Perched among the blaring sun, saguaro cacti, mesquite bushes and sunbaked caliche in Oracle, Ariz. is a futuristic beacon in the desert.

It is Biosphere 2, a scientific facility, operated by the University of Arizona, which looks more like something that would be resting on the sands of Mars rather than in an American desert.

The structure, which spans over more than three acres of desert land, consists of simulated oceans, rain forests, prairie and other land, completely closed off from the outside world.

And although the structure, which will turn 25 in September, was constructed to help man contemplate his place in the stars, John Adams, deputy director of the project, said the creation may help man’s future life on this planet. Adams said construction on the facility began in 1987. He said a question is why the facility, the first of its kind on the planet, was dubbed “Biosphere 2” “The systems and functionalities in B2 are modeled here on earth so earth is referred to as Biosphere 1,” he said.

Construction was completed in 1991, and the experiment began, to house eight people in the massive structure that was supposed to model a self-contained ecosystem. The information and experiment would assist humans in colonization of other planets. The test subjects, known as “biospherians” would live off the land inside the structure, cook their own food, grow their own crops and not get outside assistance. “And for the most part it worked really well,” Adams said.

Inside the white beacon in the desert the biospherians grew their own crops, maintained their atmosphere and worked on living the two years essentially isolated from the rest of the planet with a layer of glass. But according to Adams there was an invisible problem, and a life-threatening one that caused a chink in the armor of the experiment. “The challenge that they had is getting that atmospheric balance correct,” he said. “The oxygen decreased significantly, CO2 went up; the primary factor was the abundant microbes living in the extremely rich organic soil and their designated farm area.”
Basically the microbes, which used oxygen, were outpacing the oxygen production of the plants inside the structure. The element that was put in place to help sustain life in the Biosphere — a rich farming area — was slowly killing the occupants.

“That soil was put in place to promote the rapid growth of these ecosystems, but it supported and overabundance of microbes,” he said. “And oxygen got down to 14.2 percent and that level triggered them as a team to need to add oxygen in the system, because they were concerned about them living inside.”

Immediately this compromised the experiment because the eight were supposed to be living isolated from the rest of the world, Adams said.

“They didn’t fully disclose what they were doing and how they were doing it, they were reluctant, and they had denied that they had done that and recant that statement, when they did this that credibility was lost with the media, the public and the scientific community,” he said.

He said, however, it needed to be done as the residents inside were suffering from oxygen sickness, similar to what is experienced by alpine climbers, he said.

After the two years another group went into the biosphere, but the credibility was lost and it was too little too late, until the topic of global warming began to take shape in popular media.

“And then there was a decision to strategically shift how the facility was being used, and moving away from this space colonization, in order to do it as an earth sciences lab,” Adams said.

This followed a thought from the scientific community that if man did go to the stars, it would be in small groups and not a mass exodus, Adams said.

“We may have the occasional person who does that, but for the vast majority of us we’re here stuck on earth and we know the changes of earth’s climate impact on the resources which we depend on greatly, we can debate whether man is responsible for that, but at the end of the day we are in charge of that ecosystem,” he said.

And with Biosphere-2 being 25 years old, it became a good platform to perform experiments to see how various systems on earth are impacted by human interaction.

“I don't know of any other place in the world that you can do those types of things in the size or control that we have at Biosphere 2,” he said.

This has helped many of the scientists work on climate change models and experiments that will assure that earth, or Biosphere 1, will last a long time, Adams
“There’s no other place in the world that has been around this long that is stable where they can do experiments,” he said.

Included in this reputation building of the structure is the public involvement and tours of the facility.

“The really exciting thing is that visitors can come through, and in most of the areas, they can actually physically go into the biosphere and take a look in the rainforest, or look down the cliff into the ocean area,” he said. “They can see how we’re using it day-to-day and its everyday life.”

Adams said visiting Biosphere 2, and experiencing it from the public standpoint is important for the public, which still has a disconnect with much of earth science. He said some of the concepts of earth science, such as global warming are hard to grasp and having an environment they can see the impacts in helps them understand.

According to Adams, he feels that Biosphere 2 will be relevant in the next 25 years as well.

“It has taken us up until now to really begin to realize its full potential, and even though the construction is not perfect for all aspects the original cost was $200 million,” he said. “If you were to have to build a facility the cost like this today the cost would be somewhere near a billion, in today’s financial climate the likelihood of getting it built is extremely low.”

**Jason Ogden**

A graduate of Central Michigan University in Journalism, Jason has served as a news reporter for the Oscoda County Herald, Oscoda Press and Iosco County News-Herald. He is also an avid fisherman.

**Make Sure To Stay At:**

Peppersauce Campground, located less than 7 miles away from Biosphere 2, is tucked away in a shallow, tree-filled canyon cut by Peppersauce Creek through rolling foothills covered with grass, oak and yucca.