see packet 7 for enclosure

WM Record File 101 WM Project 10
Docket No.
PDR
LPDR
Distribution: *Giarratana, REB, MJB, JDB, *HJM, *MRK, *JTG, DRM, CPK, LBH/Linehan (Return to WM, 623-SS) Bilhorn, *Kennedy, Westbrook

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

WM DOCKET CONTROL CENTER

'85 JUN 18 A11:08

May 31, 1985

MEMORANDUM FOR: Robert E. Browning, Director
Division of Waste Management

FROM: F. Robert Cook, Senior On-Site Licensing Representative, Basalt Waste Isolation Project (BWIP)

SUBJECT: OBSERVATIONS, COMMENTS AND RECOMMENDATIONS FOR THE PERIOD APRIL 20 TO MAY 22, 1985

1. On May 21, 1985 DOE (HDQRS) initiated an audit of the DOE (BWIP) Office. The Agenda for the audit is Attachment A. Attachment B is a list of current meetings relating to the BWIP Project which indicate status for my attendance. "O" indicates the meeting is open and that I may attend. "R" indicates the meeting is restricted and that I will be barred from attending. In accordance with the "O" indication of Attachment B, I planned on attending, as an observer, the DOE QA Audit indicated as the first meeting on the list.

After the Pre-audit Conference, which ended at about 8:30 a.m. on May 21, 1985, I was informed by DOE (Newton) that I was not permitted to observe the audit and that only one NRC observer would be allowed. (D. Hedges, NRC, was also in the meeting.) Newton stated that NRC had agreed that only one NRC Staff would observe the audit. I told him I did not know that you had agreed with that condition, that it was inconsistent with the indication I had from DOE (BWIP) per discussion with the BWIP QA personnel, as well as, the indication of Attachment B list of open meetings. In addition I noted it appeared inconsistent with the DOE/NRC Implementing Agreement of August 20, 1984 for the Procedural Agreement.

(I note that the Procedural Agreement in the first paragraph states that, "The agreement is to assure that NRC receives adequate information on a timely basis to enable NRC to review, evaluate, and comment on those DOE activities of regulatory interest in accordance with DOE's project decision schedule and thereby facilitate early identification of potential licensing issues for timely staff resolution." The Implementing Agreement under "1" states that, "The NRC OR shall be afforded access to personnel, project records and facilities..." It would appear that this item is intended to allow observance of activities and records and, hence, allow receiving information on a timely basis, consistent with the Procedural Agreement. The performance of QA audits by DOE is an important activity when it comes to

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justifying the adequacy of QA actions at licensing. Their objective and thorough accomplishment is equally important. Observance of this key activity, audit, is the best way to quickly gain an understanding of its objectivity and thoroughness.)

I pointed out to Newton that DOE had two teams auditing and that it was impossible for one person to observe the actions of both teams. In fact I noted to Newton that I was planning to start observations with TEAM B (see Attachment A) and that Hedges wanted to start with TEAM A. This made no difference to Newton. He indicated it had been already decided that only one NRC representative could attend, and, since it was his audit, the position of the BWIP Office, which would have allowed my observation, was inappropriate. I conclude Newton does not apparently recognize the unique status of the OR's.

Newton stated he would call Stein at DOE concerning the issue and that he, Stein would get in touch with you. However, as a result of Newton's objections, I did not observe the design control portion of the TEAM B audit nor subsequent portions of the audit.

2. I was permitted to attend the post-audit interview of the audit team with the DOE Field Office management. Hedges was also present. I consider the main conclusion that the audit team presented was that DOE (RL) had insufficient manning in the QA orgainzation to develop and implement a satisfactory program prior to the start of site characterization. DOE (RL) (Lawrence) indicated that additional effort would be allotted to QA to resolve the problem.

3. During the subject period I reviewed many old DOE contractor reports and records concerning ground water monitoring and ground water movement, radio-nuclide contamination in the ground water and other environmental assessments. Some of these items were forwarded to cognizant staff via. separate correspondence for their information and use in assessing the site hydrology.

4. Rockwell is in the process of surveying springs in and around the site.

5. During deepening of DH-28 the drillers encountered caving in the Rattlesnake Ridge Interbed. The drillers log should now be available.

6. Overcoring operations have resumed at the NSTF. Results of this instrumentation development should be available soon.

7. Comparisons of down-hole pressure readings with head measurements corrected for temperature and salinity have been made by Rockwell (Spane) and are contained in RHO-MA-9P, which is not yet released.

8. Recent logging of horizontal cores taken from Gable Mountain

at the NSTF in 1984 identified a fault zone at the location I suggested in my memorandum of November 8, 1984.

F. Robert Cook

F. Robert Cook
Senior On-Site
Licensing
Representative
BWIP

Attachments as stated.
cf:
JOBunting
HJMiller
MRKnapp
JMHoffman
TRVerma
PTPrestholt
JKennedy
JTGreeves
FRCook

Cook (NRC)
Attachment A
5/31/85
memo

AGENDA
HQ/OGR QA AUDIT
BWIP OFFICE
MAY 21-23, 1985

TEAM A

May 21, 1985

8:00-9:00	Preaudit Conference	Rm. 780	Olson, Anttonen, Fitzsimmons, Gerton, Karol, Bracken, Saget, Mecca, Lassila
9:00-12:00	Organization QA Program	Rm. 780 Until 10:00 Rm. 650A	Olson, Gerton Bracken
12:00-1:00	Lunch		
1:00-2:00	Organization QA Program	Rm. 650C	Saget, Bracken
2:00-3:30	Procurement Document Control	Rm. 709	Wilcynski, Lorenz, Lassila, Bracken
3:30-5:00	Audit Team Caucus	Rm. 686	As Necessary

May 22, 1985

8:00-10:00	Procurement Document Control	Rm. 709	Wilcynski, Lorenz, Lassila, Bracken
10:00-12:00	Control of Purchased Services	Rm. 650C	Saget, Lassila, Bracken
12:00-1:00	Lunch		
1:00-2:00	Instructions, Procedures & Drawings	Rm. 650C	Saget, Petrie, Bracken
2:00-2:30	Document Control	Rm. 650C	Saget, Petrie, Bracken
3:30-5:00	Audit Team Caucus	Rm. 686	As Necessary

AGENDA
HQ/OGR QA AUDIT
BWIP OFFICE
MAY 21-23, 1985

TEAM B

May 21, 1985			
8:00-9:00	Preaudit Conference	Rm. 780	Olson, Anttonen, Fitzsimmons, Gerton, Karol, Bracken, Saget, Mecca, Lassila
9:00-12:00	Design Control	Rm. 650C	Saget, Petrie, Lassila, Karol
12:00-1:00	Lunch		
1:00-2:30	Peer Reviews	Rm. 642D	Mecca, Tinsli, Karol
2:30-3:30	Nonconformances	Rm. 650C	Saget, Petrie, Karol
3:30-5:00	Audit Team Caucus	Rm. 780	As Necessary
May 22, 1985			
8:00-10:00	Corrective Action	Rm. 650C	Saget, Petrie, Karol
10:00-12:00	QA Records	Rm. 642D	Mecca, Bell, Karol
12:00-1:00	Lunch		
1:00-2:00	QA Records	Rm. 642D	Mecca, Bell, Karol
2:00-3:30	Audits	Rm. 618	Gerton, Karol
3:30-5:00	Audit Team Caucus	Rm. 686	As Necessary

AGENDA
HQ/OGR QA AUDIT

TEAMS A & B

May 23, 1985

8:00-1:30	Prepare Audit Report	Rm. 686	
1:30-2:00	Brief SQA	Rm. 686	Bracken, Karol
2:00-3:00	Brief Project Manager	Rm. 650A	Olson
3:00-4:00	Exit Meeting	Rm. 780 or 686	Olson, Anttonen, Fitzsimmons, Gerton, Karol, Bracken, Saget, Mecca, Lassila

Attachment 15
5/31/85
memo

BWIPO UPCOMING EVENTS
MAY 16, 1985

Event	Location	Date	Contact	Code
[illegible]				
QA Audit	Richland	May 20-24	Olson/ Bracken	O
HQ Project Cost Estimate Review (ICE Format)	Richland	May 29-30	Olson/ Staff	R
Systems Eng. Mgmt. Plan Meeting	HQ	June 5-6	Petrie	R
Project Managers meeting	HQ	June 5-6	Olson	R
EA Workshop Comment/Response	HQ	June 10-14	Mecca	R
NRC Meetings				
Hydrology Workshop	Silver Spring	May 22-23	Dahlem	O
Coordinating Group Meetings				
MRS/Repository Interface meeting	Irvine, CA	May 23-24	Nicoll	R
Waste Package Coordination Group	Denver	June 25-27	LaMont	R
Materials Steering Committee	HQ	July 9	LaMont	R
Licensing Coordination Group Meeting	HQ	TBD	Mecca/ Kovacs	R
State/Indian/Public Interaction				
Nuclear Waste Board/Nuclear Waste Advisory Committee	Olympia	May 17	Kovacs	O
Umatilla Confederated Tribes Grant Program Review	Pendleton	May 21-22	Tinsley	O
BWIP Briefing for State Senator Sam Guess	Richland	May 23	Olson	O
FY-86 Grant Workshop for State and Indian Tribes	Richland	June 3-4	Tinsley	O

Event	Location	Date	Contact	COC
[illegible] training	[illegible]	[illegible]	[illegible]	O
State of Oregon Department of Energy BWIP Briefing	Richland	June 12	Olson	O
State of Oregon Legislators	Richland	June 19	Olson	O
CERT Contract, Grant Program Review	Denver	June 20	Tinsley	O
International Meetings				
Japanese government officials	Richland	May 20	Squires	O
Nuclear Fuel Waste Management Mtg.	Toronto, Ont.	May 20	Dahlem	N/A
NEA Symposium on in situ experiments in granite	Stockholm	June 4-6	Dahlem	N/A
Waste Package Conceptual Design for an NWRB	Julich, FRG	June 10-14	Dahlem	N/A
Visit to Asse Salt Mine	Braunschweig, FRG	June 17-18	Dahlem	N/A
Other Meetings				
National Association of Attorney Generals	Richland	May 20	Olson	O
SCP Small Group Reviews	Richland	May 20-24	Kovacs/ Mecca	O
RHE/PB Monthly Review	Oakland	May 22	Nicoll	O
IG BWIP briefing	Richland	June 5-7	Squires	O
National Academy of Sciences - BWIP briefing	Richland	June 6-7	Olson	O

CODES

O = Open

R = Restricted

? = at option of sponsoring organization

O&O

O & P.S.

To: Kristen Westbrook
MS 623SS
4-MGT

Send to
K Westbrook
at [illegible]

BWIP LINEAMENT INVESTIGATIONS

O RECONNAINISSANCE / SITING STUDIES

O POST SITING STUDIES

O APPROACH TO SITE CHARACTERIZATION LINEAMENT EVALUATION

O DATA MANAGEMENT AND DISPLAY

RECONNAISSANCE / SITING STUDIES

PHOTOLINEAMENT STUDIES

Objective: Identify geologic features that may have significance on structural and tectonic character of Columbia Plateau.

DATA SOURCES

Landsat

Skylab

U-2 Photos

Airphotos
- 1:63,360
- 1:24,000

Remote Sensing Reports - 28

Construction Projects on Columbia Plateau - 39

CLASSIFICATION

Source

Description

REPORT

Remote Sensing of the Columbia Plateau
(RHO-BW-CR-133P/PNL-3140)
Includes 20 AMS Sheets - classified photolineaments

GEOPHYSICAL STUDIES

Objective: Screen Hanford Site using reconnaissance geophysical surveys.

DATA SOURCES

Aeromagnetics -

Rockwell multilevel survey
- 760 meter
- 990 meter
- 1220 meter
- 1450 meter
- 1680 meter

WPPS Weston Geophysical 300 meter terrain clearance

Five additional surveys listed in RHO-BWI-ST-14

Ground Magnetics -

Rockwell profiles

WPPSS profiles

Seismic Reflection -

Rockwell 113 line mile survey - 1979 and 1980

Gravity -

Rockwell profiles

WPPSS gravity map and profiles

INTERPRETATION

Werner Deconvolution - aeromagnetics

Preliminary sensitivity models

Seismic anomalies

REPORT

Subsurface Geology of Cold Creek Syncline (RHO-BWI-ST-14)

POST-SITING STUDIES

GRIDDED GRAVITY

GROUND MAGNETICS

REPROCESSED SEISMIC DATA

APPROACH TO SITE CHARACTERIZATION LINEAMENT EVALUATION

(Geophysical and Photo)

STUDY AREA

- Based on potential impact to seismic design (preclosure) and postcosure performance
- Size of lineaments to be evaluated increases with distance from repository

LINEAMENT CLASSIFICATION

- Document obvious cultural and nonstructural stratigraphic and/or geomorphic features
- Document previously investigated lineaments
  - "Bingham's Linear" - WPPSS
  - Yakima Firing Range Trail -NESCO
  - "Slemmon's Lineament" - WPPSS

LINEAMENT EVALUATION

- Compare with mapped surface and subsurface geology - largest scale possible
- Compare photo and geophysical lineaments - largest scale possible
- Compare with seismicity - largest scale possible

ESTABLISH POTENTIAL SIGNIFICANCE TO SITE

- Develop criteria (potential rupture length/magnitude vs distance from site)
- Identify lineaments that have potential impact on design/performance

DETAILED STUDY OF SIGNIFICANT LINEAMENTS

- o Detailed geologic mapping
- o Modeling geophysical data
- o Aerial reconnaissance
- o Trenching as required
- o Drilling as required

EVALUATION OF EARTHQUAKE POTENTIAL AND/OR PERFORMANCE IMPACT

- o Geologic recurrence rate of faults
- o Physical properties (hydrologic) of structures

DATA MANAGEMENT AND DISPLAY

GEOPHYSICAL ANOMALY STATUS FILE

DATABASE MAP INTEGRATION

- Seismicity File
  - location
  - magnitude
  - isoseismal
  - focal mechanisms
  - data quality notations
- Geophysics File (data and interpretive gradients, trends, anomalies)
  - magnetics
  - gravity
  - magnetotellurics
  - seismic reflection/refraction
  - other
- Photolineament File
  - source
  - interpretative notations

GEOLOGIC CHARACTERIZATION

STRATIGRAPHY
- SUBBASALT
- BASALT
- INTERBEDS
- SUPRABASALT
- THICKNESS VARIATIONS
- MODEL DEVELOPMENT

GEOLOGIC INTEGRATION
- GEOMETRIC FRAMEWORK
- "DYNAMIC" MODEL DEVELOPMENT
- INPUT TO DESIGN, PERFORMANCE ASSESSMENT

TECTONICS
- STRUCTURAL GEOLOGY
- PAST AND PRESENT DEFORMATION
- SEISMOLOGY
- TECTONIC MODEL EVALUATION/ DEVELOPMENT

INTRAFLOW STRUCTURE
- TYPES
- DISTRIBUTION
- MODEL DEVELOPMENT

FRACTURE CHARACTERIZATION
- FREQUENCY
- DIMENSIONS
- INFILLING
- MODEL DEVELOPMENT

GEOMOPHOLOGY
- SURFICIAL GEOLOGY
- SURFICIAL PROCESSES
- EROSIONAL INCISION POTENTIAL

ROCK CHEMISTRY
- PRIMARY/SECONDARY MINERALOGY OF BASALT
- MINERALOGY OF INTERBEDS
- MINERALOGY OF ALTERED BASALT
- MINERALOGY OF FAULT INFILLING MATERIALS
- MODEL DEVELOPMENT

ECONOMIC GEOLOGY
- MINERAL RESOURCE OCCURRENCE
- COMPARATIVE VALUE ESTIMATION
- INADVERTANT INTRUSION POTENTIAL

GEOLOGY ACTIVITIES
APRIL - MAY 1985

- EA AND SCP SUPPORT
  - RESPONSE TO EA REVIEW COMMENTS
  - FORMULATION OF INITIAL SCP DRAFTS AND INPUT TO SCP DESIGN
- STRATIGRAPHY
  - SUPPORT OF DRILLING OF BOREHOLE RRL-2C
- INTRAFLOW STRUCTURE AND FRACTURE CHARACTERIZATION
  - SUPPORT OF REPOSITORY DESIGN PLANNING EFFORTS — New bore hole
  - INITIATION OF STATUS REPORT ON DETAILED FRACTURE WIDTH MEASUREMENTS — Procedure for fracture width Measurements.
- ROCK CHEMISTRY
  - INITIATION OF STATUS REPORT ON STUDIES OF SECONDARY MINERALS IN FLOW TOPS
- TECTONICS
  - COMPLETION OF INTERNAL REVIEW OF TECTONIC MAP — New map
  - COMPLETION OF MAGNETOTELLURIC DATA EVALUATION REPORT — Who is contractor? along MI road
  - UPPER COLD CREEK HYDROLOGIC BARRIER STUDY:
    - COMPLETION OF DEEPENING OF BOREHOLES DH-27 AND DH-28
    - COMPLETION OF COLLECTION OF GRAVITY AND MAGNETICS

    } cross section available.
  - HELD MEETING WITH NRC TO DISCUSS APPROACH TO SEISMIC REFLECTION/REFRACTION TEST —
  - COMPLETED SAMPLING OF PALEOMAGNETIC SITES FOR TECTONIC ROTATION STUDY —
  - REVIEW OF DRAFT REPORT ON "SUGGESTED APPROACHES TO DEVELOPING CRITERIA AND ANALYSIS METHODOLOGY FOR SEISMIC DESIGN" — Woodward-Clyde draft report received.
- GEOLOGIC INTEGRATION
  - CONTINUATION OF FORMULATION OF APPROACH TO MAP INTEGRATION

Dodds group.

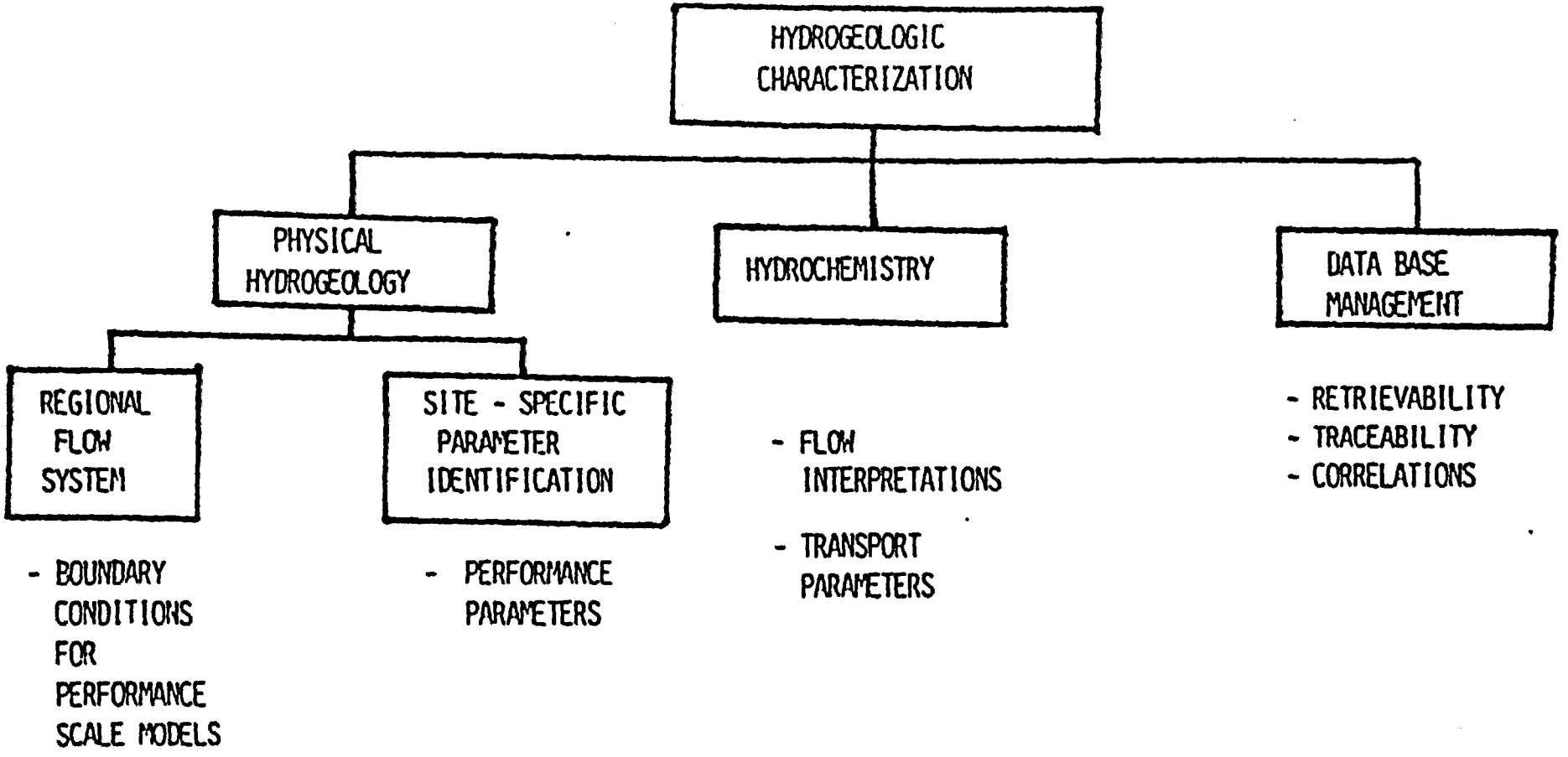
GEOMECHANICS TESTING

- o ROCK STRESS
- o ROCK MASS MODULUS – block Test –
- o ROCK MASS STRENGTH
- o THERMAL PROPERTIES
- o GEOPHYSICAL TESTING
- o LABORATORY TESTING
- o GEOMECHANICAL MODELING
- o MISC. AND DEVELOPMENT

ROCK MECHANICS ACTIVITIES
APRIL - MAY 1985

- INITIAL DRAFT OF SCP DATA CHAPTER COMPLETED
- OVERCORING TESTING RESUMED AT NSTF
- FLAT JACKS AND SLOT CUTTING TECHNIQUES DEVELOPED
- PARAMETRIC SENSITIVITY STUDY COMPLETED IN SUPPORT OF ES TESTING
- TWO DIMENSIONAL MODEL FOR CANISTER HOLE INTERACTION STUDIES COMPLETED
- ADINA INSTALLED

BWIP HYDROGEOLOGY PROGRAM



HYDROLOGY ACTIVITIES APRIL-MAY 1985

- WATER LEVEL BASELINE
  - Hydrologic head forecasts made in December have been compared to actual data through March
  - Head recovery trends can be predicted up to four months within 0.2 feet
  - A baseline with respect to evaluating LHS tests has been established
  - Groundwater flow direction in the vicinity of the RRL not yet established

- LARGE-SCALE HYDRAULIC STRESS TEST PLANNING
  - A range of pre-test analyses have been performed to determine the sensitivity of testing parameters (e.g. pump size) to hydraulic conditions (e.g. conductivity)
  - Planning for tracer testing in conjunction with LHS tests is proceeding

- MISCELLANEOUS
  - ES hydrologic test design Request For Proposal sent to potential bidders
  - Groundwater inflow calculations being performed in support of engineering design Reports or cal's that have been done.

HYDROCHEMISTRY ACTIVITIES

GROUNDWATER FLOW SYSTEM EVALUATION

- USGS data base (WATSOR) being used to assess groundwater evolution patterns
- EQ3/EQ6 utilization beginning Livermore
- Survey of springs in Upper Cold Creek Valley completed
- Evaluation of methane being completed
- Conceptual groundwater flow models including mixing being prepared
- Chlorine-36 data being evaluated to assess groundwater flow rate (in light of mixing models)
- Iodine-129 data being assessed for utility in shallow flow system studies

SOLUTE TRANSPORT EVALUATION

- Sorption experiments on flow top material in process
- Plans for field testing of non-radioactive analog solutes being planned

WASTE PACKAGE ACTIVITIES

- Packing material (crushed basalt and bentonite) sorption experiments in progress
- Developing sorption flow-through testing techniques
- Measurement of diffusion coefficients for radionuclides
- Measurement of radionculide solubilities
- Measurements of radiolytic effects on groundwater chemistry and radionuclide transport
- Measurement of packing material chemical and physical characterisitcs
- Natural analogue studies