Protection Act, that is managing the program to restore the dams and lakes impacted by the 2020 disaster. The overall cost of repairing and restoring the Sanford Dam system is approximately \$90 million, reflecting the scale and complexity of the work required to safely bring the lake back to life. The new dam structure includes a primary spillway consisting of six hydraulic crest gates, an automated low-level outlet, a roller compacted concrete auxiliary spillway design for overtopping, and a rehabilitated powerhouse, which now acts as the operating building.

While the lake has reached its legal level, the restoration process is far from complete. During the refill process, debris that accumulated throughout the lake basin is continuing to move downstream toward the dam. Four Lakes Task Force and Spicer Group continue to monitor debris accumulation and coordinate removal of material with the contractors, when possible, particularly in areas near the dam.

The lake bottom and shoreline have also changed dramatically over the past six years. Water depths vary from previous conditions, and new features, including fish habitat structures, shoreline stabilization measures, and riprap installations, have been constructed during the project's duration.



Water quality is another which will require time to stabilize. As water levels rise, accumulated sediment and organic materials are naturally disturbed and redistributed throughout the system. This process can temporarily affect water clarity and overall water quality. Ongoing monitoring is being conducted to track conditions and ensure the lake continues moving toward a healthy and stable ecosystem.

As required to adhere to state and federal environmental permitting requirements, Spicer Group assisted with ecological enhancement projects designed to improve habitat and support long-term lake health. This included working with project partners to design and coordinate the placement of fish habitat structures throughout Sanford Lake.



Project Snapshot

- **\$90 million in repairs and restoration**
- **Fish habitat placement**
- **Shoreline stabilization**
- **Riprap installation**
- **Native vegetation additions**



The beginning stages of shoreline stabilization along Sanford Lake. This was necessary due to severe erosion after the lake levels dropped.

These strategically located structures were installed on the lake bottom prior to refilling and are intended to provide shelter, feeding opportunities, and spawning habitat for fish populations as the aquatic ecosystem re-establishes itself.

In addition, native vegetation was incorporated along portions of the shoreline and within shallow water areas. Native plantings play an important role in improving water quality, reducing shoreline erosion, supporting wildlife, and creating healthy aquatic habitat. These ecological enhancements are intended to help the lake recover not only as a recreational resource, but also as a thriving natural environment.

Beyond individual restoration projects, Spicer Group continues to assist with managing the assessment roll as well as supporting Four Lakes Task Force through coordination and preparation of comprehensive watershed management plans. The effort encompasses the entire Four Lakes system, including Sanford, Wixom, Smallwood, and Secord lakes.

The watershed-wide planning initiative is focused on understanding how water moves throughout the system and identifying opportunities to improve water quality, habitat, recreation, shoreline management, and long-term resiliency.

The successful refill of Sanford Lake also serves as an important milestone in the broader restoration schedule for the Four Lakes system. Smallwood Lake Dam has reached substantial completion and lake refill has begun. Normal water level is expected to return later this fall.



Secord Dam and Lake are expected to follow, with restoration efforts currently projected for completion by spring 2027. Restoration of Edenville Dam and Wixom Lake remains the final phase of the overall program, with repairs and refilling currently estimated for completion in Spring of 2028.

Each completed phase brings the region one step closer to restoring the interconnected lakes that have long served as important recreational, environmental, and economic resources for Mid-Michigan communities.

While work remains ahead, reaching normal lake levels represents a major achievement in one of Michigan’s most significant infrastructure and environmental recovery efforts. As restoration continues across the Four Lakes system, the progress at Sanford Lake offers a glimpse of the future and a renewed optimism for the communities that call these lakes home.



Fish habitat was installed throughout the lake prior to refilling.

Project Timeline



Sanford Dam after lake refill

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