Background and Purpose of the Following Draft Reclamation Safety and Health Standards (RSHS)

The RSHS are being updated by the Bureau of Reclamation Safety and Occupational Health Office to reflect new guidance from Reclamation, the Department of the Interior, and the Occupational Safety and Health Administration. This public release is intended to provide the public an opportunity to comment on each updated section in draft form. This process will enhance transparency and eliminate potential confusion about Reclamation’s safety standards.

The RSHS are incorporated into the Reclamation Manual through SAF 01-01, *Occupational Safety and Health Directive – General*. The Reclamation Manual is used to clarify program responsibility and authority and to document Reclamation-wide methods of doing business. All requirements in the Reclamation Manual are mandatory for Reclamation employees.

See the following pages for the draft RSHS.
Section 28
Watercraft and Dredging

28.1 Scope
This section sets forth the safety requirements for Bureau of Reclamation (Reclamation) watercraft and dredging activities. These include requirements for equipment as well as inspections, training, certification, and various operating activities.

28.2 General Requirements
Ensure that all watercraft and dredges are constructed and operated in compliance with this section, as well as applicable U.S. Coast Guard (USCG), Department of the Interior (DOI; i.e., 485 Department Manual (DM) 22), state, and local requirements.

28.3 Responsibilities

28.3.1 Regional Safety Managers
28.3.1.1 Shall designate a Motorboat Operator Certification Course (MOCC) instructor to serve as Regional Watercraft Program Coordinator/Lead Instructor.

28.3.1.2 Shall review requests for deviations to personal flotation device (PFD) requirements.

28.3.2 Reclamation Watercraft Safety Workgroup
28.3.2.1 Shall appoint a Reclamation Watercraft Work Group member as the Reclamation Watercraft Safety Coordinator.

28.3.2.2 Shall review requests for training substitutions based on DOI training requirements.

28.3.2.3 Shall identify online courses or other courses that are approved for use in completing the MOCC refresher training education module.

28.3.3 Reclamation Watercraft Safety Coordinator
28.3.3.1 Shall serve as the watercraft safety program point of contact for Reclamation and help to coordinate watercraft safety activities and operator training.

28.3.3.2 Shall successfully complete MOCC and Motorboat Operator Instructor Certification Course (MOICC) training.

28.3.3.3 Shall serve as Reclamation representative on the DOI Watercraft Safety Work Group.

28.3.4 Regional Watercraft Program Coordinators/Lead Instructors
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<td><strong>28.3.4.1</strong></td>
<td>Shall serve as member of Reclamation Watercraft Safety Work Group.</td>
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<td><strong>28.3.4.2</strong></td>
<td>Shall successfully complete MOCC and MOICC training.</td>
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<td><strong>28.3.4.3</strong></td>
<td>Shall coordinate/instruct MOCC training for their respective regions.</td>
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<td><strong>28.3.4.4</strong></td>
<td>Shall report/track regional MOCC training/refresher information to the Reclamation Watercraft Safety Coordinator.</td>
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**28.3.5 First-Line Supervisors**

**28.3.5.1** Shall establish protocols to ensure that all personnel and volunteers:
- Conduct watercraft and dredging operations in a safe manner and in compliance with this section;
- Ensure that equipment is maintained in compliance with this section and with existing policies and procedures; and
- Ensure that operators have the skills needed for conditions in which they are expected to operate watercraft and dredges.

**28.3.5.2** Shall ensure that their employees who operate and work in watercraft and dredges have training in watercraft operations appropriate for the size/type of watercraft used; geographic, climatic, and physical nature of the operations; and operational tasks being performed.

**28.3.5.3** Shall review the float plan (for watercraft operations), job hazard analysis (JHA), and/or conduct safety briefing (for dredge operations) developed by the watercraft/dredge operators prior to operation.

**28.3.5.4** Shall provide the safety and survival equipment identified on the float plan, JHA, and/or during safety briefing.

**28.3.6 Watercraft/Dredge Operators**

**28.3.6.1** Shall successfully complete the training required by 485 DM 22.

**28.3.6.2** Shall conduct watercraft and dredging operations in a safe manner and in compliance with this section.

**28.3.6.3** Shall ensure that equipment is maintained in compliance with this section and existing policies and procedures.

**28.3.6.4** Shall prepare the float plan, JHA, and/or safety briefing for first-line supervisor review/approval prior to watercraft/dredge operations.

**28.3.6.5** Shall conduct onsite risk assessment with crew, checking equipment, weather, and site conditions prior to watercraft/dredge operations.
28.3.6.6 Shall conduct a review of the float plan, JHA, and/or safety plan with watercraft/dredge occupants directly before the watercraft/dredge activity commences.

28.3.6.7 Shall ensure safety of crew and other onboard personnel and operate the watercraft/dredge in compliance with this section and existing policies, guidelines, and training.

28.3.6.8 Shall report any accident, injury, property damage, or near-miss incident that occurs during the watercraft/dredging operation to the first-line supervisor.

28.4 Training Requirements

28.4.1 Initial
Reclamation employees and others who operate Reclamation-owned watercraft and dredge must first be trained and certified to operate watercraft in accordance with this section and with 485 DM 22. Non-Reclamation personnel who operate Government watercraft for Reclamation activities must be qualified in accordance with USCG, state, and local regulations.

28.4.2 Certification

28.4.2.1 MOCC Training. Reclamation employees must successfully complete DOI’s MOCC training before operating motorboats. MOCC training must be successfully completed by anyone operating motorboats/dredges for which Reclamation is responsible (e.g., Reclamation-owned, borrowed, rented, or leased). Reclamation employees can complete MOCC training through any DOI agency. MOCC training is valid for 5 years.

28.4.2.2 MOCC Exemption. Operators of non-motorized watercraft are exempt from MOCC completion; however, they must be provided with practical operator safety training pertinent to the watercraft (e.g., raft, kayak) and environmental conditions in which the watercraft is operated. Appropriate training includes, but is not limited to, the non-motorized module of the MOCC.

28.4.2.3 MOCC Instructors. Reclamation employees who serve as MOCC instructors must successfully complete both the MOCC and MOICC as outlined in DOI’s MOCC Instructor Manual.

28.4.2.4 Preparation for MOCC. In preparation for taking the MOCC or MOCC module, Reclamation employees may practice elementary operating skills under the onboard supervision of a MOCC instructor.
28.4.2.5 Training Substitute. Another watercraft training may be substituted for the MOCC if it meets or exceeds the MOCC standard. Requests for substitutions must be submitted to the Regional Watercraft Safety Work Group.

28.4.2.6 USCG Licensing. Reclamation employees operating watercraft normally subject to USCG licensing regulations (e.g., watercraft longer than 65 feet) will be trained and licensed in accordance with the requirements in 46 CFR 25.

28.4.2.7 Dredge and Related Equipment Inspection. Employees who inspect dredges and related equipment must have certificate, license, or professional standing, as well as extensive knowledge, training, and experience in solving problems related to the work.

28.4.3 Recertification

28.4.3.1 Watercraft/Dredge Operators. Must successfully complete MOCC recertification every 5 years in accordance with 485 DM 22.

28.4.3.2 MOCC Instructors. Must participate in providing instructions in at least one MOCC every 3 years to maintain instructor certification. MOCC instructors who do not meet this requirement will be required to successfully complete the MOICC prior to being permitted to conduct MOCC training.

28.4.4 Proficiency Qualification

In addition to ensuring that their employees successfully complete MOCC training, first-line supervisors must ensure that watercraft/dredge operators receive safety and operations training on the specific watercraft, in the environmental conditions and in the area that they will be operating.

28.4.5 Recordkeeping

All watercraft/dredge training records shall be kept in the DOI official repository.

28.5 Hazard Identification, Assessment, and Safety Measures

28.5.1 Entering Water

There may be times when the watercraft operator needs to enter the water (e.g., when an object is wrapped around the watercraft prop or to remove the boat from a sandbar). The operator shall ensure that the JHA addresses this possibility. When entering the water, observe and address the following:

- Place watercraft controls in gear to guard against accidental starting of the motor;
- Remove the key from the ignition;
Display an orange flag to alert others to the fact that someone is in the water;
Turn off all generators; and
Ensure that no sources of carbon monoxide are present.

28.6 Pre-job Briefing and Planning Requirements

28.6.1 Float Plans
Prior to using a watercraft, the operator must provide a float plan to their first-line supervisor. The float plan must include the following information:

- Watercraft information (vessel make/model or local identifier);
- Emergency equipment onboard;
- Personnel onboard;
- Activity to be perform;
- Expected time of departure, route, and time of return;
- Means of communication (e.g., VHF radio, cell phone) and contact schedule;
- Description of vehicle(s) left behind; and
- Plan of action if overdue in contacting first-line supervisor or returning.

28.6.2 Safety Plans for Dredging Operations
Prepare a comprehensive safety plan for each dredging operation. Make the plan location specific and include provisions for communications and emergency response.

28.6.3 Job Hazard Analysis
Prepare a JHA for watercraft and dredging operations. Review the JHA with all employees involved with the watercraft/dredge operation prior to the work being started, at the beginning of each work shift, and anytime the JHA is modified. The JHA must be approved/signed by the first-line supervisor.

28.7 Hazardous Environmental Conditions

28.7.1 Weather
The watercraft/dredge operator shall monitor the National Weather Service warnings (e.g., small watercraft advisories) when planning watercraft/dredging operations. The operator shall re-evaluate the need for watercraft/dredge operations during high winds, high flows on a river, or other weather conditions which may adversely affect watercraft/dredge operations.

28.7.2 Lightning
The watercraft/dredge operator shall terminate or reschedule watercraft/dredging operations when lightning is present. Seek shelter off the water.
28.8 Personal Protective Equipment (PPE)

28.8.1 PFD Use During Watercraft/Dredging Activities
Equip watercraft with one USCG-approved PFD for each occupant, and one USCG-approved throwable device onboard the watercraft. Wear a PFD whenever onboard a watercraft or working around bodies of water where a drowning hazard exists. Employees must wear and maintain PFDs as directed by the manufacturer’s instructions (e.g., properly zipped, tied, latched). PFDs must be worn as the outermost layer. **Personnel using floating pipelines as accessways or working on the pipeline must wear a USCG-approved PFD.**

28.8.1.1 Design. The PFD will be either “international orange” or “fluorescent yellow-green” and will have at least 31 square inches (200 square centimeters) of retroreflective material attached to both the front and the back, in the upper quadrants of the PFD. If the PFD is reversible, retroreflective material will be attached to each of its reversible sides. In accordance with 46 CFR 25.25-13, each PFD shall be equipped with a light securely attached to the front shoulder when onboard watercraft being operated in coastal waters, the ocean, sea, or large lakes.

28.8.1.2 Inspection and Replacement. Before each use, visually inspect each PFD for defects that will compromise its strength or buoyancy. Check the PFD for rips, tears, sun damage, and holes, and ensure that seams and fabric straps are in satisfactory condition. There must be no signs of waterlogging, mildew, or shrinkage of the buoyant materials. Metal or plastic hardware used to secure the PFD on the wearer must not be broken, deformed, or weakened by corrosion. Webbing or straps used to secure the PFD on the wearer must not be ripped, torn, or separated from the attachment point on the PFD. If any defects are found, do not use the PFD; replace it immediately.

28.8.1.3 Auto-Inflatable PFDs. When USCG-approved auto-inflating PFDs are selected, they must be visually inspected before each use to ensure that the inflator mechanism is armed and in good condition. The bladder must not leak, and the user must be familiar with its use and operation. Auto-inflating PFDs must be maintained and inspected based on the manufacturer’s recommendations.

28.8.2 Cold Weather PPE
Cold weather PPE (e.g., USCG-approved exposure suits) will be worn when the sum of air and water temperatures is less than 100 degrees Fahrenheit. The watercraft operator may
make an exception to this requirement if determining that the risks associated with wearing cold weather PPE (e.g., crew performance degradation, thermal stress) are offset by the benefits of not wearing cold weather PPE. Prior to use, personnel will be trained in the use of this equipment.

### 28.9 Other Safety Equipment

Equip all watercraft and dredges with adequate safety equipment to meet USCG requirements and to address any hazards that may be encountered during normal operations. The following equipment must be available on all motorized watercraft and considered for all non-motorized watercraft:

- Visual distress signals (e.g., orange distress flag, distress light, 3 day/night red flares);
- Sound producing device’ and
- Re-entry ladder or other means of assisting someone with getting back into the watercraft (e.g., trim tabs).

#### 28.9.1 Flame Arrestors

Equip gasoline engines, except for outboard types, with a USCG-approved backfire flame arrestor. Make sure the arrestor is attached to the air intake with a flame-tight connection. It must be kept clean and in serviceable condition.

#### 28.9.2 Fire Extinguishers

**28.9.2.1 Less than 26 ft in Length.** For watercraft less than 26 ft in length, at least one USCG-approved fire extinguisher, rated B-1 or greater, must be carried onboard.

**28.9.2.2 26 ft up to 40 ft.** For watercraft 26 ft up to 40 ft in length, either one Type B-II or two Type B-1 extinguishers must be carried onboard.

**28.9.2.3 40 ft up to 65 ft.** For watercraft 40 ft up to 65 ft in length, either one Type B-II and one Type B-1 OR three Type B-1 fire extinguishers must be carried onboard.

**28.9.2.4 Greater than 65 Feet.** Watercraft that are 65 ft or greater in length must carry sufficient fire extinguishers to meet USCG requirements.

**28.9.2.5 Watercraft with Powerplants in Confined Locations.** Watercraft with gasoline or liquid petroleum gas powerplants located in a compartment or confined location must have a fixed carbon dioxide (or equivalent) fire-extinguishing system meeting the requirements of 46 CFR 25.30-15.

**28.9.2.6 Inspection.** Portable fire extinguishers shall be maintained and inspected monthly in accordance with RSHS Section 10, *Fire Protection and Prevention.*
28.9.2.7 **Navigation Lights.** Watercraft and dredges must be equipped with navigation lights required by USCG. Display navigation lights between sunset and sunrise and any other time visibility is reduced (e.g., fog, haze, rain, etc.).

28.9.2.8 **Pipeline Marking.** Dredge pipelines that float or are supported on trestles must display appropriate lights at night and when visibility is restricted, in accordance with USCG regulations and 33 CFR 88.15.

28.10 **Safe Practices**

28.10.1 **Watercraft Inspection**
Inspect all watercraft and equipment according to applicable USCG regulations and other jurisdictional entities before placing them in service.

28.10.2 **Watercraft/Dredge Loading**
Make sure each watercraft/dredge has enough room, freeboard, and stability to safely carry the maximum cargo and passengers under various weather and water conditions. Document this information on the JHA developed for the watercraft/dredge operation.

28.10.3 **Watercraft Ventilation**
Watercraft with installed gasoline engines must have powered ventilation systems to remove gasoline vapors from the vessel.

28.10.4 **Watercraft Fuel**
Store fuel in USCG approved containers suitable for marine use. Fuel lines must be equipped with a valve to cut off fuel flow. In addition, the valve must be closed if the watercraft will not be used for a period of 8 hours or longer.

28.10.5 **Kill Switch**
Open cabin launches or motorboats will be equipped with kill (dead man) switches when there is a risk that the watercraft operator can be thrown overboard or away from the controls, except in rare instances when doing so increases the risk to personnel (e.g., operating upstream from a significant hazard, operating in extremely rough water, or performing a rescue). If a kill switch tether increases the risk to personnel, use a non-direct/wireless kill switch during the watercraft operation. When the use of a kill switch during a specific watercraft/dredge operation is determined to pose a greater hazard than not using a kill switch, and using a non-direct/wireless kill switch is not feasible, the watercraft operator must identify measures to prevent injuries associated with the operation on the JHA.

28.10.6 **Watercraft Inspections**
The local fleet manager shall ensure that watercraft and their trailers are inspected by a qualified/competent technician/mechanic at least annually. Document watercraft inspections on Reclamation Form 7-1776C. Document trailer inspections on Reclamation Form 7-1776B.

28.10.7 Dredge and Related Equipment Inspections
A qualified person must inspect dredges and related equipment before they are entered into service, and at least annually thereafter, to ensure that they are in safe operating condition. The inspector must be trained and certified in accordance with 28.4.2.7 of this section. Inspections must be documented and accessible to personnel.

28.10.8 Maintenance and Repair of Dredges and Related Equipment
Before performing repair or maintenance work on the pump, suction, or discharge lines below the water line, or within the hull, in addition to the normal process of securing hoisting machinery, employees must raise the ladder (or drag arm) above the water line and positively secure it. Set blank or block plates in suction or discharge lines as appropriate. See also RSHS Section 15, Control of Hazardous Energy (Lockout/Tagout).

28.10.9 Submerged Dredge Pipelines
28.10.9.1 Crossings. Where a pipeline crosses a navigation channel or other area subject to boat traffic, submerged pipeline must rest on the channel bottom. The top of the pipeline and any anchor securing the pipe must be no higher than the maximum draft or traffic expected in the area where the pipe is placed.

28.10.9.2 Submerged Pipeline. When buoyant or semi-buoyant pipeline is used, the dredge operator must ensure that the pipeline remains fully submerged and on the bottom. When raising the pipeline, warn boat traffic of the pipeline hazard. Mark the entire length of the pipeline as required by USCG.

28.10.9.3 Marking. Mark the entire location of the submerged pipeline with signs, buoys, lights, or flags as required by USCG and as approved by the authority having jurisdiction.

- Unless otherwise specified by USCG, submerged pipelines are considered to require special marks and will have a USCG-approved flashing yellow light.
- Indicators, such as signs or buoys that state “DANGER SUBMERGED PIPELINE” will be placed at the beginning and end of the pipeline. In addition, indicators are required beginning in areas which reduce the charted depth by more than 10 percent, and, at a minimum, every 1,000 feet (304.8 meters) to clearly warn of the pipeline length and course.
• If barges or other vessels are used to anchor the beginning and/or end of the submerged pipeline, they will be lighted in accordance with 33 CFR 88.13.
• Within a navigation channel, each end of the pipeline will be identified with a regulatory marker buoy.
• Lengths of submerged pipeline located outside of the navigation channel, which reduce the charted depth by more than 10 percent, will be identified with high visibility buoys marked with 360-degree visibility retro-reflective tape, such as orange neoprene buoys, placed at an interval not to exceed 500 feet (152.4 meters) to clearly show the pipeline length and course.

28.10.9.3.1 Inspections. Conduct routine inspections of the submerged pipe to ensure anchorage.

28.10.9.3.2 Removal. Remove all anchors and related materials when removing the submerged pipe.

28.10.10 Floating Pipeline
Clearly mark floating pipeline, including rubber discharge hoses. Do not allow pipelines to fluctuate between the water surface and the channel bottom or to lie partially submerged. If floating pipelines are used as accessways, equip them with a walkway and handrail on one side.

28.10.11 Dredge Design
Design dredges to ensure that a failure or rupture of any of the dredge pump components (including dredge pipe) will not cause the dredge to sink.

28.10.11.1 Dredge Pumps. Any dredge with a dredge pump below the water line must have a bilge alarm or automatically shut down in the event of a pump leak.

28.10.11.2 Fall Protection. Provide guardrails, bulwarks, and self-closing gates for deck openings, elevated surfaces, or other locations where a person may slip or fall from them. Guardrails and self-closing gates must comply with the requirements for standard guardrails in accordance with RSHS Section 13, Walking and Working Surfaces, and 29 CFR 1910.29(b)(13)(i).

28.10.12 Walking and Working Surfaces.
• Provide anti-slip surfaces on all working decks, stair treads, vessel ladders, and other walking or working surfaces that may become wet during operations.
• Remove obstructions in walking and working surfaces when possible. Where obstructions cannot be removed, post appropriate warning signs or distinctively mark them in accordance with RSHS Section 9, Signs, Signals and Barricades, and ANSI Z535.1.
• Where the distance between the vessel and docks or landings exceeds 18 inches horizontal or 12 inches vertical, provide gangways. Gangways must be at
least 22 inches wide, with standard railings, and be able to support 250 pounds (with a safety factor of 4:1) at its midpoint.

28.10.13 Relocation of Dredges and Related Equipment
A qualified person must directly supervise any mobilization, demobilization, or relocation of dredges, support barges, and other support equip

28.11 Communication Requirements

28.11.1 Equipment
Always carry at least one communication device, whether that is a cell phone, a satellite phone, or a VHF marine radio. If the device is not waterproof, place it in a waterproof container that will float with the device inside. An emergency position indicator radio beacon or personal locator beacon that has global position system capability shall be used in the following situations:

- Boating operations on large bodies of water;
- Work requiring overnight boat operations;
- Work on water in remote areas where other communication devices are non-functional; and
- Work on water areas where signal coverage is weak or unavailable.

28.11.2 Public Notification of Dredging Operations
Issue public notices where dredging activity may pose hazards to navigation or to the public.

28.12 Definitions

Dredging
The operation of excavating material from a water environment.

Floating Pipeline
Any pipeline not anchored on the channel bottom.

Kill Switch
A device designed to shut off the engine if the operator is thrown overboard or otherwise away from the watercraft controls.

Motorboat
Any motorized watercraft 65 feet or less in length and does not require a USCG license or certification to operate.

Operator
The individual in physical control of the watercraft or dredge.

Personal Floatation Device (PFD)
Commonly known as a life jacket. Various types of PFDs are available. The type of PFD selected depends on user activity, weather conditions, and user preference.
Qualified Person: One who, by possession of a recognized degree, certificate, or professional standing, or who by extensive knowledge, training and experience, has successfully demonstrated his or her ability to solve or resolve problems relating to the subject matter, the work, or the project.

Safety Briefing: Pre-departure discussion of the vessel, safety gear location, where and where not to sit and/or stand, and the overall guidelines for the boat and trip.

Watercraft: Boats and ships, collectively, that are propelled manually, by wind, or machinery (e.g., airboats, sailboats, inflatable rafts, other vessels), excluding seaplanes.

### 28.13 References


