Loveland Fire Rescue Authority
410 East 5th Street
Loveland, Colorado 80537
(970) 962-2471 Fax (970) 962-2922 TDD (970) 663-5144
www.cityofloveland.org

SHORE BASED DIVE OPERATIONS (1.1)

Matthew Hintzman
September 2015
NFPA 1670 Standard on Operations and Training for Technical Rescue Incidents

TASK SKILL DESCRIPTION AND DETAIL

Shore based dive operations should be set up in an efficient manner utilizing all means necessary to affect a possible rescue of the victim.

Shore based dives are limited to the reach of our comm lines which are approximately 200 feet. If the last seen point is beyond 190 feet a boat based dive may be performed if conditions allow.

The first arriving company will need to establish a safe and secure scene. This entails getting all non-divers out of the water. Everyone but the actual witness(es) should be removed from the scene.

Last Seen Point

Use the witness(es) to establish a "Last Seen Point."

A "Last Seen Point" is the point in the water where the victim was last seen by a witness.

Once this has been established use some type of marker to mark the location the witness was located when the incident happened. Also have the witness use an object from across the water to line up the last seen point with. If there is more than one witness have both witnesses set up a last seen point for triangulation.

Support Positions Needed

- **Tender**
  A tender's job is to get the equipment needed for the diver as close to the water's edge and location of the dive as possible. After the diver has suited up, the tender will establish communications with the diver and will be responsible for the diver's safety, interacting with the Rescue Group Supervisor about things the diver has found and documenting the time the diver went in, how much air was in their cylinder, and maintaining communications with the diver.

Dive Positions Needed

- **Primary Diver**
  The primary diver's objective is to perform a search and find the victim. The primary diver should keep the tender's line tight to ensure that the search has been completed.
- **Back Up Diver**

The backup diver responds to the primary diver's need for assistance. The backup diver is positioned as close to the primary diver's tender so he/she can deploy down the primary diver's line for immediate assistance to that diver.

- **90% Diver**
  The 90% diver steps into the back up diver's position if the backup diver is deployed to assist the primary diver. This diver should be 90% ready to go and close to the backup diver's location near the primary diver's tender.

Communications

- **Shore to Diver Communication**

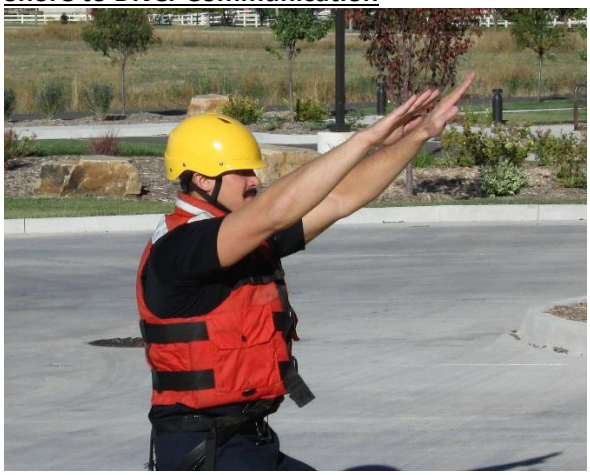
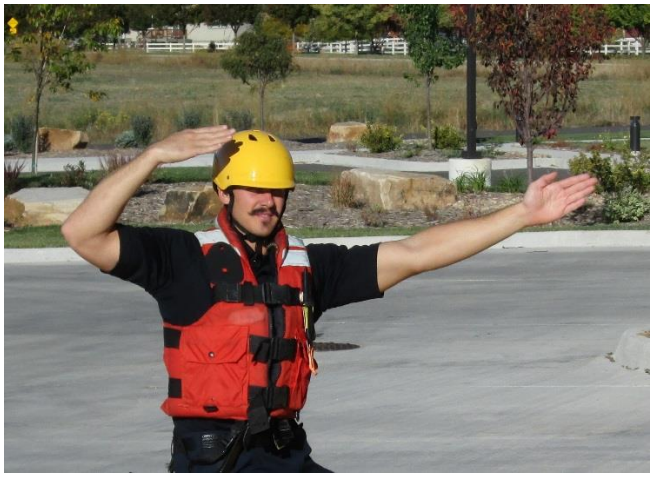


Photo 1. Head to Far Shore

Loveland Fire Rescue Authority
410 East 5th Street
Loveland, Colorado 80537
(970) 962-2471 Fax (970) 962-2922 TDD (970) 663-5144
www.cityofloveland.org

Photo 2. Head to near shore

Photo 3. Swim this direction (Left)



Loveland Fire Rescue Authority
410 East 5th Street
Loveland, Colorado 80537
(970) 962-2471 Fax (970) 962-2922 TDD (970) 663-5144
www.cityofloveland.org

Photo 4. Swim this direction (Right)

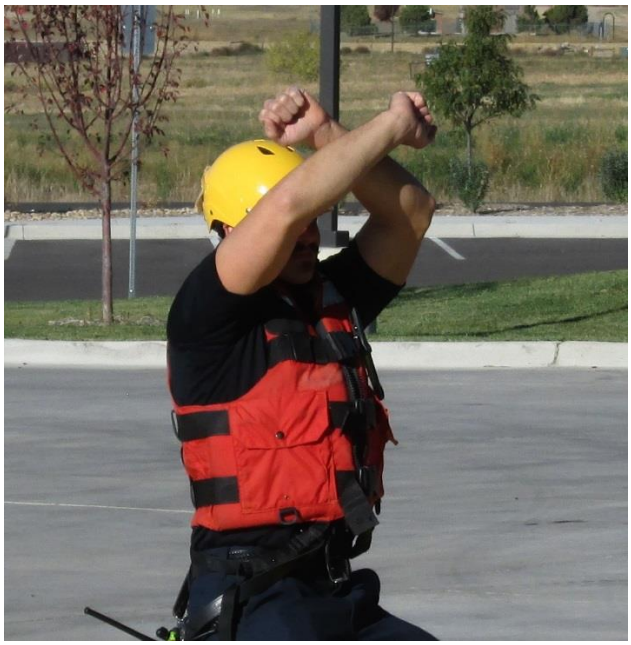


Photo 5. Stop

- **Line Signals**

  Tender to Diver:
  1 pull: Okay?
  2 pulls: Stop, take out slack and reverse direction
  3 pulls: Come to the surface
  4 pulls: Stop, do not move

  Diver to Tender:
  1 pull: Okay?
  2 pulls: Need more line
  3 pulls: Object found (Official time)
  4 pulls or more: Diver needs assistance

- **Comm Line**

Loveland Fire Rescue Authority
410 East 5th Street
Loveland, Colorado 80537
(970) 962-2471 Fax (970) 962-2922 TDD (970) 663-5144
www.cityofloveland.org

Comm line attaches from the Diver's mask to the comm line. The comm line attaches to the tender's comm box. The tender communicates to the diver via his/her headset. (See Below)

Radio Traffic and Benchmarks

At the mark of one hour of dive operations, the Rescue becomes a Recovery. Proper transition must take place.

- **Divers in the water**
  The backup diver should be ready for entry prior to the primary diver making entry. If there is a known rescue, the primary diver can enter the water when the backup diver is 90% ready.
- **Victim Removed**
  Once the diver finds the victim, the diver should ask the tender for "official time." If using the tender line for communication the diver would give 3 pulls to the tender to signify "object found."
- **Divers out of the water**
  Rescue Group Supervisor notifies Command that the divers are all out of the water.

Search Patterns

Conditions that have an effect on the search pattern:

- Visibility -During the initial bounce dive, establish the visibility. This will be relayed to the tender. This way the tender only lets out that distance on the line when the primary diver is performing his/her pattern
- Depth-This will establish the search corridor
- Bottom Contour- If there are obstacles on the bottom that the tender line is getting

hung up on, a buoy can be placed on the line to lift the line over those obstacles.

- Size of the Object

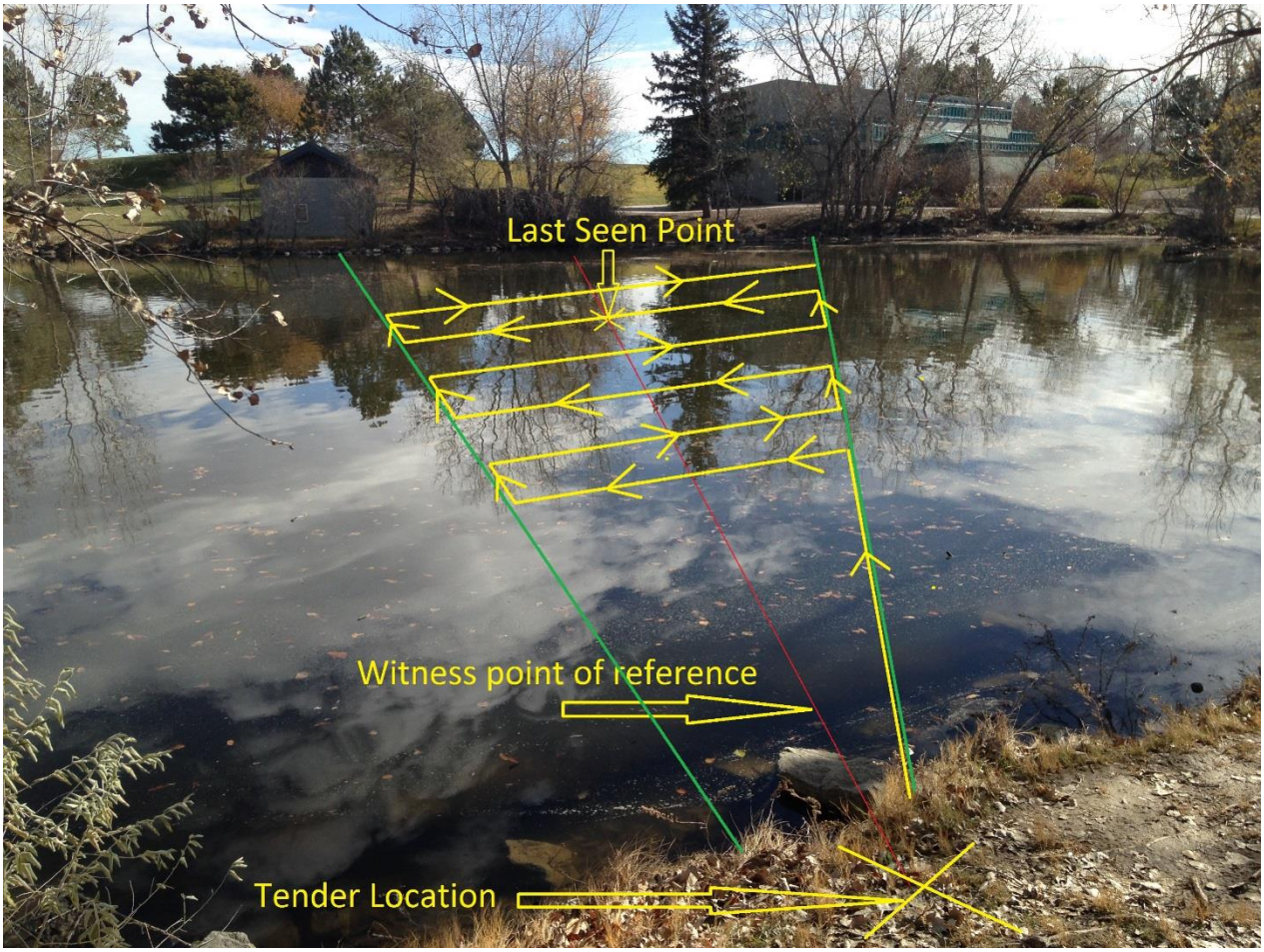
If the last seen point can be established the primary diver will begin there with a bounce dive and perform a search of the area. If nothing is found the primary diver will surface and swim back towards the shoreline to initiate his/her search pattern. The distance will be determined by the depth of the bounce dive multiplied 1.5 times. An example would be a 10 foot bounce dive. The diver will surface and be brought a minimum of 15 back towards shore and initiate the pattern.

The minimum distance the diver comes back towards the shore is based on the depth od where the bounce dive took place. Add another 105

Sweep Pattern

- Starts about 2/3rd of the way from shore to the last seen point.
- Tender stays stationary while the diver swims in an arc pattern away from the tender
- The diver must keep the line tight to ensure the search is being completed effectively
- The diver performs his/her pattern within the search corridor established by the tender.
    - The search corridor is figured out using the depth of the water.
    - An Example: If the depth is 10 feet. The search corridor is ten feet to the left and ten ffet to the right of the last seen point. This would make the corridor a total of 20 feet side to side.

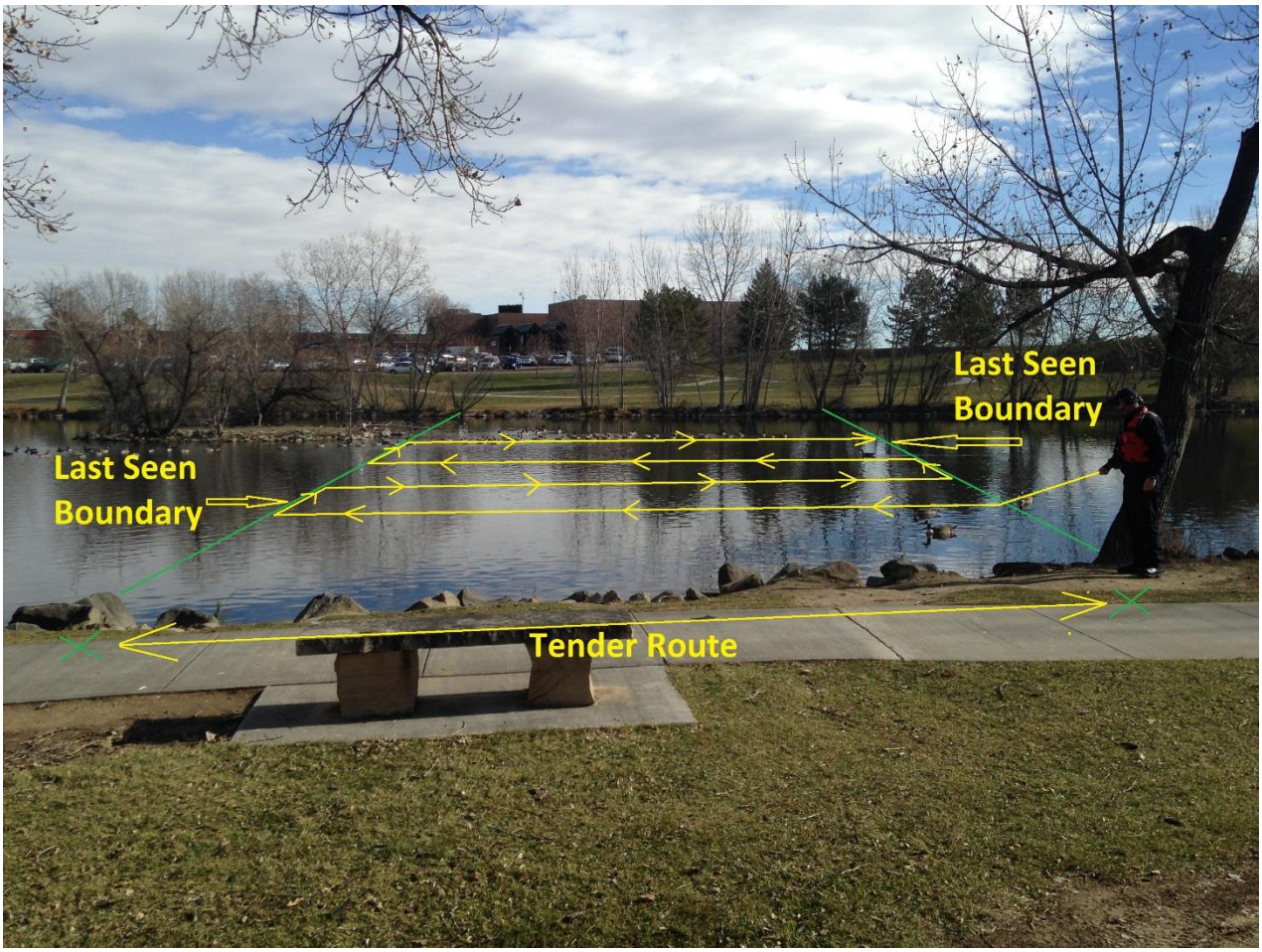
Loveland Fire Rescue Authority
410 East 5th Street
Loveland, Colorado 80537
(970) 962-2471 Fax (970) 962-2922 TDD (970) 663-5144
www.cityofloveland.org



Shore Based Parallel Pattern

- Covers a large area close to shore when the last seen point is not well established
- Tender walks back and forth between points on the shore while the diver keeps the line tight swimming parallel to the tender.
- Once the tender reaches one established point the tender stops the diver, lets out more line, and turns the diver in the other direction. The tender then continues back to the previous point on shore.

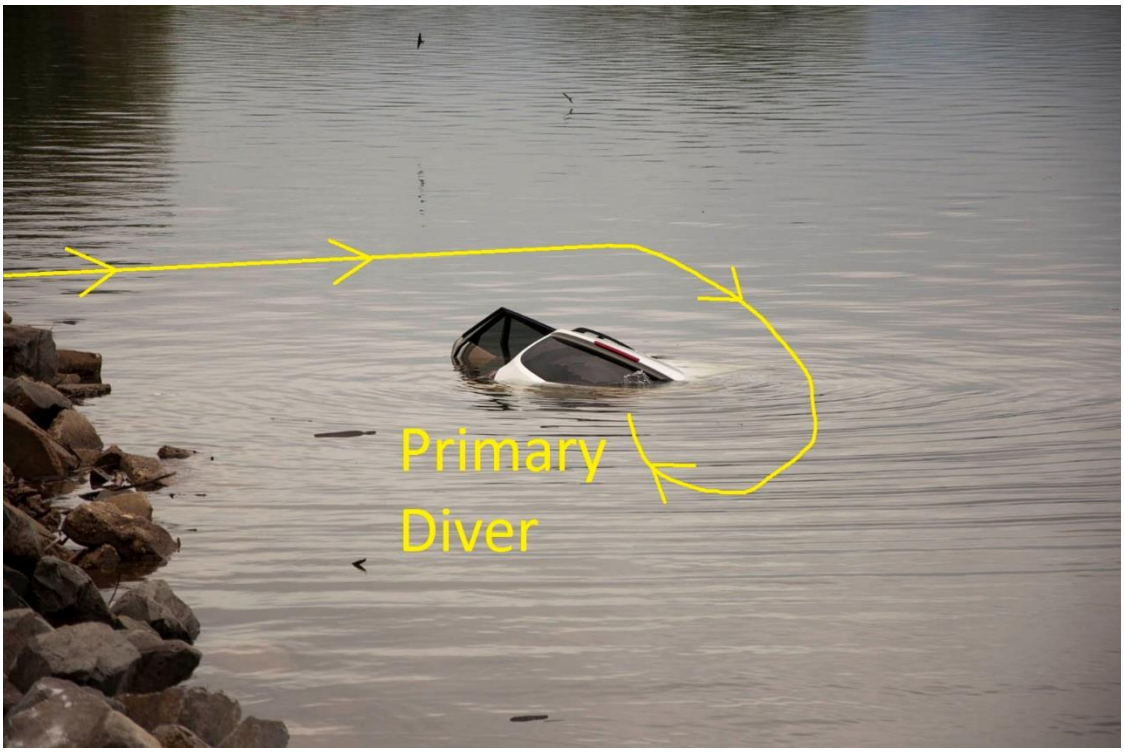
Loveland Fire Rescue Authority
410 East 5th Street
Loveland, Colorado 80537
(970) 962-2471 Fax (970) 962-2922 TDD (970) 663-5144
www.cityofloveland.org



Snag Pattern

- Objective is to catch the tender's line on a large object on the bottom
- The primary diver takes an excess of slack and swims straight out from shore.
- The primary diver keeps the line close to the bottom of the body of water and turns towards the direction of the object.
- The tender's line should snag on the object. When the line snags, the primary diver will swim back up the line towards the object to make an identification.

Loveland Fire Rescue Authority
410 East 5th Street
Loveland, Colorado 80537
(970) 962-2471 Fax (970) 962-2922 TDD (970) 663-5144
www.cityofloveland.org



Emergency Procedures

- If a diver encounters an emergency situation the best thing for the diver is to: ***Stop, Breathe, Think, Act***
- Notify the diver's tender by giving 4 or more pulls on the tender line or by notifying the tender using the comm line that the diver has encountered a problem.
- The diver must be comfortable and be able to solve the problem underwater.
- The tender should notify the Rescue Group Supervisor of the emergency. The backup diver may be sent to assist the initial diver by following the tender's line of the primary diver. The 90% diver should be moving up to the backup diver position.

TASK SKILL INSTRUCTIONAL REQUIREMENTS AND IMPLEMENTATION

- Minimum of gloves and radios should be worn for shore support personnel.
- Shore support personnel should have a PFD on their person if tending near moving water.

Loveland Fire Rescue Authority
410 East 5th Street
Loveland, Colorado 80537
(970) 962-2471 Fax (970) 962-2922 TDD (970) 663-5144
www.cityofloveland.org

Reference Information

This heading includes information about the following:

- NFPA 1670 Standard on Operations and Training for Technical Rescue Incidents
- Dive Rescue Operating Guide, Loveland Fire Rescue Playbook
- Dive Rescue Specialist By Steven Orusa, Diver Rescue International
- Public Safety Diver, Initial Training for Public Safety Divers, Dive Rescue International