

## **DUSEL Education and Conference Center**

Dr. Larry D. Stetler (PI), Associate Professor, Geology & Geological Engineering, South Dakota School of Mines & Technology, 501 East St Joseph Street, Rapid City, SD 57701, E-mail: [lstetler@taz.sdsmt.edu](mailto:lstetler@taz.sdsmt.edu)

### **Project Goal:**

The goal of this proposal is educational: to establish the DUSEL Education and Conference Center (DECC) that would be utilized 10 weeks per year by the Black Hills Natural Sciences Field Station and the remainder of the year by DUSEL scientific activities

### **Background:**

This proposal idea was initiated in May, 2005 when SD Gov. Rounds asked for project and/or development ideas for a science and engineering lab if SD were to operate some type of facility at the old Homestake Mine prior to any NSF decision regarding the formal establishment of DUSEL. An initial idea plan was submitted on May 13 and refined again on Oct. 26, 2005.

The basic premise that was outlined was that if a national laboratory facility were to be built at the old Homestake Mine, then a dual-use educational/conference facility would be a required component of the lab. The design included plans to host for 10 weeks the Black Hills Natural Sciences Field Station's summer camps in geology and geological engineering. During the remainder of the year, the facility would house visiting scientists while conducting research at DUSEL as well as hosting scientific conferences on the site. The facility would offer rooms, meals, meeting spaces, computer facility, library, and theater room, all on the DUSEL site.

### **DUSEL Educational and Conference Center Specification:**

Conversion of an existing building will be utilized for the DECC (see Surface Labs and Space worksheet, attached). At the present time, no structure has been identified, however, several potential candidate buildings exist at Homestake DUSEL. Under this proposal, the PI would work with the appropriate persons at the SDSTA to perform a structural search at the site and identify the best existing structure for the conversion. At that time, an architect would be consulted and conversion plans would be drawn to utilize the existing space to produce the best facility that would be possible.

A completed education and conference center at DUSEL would include the following which are fully described below:

- Dorm rooms
- Kitchen facilities and dining room
- Conference room(s)
- Theater room (could double as a conference room)
- Work room, computer facility
- Large common area
- Library
- Laboratory

### Breakdown and Details of the DECC:

Fifteen dormitory rooms will be constructed for a total capacity of 60 persons. Each room would hold 2 bunk beds for a total of 4 persons per room. Each room would have a closet, two small desks with lamps, and a private bathroom. In addition, two single occupancy rooms with bathrooms would be constructed to house the instructor for the camps or conferences and the cook.

It is possible that large bathroom facilities could be common since some of the buildings already have large shower rooms which could be upgraded and utilized, thus, saving construction costs.

A large, modern industrial kitchen and dining facility will be constructed such that a full capacity Center could be comfortably and timely fed. Renovation for a kitchen would be based on existing utilities and services. Equipment would include a large industrial stove and oven, spacious work counters, large and deep sinks, industrial dishwasher, refrigerator, and freezer. The attached dining area would be planned to provide a cafeteria-style service center that has easy access to the kitchen and a separate tray-return area so that traffic congestion is minimized.

The center-piece of the DECC would be the conference and educational rooms. These will be designed after consultation with the scientific community and study of other such centers to ensure the layout will best serve their intended purpose. The most probable layout will be one large room having a capacity of at least 100 persons. This room would be furnished with tables and chairs enabling attendees to use notebook PCs on the table top. The room will be furnished with a main computer center and DLP projection system. The room will be designed such that it can facilitate a scientific conference or an educational workshop.

A modern education and conference center should be equipped with a theater room that could also serve as an additional conference room. The primary difference would be the size of the projection area (theater format) and seating (staggered in the absence of a slopped floor). A computer center and DLP projection system would be installed in this room. This room will also host a nightly movie for relaxation and entertainment of the guests.

A computer room will be constructed that will be setup with desk stations that have computers and monitors on each station. Several printers will be provided that are connected to the computers. The room will be served by Hi-speed internet (T-100 and WiFi). This room will receive heavy use during the field camps and will offer visiting scientists a place to work on data, write, communicate with colleagues at other locations, etc. Space for a minimum of 20 workstations will be required for this room.

Relaxation, reading, and TV viewing will occur in a common area that will have an open floor plan. Several small conversation areas will be created using furniture arrangements. Large easy chairs, sofa's, and tables will constitute the furniture. If possible, a fireplace will be included on one wall of the common area.

A library space will be included in the commons area where bookshelves will be built onto a wall.

A small laboratory room will be included where the field camps can analyze samples collected as part of the field exercises. This room will have a sink, drying oven, counter space, Rho Tap, sieve screens, scales, and other basic lab equipment such as Nalgene bottles, etc. If funds exist possibly larger equipment could include a tri-axial soils tester, a portable XRF, and thin section equipment. These additions would increase the quality of the projects that could be done in field camps and make them the state-of-the-art in technology used in a field camp thereby increasing the potential number of students drawn into these camps. In addition, thin section and XRF equipment would most likely be utilized by the DUSEL scientists as well throughout the year.

No formal cost estimation for construction of the DECC is possible without a more concerted effort by the PI, which would occur if this proposal receives merit in the 1<sup>st</sup> review. Items that require further analysis for cost include an evaluation of the infrastructure that would have to be remodeled, plus architectural, materials, and construction costs associated with the project. The facility would generate income from its operation including rental the field camps and conference rentals. Visiting scientists would also pay a nightly fee for using the dorms. As an example, currently the Black Hills Natural Sciences Field Station rents Ranch A located south of Beulah, WY, for a cost (in summer 2005) of ~\$25,000. Holding these camps at the DECC for a period of 10 years would defray a majority of the remodeling and construction costs. The DECC would also provide students the use of a new facility, a CLEAN facility, and one that would be at the center of international scientific research.

The PI is available to look at potential buildings and prepare more accurate cost estimates based on actual spaces that are available at Homestake DUSEL as well as having an interest in becoming involved in the management of the DECC after it is built.

#### **Infrastructure Requirements and Impact on Other Users:**

The infrastructural requirements for this proposal are 1 of the existing buildings at the Homestake DUSEL site. It is estimated there will be no negative impacts on other users of other buildings. However, the creation of the DECC will have a positive impact on other users of DUSEL in that its existence will relieve the necessity to acquire facilities at another location while a visiting scientist is at DUSEL. In addition, the DECC will allow scientific meeting to be held right on the Homestake DUSEL site in a new and modern facility. A possibility also exists for the kitchen facility at the DECC to be utilized on a daily basis as the site cafeteria.

#### **Readiness for Deployment – technology:**

Technology at the DECC revolves around the projection equipment used in the conference hall, theater, and computer room. Advances to technology of this sort most often requires simple replacement of wiring and/or equipment and will pose no standing problems to the DECC. It is intended that WiFi will enable internet access from any room in the center. As with the projection equipment, this technology is easily upgraded without any major renovation as it generally requires new equipment or new cabling. Adequate pipe-ways will be installed during the construction phase to allow these upgrades to made seamlessly and cheaply.

#### **Readiness for Deployment – effort and funding:**

This proposal is intended to receive funding from the SDSTA as part of the Homestake DUSEL site restoration process and the opening of the 4850 lab. Therefore, no formal funding has been

secured for the renovation of the building and establishment of the DECC. This proposal was developed on a call from the SD Governors office for developmental ideas for the new lab. It is hoped that with a good merit review, the Office of the Governor along with the SDSTA will provide some or all of the funding to make this center become a reality.

**Environment, Safety, and Health:**

At this time there are no foreseen risks to environment, safety, or health.

