ANDREA BEATTY RINKER
Director

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

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MINUTES OF JOINT NUCLEAR WASTE BOARD/ NUCLEAR WASTE ADVISORY COUNCIL MEETING

August 20, 1987

1:30 p.m.
EFSEC Hearings Room
Rowesix, Building #1
4224 Sixth Avenue S.E.
Lacey, Washington 98504

Board Members Present:

Curt Eschels
Al Conklin, DSHS
Allen Fiksdal, EFSEC Designee
Ray Lasmanis, Department of Natural Resources Designee
Representative Nancy Rust

Advisory Council Members Present:

Pam Behring
Phyllis Clausen
Nancy Hovis
Russell Jim
Sam Reed

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PDR WASTE
WM-10 PDR

The meeting was called to order by Chair Warren Bishop.

Mr. Bishop explained that the Council, at their June 19 meeting, recommended to the Board that a public meeting be held where USDOE would provide a full briefing on the hydrology testing program. That is the purpose of today's meeting. In addition, Jim Mecca will report on the status of the site characterization plan.

Terry Husseman provided background regarding work under way by technical staff. He reported that about 3 months ago a meeting was held with the Department of Energy regarding the pre-exploratory shaft hydrology test program. The USDOE hydrology task force that developed the recommendation for this test program made a presentation and recommended a specific option, which was accepted by the Department of Energy officials. The state at that time requested additional consultation points in the schedule. USDOE agreed to more consultation points, but the rest of the state's requests were denied. The program, as Mr. Husseman understands, is about to start. He stated he attended a meeting two days ago related to the start of drilling on DC-24 and 25, and again had a chance to comment. Responses to those comments are expected August 20..

Jim Mecca, Licensing and Environmental Safety Chief, BWIP, introduced the members of his team:

Dr. Dave Dahlem, Geoscience and Technology Branch Chief
Max Powell, liaison with the State
Madeline Brown, Westinghouse
Joe LaRue, Westinghouse (monitors BWIP activities)

Dave Dahlem made a presentation regarding the hydrology testing program. Copies of his handouts are attached. Comments included:

The objective of the hydrology testing program is to collect data that may be impacted after exploratory shaft drilling is started. The Options Paper (attached) addresses collection of perishable geohydrologic data which might be affected by later characterization activities, and also addresses critical data which could be used in evaluating disqualifying conditions.

The pre-ES program consists of several fairly well-defined activities. First, the monitoring network is somewhat incomplete. USDOE has assessed the need for data collecting and concluded it needs additional monitoring facilities; plans exist to install four additional data collecting points within the near future. USDOE has identified acceptance criteria for the end of this baseline data collecting program. The next activity after putting in the additional facilities is to collect the information necessary to establish a water level baseline for the region at several points in the geology. Beyond this, there is a testing program consisting of withdrawing fluids from discrete horizons in the geology and the subsurface, and there are four of these horizons from which data will be collected: The Rocky Coulee Flow Top, the Cohasset Flow Top, Cohasset Vesicular Zone, and the Birkett Flow Top.

Terry Husseman pointed out that at a meeting with NRC and the states and tribes participants were provided a schedule, and no consultation points were included in that schedule.

Dave Dahlem stated there were five consultation points in the first schedule, now there are either 15 or 16.

Terry Husseman inquired if a revised schedule containing the additional consultation points would be available soon.

Dave Dahlem stated consultation points change the schedule only in lengthening some parts of it. However, these interaction points may be either consultation as data are collected, or they may be meetings as conducted the last couple of months, which will impact the schedule.

Terry Husseman continued, stating the program was to run through June 1989 under the old schedule. Now that additional con-

sultation points have been added, when is the program suppose to be completed?

Dave Dahlem replied the program schedule is nominally the same. The durations of the activities are imprecisely known, so we can accommodate those interactions with the current schedule. The pre-ES program is fully planned, it has received review from a number of parties, information relating to the engineering test data dealing with drilling of the last 4 monitoring facilities has been circulated, and affected parties' comments have been received. The next step will be drilling the boreholes, instrumenting the facilities, and collecting the data.

Terry Husseman said the state is interested in the fatal flaw approach receiving more consideration, and that would take a change in the pre-ES testing program.

SITE CHARACTERIZATION PLAN

Jim Mecca provided an update on the Site Characterization Plan. A copy of the handout "Site Characterization Plan Completion" is attached. He stated the Assembled Review Text should be distributed around September 7-14. The document will consist of more than 10,000 pages.

Don Provost stated he recently attended a meeting where it was learned that Ben Rusche had released a paper on quality assurance, and as a result of that paper the Office of Geologic Repositories' quality assurance program is being changed in some fairly significant areas. The state had commented on the OGR and some of these other quality assurance programs, especially the accountability parts. Is this new philosophy going to be reflected in the SCP.

Jim Mecca answered yes. The one area we can't grandfather is the quality assurance area. If there is something the NRC staff sees as critical, it will have to be immediately reflected in the SCP or any study plans. It could have an influence on DC-24 and DC-25 if it's big enough, and could result in the regeneration of a whole set of figures.

The Board and Council could be briefed on the contents of the Assembled Review Text sometime in October.

ADJOURNMENT

There being no further business, the meeting adjourned.

NOTE: On August 26, USDOE announced a new schedule for completion of the Site Characterization Plan (SCP). Consultative draft SCP's for all three sites are scheduled to be released in January 1988. States, tribes, and NRC will have a 90-day comment and consultation period. USDOE will then release the final documents anywhere from three to nine months later. At that time, there will be a 90-day formal comment period.

OPTION 'D'
PRE-EXPLORATORY SHAFT TEST PROGRAM

OBJECTIVES

- To collect data on geohydrologic conditions that will be changed by site characterization activities

- To collect data having the potential for providing an early indication of the presence of disqualifying conditons

- To collect data on geohydrologic conditions in order to identify the effects of the ESF on the geohydrologic system and on subsequent geohydrologic tests

- To collect data on geohydrologic conditions that may affect the design of the ESF or the repository

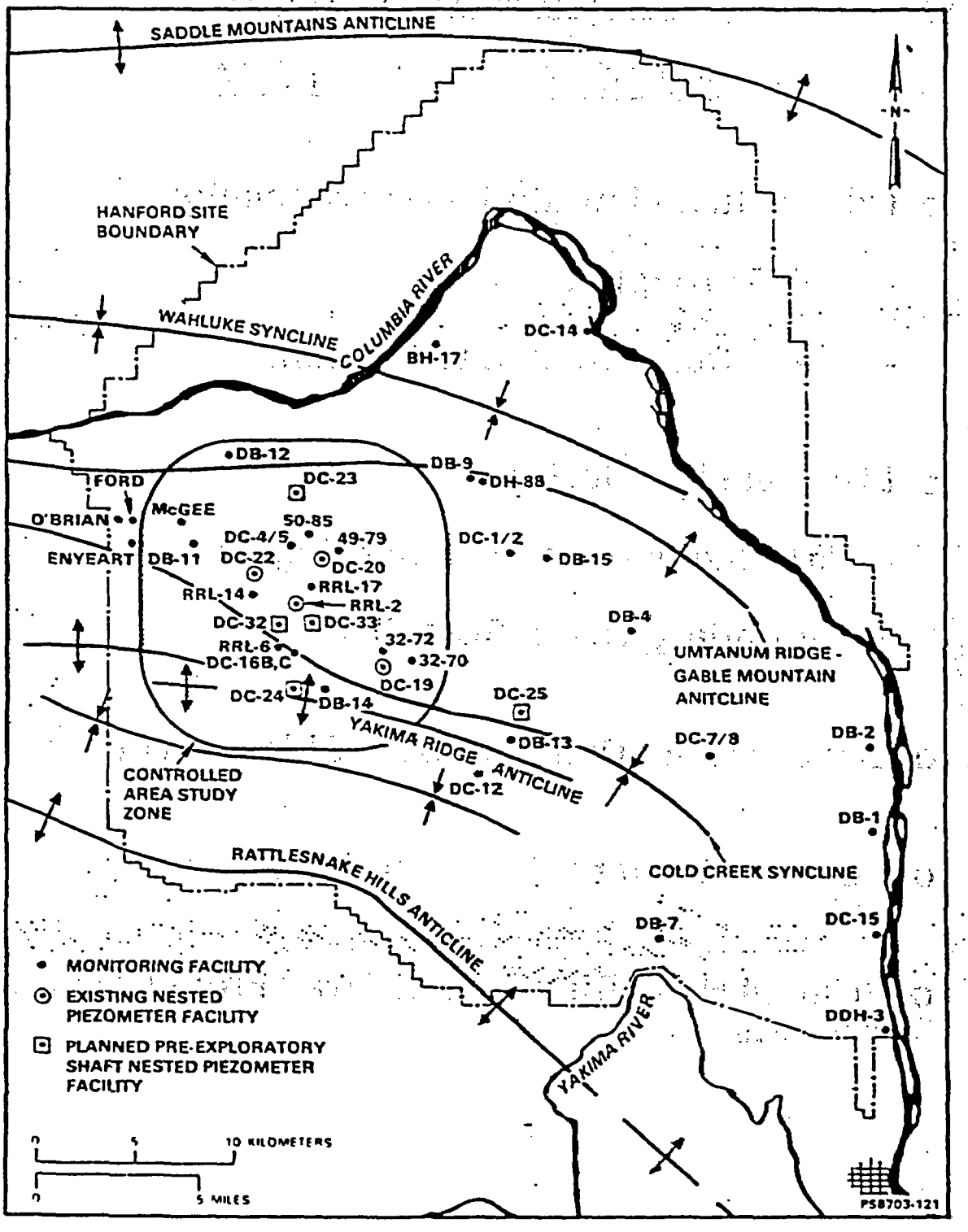
PRE-ES SURFACE BASED PROGRAM CONTENT

- o Install Required Monitoring Facilities
- o Establish Potentiometric Baseline
- o Perform Hydraulic Tests at RRL-2B
  - Rocky Coulee Flow Top
  - Cohassett Flow Top
  - Cohassett Vesicular Zone
  - Birkett Flow Top
- o Perform Adjunct Tests
  - Radial-Convergent Tracer Tests with LHS Tests
  - Hydrochemical Samples of Pump Test Discharge

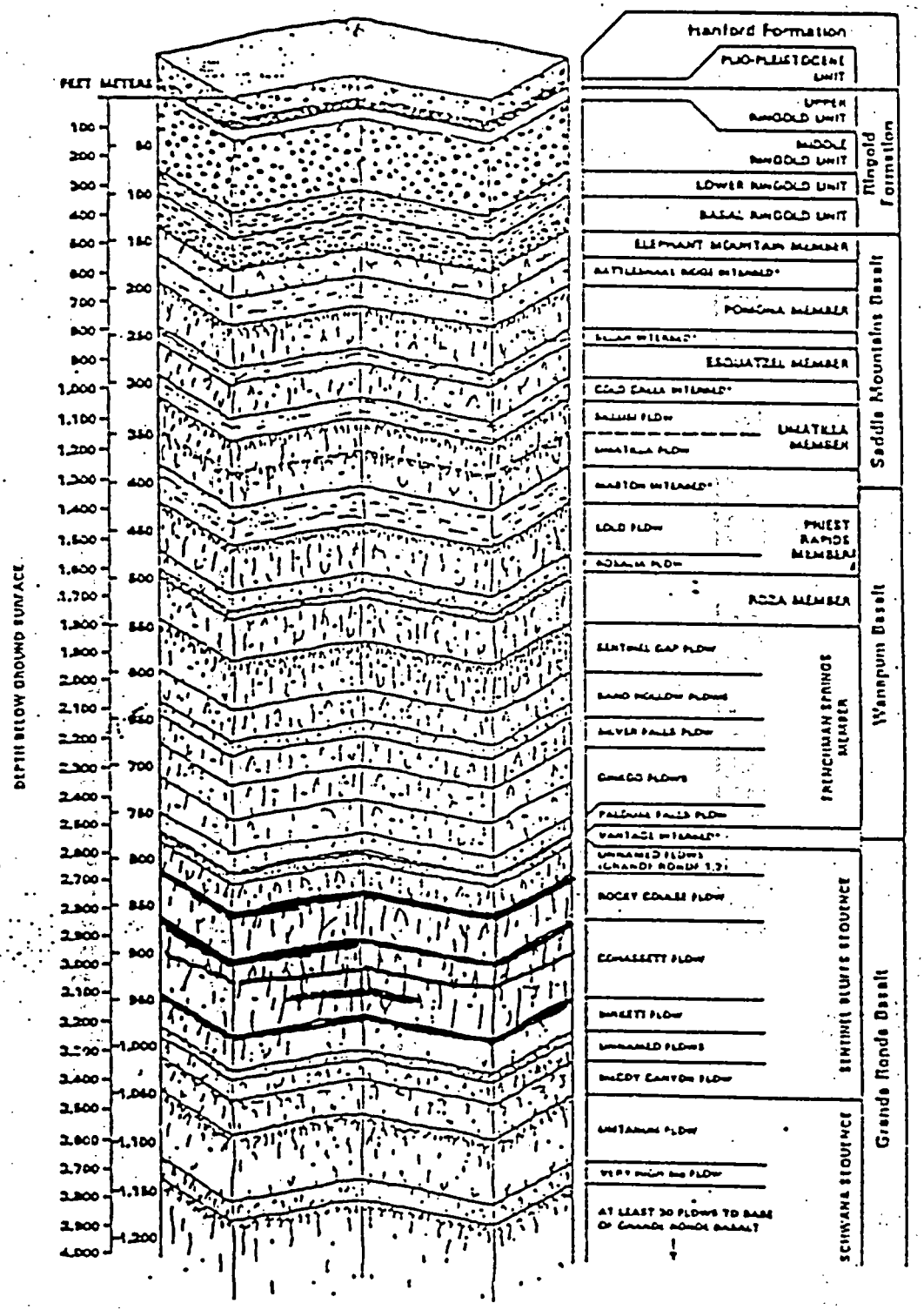
MONITORING FACILITIES

BASIS OF FACILITY LOCATION

- o Conceptual Flow Model Discrimination
  - SW Throughgoing Flow
  - Flow Convergence to Syncline
- o LHS Test Monitoring
  - Intermediate Zone Monitoring
  - Boundary Tests (Post-ES)
- o Lack of Head Data on South Side of Syncline
- o Need for Eastern Constant Head Boundary
- o Vertical Head Distribution Away From Recharge Mounds


SADDLE MOUNTAINS ANTICLINE
N
HANFORD SITE BOUNDARY
WAHLUKE SYNCLINE
COLUMBIA RIVER
DC-14
BH-17
DB-12
DB-9
DH-88
FORD
DC-23
McGEE
O'BRIAN
50-85
DC-4/5
49-79
DC-1/2
ENYEART
DB-11
DC-22
DC-20
DB-15
RRL-14
RRL-17
RRL-2
DC-32
DC-33
DB-4
RRL-6
32-72
DC-16B,C
32-70
UMTANUM RIDGE - GABLE MOUNTAIN ANITCLINE
DC-19
DC-24
DB-14
DC-25
YAKIMA RIDGE ANTICLINE
DB-13
DC-7/8
DB-2
CONTROLLED AREA STUDY ZONE
DC-12
DB-1
RATTLESNAKE HILLS ANTICLINE
COLD CREEK SYNCLINE
DB-7
DC-15
MONITORING FACILITY
EXISTING NESTED PIEZOMETER FACILITY
PLANNED PRE-EXPLORATORY SHAFT NESTED PIEZOMETER FACILITY
YAKIMA RIVER
DDH-3
0 5 10 KILOMETERS
0 5 MILES
PS8703-121

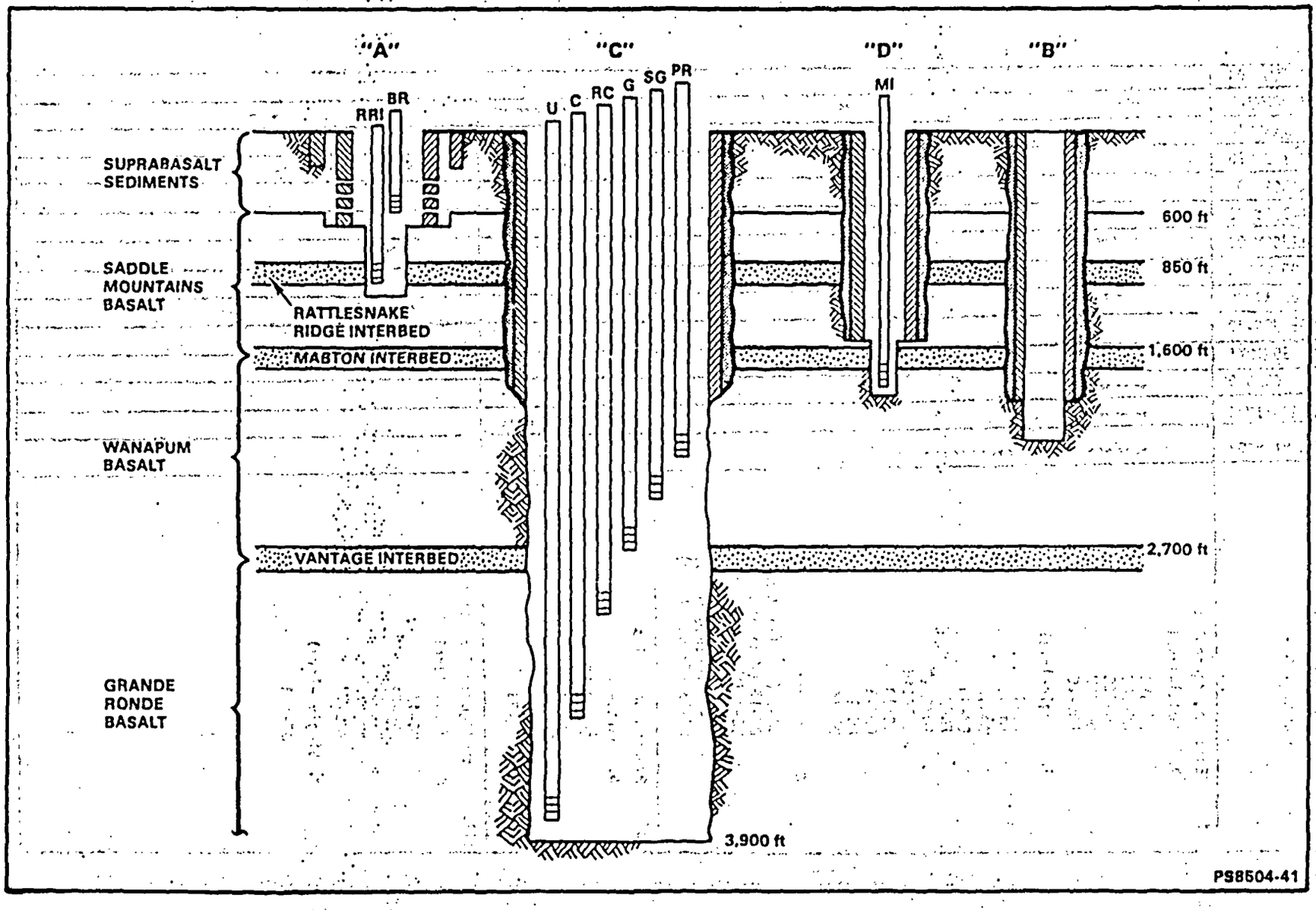
STRATIGRAPHIC UNITS FOUND WITHIN RRL-2



*INTERBEDS ARE STRATIGRAPHICALLY CONTAINED IN THE ELLENSBURG FORMATION

HYDRAULIC BASELINE

- Seven nested piezometers primary data sources
- 35 mostly single piezometer boreholes - secondary data sources
- Three years of data at DC-19, DC-20, DC-22
- Two years of data at RRL-2
- Install three additional nested piezometers
- Baseline termination based on acceptance criteria and Technical Review


"A"
"C"
"D"
"B"
RRI
BR
U
C
RC
G
SG
PR
MI
SUPRABASALT SEDIMENTS
SADDLE MOUNTAINS BASALT
RATTLESNAKE RIDGE INTERBED
MABTON INTERBED
WANAPUM BASALT
VANTAGE INTERBED
GRANDE RONDE BASALT
600 ft
850 ft
1,600 ft
2,700 ft
3,900 ft
PS8504-41

HYDRAULIC-HEAD MONITORING FACILITIES FOR OPTION - D	ROSALIA	SENTINEL GAP	GINKGO	VANTAGE INTERBED	GRANDE RONDE-2	ROCKY COULEE FLOW TOP	ROCKY COULEE DENSE INT.	COHASSETT FLOW TOP	COHASSETT VES. ZONE	COHASSETT DENSE	BIRKETT FLOW TOP	BIRKETT DENSE INT.	UNITANUM FLOW TOP	LOW HG. FLOW TOPS
I. Existing Boreholes														
A. Multi-level														
DC-19C	X	X	X			X		X					X	
DC-20C	X	X	X			X		X					X	
DC-22C	X	X	X			X		X					X	
DC-23W	X	X	X											
RRL-2C						X	X	X		X	X	X		
B. Single-level														
DB-1	X													
DB-11	X													
DB-12	X													
DB-14	X													
FORD	X													
ENYEART	X													
O'BRIAN	X													
DC-18			X											
DDH-3			X											
DC-1													X	
DC-14														X
C. Composite														
DB-2 (Rosalia-Roza)														
DB-15 (Wanapum)														
DC-1 (Wanapum)														
DC-7 (Grande Ronde)														
DC-12 (Grande Ronde)														
DC-15 (Grande Ronde)														
II. Planned Boreholes														
A. Multi-level														
DC-23 GR						X		X			X		X	
DC-24	X	X	X			X		X			X		X	
DC-25	X	X	X			X		X			X		X	
DC-32	X	X	X			X		X			X		X	
DC-33	X	X	X			X		X			X		X	
III. Reconfigured Boreholes														
A. Multi-level														
DC-4/5						X					X			
RRL-2A						X		X	X		X			
RRL-6						X					X			
RRL-14						X					X			
RRL-17						X					X			
B. Single-level														
DC-16A											X			

HYDRAULIC HEAD BASELINE

PURPOSE	ACCEPTANCE CRITERIA	CURRENT STATUS
1. Pumping Response	Verified water-level recovery prediction for the period of pump test in wells affected by pump test	Trends are predictable for LHST duration DC-19, 20, & 22
2. Gradient for velocity field estimates (horizontal & vertical)	Verify predicted recovery trend at DC-23, 24, 25 to estimate equilibration	Established at DC-19,20, & 22
3. Conceptual Model/System Dynamaics	Identify role of Baseline data in development or use of conceptual model. Technical review required	Being evaluated

PRE-ES HYDRAULIC TESTS

PROGRAM CONTENT

- Test four zones - sequentially, top to bottom
  - Rocky Coulee Flow Top - LHST
  - Cohassett Flow Top - Pulse (pump if possible)
  - Cohassett Vesicular Zone - Pulse (pump if possible)
  - Birkett Flow Top - LHST

FACILITIES

- Pump from RRL-2B
- Monitoring Wells
  - Nine Nested Piezometers
  - Thirty-Five Monitoring Wells
  - Reconfigure selected wells for Rocky Coulee and Birkett Tests RRL-6, RRL-I4, DC-4, DC-5, RL-I7, McGee
  - Configure DC-I6 for Birkett Monitoring

ROCKY COULEE & BIRKETT FLOW TOP LHS TESTS

OBJECTIVES

- o Stress across repository area
  - Hydraulic properties (Transmissivity & Storativity)
  - Assess potential presence of discontinuities
- o Induce sufficient drawdown to assess vertical conductivities in dense interiors
- o Assess leakage from dense interiors into flow top
- o Provide data to assist in determining representativeness of existing data
- o Adjunct Tests

PLANNING ASSUMPTIONS IN DEFINING OBJECTIVES

- o Bounding anticlinal structures and Cold Creek syncline flow impediment boundaries will be tested from other pumping centers subsequent to ES construction
- o Full data base for range and distribution of hydraulic parameters will be obtained in post-ES testing program

LHS TEST

INITIATION / TERMINATION

- o Re-establish testing purpose baseline prior to each test
- o Test termination will be predicated on acceptance criteria that are based on test objectives

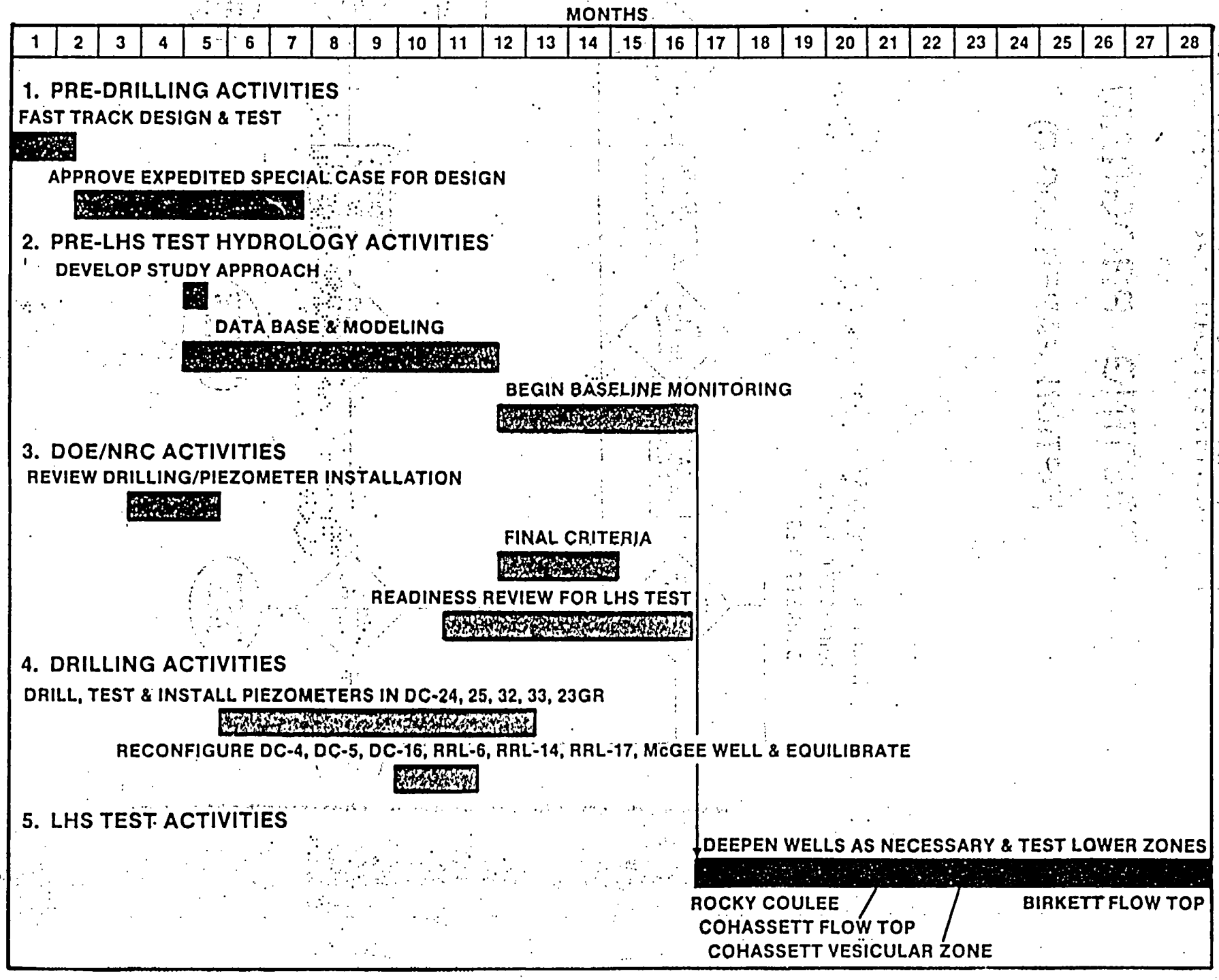
FACTORS under consideration include:

- Reaching Quasi-steady state conditions
- Observation well data match to type curves (T, S & Leakance)
- Analysis of propogation of pressure response
- Measurable drawdown at DC-32, 33, 20 & 22
- Vertical response to estimate Kv

ASSUMPTIONS

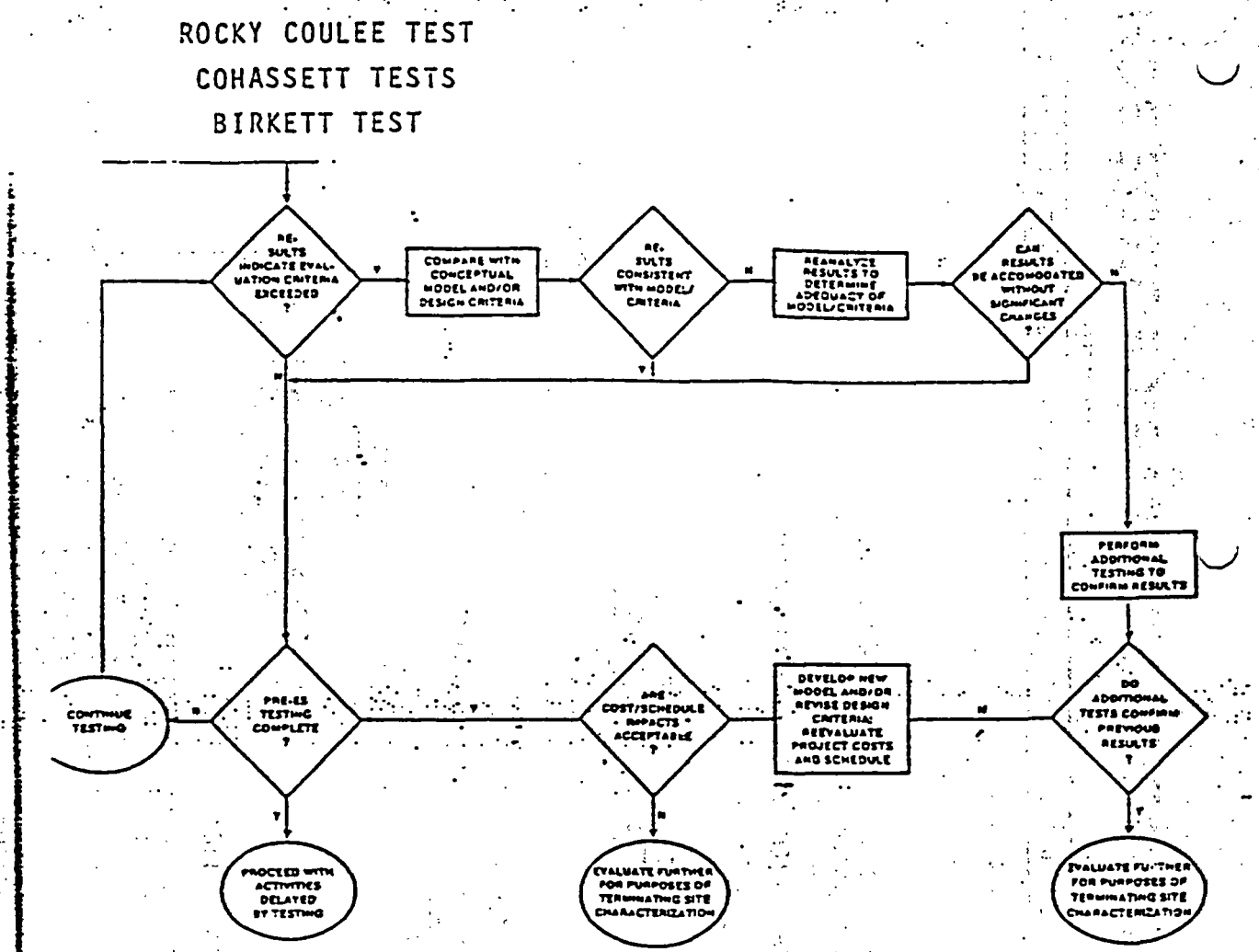
- Expected duration of pumping is 30 days, with 60 days of recovery
- Hydraulic objectives will be met prior to injecting tracers - option of injecting tracers prior to start of test is being considered

HYDROLOGY TASK FORCE SCHEDULE



TERMINATION OF PRE-ES TESTING PROGRAM

(OPTION PAPER LOGIC)



ADJUNCT TESTS

- Hydrochemistry sampling
- Tracer Tests

COHASSETT FLOW TOP AND VESICULAR

ZONE SMALL-SCALE TESTS

OBJECTIVES

- Determine if zone can yield sufficient water to sustain a pumping test

- Small-scale hydraulic parameters

COHASSETT FLOW TOP / VZ TESTING

- Isolate test interval
- Establish Pre-test trend
- Small-scale test(s)
  - Pulse
  - Constant head injection
- Evaluate testing results
- Determine if transmissivity is high enough for LHS testing
- Conduct LHS test if sufficient transmissivity exists, otherwise, drill to next test interval

Geohydrology Program Integration

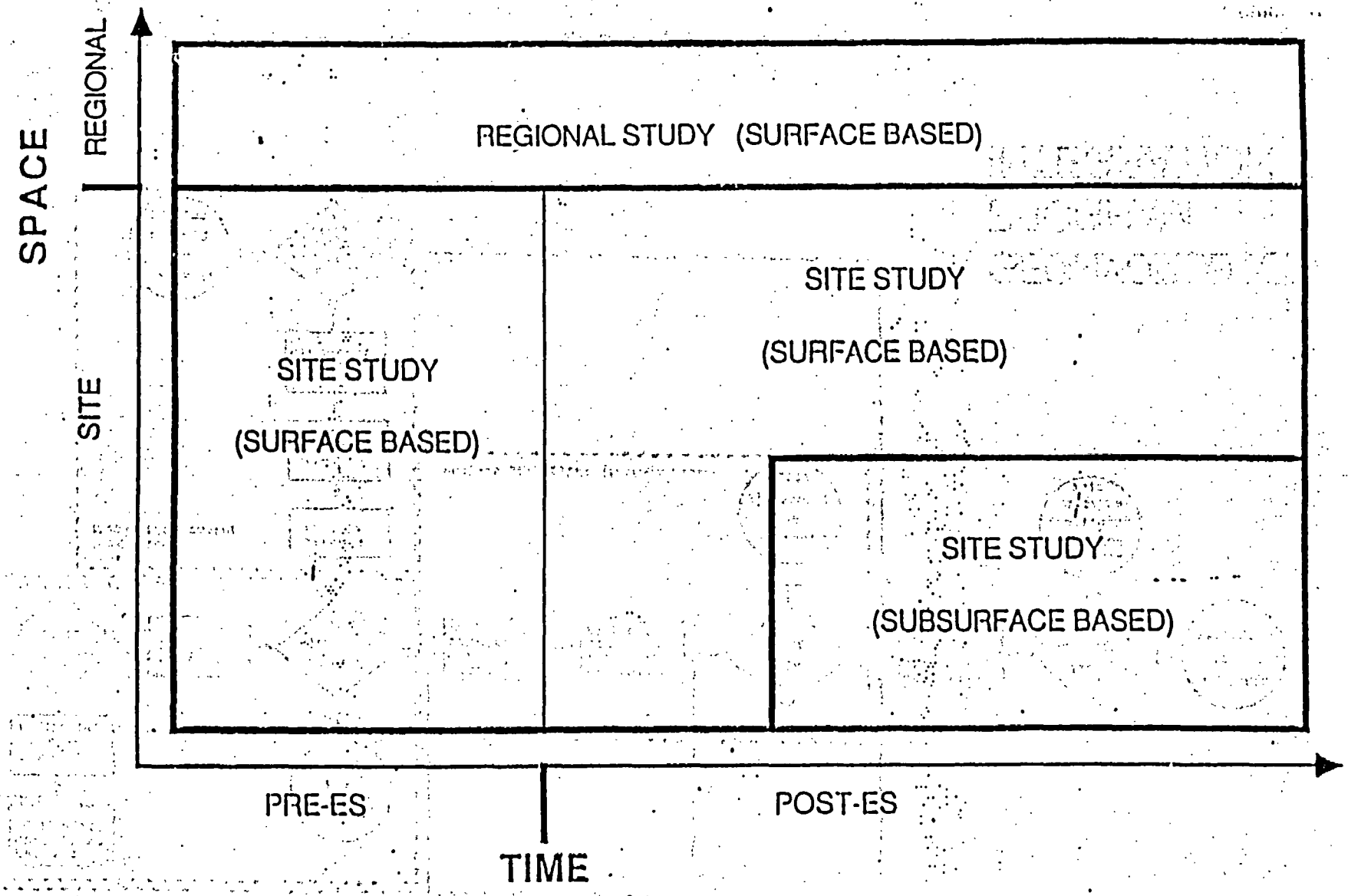
GEOHYDROLOGY PROGRAM OVERVIEW

- Planning Logic
- Pre-Exploratory Shaft Surface-Based Testing
- Post-Exploratory Shaft Surface-Based Testing
- Regional Program
- Subsurface Testing Program
- Geohydrology Program Integration

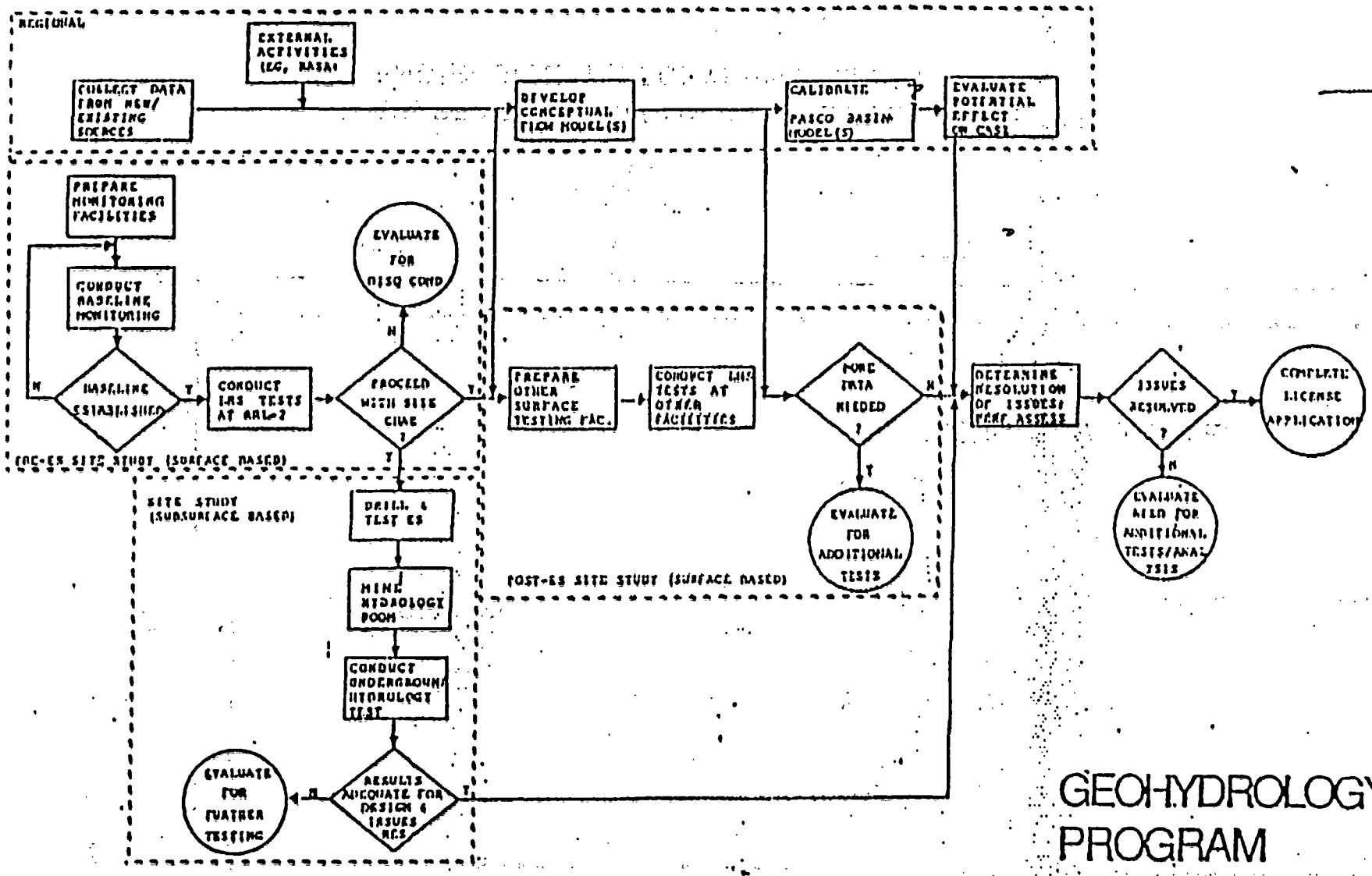
GEOHYDROLOGY PROGRAM

PLANNING LOGIC

1. Develop Issue Resolution Strategies
2. Identify Geohydrologic Parameters Required by the Issue Resolution Strategies
3. Develop Testing Program to Provide Estimates of Parameter Values at the Appropriate Level of Confidence
4. Identify Program Components
   - o Pre-Exploratory Shaft Surface-Based Testing
   - o Post-Exploratory Shaft Surface-Based Testing
   - o Subsurface Testing
   - o Regional Testing / Data Collection



TIME-SPACE RELATIONSHIP BETWEEN THE SITE AND REGIONAL GEOHYDROLOGIC STUDIES



GEOHYDROLOGY PROGRAM INTEGRATION

SITE CHARACTERIZATION PLAN COMPLETION

SITE CHARACTERIZATION PLAN COMPLETION STATUS

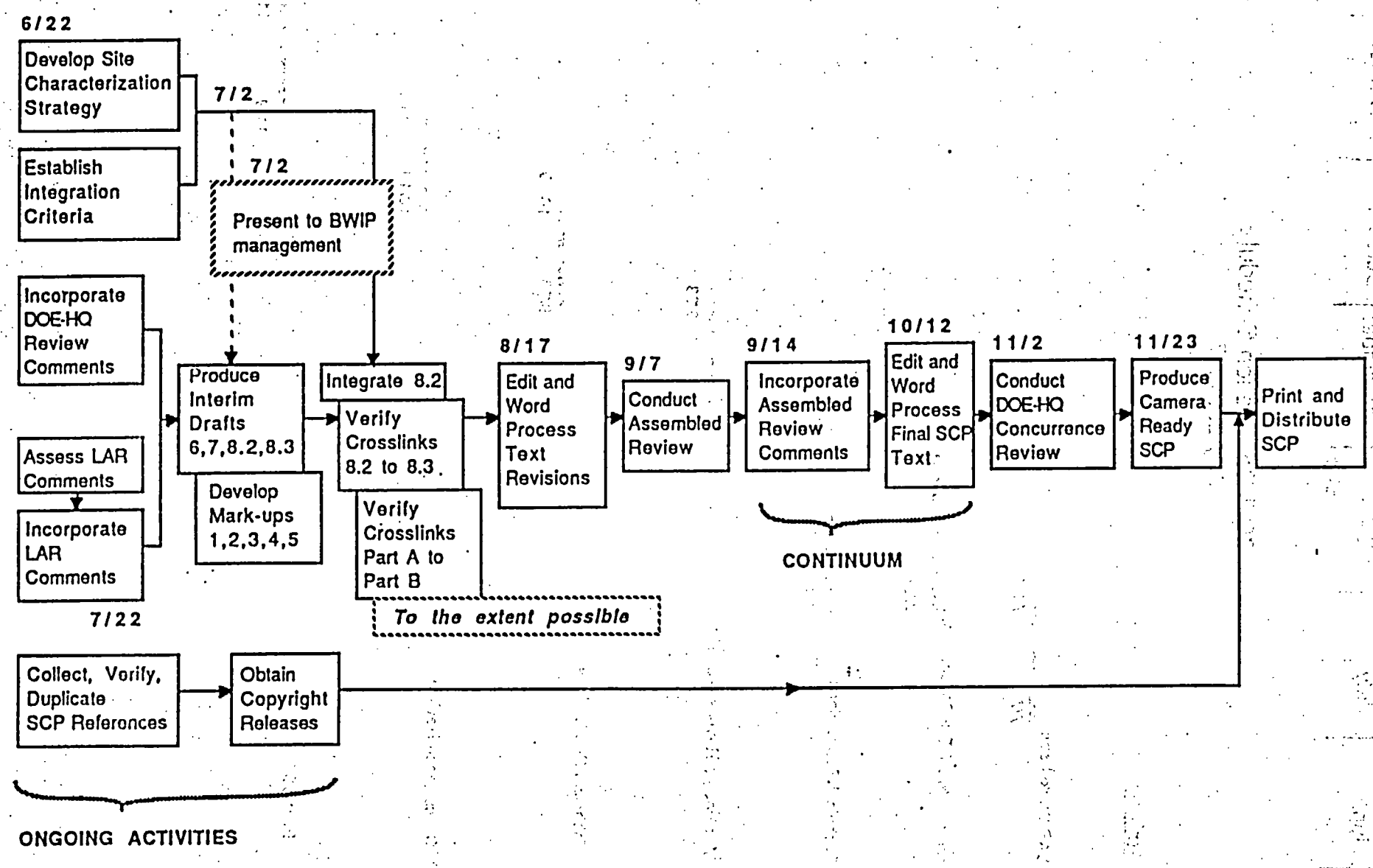
- Top-level Site Characterization Strategy derived and presented to DOE management, text for 8.2.1 being developed.

- Licensing Assurance Review Comment Resolution workshops have been completed and the remainder of HQ comments are being incorporated

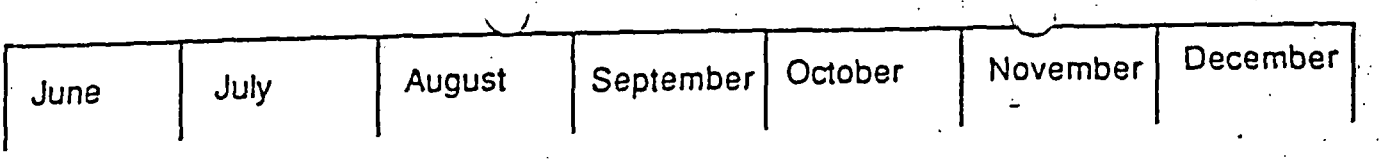
- Completion schedule for all sections of the SCP discussed and agreed with DOE-RL

- Tight schedule negotiated with Word Processing for the production of a clean Assembled Review Copy of the SCP by 9/7

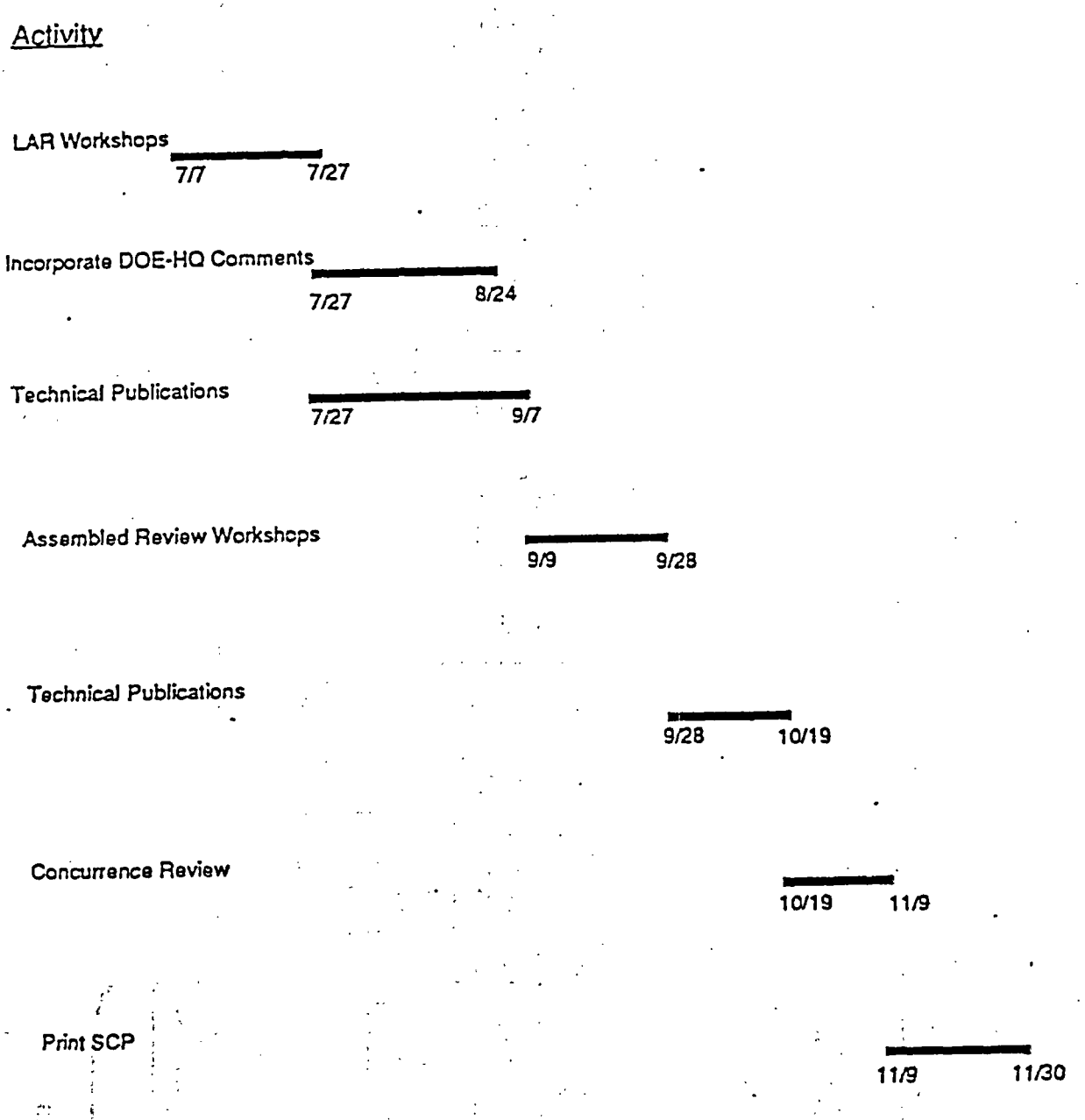
SCP COMPLETION LOGIC



Enclosure 1



SCP Completion Schedule
July 29, 1987



Enclosure 2

CHAPTER	SECTION	MAY 4	11	18	25	JUNE 1	8	15	22	29	JULY 6	13	20	27	AUGUST 3	10	17	24	31	SEPTEMBER 7	14	21	28	OCTOBER 5	12	19	26	NOVEMBER 2	9	16	23	30
						LAR				LAR	LAR INCORPORATED				DOE-HQ COMMENTS INCORPORATED				ASE REV	DOE-HQ CD			REVISIONS WORK PLCC			DOE-HQ DOE-HQ				PRINT	ISSUE
1	GEOLOGY																		D2													
2	GEOMECHANICS																		D2													
3	HYDROLOGY																		D3													
4	GEOCHEMISTRY																		D3													
5	CLIMATOLOGY & METEOR.																		D3													
6	CONCEPTUAL DESIGN OF A REPOSITORY																		D3													
7	WASTE PACKAGE																		D3													
8.0	INTRODUCTION																		D2													
8.1	RATIONALE																		D2													
8.2.1	ISSUES TO BE RESOLVED																		D3													
8.2.2	ISSUES																															
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	1.2																		D3													
	1.3																		D3													
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	1.7	NOT CONSIDERED																	D3													
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	1.10																		D3													
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	4.4																		D3													
	4.5																		D3													
8.3	PLANNED TESTS																		D3													
8.3.1.1	OVERVIEW																		D3													
8.3.1.2	GEOLOGY																		D3													
8.3.1.3	HYDROLOGY																		D3													
8.3.1.4	GEOCHEMISTRY																		D4													
8.3.1.5	CLIMATOLOGY																		D4													
8.3.1.6	RESOURCE POTENTIAL																		D3													
8.3.2	REPOSITORY PROGRAM																		D3													
8.3.3	SEAL SYSTEM PROGRAM																		D3													
8.3.4	WASTE PACKAGE PROGRAM																		D3													
8.3.5	PERFORMANCE ASSESSMENT																		D3													
8.4	PLANNED SITE PREP. ACTIVITIES																		D3													
8.5	MILESTONES, DECISION POINTS & SCHEDULE																															
	E/A PROGRAM																		D3													
	DECONTAMINATION & DECOMMISSIONING																		D3													
	SCP GLOSSARY																		D1													

--- WORK PROCESSING/TEXT REVISION
___ SCHEDULED REVIEW
D2 SECOND DRAFT

— MESTON/DOE-HQ REVIEW
xxx COMMENT RESOLUTION
D3 THIRD DRAFT

* TO LICENSING/TECH PUBS
D4 FOURTH DRAFT

NOTE: NO SCHEDULED REVIEW FOR SECTION 8.5

PDR-1
(PDR WM-10(2)

WM DOCKET CONTROL
CENTER

'87 OCT 13 P1:43

WM Record File 101.3

WM Project 10
Docket No.
PDR ✓
X LPDR ✓(B)

Distribution:
KEB MJB
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(Return to WM, 623-SS)

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