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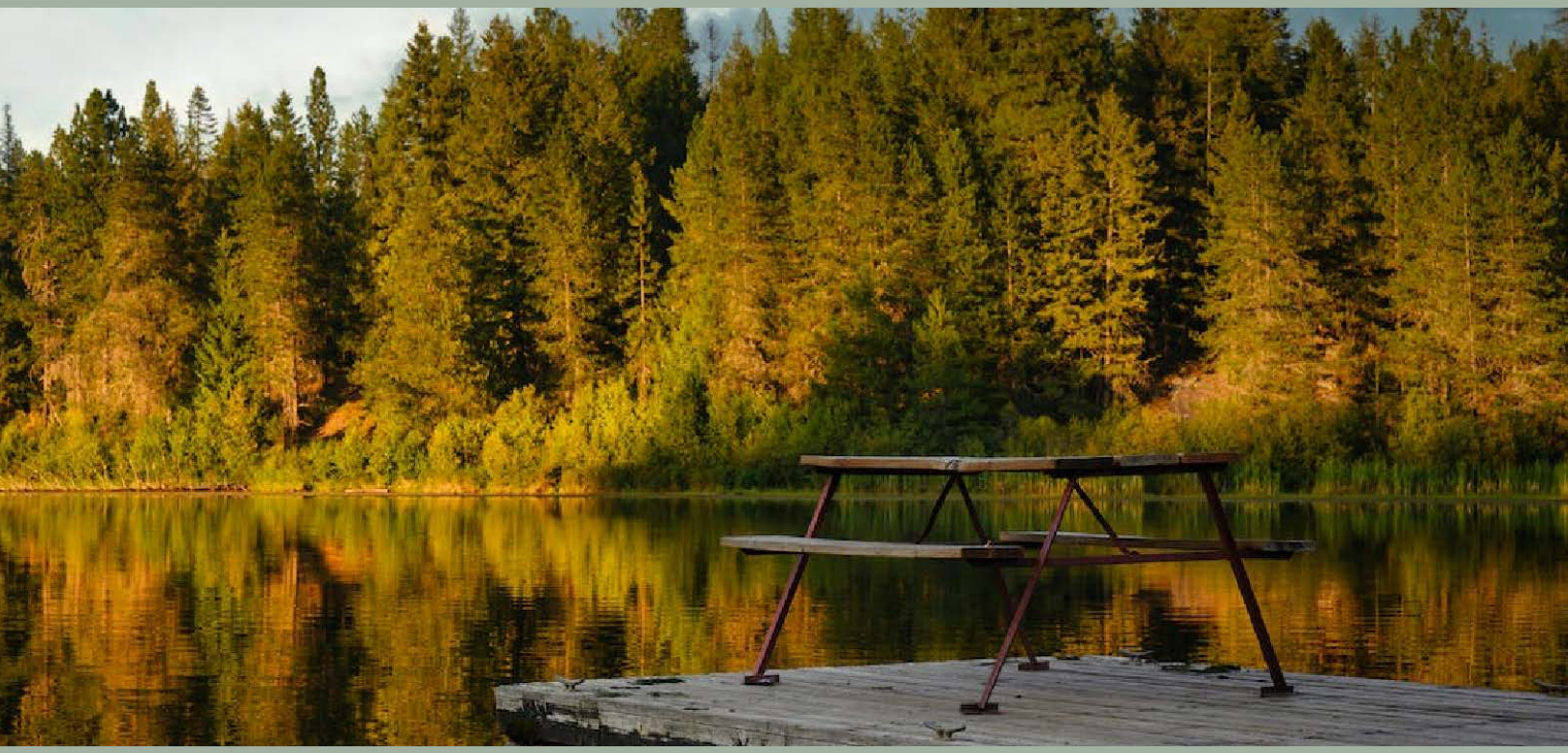
KEITH FABER



Ohio Department of Natural Resources

Dredge Program

Performance Audit

February 2023

OHIO AUDITOR OF STATE
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OHIO AUDITOR OF STATE
KEITH FABER

To the Governor's Office, General Assembly, Director of the Ohio Department of Natural Resources, Ohio Taxpayers, and Interested Citizens:

The Auditor of State's Office recently completed a performance audit of the Division of Parks and Watercraft Dredge Program (the Program) within the Ohio Department of Natural Resources (ODNR). This service to ODNR and to the taxpayers of the state of Ohio is being provided pursuant to the Ohio Revised Code § 117.46.

This audit report contains recommendations, supported by detailed analysis, to enhance the overall efficiency, effectiveness, and transparency of the Program. This report has been provided to the Department and its contents have been discussed with the appropriate staff and leadership within ODNR. The Department is reminded of its responsibilities for public comment, implementation, and reporting related to this performance audit per the requirements outlined under Ohio Revised Code § 117.461 and § 117.464. In future compliance audits, the Auditor of State will monitor implementation of the recommendations contained in this report, pursuant to the statutory requirements.

It is my hope that ODNR will use the results of the performance audit as a resource for improving transparency, operational efficiency, and the Program's overall effectiveness. The analysis contained within are intended to provide management with information to consider while making decisions about the Program's operations.

This performance audit report can be accessed online through the Auditor of State's website at http://www.ohioauditor.gov and choosing the "Search" option.

Sincerely,

Keith Faber
Auditor of State
Columbus, Ohio

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Ohio Department of Natural Resources

Performance Audit Summary

What We Looked At

The Ohio Department of Natural Resources (ODNR) has 10 divisions and is responsible for maintaining the balance between the wise use of and protection of Ohio's natural resources. The Division of State Parks and Watercraft (the Division) provides outdoor recreation and boating opportunities along with maintenance of the state park waterways. The dredging program (the Program) falls within the Division's responsibilities for waterway maintenance and safety.

Dredging is the process of removing sediment from a body of water and depositing the sediment in a designated area that will allow for the sediment to dry. Dredging is used to help improve the navigability of waterways and, in Ohio, the depth and usability of inland lakes. Dredging helps keep the lakes at a safe enough depth for modern boating and helps to control harmful algae blooms by removing nitrates from agriculture run off which can feed algae. The material removed from dredging must be placed in an open area outside of the body of water that allows for sediment to be separated from the water. These areas are called dredged material relocation areas (DMRA) and require dozens of acres near the dredging location. DMRA's are acquired by ODNR either by leasing acreage from local farmers or by purchasing the land outright.

The Division divides the dredging program into permanent and statewide teams. The statewide team moves to different lakes, depending on need, while permanent teams are stationed at specific lakes. ODNR currently operates a permanent dredging program at the following locations: Buckeye Lake, Grand Lake St. Marys, Indian Lake, and Lake Loramie. The statewide program services up to seven additional lakes each year, depending on need. In FY 2021, the permanent dredge team removed 449,525 cubic yards of dredge material and the statewide dredge team removed 273,26 cubic yards of dredge material from these waterways.

The Ohio Performance Team (OPT) analyzed the efficiency of the dredging operations, the planning processes for dredging projects, and the current costs associated with dredging.

What We Found

Ensuring Ohio's lakes remain safe and navigable for boats is a responsibility that falls primarily on ODNR through the Division. This task impacts the lives and livelihoods of thousands of Ohioans who either enjoy recreational boating or who are employed by or operate businesses that rely on seasonal boaters. However, routinely there are stories regarding a lake being unsuitable for use, either due to unsafe water depths or vegetation overgrowth. The Division has historically taken a one-off approach to address problems when they arise, rather than act proactively to avoid future issues. While the Division has found one-off success in the past, the Division still

does not consider dredging in its strategic planning process, allowing ongoing planning failures to continue.

While the initial objectives of this audit centered on evaluating the efficiency and effectiveness of the Department's dredging program, we encountered several issues related to the amount and quality of performance related data collected by the Division. The overall lack of data limited our ability to conduct some of our planned analyses. Because the Division does not collect significant pieces of data, we found that it is unable to answer key questions regarding dredging performance, such as:

- What percent of planned dredging activity is fully completed each year?
- Which dredge crew is most efficient in terms of cost per cubic yards dredged?
- What should be the expected efficiency of each dredge crew?
- What is the impact of unexpected maintenance needs on dredge operations?
- How many hours of potential dredging were lost due to poor weather?
- How many DMRA acres will the Division need over the next 5, 10, 15, and 20 years?
- What could the Division accomplish with one additional dredge?

Because the Division is unable to answer key performance related questions, it is further unable to identify how to objectively prioritize projects. Further, the Division would be unable to determine what projects would be best suited to be postponed if the need arose, for example due to an emergency project or unexpected loss of personnel. Although our analysis was limited due to available data, we identified multiple key observations and recommendations that will assist the Division in improving data collection and overall process management.

Key Observations

Key Observation 1: ODNR reports that it currently uses complaints from park managers and a limited amount of survey work as inputs for planning their dredging operations. Complaints typically come in via email, but there is no spreadsheet, database, or any type of work order system that allows for complaint tracking.

Key Observation 2: The Division's planning documents are stored either on PDF or on paper and therefore not readily available for systematic analysis.

Key Observation 3: Dredging requires the availability of DMRA space available near the dredging locations. ODNR has a stated goal of being able to plan dredging projects five years in advance, however, without a full understanding of the amount of dredging that needs to be done it may be difficult for the Division to know how much DMRA space needs to be acquired.

Key Observation 4: The Division has an informal goal that, during dredge season, that each machine located at permanent locations be operational for 36 hours per week, based on ideal working conditions. We found that over a five-year period, this weekly goal was met on only two occasions.

Key Observation 5: The Division collects dredge related cost data at a high level for purposes of obtaining grant funding related to boater safety. This incomplete data is used by the Division to calculate a cost per cubic yard of dredged material. We found this number to be highly inaccurate, severely underestimating the cost per cubic yard. Using detailed information that is collected in Ohio's Administrative Knowledge System (OAKS), we determined that the true cost per cubic yard of material dredged is approximately twice that of the value used by the Division for planning purposes.

Key Observation 6: The Division does not have key performance indicators (KPIs) for the dredging program. Without these metrics, it is highly improbable that the program can ensure that dredging is as efficient as it could be or that areas that need to be improved can be identified.

Summary of Recommendations

Recommendation 1: The Division stated that it relies on complaints regarding lake conditions to determine when and where dredge activity should occur. There is no formal process in place for collecting such complaints and, once a complaint is received, there is no formal process in place that allows for the verification, prioritization, or tracking of necessary dredging activity. Because the Division does not have these procedures in place, it is not able to determine the effectiveness of current dredge activity or if current dredge activity mitigates complaints. Further, the Division is unable to provide transparent reporting on the efficiency of the dredge program. The Division should develop a formal process for the identification, prioritization, and tracking of dredging projects.

Recommendation 2: The Division does not track key measures of dredge performance at a level of detail sufficient to fully understand potential causes of variations in dredge performance. The Division should improve the collection of dredge related performance data, including specific causes of dredge downtime. Without sufficient data to track and analyze dredge performance the Division risks making sub optimal decisions about dredge planning and equipment replacement.

Recommendation 3: Between CY 2017 and CY 2021, the Division expended an average of $5.5 million annually on its dredge program. However, on average, the Division recorded only $2.1 million on project specific expenditures during the same time period. This means that more than half of the Divisions dredge program expenditures cannot be tied to specific dredging activities. The Division should fully capture data concerning dredge expenditures, either by revising the existing Dredging Workbook or by using location specific categories for OAKS accounting. Without additional cost details, the Division cannot conduct accurate analyses

regarding the efficiency of the overall dredging program, or how dredge efficiency and potential productivity factors into annual dredge plans and resolution of customer complaints. Furthermore, the Division should strengthen the internal controls around cost reporting and develop protocols for analyzing and applying cost and performance data.

Recommendation 4: The Division does not collect or curate key pieces of data in a manner which allows the Division to accurately plan for the future. The Division should develop a strategic plan that includes goals, metrics, and annual goals for the dredge program. The strategic plan should include, at minimum, a reasonable estimate of the location of future dredging activity and a reasonable estimate of the amount of dredge material to be removed. Further, as data collection improves, the Division should use quantitative analysis to improve decision making. Without data to inform its strategic plan and plan outcomes, the Division is unable to make informed plans and decisions.

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Introduction

The Ohio Department of Natural Resources (ODNR or the Department) manages nearly 600,000 acres of land, including 74 state parks, 21 state forests, 136 state nature preserves, and 117 wildlife areas. Additionally, the Department is responsible for managing more than 120,000 acres of inland waters, 7,000 miles of streams, 481 miles of the Ohio River, and more than 2 million acres of Lake Erie. Critically, ODNR is tasked with maintaining the balance between the wise use and protection of these spaces and Ohio's natural resources. In the most recent state budget, the Department was appropriated more than $1 billion for the two-year period in order to carry out this important mission.

The Division of State Parks and Watercraft (the Division) is responsible for managing state parks and providing outdoor recreation and boating opportunities to the public. In order to do so, the Division must balance conservation and protection efforts with the public's desire to enjoy and use these areas. Several of the lakes in Ohio that are used for recreational boating were first created in the 19th century as a part of the state's canal system. After the canal system was largely abandoned, these lakes, became popular recreation destinations. To provide additional recreational boating opportunities, the depth of the lakes was maintained through a process known as dredging. Furthermore, the Division has the ability to dredge natural and manmade lakes that are not part of the state's old canal system.

In order to maintain the depth of these lakes, ODNR, through the Division, conducts dredging operations at multiple locations from April through October. In addition to ensuring waterways are safe for boats, dredging removes material that contains fertilizers from agricultural run-off that enters the lake. This material, if allowed to remain, can result in harmful algae blooms that make the lake unsafe for public use. Dredging operations are funded using the Waterways Safety Fund, which collects revenue primarily from boat registration fees and motor fuel taxes.

The Ohio Auditor of State, through its Ohio Performance Team (OPT), is required by Ohio Revised Code (ORC) § 117.46 to complete at least four performance audits of state agencies[1] or, at its discretion, institutions of higher education during each biennium. In 2021, OPT initiated a performance audit[2] of the Department's dredging program in order to determine the effectiveness and efficiency of its operations. This report contains the findings from our audit and recommendations, which will assist Department management in making decisions related to dredging.

[1] At least two of the audits shall be of state agencies selected from a list comprised of the administrative departments listed in section 121.02 of the Revised Code and the department of education and at least two of the audits shall be of other state agencies.
[2] Performance audits are conducted using Generally Accepted Government Auditing Standards guidelines; see **Appendix A** for more details.

Ohio Department of Natural Resources

The Department was created by the Ohio General Assembly in 1949 to provide management for the development, use, and enjoyment of the natural resources of the state. ODNR currently has 10 operating divisions and 2,300 employees. A Director, along with two Assistant Directors and a Deputy Director, oversees the Department. All ODNR divisions have three overlapping responsibilities: resource management, recreation, and regulation. The 10 divisions and functional areas are:

- **Division of Engineering:** Provides professional and technical engineering and related administrative support services required by ODNR.
- **Division of Forestry:** Promotes and applies management for the sustainable use and protection of Ohio's private and public forestlands.
- **Division of Geological Survey:** Provides geologic information and services needed for responsible management of Ohio's natural resources.
- **Division of Mineral Resources Management:** Manages the environmental and safety aspects of the coal and mineral mining industries while protecting citizens, land, and water resources.
- **Division of Natural Areas and Preserves:** Preserves state nature preserves and natural areas of Ohio's pre-settlement past, rare and endangered species, and wondrous geological features.
- **Division of State Parks and Watercraft:** Provides outdoor recreation and boating opportunities by balancing outstanding customer service, education, protection and conservation of Ohio's state parks and waterways.
- **Division of Water Resources:** Manages statewide oversight of dams, levees, and floodplains, and oversees the collection and management of data related to the state's water resources.
- **Division of Wildlife:** Conserves and improves fish and wildlife resources and their habitats for sustainable use and appreciation by all.
- **Division of Coastal Management:** Protects and restores the resources of Ohio's Lake Erie coastline and watershed.
- **Division of Oil and Gas Resources:** Regulates Ohio's oil and natural gas industry, while ensuring the state's abundant natural resources are managed and developed responsibly.

NOTE ON DATA LIMITATIONS AND INTERNAL CONTROLS

The initial objectives of this audit centered on evaluating the efficiency and effectiveness of the Department's dredging program. However, we found that much of the data that would be needed to evaluate these functions was either very limited or non-existent. As a result of the limited data, our audit, and the recommendations resulting from our work, focus primarily on improving the collection and utilization of operational data so that future management decisions can be informed by data-driven analyses.

Throughout the report, OPT identifies areas where the Department has weak, or in some cases no, internal controls related to the Dredge Program. Internal controls in performance audits refer to plans, policies, procedures and actions that help an organization achieve its goals, objectives, mission and/or legislative intent. These differ from the narrow definition of internal controls used in financial audits and can be wide ranging and encompass a broad range of activities. In performance audits, we look at both the design of the controls and how those controls function within the organization.

Some examples of organizations' internal controls that might be examined in a performance audit include outcome metrics, program protocols, time and productivity tracking, and methods of measuring customer satisfaction.

Organizations with strong internal controls have a greater likelihood of meeting their objectives and desired outcomes. On the other hand, organizations with weak, faulty, poorly designed, or nonexistent internal controls may struggle to meet basic program outcomes.

Dredging Program

In the early 19th century, the Ohio legislature established the Ohio Canal Commission to identify potential canal routes within the state. Eventually two major canal routes were identified and created. These man-made waterways allowed farmers and merchants to transport products north to Lake Erie and south to the Ohio River in an efficient and economic manner. In order to function, the canals needed to maintain a 4-foot water depth. In order to supply water for this purpose, a number of shallow feeder lakes were created along the two main canal routes.

The Ohio Canal System was largely abandoned in the late 19th century as railways surpassed canals as a means of transportation. While the canals were no longer used for transportation, the feeder lakes were converted into recreational lakes in the early 20th century. In the 1960s, ODNR began dredging the lakes in order to increase the depth of the water to allow for modern recreational watercraft. Because silt and other material are routinely washed into the lake due to rainstorms and other natural events, the lakes are dredged on a regular basis. This dredging is done to ensure boats can continue to safely navigate the lakes and to prevent harmful algae blooms that can occur. In addition to the canal lakes, ODNR has the ability to dredge natural lakes throughout the state when necessary.

Dredges are large pieces of heavy machinery that use hydraulic pumps to suction sediment from the bottom of a waterway. This material is then transported away from the waterway using a

pipeline. The material is deposited into a designated area known as a dredge material relocation area (DMRA) where the silt and water are separated. Once separated, the water is returned to the lake and the silt is left behind to dry out. Once dry, the land can be used for a variety of purposes.

ODNR has 12 hydraulic suction dredges in operation. These machines cost hundreds of thousands of dollars to purchase and last for several decades. The table on the following page shows dredge locations, the name of each dredge, and the original purchase price. In total, these 12 dredges represent an investment of over $6.5 million at their original purchase price, however due to the age of some of these dredges and that the last dredge purchased was over a million dollars, the current replacement cost of these dredges could exceed 10 million dollars.

ODNR's Dredge Purchases and Dredge Locations

Lake	Dredge Name	Acquisition Year	Dredge Age	Original Purchase Price
Indian Lake	Scout	2017	5	$898,516
Indian Lake	Chief	2014	8	$895,000
GLSM	PAL	2000	22	$354,889
GLSM	Hoe Dag	2014	8	$895,000
GLSM	Brutus	2012	10	$668,229
Loramie	Dredge	1968	54	$5,404[1]
Statewide	Akron	1990	32	$239,864
Statewide	Confluence	2006	16	$567,000
Statewide	Deep Cut	2021	1	$1,054,755
Statewide	Elkeye	1991	31	$326,000
Statewide	Eagle	1969	53	$85,000
Statewide	Millie	2000	22	$484,205
			Average Dredge Age	**21.8**

Source: ODNR

[1] This unit was purchased used and the full original purchase price was unavailable.

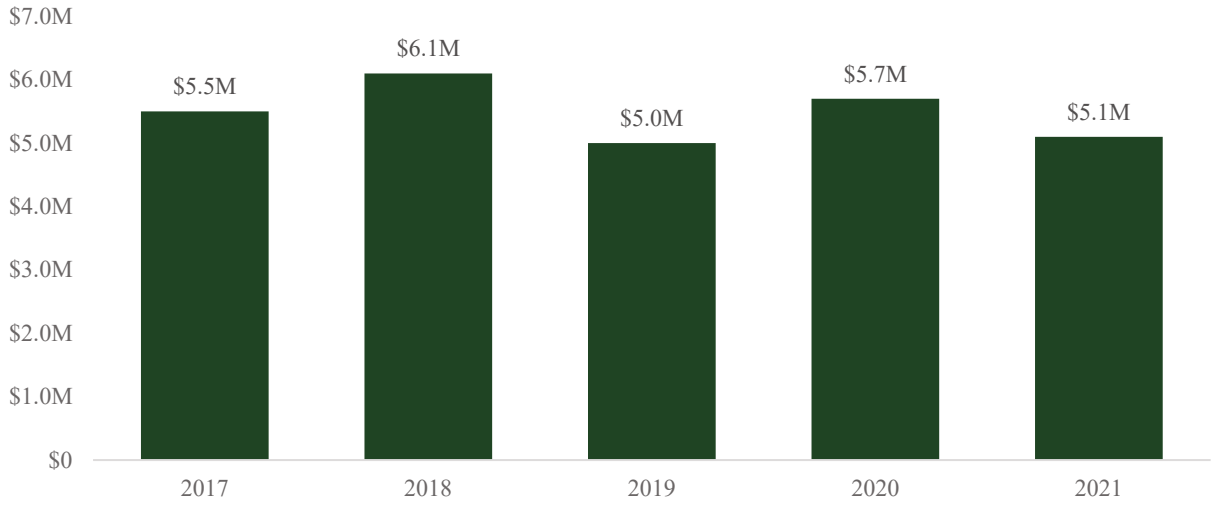
There are four dredge machines that have been purchased in the past decade. The average purchase price of these four machines was approximately $935,000. Dredge machine purchases are infrequent and recent acquisitions were funded through the state capital budget.

Program Revenues and Expenditures

The Division receives its financial appropriations through various funds including the General Revenue Fund (GRF), State Park Fund, and Waterway Safety Fund. In total, the Division had an operating budget of $150 million for fiscal year FY 2022 and $135 million for FY 2023. Expenses associated with dredging operations are paid using revenue from the Waterways Safety Fund. This fund had more than $34 million in revenue in FY 2021, with over 85 percent coming from the motor fuel tax and boat registration fees. Expenditures associated with dredging

operations averaged $5.6 million, or 18.7 percent of the total fund revenues, between FY 2017 and FY 2021.

Waterways Safety Fund (7086) – Dredging Expenditure



Source: OAKS

Between FY 2017 and FY 2021, 55.3 percent of the annual operating expenditures associated with dredging were directly related to personnel costs, whereas an average of 44.7 percent were spent on maintenance, fuel, parts, leases for DMRAs and all other dredging related expenditures.

Dredge Operations

The Division of Parks and Watercraft's mission statement is to "...provide exceptional outdoor recreation and boating opportunities by balancing outstanding customer service, education, protection and conservation of Ohio's state parks and waterways". Dredging is an essential part of the Divisions stated goals of providing boating opportunities and conservation of waterways, and, as such, effective and efficient dredging operations are an essential component of the Division meeting its own goals and providing excellent customer service. Monitoring performance data is a critical component of ensuring efficient and effective operations.

Generally, dredging waterways is a process that requires careful consideration and planning. Potential dredging projects are identified by the Division on a reactive basis using information from complaints that are issued by state park managers. These complaints generally are in relation to the boating conditions on the lake. Administrators from the Division are responsible for reviewing the complaint, conducting a site visit, and determining if the complaint can be resolved through dredging. If a complaint is considered valid, a dredging plan is drafted.

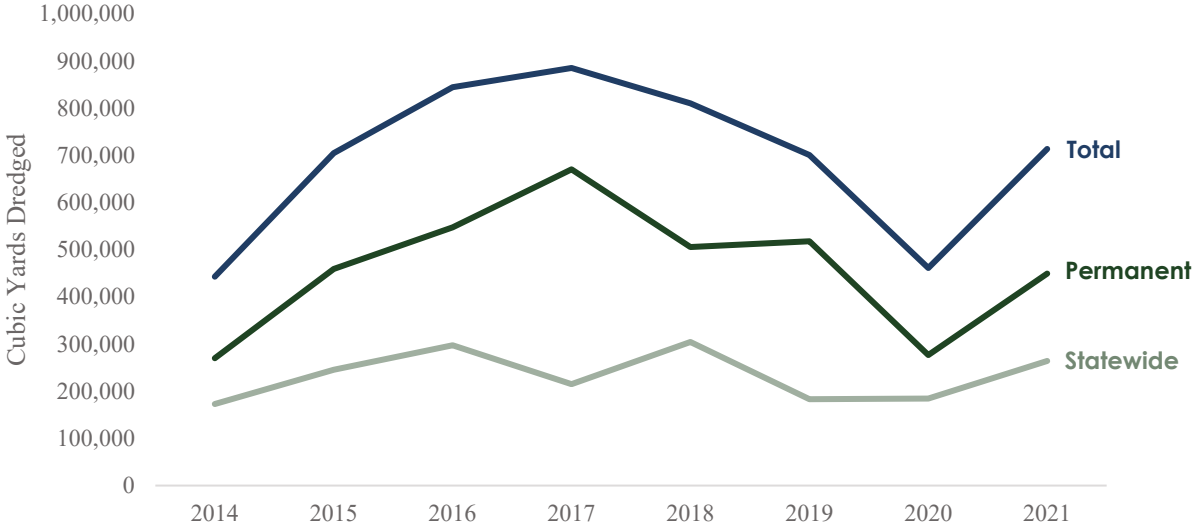
Prior to beginning a dredge project, the Division must undertake multiple steps to ensure that it is feasible. This includes a variety of activities including identifying an appropriate DMRA for the dredged materials and obtaining appropriate permits. At several points during this process a proposed dredge project could be abandoned or rejected.

Once a project is approved and started, a dredge is brought to the identified location for sediment removal. Each dredge typically has two individuals operating the dredge at a time. These individuals are trained in heavy equipment operation and maintenance and are responsible for the daily operations of the dredge. There are four permanent dredge teams located at Grand Lake St. Marys, Buckeye Lake, Lake Loramie, and Indian Lake. These locations have DMRAs that have been established near the lakes and the dredge machines are moved as needed at each individual location. In addition to the permanent dredge locations, there is a statewide dredge team that travels between five to seven locations each year on an as-needed basis. The statewide team must transport all machinery and supplies necessary to conduct dredging activities. These teams may also need to prepare a DMRA prior to the commencement of a dredge project. While working a statewide dredge project, operators and any support staff would travel to the location and stay in hotels while on-site during the work week.

Dredging season lasts from April through October; and, typically, all dredge operations occur Monday through Thursday on four 10-hour shifts during the week. While dredge operations are scheduled for 10-hour days throughout the summer, the amount of time actively spent dredging can be impacted by a variety of factors. Inclement weather can result in dredge operations halting. Similarly dredge machine maintenance can result in downtime where dredges are not operational.

The amount of material dredged in a given year can vary based on conditions and identified needs. The chart on the following page shows dredge performance between Calendar Year (CY) 2014 and CY 2021, based on the volume of material removed from waterways. The green line shows the annual amount of dredge material removed by permanent dredge teams and the blue line shows dredging results from the statewide team. This chart shows that annual dredge results can vary significantly from one year to the next and shows that permanent locations are responsible for significantly more dredging than the statewide teams.

Permanent and Statewide Dredge Performance CY 2014-2021



Source: ODNR

In 2020, there was a significant decrease in dredging activity because the Department operated on a reduced schedule due to the COVID-19 pandemic. Additionally, in 2020, the Department was unable to dredge at all at Lake Loramie due to staffing issues. While specific issues can be identified regarding the decrease in dredging activity in 2020, there is a limited amount of data collected for specific causes of variation in dredge performance on an on-going basis, which makes it difficult to ascertain the exact causes of year-over-year variation that were not caused by the pandemic.

In addition to operating the dredges, Division employees are responsible for a variety of other tasks including the construction of the DMRA needed for the materials removed from the lakes, removal of roots and other debris that would impede dredging, and maintenance on dredge machines. These activities, along with downtime due to weather, limit the amount of time that is spent actively dredging the lakes.

Dredged Material Relocation Areas

DMRAs are large flat areas that have manmade banks around the outside perimeter, like the shape of a swimming pool. Dredge materials are deposited into a DMRA in order to separate the silt from the water. DMRAs are located within about 10,000 feet of the dredging site, as sediment from hydraulic suction dredges is pumped via pipeline into a DMRA to begin the dewatering process. The picture on the following page is an example of a DMRA.

Dewatering Process of DMRA at Grand Lake St. Marys

Dewatering is the process of removing water from dredged material with a goal of reintroducing clean water back into the original body of water. The pipeline that is attached to a dredge creates water pressure that moves the dredged material around the DMRA as the material is dumped into the DMRA. As the dredged material moves around the DMRA, debris falls to the bottom of the pool leaving filtered water on top. DMRAs are constructed in such a way that gravity naturally pulls the now debris free water back to the main body of water. After several months, the water that has been pushed completely through the DMRA is considered filtered and flows back into the original body of water leaving the dredged material behind. The material that has fallen to the bottom of the pool during the dredging process then dries out in the sun.

The material left over after the dewatering process can take years to fully dry. Dried dredged material left over from the dewatering process is used for multiple purposes including wetland creation, further DMRA building, or agricultural purposes. Depending on the property owner of the DMRA location, the Department will either return the property to the original owner or repurpose the location and material.

Example: Grand Lake Saint Marys

One key benefit of dredging is the removal of nutrient rich soil and animal fertilizer which can cause harmful algae blooms. Nutrients flow into bodies of water when rainwater washes fertilizer off nearby agricultural land when it rains. Algae then feeds on the additional nutrients and can overgrow which can then block sunlight and harm aquatic life. Algae blooms can also be toxic to both animals and humans.

In June of 2010, GLSM had to be shut down due to toxic algae blooms. Several solutions were pursued to address the issues, including increased regulations on the use of fertilizer, increased dredging, and the construction of additional wetlands, which can improve water quality by providing a natural filter on runoff before the water flows into the lake. The Ohio Environmental Protection Agency (Ohio EPA), Ohio Department of Agriculture (OAG), and ODNR worked together to reduce toxic algae at GLSM, and dredging played a key role by using dredged material to build wetlands, and to remove nutrient rich soil. Since 2008, the Department increased annual removal of dredge material at GLSM from less than 100,000 cubic yards in 2008 to over 400,000 cubic yards in 2018. In addition, the Department removed 181 tons of phosphorous material during the same period.

GLSM is once again safe for recreational use. While the restoration of GLSM was a team effort between multiple stakeholders (such as the Ohio EPA, OAG, and ODNR), this success demonstrates how valuable a focused, effective dredging project can be.

The Division's lack of the systematic collection and use of data and information inhibits the Division from replicating the kind of the success found at GLSM. When this project began the intent was to identify opportunities to improve the efficiency and effectiveness of the Division's dredging operations using data-driven analysis. As the project progressed it became apparent that the Division did not collect or curate sufficient data to accurately assess dredge performance in a manner that would allow it to strategically allocate its resources to achieve the best outcomes for Ohio boaters. Furthermore, the Division does not include dredging as part its strategic plan.

Based on the limited data available to the Department for use in decision-making and the impact this has on its performance, we developed the following recommendations that focus on improving the collection and use of data and information to more effectively set and goals and manage the dredge program going forward. Specific areas analyzed include the collection and use of data to monitor dredge project planning, dredge performance, and overall strategic management of the dredge program. Implementing these recommendations will help the Division improve the program's overall efficiency and effectiveness going forward.

Recommendation 1: Formalize and Improve Dredge Project Planning

The Division stated that it relies on complaints regarding lake conditions to determine when and where dredge activity should occur. There is no formal process in place for collecting such complaints and, once a complaint is received, there is no formal process in place that allows for the verification, prioritization, or tracking of necessary dredging activity. Because the Division does not have these procedures in place, it is not able to determine the effectiveness of current dredge activity or if current dredge activity mitigates complaints. Further, the Division is unable to provide transparent reporting on the efficiency of the dredge program. The Division should develop a formal process for the identification, prioritization, and tracking of dredging projects.

Impact

A formalized project planning process will allow the Division to ensure dredge activity is prioritized appropriately and conducted in a transparent manner. Without such a process, the Division is at risk for ineffective and inefficient dredging projects. The absence of formal, consistent processes around dredge planning represents a lack of internal control.

Methodology

We interviewed the dredging program's leadership to better understand the dredging operations including specifics on dredge planning. We requested digital copies of the dredge project plans to review. We were informed that digital copies were kept on a local hard drive of a single individual, the individual was on leave during this request and the Division did not have access to the digital files for project plans. OPT was eventually provided with paper planning documents. We were unable to determine if the paper copies we received represented the total project planning documents.

Additionally, we obtained project related Excel files. These Excel workbooks contained the project data for both the permanent dredge team and statewide dredge team. Workbook data included many data points like project duration, equipment use, labor hours, maintenance costs, fuel costs, and travel costs. Once OPT aggregated and tested the reliability of the data, we conducted additional interviews with the Program's leadership to better understand the data and planning that takes place. Finally, we analyzed the difference between project plan estimates provided from the paper copies to the actual project outcomes to review the accuracy of the Division's estimates.

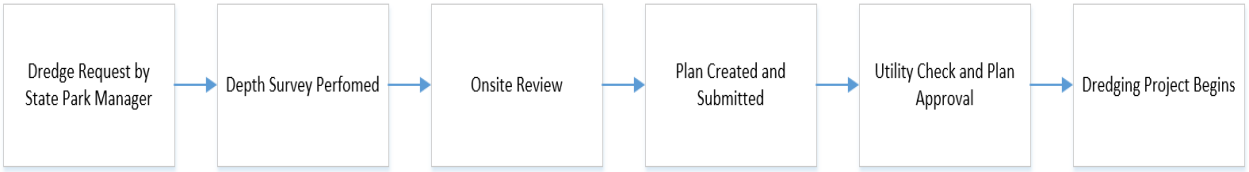
The paper plans were at the project level. However, the incomplete nature of the project planning data made it difficult to match project plans against the plans in the Dredging Workbook. For example, there were project plans that appeared to repeat for multiple seasons, and it was impossible to tell if the plans were repeated due to the project being either incomplete or if the

area needed to be dredged again. Furthermore, there are planning documents for which no projects exist in the Dredge Workbook for the year in which the project was planned. In addition, neither the project plans nor the workbook specifies which dredge was used to complete a task.

The issues with the planning documents made a comprehensive analysis of Division planning impossible. The analysis below uses a selection of projects for which planning documents and records of completed work were found. Planned and actual results were compared for three large projects for 2020 through 2021. In addition, existing planning and actual dredging was also compared for all lakes with permanent dredges for the 2018 through the 2021 seasons.

Analysis

The Division has a general process map in place for the identification of dredge activities. The whole process is ultimately overseen by the Dredge Administrator, who in turn answers to the Assistant Chief of the Division of Parks and Watercraft. The Dredge Administrator works with the Planner to plan dredge projects for the year, and with the Statewide Dredge Administrator and Equipment Maintenance Supervisors who oversee day-to-day dredge operations. This process shown below and begins with a complaint or request beings submitted by a state park manager. While this process map provides a bare-bones structure, the Division was unable to provide any additional detail or criteria that was used for decision making purposes.



Complaint Tracking

The Division states complaints are generally sent to the Division via e-mail. However, the Division also confirmed that there is currently no process to track complaints or compliant resolutions. According to the Division, complaints are a key indicator of dredging demand, and it uses complaints to decide where, when, and how much to dredge.

Although the Division relies on complaints to identify potential dredge projects, it does not have any mechanism to track the progress of an individual complaint. This means that the Division cannot determine the extent to which any complaint results in dredging activity. Because the Division does not track this information, it may be unable to accurately calculate dredging demand.

Further, because the Division does not have a complaint tracking system, it cannot clearly identify the extent to which complaints were resolved. This means that the Division does not know if dredging projects successfully resolve complaints. It further means that the Division may not fully understand the amount of deferred dredging that may occur on an annual basis. This can

lead to sub-optimal decision making regarding the deployment of dredging resources because the Division does not have the data necessary to make informed decisions.

The State of Ohio uses an enterprise work order system known as ServiceNow, which could be used by the Division for dredging complaints. ServiceNow can track customer complaints and resolutions. ODNR may be able to onboard the dredging program to the ServiceNow complaint module. Furthermore, while dedicated software may be optimal for tracking work orders and resolution, an Excel spreadsheet or Access Database could be used in the interim until the Division is able to rollout a specialized software solution.

Project Prioritization

Because the resources needed to complete a dredging project are limited, it is critical that the Division have a process for project prioritization in place. When this information was requested, Division officials were unable to provide information regarding how the prioritization of one project over another would occur, if those projects were similar in nature. This lack of transparency can lead to ineffective and inefficient dredging activity.

The Division does have criteria in place to identify if a complaint would require dredging activity. There is a prioritization based on the area that may need to be dredged, with an emphasis on ensuring that the main body of water is navigable for modern watercraft. Waterways must be at a minimum depth of four feet to be considered navigable for modern watercraft.

DMRA Availability

Dredging projects require an appropriate DMRA to be available. The lack of DMRA space may be sited as a limiting factor for dredging projects in certain areas. The identification and development of these areas is critical for proper project planning. The Division must be proactive in these efforts and develop DMRAs as they are needed.

Particularly for the statewide dredging team, which must haul equipment and travel to project locations, having specific criteria to prioritize projects based on efficient dredging activity would improve overall transparency related to this program.

Project Tracking

The table on the following page shows planned and actual cubic yards dredged for the 2020 and 2021 seasons at GLSM, on a per project basis. This table demonstrates substantial variance between planned and actual for each project that was analyzed.

GLSM Projects Planned vs Actual 2020-21

Project	Planned	Actual	Variance	Actual as % of Planned
Montezuma Bay	98,800	114,762	15,962	116.2%
Park Grand East	60,000	189,351	129,351	315.6%
Riley Bay West	71,000	48,184	(22,816)	67.9%

Source: ODNR

Two of the projects, Montezuma Bay and Park Grand East, exceeded planned dredging activity during this time period. The variance at Park Grand East was more than 300 percent of planned activity, which means that the total amount dredged was triple the amount that was planned for that project. Compare this to the results for Riley Bay West, where the actual results were 22,000 cubic yards, or about one third, below what was planned. Based on the information that is currently available, there is no way to ascertain why theses variances exist. For example, we are unable to determine if the variation between budgeted and actual is due to inaccuracies in the planning estimate or if more material was dredged than was needed.

We also reviewed planned dredging activity compared to actual activity at a lake-wide level. The table below shows the planned dredging activity at GLSM, Indian Lake, and Lake Loramie for CY 2018 through CY 2021 along with the actual dredging activity for that same period. Like the table on the previous page, there is significant variance between the planned dredging amount and the actual amount, with GLSM ultimately dredging over 150 percent more than what was planned percent and the other two lakes showing significant underperformance, with Lake Loramie dredging less than half the planned amount of material.

Planned vs Actual CY 2018 through CY 2021

Location	Planned	Actual	Variance	Actual as % of Planned
GLSM	794,680	1,214,883	420,203	153.0%
Indian Lake	370,100	270,509	(99,591)	73.1%
Lake Loramie	376,700	99,536	(277,164)	26.4%

Source: ODNR

The tables above show an example of the kind of analysis the Division might do if dredging plans were kept in a database or spreadsheet. For example, if the Division were to discover that dredge crews removed either significantly more or significantly less material than what was planned, Division leadership could determine the cause and adjust its planning process accordingly. Finally, this type of analysis could also be useful in assigning resources based on understood need.

Given the current data limitations, it is difficult to accurately identify the direct cause for the difference between the planned dredged amounts and actual dredged amounts as the level of

detail in the data needed for this is not currently collected. Additionally, we are unable to determine with total confidence if the large difference from planned dredged amounts to actual dredged amounts is based on actual dredging results or if there appears to be a large variance due to missing documents.

In addition to not comparing planned and actual dredging activity, the Division also reported that it does not regularly survey lakes, nor does it regularly keep track of sediment inflow. Including regular surveys and an assessment of expected sediment inflow should be an important component when the Division further revises their dredge planned process.

Conclusion

Although the Division relies on complaints to identify potential dredging projects, it does not track the resolution of the complaints it received. This means that it is unable to determine the effectiveness of any dredging project as it relates to a specific inquiry. Further, there is no mechanism in place to prioritize projects once a complaint is received. This can result in the Division making decisions that lack transparency and do not result in efficient or effective operations. The Division must develop a formal process for project planning that tracks complaints so that it can begin to determine the effectiveness of dredging operations. This plan must also include specific criteria so that projects can be prioritized in a transparent manner that increases overall dredging efficiency.

Recommendation 2: Improve Tracking of Dredge Performance

The Division does not track key measures of dredge performance at a level of detail sufficient to fully understand potential causes of variations in dredge performance. The Division should improve the collection of dredge related performance data, including specific causes of dredge downtime. Without sufficient data to track and analyze dredge performance the Division risks making sub optimal decisions about dredge planning and equipment replacement.

Impact

Without specific data on the causes of dredge downtime and associated internal controls to ensure the information is complete and accurate, the Department is not able to fully understand variations in dredge performance or factor this into its annual plans and related goals. The insufficiency of guidance over the recording of specific causes of dredge downtime represents a weakness in internal controls.

Background

The Dredging Workbook (the Workbook) contains dredging cost data for specific projects. The Workbook is used primarily to collect evidence of boater safety activity which is in turn submitted to US Coast Guard as part of a boater safety grant. A dredging project is dredging activity that takes place in a specific location during a specific timeframe. Dredging is further divided into permanent dredge locations and statewide dredging locations. For each project, the performance data collected in the Dredging Workbook include:

- Hours worked by dredge operators,
- Hours the dredge is actively dredging (operating hours),
- Hours the dredge is down for maintenance (maintenance hours),
- Cubic yards dredged,
- Location of dredging project; and,
- Dates of dredging project.

The Division does not use the collected performance data to calculate key performance indicators. During the audit, Program leadership stated that there is an informal goal that a dredge should be active for 36 hours per week along with an expectation that a dredge should move between 50 and 100 cubic yards of material per hour.[3] Both goals are considered informal

[3] 36 hours per week represents 4 10-hour days per week, with a total of one hour of combined set-up and tear down time each day, and is considered an ideal state.

and not based on data collected or industry standards and are, therefore, weak measures upon which to base program internal controls.

Methodology

From the Division, we obtained a copy of the Dredging Workbook that is used to collect performance data. The data from the Dredge Workbook was used to calculate the following metrics: total cubic yards dredged, average operating hours vs maintenance hours, and equipment operating hours by project.

An estimated cost of dredging, dredging downtime, and all other activities was calculated by doing a comparison between the total labor hours recorded in OAKS, the total dredging costs recorded in OAKS, and the relative proportion of hours based on the Dredging Workbook. For example, if the data from the workbook showed that 13 percent of the total hours recorded were spent dredging, then 13 percent of recorded costs were assigned accordingly. Costs that could not be otherwise categorized were placed into the category of support activities.

Analysis

Since CY 2014, the Division dredged between 270,000 and 670,000 cubic yards annually at permanent sites and between 170,000 and 300,000 cubic yards at statewide sites. The Division averaged between 20 and 30 hours per week of actual dredging at permanent locations, while the statewide dredging locations averaged slightly lower operating hours and significantly more maintenance hours. One reason for the higher maintenance hours in the statewide dredge program is that maintenance hours include everything that is not dredging. This includes all travel and set-up time, inclement weather stoppages, and any other downtime not associated with direct dredging work.
Equipment operating hours represent hours when the dredge is actively engaged in dredging whereas average maintenance hours are comprised of all activity where the dredge is not actively dredging. The existing Dredge Workbook does not differentiate between different possible reasons that a dredge might by down, for example, there is no way to tell if the dredge was down for mechanical reasons or if the dredge was down due to inclement weather. Furthermore, the statewide team also includes their travel time in maintenance hours. This makes it effectively impossible to ascertain the breakout of downtime by cause. The chart on the following page shows the average hours pre location and how those hours were recorded. The lighter bars represent maintenance hours while the darker bars represent equipment operating hours.

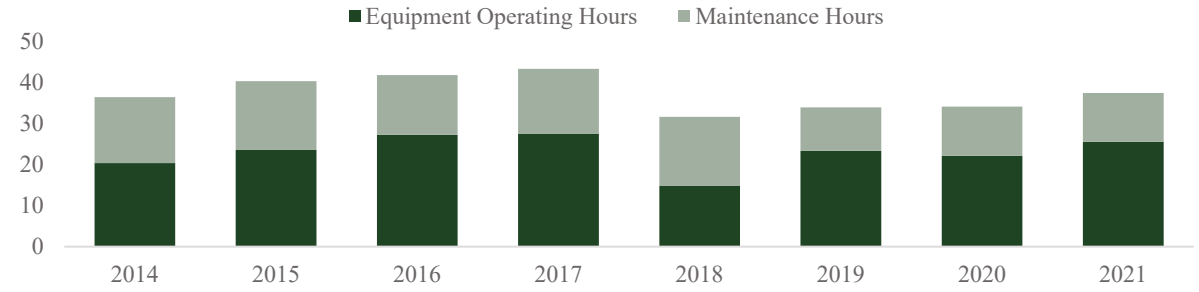
Dredge Downtime

The Division tracks all the time a dredge is not operational as maintenance hours. In addition to actual maintenance activities, this includes travel and set-up time for the statewide team, all stoppages due to weather, and any other downtime that is not associated with direct dredging work.

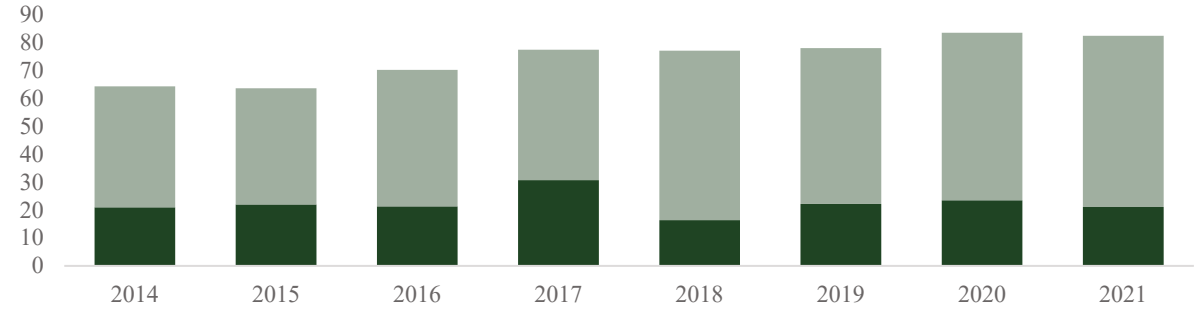
The existing data does not allow us to determine how much downtime is due to maintenance and how much downtime is due to other issues.

Average Hours per Location, 2014-21

PERMANENT DREDGING LOCATIONS



STATEWIDE DREDGING LOCATIONS



Source: ODNR

Note: The dredging season lasts from April 1st to November 1st.

The chart above shows that permanent dredge locations tend to operate with fewer maintenance hours when compared to the statewide team. It also shows that more than half of the statewide team's dredge season is typically lost to maintenance. While the Department does not capture sufficient detail to determine the cause of all maintenance downtime, the nature of the statewide program inherently includes a lot of travel and setup time which will take away from possible equipment operating hours.

Another way to display performance data is to look at equipment operating hours for projects associated with a specific location. The Division stated its informal goal of each dredge operating 36 hours per week, The table on the following page shows the percent of weeks that the 36-hour goal was achieved at each of the permanent locations each year from 2016-2021. Compared to statewide locations, permanent locations should require significantly less regular set up and tear down time so permanent locations should be the sites most likely to achieve the 36-hour goal. However, between 2016 and 2021, the 36-hour goal was achieved only in 2019 and 2021 and for just 3.3 percent of the total weeks in those years, and only at GLSM.

Percent of Weeks at/above 36 Operating Hours 2016-21[1]

Location	2016	2017	2018	2019	2020	2021
GLSM	0%	0%	0%	3.3%	0%	3.3%
Indian	0%	0%	0%	0%	0%	0%
Loramie	0%	0%	0%	0%	0%	0%

Source: ODNR

[1] Percent of weeks is based on a 30-week operating season from April 1 to November 1.

The table below shows another way to look at dredge performance is to look at the average weekly hours at each permanent location, the average weekly hours across locations, and the percent of time spent dredging, during the dredge season. As the table shows, the highest average was 61.0 percent, which was achieved in 2021. This means that even in the best year, about 1/3 of potential dredging time is lost to non-dredging activities, which might include planned maintenance, unplanned maintenance, downtime due to weather, or anything else that can keep the dredge from running.

Average Weekly Dredging Hours by Permanent Location 2016-21[1]

Location	2016	2017	2018	2019	2020	2021
GLSM	27.3	29.9	30.2	28.6	21.5	31.5
Indian	26.2	21.3	20.7	21.6	21.7	22.3
Loramie	24.0	23.4	17.8	7.0	N/A	19.4
Avg. Weekly Hours	25.8	24.8	22.9	19.0	21.6	24.4
% Spent Dredging[2]	**64.5%**	**62.0%**	**57.3%**	**47.5%**	**54.0%**	**61.0%**

Source: ODNR

[1] Operating hours during the dredge season, April 1st to November 1st, for each year.

[2] Percent of a typical 40-hour week.

The table above is the type of data the Division should consider when developing a strategic plan. The Division could use this type of data to develop a realistic expectation of dredge uptime which could be used to help develop more accurate dredging expectations.

Dredges are large and expensive pieces of equipment that can cost from several hundred thousand to just over $1 million each. Furthermore, dredges may remain in service for 40-50 years. The relatively large upfront cost and long expected service life means that dredges represent a significant investment of Division resources. In order to protect the investment, the Division needs to understand the need for and frequency of maintenance. The Division's lack of data on the causes for dredge downtime make it difficult for the Division to understand the impact of maintenance or lack thereof on the dredge fleet.

The table below shows an estimate of how hours and costs associated with the dredge program break down between different types of activity. Overall, it is estimated that actual dredging accounts for about 13 percent, or just over $739,000 of the total of $5.6 million expended

annually from FY 2016 to FY 2021. Of note, the other 87 percent of expenditures, or about $4.8 million, are dedicated to tasks for which there is a minimal amount of measured output. For example, as mentioned above it is impossible to fully understand what type of maintenance or downtime causes $1.4 million in expenditures, or about 25 percent of the total. Furthermore, $0.62 of every dollar expended, or $3.4 million, had to be categorized in the broad category of "support activities" due to the inability to reconcile expenditures against specific activities. Support activities include any expenses that were not directly related to dredging including, but not limited to, DMRA land sourcing and construction, training, IT, and employee travel. Many support activities, such as the acquisition of new DMRA land and DMRA construction and maintenance tend to occur in the off season. This highlights one reason that planning is so important, because the majority of expenditures are focused on activities that support dredging.

Average Annual Estimated Proportion of Expenditures FY 2016-21

Activity	Labor Hours	% per Activity	Cost per Activity
Dredging	11,229	13%	$739,369
Dredge Maintenance/Downtime	21,092	25%	$1,388,727
All Support Activities[1]	52,078	62%	$3,428,971
Total	**84,399**	**100%**	**$5,557,067**

Source: ODNR

[1]Includes all activities and expenses that could not otherwise be categorized.

As shown on the table above, most expenditures are difficult to match up against any specific outcome or measure of output. This makes it very difficult to estimate potential improvement that could be gained through improved maintenance practices or through the purchase of a newer dredge that may require less maintenance. Furthermore, without an accurate estimate of where hours are being spent during the year, it can be very difficult to plan effectively for future years. For example, if the Division could calculate an average amount of hours lost to inclement weather events, the Division may be able to more accurately plan how much dredge material could be removed in a season. The Division may also be able to develop strategies to minimize downtime. In addition, if the Division were able to calculate the full cost of dredge downtime, the Division could be able to make better informed decisions regarding dredge maintenance and replacement needs by monitoring true dredge maintenance. Finally, the Division can use an accurate assessment of prior performance to set firm goals for the future.

Conclusions

The Division does not collect data at a sufficient level of detail, accuracy, or completeness to extrapolate details on individual projects such as the reason a given dredge is out of commission at any given time or why informal program performance goals remain unmet. Collecting more accurate and granular level of detail in Dredging Workbook will help the Division more effectively manage the dredge program by being better able to understand the full possibilities and opportunity costs of dredge downtime and its impact on annual plans. Once accurate data is

gathered, the Division will be able to reasonable estimates of how much time is lost to planned maintenance, unplanned maintenance, poor weather, and other causes. These estimates will help the Division create more accurate dredging plans, achieve its goals and help the Division accurately estimate at what point dredge replacement may be cost beneficial relative to additional repairs or maintenance.

Recommendation 3: Collect Improved Project Cost Data

Between CY 2017 and CY 2021, the Division expended an average of $5.5 million annually on its dredge program. However, on average, the Division recorded only $2.1 million on project specific expenditures during the same time period. This means that more than half of the Divisions dredge program expenditures cannot be tied to specific dredging activities. The Division should fully capture data concerning dredge expenditures, either by revising the existing Dredging Workbook or by using location specific categories for OAKS accounting. Without additional cost details, the Division cannot conduct accurate analyses regarding the efficiency of the overall dredging program, or how dredge efficiency and potential productivity factors into annual dredge plans and resolution of customer complaints. Furthermore, the Division should strengthen the internal controls around cost reporting and develop protocols for analyzing and applying cost and performance data.

Impact

By collecting and applying accurate per unit cost data, the Department will be able to perform essential performance measures leading to a more complete understanding of the true cost dredging operations. These measured outcomes will provide the Department with a better understanding of how to become more efficient and plan future projects. Because there is no reconciliation between the dredge workbook and OAKS, the Division has no internal controls over its cost data and recording, relative to the data in OAKS.

Background

The Division incurs several costs across a range of areas while conducting a dredging project. The costs incurred, such as labor, fuel, and maintenance, vary between each dredging project and are determined by the circumstances of the project such as dredging location and the scope of the project. Dredging expenses are collected in an Excel workbook maintained by the Program Administrator (the Dredging Workbook). The expense data collected is specifically used for the United State Cost Guard Recreational Boater Safety grant program requirements. The Boater Safety grant program requires evidence of boater safety activity but does not require a fully burdened accounting for all costs incurred from dredging. Additionally, expenses made for dredging projects are recorded in OAKS in accordance with state policies on accounting and purchasing. However, the OAKS data does not require a level of detail that would enable a detailed cost-benefit analysis of each project or the overall dredging program.[4] While the Department tracks expenditures for dredge related parts, maintenance, and labor, it is not at a

[4] While not required, OAKS does allow for expenses to be tracked by location which could make more detailed expenditure data collection easier.

level of detail needed to assign those costs to a specific dredge at a specific lake or dredge. The failure of the agency to track detailed, program specific data represents a lack of internal controls and poor management practices.

Methodology

We requested a copy of the Dredging Workbook the Program Administrator uses to monitor and track dredge activity. We then downloaded general ledger reports through OAKS that detail the Department's expense transactions related to dredging. We compared the costs reported in the Department's dredging workbook to the expenditures reported by the Department in OAKS. Finally, a cost per cubic yard dredged was calculated by dividing the total cubic yards dredged as reported in the Dredging Workbook by both the total costs as recorded in the Dredging Workbook and by the total costs recorded in OAKS.

Analysis

According to the Department's submitted expenditures in OAKS between CY 2017 and CY 2021, the Division expended an average of $5.5 million per year for the dredge program. According to the Dredging Workbook, the Division recorded an average of $1.9 million per year on dredging projects during the same year. The difference of $3.6 million in costs between the OAKS expenditures and the collected costs in the Dredging Workbook mean that an average of $3.6 million in costs are not directly assignable to a specific dredge, dredge location, or dredge project.

According to Brennan, a leading private sector dredging firm, the following data is needed to estimate the full cost of a dredging project.

- **Engineering and Permitting Costs:** This includes surveying and environmental impact studies.
- **Mobilization Costs:** This includes the transportation of the dredge and crew
- **Depth and Type of Sediment:** This can have a major impact on fuel, equipment, and maintenance costs.
- **Allowable Run-Times:** This includes startup and shutdown times and can help optimize operations.
- **Transport Distance:** This includes the transportation of sediment into Dredge Material Reclamation Areas or DMRAs.
- **Disposal:** This includes the cost of acquiring and developing DMRA sites.
- **Water Management:** This includes the cost of closing out the dredge site and clean up.

These costs are then totaled and divided by the amount of planned cubic yards of sediment to be dredged. The result is the estimated cost per cubic yard dredged. With its data limitations, ODNR would be unable to accurately calculate the fully loaded cost of any given dredge project. OAKS data, however, could be used to calculate a single cost of per cubic yard dredge, statewide.

The table on the following page shows a comparison between the costs per cubic yard dredged using the cost data recorded in the Dredging Workbook compared to the cost per cubic yard dredged calculated using the expenditures as recorded in OAKS. This table shows a high level, division-wide average because a more granular look based on specific projects or select dredge units is not possible due to the lack of detailed, location or unit specific data. As shown, using the Dredging Workbook to calculate a cost per cubic yard dredged could understate the actual costs by an average of $4.58 per cubic yard, or about 62 percent.

Cost per Cubic Yard Dredged Compared

Year	Cost per Cubic Yard Dredged - OAKS	Cost per Cubic Yard Dredged - Reported	Variance
2017	$6.78	$2.77	$4.01
2018	$7.22	$2.84	$4.38
2019	$6.57	$2.54	$4.03
2020	$9.33	$3.16	$6.17
2021	$6.98	$2.68	$4.30
Average	**$7.37**	**$2.80**	**$4.58**

Source: ODNR

The cost per cubic yard dredged is an industry standard measure of dredging productivity. Because ODNR does not have an accurate picture of cost per cubic yard, ODNR is unable to compare itself to other dredging operations. For example, ODNR is unable to make an accurate comparison between its own operations and the contractors who work with the US Army Corps of Engineers.

Conclusion

The Division lacks a full accounting of dredging costs. While expenditures are tracked in OAKS, the data is not tracked or collected at a level of detail sufficient to calculate an accurate unit cost of dredging, for example, cost per cubic yard dredged by location, by project team, or by specific dredge. By capturing more detailed costs, the Division will be able to conduct more thorough analyses on dredging project performance. This will enable the Division to better plan future projects and allow for the consideration of alternative service delivery options.

Recommendation 4: Implement Strategic Planning

The Division does not collect or curate key pieces of data in a manner which allows the Division to accurately plan for the future. The Division should develop a strategic plan that includes goals, metrics, and annual goals for the dredge program. The strategic plan should include, at minimum, a reasonable estimate of the location of future dredging activity and a reasonable estimate of the amount of dredge material to be removed. Further, as data collection improves, the Division should use quantitative analysis to improve decision making. Without data to inform its strategic plan and plan outcomes, the Division is unable to make informed plans and decisions.

Impact

Decisions about the future are limited by the quality of data and information which guide them. It is difficult to determine what direction an organization should take when it is uncertain as to where it has been or where it is currently. Furthermore, it is difficult for an organization to fully understand their current situation without a strong plan for future action. As the scale of an organization increases, either by budget, scope of work, or workforce, the importance of accurate and well-maintained data that can be analyzed increases. The lack of a formal strategic plan for the dredge program represents a general weakness of internal controls surrounding the program.

Background

ODNR struggles with identifying, collecting, monitoring, and analyzing data related to business operations. These issues are not insignificant. Division leadership should be able to answer fundamental operational questions such as:

- What percent of planned dredging activity is fully completed each year?
- Which dredge crew is most efficient in terms of cost per cubic yards dredged?
- What should be the expected efficiency of each dredge crew?
- What is the impact of unexpected maintenance needs on dredge operations?
- How many hours of potential dredging were lost due to poor weather?
- How many DMRA acres will the Division need over the next 5, 10, 15, and 20 years?
- What could the Division accomplish with one additional dredge?

These questions, and their answers, could have a real impact on the Dredge operations. The Divisions funding is relatively stable (see **Program Revenue and Expenditures**), but the dredges themselves typically cost over a half million dollars each and are paid for via the state capital budget (see **Dredges and Dredge Teams**). Furthermore, dredges remain in service for several decades, with recently replaced dredges having been models from the 1960s. The long-term planning required for the acquisition and use of a dredges requires the Division having a

full understanding of exactly how much dredge material needs to be moved and which dredging project is the most important. The Division could benefit from being able to provide data-driven answers to decision makers such as the Director of ODNR or the state legislature. Finally, the by not having program and internal controls the Division will continue to struggle to addresses dredge problems and meet customer expectations.

In addition to a lack of overall data collection and internal controls over data, information and work plans, the Division does not include a strategic plan for dredging in its published overall strategic plan for Parks and Watercraft. Planning for dredging operations is conducted on a just in time and per project basis and is based on historical practices and complaints submitted by park managers. It should be noted that the process below is a general description of the process, but detailed complaint data is not tracked (see **Recommendation 1**). The current process for dredge planning is:

- A state park manager emails a complaint to dredging operation leadership. This email will contain a specific section of lake that needs to be dredged and the rationale behind dredging this specific area.
- A member of the dredging team, such as the Dredge Administrator or designee performs an in-person review of the requested dredge site. This includes reviewing depths of the site, any safety hazards that dredging would mitigate, and initial planning of where the dredging operations will take place, including DMRA location.
- Once a dredge site is decided upon, the dredge program operations manager designs a project proposal to submit to the Capital Improvements and Field Support Administrator. This proposal includes a map of the proposed dredge area, the purpose of the dredge project along with a description of why it is suitable for a dredging program, an estimated cubic yardage to be exhumed, the time length of the project, the costs associated with the project, the dredged material location and use, and a brief explanation of which DMRA will be used to store the dredge material (see **Appendix B**).

ODNR does not have a process to connect the above steps to larger or longer-term goals or Division priorities. Furthermore, the Division generally does not collect or manage data in a manner which would make it possible to do so. This program has not recognized the need to implement internal and program controls or even explicit objectives and performance targets and, therefore, is unable to demonstrate that it is effectively and efficiently using its revenues or attempting to meet customer expectations.

Methodology/Analysis

This section analyzes the Division's planning and the use of data and information to make key decisions in the scope areas analyzed in this report. Analysis was conducted by reviewing work conducted in other sections. It is important that governmental organizations make decisions based on strategic data analysis. This type of decision making allows for transparency necessary

to safeguard taxpayer dollars. Further, by making strategic business decisions, and understanding the data which drives expenditures, it is possible to proactively and effectively pivot operations when the need arises due to external circumstances. The report identifies several areas where the Division is lacking in business intelligence and strategic decision making. This recommendation reviews and consolidates those areas that have been previously discussed.

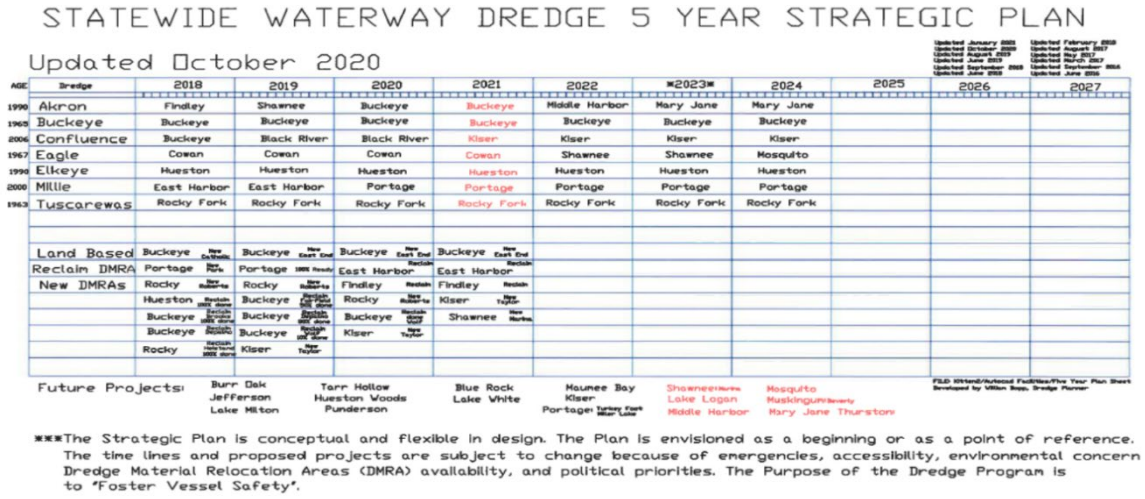
OPT collected data on the Divisions planning process by requesting and then reviewing copies of planning related documents, and through conversations with key Division personal. The Division was unable to provide OPT with electronic copies of planning documents but did provide some planning documents on paper. Furthermore, OPT was able to review Parks and Watercraft overall strategic plan but the Division reported that there was no strategic plan for the permanent dredge locations. The Department did provide OPT with a plan for statewide dredging.

Strategic Planning and Reconciliation

The Division does not collect or curate planning documents in a way that allows the Division to calculate the total amount of material to be dredged each year. Planning is conducted in a discrete, per project basis but not compiled in a way that makes it feasible to make comparisons between or among various possible projects. Furthermore, the Division cannot ascertain what percentage of any given dredge project is not completed in any given season.

Below is an example of the Division's five-year plan for statewide dredging. The plan includes the year the dredge was active, the name of dredge, and what park the dredge is expected to be needed each year for the next five years.

Statewide Dredge Team 5 Year Plan



STATEWIDE WATERWAY DREDGE 5 YEAR STRATEGIC PLAN

Updated October 2020

AGE	Dredge	2018	2019	2020	2021	2022	***2023***	2024	2025	2026	2027
1990	Akron	Findley	Shawnee	Buckeye	Buckeye	Middle Harbor	Mary Jane	Mary Jane			
1965	Buckeye	Buckeye	Buckeye	Buckeye	Buckeye	Buckeye	Buckeye	Buckeye			
2006	Confluence	Buckeye	Black River	Black River	Kiser	Kiser	Kiser	Kiser			
1967	Eagle	Cowan	Cowan	Cowan	Cowan	Shawnee	Shawnee	Mosquito			
1990	Elkeye	Hueston	Hueston	Hueston	Hueston	Hueston	Hueston	Hueston			
2000	Millie	East Harbor	East Harbor	Portage	Portage	Portage	Portage	Portage			
1963	Tuscarawas	Rocky Fork	Rocky Fork	Rocky Fork	Rocky Fork	Rocky Fork	Rocky Fork	Rocky Fork			
	Land Based	Buckeye	Buckeye	Buckeye	Buckeye						
	Reclaim DMRA	Portage	Portage	East Harbor	East Harbor						
	New DMRAs	Rocky	Rocky	Findley	Findley						
		Hueston	Buckeye	Rocky	Kiser						
		Buckeye	Buckeye	Buckeye	Shawnee						
		Buckeye	Buckeye	Kiser							
		Rocky	Kiser								
	Future Projects:		Burr Oak Jefferson Lake Milton	Tarr Hollow Hueston Woods Punderson	Blue Rock Lake White	Maumee Bay Kiser Portage	Shawnee Lake Logan Middle Harbor	Mosquito Muskingum Mary Jane Thurston			

***The Strategic Plan is conceptual and flexible in design. The Plan is envisioned as a beginning or as a point of reference. The time lines and proposed projects are subject to change because of emergencies, accessibility, environmental concern Dredge Material Relocation Areas (DMRA) availability, and political priorities. The Purpose of the Dredge Program is to "Foster Vessel Safety".

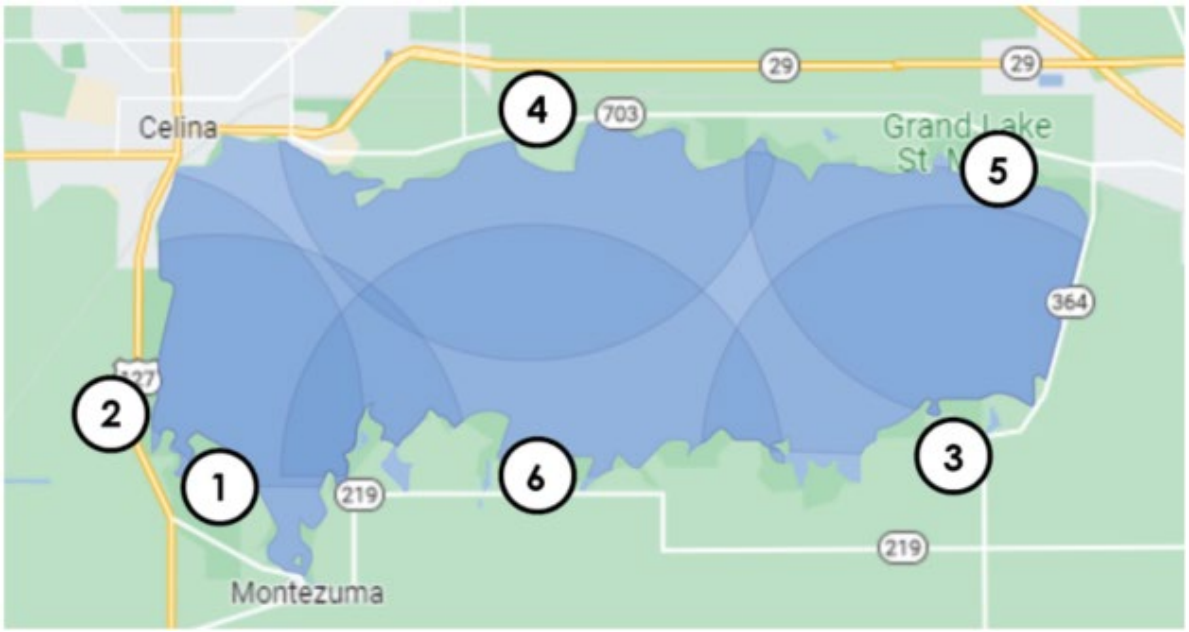
Source: ODNR

This is the only long-term plan that exists for dredging and this plan is not included as an overall part of Parks and Watercraft strategic plan. Furthermore, this plan does not include any assessment of cubic yards to be dredged, the exact location of dredging activity (i.e., northwest part of the lake, etc.), and each location appears to be expected to take a full season. Finally, there is no assessment of prioritization.

One reason that a strategic plan may be important is the need to plan for the acquisition and management of DMRAs. A DMRA must be located within about 2 miles of the location to be dredged. Furthermore, DMRAs can be either be purchased or leased from a landowner. Either purchasing or leasing can require a negotiation process, so it is important that the Division have an accurate assessment of need in advance.

As an example, the graphic below shows a map of GLSM, a list of each DMRA, the total capacity of each DMRA, the percent of DMRA capacity remaining, and the remaining acres. Furthermore, the lightly colored circles represent the distance that each DMRA can cover. As shown, two of the five DMRAs are 80 percent full, and a third DMRA, Gast, is completely full.

DMRA Locations and Capacity at GLSM[1]



Note: Circular shapes denote 2-mile radius of DMRA's dredging capabilities.
[1] Data as of September of 2022.

DMRA Locations and Capacity at GLSM

#	Name	Total Capacity	% Full	Remaining
1	Park Grand	6.0 acres	80%	1.2 acres
2	Nationwide 27 Coldwater Creek	165.0 acres	80%	33.0 acres
3	Gast	12.0 acres	100%	0.0 acres
4	Wright State	34.0 acres	30%	23.8 acres
5	Fry's Channel	8.0 acres	70%	2.4 acres
6	Aqua View	46.0 acres	0%	46.0 acres

Source: ODNR
Note: The Gast DMRA is currently full, but the owner expects to dig the site out and the Division hopes to reuse the site in 2024.

As shown on the graphic on the previous page, most of GLSM is covered by DMRAs. However, as shown in the table above, three areas are covered by DMRAs that are between 80 and 100 percent full. This graphic and the capacity analysis demonstrate the importance of having a long-term, strategic plan for dredging because it is critical that the Division have a plan to replace DMRAs as they fill up.

The map below shows a similar look at the situation at Buckeye Lake. While there is significant DMRA space remaining at Buckeye Lake, one DMRA location, Lieb's Island, is about 70 percent full.

DMRA Locations and Capacity at Buckeye Lake[1]

Note: Circular shapes denote 2-mile radius of DMRA's dredging capabilities.
[1] Data as of September of 2022.
x

DMRA Locations and Capacity at Buckeye Lake

#	Name	Total Capacity	% Full	Remaining
1	East End Project [2]	68.0 acres	0%	68.0 acres
2	Liebs Island	6.0 acres	70%	1.8 acres
3	Maple Bay [3]	10.0 acres	0%	10.0 acres

Source: ODNR
[2] Under construction at time of data retrieval.
[3] Pending agreement.

When considered together, the above maps of GLSM and Buckeye Lake show two examples of different DMRA situations at different lakes. If the Division created a strategic plan, this kind of analysis could be included and could provide the Division a more wholistic picture of the need for future DMRA acquisitions.

When the Division makes the decision to dredge a location, there is a project plan created (see **Appendix B, Exhibit B-1**). The project plan includes the location to be dredged, the reason for dredging, the location of the DMRA, and the amount of material to be removed. However, the Division does not roll up the existing project level plans into any type of Division wide plan. There is also no way to track progress on any given plan (see **Recommendation 1** and **Recommendation 2**). Doing so could allow the Division to make decisions between possible dredge locations, set priorities, and see the whole picture of dredging demand.

Cost Accounting

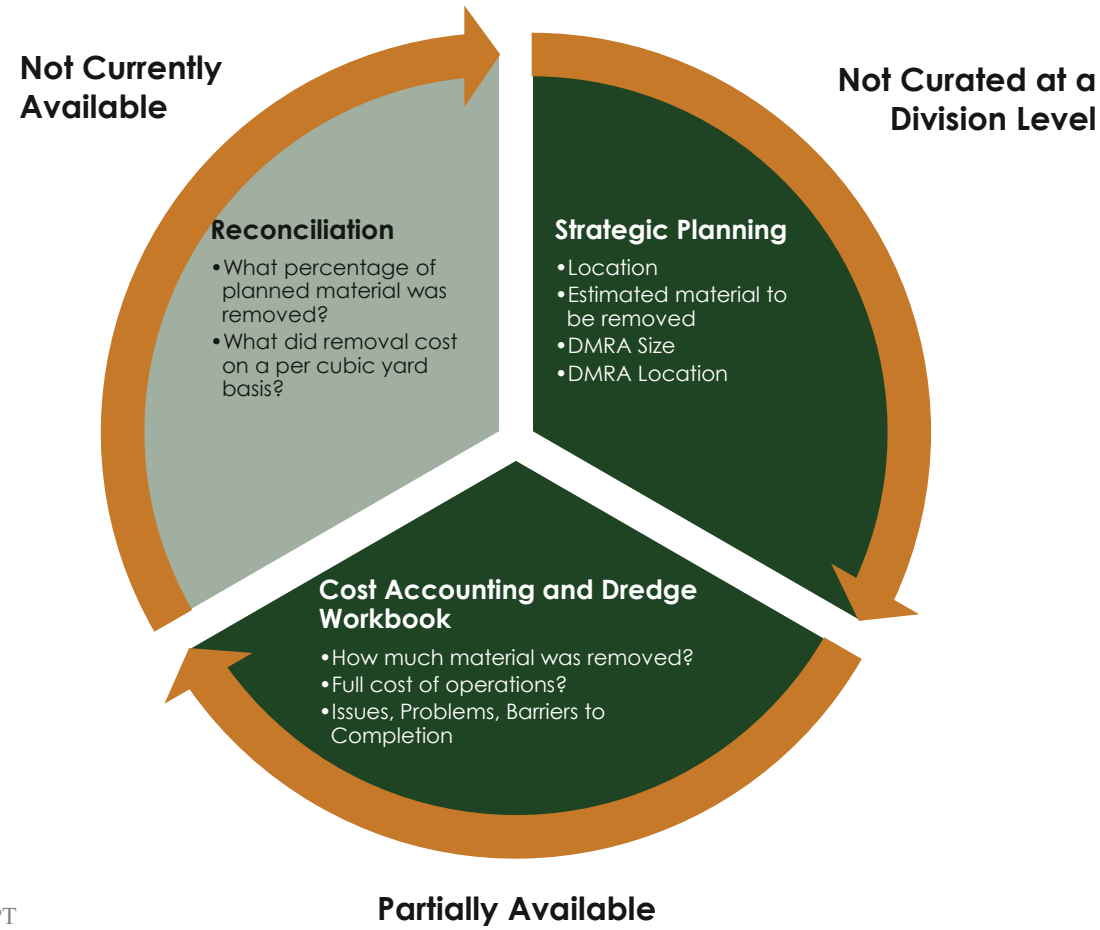
The Division does not capture the full cost of dredge activity in a way that allows for the calculation of per unit costs, such as the cost per cubic yard dredged (see **Recommendation 3**). Without a full cost per cubic yard dredged the department is unable to conduct accurate year-over-year or location-to-location efficiency comparisons. Furthermore, cost per cubic yard calculations could be used to measure Division efficiency compared to industry standards and potential private sector options.

Dredge Workbook

The Division does not collect dredge data at a level of detail sufficient to use modern business intelligence tools to easily understand barriers to dredge efficiency. For example, the Division is unable to tell how much dredge downtime is caused by planned maintenance, unplanned maintenance, or sever weather events. All of these data points could be important if the Division wants to establish efficiency and production measures.

Taken collectively, the three categories above show areas where weaknesses in data collection and curation within the Division make it very challenging for the Division to use business intelligence to guide decision making.

The diagram below shows the process flow and necessary subcomponents of a data-driven dredge program. As shown, the Division dredge plans on a project level but those plans are not collected or curated in such a way that it possible to analyze planning on a division level. Furthermore, the Division has only partial data on expenditures or dredge performance. Finally, the Division does not conduct reconciliation between planned versus actual.



Source: OPT

The arrows on the above diagram also provide a conceptual model for how data and information can flow through the program and reinforce future plans. For example, if the Division had a full sense of the amount of planned material that was removed, the Division could be in a better place to include the incomplete work the next season's plans. Furthermore, if the Division was able to identify the full cost of operations the Division could be in a position to consider alternative service delivery options such as contracting out some dredge work.

Dredging inherently involves both regular operating expenses, such as fuel and labor costs, and fixed capital expenditures such as the purchase of actual dredges. A dredge is an expensive piece

of equipment that can cost about $1 million when purchased new. As part of the overall strategic planning process, the Division should maximize the number of hours that a given dredge operates on any given day in order to improve both the efficiency and effectiveness of the dredging program.

Efficiency of the dredge program may be improved by making better use of the assets the Division has already purchased. The table below shows a hypothetical model for how increasing dredge operating hours could increase the overall efficiency of the dredge program. This hypothetical model assumes that a dredge cost $1 million, remained in service for 50 years, and that the dredge can operate an average of 30 weeks per year (approximately the number of weeks between April and November).[5] Each of these assumptions is in line with historical practices.

Hypothetical Efficiency Improvements

Dredge Cost	Years in Service	Cost per Year	Dredge Operating Weeks per Year	Cost per Week
$1,000,000	50	$20,000	30	$667
Weekly Operating Hours		24	36	48
Avg. Cost per Hour		$27.78	$18.52	$13.89

Source: ODNR and OPT

The Division currently averages about 24 operating hours during a 40-hour week within the dredge season. As shown above, this means the fixed cost of a $1 million dredge is $27.78 per hour, during an average 30 week dredging season. However, if the Division could increase their operating hours to their internal goal of 36 hours per week, the effective average cost per hour of a dredge decreases to $18.52 an hour. Finally, if the Division were able to double the current average to 48 hours per week, the average hourly cost would fall to $13.89 per hour. The above hypothetical numbers show that, conceptually, it is more efficient to use an expensive piece of equipment more hours in any given week whenever possible.

Another consideration is that improved efficiency could also increase the Division's effectiveness. The table below uses historical data from GLSM to calculate an average cubic yards per hour measurement and then uses that statistic to calculate how many additional dredging hours would be required to eliminate the variance between planned and actual dredging at Riley Bay West in FY 2020-21. The table calculates that the dredge crews at GLSM dredge an average 139.57 cubic yards per operating hour. As mentioned in **Recommendation 2**, the Division does not have the data to determine the exact amount of set up or tear down time each day. Collecting and incorporating this data into future plans is essential to develop realistic expectations of what may be accomplished in each amount of time.

[5] The Division should monitor dredge service life as utilization increases to check if the 50-year expectation remains accurate.

The hypothetical presented assumes no improvements in overall operational efficiency, however, it should be considered that the calculations shown below could further improve if overall operational efficiency improved.

Hypothetical Effectiveness Improvement at GLSM[1]

Actual Cubic Yards Dredged	283,817
Actual Dredge Operating Hours	2,034
Avg. Cubic Yards per Hour Operating Hour	139.57
Variance Between Planned and Actual at Riley Bay West[2]	22,816
Estimated Hours Need to Reduce Variance	163
Avg. Weeks in Dredge Season	30
Hours Needed per Week	5.4

Source: ODNR and OPT

[1] Based on historical performance at GLSM during the FY 2020-21 season.

[2] The Division believes this variance could have been due to Riley Bay containing a large amount of clay soil.

As shown on the table above, eliminating the variance between planned and actual at GLSM would require an additional 5.4 operating hours per week, on average. While the above table uses GLSM as an example, it should be noted that the Division's own 5-year plan for the statewide dredge program shows a few lakes the statewide team is expected to need to dredge during the next five years. Increasing the effectiveness of any given dredge crew may free up resources that could be put towards completing additional work.

The above tables were both hypothetical calculations based on historical performance. However, these calculations to highlight how increasing the amount of time that a dredge operates could enhance both the efficiency and effectiveness of the overall dredge program. The Division should consider improved efficiency and effectiveness as a part of the overall strategic planning process. Specific steps that could help improve the efficiency and effectiveness of dredging could include:

- **Improve the Ratio of Dredge Operating to Maintenance Hours –** The Division is currently losing an average of about one third of potential dredge operating hours to non-dredging activities during the dredging season, including maintenance. By implementing **Recommendation 2**, the Division will improve its data concerning the purpose for dredge downtime. If the Division then focuses on improving the ratio of dredge operating to non-operating hours, the Division will inherently see more dredge material moved during any given time period.
- **Promote Flexibility to Maximize Available Dredge Time –** Dredging is limited by weather conditions. The Division should consider possibly making great use of overtime,

flexible scheduling, additional shifts, or strategically making use of seasonal labor in order to maximize the amount of dredging hours when conditions allow for it.

- **Alternative Staffing –** The Division currently uses state employees for all dredge work. In order to maximize dredge efficiency and effectiveness, the Division might consider bidding out all or part of the dredging program at one or more location.

Any changes to staffing in the above scenarios may require additional negotiations with the bargaining unit. Furthermore, the use of contractors could also require negotiations.

Vegetation Management

The Division's need for strong strategic planning is increasingly important as available resources are being used for vegetation management purposes. Vegetation management is a critical component of maintaining safe waterways. Excessive aquatic vegetation can make navigation difficult and clog up boat motors. Ironically, modern efforts to maintain clean waterways can contribute to excessive vegetation growth because clean, clear water allows more sunlight to pass through which contributes to weeds growing faster. Aquatic vegetation management can be further complicated by the introduction of invasive plant species which can be accidently introduced into the ecosystem by boaters.

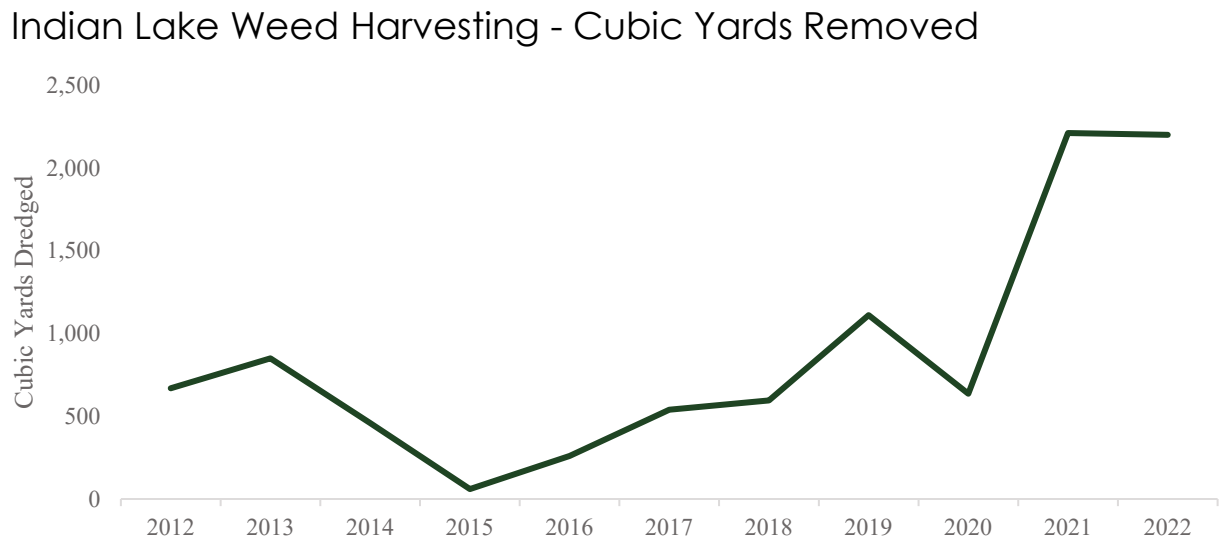
Effective aquatic vegetation management can be achieved through prevention and mitigation. Prevention involves educating boaters about the need to clean their boats before they take their boat from one lake to another. Mitigation can be accomplished through the application of herbicide or through weed harvesting. Weed harvesting is the removal of aquatic vegetation and plant life from segments of a lake, sort of like an underwater lawn mower.

In recent years Indian Lake began to experience issues with aquatic vegetation, driven at least partially by non-native Eurasian watermilfoil and curly-leaf pondweed. ODNR pursued a multi-prong approach to address the issues, including the application of herbicides and increased weed harvesting. To help meet the increased need, the General Assembly appropriated an additional $500,000 in HB 175 and an additional $1.25 million in HB 377 in FY 2022. In total, ODNR received an additional $1.75 million in appropriations to assist in their Weed Harvesting Operations at Indian Lake.[6]

[6] House Bill 45 also added $2.75 million for FY 2023.

The removal of vegetation requires the use of a machine known as a weed harvester, which is operated by a single individual. In 2022, the Division had a total of three weed harvesters in inventory, and all three were assigned to Indian Lake. Typically, harvesters are operated by ODNR employees that would otherwise be operating dredge machines, which may take away time from dredging activities. The picture to the right shows a harvester at work on Indian Lake in the summer of 2022.

Vegetation management has been an on-going task, though not a priority, for ODNR. The chart below shows the amount of vegetation removed from Indian Lake in cubic yards. The chart shows that the amount of vegetation removed from Indian Lake gradually increased between FY 2015 and FY 2019 and then greatly increased after FY 2020.



Source: ODNR

Prior to 2020, the Division did not spend a significant amount of time on vegetation management activities. However, it has recently hired additional staff to address the on-going issues at Indian Lake. Additionally, the Division has plans to buy two additional harvesters in 2023 and one additional harvester in 2024. Vegetation management efforts will require the same types data

collection and management decisions as the dredge operations that are outlined in this recommendation. The Division will need to carefully consider both activities when developing its strategic plan.

Conclusion

The Division does not include dredging as part of its existing strategic plans. Without a strategic plan, the Division may be unable to take a broader view the demand for dredging, which can make it difficult to set priorities between possible dredge projects. ODNR does not collect the data needed to effectively manage the dredge division in a data driven manner. The lack of a consistently applied, Division-wide approach to strategic data management could make it difficult for ODNR to sustain progress into the future.

Client Response Letter

Audit standards and AOS policy allow clients to provide a written response to an audit. The letter on the following pages is the Department's official statement in regards to this performance audit. Throughout the audit process, staff met with ODNR officials to ensure substantial agreement on the factual information presented in the report. When the Department disagreed with information contained in the report, and provided supporting documentation, revisions were made to the audit report.

February 17, 2023

The Honorable Keith Faber
Auditor of State
88 East Broad Street
Columbus, Ohio 43215

Dear Auditor Faber:

The Ohio Department of Natural Resources (ODNR) appreciates the months of hard work your staff put forth to conduct a thorough performance audit of the Division of Parks and Watercraft Dredge Program. We also appreciate your interest in this program and want to thank you for all the dedicated funding you helped secure during your days in the legislature. This funding not only provided additional dredges at Grand Lake and several of the canal lakes you represented, but it also produced an improvement in both water quality and recreation.

One of my top priorities when I became Director of this agency was to develop a set of core values to be implemented across ODNR. We are committed to those values which are: doing things the right way, striving for excellence in customer service, a sense of urgency, a commitment to great communication, and embracing diversity. And this report further strengthens my desire to ensure our program follows those core values and effectively serves the constituents of Ohio.

As you know, dredging is a unique operation that includes a variety of tasks to occur in the daily operation and management of the program. The audit sets forth four key recommendations, which we welcome and have already begun to address:

Recommendation 1: The Division should develop a formal process for the identification, prioritization, and tracking of dredging projects.

> While we do have a process for the identification, prioritization and tracking of dredging projects, we recognize the need to enhance our data management so that the process can be understood and followed through clear documentation. The Division has developed an excel database that will track the identification process as well as the work completed by each dredge and then track progress. We will also improve upon our capability to incorporate customer inquiries and complaints, and ensure we document the responses and how those items relate to priority-setting. ODNR's IT office is working on a software program that will help to more clearly document this data. It will be implemented this summer.

Recommendation 2: The Division should improve the collection of dredge related performance data, including specific causes of dredging downtime.

The database highlighted in the first recommendation will also document dredge downtime from maintenance, weather, equipment breakdowns and other operational downtime causes. We hope that by clearly tracking these things, we can accurately evaluate not only the efficiency of the operation but use the information to help set more realistic goals as far as projected time for actual operational dredging, as well as better plan for future projects. In addition, we will chart special projects often not associated as "dredge operations" which include shoreline protection work, navigational aid placement and service, in-lake debris removal, and other items that are the responsibility of the dredging staff.

Recommendation 3: The Division should fully capture data concerning dredge expenditures, either by revising the existing Dredging Workbook or by using location specific categories for OAKS accounting.

ODNR began implementing the OBM service location tracking requirement as of July 1, 2022. This now allows for expenditures to be tracked to a specific lake allowing for a more accurate cost per cubic yard of material removed.

Recommendation 4: The Division should develop a strategic plan that includes goals, metrics, and annual goals for the dredge program. This should include, at minimum, a responsible estimate of the location of future dredging activity and a reasonable estimate of the amount of dredge material to be removed. As data collection improves, the Division should use quantitative analysis to improve decision making.

The Division of Parks and Watercraft manages 192,560 acres of land and water throughout Ohio. This includes 71 beaches, 64 lakes, 35 marinas, 4,889 docks, and 169 boat ramps. With nearly 600,000 registered boats and increased use each and every season, our park management must prioritize issues and needs to ensure our waters are safe for the millions of recreational users.

The dredge program is part of that management. It is a complex program which is why we are developing a plan that is both dynamic and capable of alteration to take account many factors, such as weather, location of immediate and projected need, the development of Dredge Management Relation Areas, staffing, permitting and more. We are committed to long term planning and maintenance of our waterways and will develop a plan that allows staff to pivot and face new circumstances that can arise each year as well as recognize a long term plan.

The development and implementation of both immediate and long-term management plans will be beneficial to all Ohio lakes. We will be undertaking the following steps:

1) The Division will utilize the expertise and assistance of an outside consultant to implement a dynamic planning effort designed to address both immediate and long term needs. This work will gather information from local staff and community leaders to pinpoint high priority areas. The consultant will work with experts from ODNR's Divisions of Engineering, Geological Survey, and Wildlife. These groups will help to identify techniques to record lake depths and estimate sediment accumulation for future dredging plans and priorities. The Division of Geological Survey has already completed sediment depth and bathymetric readings in the open zone at Indian Lake to measure depths and estimates of accumulated material that will aid in future management priorities. Similar work in other priority lakes will help our planning going forward.
2) We are currently using Park staff to contact local landowners now for future Dredge Management Relocation Areas as we strive to improve dredge management decisions through this strategic planning effort.
3) As part of the FY24/25 budget request for personnel, we will hire a full-time Lakes Manager to direct the management of our state park lakes in terms of vegetation control, water quality, and lake health. This position will also have a vital role in monitoring sediment accumulations to aid in prioritization of future dredging activities.
4) We are increasing our efforts to train and recruit a new pool of qualified dredge operators that will improve our efficiency and output, working with career centers and expanding our hiring pool to include intermittent workers.

While data is an important piece of this effort, we must be nimble and in a position to adjust priorities based on funding, recreational demands, safety concerns, and water quality to ensure our efforts are both efficient and effective to not only serve Ohio's constituents, but also to benefit the resources.

Please know that ODNR is committed to improving this program for the health, safety, and recreational needs of Ohioans. I look forward to sharing continued progress with you and your staff throughout the days ahead.

Sincerely,

Mary Mertz
Director

Appendix A: Purpose, Methodology, Scope, and Objectives of the Audit

Performance Audit Purpose and Overview

Performance audits provide objective analysis to assist management and those charged with governance and oversight to improve program performance and operations, reduce costs, facilitate decision making by parties with responsibility to oversee or initiate corrective action, and contribute to public accountability.

Generally accepted government auditing standards (GAGAS) require that a performance audit be planned and performed so as to obtain sufficient, appropriate evidence to provide a reasonable basis for findings and conclusions based on audit objectives. Objectives are what the audit is intended to accomplish and can be thought of as questions about the program that the auditors seek to answer based on evidence obtained and assessed against criteria.

We conducted this performance audit in accordance with GAGAS. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. We believe that the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Audit Scope and Objectives

In order to provide the Department with appropriate, data-driven, recommendations, the following questions were assessed within each of the agreed upon scope areas:

Summary of Objectives and Conclusions

Objective	**Recommendation**
What opportunities exist to improve ODNR's planning for short, medium, and long term use of Dredge Material Reclamation Areas (DMRA)?	Rec. 4
What opportunities exist to improve the efficiency and effectiveness of dredging operations?	Rec. 1, Rec. 2, Rec. 3

Because internal and program controls were absent for the majority of the work the Department performs, we refined our objectives to illustrate and address these program and internal control issues. Internal controls were evaluated in areas of planning and record-keeping and recommendations to improve internal control absences, weaknesses, or failures are included in **Recommendation 2**, **Recommendation 3**, and **Recommendation 4**. Subsequent audit work may be conducted to evaluate the implementation of recommendations on program and internal controls and to address the original objectives concerning efficiency and effectiveness.

Audit Methodology

To complete this performance audit, auditors gathered data, conducted interviews with numerous individuals associated with the areas of the Department's operations included in the audit scope, and reviewed and assessed available information. Preliminary assessments were performed using criteria from a number of sources, including:

- Industry Standards;
- Leading Practices;
- Statues; and,
- Policies and Procedures.

Because the Department has not implemented internal or program controls, such as performance targets or formal annual plans, and has not developed and implemented basic planning and record-keeping, audit objectives were refined to address these deficiencies.

Appendix B: Additional Information

The Department provided us with an example dredge plan as seen below. The document shown was for GLSM in 2016. Notes that the document does show the location of the proposed dredge project and an estimate of the amount of dredge material to be removed.

Exhibit B-1: Example of a dredging plan

WATERWAY IMPROVEMENT
PROJECT DESCRIPTION

Area: Grand Lake St. Marys State Park

Project Name: Bay View Project
Dredge Project
Project Number: 08 -2016 - C
Corps Number: Not Assigned

Purpose: The purpose of this waterway improvement project is to foster vessel safety and maintain the publicly owned waterway by removing accumulated sediment and other submerged debris that may be hazardous to navigation. This project provides access from a major launch ramp to the main lake.
Description: Grand Lake St. Marys is a 13,500-acre lake that annually supports approximately 80,000 boater occasions. The project site is located in the south east area of the lake.

The project will consist of using hydraulic suction dredge to remove approximately **32,000 cubic yards** of sediment from the **Bay View** area.

Dredged material will be relocated to the existing Prairie Creek Littoral Wetland Restoration DMRA. **The anticipated disposition of the dredge material is long term storage.**

This project is planned for the 2016 / 2017 dredge season.
This project provides / improves access to a launch ramp.

Estimated costs are as follow:

Labor	**$36,480**
Equipment	**$24,960**
Other	**$3,000**
Fuel:	**$25,600**
Total project cost:	**$90,040**
Cost per cubic yard:	**$2.81**

The table below shows the positions that work on the dredge program and FTE counts at each location. Dredge operators are the individuals who directly operate the dredges, whereas positions such as Natural Resource Technician, Automotive Technicians, and Equipment Maintenance Support all support dredge operations by assisting with maintenance, repairs, and building and maintaining DMRAs. In addition to the individuals responsible for maintaining and operating dredge machinery, there are administrative roles that serve the entire Division. These

positions that lead the program are embedded into the dredge teams, for example there is a Natural Resources Administrator 2 on the GLSM team and there is a Natural Resources Administrator 1 and a Planner 3 on the statewide team. While these individuals are on a specific location team, they are responsible for administrative tasks and leadership functions for the whole program.

Dredge Employee Locations, Positions, and FTEs[1]

Location/Team	Position	FTE
Administration	Natural Resource Administrator 2	1.1
	Natural Resource Administrator 1	1.0
	Planner 3	1.3
GLSM	Dredge Operator 1	2.4
	Dredge Operator 2	4.0
	Equipment Maintenance Supt 2	1.1
	Natural Resources Technician 2	0.7
Indian	Natural Resources Technician 2	0.8
	Groundskeeper 2	0.0
	Automotive Mechanic 2	1.1
	Dredge Operator 1	3.1
	Dredge Operator 2	2.1
	Equipment Maintenance Supt 2	0.4
Loramie	Dredge Operator 1	0.3
	Dredge Operator 2	2.0
Statewide	Dredge Operator 2	12.4
	Dredge Operator 1	8.2
	Natural Resources Technician 2	0.0
	Equipment Maintenance Supt 2	1.1
	Automotive Technician	1.3
	Total FTE	**44.3**
	Total Permanent Operators	13.9
	Total Statewide Operators	20.7

Source: ODNR

[1] As of July of 2022.

OHIO AUDITOR OF STATE
KEITH FABER

OHIO DEPARTMENT OF NATURAL RESOURCES

FRANKLIN COUNTY

AUDITOR OF STATE OF OHIO CERTIFICATION

This is a true and correct copy of the report, which is required to be filed pursuant to Section 117.26, Revised Code, and which is filed in the Office of the Ohio Auditor of State in Columbus, Ohio.

Certified for Release 2/28/2023

88 East Broad Street, Columbus, Ohio 43215
Phone: 614-466-4514 or 800-282-0370