



Standard Operating Guideline	
<b>SOG Name:</b>	<b>Surface &amp; Swift Water Rescue</b>
<b>SOG Number:</b>	<b>150.6</b>
<b>Standard:</b>	<b>TBD</b>
<b>Guideline Owner:</b>	<b>Special Operations</b>
<b>Implementation Date:</b>	<b>November 30, 2017</b>
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<b>Authority:</b>	<b>Larry H. Williams, Jr, Fire Chief</b>

**PURPOSE:** Water rescue operations present a significant hazard to fire department personnel. The safe and effective management of these types of operations requires basic to very specialized considerations. This guideline identifies some of the considerations that must be included in managing these types of incidents.

A water rescue shall be defined as any incident that involves the removal of victims from any body of water other than a swimming pool. This includes rivers, creeks, lakes, washes, storm drains, or any body of water, whether still or moving

**A--Response categories, rescue levels, and team make-up**

**SECTION 1--Deployment: Water 8**

Water Rescue 8 is one of the Swift Water Rescue (SWR)/Flood Rescue teams assigned to the Alabama Mutual Aid System (AMAS). Water 8 will deploy in accordance with Dothan Fire Department (DFD) SOG #150.3<sup>1</sup>. Non-DFD members who deploy with Water 8 shall operate under AMAS CONOPS, DFD SOGs, mutual aid agreements, and policies as identified prior to a deployment.

**SECTION 2--Mutual Aid**

Mutual aid requests for the SWR team will follow DFD Operations SOG #100. 3<sup>1</sup> and policies for mutual aid requests. Swift water incidents can be as simple as using four trained members to complete the rescue in a short amount of time or can be long stretched out events. Battalion Chiefs will base response decisions on how to respond based on current operations within the City, on-duty trained personnel, and the information provided in regards to the mutual aid request. The Fire Chief, Duty Officer and the Special Operations Team Leader should be notified of the request(s).

**SECTION 3--City Responses**

The SWR Team will be dispatched to respond to any water rescue excluding residential pools, unless deemed necessary by the on-duty battalion chiefs.

<sup>1</sup> Old Ops SOG #25 and #10 respectively

**SECTION 4--Rescue Level III-water**

All water rescues will be considered a Level III rescue unless involving a residential pool. A Level III Water Rescue will have one engine, one truck, one ambulance, one battalion chief, Duty Officer, Training/Safety Chief and the technical rescue team. Battalion Chiefs may have to arrange on-duty personnel trained in water rescue to respond also. During long scale events (severe weather, flood warnings, etc), water rescue crews will be established and staged as directed by the Senior Staff and DOC.

**SECTION 5--Team Make-up**

The SWR Team is made up of personnel with different levels of training as outlined in NFPA 1006. The three levels are: Awareness, Level I and Level II. See Section B for explanations for each training level. The SWR Team will utilize the following colors for the identification for SWR operations: yellow and red. Yellow PFD and helmets will be utilized for the team members who will not get into the water during normal operations. Red helmets and PFDs will be utilized by those members who will enter the water or who may be assigned to the RIT team (downstream safety).

**B--Training Levels and Personal Protective Equipment (PPE)****SECTION 1--Awareness**

Awareness level training is training to all department members and support personnel at the basic level of water rescue. Boils down to “do no more harm” and is class-room information only. Member should be able to recognize a swiftwater situation, prevent anyone else from turning into a victim and calls for assistance.

**SECTION 2--Level I (Operations)**

Level I members are generally trained to use, deploy and support surface-based or shore based rescues. They may line tend, back up shore evolutions or boat operations. They are trained to self-rescue from water. Normally will wear yellow PFD and helmet at the incident scene

**SECTION 3—Level II (Technician)**

Level II members will be the members who enter the water with specific equipment and extricate victims. The level II rescuer is in the same environment as the victim. Normally will wear red helmets and PFDs (with rescue tether) at the incident scene

**SECTION 4—PPE**

Any department member within 10 feet of water during a water rescue operation will be wearing an appropriate PFD. The preferred PFD will be a USCG approved Type III or V PFD. Wearing turnout (unless fighting a fire) should not be worn at the water’s edge. Structural firefighting helmets will not be utilized for swiftwater rescue.

At a minimum swiftwater team members will wear a PFD, Helmet, gloves (neoprene), and water boots. The wearing of a wet suit or dry suit will be based on the hazards within the water (temperature, hazardous materials, debris elements, etc). There should be a knife and whistle attached to the PFD. For night operations a light or chem-stick should also be utilized. **Dry suits offer the best protection when dealing with flash flood situation and should be the first choice for PPE.**

## **C--Communications**

### **SECTION 1—Radio**

Radio communications is the preferred method of communicating, especially over long distances. Care must be taken with the individual-issued Motorola radios, so that they are not lost or damaged due to being submerged in water. The SWR team has a couple of items to assist with this. First water proof bags designed for radios can be utilized along the water's edge. This will prevent water damage but not the loss of a radio. There are also FRS radios available to use. These radios do not utilize a repeater, are limited to certain mile radius and are not secure communications, but they are water resistive to certain depths.

### **SECTION 2—Whistle**

Whistles can be utilized to assist with the communications.

One blast: Stop or Attention, look at me

Two blasts: Attention up stream or proceed upstream

Three blasts: Attention down-stream or proceed down stream

Three blasts repetitive: Distress, need help

### **SECTION 3--Hand Signals & Paddle Signals**

Hand signals and oar signals can also be utilized to assist with communications

One arm straight in air: I need help

One hand on top of head: I am ok/ready or are you ok/ready?

Arms crossed on chest: I need medical help

One arm pointing: move this way

Paddle Signals are used in conjunction with one whistle blast

Paddle straight up: STOP

Paddle pointed in one of the follow directions (river orientation)

Up River

River Right

River Left

Down River

**D—Operations**

Water rescue operations present a significant danger to rescue personnel.

**SECTION 1—Command Responsibilities**

Operational SOG #100.1 should be utilized for all incidents. Utilize a member who is trained to the SWR Level II for the Operations Section and Safety Officer whenever possible. Command should determine the scope of the incident whether it is a recovery or rescue operation. Risk Assessment will be used throughout the incident.

**SECTION 2--Phase I-Incident Size-Up**

- A. Secure responsible party and/or witness(es)
- B. Assess the need for additional rescuers
- C. Assess the hazards
- D. Decide Rescue or Recovery Mode
- E. Develop an IAP

**SECTION 3--Phase II--Pre-Rescue Operations**

- A. Make the general area safe
- B. Make the rescue area safe
- C. Fine tune rescue plan and back-up plan(s)
- D. Victim PPE
- E. Rescue plan briefing

**SECTION 4--Phase III--Rescue Operations**

- A. Implement the rescue plan
  - i. Should be from the least risk to the highest risk
    - Talk to the victim(s)
    - Reach (pike pole, inflated fire hose)
    - Throw--rope bag, PFD, rescue ring
  - ii. The next options are considered higher risk and only personnel with the appropriate training should conduct
    - Row--using a boat either with a rope system or rowing may need to have a group/team on the opposite bank
    - Go--live bait rescue, swimming to the victim (bring victim PPE). This can also be a "Wading" operation.
    - HELO--highest risk
- B. Victim Contact--quickly assess the victim(s) and provide proper PPE
  - i. Determine if victim can assist in rescue or not
  - ii. Move victim to safe area as quick as possible
  - iii. Transfer to Medical Group

**SECTION 5--Phase IV--Termination**

- A. Ensure accountability of all personnel and equipment
- B. Collect water samples to assess contamination
- C. Decontaminate all rescuers and equipment
- D. Preventative health actions (i.e. Use Swimmers' Ear to remove water in ears, etc.)
- E. Consider CISM

**E--Water Rescue Hazards & Decontamination****SECTION 1--Water Rescue Hazards & Risks**

There are many hazards associated with swiftwater operations. Water is the main hazard since it does not stop moving. Debris (bottom, suspended and top/floating) is another hazard that must be dealt with. Bottom debris can trap victims and rescuers. Suspended debris can cause entanglement or sweep rescuers further down-stream. Floating debris can cause injury along with pinning rescuers/victims. Strainers allow water to pass through but nothing else. These can also pin rescuers and victims

During flash flooding in urban areas, hazardous materials can also be released into the waterway. Biological and chemicals can cause injury to those in the water. Exposures can be limited by using the appropriate PPE, preventing ear infections, and deconning on site as quick as possible. The operational area especially in rural conditions can be hazardous. Be watchful for poison ivy, sumac, crawling and flying animal/insects.

The panicked victim can be a hazard and proper training and skills are needed to manage the victim. Electrical shock is also a significant hazard in urban flooding. Finally storm drains can be hazard even when water levels are dropping.

**SECTION 2—Decontamination**

During flash flooding even in rural areas, hazardous materials can be in the water. Due to the unknowns, all members who have entered water will complete a gross decon at a minimum, utilizing tank water from an apparatus. If water tests or known hazmat are in the water, then a formal decontamination will be utilized.

**F--Joint Operations****SECTION 1**

The SWR team is comprised of members from different organizations and SWR incidents can escalate to large multi-jurisdictional, multi-agency events. The use of a Unified Command structure should be utilized.

**G--Post Incident Analysis/After-Action Review**

A Post Incident Analysis should be completed after each incident and exercise. This can be done at the incident site or may be a formal debriefing within 24-72 hours. Certain incidents a formal PIA/AAR will be necessary. Results should be forwarded to the Fire Chief and Team leader.

**(Signature On File)**

Larry H. Williams, Jr.

Fire Chief

DOTHAN FIRE DEPARTMENT

## Addendum 1 Definitions & Terminology

**Aggregate Temperature**—Air temperature plus water temperature;  $\geq 140^{\circ}$  F dry suits do not have to be worn unless potential hazardous materials are present;  $< 140^{\circ}$  F dry suit must be worn to prevent hypothermia

**Debris**—top load that floats on the river surface

**Defensive Swim Position**--feet first, facing downstream; knees are bent with feet slightly lower than the butt. Should be assumed when in the water, unless swimming offensively to get over obstacles or swimming to an eddy

**Downstream "V"**--forms when water flows between obstacles

**Eddy**—horizontal reversal of water flow where the differential between the current's pressure on the upstream & downstream side of an obstacle cause the water behind the obstacle to flow upstream; are downstream of solid obstacles in the flow; eddy is your friend

**Foot Entrapment**—occurs when a swimmer's foot becomes wedged in a crack or crevice (other bottom debris) in the river bottom. The force of the current makes escape difficult.

**Force of water**--increases exponentially as the speed and volume of water increases; a current twice as fast causes four times the pressure on a submerged object

**Helical flow**--corkscrews along the bank, pushes floating objects towards the center of the flow

**Hydraulics**--is a full depth re-circulating current that may keep an object for an extended period; often found at the base of low-head dams but also occur naturally

**Laminar Flow**--moves down the center of the river/stream with the fastest flow in the middle

**Live Bait rescue**--tethered swimmer; free swimming rescue. An effective rescue method for unconscious, drowning, exhausted or hypothermic victims; rescuer can use two hands on victim and is "pendulum" into the shore. PFD must have a quick release

**Low-head dam (weir)**—an artificial construction in the river for flood control, irrigation, or power generation; water flowing over the dam creates a hydraulic

**Multi-directional Control Point (MCP)**—rope system rigging for a boat which allows the boat to be controlled from both sides of a river/stream

**Personal Flotation Device (PFD)**--USCG Type III or V rated flotation device, Level II (Techs) members will use a Type V PFD with a tether release system

**River Orientation**--rescuer facing down stream

River Left, River Right, Up river, & Down river

**Surface water**—any body of water in the AHJ response area that is not moving (less than 1 knot); examples—lakes, ponds, and large pools

**Strainer**—river obstacle that allows water but not solid objects to pass through; most often caused by trees, brush or debris piles in the current

**Swift Water**--NFPA 1670 defines swift water as any water moving greater than 1 knot (1.15 MPH)

**Throw Ropes**—40-70' sections of polypropylene rope used to throw towards victims

**Tension diagonal**—taut line angled downstream from obstacle (or other bank) to the shore; normally 45 to 60 degrees; used to get rescuers or victims across the current and uses the current to ferry them across

**Upstream spotter(s)**—Upstream safety, watching for moving debris in the water

**Upstream "V"**—a hydraulic effect in the form of a "V": point upstream; formed by downstream water flowing around an obstacle (rocks submerged just under the surface)

**Addendum 2**  
**Water Rescue Incident Command Checklist****Phase I--Size-Up**

- Primary Assessment
  - Secure Witness
  - Determine location, number & condition of victims
  - Identify immediate hazards
    - Water level rising or falling (mark waterline)
    - Surface loads (debris), hydraulics, hypothermia
- Secondary Assessment
  - Assess need for additional personnel & equipment
  - Assess need for additional support (boat, helicopter)
- Rescue mode or recovery mode

**Phase II--Pre-Rescue Operations**

- Make general area safe (traffic & crowd control)
- Make rescue area safe
  - Assign safety officer
  - Assure team response to opposite bank
  - PPE within 10' of water (PFD, water helmet, etc.)
  - Assign downstream bag throwers
  - Assign upstream spotters
  - Water Level: Rising or dropping
- Form IAP
  - Talk, Reach, Throw, **Wade, Row, Go or HELO<sup>2</sup>**
- Backup plans (paddle team with boat, etc.)
- Victim PFD & helmet
- Pre-rescue briefing

**Phase III--Rescue Operations**

- Implement primary IAP
  - Make contact with victim
  - Apply protective equipment to victims
  - Remove victims to safe area
- Transfer to ALS; consider hypothermia

**Phase IV--Termination**

- Personnel Accountability Report (PAR)
- Collect water samples to assess contamination
- Decontaminate rescuers
- Complete Post Incident Analysis

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<sup>2</sup> Wade, Row, Go or Helo are considered Level II operations



**Swift Water Tactical Worksheet**

**VICTIM:** Last seen where? \_\_\_\_\_ Action/doing? \_\_\_\_\_ Clothes color? \_\_\_\_\_

PFD/Life Jacket: Y or N      Description: \_\_\_\_\_

**WEATHER:** Temp: \_\_\_\_\_ HUM: \_\_\_\_\_ Wind: \_\_\_\_\_      Flash flooding: Y or N

FORECAST: Rain Y or N      Temp: \_\_\_\_\_ HUM: \_\_\_\_\_ Wind: \_\_\_\_\_

**WATER:** SURFACE   MOVING   SPEED: \_\_\_\_\_ (100' in 1 minute=1 knot)   TEMP: \_\_\_\_\_

**Aggregate Temp (Air Temp + Water Temp): \_\_\_\_\_      Suit: Dry      Wet**

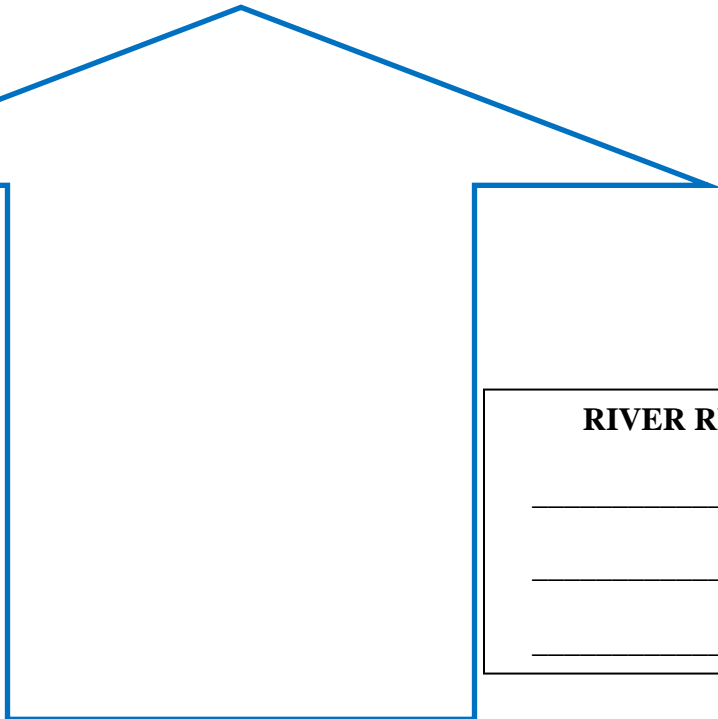
**Assignments:** Rescue Ops: \_\_\_\_\_

**Safety:** \_\_\_\_\_

**Down River (w/ throw ropes)**

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

<b>RIVER LEFT</b>
_____
_____
_____



<b>RIVER RIGHT</b>
_____
_____
_____

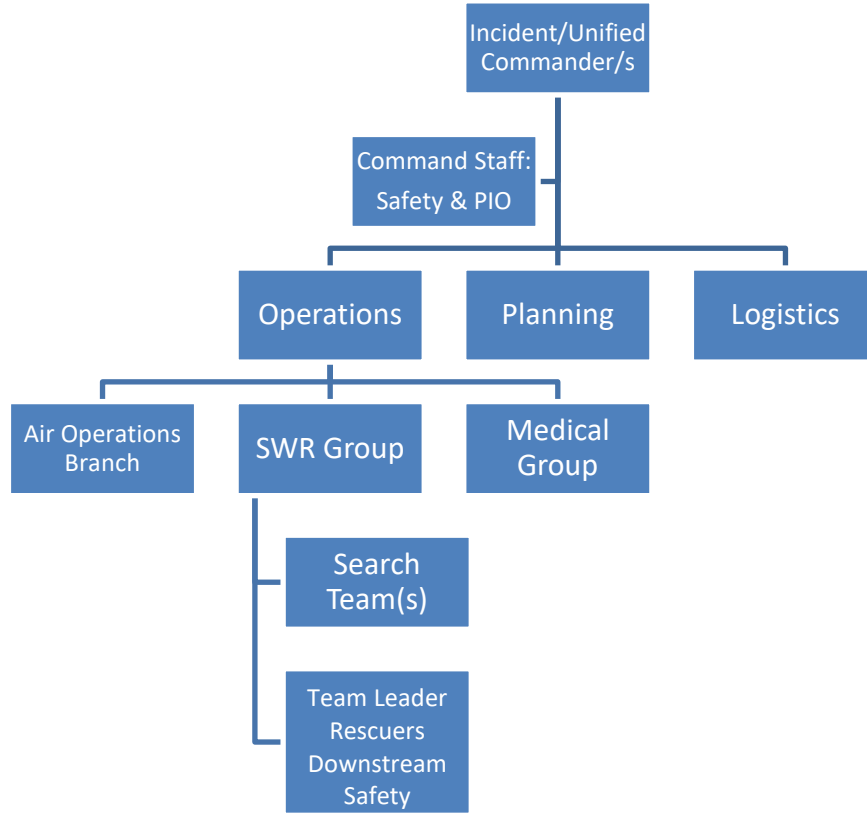
**Up River Safety:** \_\_\_\_\_

**Water Level:** Rise or Fall

**Accountability:** PAR \_\_\_\_ PAR \_\_\_\_ PAR \_\_\_\_ PAR \_\_\_\_ PAR \_\_\_\_ PAR \_\_\_\_

<input type="checkbox"/> RESCUE	SWIFT WATER INCIDENT COMMAND BOARD										<input type="checkbox"/> RECOVERY	
Dispatch	Incident								Victim(s)			
ENG	Location:								Info			
TRK	River Right Access:				Cmd Name:				Radio	Tac	Air	
RES	River Left Access:				Cmd Loc:				Channels	Cmd	EMS	
Boat	Group/Division		Group/ Division		Group/Division		Group/Division		RIT	Staging		
Boat									Loc:			
EMS	Sup	Sup	Sup	Sup	Sup	Sup	Sup	Sup	OIC:			
BC	Unit	Assignment	Unit	Assignment	Unit	Assignment	Unit	Assignment				
AMB												
ISO												
HELO									Medical Unit (Decon)			
Add'l Resources												
BOAT												
BOAT												
BRUSH												
4x4												
REHAB												
DO	<input type="checkbox"/> Pt located		<input type="checkbox"/> Pt Extricated		<input type="checkbox"/> First Put in		<input type="checkbox"/> Air/H2O Temp		Put-In Location		Take-Out Location	
2nd BC	<input type="checkbox"/> Pt Accessed		<input type="checkbox"/> Pt w/ EMS		<input type="checkbox"/> Last Take Out		<input type="checkbox"/>					
2nd EMS	<input type="checkbox"/> Pt Stabilized		<input type="checkbox"/> Area Secured		<input type="checkbox"/> Off Water		<input type="checkbox"/>					
2nd AMB	Request				Task				PAR/OS Time:		Monitor	
	<input type="checkbox"/> LE	<input type="checkbox"/> Wrecker	<input type="checkbox"/> HazMat		<input type="checkbox"/> Upstream		<input type="checkbox"/> Hazard ID		<input type="checkbox"/> 10 Min	<input type="checkbox"/> 60 Min	water lvl	Weather
	<input type="checkbox"/> Bus	<input type="checkbox"/> Helo	<input type="checkbox"/> Utilities		<input type="checkbox"/> DownStream		<input type="checkbox"/> Victim PFD		<input type="checkbox"/> 20 Min	<input type="checkbox"/> 80 Min	10' PPE	Debris
	<input type="checkbox"/> LS	<input type="checkbox"/> Trans	<input type="checkbox"/> PIO		<input type="checkbox"/> Water Sample		<input type="checkbox"/> Prevent		<input type="checkbox"/> 40 Min	<input type="checkbox"/> 100 Min	Temp	Pt Loc
Sketch								Notes				
GPS points								Water Info				
Hazards								Haz Info				
Access								Site Info				

**Addendum 3**  
**Response Organizational Chart**



### **Addendum 4 Continuing Training Plan**

#### **Certification Training:**

Water 8 team members will complete certification courses as deemed necessary by the department, AMAS, Alabama Fire College and other agencies as identified.

#### **Awareness Level Training**

*Current membership:* Awareness level training will be provided by the Water 8 Team members through various training opportunities: Power DMS, Company Level Training Plan and Multi-Company Training. Senior Staff members will receive an additional opportunity to develop response SOGs and enhance response capabilities

*New Employees:* will receive water rescue awareness as a part of their indoctrination to the DFD

*City Officials:* the Fire Chief (and/or designee) will take opportunities to educate city officials of the roles, capabilities and needs for the water rescue team.

#### **Level I & II Training**

Will be accomplished utilizing additional certification schools (Power Craft Operator, Animal Rescue, SWR I/II, etc), regular training drills, AMAS/HSEEP exercises and company level training. Team members have the responsibility to maintain their individual knowledge, skills and abilities.

#### **Annual Training**

Functional drills, tool labs, and local exercises will be conducted on a regular basis throughout the year. One, four-to eight-hour drill period will be held every 4 months for department members. The drill period will be rotated by shift throughout the year. Off-duty members will be compensated to participate off-duty.

#### **AMAS Designated Exercises (HSEEP):**

Water Rescue 8 will participate in functional drills and exercises as needed and determined by the Alabama Mutual Aid System (AMAS).

#### **Public Education:**

Working with the Public Education Officer for the department, the Team Leader (and/or designee) will help to educate the public of the hazards/dangers of moving water during flash flooding.

**Addendum 5**  
**SWR Operations Manual**

The purpose of the operational manual is to give team members and incident commanders a starting point for tactical rescue operations in a water environment. The references for this manual are included in Addendum 6. The Ops Manual is not all inclusive and the team members may have to improvise at certain times. Swift water rescue is a very hazardous and has a high level of risk. Incident Commanders and team members should take the least risk approach to a rescue and/or body recovery as much as possible.

**A. Phase I--Size-Up**

Size-up begins prior to the dispatch of an event. During certain weather conditions (flood watches, tropical storms/depressions, hurricanes, severe thunder storms, etc) on-duty members should monitor conditions around the city, county, and region. Senior Staff members will issue weather updates as provided by Houston County EMA, National Weather Service and AMAS operations on-going around the state and region.

1. Upon arrival at the incident scene, establish command (issue DFD BIR) or report to the incident commander already on scene; conduct a primary assessment.
  - i. Identify or confirm the responsibility party and/or witness(es)
  - ii. Determine location, number and the condition of victims
    - a. Victim descriptions, clothing color, victim actions
  - iii. Identify the immediate hazards
    - a. Water rising or falling (mark water line with some type of marker)
    - b. Surface loads, water hydraulics, hypothermia, vehicle stabilized
2. The secondary scene assessment should be conducted:
  - i. Need for more resources (personnel and equipment)
    - a. Consider the need for rehab and lighting
    - b. Helicopter to assist with search or moving equipment/personnel
  - ii. Additional water rescue personnel (mutual aid?)
  - iii. Rescue mode or recovery mode
3. Exclude all non-essential personnel (establish zones) and ALL personnel within 10' of the shore must be in proper PPE

**B. Phase II--Pre-Rescue Operations**

1. Make the general area safe (traffic control, shut down/reduce water flow)
2. Make the rescue area safe
  - i. Assign Safety Officer
  - ii. Team response to the other side of the bank
  - iii. PFD within 10 feet of water
  - iv. Assign downstream group (minimum of two) with throw ropes
  - v. Assign an Upstream Spotter--brief spotter on roles/responsibilities if not water rescue team member
  - vi. Consider establishing tension diagonals with either rope or firehose if possible

3. Develop the incident rescue plan
  - i. Talk--attempt to get victim to self-rescue if possible
    - a. Get victim PPE to them if possible (PFD minimum)
  - ii. Reach--pike pole or inflated fire hose—advanced to the victim
    - a. Bridge rescues—can utilize a pendulum rescue by lowering a rope (or an inflated hose) on the downstream side of the bridge.
    - b. Once victim makes contact to rope/hose, one side is released and the victim pendulums over to the shore.
    - c. If victim is on debris or a bridge piling, then a simple haul system or a ladder can be lowered to the victim
  - iii. Throw--rope bag, rescue ring, etc to victim.
    - a. get PPE to victim if possible
    - b. throw rope bag at or just upstream of victim
    - c. Consider a belay for the rope thrower
    - d. May have to use a dynamic belay (move down stream on shore)
    - e. Pendulum the victim into the shore or eddy if possible.
    - f. Rope should go over the shoulder opposite the shore you want the victim to move to for proper ferry angle
    - g. When throwing use underhand throw and do not wrap rope around wrist
    - h. If victim does not have a PFD on they may plane under the surface of the water, pull them in slowly
    - i. Be ready for second throw
    - j. Do not count on the victim to participate in their own rescue
  - iv. Wade--using either wedge/V formation or line astern formation. Pivot may also be used
    - a. Use pike pole, stick or paddle for support; keep formation headed straight into stream
    - b. Do NOT use if water is deeper than knee high
    - c. Support the person in front of you
    - d. get solid foot placement before you move foot
    - e. do not rush'
    - f. If unstable return to shore
  - v. Car in the water
    - a. If there is a report of a car in water, immediately request a wrecker to the scene
    - b. Determine the type of bottom
      - hard-vehicle most likely to roll or move
      - soft-car normally sinks to frame and is more stable
    - c. Stabilize vehicle--use ropes to keep car from rolling or moving if vehicle on hard bottom surface have victims stay on upstream side of vehicle
    - d. Do not follow stabilization line to vehicle
    - e. Take PFD and helmet for each victim
    - f. Use reaching options (ladders?), approach by wading (not over knee deep), swim or use boat

Watch vehicle stability

Approach from the eddy downstream

vi. Boat Operations

- a. Boats can be utilized in three different methods: powered, row/paddle, and as part of a rope system
  1. The most direct method of boat rescue is to get the boat next to the victim, no matter how the boat is powered
- b. Paddle Crew—Five personnel
  1. Inflate boat
  2. One paddle per rescuer, plus one back-up
  3. Have two throw ropes (clipped in)
  4. Assemble crew
  5. Launch from suitable location or eddy
  6. Designate two victim grabbers
  7. Paddle captain sits in back on raised stern, steers boat
  8. Keep legs in boat
  9. Paddle Commands
    - a. “Forward paddle”=all paddlers paddle forward
    - b. “Back paddle”=all paddlers back paddle
    - c. “Right turn”=paddlers on right give one stroke back then continue forward. Left continues forward
    - d. “Left turn”=paddlers on left one stroke back then continue forward. Right continues forward
    - e. “Stop”=all paddlers stop
    - f. “High side”=everyone moves to the rising tube
- c. Rope System
  - a. Highline & Multiple Control Point (MCP)
    - i. Using a highline with MCP places a safe rescue platform that is moveable, allows access to low head dams, and allows positioning in fast current
    - ii. Boat should be rigged properly with a three point load distributing bridle (30ft of webbing) at the bow
    - iii. Boat should have two pieces of webbing attached in the side of the boat to assist with “righting” the boat should it flip over.
    - iv. Two throw ropes, one paddle per rescuer, plus one extra
    - v. MCP should consist of three ropes
      1. Track line
      2. River right control line
      3. River left control line
        - a. Either control line can have either 1:1 (weak current), 2:1 (strong current) MA, or fixed point
        - b. Lowering can also be controlled from the boat
      4. MCP hardware

- a. Pulley track line
  - b. Pulleys for MA or change of direction as needed
  - c. Anchor plate or O-ring
  - d. 4-5 pulleys based on MA
  5. Anchors for track lines
    - a. Dependent on tensioning system and anchor knots
      - i. 3:1 tensioning
        1. Carabiners
        2. Pulleys
        3. Webbing
        4. Prusicks
  6. Will need a team on the far side of the river.
  7. The track line can be sent to the other side using various means
    - a. Messenger line
    - b. Swimmer (high risk)
  8. Once track line is anchored, use it to get far-side control line and hardware over
  9. Use tensionless hitch on one side anchor and a 3:1 on the other
    - a. Pre-tension the 3:1 with ONE puller)
  10. Attach track pulley and rig MCP.
  11. Once boat is mid-stream, track line is post-tensioned with three pullers
  12. Follow boat communications from above
    - a. Paddle Signals are used in conjunction with one whistle blast
    - b. Paddle straight up: STOP
    - c. Paddle pointed in one of the following directions (river orientation)
      - i. Up-river
      - ii. River left or river right
      - iii. Down river
- b. Boats can also be controlled by one point, two point and four point tethers
- i. Quick ways to hold a boat in place but cannot be used in heavy current
  - ii. One line will need to be ferried or delivered to the other side
  - iii. Control lines are attached to d-rings on the outside of the inflatable tubes
  - iv. One person controls each line
  - v. Rope length should be twice the width of the river



- c. Use of a two-boat tether can be used for hydraulics (low-head dam) but this will be under powered boats
- d. Powered Boats
  - a. Two-boat tether is normally utilized for low-head dam rescue.
    - i. Upstream boat is normally a IRB
    - ii. Tether line is tied from the stern of the upstream boat to the bow of the downstream boat
      - 1. Tether line is 100-150 feet long and is tied to the stern utilizing a bridle system and a float to prevent snagging
      - 2. Down-stream boat is usually a rigid hulled boat
    - iii. Upstream boat gets as close to the boil line as close as possible and throws a tethered flotation device
    - iv. If upstream boat starts to move into the backwash, downstream boat performs a power turn downstream.
      - 1. Downstream boat may have to swamp itself (creating a “sea-anchor”) to help pull the upstream boat out of the boil
    - v. The downstream boat keeps tension on the tether line at all times to prevent entanglement in the engine.
  - e. Tethered Strong Swimmer Ops
    - a. Strong swimmer with appropriate PPE
      - a. Water rescue helmet, PFD with release clip, wet/dry suit, gloves, fins (if applicable) and footwear
      - b. Release clip is set on PFD
      - c. Tether line is clipped into the rear of the PFD or on an extension. Approximately 200 feet of water rescue rope.
      - d. 4 Additional Level II personnel
      - e. Back-up plan
    - b. Used as a:
      - a. downstream back up plan
      - b. Rescue a drifting victim who is out of reach of a throw-bag or cannot catch a throw-bag
    - c. Procedure
      - a. Set-up downstream location with best advantage
      - b. Strong swimmer dons PPE with quick release (red PFD)
      - c. Water rescue rope attached to carabiner on quick release
      - d. Position tender crew down river from entry point
      - e. Wait for victim to be even with rescuer
      - f. Rescuer makes shallow entry dive and swims aggressively to victim
      - g. Tenders feed rope to prevent drag and wait for ready signal
      - h. Rescuer holds victim with appropriate technique indicates ready by tapping top of head
      - i. Tenders move victim to shore

- j. If unable to come to shore, rescuer releases from tether line & initiates back-up plan

#### F. Helicopter Ops

- a. Consider helicopter rescue before “row or go” IF:
    - a. Risk is deemed lower
    - b. Appropriate rescue helicopter is readily available
    - c. Helicopter crew is trained in swiftwater rescue techniques
  - b. Support role, less risk
    - a. Transport of rescuers and equipment to other side of river
    - b. Recon
  - c. Rescue role, higher risk
    - a. Access vehicles & midstream objects
    - b. Extract victims via one-skid
    - c. Insert rescuers onto mid-stream objects and/or into water
    - d. Extract rescuers/victims via short haul
4. Back-up plans
- i. When planning always be prepared to develop a back-up plan in case the first one does not work. Example would be a paddle team with boat, hand signals for communication if radio failure, etc...
5. Victim PFD & Helmet
- i. Bring helmet and PFD for victim(s).
6. Pre-rescue briefing
- i. Pre-rescue briefing should include known hazards, victim location, plan for removal, communication (i.e. hand signals, and egress location from water). A back-up should also be included.

#### C. Phase III: Rescue Operations

- A. Implement Rescue Plan
  - a. Make contact
  - b. Apply PPE to victim
  - c. Remove to safe area
- B. Transfer to ALS, consider hypothermia

#### D. Phase IV: Termination

- A. Personnel Accountability Report
- B. Decontamination for rescuers
- C. Collect water samples to assess contamination
- D. Conduct equipment inventory prior to leaving incident scene
- E. Clean and repair equipment at station
  - a. Report shortages and out of service equipment

**Addendum 6  
References**

NFPA (1). (2017). *NFPA 1006: Standard for Technical Rescuer Professional Qualifications, 2017 Edition*. NFPA. Quincy, MA.

NFPA (2). (2017). *NFPA 1670: Standard on Operations and Training for Technical Search and Rescue Incidents, 2017 Edition*. NFPA. Quincy, MA

Pendley, Tom. (2011). *The Essential Technical Rescue Guide, 4<sup>th</sup> Ed.* Desert Rescue Research

Ray, Slim. (1997). *Swiftwater Rescue*. CFS Press. Ashville, NC.

Ray, Slim. (2006). *Swiftwater Rescue: Field Guide*. CFS Press. Ashville, NC.

Trenish, Steve. (2017). *Water rescue: Principles & Practice to NFPA 1006 & 1670, 2<sup>nd</sup> Edition*. Jones & Bartlett. Burlington, MA