

## **Walkers Mill Cave: Scouting, July 19, 2010**

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On July 19th two Summer Scholars met with Chuck Hilpert, the maintainer of the Walkers Mill Cave outside of Carnegie, PA. He brought them inside the cave where they were able to evaluate it's potential use for sensor characterization in unstructured environments. Subsequently Chuck gave open access for the duration of the project. The cave is small but adequate for testing a variety of sensors in a natural environment.

Note that all dimensions used in this document are only approximations. In some cases a measuring tape was used (ie. dimensions of the entrance and corridor), but others are rough estimates.

The length of the cave is about 34 meters (110 ft). The entrance [fig 1] is small and goes through a locked gate with width and height of 0.9 x 0.76 meters (36x30 in). The length of the entrance is 3 meters (10 ft) and opens up into a corridor [fig 2] with varying width (1+ meter) and height of 1.6 m (5 ft 6in) . This corridor is open for roughly 15 m (50 ft) before it bends and comes to a final pinch [fig 3].



Figure 1. Walkers Mill Cave Entrance



Figure 2. Main corridor



Figure 3. (a) Bend (b) Pinch

There are a couple of boreholes leading to the surface and a small room to the right side after going through the entrance [fig 4]. The room requires fitting through a small hole of dimensions 0.6x0.6 meters leading downwards about 1 meter. The room fits one to two people tightly.



Figure 4. Side room

Assuming all power equipment fits through the entrance, Walkers Mill Cave is a small but suitable location for sensor testing. Note that a wagon may only be of minor use. If mounts are available, a tripod would be manageable for setting up sensors. The whole cave is composed of sandstone. This limits the characterization to using sensors for determining metrics such as accuracy but not for detecting differences in various material compositions.

The ceiling is in fine condition, however, Chuck specifically stated that it should not be touched; Chips come off easily if touched. The cave is damp but not wet. Supposedly the back borehole leaks lots of water at certain times of the year.

There is some minor wildlife in the cave. There were numerous white spotted salamanders. According to Chuck, after the cave was opened to the public the salamanders went into hiding. In one case several years ago there was a bat in the cave. Because of the small size and close proximity to the outside world the temperature varies by a greater amount than larger caves. It stays around 53 degrees Fahrenheit (10-15\* C) throughout the year. The cave opened in 2001 but has not been visited in over a year.

A key was given to Colin with an agreement that anytime the group wants to access the cave we call or text message Chuck. Call before entering and again after the group leaves. There must be a minimum of two people in a group. Access is granted any time of day for as much time as necessary. If anyone asks, the group has permission through Chuck Hilpert and the Collier Township commissioner knows about this access.

While access is given almost unconditionally, Chuck had two things he would appreciate. If



possible he would like a model of the cave based on our data (If nothing else, pictures of the point clouds or meshes would probably be welcome). Additionally, he would like at least one of us to give a brief (~10 min) presentation to the Pittsburgh Caving organization he belongs to. More details about when they meet will be sent to Colin. It sounded very informal; the meetings generally only gather about 6 people. The goal of this is to add to the culture and to let people know what others are doing in the caves.

In the past cave-goers have drawn topographical maps of the cave. Chuck is going to look for digital copies of these and will email them to Colin.

Access to the cave requires a short walk, partly up the side of a hill. Park your car next to the gate in the alleyway past the intersection of Noblestown Rd and Walkers Mill Rd (see Google Maps link below). It is located in the Township of Collier but is addressed at Carnegie, PA. During rush hour it took 50 minutes to reach the cave from near Carnegie Mellon (4:40pm - 5:30pm) and on the way back, leaving around 7:20, it took a little over 20 minutes.



Once on site, walk past the gate and follow the woods on the right hand side. Behind the dirt housing (Not pictured) walk into the woods. Go towards the right and up the hill. There should be a lightly walked path leading to the cave's entrance. The blue line pictured above should be a good indicator. Once in the cave there is a locked gate. This can be opened by the key given to Colin.

Many pictures were taken by Colin and Haoming. These are located online at the website below.

*Noblestown Rd and Walkers Mill Rd, Carnegie, PA*

[http://maps.google.com/maps?  
f=q&source=s\\_q&hl=en&geocode=&q=Noblestown+Road+and+Walke  
rs+Mill+rd.+Carnegie.+PA&sll=40.39933.-](http://maps.google.com/maps?f=q&source=s_q&hl=en&geocode=&q=Noblestown+Road+and+Walkers+Mill+rd.+Carnegie.+PA&sll=40.39933.-)

[80.1007&sspn=0.008726,0.014827&g=Noblestown+Road,+Carnegie,+PA&ie=UTF8&hq=&hnea](http://maps.google.com/maps?hl=en&ll=40.397165,-80.131831&spn=0.002182,0.003707&t=h&z=18)  
[r=Noblestown+Rd+%26+Walkers+Mill+Rd,+Carnegie,+Allegheny,+Pennsylvania+15106&ll=40.](http://maps.google.com/maps?hl=en&ll=40.397165,-80.131831&spn=0.002182,0.003707&t=h&z=18)  
[397165,-80.131831&spn=0.002182,0.003707&t=h&z=18](http://maps.google.com/maps?hl=en&ll=40.397165,-80.131831&spn=0.002182,0.003707&t=h&z=18)

Photos:

[http://picasaweb.google.com/colincsl/WalkersMillCaveScoutting?](http://picasaweb.google.com/colincsl/WalkersMillCaveScoutting?authkey=Gv1sRgCMbWn_j8p4jEwQE#)  
[authkey=Gv1sRgCMbWn\\_j8p4jEwQE#](http://picasaweb.google.com/colincsl/WalkersMillCaveScoutting?authkey=Gv1sRgCMbWn_j8p4jEwQE#)