2016 Missouri Mine Rescue Contest
Rolla, MO.
Problem Solution Day #2
(See Solution Maps)

FAB

The teams will arrive at the FAB and have introductions, the team will also be informed that they will be able to string out their communication line but will not be able to check functionality until they have started the clock. Once the clock has been started the team will receive all of their Maps, Information, Previous Exploration Map, and Mine Manager statement.

Team Stop #1

Teams will explore the FAB area and identify the #2 Permanent Stopping W/ Door (closed), Building Materials, the #2 Air Shaft (Fan ON and Blowing), Caved Tight, Foam Generator, Direction and Quantity of Ventilation, and #1 Permanent Stopping w/Door (open) where ventilation is passing through into the east side of the mine . Since the team does not know the conditions behind the permanent stopping door, they will need to use building materials to create an airlock to enter the S. Access drift.

Team Stop #2

Teams will identify a Heavy Smoke placard and most likely conduct their 50'check. Stretching west the team will identify the #2 Sump (empty) and also an area of Caved Tight.

Team Stop #3

Continuing exploration the team will identify Utility Lines (Air & Water) on the left rib and Fire Extinguishers (2) on the right enrout to the intersection. Exploring the intersection the team will identify a Heavy Smoke placard and a Barricade. Knocking on the barricade the team will make contact with Joe D., he will inform them that the air inside is ok, he is not injured, and he will ask if he can open the barricade. Teams will inform him that they have a irrespirable atmosphere and he should wait for them to enter the barricade.

Team Stop #4

The team will continue exploration west in the N. Access drift. Teams will identify a Powder Truck on Fire, since the fire condition is **NOT** "Fire Out of Control" or "Intense Heat", this will be considered a combatable fire. The team may choose to use their Fire Extinguishers, but this will not put out the fire. The team may also choose to retreat to get the other (2) fire extinguished that they found, if they choose to use these fire extinguishers on the fire the fire again will remain ON. The team will need to retreat to the FAB and get the Foam Generator to extinguish the fire. Once the team has taken the Foam Generator to the fire and expressed to the Judge their desire to utilize this unit, the Fire will be extinguished and the judge will inform the team that the foam has also dissipated.

Team Stop #5

The team will identify a gas placard and stretching east in the S. Access drift they will identify Caved Tight.

Team Stop #6
The team will most likely continue exploration into the N. Access drift, identifying a Ventilation Door (open), another Heavy Smoke Placard, Unsafe Rood with (2) installed Roof Jacks. The team will be able to enter this are that has been previously supported but will encounter Water Over Knee Deep and they will also identify Unsafe Roof & Rib. The team will not have the means to pump the water, so they will retreat to continue exploration.

Team Stop #7
The team will continue exploration into the S. Access drift to the next intersection. The team will identify a Heavy Smoke Placard and a Permanent Stopping. They will continue exploration into the S. Access drift.

Team Stop #8
The team will explore the next intersection and identify and are marked Water Ankle Deep, a Light Smoke Placard, and stretching into the drift they will identify and area of Unsafe Roof. The team will discover miner Jack. H #1055 underneath the area but does not have the means to support the area to access Jack. The team will also identify the Caved Impassable areas and continue exploration.

Team Stop #9
The team will explore into the N. Access drift to the next intersection and identify that they are now in Heavy Smoke and also find the #4 Sump (full).

Team Stop #10
The team will continue exploration identifying a Heavy Smoke placard enroute as well as next to the Shop Door (closed). The team will knock on the door and they will get no response.

Team Stop #11
The team will continue exploration until they reach Water Over Knee Deep and since they have not identified how or where to pump the water they will retreat and continue exploration in the N. Access drift.

Team Stop #12
The team will explore identifying the #1 Air Shaft, Light Smoke, and the Caved Impassable area. Team will have explored all accessible area of the mine to this point and will look to making a ventilation change to access the Barricade.

Ventilation Change to enter the Barricade (See attached map)
The team will request the ventilation change, once granted the following step will be necessary to enter the refuge chamber. (see attached map)

Team Stop #13

Inside the Barricade the team will find Joe D., a Power Center, and identify the backside of the Caved Tight area. The team will take Joe D. to the FAB. The team will also need to execute the proper water pumping solution in order to access the unexplored areas of the mine. they will find pump controls for the #3 Sump and the #4 Sump, they will need to pump the #3 sump to the #2 Sump to properly lower the water level at the #3 Sump area. Note: If the team pumps the water from the #3 Sump to the #4 Sump they will flood the area and Jack will be endangered.

Team Stop #14

The team can now explore this are, identifying Roof jacks (12), the #3 Sump (full), Line Brattice, and Unsafe Roof & Rib. The team should now choose to support the area where Jack H. is located since they now have the means to do so. The team will retreat to S. Access drift and utilizing the techniques outlined in the rule book, they will access jack H. upon examination they will identify that Jack is deceased. The team will still not be able to enter the Shop due to the concentrations of gasses outside of the door, so they will examine the Unsafe Roof & Rib. Utilizing the Roof Jacks they will dual support the area and tie in the unexplored area. The team should now plan to make their second ventilation change.

Ventilation Change to enter the Shop (See attached map)

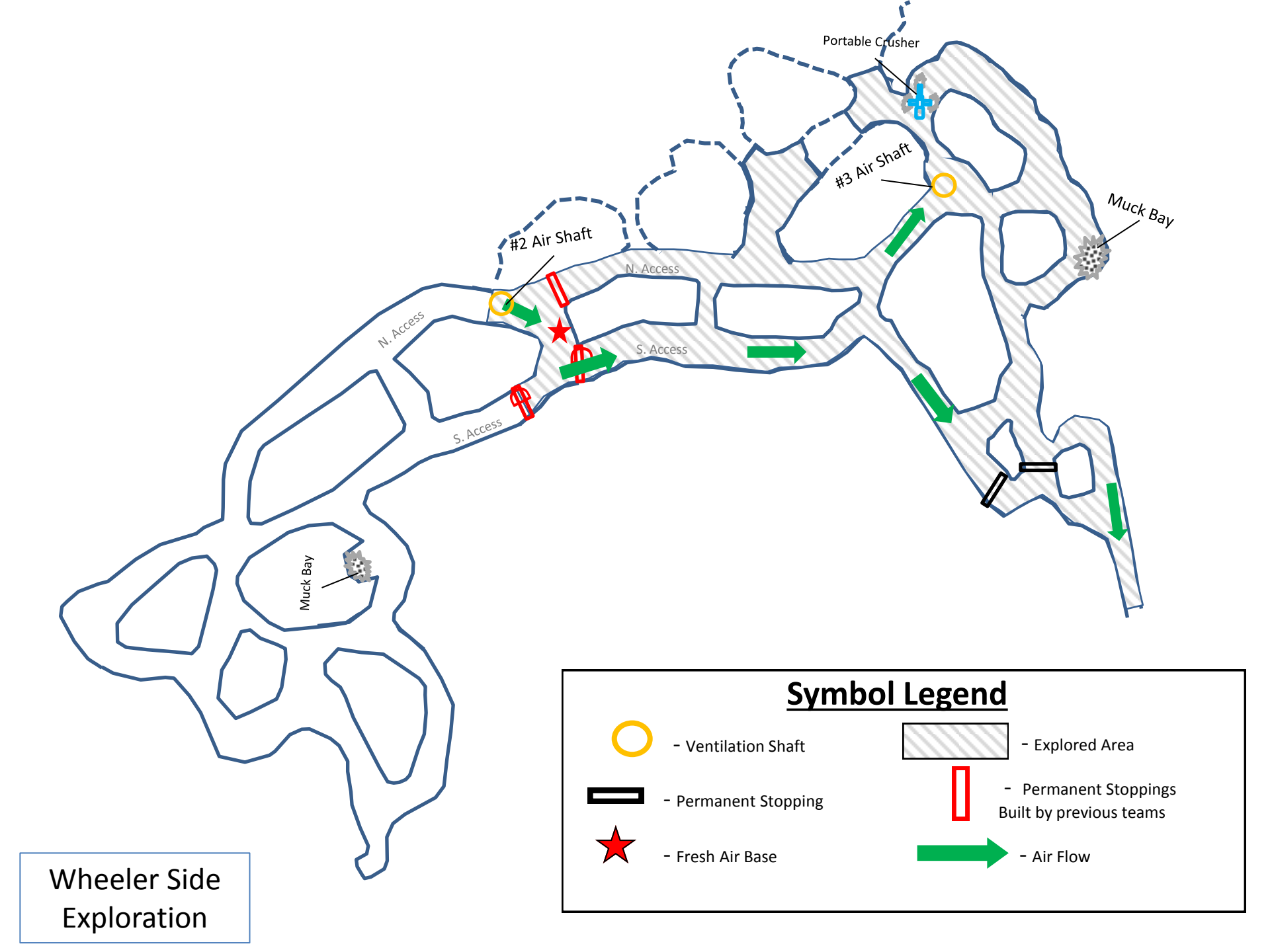
The team will request the ventilation change, once granted the following step will be necessary to enter the refuge chamber. (see attached map)

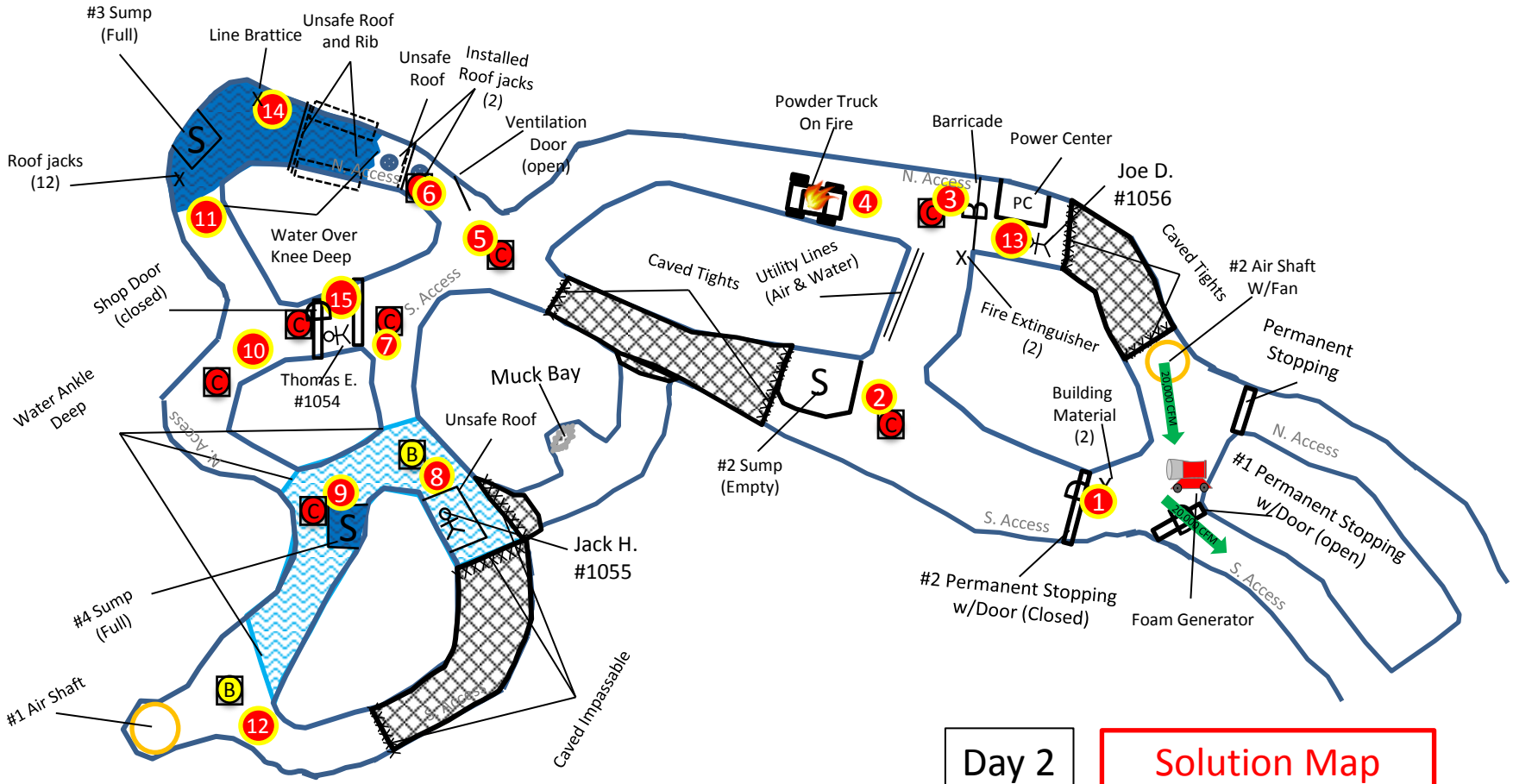
Team Stop #15

Entering the Shop, the team, will identify Thomas E., he will inform the team that he is ok and he can walk. The team will take Thomas to the FAB. They will notify the Mine Manager that they have met all of their objectives and stop the clock. THE END

Mine Manager Statement
Day #2

Thank you for coming back on such short notice. Here is an updated map of the mine that includes the progress of the teams to this point. I have also been informed that the #2 Air Shaft Fan output has dropped from 50,000 cfm to around 20,000 cfm. We still have not been able to communicate with anyone inside the mine. I will provide any updates to your captain if anything changes. Good Luck!


Portable Crusher
#3 Air Shaft
Muck Bay
#2 Air Shaft
N. Access
N. Access
S. Access
S. Access
Muck Bay
Symbol Legend
- Ventilation Shaft
- Explored Area
- Permanent Stopping
- Permanent Stoppings Built by previous teams
- Fresh Air Base
- Air Flow
Wheeler Side Exploration



Day 2

Solution Map

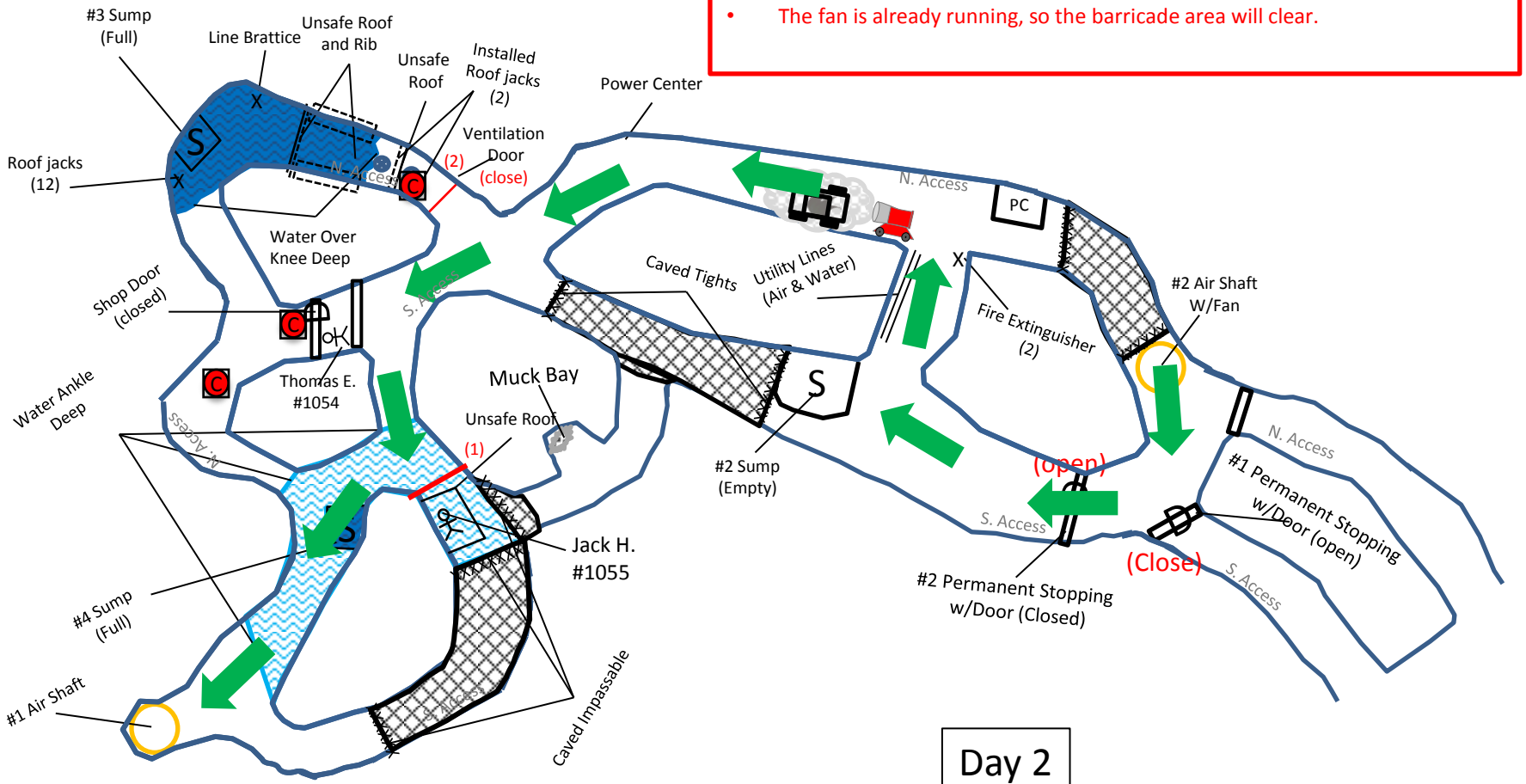
Kennedy Side

GAS PLACARD KEY

- A = Clear air
- B = 18.5 % O_2, CO - 1000 ppm, CH4 – 0%, Light Smoke
- C = 16 % O_2, CO - 4000 ppm, CH4 – 0%, Heavy Smoke

Ventilation Change #1 to enter the Barricade & Accesss the power Center

- Built Temp Stopping (1) to protect the miner under the unsafe roof.
- Close the ventilation door (2).
- Open the #2 permanent stopping door.
- Close the #1 permanent stopping door to direct ventilation into the mine.
- The fan is already running, so the barricade area will clear.



Day 2

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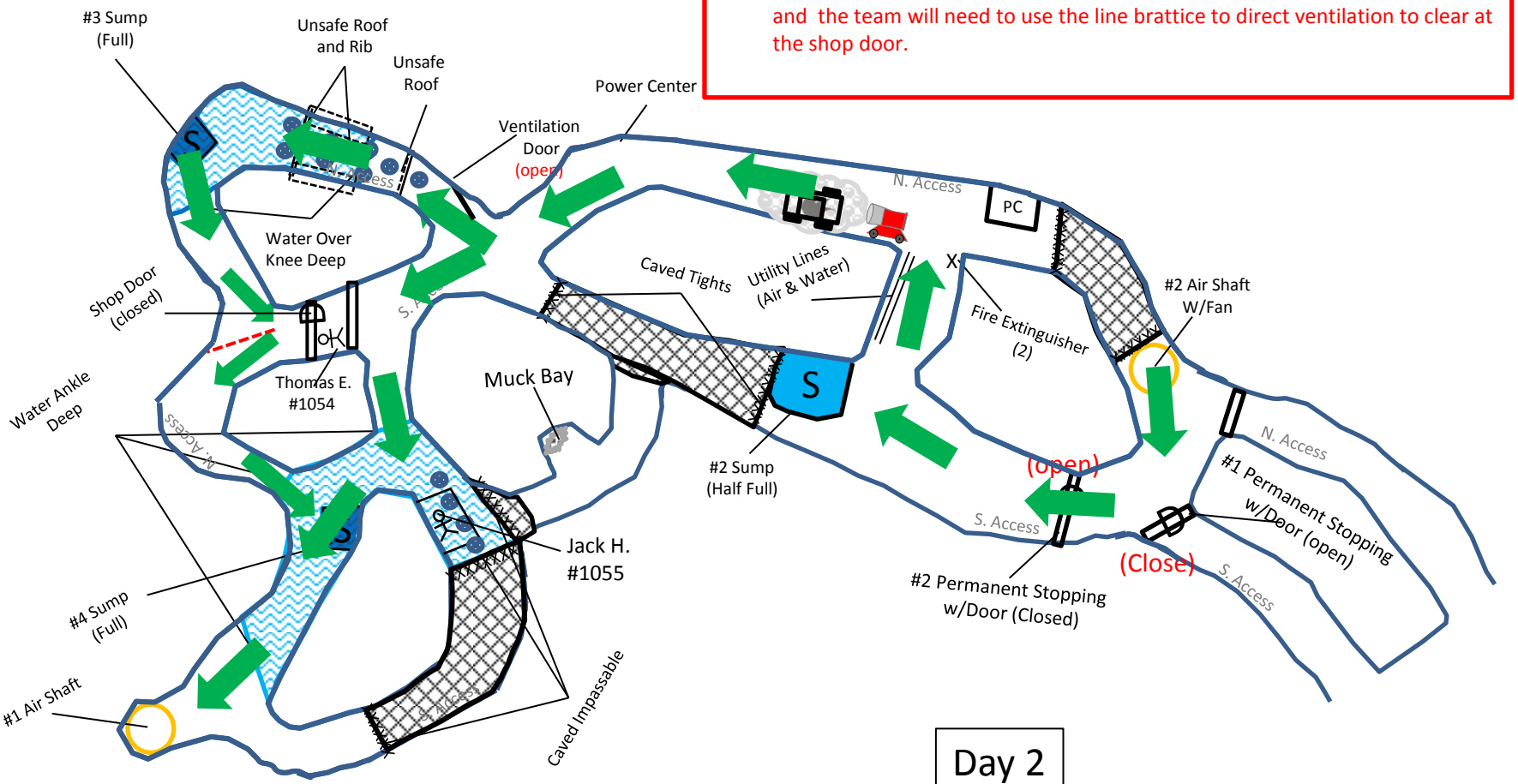
Ventilation Change #2 to enter the Shop Door

- Open the ventilation door.
- Open the #2 permanent stopping door.
- Close the #1 permanent stopping door
- The gas concentrations in the N. Access drift next to the shop door will clear and the team will need to use the line brattice to direct ventilation to clear at the shop door.



Day 2

Kennedy Side

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Light Smoke

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CO - 4000 ppm
CH4 – 0%
Heavy Smoke