DUSEL Status

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Oct. 15, 2008

Long Base Line Collaboration Meeting

Outline

- DUSEL Project Key Dates & Deliverables
- DUSEL Organizational Additions
- Recent News
  - S-4 Solicitation
- Current RFP's
- 2009 January NSF Review
  - Large Cavity Requirements.
- Water Level

DUSEL: Key dates

- July 2007: Homestake Site Selection for proposed DUSEL
- October 2008: S4 solicitation for experimental proposals
- December 2010: PDR-Preliminary Design Report, Baseline Scope, Schedule, Budget
- March 2011: Earliest National Science Board Presentation of DUSEL MREFC proposal
- October 2012: FDR Final Design Report for construction start in FY2013

Key Deliverables

Activities, Contracts, and Project Milestones				
FY08	FY09	FY10	FY11	FY12
• Project Office Staffing	• Project Office Staffing	• Project Office Staffing	• Project Office Staffing	• Project Office Staffing
• Define Scope and Let: Geotechnical Site Investigations and Excavation Design Contract (300 and 4850L	• Geotechnical Report: Establishing Rock Properties and Basis of Design for Underground Construction			
• Define Scope and Let: Surface Infrastructure and Underground Operations Alterations and Upgrade Contract	• Infrastructure Assessment Report: Assessing Existing Conditions and Establishing Requirements Definition for Upgrades and Improvements for the	• Surface and Underground Operations Upgrade Report: Detail Plans for Surface and Underground Infrastructure Upgrades	• *Draft Report* Operations Infrastructure: Prepare Construction Ready Drawings and Specifications for Surface and Underground Operations Infrastructure	• Operations Infrastructure Report: Prepare Construction Ready Drawings and Specifications for Surface and Underground Operations Infrastructure
• Define Scope and Let: Underground Laboratories Design Contract	• Laboratory Requirements Document: Assessing Establishing Requirements Definition for Underground Laboratories and Excavations	• Laboratory Module Design Report: Integrate Rock Properties with Instrumentation and Laboratory Requirements to Establish Laboratory Module Design	• *Draft Report* Laboratory Modules: Prepare Construction Ready Drawings and Specifications for Laboratory Modules (end of FY)	• Laboratory Module Report: Prepare Construction Ready Drawings and Specifications for Laboratory Modules
• Assess Potential Experiments and Accumulate Conceptual Experimental Requirements	• Experimental Instrumentation Requirements Document: Establishing *Preliminary* Instrumentation Requirements for the Suite of Experiments	• DUSEL Experimental Instrumentation Requirements Definition: Following Experimental Selection Establish Instrumentation Requirements and Preliminary Designs	• *Draft Report* DUSEL Instrumentation: Prepare Construction Ready Drawings and Specifications for Intrumentation (end of FY)	• DUSEL Experimental Instrumentation Report: Prepare Construction Ready Drawings and Specifications for Intrumentation
	• *Preliminary* Facility Baseline Report	• *Preliminary* Experimental Instrumentation Baseline Report		
		• Facility Baseline Report	• Facility and Instrumentation Baseline Report: Integrate Facility Design with Experimental Instrumentation (mid-FY)	
			• DUSEL Preliminary Design Report December 2010	

Geotech

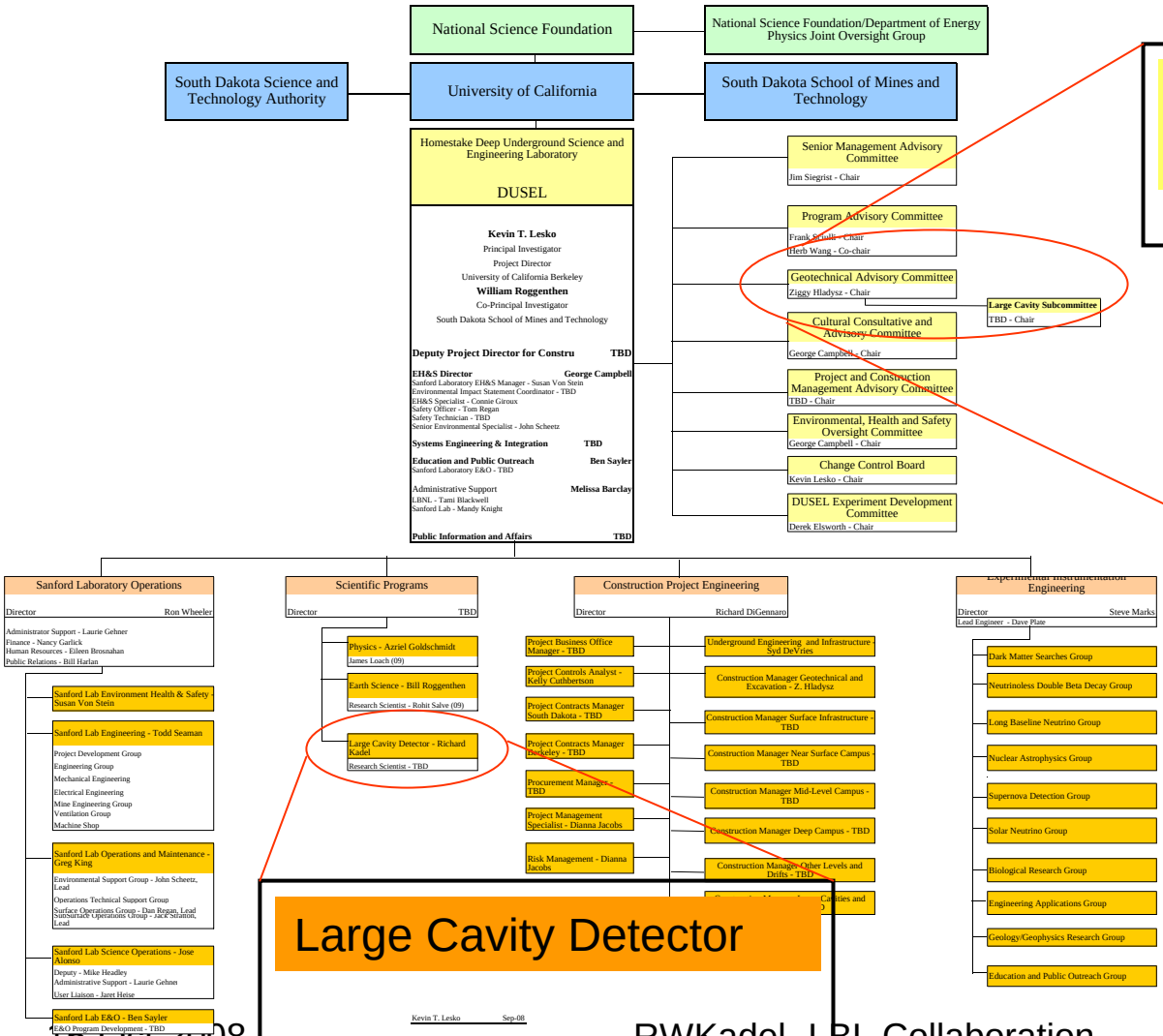
Infrastructure

U. Labs

Exp. Instrumentation

Facility Reports

DUSEL Org Chart.



Geotechnical Advisory Committee

Ziggy Hladysz-Chair

Large Cavity Board

TBD-Chair.

Large Cavity Detector

Richard Kadel.

Geotechnical Advisory Committee and Large Cavity Board

- GAC fully functioning (geotech RFP)
- LCB Organized by DUSEL, DEDC, and NSF
  - LCB Members are independent consultants and experts in large underground cavities
  - LCB Charge is being finalized now. They will provide oversight and recommendations to the DUSEL Project regarding:
    - Initial studies prior to 4850 ft level access
    - Plan for cores, locations and analysis
    - RFP for Cavern design & approval
    - RFP for Excavation plan & approval

Recent News

- The Change Control board met on 2008-Aug-29 at Lead, SD.
- Two priorities were affirmed as being the highest priority for the SDSTA activities in the coming year –

  1) dealing with the accumulated water and

  2) developing an agreement to dispose of waste rock from u/g construction.
- Actions:
  - Minimal restoration of Yates shaft. Major upgrades in the Yates were deferred until DUSEL.
  - The SDSTA will continue to pump water below the 5300 level and will focus on increasing the water pumping capacity of the Ross Shaft with a goal of maximizing the pumping of water to the limits of the existing shaft pump column.
    - Maximum existing capacity: 2200 gal/min, operate on average at 80% of maximum.
    - 4850 ft access in ~ 2009-July.
    - Current capacity limited by water treatment (20-60 ppm Iron in water) to ~ 1250 gal/min. Upgrading water treatment plant

Status, Request for Proposals (RFP)

- Geotechnical Study (RESPEC)
- Architectural Program
- Surface and Underground Infrastructure
- Environmental Studies
  - EIA
  - EIS

Geotechnical

- Meetings between DUSEL/ RESPEC for Geotechnical work at 300 ft and 4850 ft level
  - Initial response exceeded budget for complete scope of work
  - Scope under negotiation, defer drilling at 300ft level
  - Initiate work before end of calendar year
  - Does not include geotech for large detector.

Architectural Program (Partial List)

- Administrative offices (23ksf) including 25 (30) Permanent (visiting scientist) offices
- Shared Surface Assembly Facilities. (67ksf)
  - Small, Large and High Bay assembly
  - Machine shop/Electronics shop
  - Dry storage
  - Remote expt. Control room (12)
- Sanford Education Science Center (50ksf)
  - Visitor Lodge/Dorm (15 rooms)
- 300/800 ft ft level (40 ksf)
  - Education & outreach module
  - Low bkg microforming and Assembly facility (800ft)

4850 Level (240ksf)

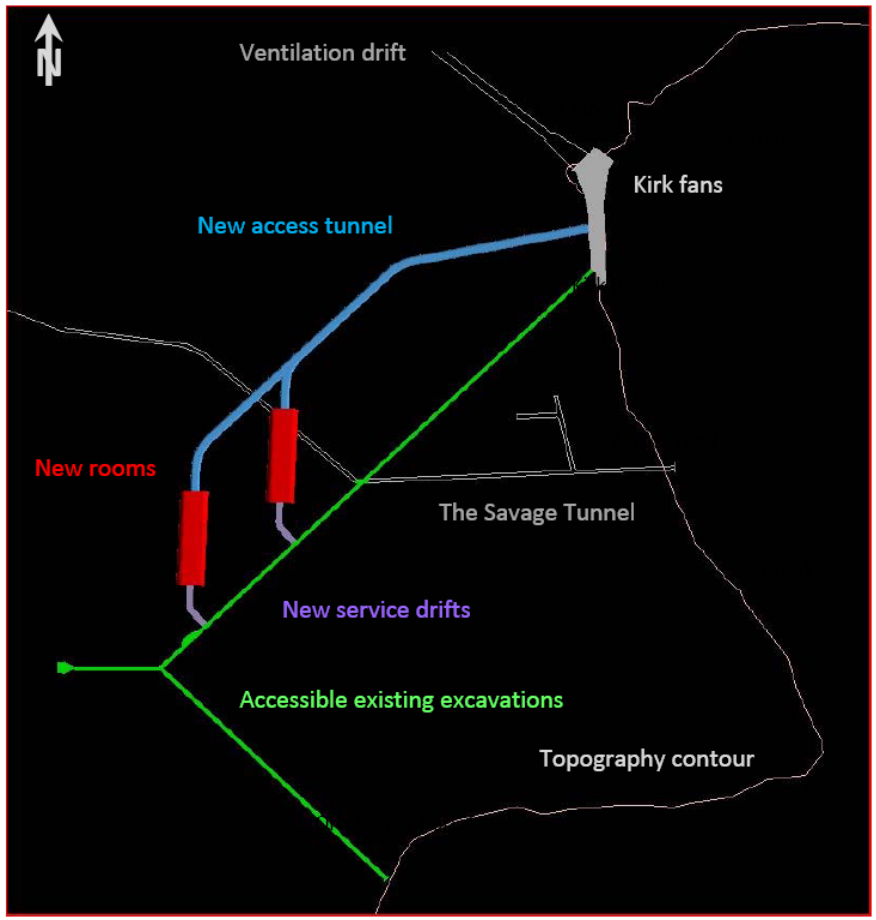
- 2-3 Laboratory Modules
- 3 Large Detectors, phased (1 being discussed as part of the MREFC)
- Davis Lab → ultimately low bkg counting facility?
- Lab Support Facilities (~15ksf)
  - Equipment Car Wash
  - Air Filtration & Cooling room
  - Electrical Facilities Substation
  - Wash/Change room
  - Refuge Station/ Cafeteria
  - Waste Water Pre-treatment
- Ross Shops remodel into common shop (4ksf)

Site Infrastructure RFP What's Included (partial list)

Provide a System-by-System Analysis of the Existing Conditions

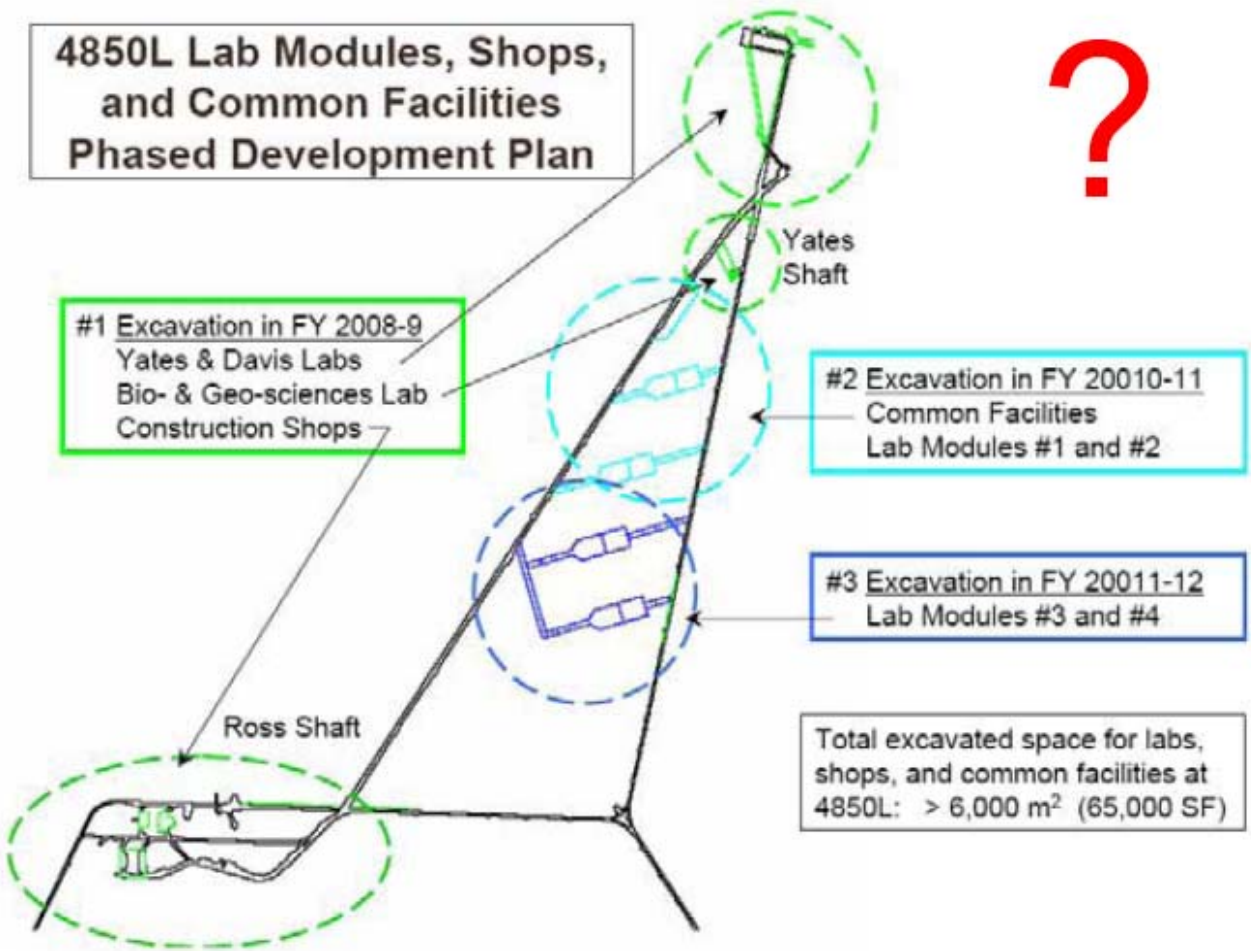
1. Shaft Systems for Yates & Ross Shafts
2. Hoist Cages & Skips
3. Plumbing Systems Including Pathways
4. Ventilation Systems Including Pathways
5. Electrical Systems Including Pathways
6. Communications Systems
7. Fire Prevention and Mitigation
8. Access and Safety
   - Along Drifts
   - General: Assess existing conditions & non-compliant conditions related to life safety codes and regulations
9. Environmental Hazards

300 ft level Area of Interest



RFP Area of Interest at 4850 Level

Does NOT include Large detectors.



Site Infrastructure Timeline

- Request for Proposal Issued August 15, 2008
- Site Tour #1 September, 2008
- Site Tour #2 October, 2008
- Proposal Submittals due to DUSEL October, 2008
- Interviews (tentative) November, 2008
- Selection and Contract issued December, 2008
- Start of Work (target) January, 2008
- $500,000 available for this contract over two years

Environmental Impact Statement (EIS)

- Discussions with Argonne National Lab, Environmental Services Division, e.g.
  - Site Surveys
  - Poll community
  - Hold hearings
  - Create corrective action plan
- Large Cavity Detectors to be included
  - Rock Disposal
  - Gd in water (?)
    - Medical Issues about Gd contrast agents in MRI
    - See, for example: http://en.wikipedia.org/wiki/Nephrogenic_systemic_fibrosis
  - LAr: EH&S issues.

Yearly NSF Review at Berkeley at the end January 2009

- 2.5 day Review of DUSEL project
- Anticipate breakout session on Large Detector(s)
- Session would concentrate on Requirements Definition, eg.
  - Depth & Mass vs Physics goals
  - Infrastructure Requirements
  - Budgets and Schedule.

Key Elements for Review (from the DUSEL Project Manager)

1. Defined REQUIREMENTS that form the basis for engineering and design:
   - Documented Requirements and Interfaces
2. DESIGN DEFINITION: preliminary design layouts, drawings, schematics, procedures, processes, and specifications
3. Identified PROJECT RISKS, including risk assessments and mitigation plans
4. Preliminary SCOPE definition for each WBS element:
   - WBS Dictionary – what is included (and what is not included, assigned responsibilities, interfaces
   - Key PERFORMANCE criteria and parameters
5. Preliminary COST ESTIMATES for each WBS element:
   - top-down estimates as-needed, detailed, bottom-up estimates if available
6. Preliminary SCHEDULE for each WBS element:
   - Preconstruction tasks and milestones for preliminary & final design
   - Estimated schedule for construction tasks and milestones
   - Identify key decision points, hold points, dependencies, etc.
7. STAFFING Plans and Resource requirements for design and construction management
8. Preliminary OPERATIONS plan: resources, operational readiness criteria

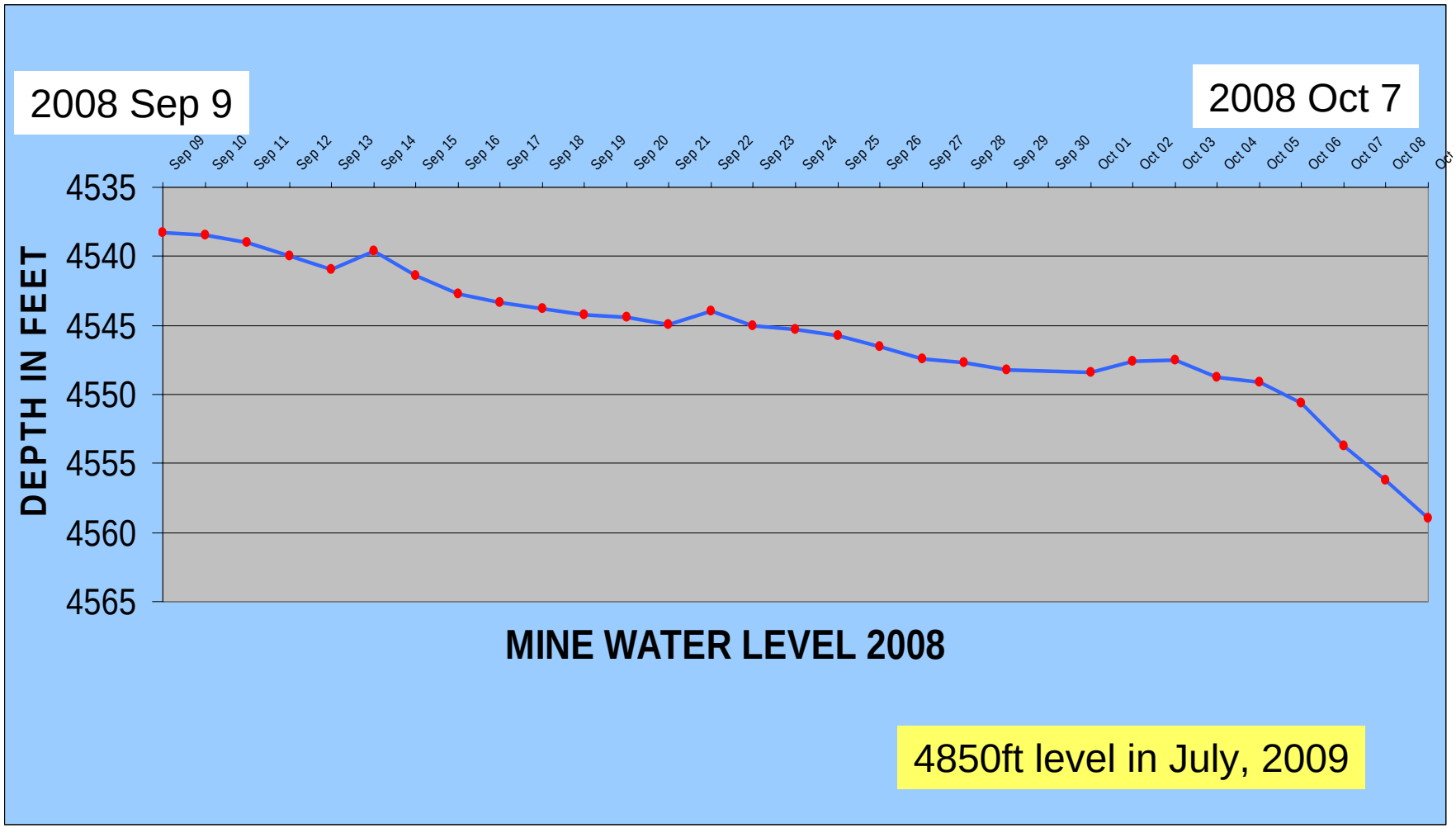
Topics for Large Detector Breakout Session

- Physics Goals & Backgrounds
- Detector Design
  - H_20
  - LAr
- Depth Document & Mass Requirements
  - Do we all agree on a level for these cavities?
  - Is there a minimum detector size?
- Collaboration management and buy-in: - can we function as a collaboration, are we big/strong enough?
- NSF "Initial Suite of Experiments" Scope
  - One Cavern for Large Detector is anticipated to be part of MREFC
  - DUSEL-supplied infrastructure (see my UDiG talk)
  - Risks & EH&S issues.
  - Project Management and Institutional Responsibilities
    - Cavity
    - Detector
    - Beamline
  - Cost and Schedule, such as it is known.

NSF Yearly Review Dates

- Initial presentations and backup material due mid- November
- Almost final presentations Dec 15 (open to review committee)
- Review: End of January in Berkeley
  - (tentatively 2009-Jan 28-30).
- Need to assign Topics & Speakers
  - Executive Board?
  - Coordinate with DEDC

Recent Pumping History



Backup

DUSEL Site Infrastructure RFP

The purpose of the work is to:

1) Identify existing, known and unknown conditions
2) Evaluate feasibility for continued use of existing equipment and systems
3) Evaluate the existing conditions related to safety concerns and environmental hazards
4) Determine the requirements to modify, replace, upgrade, abandon or demolish existing infrastructure
5) Provide recommendations for testing and laboratory analysis of material samples as necessary
6) Produce a comprehensive report of the Site Assessment findings and recommendations for infrastructure improvements and budgets to accommodate the planned lab development

Site Infrastructure, cont.

7) Provide the engineering design services necessary to prepare for implementation of the improvements
8) Develop detailed and reliable preliminary cost estimates for the required improvements
9) Provide preliminary design documents including drawings, and specification for the infrastructure improvements and refurbishment that allow:
   a) the preliminary and final design of the laboratory spaces and excavations to proceed with confidence and knowledge of existing conditions;
   b) DUSEL to retain contractors to prepare detailed, final design for the infrastructure improvements and rehabilitation, concurrently with the design of underground laboratories and excavations