

# Incident Commander's Guide to Sump Rescue

July 2026



Michael A. Raymond – [mraymond@caves.org](mailto:mraymond@caves.org)

## 1. Introduction

- a. This guide exists to help the incident command team during a sump rescue. In a sump rescue, you have patients who cannot exit a cave or mine because they are stuck beyond a flooded passage (sump). This guide will introduce you to the special equipment and personnel involved, and how to manage it. Solutions include the use of scuba divers, who have a low probability of success and have high risks, but may be your only chance of rescuing the patients.
- b. There are two kinds of sump rescue incidents. In a **temporary sump** incident, something caused water to fill the cave tunnel while the patients were beyond it. The water is expected to recede in the next few days. There is a risk that patients may drown, suffocate, or freeze to death before that happens.
- c. In a **permanent sump** incident, water has always been in the tunnel. Scuba divers swam through the tunnel and were operating beyond it when something happened to prevent their return. This may have been a problem with the tunnel, their equipment, and/or the patients themselves. The water will not recede on its own.
- d. Sump rescues are different than most other rescues in several ways. If you choose to use scuba divers, you will have an extremely **limited pool of divers** who can perform the task. While they are operating, you will likely **not have any communication** with them for many hours at a time.
- e. It is critical to understand that in the diving world, anyone can cancel the dive at any time and for any reason, without any repercussions. This standard must be maintained.

## 2. First Step

- a. Contact the local coordinator of your country's cave rescue organization. They can provide advice and trained personnel to work for you.
- b. In the U.S., this is the National Cave Rescue Commission (NCRC). Contact information is at <https://caves.org/ncrc/staff/>.

## 3. Rescue Options

Your approach to managing the rescue will be heavily influenced by whether the patients are trapped by a temporary or permanent sump. You will use different techniques for each of the four FAST phases of **Finding** the patients, **Accessing** them physically, **Stabilizing** them for movement, and **Transporting** them out of the cave / mine.

|                  | <b>Temporary Sump</b>                                                                                                                        | <b>Permanent Sump</b>                                                                                                                                                                                                                |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Find</b>      | Assume the patients are beyond the sump                                                                                                      | You must also search underwater in case they drowned swimming through the sump                                                                                                                                                       |
| <b>Access</b>    | The same as with permanent sumps, except that you may also be able to wait for the water to recede.                                          | Attempt to gain access by finding an alternate dry route, removing any blockages damming the water, digging a new tunnel, drilling a new tunnel, pumping out the water, and/or diverting incoming water before sending scuba divers. |
| <b>Stabilize</b> | Support the ability of the patients to camp in the cave until the sump is no longer a problem. This may mean daily resupply trips by divers. | Attempt the rescue with two scuba trips. The first will determine what problem kept the patients from leaving, and deliver minimal supplies. The second will solve the problem and evacuate the patients.                            |
| <b>Transport</b> | If possible, don't evacuate the patients until they can keep their heads above the water.                                                    | Unless an alternate entrance has been created, patients will need to be scuba dived out of the cave.                                                                                                                                 |

#### 4. Information Gathering

##### a. Information to help decision makers

- i. What indicators are there that missing people might be beyond the sump?
- ii. Is the water in the sump rising or dropping, and how quickly?
- iii. Is the water flowing or relatively still?
- iv. Does the water appear clear or muddy?
- v. What parts of the cave / mine are flooded or impassible?
- vi. What challenges to moving bulky scuba equipment exist along the path to the sump?
- vii. Where are the low parts of the underground area along the way to the sump that may also flood?
- viii. What does local knowledge say about the cave / mine, known air spaces, flood durations, and historical rescues?

- ix. For each of the missing persons, what are their known medical considerations, heights, weights, and what is their experience level with caving / mining, swimming, and scuba diving.

b. Information to help divers

- i. What is the water temperature?
- ii. How much dry area is available near the sump to gear up at?
- iii. How far is the sump from the cave / mine entrance?
- iv. Are there any tight areas that divers would have to swim through?
- v. How deep is the water? If this is well known cave / mine, how far has the water risen above its normal level? This can be in ranges, e.g. 5 – 10 meters or 30+ meters.
- vi. How long is the sump? This usually requires a pre-existing map.
- vii. Is there a guideline through the sump?
- viii. Are the missing persons suspected to be behind recently flooded passage or did they scuba dive to behind a long-standing sump?
- ix. If the sump is the result of recent flooding, what was the passage like when it was dry?

5. Recruiting and Evaluating Divers

- a. Only use divers certified at the level of Full Cave with sidemount experience. Refer to your National Cave Rescue Commission (NCRC) regional coordinator for their callout list.

6. Logistics & Specialty Equipment

- a. Scuba divers may arrive with limited supplies. You can help them by getting items from your local scuba shop.
  - i. Scuba tanks with DIN valves
  - ii. Dive weights – preferably solid lead and weighing 5 pounds each
  - iii. Charged 18650 and 21700 batteries
- b. Your fire department may have a truck or equipment at their facility to fill scuba tanks with breathing gas. They will need a DIN adapter, as fire fighter air tanks use a different valve type.

7. Additional Resources

- a. See <https://www.steelclan.org/SumpRescue/> for more information.