List of revisions to the January 5, 2004 version:
References to pages are indicated and the changes on the pages are in italics.

1. Summation of the South Dakota proposal – Pg 4
2. Recognition of the management collaboration between the Science Program, the operation of the laboratory, and the oversight of the NSF. – Pg 14
3. Transfer of the First Chamber to the Science Program – Pg 17
4. Separation of the core conversion from the operations of the Authority – Pg 17
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6. Clarification of the cost of bonding – Pg 19

1. Budget update pending the cost of bonding – Pg 19
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INTRODUCTION

The State of South Dakota proposes a unique approach to expedite the conversion of the Homestake Gold Mine into a laboratory to meet the requirements of the science community for a deep underground research facility. In agreement with the Homestake Mining Company, the mine will be transferred to South Dakota through the implementation of the South Dakota Science and Technology Authority (the “Authority”).

The South Dakota proposal includes the following features:

1. Construction bonds will be issued through the Authority, guaranteed by the National Science Foundation (NSF), to provide the funding to convert the mine to the Homestake Underground Laboratory.

2. The Authority will become the owner of the mine with appropriate responsibilities to operate a safe, quality research environment with appropriate management of regulatory and liability compliance. The Authority will make the converted mine available to the science community, through the NSF, for the development of the Science Program of large detectors and experiments required for research in the deep underground laboratory.

3. Funding from the bonds will allow implementation of the design completed by Dynatec, one of the worlds largest mine construction companies, to build a safe core laboratory at the 7400 feet level. This core facility will be capable of the continuing expansion of the laboratory to meet future requirements of the deep underground Science Program.

4. A significant element of the Dynatec feasibility study is the focus on providing a facility that places life-safety as the primary design requirement, with the secondary requirement to include the use of the most appropriate technologies to assure the safe operation of the laboratory with minimal long-term operating costs. The addition of the auxiliary high speed elevators in both the Yates and #6 Winze, along with the addition of a new hoist in the #6 Winze, are part of the upgrade in the conversion to provide better services at lower operating costs.

5. The core design demonstrates the feasibility of the core laboratory to support the Science Program through the inclusion of large detector chambers and the ability to increase the number of detectors without construction impact upon existing detectors.

6. The Authority will provide the maintenance and operation of the laboratory, including the ability for scientists to access their experiments through an automated high speed elevator and transport system.

7. While South Dakota will make a significant contribution to the cost of converting the mine, the issue of bonds requires the availability of a guarantor, such as the National Science Foundation (NSF). The proposal to support the construction will cost $81,458,132 and take 22 months for the core facility to be operational.
8. The Dynatec feasibility study demonstrates that seven months later the first chamber 252’ long x 66’ wide x 55’ high can be ready for the insertion of a detector.

9. The Dynatec feasibility design includes upgrading the mine to comply with all applicable life-safety requirements; refurbishment of the shafts and related electrical, pumping, ventilation, water, communications and data systems; dewatering and treatment of water removal; disposal of the rock removed from large chambers; and installation of systems to support the Science Program.

The South Dakota approach represents a significant shift from the earlier concepts of building the entire underground laboratory (including several large caverns waiting for future detectors) to providing a core facility fully prepared to accommodate whatever detectors or other experiments may be selected by the scientific community for insertion into the underground facility.

South Dakota Governor M. Michael Rounds, the Homestake Mining Company and the Barrick Gold Corporation, the owners of the mine, have reached an accord which includes the creation of the South Dakota Science and Technology Authority which will operate and maintain the laboratory for the science community. The establishment of the Authority will enable the transfer of the mine without Homestake or Barrick being exposed to continuing liability for the operation of the deep underground laboratory.

In recognition of the importance of the historic Homestake Mine to South Dakota, to our country and to the world, and in honor of the miners who gave their lives in the mine, the converted mine will be named the Homestake Underground Laboratory.

After the designation by NSF of the Homestake Mine as the preferred site, and in recognizing the great depth to 8000 feet and the availability of exceptionally strong rock suitable for the construction of the large chambers required by the science research detectors, Governor Rounds obtained legislative approval for State funding of the Homestake Laboratory Conversion Project to determine the feasibility of the conversion of the mine, as will be transferred, to meet the requirements of the science community for the deep underground laboratory. A feasibility study has been completed by Dynatec, one of the world’s leading mining construction companies and a design for the Homestake Underground Laboratory is presented in the following sections of this proposal.

This proposal provides an innovative approach to financing the project to meet the urgent need to act quickly to protect the physical assets that make the conversion possible at a significantly reduced cost over any other alternatives. There is a definite cost associated with delay while possible consideration is being given to reversing the previous decision of NSF regarding Homestake and the possible reopening of the evaluation of site process.

The Homestake Mine is in optimal condition for conversion to the deep laboratory. While there is the normal process of water flowing into the mine, the level of the water in the mine at present is not a significant concern. However, continued delay will result in the water rising to the level where needless serious damage to currently usable equipment will occur.
Years of potential delay with the consideration of unproven sites could cause the scientific community to lose the most optimal site for the deep underground laboratory. The South Dakota offer will make a site available in two years for the installation of detectors. Further, the cost of the decision to create an underground science program at Homestake is well within the increase in funding provided to NSF.

Ownership of the mine will be transferred from the Homestake Mining Company and the Barrick Gold Corporation to the South Dakota Science and Technology Authority upon availability of the funding to complete the core conversion. All information necessary for the design and development of the core laboratory facility, and other related information, has been transferred to the Homestake Laboratory Conversion Project, which is the precursor to the Authority.

The Authority will be the legal entity responsible for ownership of the laboratory facility, including the operation of the facility through a culture of life-safety and shared management with the scientific community.

The Authority will convert the mine, as transferred, by upgrading the mine shafts, the infrastructure, and associated facilities required to provide the requirements identified for the deep laboratory. The Homestake Underground Laboratory facility will include:

1. Primary Construction at the 7400 foot level, with supporting facilities at the 7100 and 7700 foot levels. The design of the laboratory will support the addition of experiments at other levels and the eventual deepening of the facility.
2. The laboratory facility will be constructed complete with the first large detector chamber.
3. The design provides for the long-term addition of all currently identified detectors and other experiments when they are ready for insertion into the deep laboratory without the requirement for additional core infrastructure cost to each detector experiment.

The South Dakota proposal includes the following major features:

1. The transfer of the mine to the South Dakota Science and Technology Authority for the conversion.
2. A guarantee to NSF of the cost and schedule of construction of the laboratory.
3. The determination of the feasibility to convert the mine to meet the research requirements to support deep underground science.

The Proposal also includes the determination of the cost for the conversion to the deep underground laboratory and annual operating costs of the facility. South Dakota will make a significant funding commitment to expedite the availability of the laboratory facility to the scientific community.

**Historic Background**

Homestake has operated the Homestake Mine in South Dakota for more than 120 years. Active mining of the underground mine ended in 2001. Since that time Homestake has been conducting
reclamation and closure activities. The underground workings at the Homestake Mine are vast, with more than 300 miles of underground tunnels and shafts which reach, at some points, more than 8000 feet below the surface. Surface facilities are also extensive, and include buildings, hoists, warehouses, and shops.

Underground scientific research has been conducted in the Homestake Mine since 1965, when Professor Ray Davis, Jr. of Brookhaven National Laboratories constructed a neutrino detecting experiment in an underground laboratory excavated by Homestake. In 2002, Professor Davis was awarded the Nobel Prize in Physics for his studies of solar neutrinos, including the Homestake research.

In September 2000 Homestake announced that the mine would be closed at the end of 2001. Shortly after that announcement, a group of scientists began studying opportunities for further underground research at the Homestake Mine. South Dakota entered into discussions with Homestake and individuals in the scientific community about the possible donation of property at the Homestake Mine for an underground laboratory.

In June 2001 an initial proposal for an underground research facility was submitted to the National Science Foundation (NSF). Studies by the National Science Foundation and other independent groups of scientists have determined that the Homestake Mine is the most favorable site for an underground scientific laboratory.

Homestake and South Dakota agree that the Homestake Mine is not suitable for construction and operation of a modern scientific laboratory without substantial investment in new infrastructure, including rehabilitation or replacement of the existing shafts and excavation of new underground chambers to house experiments. The changes required for the laboratory will substantially and permanently change the mine property. The new laboratory, which will be used by research scientists, academia, and students, and may be accessible to the public, will present new and different risks from those presented by a closed and vacant underground mine.

In the fall of 2001 Homestake agreed to donate the underground workings for the laboratory and certain surface facilities to support the laboratory provided that:

- necessary funding and approvals were obtained for construction and operation of the laboratory, and
- Homestake was released from any future liability that might result from the construction and operation of the new laboratory.

Initially, it was expected that federal legislation would be required to provide that protection. Legislation was passed by the Congress at the end of 2001 but was unworkable and unacceptable to Homestake.

In the spring of 2002 South Dakota began discussions with Homestake seeking an alternative means to acquire the property and provide the necessary protection from future liability through state law. As those discussions progressed, Homestake continued its reclamation and closure activities, focusing its efforts on those portions of the Homestake Mine other than the Laboratory Property. These other portions represent the vast majority of reclamation to be conducted at the
Homestake Mine. To date, Homestake has spent tens of millions of dollars on such reclamation and closure.

Closure activities in the underground mine included cleanup and inspection of all of the safely accessible shafts and tunnels. Waste materials, equipment, fuels, solvents, and other chemicals—including the original neutrino experiment—were removed from the underground mine.

The underground cleanup and closure activities were extensively documented. The South Dakota Department of Environment and Natural Resources conducted several inspections of the underground mine as closure activities were being completed and also reviewed the closure plan and documentation prepared by Homestake.

Thanks to the knowledge gained through the closure process, including the state inspections, Homestake and South Dakota have been able to more accurately assess the potential risks associated with the donation of the property.

In July 2003 closure activities associated with the underground mine were completed and the underground mine was closed. Closure activities involving portions of the Homestake Mine other than the Laboratory Property are ongoing.

In June 2003 the NSF identified the Homestake site as the preferred location for a potential deep underground laboratory. In response to this announcement, Governor Rounds created, and the State funded, the Homestake Laboratory Conversion Project. The Governor provided three charges to the project:

- To provide support to the scientific community in preparing for the submission of their proposal to the NSF for their conversion of the Homestake Mine to their deep laboratory,
- To prepare the legislation necessary for the creation of the South Dakota Science and Technology Authority, and
- To complete the transfer of the mine to the Authority

Homestake has worked cooperatively with the Conversion Project Office, providing data and support. Homestake has implemented certain recommendations from the Conversion Office and its contractors to protect the main shafts from deterioration while the process of developing and funding the laboratory proposal proceeds. Homestake intends to continue to support the Conversion Office as it works with the scientific community to prepare a proposal to the National Science Foundation.

Subsequently, the Homestake Laboratory Conversion Project has demonstrated the feasibility of preparing a core facility to expedite the development of the detectors and other experiments required by the scientific community. These efforts have led to joint proposals from the State of South Dakota and the science community. The proposal from the State calls for the use of bonding capability of the Authority, with a funding guarantee from the NSF, for the construction of the core conversion. The proposal from the science community deals with the scientific operation and management of the deep laboratory.
In the fall of 2003 Homestake and South Dakota agreed that the issues relating to the donation of the property could be resolved through state action, including the creation of the South Dakota Science and Technology Authority to receive the property from Homestake and then manage it for scientific research.
CONTRACT AND TRANSFER

Homestake Mining Company and Barrick Gold Corporation (collectively “Homestake”) and the State of South Dakota (“South Dakota”) will enter into an Agreement in Principle for the donation of certain property that Homestake currently owns in and near Lead, South Dakota.

South Dakota desires to acquire this property from Homestake for use as an underground scientific laboratory. Homestake is willing to donate the property to South Dakota, provided that necessary funding and approvals are acquired for construction and operation of the laboratory and provided that Homestake is protected from any liability that may arise after the donation as a result of the construction and operation of the underground laboratory. The property will be conveyed from Homestake to South Dakota with the following terms and conditions.

**Property to be conveyed**
Homestake owns or controls certain real property, surface rights, underground workings, shafts, tunnels, mineral rights, water rights, structures, buildings, facilities, fixtures and other rights and property associated with the Homestake Mine. South Dakota wishes to obtain that portion of the property that has been identified as useful for the operation of an underground scientific laboratory, including, in particular, the underground workings and certain surface property and facilities.

The property that is proposed to be conveyed from Homestake to South Dakota is identified on maps conveyed to the Authority. The Laboratory Property will include all rights, fixtures, and structures within the identified property boundaries. The Laboratory Property will also include any water that flows into the Laboratory Property from any source.

The agreement does not include, and Homestake will not convey to South Dakota, any lands or facilities of the areas described provided to the Authority. Homestake will retain ownership of, and the agreement will not change its responsibility for, all of its property not subject to the agreement, including, but not limited to the open cut, waste rock repositories and the tailings disposal facility. Homestake intends to continue to reclaim and close the remaining mine facilities insofar as required by applicable law and such activities shall be unaffected by the agreement.

**Indemnification and Protection from Liability**
Homestake and South Dakota acknowledge that, after the donation of the property, Homestake will lose all control over the use of the property. They also acknowledge that the property will be substantially changed by the construction and operation of the laboratory and the introduction of scientists and other non-miners into the underground environment. Accordingly, Homestake and South Dakota have agreed that Homestake will be indemnified from any future liability associated with the Laboratory Property.

The release and indemnification package will include three components:
- a contract between Homestake and the Science and Technology Authority by which the Authority will indemnify Homestake for any civil liability associated with the Laboratory Property after the date of conveyance;
Homestake Underground Laboratory

- a statutory change that will provide immunity from claims under state law for the owners of property donated to the Authority; and
- a statutory indemnification directly from South Dakota from future civil liability

Homestake and South Dakota agree that the liability protection and indemnification provided by the agreement is meant to coincide, as nearly as possible, with the scope of protection provided by the federal legislation which was passed by the United States Senate in November, 2001. The language contemplated for the contract with the Authority and the proposed amendments to South Dakota law are based on the language that was approved by the United States Senate.

Exhibit A is a draft statute creating the Authority.

**Contract with the Authority**

After the creation of the Science and Technology Authority, Homestake will enter into a contract with the Authority that includes the following components:

A. After the date of the conveyance, the Authority will assume liability for and will indemnify, defend, and hold Homestake harmless from and against any liability to any person, South Dakota or the United States for any injuries, costs, injunctive relief, reclamation, damages (including damages to natural resources or the environment), or expenses, or any other claim (including claims for indemnification, or contribution, claims by third parties for death, personal injury, illness or loss of or damage to property, or claims for economic loss) under any law (including a regulation) for any claim arising out of or in connection with the condition or use of the Laboratory Property, regardless of when the condition or use giving rise to the liability originated or was discovered.

The Authority will not assume liability or indemnify Homestake against any unemployment, worker’s compensation, or other employment-related claim or cause of action of an employee of Homestake before the date of conveyance, nor any violation of any provision of criminal law.

B. The Authority will create an interest bearing fund that will be used for closing the laboratory after its operating life (the “Closure Fund.”) The Closure Fund will be funded at $1 million. The Authority will contribute $800,000 to the Closure Fund on or before the date of the conveyance of the Laboratory Property and Homestake will contribute $200,000 to the Closure Fund on the date of the conveyance of the Laboratory Property. Homestake will have no interest in, access to, or control over the Closure Fund.

C. The Authority will create a $10 million Indemnification Fund that will be used only to indemnify Homestake (or its successors) from any claims that might be brought against Homestake in connection with the Laboratory Property. The purpose of the Indemnification Fund is to provide a fund that is immediately accessible by the Authority without further authorization or appropriation by the State of South Dakota. The Indemnification Fund will be fully funded before the Laboratory Project is conveyed to the Authority.

The Indemnification Fund will be maintained at a level of at least $10 million until five years after the closure of the laboratory (or until all pending claims or demands or resolved, whichever
is longer). Money remaining in the fund after that date will be subject to dispersal as directed by the Authority.

Apart from any expenditure from the Indemnification Fund that might be made in accordance with the terms of the contract between Homestake and the Authority, Homestake will have no interest in, access to, or control over the Indemnification Fund.

D. The Authority will obtain insurance covering potential existing environmental liability and liability insurance for the operation of the Laboratory, including any experiments that may be conducted on Laboratory Property. An insurance policy with a liability limit of at least $5 million will be in place prior to the date of conveyance of the Laboratory Property. The Authority will also purchase insurance to insure against the risks associated with each experiment that is authorized to be conducted on the Laboratory Property. The Contract will not limit, in any way, insurance that may be obtained by the Authority for any other purpose, or any requirements for liability insurance that the Authority may impose on sponsors of experiments.

E. Homestake will agree to donate the Laboratory Property to the Authority no later than thirty days after the Authority demonstrates that it has obtained funding, permits and approvals required to fully construct and operate the underground laboratory.

F. The Authority will agree to reimburse Homestake for the reasonable transaction costs (legal and administrative costs) associated with the donation of the property, including the costs of preparing the Contract, preparing documents to convey the property and similar costs. The reimbursable costs will not include the salary or benefits of any Homestake employee or any costs related to managing or maintaining the Laboratory Property. These costs will be reimbursed within 90 days after the conveyance of the property, and there will be no reimbursement of any transactional costs if, for any reason, the Laboratory Property is not conveyed to South Dakota.

**Immunity Statute**
South Dakota agrees that it will enact a statute granting immunity from civil liability to persons who donate property to the Authority for public use and benefit.

**Statutory Indemnification**
South Dakota agrees that it will enact a statute providing that the State of South Dakota will indemnify Homestake from any claims which might arise in connection with the Laboratory Property after the date of the conveyance. The Statutory Indemnification is intended to supplement the indemnification provided for in the contract between Homestake and the Authority and to assure that indemnification is provided should the Authority fail or be dissolved by South Dakota.

**Termination**
The Agreement in Principle may be terminated by South Dakota at any time prior to the conveyance of the Laboratory Property should South Dakota determine, for any reason, that it will no longer seek to construct and operate the underground scientific laboratory at the
Homestake site. The Agreement shall terminate three years from the date of the Agreement if there has been no conveyance of the Laboratory Property.

**The Operation and Management of the South Dakota Science and Technology Authority**

The South Dakota Science and Technology Authority will have the responsibility for owning, operating, and managing the conversion of the Homestake mine to the Homestake Underground Laboratory for the State of South Dakota.

The Authority is designed to sustain a culture of risk management that effectively minimizes the possible occurrence of events that could lead to an unacceptable life-safety or environmental incident. The Authority will be responsible for developing the culture of life-safety for the operation of the laboratory in collaboration with the Science Program of the laboratory. Although the Authority will make the underground facility available for development and use by the scientific community, it will remain legally responsible for assuring the safety and integrity of the facility. The Authority will provide appropriate oversight through legislation and rules to assure that all uses of the facility are in compliance with applicable life-safety, environmental and other regulatory requirements.

The proposed implementation of the Authority is illustrated in Figure 1, with operations under the control of a bipartisan seven member Board of Directors appointed by the Governor of South Dakota for specific, staggered terms of service. The Board of Directors of the Authority will employ the Executive Director of the Authority.

The Authority will administer the transfer of the mine, including the management of the designated funds, the purchase of insurance, and the preparation, processing, and issuance of bonds for the construction and operation of the laboratory.

The Authority will provide for the operations and maintenance for the Laboratory, including providing 24/7 access for the scientists to their research laboratory through an automated high speed clean elevator in the Yates Shaft that will connect through a clean transport on the 4850 foot level to a similar automated elevator in the #6 Winze to the bottom of the laboratory. The Authority will assure the maintenance of all infrastructure facilities required for the operation of the detector laboratories including life-safety systems and procedures, rescue, shaft operations, electrical, pumping, ventilation, air, water, waste removal, and the response to and management of any incidents that may occur in the operation of the laboratory.

The Authority will have the capability to respond to other opportunities for the development and enhancement of science and technology. An Underground Laboratory Science Education and Visitor Center is planned. It will be funded separately from this proposal. The new Center will be located in conjunction with an improved Ellison Main Entrance to the Homestake Lab on a site overlooking the historic City of Lead. The Center will also serve as a science and mining exhibit hall and a resource for educational outreach.
The Authority will remain separate from the Science Program of the Homestake Underground Laboratory, but will operate in close collaboration and support with the Director of the Homestake Underground Laboratory and the staff of the Science Program.

The Authority anticipates providing the laboratory through a management contract to the NSF to determine the appropriate services and oversight of the collaboration with the Science Program for the operation of the laboratory. It will be the responsibility of the Board of Directors of the Authority to implement the legislation creating the Authority. Additionally, the Board of Directors of the Authority, in consultation with the Science Program, will provide the life-safety, compliance, and liability management provisions required of the operation of the laboratory facility. The Board of Directors of the Authority, with oversight from NSF and the Science Program, will have the responsibility of maintaining a cooperating relationship that assures that the laboratory provides the needs of the Science Program while also assuming the safety and integrity of the facility.

The Authority will provide a Manager of the Operations and Maintenance for the Homestake Underground Laboratory who will be located at the Ross Shaft. It will be the primary objective of the Authority operation to assure that both the NSF and the Science Program are successful in the development of the many aspects of the laboratory as the center for the deep underground science research. The establishment of a management contract by the Authority to provide services and the provision of adjudication through the NSF and the Board of Directors of the Authority will include the recognition of whatever management organization and structure as selected by the Science Program.

The Authority will have broad capabilities to assist the development of the science and technology resources throughout South Dakota. Initially the Authority will focus on the
conversion of the underground mine into a facility for use by the scientific community as the deep underground laboratory.
PROPOSED BUDGET FOR THE CONVERSION OF THE HOMESTAKE MINE TO THE HOMESTAKE UNDERGROUND LABORATORY

South Dakota’s offer to the science community is to use the capability of the South Dakota Science and Technology Authority to issue bonds to acquire the full funding necessary to expedite the conversion of the Homestake mine into the much supported deep underground research laboratory. Homestake has already been identified as the most appropriate site for the deep underground laboratory. In response to that decision, South Dakota has made a significant investment to clearly establish that the conversion of the Homestake mine to the deep underground laboratory is feasible.

This proposal and budget contemplate an innovative approach to financing the project for one compelling reason – the urgency to act quickly to protect the physical assets that make the conversion possible at a significantly reduced cost over any other alternatives. There is a definite cost associated with delay while possible consideration is being given to reversing the previous decision of NSF regarding Homestake and the possible reopening of the site evaluation process.

The Homestake Mine is in optimal condition for conversion to the deep laboratory. While there is the normal process of water flowing into the mine, the level of the water in the mine at present is not a significant concern. Continued delay will result in the water rising to the level where needless serious damage to currently usable equipment will occur. Additionally, Homestake has prepared the hoists, electrical, water, and control systems for appropriate processing for reuse, but delay will lead to significantly increased recommissioning costs for the conversion.

Years of potential delay with the consideration of unproven sites could cause the scientific community to lose the most optimal site for the deep underground laboratory. The South Dakota offer will make a site available in two years for the installation of detectors and other experiments. Further, the cost of the decision to create an underground science program at Homestake is well within the increase in funding provided to NSF.

In order for South Dakota to issue the bonds for immediate construction, it is necessary to demonstrate a qualified source of repayment such as NSF. While South Dakota proposes to share significantly in the cost of the conversion of the mine, it seeks the assistance of the science community in requesting the NSF to consider the South Dakota offer as an alternative approach to the provision of the deep laboratory.

Specifically, NSF is asked to make the decision to commit to deep underground science in response to the extensive and broad justification of the need through the notable studies, reports, and workshops supported by NSF and the Congress. NSF is requested to provide a guaranteed grant to the Authority over the course of the next five years in an amount sufficient to repay the bonds issued by the Authority.

The budget is provided in five major parts:

1. The cost of the conversion of the mine to the underground laboratory with the ability for the long-term addition of detectors and other experiments. The cost estimate for the
underground conversion was completed by the Dynatec Corporation, one of the world’s leading mine construction organizations.

*The cost of the conversion of the mine to the core laboratory facility is $77,793,975. The underground design included the ability to add the detectors required to provide the science program. The core laboratory design will provide the infrastructure to support the detectors identified in the science portion of this overall proposal. As discussed in greater detail in the following sections, the core laboratory design will enable the addition of future detectors without infringement on the operation of existing experiments.*

*While not included in this proposal, as an example of the capability of the core laboratory, the feasibility design included the determination of the cost of $21,138,428 to construct a large 252’L x 66’W x 55’H detector chamber as the first addition to the core. It is anticipated that the cost of this chamber will be included in the science program of the laboratory.*

*The cost of renovating the surface buildings to support the operation of the science program at the Yates Shaft site is $3,505,500. As discussed in the following sections, these renovations include the conversion of the Yates Dry House to an education center, offices, and housing for the science participants, along with the renovation of the existing administration building as the Administrative Center for the Laboratory Director and staff. There are also improvements in roads and the security of the laboratory site.*

2. The cost of the requirements for the transfer of the mine and associated facilities to the Science and Technology Authority, including insurance, are described in detail under the contract section of this proposal. They include
   a. A $10 million Indemnification Fund whose purpose is to assure Homestake that funds will be immediately available to satisfy any claims against Homestake as a result of the Laboratory’s construction or operation without requiring additional legislative action or appropriation. That level of funding is to be maintained until five years after the Laboratory has closed, at which time any remaining funds may be disbursed as directed by the Authority. Apart from the terms specified in the contract, Homestake will have no interest in, or control over, this fund.
   b. Additionally, a $1 million Closure Fund will be created to assure that funds will be available to provide for an orderly closure of the facility once experiments have concluded. Of that amount, $800,000 will be provided by the State and $200,000 by Homestake. The funds will be deposited in an interest-bearing account.
   c. The State has agreed to provide up to $500,000 to reimburse Homestake for its legal and technical expenses related to the transfer of the mine.
   d. An Insurance Deductible Management Fund will be developed with an initial allocation of $5,000,000 and subsequent allocations from experiments placed in the laboratory. When the fund exceeds the cost of insurance and the maximum
deductible, the excess funding will be returned to the detector experiments pro-rata over time.

3. The significant contribution of $20,000,000 on behalf of the State of South Dakota more than offsets the costs of the transfer of the mine to the Authority. While not included in this proposal, the State will provide an estimated additional $4,000,000 over the five year anticipated period of the proposal to fund the Authority to provide the management to accomplish this proposal on behalf of the State of South Dakota.

4. The Authority is evaluating proposals from companies to prepare bonding packages that sell bonds, and charge the Authority a fee for their services and include an interest charge for the funding that will be provided to pay for the construction. South Dakota maintains many bonding activities to construct facilities and this program will operate similar to the existing programs. A final cost for the bonds will be provided at the time of submission of the proposal to assure that the best conditions of bonding are available. When the project is approved, then an update on the cost of bonding will be completed to again assure the best possible bond costs.

5. The budget provides a contingency of 15 percent. When the project is approved, the State of South Dakota will evaluate the option of a fixed price construction contract and the negotiation of cost containment. The contingency provides the base funding to assure that the State of South Dakota can guarantee NSF a fixed cost and schedule of the project.

6. The overall estimated cost of the construction of the laboratory, without the cost of bonding, is $81,458,132. NSF will be requested to serve as the as guarantor of the construction bonds by providing a contract to the Authority payable yearly at one fifth of the overall final cost.

7. While not included in the budget for this proposal, there will be need to provide funding for the Authority to provide the services required as the condition of the transfer of the mine and the provision of a safe and compliant laboratory operation. A projection of the continuing expenses for the operation of the Homestake Underground Laboratory is estimated. The design of the laboratory placed special emphasis of providing a safe and efficient operating environment equivalent to an automated and centrally controlled industrial research laboratory.

Budget Overview

1. **Mine Conversion to Homestake Underground Laboratory**
   a. Underground Laboratory Conversion $77,793,975
   b. Surface Laboratory Conversion $3,505,500
   **Subtotal** $81,299,475

2. **Requirements of Transfer of the Mine to the Authority**
a. Indemnification Fund $10,000,000
b. Closure Fund $1,000,000
c. Property Transfer Expenses $500,000
d. Insurance Deductible Management Fund $5,000,000
e. Insurance Premiums
   i. Pre-existing conditions –$5,000,000 / 10 years $260,075
   ii. Post conveyance - $75,000,000 / 10 years $1,828,972
   iii. Limit to max of $5 million / 10 years $365,795

Subtotal $18,954,842

3. Contributions of South Dakota
   a. Legislative appropriation for conversion to the Homestake Underground Laboratory $10,000,000
   b. Congressional authorization for conversion $10,000,000

Subtotal ($20,000,000)

4. Provision of South Dakota Guarantee of Cost and Delivery Schedule- 15% Contingency $1,143,815

5. Preliminary Project Cost, without cost of bonding, Pending the Review of the Science Community
   Does not include the possible addition of the Science Program First Detector Chamber at a cost of $21,138,428

Preliminary Project Total without cost of bonding $81,458,132

6. Request to NSF – Provide a Contract Grant over the five years of the project in the amount of the project, including the cost of bonding

7. Projection of Continuing Operating Expenses
   The cost for the Operation and Management of the Homestake Underground Laboratory through the Science and Technology Authority is estimated to be:
   Administrative Operations $1,400,000 per year
   Laboratory maintenance and 24/7 operations $5,800,000 per year
CONVERSION OVERVIEW

The Authority will convert the mine, as transferred, by upgrading the mine shafts, the infrastructure, and associated facilities to provide a core laboratory that will be capable of meeting the requirements of the science community for a deep underground laboratory. The core laboratory will be constructed at the 7400 foot level, with supporting facilities at the 7100 foot and 7700 foot levels.

The conversion of the mine includes five major activities as illustrated in the following diagram. The Homestake Mine is located in Lead, South Dakota. The Ross and Yates Shafts are the two principle working shafts of the mine and connect the surface with the 4850 feet level. The shafts are linked at the 4850 feet level with the #6 Winze, a shaft that continues for an additional 3000 feet to the bottom of the mine at the 8150 feet level. The conversion project will proceed largely in parallel with the Yates Shaft Upgrade, the #6 Winze Upgrade and De-Watering, the Ross Shaft Upgrade, and finally the construction of the Basic Facility Core site and the Additional Detector Chamber.

![Diagram of Homestake Mine conversion activities](image)

The core laboratory will be constructed with the possibility for the long-term addition of all currently identified detectors and other experiments when they are ready for insertion into the deep laboratory without requiring additional infrastructure cost to each experiment.
The proposal for construction of the core Homestake Underground Laboratory will include the following:

1. Immediate priority for the construction of the core facility through the Authority’s ability to issue $105 million in bonds to raise the funding necessary to begin the conversion as soon as possible, perhaps as early as the end of calendar year 2004 or the beginning of 2005.

2. South Dakota, with the support of the science community, will request the National Science Foundation to enter into a five-year contract with the Authority. Current funding within the NSF divisions participating in the deep underground laboratory will be used to repay the contract with the Authority, which will in turn repay the bond indebtedness.

3. South Dakota will participate in the development of the core facility with a $20 million contribution as part of the total conversion project cost, and will support the operation of the Authority during the conversion phase. Separate funding for the Science Education and Visitor Center will be sought from several sources.

4. South Dakota will guarantee to the NSF the maximum overall cost of the core project.

5. South Dakota has already made a substantial investment for the conversion through the completion of a design study by one of the world’s premier mine design and construction companies to establish the feasibility and cost for the conversion of the mine to accommodate the requirements of the science community.

6. The conversion and upgrading of the mine, including the development of the core facility with all appropriate life-safety requirements and improvements in the associated surface support facilities, will require $81,299,475 and can be completed within 23 months from the date contracts are awarded.

7. The feasibility design study also includes a demonstration of the capability for continuing construction for the immediate integration of a large detector, including full compatibility with life-safety and scientific requirements. Additionally, the feasibility design includes capability for long-term continued expansion of the deep underground laboratory by assuring that other detectors and experiments can be inserted without interfering with existing operating facilities and experiments.

8. The Authority will collaborate with the science community in the operation of the scientific management and scientific aspects of the Homestake Underground Laboratory.

9. The Authority will be the owner responsible for the liability of the safe operation and maintenance of the core facility.

**Summary of the Feasibility Study**
In September of 2000 Homestake Mining Corporation announced the forthcoming closure of the 8000 foot deep gold mine in Lead, South Dakota and leaders of the scientific community proposed the conversion of the mine to a deep laboratory. There have been several other locations proposed for the construction of such a deep laboratory.

In May 2003 the NSF identified the Homestake Mine as the preferred choice because of the excellent quality of the available rock and extensive infrastructure. (Estimated value of over $140 million)
The Homestake Mine closed in June 2003. All operations in the underground mine ceased, including pumping the small amount of naturally occurring water that enters the mine, leaving what is essentially a dry mine containing more than 360 miles of drifts and shafts.

The original National Underground Science and Engineering Laboratory (NUSEL) proposal submitted by scientists conceptualized the need for deep underground excavation to make room for several large detector experiments as part of the laboratory. That proposal would have required funding in excess of $300 million dollars and remains unfunded.

The Homestake Laboratory Conversion Project contracted with the Dynatec Corporation, a world leader in the design, development and construction of mining operations, to study the possibility of converting the mine into a laboratory. The study concluded that conversion is feasible and the capability exists to provide for continual future addition of detector experiments. The Dynatec Corporation Feasibility Report is Exhibit B.

A new approach became possible as the extensive capabilities of the mine were reviewed. The mine will include extensive infrastructure and operational capabilities that can provide the core support facilities for the laboratory. In addition, the ability exists to expedite the addition of various detector experiments far into the future as they are proposed, reviewed, and authorized without disrupting on-going experiments.

The core facility will have the ability to accommodate the requirements of the scientists for 24/7 access to their experiments in an environment equivalent to the highest quality university research laboratories.

**The Conversion to the Core Laboratory**

The evaluation of the feasibility of converting the mine required a determination of the conditions of the shafts, hoists, existing electrical, pumping, ventilation, waste removal, and the various other control and infrastructure support systems, including the presence of un-pumped water. That review established the design for a new core laboratory facility.

The feasibility study demonstrated the ability to accomplish the following specific objectives:

1. Prepare for mine re-entry
2. Refurbish and upgrade the Yates Shaft
3. Refurbish the Ross Shaft
4. Remove water from the mine, refurbish and upgrade the #6 Winze
5. Provide the core Homestake Underground Laboratory with the infrastructure to support future detectors
6. Demonstrate the ability of the Core Laboratory to support the future addition of large detector experiments

**Mine Re-entry**

The mine will be transferred from Homestake to the South Dakota Science and Technology Authority in a non-operating, sealed, and closed condition. The Authority will obtain all permits to re-open the mine and to establish itself as the legal entity responsible for the liability of all operations of the re-opened mine and associated facilities. The Authority will contract with qualified companies and organizations to validate the safe operation of the facilities.
The schedule for the mobilization and re-entry begins with the first quarter of the project. It is anticipated that the necessary permits and authorizations will occur in advance of the location of the construction company at the mine site.

The Authority has completed a detailed feasibility study with Dynatec, a world leading mine constructing company to accomplish the detailed design and development of the conversion. It is anticipated that the feasibility design will be the basis for the construction of the core facilities. The initial phase will begin with an inspection and analysis of the Yates Shaft. A similar inspection and analysis of the Ross Shaft will be accomplished. It is expected that both shafts will be recommissioned for the construction phase of operations within the first two months of re-entry to the mine. Additionally, the unused drift interfaces that intersect with the shafts will be sealed with a system of frame support and shotcrete. Drift is the mining term for a horizontal tunnel.

The conversion of the infrastructure will include four major and somewhat parallel activities:

- the refurbishment of the Yates Shaft,
- the refurbishment of the Ross Shaft,
- the upgrade and refurbishment of the #6 Winze and Ramp,
- the dewatering of the mine.

Special priority will be placed on the coordinated refurbishment of the shafts by providing service areas that will be efficient to maintain and that will reduce the cost of future upgrades as utility and communication technologies evolve.

The following is an illustration of the range of the detailed design documentation that has been prepared to support the construction of the core facility at the 7400 foot level.

1. Addition of Auxiliary Hoist and Hoist Room for the Yates Shaft
2. Addition of Auxiliary Hoist and Hoist Room for the #6 Winze
3. Construction of Working Platforms for the Shaft Rehabilitations
4. Establishing new and efficient Ventilation system including new Ventilation Raise between 7100, 7400 and 7700 foot level
5. New fresh air and exhaust fans on surface
6. Upgrading and Automation of Existing Hoists
7. Dewatering Lower Level of Mine
8. Upgrading Loading Pockets in the Ross Shaft and #6 Winze
9. Conversion of #6 Winze Hoists for Shaft Rehab and back to Production
10. Upgrading Electrical System and new Installations
11. Addition of New Drift at the 7100 foot level and Rock Mechanics Evaluation and construction of Excavations at 7400 foot level and 7700 foot level
12. Modification to Waste Water Treatment Process

**Yates Shaft**

The permanent upgrade to Yates will include the refurbishment of the shaft, relocation of the services delivered through the service compartment, and the addition of a high speed auxiliary hoist elevator to provide scientists with a 24/7 dedicated, constant availability automated ADA access to the 7400 foot level core facility through the Yates Shaft, *then shifting to an ADA approved transport vehicle* at the 4850 feet level, and the continuation in an additional automated elevator in the #6 Winze.

The plan and schedule for the upgrade to the Yates Shaft includes the refurbishment of the shaft, the addition of the auxiliary elevator, and the replacement of timbers in the shaft.

<table>
<thead>
<tr>
<th>Task ID</th>
<th>Task Name</th>
<th>Duration</th>
<th>Qtr 1</th>
<th>Qtr 2</th>
<th>Qtr 3</th>
<th>Qtr 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-5.1</td>
<td>Yates Shaft</td>
<td>420 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-5.1.1</td>
<td>Re-Open &amp; Basic Re-Hab - Yates Shaft</td>
<td>22 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-5.1.2</td>
<td>Install Winch, A-Frame And Cross Head - North</td>
<td>45 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-5.1.3</td>
<td>Remove Manway &amp; Install New Equip, Services - N</td>
<td>140 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-5.1.4</td>
<td>Install Aux Hoist And Cage - South Service</td>
<td>88 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-5.1.5</td>
<td>Remove Old Services &amp; Replace guides - South</td>
<td>26 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-5.1.6</td>
<td>Replace Remaining Timber (800L To 3060L)</td>
<td>144 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-5.1.7</td>
<td>Pump Station 2600L Yates - Install</td>
<td>16 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-5.1.8</td>
<td>Surface Pump Line To Mill Res.</td>
<td>20 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-5.1.9</td>
<td>Pump Station 4850L Yates - Install</td>
<td>16 days</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A-5.1.10</td>
<td>Loading Pocket Rehab 8000L - Yates Shaft</td>
<td>15 days</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Specific upgrades and refurbishment of the Yates Shaft include:
1. Remove shaft cover and reestablish mine services to the surface (shaft collar and hoist room). The services include electrical, compressed air, water, and communications.
2. Recommission the Hoists and inspect the ropes, start the Yates Hoist and inspect the Yates shaft to the 4850 foot level. The initial inspection of the Yates Shaft during the re-
opening and recommissioning will provide verification of the long-term usability of the timber sets in the Yates Shaft. The Yates will provide a secondary escape route for personnel during the dewatering phase of the mine. The inspection will also allow an assessment of shaft conditions to identify the scope of the shaft rehabilitation work needed.

3. Installation of a Winch, A-frame and Cross Head in the North Services Compartment.
   a. Installation of Auxiliary Hoist and ADA Accessible Elevator Cab for the South Services Compartment to provide 24/7 automated access to be used exclusively by the scientists once the core Laboratory is in service.
   b. Removal of the existing manway in the North Services Compartment.

Dynatec Drawing E771-200-02-D-213 (available in exhibit B), provides an overview of the changes proposed for the Yates Shaft Head with the installation of an auxiliary hoist to serve as the high speed 24/7 automated access for the scientists to the 4850 feet level.

A new auxiliary hoist house will be constructed in the Yates yard and serve the elevator that will be placed in the revamped South Service Section of the Yates Shaft. The air pipe currently
located in this service compartment will be moved to the North Service Compartment, the manway will be removed, and guides for the elevator will be installed in the shaft. A simplified representation of the Yates Shaft provides orientation for the more detailed Dynatec Drawing E771-200-020D-211 that follows.

4. Installation of Bulkheads on all inactive levels of the mine to isolate the Yates shaft from other previous mine workings. Doing so will minimize ventilation requirements, reduce
the oxygen supply to help prevent and protect the lab from mine fires, control infiltration waters, and provide a safety barrier for sudden release of trapped waters from previous mine works.

5. Re-establish Electrical Substations and provide power to new pump rooms on 2600 and 4850 foot levels. Install pipes and cables in the North Services Compartment, including a new 12” pump line, and extend a new pump line to the Mill Reservoir.

6. The new Auxiliary Hoist will also be used to remove existing utilities from South Service Compartment and install new guides for the elevator.

7. Homestake had changed the timber sets down to the 800 foot level. Replacement of all timber sets between 800 and 1100 foot level and replacement of 150 individual structural timbers between the 1100 foot level and the 3050 foot level is planned in accordance with one of Homestake’s plans for the continuing upgrade of the Yates shaft. It is also expected that there will not be a significant change in the condition of the timber in the Yates Shaft up to the time when the conversion commences.

8. Scaling of loose rock around the sets and installing of rock bolts and other ground support to maintain the shaft for long-term use during timber replacement.

9. Mining and Installing new pumping stations on the 2600 foot level and the 4850 foot level.

10. Recommission the loading (skip) pocket below the 4850 foot level.

Once the immediate repairs required for safe shaft operation are completed, the shaft will be put in operation to provide service access to the 4850 foot level, which is the major connecting level between the Yates, Ross, and #6 Winze shafts.

**Ross Shaft**

In a manner similar to the inspection and recommissioning of the Yates Shaft, the Ross Shaft will be inspected and placed in operation during the construction phase.

<table>
<thead>
<tr>
<th>Task ID</th>
<th>Task Name</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-6.2</td>
<td>Ross Shaft</td>
<td>492 days</td>
</tr>
<tr>
<td>A-6.2.1</td>
<td>Re-Open For Pumping - Ross Shaft For</td>
<td>27 days</td>
</tr>
<tr>
<td>A-6.2.2</td>
<td>Re-Hab Shaft (sets) - Ross Shaft For</td>
<td>25 days</td>
</tr>
<tr>
<td>A-6.2.5</td>
<td>Loading Pocket Rehab 4850L - Ross Shaft</td>
<td>30 days</td>
</tr>
<tr>
<td>A-6.1a</td>
<td>Re-Hab. 4500 Level - Ross Shaft to #6 winze</td>
<td>2.5 days</td>
</tr>
<tr>
<td>A-6.1b</td>
<td>Re-Hab. 4850 Level - Ross Shaft to #6 winze</td>
<td>2.5 days</td>
</tr>
<tr>
<td>A-6.1c</td>
<td>Re-Hab. 4850 Level - Yates Shaft to #6 winze</td>
<td>23 days</td>
</tr>
<tr>
<td>A-7.1</td>
<td>Re-Hab. Ramp - 4850 Level to 8000 Level</td>
<td>255 days</td>
</tr>
<tr>
<td>A-7.1</td>
<td>Re-Hab. Level Development - Off #6</td>
<td>210 days</td>
</tr>
</tbody>
</table>

Priority will be placed on the preparation of the Ross Shaft for dewatering. The main 12” discharge pipe will be inspected and pipe sections will be replaced as required. The pumps at the pump stations on the 1250, 2450, 3650, and 5000 foot levels will be removed, reconditioned, and returned underground for dewatering. The existing Ross Shaft pump-line will be used for
dewatering, with repairs only as required to service the initial dewatering. Once the Yates Shaft renovations are complete, including installation of the new 12” discharge pipe, and Yates is back in service, the dewatering operations will be moved to the Yates Shaft.

Specific upgrades and refurbishment to the Ross Shaft include:

1. Remove shaft cover and reestablish mine services to the surface (shaft collar and hoist room). The services include electrical, compressed air, water, and communications.
2. Recommission the hoists and inspect the ropes, start the Ross Hoist and inspect the Ross shaft to the 4850 foot level. The initial inspection of the Ross Shaft during the re-opening and recommissioning will provide verification of the long-term usability of the structural steel sets in the Ross Shaft. The Ross will serve as the primary travel route for personnel during Yates Shaft rehabilitation and the dewatering phase of the mine. It will also allow an assessment of shaft conditions to identify the scope of the shaft rehabilitation work needed.
3. The main 12” discharge pipe will be inspected and pipe sections will be replaced as required.
4. Re-establish Electrical Substations and provide power to pump rooms on 1250, 2450, 3650, and 5000 foot levels.
5. Remove, recondition, and replace the pumps and controllers at the pump stations on the 1250, 2450, 3650, and 5000 foot levels.
6. Installation of Bulkheads on all inactive levels of the mine to isolate the Ross shaft from other previous mine workings. Doing so will minimize ventilation requirements, reduce the oxygen supply in the event of mine fires, control infiltration waters, and provide a safety barrier for sudden release of trapped waters from previous mine works.
7. Installation of required pipes and cables in the Services Compartment
8. Rehab 4550 foot level from Ross Shaft to #6 Winze Hoist Room including scaling, bolting, track repair, and all utilities. This includes compressed air, water, electrical, and communications.
9. Rehab 4850 foot level from Ross Shaft to #6 Winze Room including scaling, bolting, track repair and all utilities. This includes compressed air, water, electrical, and communications.
10. Rehab 4850 from Ross to Yates Shaft including scaling, bolting, track repair and all utilities. This includes compressed air, water, electrical and communications.
11. Rehab 4850 from Ross to the Ramp including scaling, bolting, track repair and all utilities. This includes compressed air, water, electrical, and communications.
12. Rehab the Ramp between the 4850 and 8000 including scaling, bolting and all utilities. This includes compressed air, water, electrical, and communications.
13. Prior to the mine shutdown, Homestake had planned to upgrade the Ross Shaft as the principal mover of rock. The procurement of 50 steel sets to rehabilitate the Ross Pillar Area had been completed. These sets will be installed. Shaft inspection will determine the extent of additional repairs and rehabilitation.
14. Once refurbishment of the Ross Shaft is completed, the loading pocket below the 4850 foot level will be refurbished and re-commissioned. The loading pocket transfers the rock to the Ross Skips for removal to the surface.
15. Scaling of loose rock around the sets and installing of rock bolts and other ground support to maintain the shaft for long-term use during steel set replacement.

After the immediate repairs required for safe shaft operation are completed, the shaft will be put in operation to service access to the 4850 foot level, the major connecting level between the Yates, Ross, and #6 Winze shafts.

# 6 Winze
The #6 Winze is a shaft that extends between the 4550 and 8000 foot level. The Hoist Room for the existing #6 Winze is located on the 4550 foot level. The main access to the #6 Winze is on the 4850 level from both the Yates and Ross Shafts. The #6 Winze will be the main access between the 4850 foot level and the core lab facility. The ramp will be the secondary access between the core lab facility and the 4850 foot level.

The existing #6 Winze Production and Service hoists are both friction type hoists. They will be converted to a drum hoist operation to allow them to be used for Shaft refurbishment and dewatering. The #6 Winze operating cage is currently chaired (stored) on the 4850 foot level and one skip is chaired on the 4550 foot level. New drum head shells will be attached to the drums, and new ropes wound on the drums. In this configuration, the hoists will act as winches. The cage and working conveyances will be reattached to access the #6 Winze Shaft for dewatering. Refurbishment of the #6 Winze will include the re-establishment of the loading pocket on the 8100 foot level.

A new high speed elevator will be installed between the 4850 and 8000 foot level. This will require the excavation of a new hoist room on the 4850 level with rope raise. The #6 Winze will also service the dewatering platform for removal of water below the 4850 level. Dynatec Drawing (Exhibit B) E771-200-02-D-203 shows the addition of the Auxiliary Hoist at the #6 Winze Headframe for the high speed elevator.

The new high speed #6 Winze will provide access to the high speed auxiliary elevator in a manner similar to the Yates Shaft conversion as illustrated in the following diagrams. The
elevator will be automated for 24/7 operation and centrally monitored in a manner similar to large industrial or commercial buildings.

Dynatec Drawing (exhibit B) E771-200-02-D-204 provides the detail for the #6 Winze Shaft changes. In addition to the installation of the elevator, the infrastructure upgrades will be made to provide long-range service support available for the core laboratory.
Specific upgrades and refurbishment of the #6 Winze include:

1. The services, including electrical, compressed air, water, and communications will be reestablished.
2. Temporarily convert the production hoist and service hoist to winch hoists.
3. Drive access drift on the 4850 foot level to the location of the new high speed elevator hoist room, excavate the hoist room and drive a new rope raise for the new high speed elevator. Install the auxiliary hoist for the high speed elevator.
4. Inspect #6 Winze down to water level. It is not expected that the un-pumped water will result in any excessive corrosion of the Shaft steel above that which would have occurred had the Shaft been kept dry.
5. Set up the floating barge with 250 horse power pump platform and suspend from skip.
6. As the mine is dewatered, a series of temporary pumps will be staged until the shaft is dewatered down to the 6800 foot level. Two new 1000 horse power pumps will be installed in the 6800 foot level pump room. Temporary pumps will continue to be used until dewatering reaches the 8000 foot level. Two new 700 horse power pumps will be installed in the 8000 foot level pump room.
7. The existing manway will be removed and new services and guides for a high speed elevator will be installed. The Auxiliary Hoist (high speed elevator) will be installed complete with a 7-person ADA Accessible Elevator Cab. The cab will be installed in the manway compartment of the #6 Winze and will be automated for 24/7 exclusive use by science personnel.
8. Inspect services and move the services in the manway compartment to the service compartment. New electrical services will be installed. The remaining services will be appropriately replaced or upgraded.
9. The main 12” dewatering discharge pipe will be inspected and pipe sections will be replaced as required.
10. Re-establish Electrical Substations and provide power to pump rooms on 6800 and 8000 foot levels.
11. Installation of Bulkheads on all inactive levels of the mine to isolate the #6 Winze from other previous mine workings. Doing so, will minimize ventilation requirements, reduce the oxygen supply to help prevent and help protect the lab from mine fires, control infiltration waters, and provide a safety barrier for sudden release of trapped waters from previous mine works.
12. Once refurbishment of the #6 Winze is completed, the loading pocket at the 8150 foot level will be refurbished and re-commissioned. The loading pocket is used to transfer rock to the #6 Winze Skips for transport to the Ross 4850 loading pocket.

**Dewatering**
The Production Hoist that will be installed in the #6 Winze will be used to raise and lower a crosshead from which the dewatering will occur through a floating deck with a 250 HP submersible pump. The floating deck will be installed in the North Skipping Compartment and will be set in place within the guides of the compartment. As the water recedes through pumping,
the floating deck will travel down between the guides of the skip compartment in 200 feet increments, or to the closest level within that range.

At that point, a temporary sump will be set up where another 250 HP submersible will be installed which will become an intermediary pumping station. This will be done until a point is reached where a total of 3 x 250 HP submersible pumps are pumping in stages for a total distance of 600 feet. At that point, a 700 HP stationary pump will be installed in a temporary sump which will be capable of pumping a total of 600 feet vertical. The progression of submersible pumps will continue past this level in a similar fashion to the next 600 feet level. This system will be applied until the Shaft is dewatered to the 8150 foot level.

Additionally, new permanent 1000 HP pumps will be installed in the 6800 foot level and two 700 HP pumps will be installed in the 8000 foot level as the permanent pumps when the dewatering is completed.

The rehabilitation of the ramp will start on the 4850 foot level and progress as the water is lowered. Temporary ventilation will be provided through a series of fans located on the 4850 foot level from which vent tubing will be added as the rehab advances. As levels are intersected that have connection to the #6 Winze, the ventilation fans will be moved down to that level and ventilation will be advanced down the ramp from that new location. This system will continue until the mine is dewatered to the 8000 foot level. The mine will be dewatered in 13 months at an average of 7.2 feet per day, based on the project starting in January 2006.

**Basic Facility Construction**
Central to the development of the core facility is the provision of the utilities essential for the continued addition of large detectors without the requirement for upgrades or additions to the
core facility. This will support the continued addition of all the detectors identified in studies available to date.

The analysis of cost indicates it is prudent to install the infrastructure systems at the projected maximum capacity during initial construction rather than return for the installation of additional capacity in the future. Furthermore, the capacity of services required during the various phases of construction normally far exceed the collective requirements of the identified detectors.

The Dynatec feasibility study included both the feasibility of converting the mine to the core deep underground laboratory and the analysis of efficiencies in the ongoing operating costs of the facility through appropriate modifications in the infrastructure systems to support the long-term core development of future detectors.

The upgrade of the Yates Shaft, Ross Shaft, and #6 Winze provide the support to enable the construction of the core facility. The core facility is designed to include the utility service infrastructure to serve all the science requirements and support the research identified for the various detectors proposed for the deep underground laboratory. Further, the core facility is designed to support, without significant additional cost, the insertion of future detectors and other experiments of differing purpose, size, and availability for inclusion in the laboratory.
Three levels of excavations comprise the core facility. The excavations include the central core deep underground laboratory at the 7400 foot level and supporting excavations on the 7100 foot and 7700 foot levels. The core facility is designed for expansion in the general plane of the 7400 foot level, while also providing the ability to support experiments such as Earthlab at the 8000 foot level and to serve as the base for future expansion of the laboratory to greater depths.

**7100 Foot Level Excavation**

The excavation at the 7100 foot level will provide the ability for the exploratory geotechnical core drilling to guide the development of the central 7400 foot facilities and the ability to plan for the continued addition of future large detectors. Additionally, the drift excavation at the 7100 foot level serves as a major component of the exhaust ventilation system and supports the life-safety requirement to expedite the purging of any noxious or other unacceptable gaseous products from areas of the core laboratory.
The excavation on the 7100 foot level will begin as soon as the dewatering process lowers the level of the water below the existing entrance to the #6 Winze. The excavation will consist of a 15’w x 15’ h drift driven northwest from the #6 Winze for a distance of 1047 feet. Access to the level will be through the refurbished main ramp from the 4850 foot level. This drift will serve two purposes:

1. It will provide access above the 7400 foot level from which geotechnical drilling can be performed in the vicinity of the planned locations of the major lab locations. The drift will be constructed with a series of core drilling stations located to the side of the major construction path of the drift to accommodate the use of core drilling equipment. Information from this geotechnical drilling will allow geologists to make adjustments to the final locations of the lab facilities, if required, in addition to specifying final ground support requirements.

2. It will provide a level above the lab on the 7400 foot level from which an 11 foot diameter borehole will be excavated which will be used to draw exhaust ventilation from the core lab.

Dewatering and shaft rehab will continue as the excavation of this drift occurs. It is planned to store the waste produced from this excavation in the many available openings on the level.

This drift will be driven with standard ground support installed which will include 8’ resin grouted rebar installed on a 5’ x 5’ pattern. Four inch shotcrete and 12” floor concrete will be installed during lab construction.

**7400 Foot Level Excavation**
The plan for the core facility is provided in Drawing E771-200-02-D-201.

Once the dewatering has reached the 7400 foot level, excavation will commence and will include the slashing of the existing 9’ x 9’ drift to the northwest of the #6 Winze to the required 15’ x
15’ dimensions. This drift will then be extended for approximately 840 feet through the center of the lab facilities. From this point, the drift will be driven an additional 280 feet to the Ventilation Raise location.

Utilities, including ventilation, services and other essential support activities will be delivered to the core facility through the central 7400 foot level drift. Ventilation will be from the entrance to a central air filtration and the 290 ton air cooling unit and exit through the 11 foot diameter raise to the 7100 foot and 7700 foot levels.

The excavation at the 7400 foot level will provide for the emergency holding of liquid or heavier than air gases from a detector leak or unanticipated waste from an experiment into holding sumps for recovery and appropriate disposal.

The design of the core facility combines the requirements of the International Building Codes for access to protected fire rated spaces, such as in university offices and research buildings with the requirements for access to mine refuge chambers. In the event of an incident, all personnel will have immediate escape access through fire and explosion-rated exit ways that will connect with mine rescue chambers appropriately equipped to support personnel in accordance with Mine Safety and Health Administration (MSHA) codes.

It is intended that the primary mine escape route from the core laboratory will be up the #6 Winze to the 4850 foot level, across the 4850 foot level to the Yates Shaft and up the Yates
Shaft. The secondary escape route will be provided by the Ramp System to the 4850 foot level and then to either the Yates or Ross Shaft.

Emergency Refuge Stations will be constructed on the 7400 foot level. Refuge stations will be provided in the path of fresh air, and have their own independent supply of fresh air. They will be adequately stocked with emergency supplies such as food and fresh water. Communications with the refuge station will include telephone, radio and data. Refuge stations will be located as needed along the Ramp System.

As required by law, mine rescue teams complete with all necessary mine rescue equipment will be put in place for the construction and conversion. It is planned to utilize the existing mine workforce for this purpose. The required number of individuals will be assembled and trained to the level required to be a practicing mine rescue team. The team will need to meet regularly for refresher training and practices to ensure that they can provide effective mine rescue capability for the conversion. Should it be necessary, additional back up mine rescue teams may be made available through MSHA.

Additional excavations at the 7400 foot level will include the following:

<table>
<thead>
<tr>
<th>Name</th>
<th>Dimensions (feet)</th>
<th>Volume (cu. ft)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Length</td>
<td>Width</td>
</tr>
<tr>
<td>Equipment Car Wash</td>
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<td>26</td>
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<tr>
<td>Air Filtration and Cooling</td>
<td>100</td>
<td>20</td>
</tr>
<tr>
<td>Electric Utilities</td>
<td>82</td>
<td>33</td>
</tr>
<tr>
<td>Wash/Change Room</td>
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<tr>
<td><strong>Total</strong></td>
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</tr>
</tbody>
</table>

Ground support in the above excavations will include both load bearing and non-load bearing fixtures, and consist of only the support which is required during the excavation. This will include 8’ resin grouted rebar installed on a 5’ x 5’ pattern in addition to 20’ cable bolts installed in some of the larger excavations. Final construction will include 4” of shotcrete around the perimeter of the excavation and 12” of concrete on the floor.

Waste rock disposal will start with available openings on the 7400 foot level. Once the dewatering is completed and the loading pocket in #6 Winze is refurbished, waste muck will be disposed of through the #6 Winze and Ross hoisting system.

There are several locations available for disposal of the waste rock at the surface. These locations will be permitted as necessary.

**7700 Foot Level Excavation**

The core laboratory is designed to accommodate additional detectors using all the infrastructure services as provided on page 42.
Excavation on the 7700 foot level will commence following the completion of the excavations on the 7100 foot level, along with the dewatering to this elevation. The existing access on the 7700 foot level will be slashed from the existing 9’ x 9’ drift to 15’w x 15’h. This access will then be extended for a distance of 830 feet to reach the location of the base of the ventilation raise. The excavation on the level will serve two purposes:

1. It will allow for the exhaust of heavier than air gases that could be created in the event of a failure within one of the labs.

2. It will serve as a conduit for leaking liquids to be directed towards a containment area on the 7700 foot level, away from the lab facilities on the 7400 foot level.

This drift will be driven with standard ground support installed which will include 8’ resin grouted rebar installed on a 5’ x 5’ pattern. Shotcrete and floor concrete will be installed during lab construction.

**Exhaust Raise**

Once the 7700 foot level has been completed, an 11’ diameter raise, will be excavated from the 7700 foot level to the 7100 foot level. The Raise will be driven with a Raise Bore machine which performs the task by first drilling a pilot hole from the 7100 foot level to intersect the 7700 foot level. Once the pilot has broken through, an 11’ diameter reaming head is attached at the breakthrough, and the pilot is then reamed to its final dimensions. Waste rock drawn from the breakthrough location will be removed from the mine via the #6 Winze/Ross hoisting system.
Ground support, shotcrete, manway and services will be installed during lab excavation and construction. This raise will intersect with the 7400 foot level ventilation drift.

**OTHER INFRASTRUCTURE – BASIC FACILITY CONSTRUCTION**

**Ventilation**
The ventilation of the mine and Homestake Lab will include the construction of new Fresh Air Intake and Return Air Exhaust capabilities. Fresh air will be provided to the Yates and Ross Shafts via the Tramway connecting the two Shafts. As a result of the significant reduction in ventilation requirements for detector experiments, the core facility and associated construction activities, new, more efficient fans for mine ventilation will be installed. New 200 HP intake fans will be located in the Tramway supplying the Yates and Ross Shafts. These fans will be used to direct fresh air down each shaft separately. Natural gas-fired mine air heating plants will be installed at each air intake location to heat the fresh air as required during the winter months. Exhaust air will be removed from the core laboratory through a new 350 HP exhaust fan which will be added at the #5 Shaft.

The new fans will serve as the primary source of ventilation and reduce the ongoing operating cost of ventilation for the core facility. Existing surface ventilation infrastructure including the 3000 HP Oro Hondo Fan and the two 700 HP Kirk Fans located at the Kirk Adit will be used during construction and then placed in a standby mode for further analysis as the core facility is fully commissioned.

The total capacity of the ventilation system is 450,000 cfm. This volume of fresh air will allow for full operation of the science facility as well as allow adequate fresh air for construction or expansion of the facility.

The ventilation system will be designed to allow full volume modulation so only the required ventilation volume will be in use at any particular time. This will optimize heating, cooling and power requirements as well as costs.

The ventilation system is designed so the science facility is always under positive pressure.

The exhaust air will be routed via the various old mine workings, including the #4 Winze to the #5 Shaft. The #5 Shaft is the principal exhaust airway.

During the reopening of the mine construction crews will install shotcrete ventilation bulkheads in the Yates, Ross and #6 Winze Shafts at each level to provide an air tight seal and prevent fresh air from entering the old workings. This sealing of the unused drifts will reduce the need for excessive ventilation and will also mitigate the potential for mine fires within the mined out areas.

**Water Treatment**
The Homestake mine is required by the State of South Dakota to treat all water released from the mine property. The existing water treatment system was designed to combine the processing of decant water from the Grizzly Gulch Tailings Facility location and the mine discharge water using a biological treatment processes. Prior to the cessation of pumping, the warm water from
the underground mine was combined with the decant water from the Grizzly Gulch tailing facility to warm the inflow to a favorable temperature to optimize the biological process.

As operations in the underground mine came to a close, Homestake replaced the warm water from the underground mine with steam injection to heat the decant water. Homestake will continue to treat the ponded decant water from the Grizzly Gulch Tailings Facility in a separate treatment facility until such time as Homestake and the South Dakota Department of Environment and Natural Resources (DENR) completes the reclamation of the Grizzly Gulch site. Grizzly Gulch Tailing Site will remain the responsibility of the Homestake Mining Company and will not be transferred. The existing water treatment facility will be transferred to the Homestake Underground Laboratory for use in treating the pumped water from the mine conversion process and core facility.

A water quality investigation of the mine discharge water was performed by the South Dakota DENR. Samples were taken from various locations throughout the mine before the mine was closed. The results of this study conclude that the general quality of the mine water is good. It is anticipated that the temperature of the water produced in the dewatering process will need to be reduced prior to the release outside of the Homestake Lab. By the time the dewatering starts, the water is expected to be at a temperature of approximately 95 degrees Fahrenheit. The maximum allowable discharge temperature limit of 65 degrees Fahrenheit will be accomplished through a combination of cooling and mixing lower temperature waters. Once the mine is dewatered, it is expected that minimal treatment will be required.

**Power Distribution and Other Utilities**

The Homestake Mine has received three separate and redundant sources of electrical power from the Black Hills Power and Light power grid. The intention is to continue this multiple source of power to assure the safe operation of the Homestake Underground Laboratory. The Authority will negotiate the most favored power rates, including the availability of federal electric power to the State as an agency of government.

Underground power is supplied to the Ross and Yates Shafts from three substations located on the surface: the East Power Substation, the Ross Power Substation, and the Oro Hondo Power Substation. The Ross and Oro Hondo Substations provide power to the Ross Shaft. The East Substation supplies power via the Yates Shaft to a substation at #6 Winze on the 7700 foot level.

The power needs of the converted facility will be considerably less than what was required for the mine while it was in operation. The existing infrastructure provides an excellent base from which required power for the core laboratory facility can be obtained. The existing surface electrical distribution power system has been maintained for the conversion to the core facility. The existing surface infrastructures including power lines, transformers and switching units will be utilized for the conversion.

Additionally, emergency generator sets will provide back-up power for the operation of the shafts and the core facility in the event of a major wide-area system failure. The generators will be strategically located to ensure that life-safety needs are provided.
Mine Heating
During the winter months, mine air heating will be kept to a minimum as requirements for cooling at depth will create a significant energy demand. Heating will be supplied through gas-fired heaters located at the Yates and Ross intake areas and will provide heating capacity to raise the air temperature to 34 degrees Fahrenheit. A 7 million Btu heater will be required at the Yates Shaft intake and a 26 million Btu heater will be required at the Ross Shaft.

Mine Air Conditioning
Mine air conditioning will be required below the 4850 level during the shaft refurbishment and excavation stages at the various levels. A 290-ton chilling unit will be installed for permanent core laboratory air conditioning on the 7400 foot level. During construction, a number of 30-ton chillers will be used to provide conditioned work space and relocated as the conversion work progresses.

Mine Communications
As a part of the renovation of the Yates and Roth Shaft and the #6 Winze, the communication systems will be upgraded. The existing voice communications will be upgraded to current technology. All data communication cables into the mine currently originate from the main computer system in the Homestake Administrative Building. Until the new Science and Administration Center is constructed, it is planned to continue with this system. The fiber optics cables used are 24 pair, 62.5 micron, multi-mode, T-base 10. Fiber optic systems will be expanded to provide an extensive network for communication with future detectors and other experiments.

Mine Monitoring and Mine Control Systems
A central monitoring and mine control system will be upgraded to current command and control technology to insure the safe operation of the overall facility. Mine security and mine rescue provisions are included in the conversion design.

Life-Safety
Life-safety will be the foremost concern at the Homestake Underground Laboratory. Several approaches will be used to ensure the safety of the laboratory staff:

1. A central monitoring system will continuously test mine air for combustion products such as carbon monoxide, and vapors from organic solvents. The central monitoring system will also be connected to fire detectors and fire alarms
2. A stench gas system will provide for the notification of all personnel in the event of a situation requiring evacuation of the laboratory. Should an emergency occur, a harmless agent with a distinctly noticeable odor (ethyl mercaptan) will be introduced into the supply side of the laboratory ventilation system. Upon sensing the odor of the air additive, all personnel will be required to evacuate the facility. This method effectively notifies all members of the staff of an emergency situation, regardless of the accessibility of staff members by wired or wireless communication devices.
3. The construction of secondary egress routes from all underground openings. Egress routes will be towards the supply side of the ventilation system.
4. The exhaust ventilation system is designed to carry fumes and vapors away from occupied areas of the laboratory.

5. The construction of emergency refuge stations, which can be sealed off from contaminated air in the underground workings. The refuge stations will have their own self-contained air supply, adequate stores of food and water, and independently powered communications systems.

6. All personnel working in underground areas will be required to carry, at all times, an MSHA-Approved Self-Rescuer breathing apparatus. This device removes carbon monoxide from air before it is breathed into the user’s lungs. The self-rescuer unit functions for 60 minutes, allowing the user to escape to the surface, or to a refuge station, in the event of an underground fire.

7. Facilities will be established to contain chemical contaminants in the event of an unplanned release. The contaminants can then be removed from containment for appropriate disposal.

**Fire Prevention and Containment**

An important consideration in planning of the lab construction will be fire prevention and containment. The lab will need a sprinkler system installed so that the fire can be contained with a sprinkler system. Water will be supplied through a gravity feed from the reservoir to the 7400 foot level through a 6” pipeline in the Exhaust Raise.

The lab will also be provided with a stench-gas warning system installed for release into the fresh air system in the event of a fire in any location within the mine. The mine will be required to have this system in place during both construction and operation phases.

The fire containment will also be accomplished through a series of air-tight ventilation bulkheads. Additionally, the installation of the fire suppression system will include the appropriate use of suppressants.

**Noxious Gas Release and Ventilation**

The ventilation system has been designed to supply the lab with sufficient quantities of fresh air. The design of the lab has considered that the exhaust for the lab will always be in the back north side. Therefore, in the event of a fire in the lab or accidental release of a noxious gas related to an experiment, the exit from the lab will be to the south which will always be in fresh air.

Evacuation from the mine will always be up the #6 Winze and out the Yates Shaft which will always be in fresh air.

The Exhaust Raise has been designed so that exhaust gases can be drawn from the lab either up or down, depending on the relative weight of the gas to the weight of air. At this time it is unknown whether there will be a potential for a heavy noxious gas to be released, however the design of the lab has made a provision for this.

**Hazardous Material Release, Containment and Removal**

With potentially hazardous fluids used in experiments, provision has been made for released hazardous fluids to be directed towards a containment area on the 7700 foot level. The spill would flow into a sump in the lab which would direct the fluid through a pipeline to the Exhaust Raise which has a 6” insulated drain line. From the Raise, the fluid will be directed to an
emergency containment area located in the exhaust way of the level where it would be stored until it can be discharged from the mine.

**Surface Buildings and Facilities**

Homestake Mining Company will transfer to the Authority the surface buildings and facilities to support the underground mine conversion and the Homestake Underground Laboratory. The principal science center for the Homestake Lab will be at the Yates site, and the principal mining and maintenance center will be at the Ross site.

The main entrance to the Homestake Underground Laboratory will use an improved Ellison Road. The current main entrance to the mine through the city of Lead’s housing areas will become an emergency entrance. The site will have controlled access at all times. Security systems will provide laboratory staff scientists and construction maintenance staff with controlled access to the Homestake Lab properties. Security gates, fences, monitors, detectors, and barriers will be installed as warranted. Visitors will be screened to enter the site.

During the construction phase the former warehouse, foundry, drill shop, and machine shop will be used to support the construction operations. The Ross Dry House, machine and maintenance shops will be available to support the construction.

Initially, the existing Ellison Boilers will be recommissioned to provide heat to the buildings of the Yates site. As renovation of the buildings at the Yates site occurs, the Ellison Boilers will be replaced by more efficient local heating units to reduce the operating expenses for the laboratory.
The Homestake Administration Building and the Yates Dry House will be designated as the headquarters for the science administration of the Homestake Laboratory. Initially, the three floors of the Yates Dry House will be renovated to provide offices, meeting rooms, housing and educational areas for the personnel associated with the deep underground science program. A renovated Homestake Administration Building will provide the facilities for the Office of the Director of the Homestake Underground Laboratory and associated staff.

In the future, with the addition of detectors and other experiments, there will be a need for the construction of a new Science and Administration Center for the laboratory.

**Other Utilities**
The conversion provides for appropriate domestic water, sewage, compressed air and other utilities required during both the construction and long-term operation of the Homestake Lab.

**Lab Construction**

<table>
<thead>
<tr>
<th>Task</th>
<th>Task Name</th>
<th>Duration</th>
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</tr>
<tr>
<td></td>
<td>7400L - Drift Excavations - Lab</td>
<td>72 days</td>
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<tr>
<td></td>
<td>7400L - General Purpose Lab - Top Cut</td>
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<td>7400L - General Purpose Lab - Shotcrete</td>
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<td></td>
<td>7400L - General Purpose Lab - Mine Guard</td>
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</tr>
<tr>
<td></td>
<td>7400L - Room &amp; Lab Floor Concrete</td>
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</tr>
<tr>
<td></td>
<td>7400L - Drift Floor Concrete</td>
<td>30 days</td>
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Following the completion of the core laboratory construction, the core facility will be ready for the addition of the first detectors chambers or other experiments at the 7400 foot level. For the purposes of this report, the first chamber has been demonstrated as a lab opening that will be 252’l x 66’w x 55’h with an arched back.
The excavation of the General Purpose Lab (core facility) would commence with a 15’w x 15’h access drift driven on both the southwest and northeast sides of the lab. The southwest and northeast sides would then be extended for a distance of 125 feet to the southeast. The lower access would be driven through the center of the lab to the northeast, and will connect with the northeast access close the vent raise. An incline would be driven from the Main Access drift to the upper elevation of the large lab. From this incline, an access would be driven along the northwest side of the lab from which an entry will branch off into the top of the lab. The excavation of the top 15 feet will be excavated from the upper access on the northwest side, and the bottom 40 feet will be benched through the access on the southeast side.

Ground Support installed during the upper level excavation would consist of 8’ resin grouted rebar installed on a 5’ x 5’ pattern with welded wire mesh. Long cable bolts would be installed in the back on an 8’ x 8’ pattern, and 4” of shotcrete will be installed over the bolts and screen. Rockweb would be applied to the surface of the shotcrete and concrete to provide a barrier against radon gas emission. The bottom wall perimeter would have similar ground support installed, with the exception that the cable bolts in the walls will be 20’ in length. The floor of the excavation would be constructed with 12” of reinforced concrete.

Before the bottom 40 feet is benched an overhead crane would be installed for the length of the room and will have a capacity of 10 tons.

During the excavation of the lab on the 7400 foot level, final ground support consisting of 4” of shotcrete on walls and 12” of concrete on the floor would be applied to the excavations.
completed on the 7100 foot level, the 7400 foot level, and the 7700 foot level. Final construction within the Exhaust Raise would also be performed at this time and would consist of 4” of shotcrete applied around the wall perimeter and a steel manway with pipes and emergency electric cables within its full length.

Following the completion of excavation with full ground support and concrete floor, the core facility would be ready for science equipment construction and installation.

**Future Expansion – Additional Laboratories**

The excavation of future labs on the 7400 foot level would be accomplished by developing new entries from the southwest side of the #6 Winze on the 7400 foot level that would be driven north to access the northwest side and east to access the southeast side.

Drawing E771-200-02-D-201A shows a conceptual layout of future labs on the 7400 foot level.

All excavation would be done outside the science area and would not interfere with operating experiments. Concrete bulkheads would be installed to provide a barrier between the lab and new excavations to prevent interference during breakthrough.

The core facility system has been designed to assure that the basic services to the lab can be adjusted to future demands. The most expensive cost of the development of the conversion is the requirement of refurbishment and the upgrading of the primary shafts. The manpower costs for these shaft activities are balanced between the upgrade of the electrical, pumping of water, and the provision of compressed air and related services required for the mining construction with the addition, at the same time of the shaft upgrade, with any future requirements for the expansion of the laboratory. The upgrade to the primary shafts includes the refurbishment and addition of improved access to the service compartments of each shaft to facilitate the addition of infrastructure capacity or the transition to future new technologies. The need for the
infrastructure services to support the mining construction activities far exceeds the projected future infrastructure requirements of the projected entire Science Program.

Once the services are provided, as necessary for the core construction, the basic utilities and infrastructure services are available for expansion. Any special requirements of a particular Science Program will be expected to be addressed in the program, but the capability to respond to special needs is included as an overall design goal of the core laboratory.

A primary consideration in the design is the cost of installation of infrastructure capacity for future expansion while minimizing the cost of operations. Emphasis has been placed on the use of equipment of the most efficient size and operating cost. The design provides for the addition of units of additional air conditioning and ventilation as may be required for future expansion. Where appropriate to decrease overall operating costs and to meet life-safety requirements, variable speed fans will be installed to adjust ventilation quantities as required. Power and utilities will be sized to allow for expansion. Should additional demands be made to the system, it will be possible to add to the infrastructure without affecting the operation of experiments already in place.

It is intended that access for excavation and construction crews will be through the #6 Winze. At this time, the scientists will be using the auxiliary hoist exclusively and will be disembarking at the 7400 foot level through the east end of the station. Construction crews will disembark through the west end and should not interfere with the science personnel.

There are several options for the disposal of the rock removed in the construction of the large detector chambers. The South Dakota Department of Environment and Natural Resources has provided four potential disposal sites that are the priority locations for waste rock disposal.

**Homestake Laboratory Science Education and Visitors Center**
The Homestake Laboratory Science Education and Visitors Center will be constructed over the improved Ellison Entrance Road at the west end of the Yates complex. The center will include the former Ellison Hoist Room, the Ellison Maintenance Shop, and the current location of the city maintenance shop for Lead.

This location will provide an exceptional opportunity to combine the historic traditions of the Homestake mine and the exciting opportunities from science developments of the laboratory. This center will be a facility of the Authority in cooperation with the City of Lead, the science operations of the laboratory, and the State of South Dakota. The funding for the development and construction of the Homestake Laboratory Science Education and Visitors Center is outside the scope of this proposal.
CONCLUSION

The closed Homestake mine offers the science community three opportunities. First is the ability to provide a deep underground laboratory with access to the 7400 foot level and below. Second is the ability to provide a large volume of exceptional rock capable of supporting the chambers needed today and allowing for deeper expansion in the future. Third is a state government that is prepared to support the science community by expediting the construction of the laboratory and by facilitating the early insertion of detector experiments.

The ability to utilize the 8000 foot depth and to access the incredibly strong rock for conversion to the underground laboratory has been the subject of much discussion. The following elements clearly make the Homestake Underground Mine the optimal choice for the deep underground science laboratory:

- An agreement is in place for a contract to transfer all ownership and liability from Homestake Mining Company and Barrick Gold Corporation to the South Dakota Science and Technology Authority upon the funding of the conversion.

- The Authority, with the statutory and financial support of the State of South Dakota, will guarantee the cost and delivery schedule of the Homestake Underground Laboratory construction through the completion of the locations for the insertion of the first detector.

- A design feasibility study has been completed by one of the world’s leading mine construction companies. It indicates that the mine can be converted to meet all published requirements for the deep laboratory. This design details the conversion of the closed, sealed, un-pumped mine with the old mine infrastructure to upgraded research quality facilities with specific costs and a completion schedule of insertion of the first detector in months.

- The willingness of the State of South Dakota to join with the Scientific Community, under the aegis of the NSF, to expedite the use of the laboratory to begin scientific studies by utilizing the capability of the Authority to issue construction bonds supported by a five year guarantee of the NSF.

South Dakota deeply respects the extraordinary mandate of the science community expressing the need for a deep underground research laboratory as established through the studies and reports of the National Academy of Sciences, the International Workshop on Neutrinos and Subterranean Science (NeSS 2002), and studies of the many other distinguished committees and groups.

The state is ready, willing, and able to make it happen.
GLOSSARY
Adit – The entrance to a mine; if driven into the earth vertically, or on a steep incline, the adit is called a shaft; if driven horizontally, it is called a tunnel.

Borehole – Common term for a small-diameter drill hole used to sample rock or break rock using explosives. A borehole can also refer to a large-diameter hole that is drilled through the rock from one mine level to another to transfer blasted rock, provide a conduit for ventilation, or serve as a passageway for people.

Btu – British thermal unit. A measure of energy required to raise the temperature of one pound of water one degree Fahrenheit.

Cage – In a mine shaft, the conveyance used to transport people and equipment.

Competent rock – Rock which, because of its physical and geological characteristics, is capable of sustaining openings without any structural support except pillars and walls left during mining.

Drift – A horizontal passage underground that “drifts” with the course of a vein.

Dry house (or change room) – A special building, constructed at a mine site, where the miner changes into work clothes. Also known as “the Dry.”

Hard rock – Ore that must be blasted, as opposed to ore soft enough to be worked with hand tools.

Headframe – A steel or wooden frame at the top of the shaft that supports the cage for lowering and raising.

Hoist – The engine that raises or lowers the cage by driving of a large drum around which cable is wound.

Lead – The visible course of a vein; pronounced to rhyme with “heed.”

Level – One of the “stories” of a deep mine, providing access from the shaft to drifts and stopes.

Manway – An entry used exclusively for personnel to travel from the shaft bottom or drift mouth to the working section.

MSHA – Mine Safety and Health Administration; the federal agency which regulates mine health and safety.

Muck – Ore or rock that has been broken by blasting.

National Science Foundation – An independent federal agency that does not fall under any Cabinet department, the NSF was established by Congress in 1950 to “promote the progress of
science, the national health, prosperity, and welfare; and to secure the national defense.” The positions of Director and Deputy Director are appointed by the President and confirmed by the U.S. Senate. NSF’s activities are guided by a 24 member National Science Board.

Neutrinos – One of the fundamental particles which make up the universe. Similar to electrons, but they do not carry an electric charge. Enrio Fermi coined the term neutrinos, which is Italian for “little neutral one.”

Ramp – A secondary or tertiary inclined opening, driven to connect levels, usually driven in a downward direction, and used for haulage.

Rockbolting – The act of supporting openings in rock with steel bolts anchored in holes drilled especially for this purpose.

Rock Mechanics – The study of the mechanical properties of rocks, which includes stress conditions around mine openings and the ability of rocks and underground structures to withstand these stresses.

Scaling – the act of removing loose slabs of rock from the back and walls of an underground opening.

Shaft – A primary vertical or non-vertical opening through mine strata used for ventilation or drainage and/or for hoisting of personnel or materials; connects the surface with underground workings.

Shotcrete – Concrete conveyed through a hose and pneumatically projected at high velocity onto a surface. It is dense, strong and waterproof. Because it is not contained by forms, it can be applied to vertical and overhead areas.

Skip – A self-dumping type of bucket used in a shaft for hoisting ore or rock.

Stope – An excavation in a mine from which ore is being or has been extracted.

Sump – The bottom of a shaft, or any other place in a mine, at which underground water gathers for pumping to the surface.

Tailings – Material rejected from a mill after most of the recoverable valuable minerals have been extracted.

Tailings pond – A low-lying depression used to confine tailings for treatment before release from the mine.

Winze – An underground shaft which has no direct connection with the surface; frequently a connection between two levels.
EXHIBIT A: LEGISLATION CREATING THE SOUTH DAKOTA SCIENCE & TECHNOLOGY AUTHORITY

Introduced by:

FOR AN ACT ENTITLED, An Act to create the Science and Technology Authority and to declare an emergency.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF SOUTH DAKOTA:

Sec. 1. This Act may be cited as the Science and Technology Authority Act.

Sec. 2. The Legislature finds and declares:

(a). That the State of South Dakota and the northern plains region of the United States are underrepresented and underdeveloped in the areas of scientific and technological investigation, experimentation and development;

(b). That fostering and facilitating scientific and technological investigation, experimentation and development will benefit the state economically and educationally by creating immediate and future jobs and educational opportunities, and will add to the quality of life of the citizens of South Dakota by adding to the general wealth of human knowledge;

(c). That the creation of this Authority will foster and facilitate scientific and technological investigation, experimentation and development by creating a mechanism through which laboratory, experimental and development facilities, both non-profit and for-profit, both governmental and non-governmental, may be acquired, developed, constructed, funded, maintained and operated; and

(d). That the foregoing are public purposes and uses.

Sec. 3. The purpose of the Authority created by this chapter is to foster and facilitate scientific and technological investigation, experimentation and development by creating a mechanism through which laboratory, experimental and development facilities may be acquired, developed, constructed, maintained, operated and decommissioned.

Sec. 4. As used in this chapter, unless the context otherwise clearly requires:

(a). “Authority” means the South Dakota Science and Technology Authority created by this Act.

(b). “Board” means the Board of Directors of the Authority.

(c). “Project” means any undertaking that includes surface and underground real and personal property, including but not limited to mineral rights, water rights, facilities, buildings and other structures, improvements, machinery, parking facilities and all other equipment or
resources generally suitable for use in, developing, constructing, acquiring, improving maintaining or operating a facility or laboratory for scientific, research or technological development. A project includes all site improvements and new construction for sidewalks, sewers, water facilities, solid waste and wastewater treatment and disposal sites, pollution control facilities, resource or waste reduction, recovery, treatment, and disposal facilities, parks, open spaces, wildlife sanctuaries, streets, highways, runways, hangers, and any other facilities or operations required for the development, construction, acquisition, improvement, maintenance, or operation of a facility or laboratory for scientific research or technological development.

(d). “Costs incurred in connection with the development, construction, acquisition, improvement, maintenance, operation or decommissioning of a project” means the following: the cost of purchase of liability, indemnification and other insurance or other risk-reduction or risk-transfer mechanisms necessary in order to acquire the facilities or property necessary for a project, or to maintain and operate a project; the cost of purchase and construction of all real and personal property and related improvements, together with the equipment and other property, water rights, mineral rights, and easements acquired that are deemed necessary for the construction of the project; financing charges; interest costs with respect to revenue bonds, notes, and other evidences of indebtedness of the Authority prior to and during initial construction and for a period of 36 months thereafter; engineering and legal expenses; the costs of plans, specifications, surveys, and estimates of costs and other expenses necessary or incident to determining the feasibility or practicability of any project; and such other expenses as may be necessary or incident to the financing, insuring, development, construction, acquisition, improvement, maintenance, operation or decommissioning of a specific project.

(e). “Financial aid” means funds or in-kind contributions or donations from any source, including grants, and also the expenditure of Authority funds or funds provided by the Authority through the issuance of its revenue bonds, notes, or other evidences of indebtedness for the development, construction, acquisition, improvement, maintenance, operation or decommissioning of a project.

(f). “Governmental agency” means any federal, State, or local governmental body, and any agency or instrumentality thereof, corporate or otherwise.

(g). “Lease agreement” means an agreement under which a project is leased to any person, governmental agency, foundation or entity that will use or cause the project to be used as a project upon such terms as may be deemed desirable by the Authority, including providing for lease rental payments at least sufficient to pay when due the lessee’s pro rata share of all principal of and interest and premium, if any, on any revenue bonds, notes, or other evidences of indebtedness of the Authority issued with respect to the project, providing for the maintenance, insurance, operation and decommissioning of the project on terms satisfactory to the Authority, and providing for disposition of the project upon termination of the lease term, including purchase options or abandonment of the premises.

(h). “Financing agreement” means any agreement by which the Authority agrees to loan or grant its funds, including the proceeds of its revenue bonds, notes, or other evidences of indebtedness issued with respect to a project to any person or governmental agency that will use
or operate the project upon terms providing for loan repayment installments at least sufficient to pay when due the borrower’s pro rata share of all principal and interest and premium, if any, on any revenue bonds, notes, or other evidences of indebtedness of the Authority issued with respect to the project, providing for construction, maintenance, insurance, operation and decommissioning of the project on terms satisfactory to the Authority, and providing for other matters as may be deemed advisable by the Authority.

(i). “Person” includes without limitation an individual, corporation, limited liability company, unincorporated association, foundation, partnership, limited liability partnership, and any other legal entity, including a trustee, receiver, assignee, or personal representative of the entity.

(j). “Revenue bond” or “bond” means any bond issued by the Authority, the principal and interest of which are payable solely from revenues or income derived from any project or activity of the Authority.

Sec. 5. (a) The South Dakota Science and Technology Authority is hereby created as a body corporate and politic.

(b) The governing and administrative powers of the Authority shall be vested in its Board of Directors consisting of seven members, all of whom shall be appointed by the Governor, with the advice and consent of the Senate. Not all members of the Board may be of the same political party. The terms of the members of the Board shall not exceed six years, and the terms of the initial Board of Directors will be staggered by the drawing of lots so that not more than two of the director’s terms shall end at the same time. Members of the Board may serve more than one term.

(c) The Governor may remove any member of the Board for cause, including incompetence, neglect of duty or malfeasance in office.

(d) Members of the Board shall receive compensation for the performance of their duties hereunder as established by the Legislature in accordance with section 4-7-10.4 from the funds of the Authority. Members may be reimbursed at rates established by the bureau of personnel for necessary expenses, including travel and lodging expenses, incurred in connection with the performance of their duties as members.

(e) Each member of the Board shall, before entering upon the duties of their office, take and subscribe the constitutional oath of office.

(f) The Board may appoint an Executive Director. The Executive Director may not be a member of the Board. The Executive Director shall hold office at the discretion of the Board. The Executive Director shall be the chief administrative and operational officer of the Authority, shall direct and supervise its administrative affairs and general management, shall perform such other duties as may be prescribed from time to time by the Board, and shall receive compensation fixed by the Board. The Executive Director shall attend all meetings of the Board; however, no action of the Authority may be taken by the Executive Director.
Board or the Authority shall be invalid on account of the absence of the Executive Director from a meeting. The Board may engage the services of such other agents and employees as they deem appropriate, including attorneys, appraisers, scientists, researchers, engineers, accountants, credit analysts and other consultants, and may prescribe their duties and fix their compensation.

(g) The Board shall meet on the call of its Chairperson, upon the written request of four members of the Board or upon the request of the Executive Director.

Sec. 6. A majority of the members of the Board shall constitute a quorum for the transaction of business. All official acts of the Authority shall require the affirmative vote of at least four members of the Board at a meeting of the Board at which the members casting those affirmative votes are present.

Sec. 7. Notwithstanding any other law to the contrary it shall not be or constitute a conflict of interest for a trustee, director, officer, or employee of any health institution, educational institution, financial institution, investment banking firm, brokerage firm, commercial bank or trust company, architectural firm, engineering firm, mining firm, insurance company, or any other firm, person, or corporation to serve as a member of the Authority, provided such trustee, director, officer, or employee shall abstain from deliberation, action, and vote by the Authority in each instance where the business affiliation of any such trustee, director, officer, or employee is involved.

Sec. 8. Each meeting of the Authority for any purpose whatsoever shall be open to the public as required by SDCL chapter 1-25. Notice of meetings shall be as provided in the bylaws of the Authority. Resolutions need not be published or posted.

Sec. 9. The Executive Director or other person designated by the Authority shall keep a record of the proceedings thereof and shall be custodian of all books, documents, and papers filed with the Authority, the minute books or journal thereof and its official seal. The Executive Director or other person designated by the Authority may cause copies to be made of all minutes and other records and documents of the Authority and may give certificates under the official seal of the Authority to the effect that such copies are true copies and all persons dealing with the Authority may rely on such certificates.

Sec. 10. The Authority may:

(a) Have perpetual succession as a body politic and corporate exercising essential public functions;

(b) Sue and be sued in its own name;

(c) Have an official seal and alter it at will;

(d) Maintain an office at such place or places within the state as it may designate;
(e) Make and execute contracts and all other instruments necessary or convenient for the performance of its duties and the exercise of its powers and functions under this chapter;

(f) Employ fiscal consultants, engineers, attorneys, and such other consultants and employees as may be required and contract with agencies of the state to provide staff and support services;

(g) Procure insurance against any loss in connection with its property and other assets, including loans and notes in such amounts and from such insurers as it may deem advisable;

(h) Borrow money and issue bonds as provided by this chapter;

(i) Procure insurance, letters of credit, guarantees or other credit enhancement arrangements from any public or private entities, including any department, agency or instrumentality of the United States or the state, for payment of all or any portion of any bonds issued by the Authority, including the power to pay premiums, fees or other charges on any such insurance, letters of credit, guarantees or credit arrangements;

(j) Receive and accept from any source aid or contributions of moneys, property, labor or other things of value to be held, used and applied to carry out the purposes of this chapter subject to the conditions upon which the grants or contributions are made, including, but not limited to, gifts or grants from any department, agency or instrumentality of the United States for any purpose consistent with the provisions of this chapter;

(k) Provide technical assistance to local public bodies and to profit and nonprofit entities to foster and facilitate scientific and technological investigation, experimentation and development;

(l) To the extent permitted under its contract with the holders of bonds of the Authority, consent to any modification with respect to the rate of interest, time and payment of any installment of principal or interest, or any other term of any contract, loan, loan note, loan note commitment, contract, lease or agreement of any kind to which the Authority is a party;

(m) To make loans and grants to any governmental agency or any person for the costs incurred in connection with the development, construction, improvement, maintenance, operation or decommissioning of a project, or for the maintenance of the physical or structural integrity of real or personal property incorporated or which may be incorporated into a project, in accordance with a written agreement between the Authority and such governmental agency or person; provided, that no such loan or grant shall exceed the total cost of such project as determined by the governmental agency or person and approved by the Authority;

(n) Cooperate with and exchange services, personnel and information with any governmental agency;

(o) Enter into agreements for management on behalf of the Authority of any of its properties upon such terms and conditions as may be mutually agreeable;
(p) Sell, exchange, lease, donate, and convey any or all of its properties whenever the Authority shall find such action to be in furtherance of the purposes for which it was organized;

(q) Acquire, hold, lease and dispose of real and personal property, and construct, develop, maintain, operate and decommission projects for the purposes for which the Authority was created;

(r) To agree to indemnify any person or governmental agency for such reasonable risks as the Authority deems advisable if such indemnification is a condition of a grant, gift or donation to the Authority, provided, however, that any such obligation to indemnify may only be paid from insurance or from revenues of the Authority, and such obligation shall not constitute a debt or obligation of the State of South Dakota;

(s) Do any act and execute any instrument which in the Authority's judgment is necessary or convenient to the exercise of the powers granted by this chapter or reasonably implied from it.

Sec. 11. The Authority may, pursuant to chapter 1-26, adopt, amend and repeal such rules, not inconsistent with this chapter, as it deems necessary to regulate its affairs, carry into effect the powers and purposes of the Authority and conduct its business, including:

(a) Establishing application procedures for grants and loans from the Authority;

(b) Establishing eligibility criteria for such grants or loans;

(c) Governing the use of proceeds of such grants or loans;

(d) Establishing criteria for the terms and conditions upon which such grants or loans shall be made, including the security, if any, that may be required for such loans; and

(e) Establishing criteria for the lease or other use of any real or personal property owned by the Authority, or the placement of experiments in any facility owned or controlled by the Authority.

Sec. 12. Loans and grants made by the Authority pursuant to the terms of this chapter shall be upon such terms and conditions as the Authority may deem necessary, and may be with or without interest and on a secured or unsecured basis.

Sec. 13. The Authority may invest any funds not needed for immediate investment in the following:

(a) Bonds, notes, certificates of indebtedness, treasury bills, or other securities constituting direct obligations of, or obligations the principal of and interest on which are fully guaranteed or insured by, the United States of America;
(b) In obligations issued by or obligations the principal of and interest on which are fully guaranteed or insured by any agency or instrumentality of the United States of America;

(c) In certificates of deposit or time deposits constituting direct obligations of any bank which is a "qualified public depository" or any savings and loan association which is a "savings and loan depository" under the Public Deposit Insurance Act pursuant to chapter 4-6A, unless sufficient volume of such certificates is not available at competitive interest rates. In that event, the Authority may purchase noncollateralized direct obligations of any bank or savings institution or holding company if such institution or holding company is rated in the highest two quality categories by a nationally recognized rating agency;

(d) In obligations of any solvent insurance company or other corporation or business entity existing under the laws of the United States or any state thereof, provided the obligation of such insurance company or other corporation or business entity shall be rated in the two highest classifications established by a standard rating service of insurance companies or a nationally recognized rating agency;

(e) In short term discount obligations of the Federal National Mortgage Association;

(f) In obligations issued by any state of the United States or any political subdivision, public instrumentality, or public authority of any state of the United States, which obligations are not callable before the date the principal thereof will be required to be paid and which obligations are fully secured as to both sufficiency and timely payment by, and payable solely from, securities described in subdivision (a) and which obligations are rated in the highest investment classification by at least two standard rating services of such obligations.

Any such securities may be purchased at the offering or market price thereof at the time of such purchase. All such securities so purchased shall mature or be redeemable on a date or dates prior to the time when, in the judgment of the Authority, the funds so invested will be required for expenditure. The express judgment of the Authority as to the time when any funds will be required for expenditure or be redeemable is final and conclusive. Investment in any obligation enumerated in this section may be made either directly or in the form of securities of, or other interests in, an investment company registered under the Federal Investment Act of 1940, whose shares are registered under the Federal Securities Act of 1933 and whose investments are limited to these obligations.

Sec. 14. (a) The Authority shall have the continuing power to issue revenue bonds, notes, or other evidences of indebtedness for the purpose of developing, constructing, acquiring, improving, operating and decommissioning projects. For the purpose of evidencing the obligations of the Authority to repay any money borrowed, the Authority may, pursuant to resolution, from time to time issue and dispose of its interest bearing revenue bonds, notes, or other instruments and may also from time to time issue and dispose of such bonds, notes, or other instruments to refund, at maturity, at a redemption date or in advance of either, any revenue bonds, notes, or other instruments pursuant to redemption provisions or at any time before maturity. All such revenue bonds, notes, or other instruments shall be payable solely from the revenues or income to be derived with respect to projects, from the leasing or sale of the projects,
or from any other funds available to the Authority for such purposes. The revenue bonds, notes, or other instruments may bear such date or dates, may mature at such time or times not exceeding 40 years from their respective dates, may bear interest at such rate or rates, may be in such form, may carry such registration privileges, may be executed in such manner, may be payable at such place or places, may be made subject to redemption in such manner and upon such terms, with or without premium as is stated on the face thereof, may be authenticated in such manner, and may contain such terms and covenants as may be provided by an applicable resolution.

(b) The holder or holders of any revenue bonds, notes, or other instruments issued by the Authority may bring suits at law or proceedings in equity to compel the performance and observance by any corporation or person or by the Authority or any of its agents or employees of any contract or covenant made with the holders of such revenue bonds, notes, or other instruments, to compel such corporation, person, the Authority, and any of its agents or employees to perform any duties required to be performed for the benefit of the holders of any such revenue bonds, notes, or other instruments by the provision of the resolution authorizing their issuance and to enjoin such corporation, person, the Authority, and any of its agents or employees from taking any action in conflict with any such contract or covenant.

(c) If the Authority fails to pay the principal of or interest on any of the revenue bonds or premium, if any, as the same become due, a civil action to compel payment may be instituted in the appropriate circuit court by the holder or holders of the revenue bonds on which such default of payment exists or by an indenture trustee acting on behalf of such holders. Delivery of a summons and a copy of the complaint to the Chairperson of the Board shall constitute sufficient service to give the circuit court jurisdiction of the subject matter of such a suit and jurisdiction over the Authority and its officers named as defendants for the purpose of compelling such payment.

(d) Notwithstanding the form and tenor of any such revenue bonds, notes, or other instruments and in the absence of any express recital on the face of any such revenue bond, note, or other instruments that it is non-negotiable, all such revenue bonds, notes, and other instruments shall be negotiable instruments. Pending the preparation and execution of any such revenue bonds, notes, or other instruments, temporary revenue bonds, notes, or instruments may be issued as provided by resolution.

(e) To secure the payment of any or all of such revenue bonds, notes, or other instruments, the revenues to be received by the Authority from a lease agreement or loan agreement shall be pledged, and, for the purpose of setting forth the covenants and undertakings of the Authority in connection with the issuance thereof and the issuance of any additional revenue bonds, notes, or other instruments payable from such revenues, income, or other funds to be derived from projects, the Authority may execute and deliver a trust agreement. A remedy for any breach or default of the terms of any such trust agreement by the Authority may be by mandamus proceedings in the appropriate circuit court to compel the performance and compliance therewith, but the trust agreement may prescribe by whom or on whose behalf the action may be instituted.
The revenue bonds or notes shall be secured as provided in the authorizing resolution which may, notwithstanding any other provision of this Act, include in addition to any other security a specific pledge or assignment of and lien on or security interest in any or all revenues or money of the Authority from whatever source which may by law be used for debt service purposes and a specific pledge or assignment of and lien on or security interest in any funds or accounts established or provided for by resolution of the Authority authorizing the issuance of such revenue bonds, notes or other instruments.

The State of South Dakota pledges to and agrees with the holders of the revenue bonds and notes of the Authority issued pursuant to this section that the state will not limit or decrease the rights and powers vested in the Authority by this act so as to impair the terms of any contract made by the Authority with such holders or in any way impair the rights and remedies of such holders until such revenue bonds, notes or other instruments, together with interest thereon, with interest on any unpaid installments of interest, and all costs and expenses in connection with any action or proceedings by or on behalf of such holders, are fully met and discharged. The Authority is authorized to include these pledges and agreements of the state in any contract with the holders of revenue bonds, notes or other instruments issued pursuant to this section.

Nothing in this chapter shall be construed to authorize the Authority to create a debt of the state within the meaning of the Constitution or statutes of South Dakota and all revenue bonds notes, other instruments and obligations issued by the Authority pursuant to the provisions of this Act are payable and shall state that they are payable solely from the funds pledged for their payment in accordance with the resolution authorizing their issuance or in any trust indenture or mortgage or deed of trust executed as security therefor. The state shall not in any event be liable for the payment of the principal of or interest on any bonds, notes, instruments or obligations issued by the Authority or for the performance of any pledge, mortgage, obligation or agreement of any kind whatsoever which may be undertaken by the Authority. No breach of any such pledge, mortgage, obligation, or agreement may impose any pecuniary liability upon the state or any charge upon its general credit or against its taxing power.

Sec. 15. The state and all counties, municipalities, political subdivisions, public bodies, public officers, banks, bankers, trust companies, savings banks and institutions, building and loan associations, savings and loan associations, executors, administrators, conservators, trustees, and other fiduciaries may legally invest any debt service funds, money, or other funds belonging to them or within their control in any bonds or notes issued pursuant to this chapter.

Sec. 16. Any documentary material or data made or received by the Authority for purposes under this Act, to the extent that such material or data consists of trade secrets, scientific or technical secrets, matters involving national security or commercial or financial information regarding the operation of a business, may not be considered public records, and shall be exempt from disclosure. Any discussion or consideration of such information may be held by the Authority in executive session.
Sec. 17. (a) The Authority may, but need not, acquire title to any project with respect to which it exercises its authority;

(b) The Authority shall have power to acquire by purchase, lease, gift, or otherwise any property or rights therein from any person or any governmental agency, whether improved for the purposes of any prospective project or unimproved. The Authority may also accept any donation of funds for its purposes from any of those sources;

(c) The Authority shall have power to develop, construct, improve, maintain, operate, and decommission any project, either under its own direction or through collaboration with any approved applicant, or to acquire any project through purchase or otherwise, using for that purpose the proceeds derived from its sale of revenue bonds, notes, or other instruments or governmental loans, grants or other funds and to hold title to those projects in the name of the Authority;

(d) The Authority shall have the power to enter into intergovernmental agreements with any governmental agency;

(e) The Authority shall have the power to share employees with governmental agencies;

(f) The provisions of section 5-2-19 shall not apply to real or personal property given to the Authority.

Sec. 18. Any department, board, commission, agency or officer of this state or the board of regents of the state of South Dakota, may transfer jurisdiction of or title to any property to, or may exchange property under its or his control with, the Authority when such transfer or exchange is approved in writing by the Governor as being advantageous to the state.

Sec. 19. The Authority shall designate a qualified public depository as defined in §4-6A-1 as a depository of its money. Those depositories shall be designated only within the State and upon condition that bonds approved as to form and surety by the Authority and at least equal in amount to the maximum sum expected to be on deposit at any one time shall be first given by the depositories to the Authority, those bonds to be conditioned for the safekeeping and prompt repayment of the deposits. When any of the funds of the Authority shall be deposited by the treasurer in any such depository, the treasurer and the sureties on his official bond shall, to that extent, be exempt from liability for the loss of any of the deposited funds by reason of the failure, bankruptcy, or any other act or default of the depository. However, the Authority may accept assignments of collateral by any depository of its funds to secure the deposits to the same extent and conditioned in the same manner as assignments of collateral are permitted by law to secure deposits of the funds consistent with the provisions of chapter 4-6A.

Sec. 20. All land, improvements, equipment, fixtures or other property interests owned by the Authority, shall constitute a separate class of property which is exempt from real property taxation.
Sec. 21. The Authority is attached to the Department of Tourism and State Development for reporting purposes. The Authority shall submit such records, information, and reports in the form and at such times as required by the Secretary except that the Authority shall report at least annually.

Sec. 22. Notwithstanding any other provisions of law, all funds received by the Authority shall be set forth in an informational budget as described in § 4-7-7.2 and be annually reviewed by the Legislature.

Sec. 23. The functions and programs of the former Homestake Laboratory Conversion Project are transferred to the Authority.

Sec. 24. The Authority is authorized to accept the donation of the Homestake Mine in Lead, South Dakota, or any part thereof.

Sec. 25. It is hereby declared that the sections, clauses, sentences and parts of this chapter are severable, are not matters of mutual essential inducement, and any of them may be excised by any court of competent jurisdiction if this chapter would otherwise be unconstitutional or ineffective. It is the intention of this chapter to confer upon the Authority the whole or any part of the powers in this chapter provided for, and if any one or more sections, clauses, sentences and parts of this chapter shall for any reason be questioned in any court of competent jurisdiction and shall be adjudged unconstitutional or invalid, such judgment shall not affect, impair or invalidate the remaining provisions thereof, but shall be confined in its operation to the specific provision or provisions so held unconstitutional or invalid, and the inapplicability or invalidity of any section, clause, sentence or part of this chapter in any one or more instances shall not be taken to affect or prejudice its applicability or validity in any other instance.

Sec. 26. Whereas, this Act is necessary for the support of the state government and its existing public institutions, an emergency is hereby declared to exist, and this Act shall be in full force and effect from and after its passage and approval.