



Burlington Fire Department



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Section: 04 - Special Operations	
SOG Number: 04.08	Effective Date: Oct. 10, 2019
Subject: Swiftwater Rescue	
By Order of Fire Chief Steven A. Locke	

I. Purpose:

This Operational Guideline will establish standard procedures and considerations for the mitigation of all Swiftwater rescue/recovery operations.

II. Scope:

This procedure applies to all members of the Burlington Fire Department that are responsible for response to water rescue/recovery incidents.

III. Definitions:

Horizon: The apparent intersection of the earth and sky as seen by an observer. Personnel in the water must constantly watch the horizon line downstream. If it appears to disappear, it is certain there is a drop-off ahead. Personnel in the water must exit immediately.

Hypothermia: Abnormally low body temperature. Hypothermia is considered to be a hazard, especially considering that most flood problems occur during the winter and spring months when ambient temperatures are low and water temperatures are even lower because of melting snow. A good rule-of-thumb: Stay out of current that is over your knees.

Temperature	Useful Work	Unconsciousness
40 degrees Fahrenheit	7.5 minutes	30 minutes
50 degrees Fahrenheit	15 minutes	60 minutes
60 degrees Fahrenheit	30 minutes	120 minutes

PFD: Personal Floatation Device.

River Left/Right: As one faces downstream the side on the left is considered “river left,” and the right side “river right”.

Strainers: A buildup of debris such as trees and logs which restrict the downstream flow. It is dangerous due to the undertow which may cause entrapment and drowning (fallen and submerged trees are primary killers during floods).

Water Characteristics:

- Hydrology: The study of water flow and the natural forces associated with its movement. Three characteristics of swiftwater are: It is powerful; It is relentless; It is predictable. Water is relentless because, unlike ocean waves that break and give the swimmer a breather, river waves offer no break. Once the pressure is applied to the body, it stays until the victim is freed.

Water is predictable to a trained and experienced person and it is this predictability that gives rescuers the edge.

Common hazards associated with water rescue/recovery operations include: water volume, velocity, temperature, floating debris, unusual drop-offs, hydraulic effects and depth of water.

- Preplanning: First Responders should be aware of potential water rescue/recovery problems. This includes times of the year when there is a greater potential for problems, specific locations where incidents have occurred in the past, and locations where incidents are more likely to occur (recreational site, etc.).
- Rivers: Rescuers should have knowledge of rivers that flow through their jurisdiction. Rescuers should have pre-planned staging, upstream, downstream, river right and river left areas. Tactical options should be planned so that a minimum amount of time is spent setting up during real emergencies.

Water Recovery: An operation where the victim is already deceased, or there is no reasonable expectation of saving the victim’s life.

Water Rescue: An operation where there is the possibility of saving the life of someone trapped in a situation involving water.

IV. Guidelines:

A). RESPONSE

1. The standard response will be Battalion One, two engine companies, and two ambulances, Tower One and Rescue One (special call).
2. Upon the dispatching of apparatus to an incident, the United States Coast Guard and Colchester Technical Rescue should be dispatched as well for additional resources.
3. Divers are available through Colchester Technical Rescue and Vermont State Police Dive Team. Request as needed.
4. Consider requesting resources from South Burlington Fire Department, including swiftwater personnel and their boat.

B). ARRIVAL

1. Upon arrival, the first water rescue trained personnel shall assume the position of Officer in Charge (OIC) until a higher trained rescuer or line officer arrives.
2. A minimum of two ambulance units should be requested.
3. Any rescue personnel arriving at a water rescue incident shall report to the Officer in Charge (OIC) of the scene prior to taking up any rescue position.

C). GENERAL SAFETY PRECAUTIONS

1. Fire department members will exercise every safety precaution to afford the highest degree of safety to themselves and victims that is proportionate with the particular hazard situation in which they are operating.
2. Rescue priorities are:
 - a. Self-rescue
 - b. Security of fellow teammates
 - c. Victims
3. The Safety Officer at all incidents involving water should be trained to recognize the additional hazards associated with water-related activities. As a minimum, the Incident Commander should insure the member appointed Safety Officer has been trained to the technician level in Swiftwater rescue.
4. Personal protective equipment

- a. Personnel working 10' or less from the water's edge shall have donned the appropriate personal protective equipment (PPE), including personal flotation device (PFD), water rescue helmet, and throw bag.
 - b. All Swiftwater personal shall wear Type V PFDs, water rescue helmets, drysuit, booties, gloves and have a regular throw bag.
 - c. All fire department members and other rescue personnel operating at the scene of the water rescue incident should wear a helmet. **Fire helmets** have no drain holes for water to pass through, and therefore, **will not be used**. Spare swiftwater helmets are available on Rescue 1.
 - d. **Structural firefighting turnouts and bunker style boots** should never be worn on the water's edge, in a boat, or in the water.
 - e. Gloves will be worn if the member is actively involved in rescue operations.
 - f. Flood situations or other contaminated water environments require the use of dry-suits by all rescue personal.
 - g. All other protective clothing and equipment will be utilized as deemed necessary by the Incident Commander, the Rescue group supervisor, Rescuers, or the Safety Officer.
5. Never tie a rope around or on a rescuer except when a water rescue technician must use a "live bait," Type V rescue PFD for a "go" rescue evolution. Use only the approved steel ring attachment in the back of the PFD for rope attachment.
 6. No swift water rescue personnel will perform tasks that are beyond his/her level of expertise.
 7. It is expressly forbidden that any swift water rescue personnel enter the water during a swift water rescue operation until three equipped backup swiftwater rescuers are present.
 8. Any personnel that does not feel completely confident in the tasks he/she are asked to perform should notify the appropriate supervisor, and refrain from doing the tasks assigned.

D). TACTICAL CONSIDERATIONS: PHASE 1 - SIZE UP

1. PRIMARY ASSESSMENT
 - a. Command should assign someone to secure the reporting party or witness of the accident, to determine exactly what happened. This will help in identifying and locating the problem and point last scene.
 - b. Assess the need for additional resources including requesting Colchester Technical Rescue and call for them early.
 - c. Decide if the operation will be rescue or recovery.
 - d. Identify immediate hazards and make an assessment of the hazards present to the rescuers. Command should assign a "Safety Officer" to accomplish this assignment.
 - e. Determine victim(s) information.
 - (1) Point last seen
 - (2) Time of accident/injury
 - (3) Time victim was last seen
 - (4) Number of victims

- (5) Description of vehicle and victims.
- f. Determine an action plan. Based on the rescue or recovery mode of operations, Command should establish an action plan that is communicated to all personnel involved in the rescue.

2. SECONDARY ASSESSMENT

a. On-Scene Personnel

- (1) Determine if there is an adequate number of trained swiftwater rescue personnel on scene to do the rescue/recovery in a safe manner.
- (2) Assign a Rescue Group Supervisor to oversee all of the rescue efforts and to be the technical liaison to Command.
- (3) Consider the effect of temperature/weather extremes on personnel, and consider early rotation of personnel operating on scene.

b. Equipment

- (1) Determine if the proper equipment is on scene to complete the operation.
This may include:
 - (a) Rescue 1
 - (b) Swiftwater personnel protective equipment
 - (c) Throw bags/rescue lines.

c. Plan

- (1) Establish formal command post.
- (2) Establish a written “search plan”, using a tactical worksheet.
- (3) Prepare drawing(s) of the rescue area.
- (4) Activate a systematic search
- (5) Share learned information with relief crew(s)
- (6) Extended operations require transfer of command and “search plan”.

- d. Consider requesting a helicopter for the task of aerial recon for spotting hazards.

D). TACTICAL CONSIDERATIONS: PHASE 2 - PRE-RESCUE OPERATIONS

- 1. Make the general area safe.
 - a. Assign and provide accountability.
 - b. Secure the area and provide site control.
- 2. Make rescue area safe.

- a. All personnel operating at or near the water shall be in proper personal protective equipment (PPE) which will include at a minimum: personal flotation device (PFD), approved water rescue helmet, and approved footwear.
- b. Identify hazards that are present which include but are not limited to:
 - (1) The volume of water.
 - (2) The velocity of the water.
 - (3) Debris in the water.
 - (4) Hydraulics.
 - (5) Depth of the water – rising / falling.
- c. Assign personnel upstream. Rescue personnel shall be assigned upstream to advise of any upstream hazards that may affect the rescue operation.
- d. Assign personnel downstream.
 - (1) Assign personnel downstream with throw bags, preferably on both sides (river right and river left, minimum of 2 people).
 - (2) Be prepared to rescue victims and rescuers that may be swept downstream.
 - (3) Personnel should place themselves in a position that will allow the rescuer to belay the victim into a safe location.

E). TACTICAL CONSIDERATIONS: PHASE 3 - PRE-RESCUE/RECOVERY

- 1. Depending on the action plan established, Command shall establish the Rescue Group Supervisor. The Rescue Group Supervisor will be responsible for gathering all equipment and personnel necessary to operate according to the action plan.
- 2. The Rescue Group Supervisor will assign personnel to conduct and support the rescue operation as the incident enters the rescue phase.
- 3. Rescue operations will not begin without a “Water Safety Team” in place. The Water Safety Team, at a minimum, shall be equipped with PFDs, helmets, throw bags, gloves, boots, Dry suit, and personnel safety devices.
- 4. The Rescue Group Supervisor should develop an alternative action plan that can be communicated to all personnel operating in the rescue area should the initial action plan become compromised.

F). TACTICAL CONSIDERATIONS: PHASE IV - RESCUE OPERATIONS

- 1. Complete a risk versus benefit model on the victim. When actions are directed towards the rescue of a victim that has a high probability of survival, rescuers may be subjected to high risk environments. It is reasonable to face calculated risks in order to save a life. When actions are directed toward the rescue of victims who have a low probability of survival, rescuers may be subjected to moderate risk environments. When actions are directed towards body recovery, rescuers should be subjected only to low risk environments.

**RISK NOTHING FOR PEOPLE AND PROPERTY THAT HAVE
ALREADY BEEN LOST.**

2. Ensure that properly trained personnel are designated to make the rescue.
3. Assure that for every person involved in the rescue, there is at least one rescuer ready as a backup. EXAMPLE: Two rescuers; two back-ups.
4. Rescue options will be considered in order from low to high risk
5. "TALK-REACH-THROW-ROW-GO-HELO" shall be the proper order of execution to effect rescue.
 - a. **Talk-** the victim into self-rescue. If possible, the victim can be talked into swimming to shore or assisting the rescuers with his/her own rescue. If a victim is stranded in the middle of a flash flood, this will not be prudent.
 - b. **Reach-** the victim with whatever means possible (pike pole, ladder, stick, rope, inflated fire hose).
 - c. **Throw-** utilizing the rope bags, throw the rope to the victim and then pendulum belay the victim to shore.
 - d. **Row-** utilizing a boat that may be available at the scene. Personnel familiar with boat operations must be utilized.
 - e. **Go-** utilizing a rescuer in the water to complete the rescue.
 - f. **Helicopter-** At times the use of a helicopter is the most reasonable method of reaching the victim. Helicopter operations over water are high-risk operations. Command should consult with Rescue group supervisor and the pilot to determine the risk/benefit of the use of a helo. If the pilot says he/she can do the operation, Command should consider it.
6. Additional Considerations
 - a. HEAT. Consider hydration issues and rotation of crews.
 - b. COLD. Consider the effects of hypothermia on victim and rescuers.
 - c. RAIN/SNOW. Consider the effects of rain or snow on the hazard profile.
 - d. TIME OF DAY. Is there sufficient lighting for operations extending into the night?
 - e. Consider the effect on family and friends; keep family informed.
 - f. Consider news media; assign a Public Information Officer (PIO) or establish a Joint Information Center (JIC).

G). TERMINATION OF THE INCIDENT

1. Command should begin termination as soon as possible after the victim has been removed from the water. This shall include securing all the equipment used for the rescue and personnel accountability. This may also include witnesses, photos, victim's personal effects, or equipment used in the rescue.

2. Command should consider the psychological impact of a Potentially Traumatic Event for extraordinary or extended operations. Consider utilizing the Response to a Potentially Traumatic Event SOG.
3. Prepare for Termination
 - a. Personnel accountability.
 - b. Equipment accountability.
 - c. If there has been a fatality, Rescue group leader may consider leaving equipment in place for investigative purposes.
 - d. On-scene cleaning and decontamination operation.
 - e. On-scene debriefing (hot wash).
 - f. Secure the scene.
 - g. Return unit(s) to service.

V. Training

- A). All Training levels should be compliant with NFPA 1670 and NFPA 1006 standards
 1. Swiftwater Awareness
 2. Swiftwater Operations
 3. Swiftwater Technician
- B). All members trained in Swiftwater Rescue at the Operations or Technician level shall be required to complete an annual swim test in a controlled environment. Each member shall complete:
 1. A 500 yard swim, uninterrupted without the use of a PFD or touching the bottom of the pool.
 2. 10 minutes of treading water without the use of a PFD or touching the bottom of the pool.
- C). All Swift water members are required to participate in NO less than two required continuing education training a year to maintain their status a Swiftwater member.

V. Responsibility:

It is the responsibility of all members to read, understand and follow this Standard Operating Guideline

Revision History			
Revision Date	Section	Summary	Principal Author
		Initial release of document. No prior document existed.	Lt. Aumand