TASK/Site Work Plan for Operable Unit 1049
Los Alamos Canyon and Pueblo Canyon

NMED ~~Informal~~ Review
March 14, 1996

SECTION	COMMENTS
2.0 Historical Background	
Description of TAs and Activities	
3.0 Environmental Setting	
Sediments and Soils	
Geology	
Hydrology	
Hydrogeology	
Surface Water and Groundwater Chemistry and Contaminant Occurrence	
Biological Setting	

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SECTION	COMMENTS
4.0 Conceptual Model	
Contaminant Transport Conceptual Model	
Refinement of the Conceptual Model	
5.0 Technical Approach	
Preliminary Evaluation	
Planning and Investigation	
Assessment	
Integration with Other Laboratory Activities	

SECTION	COMMENTS
6.0 Risk Assessment Models and Approach	
ID of COPCs	
Conceptual Model for Human Exposure	
Land Use Scenarios and Human Receptors for the Canyons	
Canyons Ecosystems	
Models for Assessing Human Health and Ecological Risk	
Description of Potential Remedial Activities	

SECTION	COMMENTS
7.0 Sampling and Analysis Plans	
Sediment Sampling and Analysis Plan	
Surface and Ground Water Sampling and Analysis Plan	
Air Particulate Sampling and Analysis Plan	
Biological Sampling and Analysis Plan	

Reports for Canyons Field Unit Pilot Study

Report on borehole investigations in 6 alluvial wells in Los Alamos and Pueblo Canyons and surface water sampling (to include well construction, well completion, stratigraphic log, results of hydrologic property testing, results of first water sampling event)

Report on borehole investigations in 3 intermediate-depth wells in Los Alamos, Pueblo, and Sandia Canyons (to include well construction, well completion, stratigraphic log, results of hydrologic property testing, results of chemical analytical results on core samples, results of first water sampling event

Results of background site only sampling in Los Alamos and Pueblo Canyons (to include summary of background sampling design, presentation of results, and UTLs developed from data set)

Results of radiation survey and sediment sampling in four canyon reaches (one report for each reach) in Los Alamos and Pueblo Canyons (to include summaries of geomorphology, rad surveys, final design of sediment sampling plan, analytical results for sediment sampling, preliminary risk screening, recommendations for corrective action - if appropriate)

Results of dust sampling at four dust collection sites in Los Alamos and Pueblo Canyons (to include design of study, analytical results, recommendations for use of data in risk assessments)

60 DAYS AFTER REC'T OF DATA

Suggested report contents:

Abstract
Introduction - state investigation objectives and approach taken
Methods - summarize field, analytical, and computational methods
Results - present data
Discussion - discuss what was learned and conclusions drawn from investigation
Conclusions - highlight major conclusions from investigation and make recommendations

Schedule:

Reports are due 60 days after all relevant data for an investigation are received.

Future Canyons Field Unit Reports

- Level I - Short (5-20 pages), topical reports, dealing with issues such as surface contamination or groundwater contamination issues as separate topics (organized much like that outlined above for the pilot study).

- Level II - (12-18 mos.) Periodic summary reports will be prepared to integrate the results of all previous and ongoing work, and they will critically examine the technical approach and conceptual models used for Canyon's investigations and to suggest improvements.

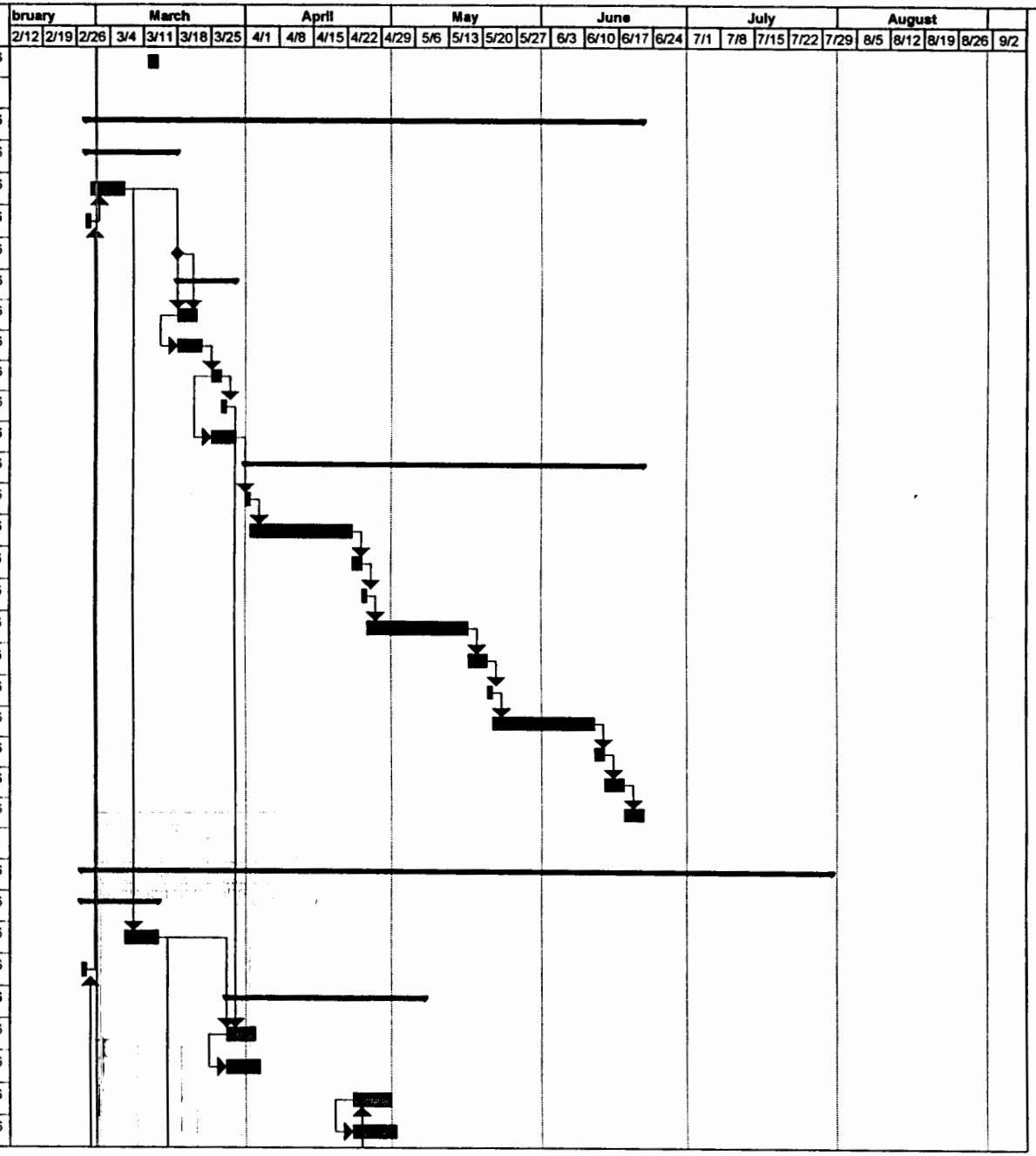
- Level III - (One report to be completed at the end of the Canyon's investigations) this document will summarize the results of all canyons investigations, integrate all surface and subsurface data into a refined conceptual model, present estimates of transport rates of contaminants in the surface and subsurface, define present-day and future impact of contaminants on the Rio Grande, make recommendations to optimize Laboratory monitoring of contaminants in the canyon systems.

The report format and schedule will be the similar to that described above for the pilot study.

County land = Reach P-1 and wells PCB-2, PC-2, PC-4 (See * on schedule)

LOS ALAMOS AND PUEBLO CANYONS PILOT STUDY

ID	Reach ID	Task Name	Duratio	Start	Finish
1	BSS	Bkgd Soil Sampling	2d	Mar 12 '96	Mar 13 '96
2					
3	P-4	Reach P-4	83d	Feb 28 '96	Jun 21 '96
4	P-4	Preliminary Work	13d	Feb 28 '96	Mar 18 '96
5	P-4	Geomorphic Mapping	5d	Feb 29 '96	Mar 6 '96
6	P-4	Monument Controls	1d	Feb 28 '96	Feb 28 '96
7	P-4	Begin Rad Survey	0d	Mar 18 '96	Mar 18 '96
8	P-4	Radiometric Survey	10d	Mar 18 '96	Mar 29 '96
9	P-4	Gamma Survey (ERG)	4d	Mar 18 '96	Mar 21 '96
10	P-4	Data Analysis	5d	Mar 18 '96	Mar 22 '96
11	P-4	Fixed Gross a,b,g (ERG)	2d	Mar 25 '96	Mar 26 '96
12	P-4	Fixed Gamma Spec (ER	1d	Mar 27 '96	Mar 27 '96
13	P-4	Data Analysis	5d	Mar 25 '96	Mar 29 '96
14	P-4	Soil Sampling	60d	Apr 1 '96	Jun 21 '96
15	P-4	Sample Seds-Full Suite	1d	Apr 1 '96	Apr 1 '96
16	P-4	Sample Analysis	15d	Apr 2 '96	Apr 22 '96
17	P-4	Data Interpretation	2d	Apr 23 '96	Apr 24 '96
18	P-4	Sample Seds-Ltd Suite	1d	Apr 25 '96	Apr 25 '96
19	P-4	Sample Analysis	15d	Apr 26 '96	May 16 '96
20	P-4	Data Interpretation	2d	May 17 '96	May 20 '96
21	P-4	Sample Seds-Add'l Sam	1d	May 21 '96	May 21 '96
22	P-4	Sample Analysis	15d	May 22 '96	Jun 11 '96
23	P-4	Data Interpretation	2d	Jun 12 '96	Jun 13 '96
24	P-4	Monument Sample Locn	2d	Jun 14 '96	Jun 17 '96
25	P-4	Survey Monuments	4d	Jun 18 '96	Jun 21 '96
26					
27	LA-2	Reach LA-2	111d	Feb 27 '96	Jul 30 '96
28	LA-2	Preliminary Work	12d	Feb 27 '96	Mar 13 '96
29	LA-2	Geomorphic Mapping	5d	Mar 7 '96	Mar 13 '96
30	LA-2	Monument Controls	1d	Feb 27 '96	Feb 27 '96
31	LA-2	Radiometric Survey	29d	Mar 28 '96	May 7 '96
32	LA-2	Gamma Survey (ERG)	4d	Mar 28 '96	Apr 2 '96
33	LA-2	Data Analysis	5d	Mar 28 '96	Apr 3 '96
34	LA-2	Gamma Survey (CRad)	6d	Apr 23 '96	Apr 30 '96
35	LA-2	Data Analysis	7d	Apr 23 '96	May 1 '96



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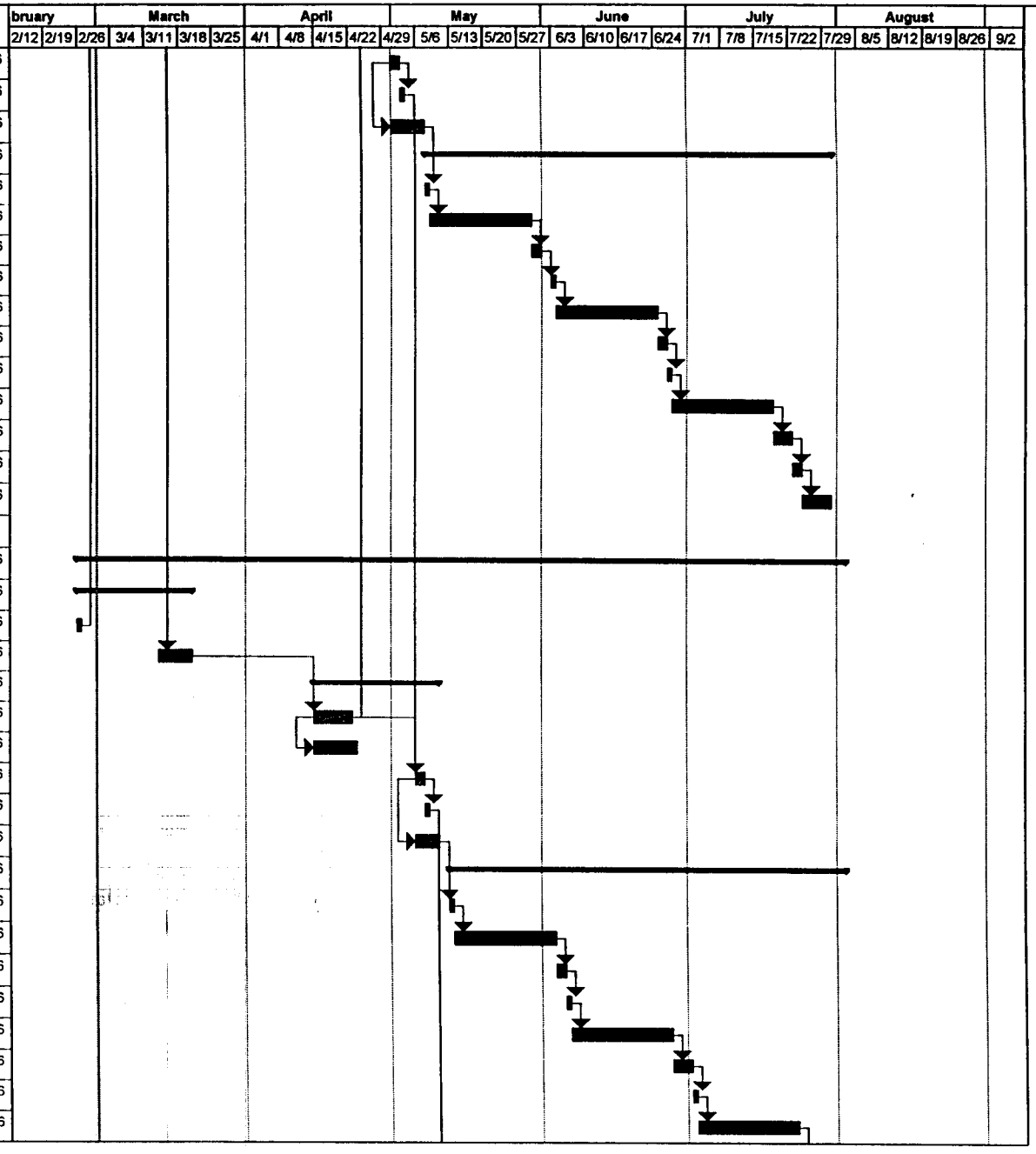
LOS ALAMOS AND PUEBLO CANYONS PILOT STUDY

ID	Reach ID	Task Name	Duratio	Start	Finish
36	LA-2	Fixed Gross a,b,g (ERG)	2d	May 1 '96	May 2 '96
37	LA-2	Fixed Gamma Spec (ER	1d	May 3 '96	May 3 '96
38	LA-2	Data Analysis	5d	May 1 '96	May 7 '96
39	LA-2	Soil Sampling	60d	May 8 '96	Jul 30 '96
40	LA-2	Sample Seds-Full Suite	1d	May 8 '96	May 8 '96
41	LA-2	Sample Analysis	15d	May 9 '96	May 29 '96
42	LA-2	Data Interpretation	2d	May 30 '96	May 31 '96
43	LA-2	Sample Seds-Ltd Suite	1d	Jun 3 '96	Jun 3 '96
44	LA-2	Sample Analysis	15d	Jun 4 '96	Jun 24 '96
45	LA-2	Data Interpretation	2d	Jun 25 '96	Jun 26 '96
46	LA-2	Sample Seds-Add'l Sam	1d	Jun 27 '96	Jun 27 '96
47	LA-2	Sample Analysis	15d	Jun 28 '96	Jul 18 '96
48	LA-2	Data Interpretation	2d	Jul 19 '96	Jul 22 '96
49	LA-2	Monument Sample Locn	2d	Jul 23 '96	Jul 24 '96
50	LA-2	Survey Monuments	4d	Jul 25 '96	Jul 30 '96
51					
52	P-1	Reach P-1	115d	Feb 26 '96	Aug 2 '96
53	P-1	Preliminary Work	18d	Feb 26 '96	Mar 20 '96
54	P-1	Monument Controls	1d	Feb 26 '96	Feb 26 '96
55	P-1	Geomorphic Mapping	5d	Mar 14 '96	Mar 20 '96
56	P-1	Radiometric Survey	20d	Apr 15 '96	May 10 '96
57	P-1	Gamma Survey (CRad)	6d	Apr 15 '96	Apr 22 '96
58	P-1	Data Analysis	7d	Apr 15 '96	Apr 23 '96
59	P-1	Fixed Gross a,b,g (ERG)	2d	May 6 '96	May 7 '96
60	P-1	Fixed Gamma Spec (ER	1d	May 8 '96	May 8 '96
61	P-1	Data Analysis	5d	May 6 '96	May 10 '96
62	P-1	Soil Sampling	60d	May 13 '96	Aug 2 '96
63	P-1	Sample Seds-Full Suite	1d	May 13 '96	May 13 '96
64	P-1	Sample Analysis	15d	May 14 '96	Jun 3 '96
65	P-1	Data Interpretation	2d	Jun 4 '96	Jun 5 '96
66	P-1	Sample Seds-Ltd Suite	1d	Jun 6 '96	Jun 6 '96
67	P-1	Sample Analysis	15d	Jun 7 '96	Jun 27 '96
68	P-1	Data Interpretation	2d	Jun 28 '96	Jul 1 '96
69	P-1	Sample Seds-Add'l Sam	1d	Jul 2 '96	Jul 2 '96
70	P-1	Sample Analysis	15d	Jul 3 '96	Jul 23 '96



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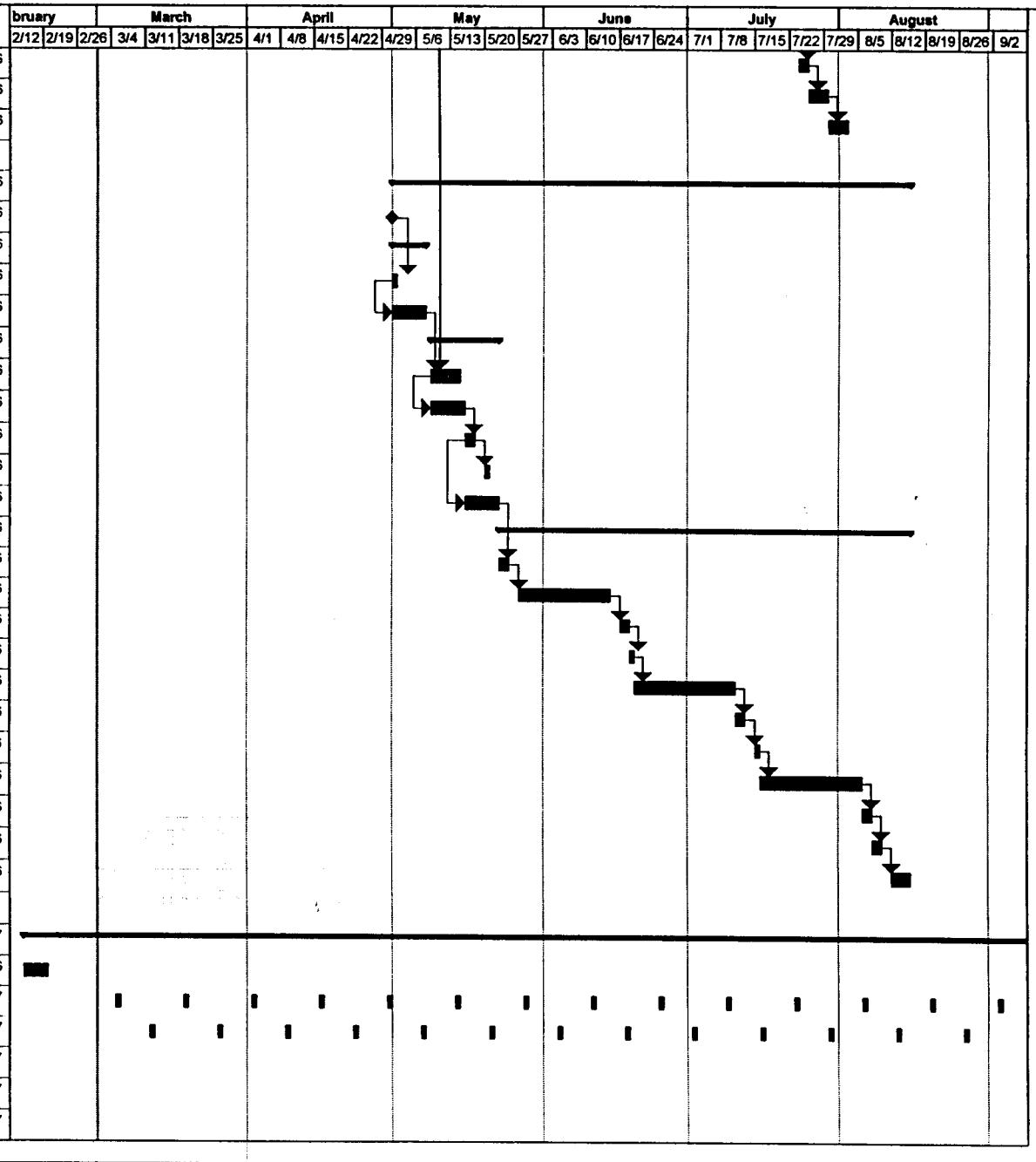
LOS ALAMOS AND PUEBLO CANYONS PILOT STUDY

ID	Reach ID	Task Name	Duratio	Start	Finish
71	P-1	Data Interpretation	2d	Jul 24 '96	Jul 25 '96
72	P-1	Monument Sample Locn	2d	Jul 26 '96	Jul 29 '96
73	P-1	Survey Monuments	4d	Jul 30 '96	Aug 2 '96
74					
75	LA-5	Reach LA-5	77d	May 1 '96	Aug 15 '96
76	LA-5	Pueblo Access Date	0d	May 1 '96	May 1 '96
77	LA-5	Preliminary Work	5d	May 1 '96	May 7 '96
78	LA-5	Monument Controls	1d	May 1 '96	May 1 '96
79	LA-5	Geomorphic Mapping	5d	May 1 '96	May 7 '96
80	LA-5	Radiometric Survey	10d	May 9 '96	May 22 '96
81	LA-5	Gamma Survey (ERG)	4d	May 9 '96	May 14 '96
82	LA-5	Data Analysis	5d	May 9 '96	May 15 '96
83	LA-5	Fixed Gross a,b,g (ERG)	2d	May 16 '96	May 17 '96
84	LA-5	Fixed Gamma Spec (ER	1d	May 20 '96	May 20 '96
85	LA-5	Data Analysis	5d	May 16 '96	May 22 '96
86	LA-5	Soil Sampling	61d	May 23 '96	Aug 15 '96
87	LA-5	Sample Seds-Full Suite	2d	May 23 '96	May 24 '96
88	LA-5	Sample Analysis	15d	May 27 '96	Jun 14 '96
89	LA-5	Data Interpretation	2d	Jun 17 '96	Jun 18 '96
90	LA-5	Sample Seds-Ltd Suite	1d	Jun 19 '96	Jun 19 '96
91	LA-5	Sample Analysis	15d	Jun 20 '96	Jul 10 '96
92	LA-5	Data Interpretation	2d	Jul 11 '96	Jul 12 '96
93	LA-5	Sample Seds-Add'l Sam	1d	Jul 15 '96	Jul 15 '96
94	LA-5	Sample Analysis	15d	Jul 16 '96	Aug 5 '96
95	LA-5	Data Interpretation	2d	Aug 6 '96	Aug 7 '96
96	LA-5	Monument Sample Locn	2d	Aug 8 '96	Aug 9 '96
97	LA-5	Survey Monuments	4d	Aug 12 '96	Aug 15 '96
98					
99	Air	Air Monitoring	292d	Feb 15 '96	Mar 28 '97
100	Air	Install Stations	3d	Feb 15 '96	Feb 19 '96
101	Air	Change Filter	261d	Mar 5 '96	Mar 4 '97
129	Air	Change Battery	261d	Mar 12 '96	Mar 11 '97
157	Air	Composite Sample	1d	Mar 5 '97	Mar 5 '97
158	Air	Sample Analysis	15d	Mar 6 '97	Mar 26 '97
159	Air	Data Interpretation	2d	Mar 27 '97	Mar 28 '97



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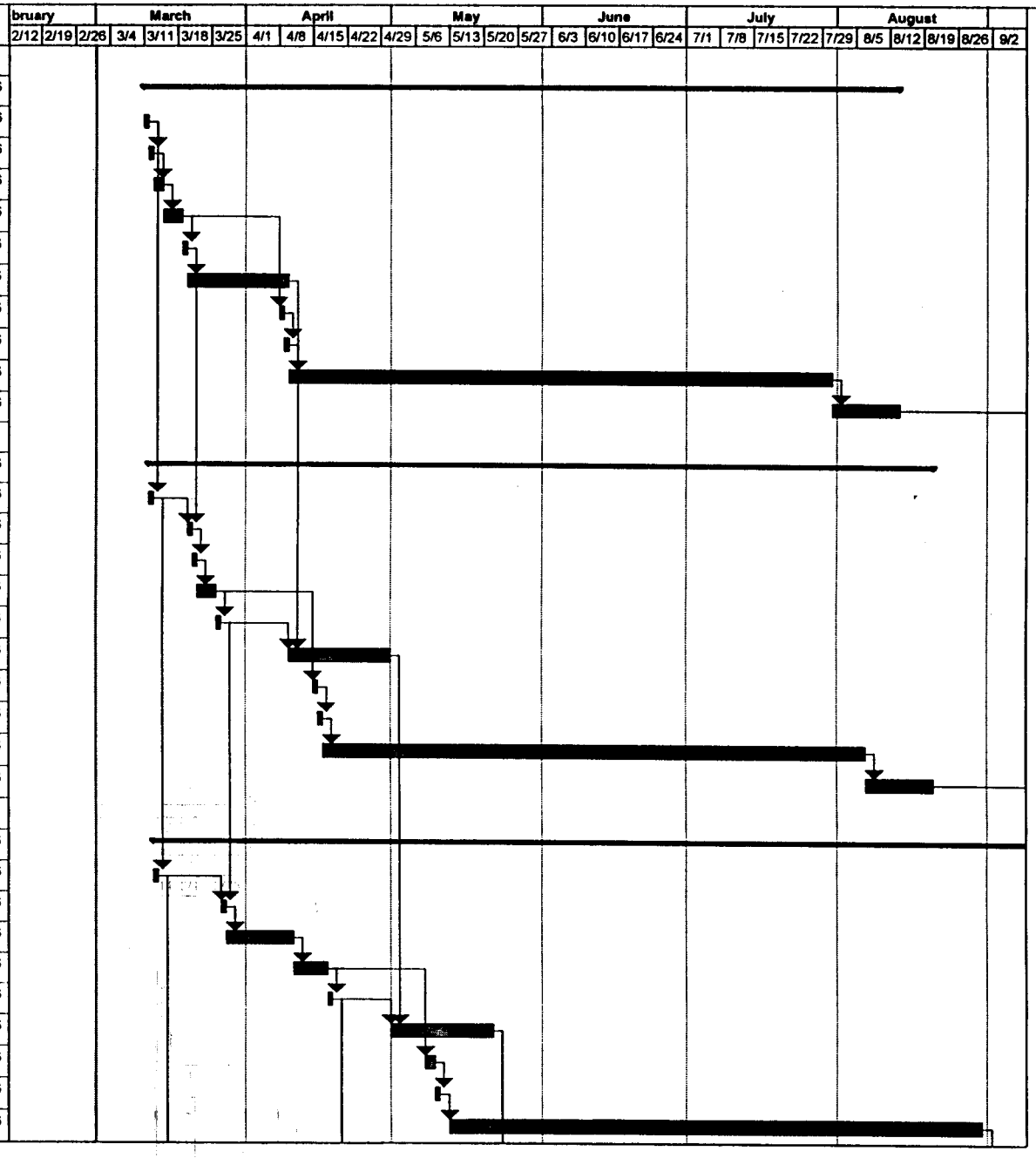
LOS ALAMOS AND PUEBLO CANYONS PILOT STUDY

ID	Reach ID	Task Name	Duratio	Start	Finish
160					
161	P0-4	Well P0-4 (50 ft)	112d	Mar 11 '96	Aug 13 '96
162	P0-4	Rad Bkgd Survey	1d	Mar 11 '96	Mar 11 '96
163	P0-4	Mob	1d	Mar 12 '96	Mar 12 '96
164	P0-4	Drill	2d	Mar 13 '96	Mar 14 '96
165	P0-4	Complete	2d	Mar 15 '96	Mar 18 '96
166	P0-4	Demob	1d	Mar 19 '96	Mar 19 '96
167	P0-4	Completion Report	15d	Mar 20 '96	Apr 9 '96
168	P0-4	Develop	1d	Apr 8 '96	Apr 8 '96
169	P0-4	Sample	1d	Apr 9 '96	Apr 9 '96
170	P0-4	Sample Analysis	80d	Apr 10 '96	Jul 30 '96
171	P0-4	Data Interp	10d	Jul 31 '96	Aug 13 '96
172					
173	LA0-1.6	LA0-1.6 (30 ft)	116d	Mar 12 '96	Aug 20 '96
174	LA0-1.6	Rad Bkgd Survey	1d	Mar 12 '96	Mar 12 '96
175	LA0-1.6	Mob	1d	Mar 20 '96	Mar 20 '96
176	LA0-1.6	Drill	1d	Mar 21 '96	Mar 21 '96
177	LA0-1.6	Complete	2d	Mar 22 '96	Mar 25 '96
178	LA0-1.6	Demob	1d	Mar 26 '96	Mar 26 '96
179	LA0-1.6	Completion Report	15d	Apr 10 '96	Apr 30 '96
180	LA0-1.6	Develop	1d	Apr 15 '96	Apr 15 '96
181	LA0-1.6	Sample	1d	Apr 16 '96	Apr 16 '96
182	LA0-1.6	Sample Analysis	80d	Apr 17 '96	Aug 6 '96
183	LA0-1.6	Data Interp	10d	Aug 7 '96	Aug 20 '96
184					
185	LA0I-7	LA0I-7 (250 ft)	133d	Mar 13 '96	Sep 13 '96
186	LA0I-7	Rad Bkgd Survey	1d	Mar 13 '96	Mar 13 '96
187	LA0I-7	Mob	1d	Mar 27 '96	Mar 27 '96
188	LA0I-7	Drill	10d	Mar 28 '96	Apr 10 '96
189	LA0I-7	Complete	5d	Apr 11 '96	Apr 17 '96
190	LA0I-7	Demob	1d	Apr 18 '96	Apr 18 '96
191	LA0I-7	Completion Report	15d	May 1 '96	May 21 '96
192	LA0I-7	Develop	2d	May 8 '96	May 9 '96
193	LA0I-7	Sample	1d	May 10 '96	May 10 '96
194	LA0I-7	Sample Analysis	80d	May 13 '96	Aug 30 '96



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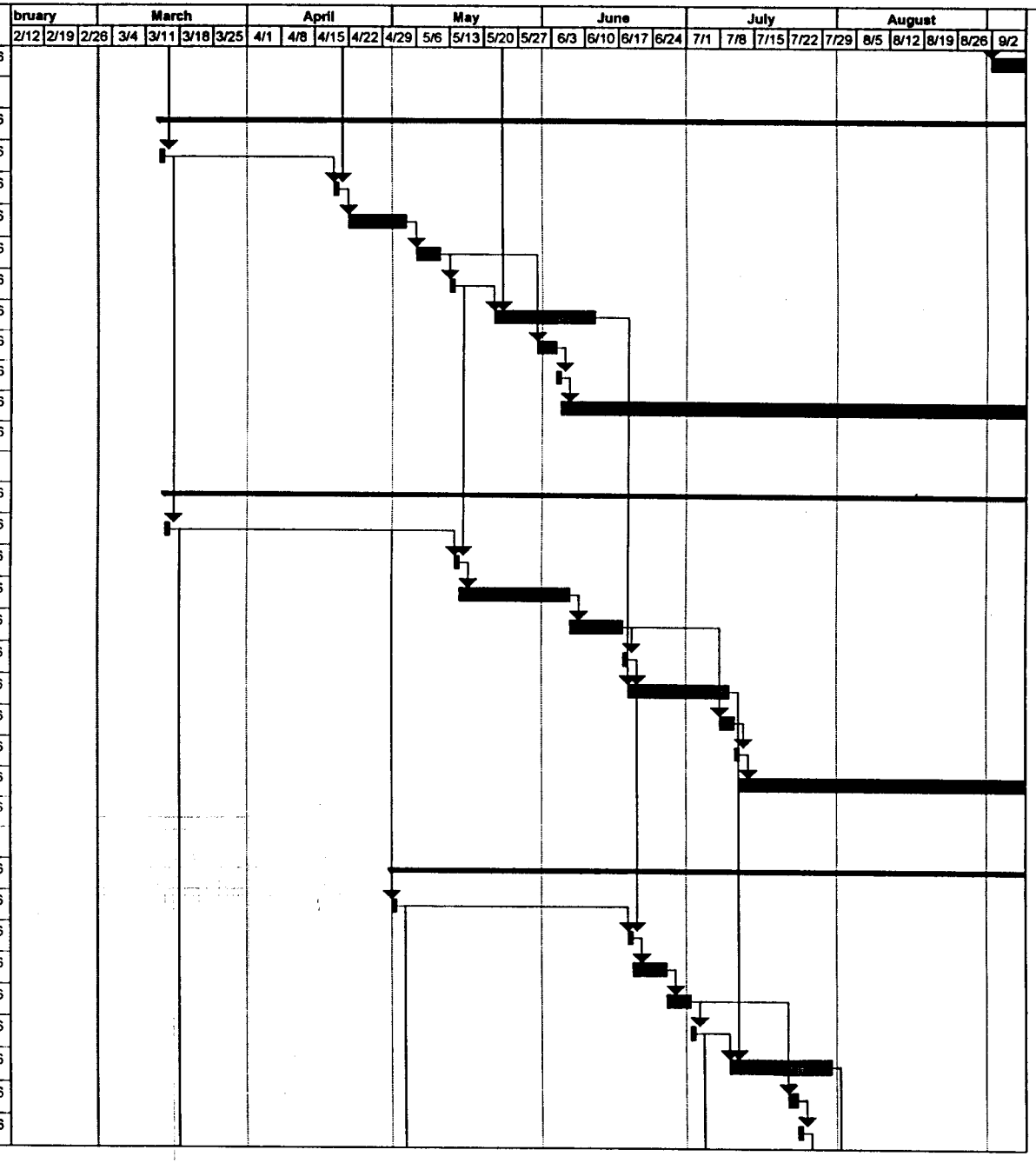
LOS ALAMOS AND PUEBLO CANYONS PILOT STUDY

ID	Reach ID	Task Name	Duratio	Start	Finish
195	LA0I-7	Data Interp	10d	Sep 2 '96	Sep 13 '96
196					
197	P0I-4	P0I-4 (250 ft)	149d	Mar 14 '96	Oct 8 '96
198	P0I-4	Rad Bkgd Survey	1d	Mar 14 '96	Mar 14 '96
199	P0I-4	Mob	1d	Apr 19 '96	Apr 19 '96
200	P0I-4	Drill	10d	Apr 22 '96	May 3 '96
201	P0I-4	Complete	5d	May 6 '96	May 10 '96
202	P0I-4	Demob	1d	May 13 '96	May 13 '96
203	P0I-4	Completion Report	15d	May 22 '96	Jun 11 '96
204	P0I-4	Develop	2d	May 31 '96	Jun 3 '96
205	P0I-4	Sample	1d	Jun 4 '96	Jun 4 '96
206	P0I-4	Sample Analysis	80d	Jun 5 '96	Sep 24 '96
207	P0I-4	Data Interp	10d	Sep 25 '96	Oct 8 '96
208					
209	SC0I-3	SC0I-3 (550 ft)	175d	Mar 15 '96	Nov 14 '96
210	SC0I-3	Rad Bkgd Survey	1d	Mar 15 '96	Mar 15 '96
211	SC0I-3	Mob	1d	May 14 '96	May 14 '96
212	SC0I-3	Drill	17d	May 15 '96	Jun 6 '96
213	SC0I-3	Complete	7d	Jun 7 '96	Jun 17 '96
214	SC0I-3	Demob	1d	Jun 18 '96	Jun 18 '96
215	SC0I-3	Completion Report	15d	Jun 19 '96	Jul 9 '96
216	SC0I-3	Develop	3d	Jul 8 '96	Jul 10 '96
217	SC0I-3	Sample	1d	Jul 11 '96	Jul 11 '96
218	SC0I-3	Sample Analysis	80d	Jul 12 '96	Oct 31 '96
219	SC0I-3	Data Interp	10d	Nov 1 '96	Nov 14 '96
220					
221	LLA0-5	LLA0-5 (100 ft)	151d	May 1 '96	Nov 27 '96
222	LLA0-5	Rad Bkgd Survey	1d	May 1 '96	May 1 '96
223	LLA0-5	Mob	1d	Jun 19 '96	Jun 19 '96
224	LLA0-5	Drill	5d	Jun 20 '96	Jun 26 '96
225	LLA0-5	Complete	3d	Jun 27 '96	Jul 1 '96
226	LLA0-5	Demob	1d	Jul 2 '96	Jul 2 '96
227	LLA0-5	Completion Report	15d	Jul 10 '96	Jul 30 '96
228	LLA0-5	Develop	2d	Jul 22 '96	Jul 23 '96
229	LLA0-5	Sample	1d	Jul 24 '96	Jul 24 '96



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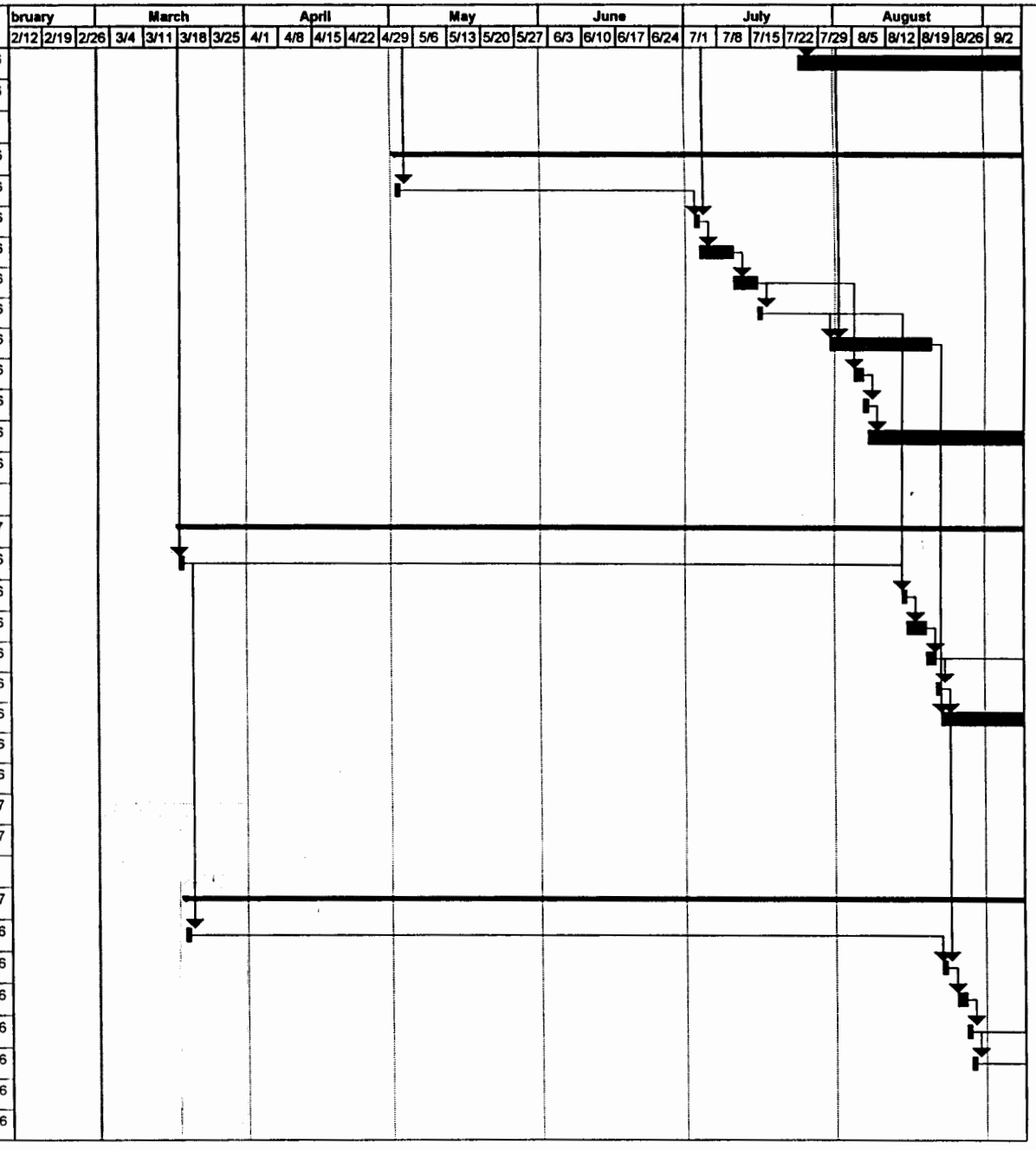
LOS ALAMOS AND PUEBLO CANYONS PILOT STUDY

ID	Reach ID	Task Name	Duratio	Start	Finish
230	LLA0-5	Sample Analysis	80d	Jul 25 '96	Nov 13 '96
231	LLA0-5	Data Interp	10d	Nov 14 '96	Nov 27 '96
232					
233	LLA0-1	LLA0-1 (100 ft)	160d	May 2 '96	Dec 11 '96
234	LLA0-1	Rad Bkgd Survey	1d	May 2 '96	May 2 '96
235	LLA0-1	Mob	1d	Jul 3 '96	Jul 3 '96
236	LLA0-1	Drill	5d	Jul 4 '96	Jul 10 '96
237	LLA0-1	Complete	3d	Jul 11 '96	Jul 15 '96
238	LLA0-1	Demob	1d	Jul 16 '96	Jul 16 '96
239	LLA0-1	Completion Report	15d	Jul 31 '96	Aug 20 '96
240	LLA0-1	Develop	2d	Aug 5 '96	Aug 6 '96
241	LLA0-1	Sample	1d	Aug 7 '96	Aug 7 '96
242	LLA0-1	Sample Analysis	80d	Aug 8 '96	Nov 27 '96
243	LLA0-1	Data Interp	10d	Nov 28 '96	Dec 11 '96
244					
245	P0-2	P0-2 (50 ft)	218d	Mar 18 '96	Jan 15 '97
246	P0-2	Rad Bkgd Survey	1d	Mar 18 '96	Mar 18 '96
247	P0-2	Mob	1d	Aug 15 '96	Aug 15 '96
248	P0-2	Drill	2d	Aug 16 '96	Aug 19 '96
249	P0-2	Complete	2d	Aug 20 '96	Aug 21 '96
250	P0-2	Demob	1d	Aug 22 '96	Aug 22 '96
251	P0-2	Completion Report	15d	Aug 23 '96	Sep 12 '96
252	P0-2	Develop	1d	Sep 11 '96	Sep 11 '96
253	P0-2	Sample	1d	Sep 12 '96	Sep 12 '96
254	P0-2	Sample Analysis	80d	Sep 13 '96	Jan 2 '97
255	P0-2	Data Interp	9d	Jan 3 '97	Jan 15 '97
256					
257	P0B-2	P0B-2 (30 ft)	225d	Mar 19 '96	Jan 27 '97
258	P0B-2	Rad Bkgd Survey	1d	Mar 19 '96	Mar 19 '96
259	P0B-2	Mob	1d	Aug 23 '96	Aug 23 '96
260	P0B-2	Drill	2d	Aug 26 '96	Aug 27 '96
261	P0B-2	Complete	1d	Aug 28 '96	Aug 28 '96
262	P0B-2	Demob	1d	Aug 29 '96	Aug 29 '96
263	P0B-2	Completion Report	15d	Sep 13 '96	Oct 3 '96
264	P0B-2	Develop	1d	Sep 18 '96	Sep 18 '96



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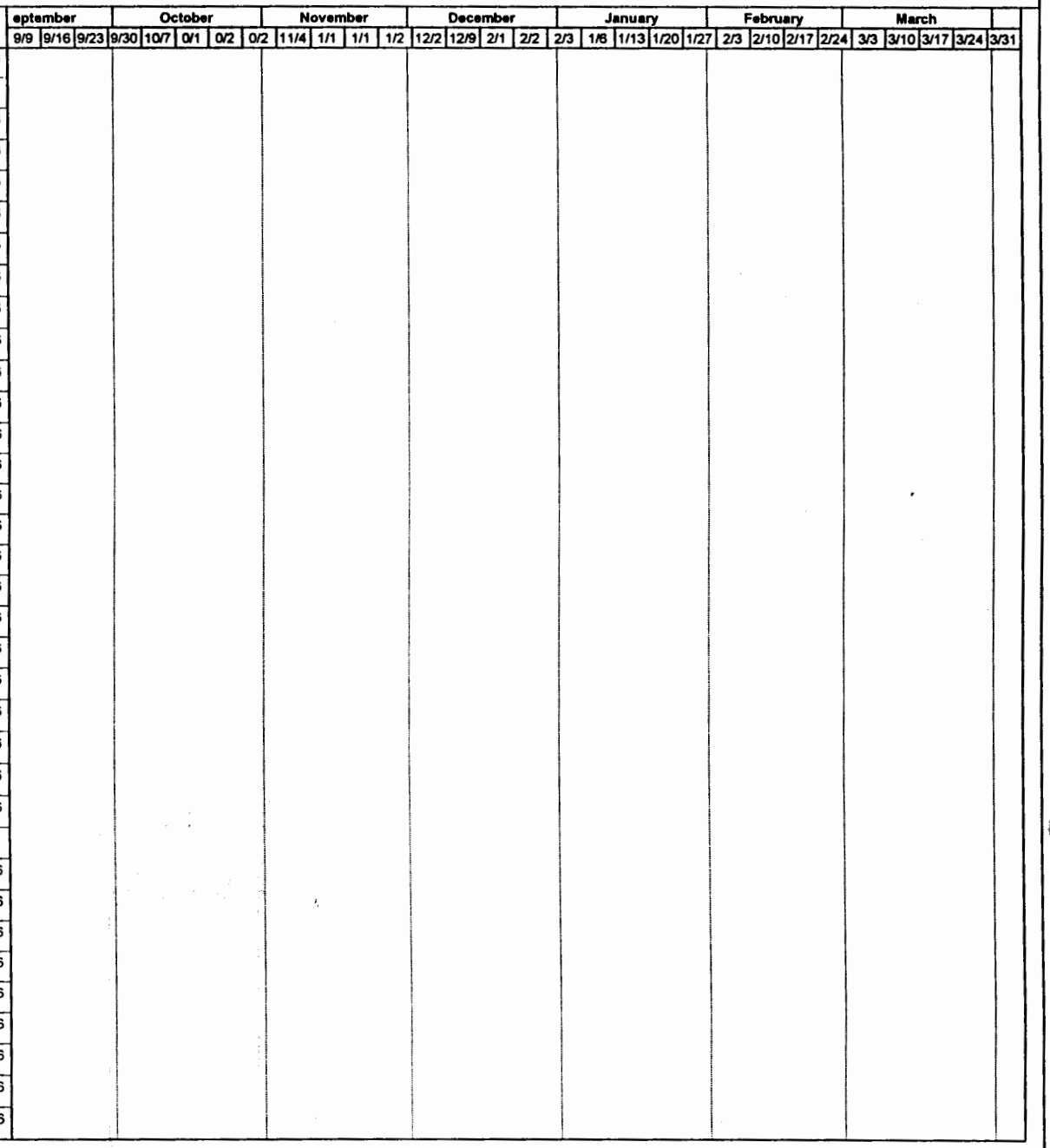
LOS ALAMOS AND PUEBLO CANYONS PILOT STUDY

ID	Reach ID	Task Name	Duratio	Start	Finish
265	POB-2	Sample	1d	Sep 19 '96	Sep 19 '96
266	POB-2	Sample Analysis	80d	Sep 20 '96	Jan 9 '97
267	POB-2	Data Interp	10d	Jan 10 '97	Jan 23 '97
268	POB-2	Survey all Well Locations	2d	Jan 24 '97	Jan 27 '97

bruary			March				April				May					June				July				August					
2/12	2/19	2/26	3/4	3/11	3/18	3/25	4/1	4/8	4/15	4/22	4/29	5/6	5/13	5/20	5/27	6/3	6/10	6/17	6/24	7/1	7/8	7/15	7/22	7/29	8/5	8/12	8/19	8/26	9/2

LOS ALAMOS AND PUEBLO CANYONS PILOT STUDY

ID	Reach ID	Task Name	Duratio	Start	Finish
1	BSS	Bkgd Soil Sampling	2d	Mar 12 '96	Mar 13 '96
2					
3	P-4	Reach P-4	83d	Feb 28 '96	Jun 21 '96
4	P-4	Preliminary Work	13d	Feb 28 '96	Mar 18 '96
5	P-4	Geomorphic Mapping	5d	Feb 29 '96	Mar 6 '96
6	P-4	Monument Controls	1d	Feb 28 '96	Feb 28 '96
7	P-4	Begin Rad Survey	0d	Mar 18 '96	Mar 18 '96
8	P-4	Radiometric Survey	10d	Mar 18 '96	Mar 29 '96
9	P-4	Gamma Survey (ERG)	4d	Mar 18 '96	Mar 21 '96
10	P-4	Data Analysis	5d	Mar 18 '96	Mar 22 '96
11	P-4	Fixed Gross a,b,g (ERG)	2d	Mar 25 '96	Mar 26 '96
12	P-4	Fixed Gamma Spec (ER	1d	Mar 27 '96	Mar 27 '96
13	P-4	Data Analysis	5d	Mar 25 '96	Mar 29 '96
14	P-4	Soil Sampling	60d	Apr 1 '96	Jun 21 '96
15	P-4	Sample Seds-Full Suite	1d	Apr 1 '96	Apr 1 '96
16	P-4	Sample Analysis	15d	Apr 2 '96	Apr 22 '96
17	P-4	Data Interpretation	2d	Apr 23 '96	Apr 24 '96
18	P-4	Sample Seds-Ltd Suite	1d	Apr 25 '96	Apr 25 '96
19	P-4	Sample Analysis	15d	Apr 26 '96	May 16 '96
20	P-4	Data Interpretation	2d	May 17 '96	May 20 '96
21	P-4	Sample Seds-Add'l Sam	1d	May 21 '96	May 21 '96
22	P-4	Sample Analysis	15d	May 22 '96	Jun 11 '96
23	P-4	Data Interpretation	2d	Jun 12 '96	Jun 13 '96
24	P-4	Monument Sample Locn	2d	Jun 14 '96	Jun 17 '96
25	P-4	Survey Monuments	4d	Jun 18 '96	Jun 21 '96
26					
27	LA-2	Reach LA-2	111d	Feb 27 '96	Jul 30 '96
28	LA-2	Preliminary Work	12d	Feb 27 '96	Mar 13 '96
29	LA-2	Geomorphic Mapping	5d	Mar 7 '96	Mar 13 '96
30	LA-2	Monument Controls	1d	Feb 27 '96	Feb 27 '96
31	LA-2	Radiometric Survey	29d	Mar 28 '96	May 7 '96
32	LA-2	Gamma Survey (ERG)	4d	Mar 28 '96	Apr 2 '96
33	LA-2	Data Analysis	5d	Mar 28 '96	Apr 3 '96
34	LA-2	Gamma Survey (CRad)	6d	Apr 23 '96	Apr 30 '96
35	LA-2	Data Analysis	7d	Apr 23 '96	May 1 '96



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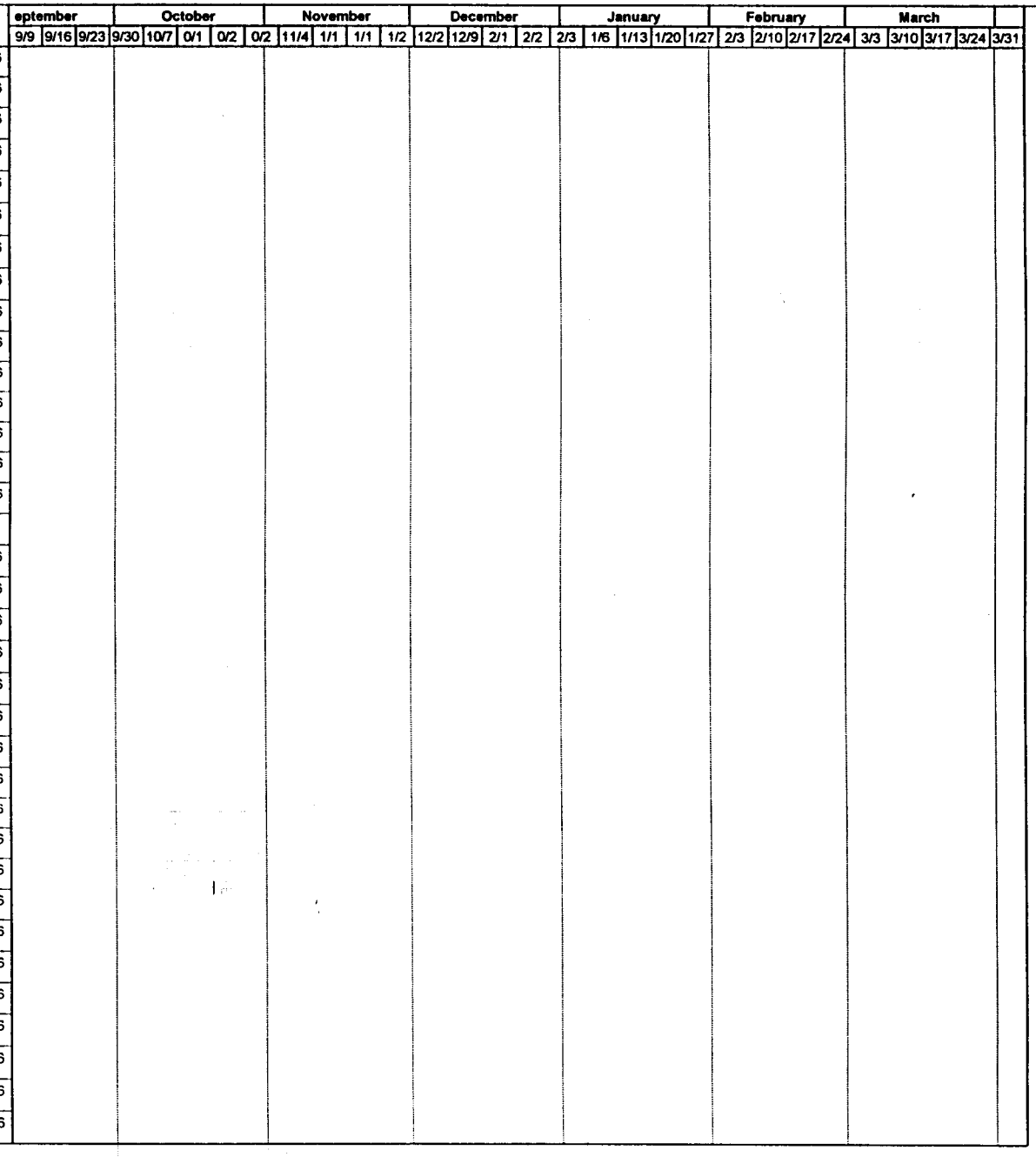
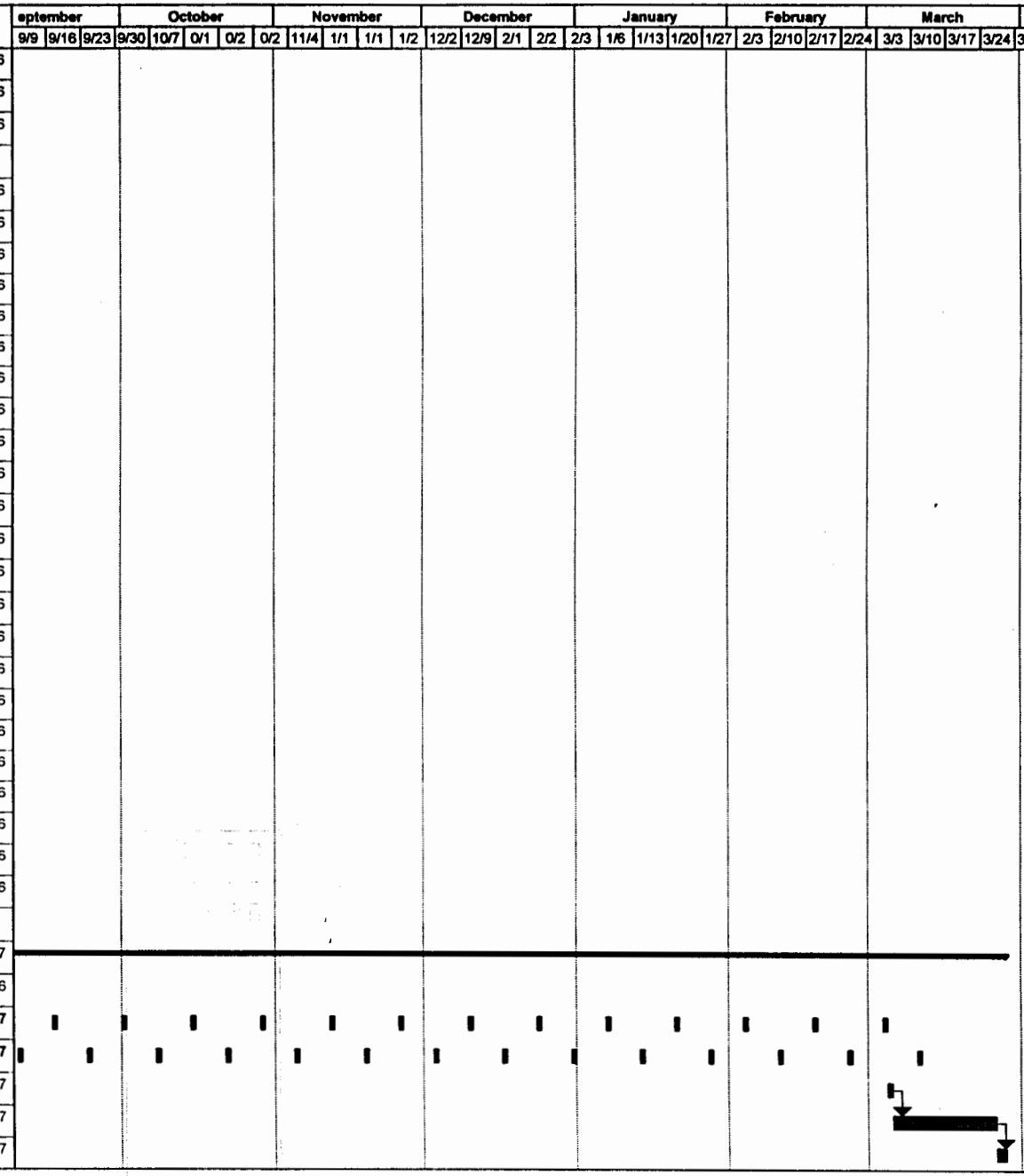
LOS ALAMOS AND PUEBLO CANYONS PILOT STUDY

ID	Reach ID	Task Name	Duratio	Start	Finish
36	LA-2	Fixed Gross a,b,g (ERG)	2d	May 1 '96	May 2 '96
37	LA-2	Fixed Gamma Spec (ER	1d	May 3 '96	May 3 '96
38	LA-2	Data Analysis	5d	May 1 '96	May 7 '96
39	LA-2	Soil Sampling	60d	May 8 '96	Jul 30 '96
40	LA-2	Sample Seds-Full Suite	1d	May 8 '96	May 8 '96
41	LA-2	Sample Analysis	15d	May 9 '96	May 29 '96
42	LA-2	Data Interpretation	2d	May 30 '96	May 31 '96
43	LA-2	Sample Seds-Ltd Suite	1d	Jun 3 '96	Jun 3 '96
44	LA-2	Sample Analysis	15d	Jun 4 '96	Jun 24 '96
45	LA-2	Data Interpretation	2d	Jun 25 '96	Jun 26 '96
46	LA-2	Sample Seds-Add'l Sam	1d	Jun 27 '96	Jun 27 '96
47	LA-2	Sample Analysis	15d	Jun 28 '96	Jul 18 '96
48	LA-2	Data Interpretation	2d	Jul 19 '96	Jul 22 '96
49	LA-2	Monument Sample Locn	2d	Jul 23 '96	Jul 24 '96
50	LA-2	Survey Monuments	4d	Jul 25 '96	Jul 30 '96
51					
52	P-1	Reach P-1	115d	Feb 26 '96	Aug 2 '96
53	P-1	Preliminary Work	18d	Feb 26 '96	Mar 20 '96
54	P-1	Monument Controls	1d	Feb 26 '96	Feb 26 '96
55	P-1	Geomorphic Mapping	5d	Mar 14 '96	Mar 20 '96
56	P-1	Radiometric Survey	20d	Apr 15 '96	May 10 '96
57	P-1	Gamma Survey (CRad)	6d	Apr 15 '96	Apr 22 '96
58	P-1	Data Analysis	7d	Apr 15 '96	Apr 23 '96
59	P-1	Fixed Gross a,b,g (ERG)	2d	May 6 '96	May 7 '96
60	P-1	Fixed Gamma Spec (ER	1d	May 8 '96	May 8 '96
61	P-1	Data Analysis	5d	May 6 '96	May 10 '96
62	P-1	Soil Sampling	60d	May 13 '96	Aug 2 '96
63	P-1	Sample Seds-Full Suite	1d	May 13 '96	May 13 '96
64	P-1	Sample Analysis	15d	May 14 '96	Jun 3 '96
65	P-1	Data Interpretation	2d	Jun 4 '96	Jun 5 '96
66	P-1	Sample Seds-Ltd Suite	1d	Jun 6 '96	Jun 6 '96
67	P-1	Sample Analysis	15d	Jun 7 '96	Jun 27 '96
68	P-1	Data Interpretation	2d	Jun 28 '96	Jul 1 '96
69	P-1	Sample Seds-Add'l Sam	1d	Jul 2 '96	Jul 2 '96
70	P-1	Sample Analysis	15d	Jul 3 '96	Jul 23 '96



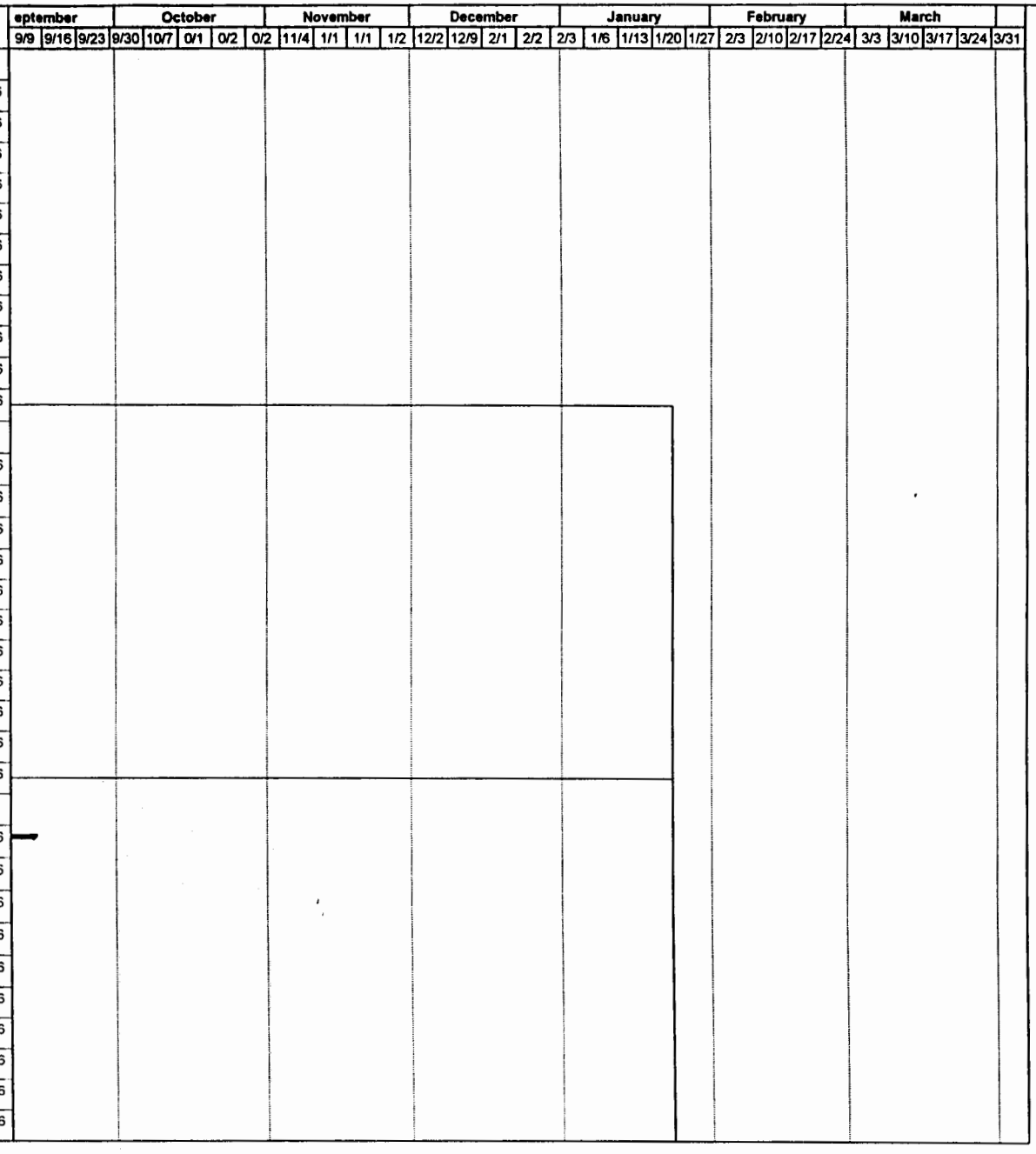
LOS ALAMOS AND PUEBLO CANYONS PILOT STUDY

ID	Reach ID	Task Name	Duratio	Start	Finish
71	P-1	Data Interpretation	2d	Jul 24 '96	Jul 25 '96
72	P-1	Monument Sample Locn	2d	Jul 26 '96	Jul 29 '96
73	P-1	Survey Monuments	4d	Jul 30 '96	Aug 2 '96
74					
75	LA-5	Reach LA-5	77d	May 1 '96	Aug 15 '96
76	LA-5	Pueblo Access Date	0d	May 1 '96	May 1 '96
77	LA-5	Preliminary Work	5d	May 1 '96	May 7 '96
78	LA-5	Monument Controls	1d	May 1 '96	May 1 '96
79	LA-5	Geomorphic Mapping	5d	May 1 '96	May 7 '96
80	LA-5	Radiometric Survey	10d	May 9 '96	May 22 '96
81	LA-5	Gamma Survey (ERG)	4d	May 9 '96	May 14 '96
82	LA-5	Data Analysis	5d	May 9 '96	May 15 '96
83	LA-5	Fixed Gross a,b,g (ERG)	2d	May 16 '96	May 17 '96
84	LA-5	Fixed Gamma Spec (ER	1d	May 20 '96	May 20 '96
85	LA-5	Data Analysis	5d	May 16 '96	May 22 '96
86	LA-5	Soil Sampling	61d	May 23 '96	Aug 15 '96
87	LA-5	Sample Seds-Full Suite	2d	May 23 '96	May 24 '96
88	LA-5	Sample Analysis	15d	May 27 '96	Jun 14 '96
89	LA-5	Data Interpretation	2d	Jun 17 '96	Jun 18 '96
90	LA-5	Sample Seds-Ltd Suite	1d	Jun 19 '96	Jun 19 '96
91	LA-5	Sample Analysis	15d	Jun 20 '96	Jul 10 '96
92	LA-5	Data Interpretation	2d	Jul 11 '96	Jul 12 '96
93	LA-5	Sample Seds-Add'l Sam	1d	Jul 15 '96	Jul 15 '96
94	LA-5	Sample Analysis	15d	Jul 16 '96	Aug 5 '96
95	LA-5	Data Interpretation	2d	Aug 6 '96	Aug 7 '96
96	LA-5	Monument Sample Locn	2d	Aug 8 '96	Aug 9 '96
97	LA-5	Survey Monuments	4d	Aug 12 '96	Aug 15 '96
98					
99	Air	Air Monitoring	292d	Feb 15 '96	Mar 28 '97
100	Air	Install Stations	3d	Feb 15 '96	Feb 19 '96
101	Air	Change Filter	261d	Mar 5 '96	Mar 4 '97
129	Air	Change Battery	261d	Mar 12 '96	Mar 11 '97
157	Air	Composite Sample	1d	Mar 5 '97	Mar 5 '97
158	Air	Sample Analysis	15d	Mar 6 '97	Mar 26 '97
159	Air	Data Interpretation	2d	Mar 27 '97	Mar 28 '97



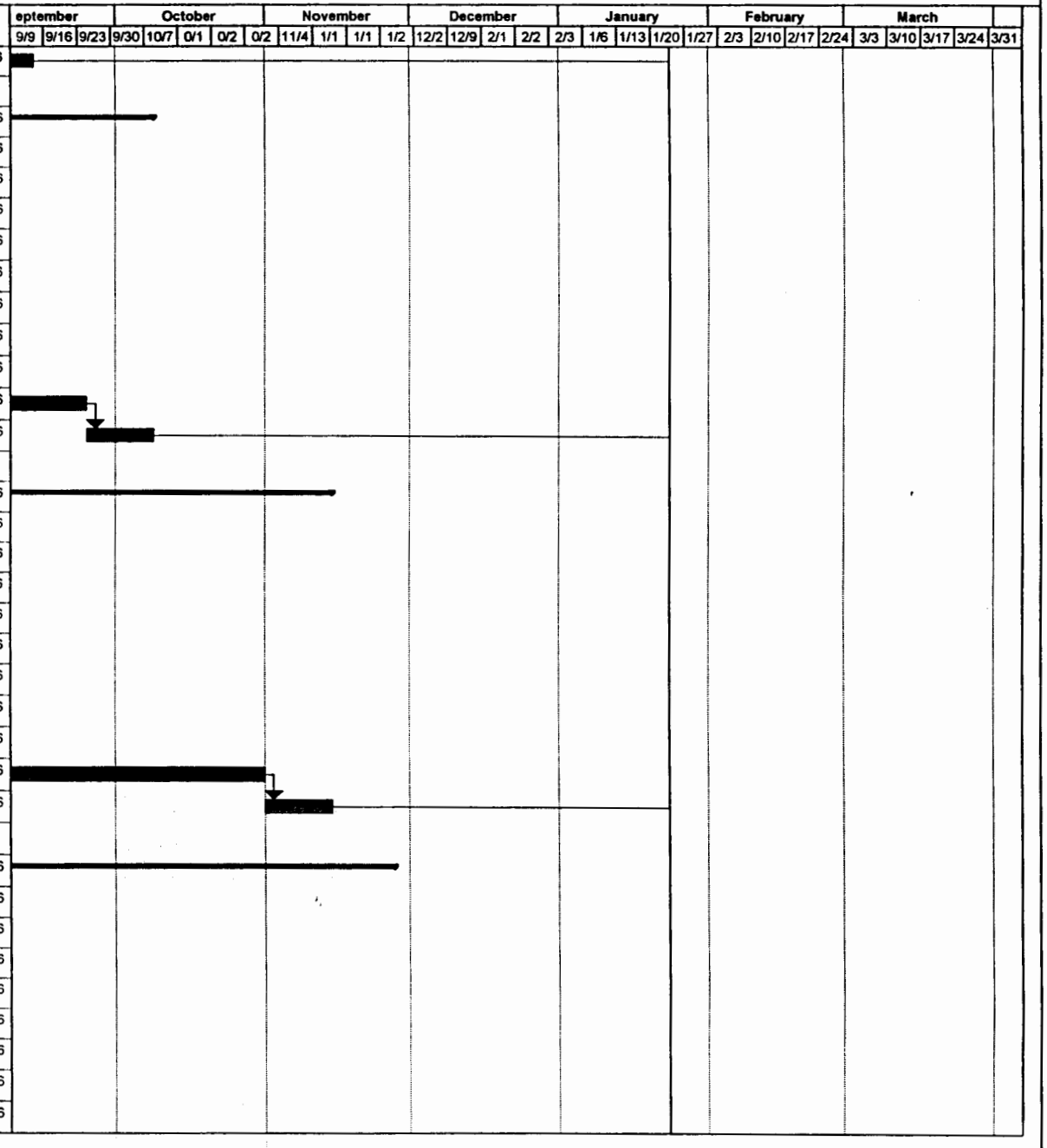
LOS ALAMOS AND PUEBLO CANYONS PILOT STUDY

ID	Reach ID	Task Name	Duratio	Start	Finish
160					
161	P0-4	Well P0-4 (50 ft)	112d	Mar 11 '96	Aug 13 '96
162	P0-4	Rad Bkgd Survey	1d	Mar 11 '96	Mar 11 '96
163	P0-4	Mob	1d	Mar 12 '96	Mar 12 '96
164	P0-4	Drill	2d	Mar 13 '96	Mar 14 '96
165	P0-4	Complete	2d	Mar 15 '96	Mar 18 '96
166	P0-4	Demob	1d	Mar 19 '96	Mar 19 '96
167	P0-4	Completion Report	15d	Mar 20 '96	Apr 9 '96
168	P0-4	Develop	1d	Apr 8 '96	Apr 8 '96
169	P0-4	Sample	1d	Apr 9 '96	Apr 9 '96
170	P0-4	Sample Analysis	80d	Apr 10 '96	Jul 30 '96
171	P0-4	Data Interp	10d	Jul 31 '96	Aug 13 '96
172					
173	LA0-1.6	LA0-1.6 (30 ft)	116d	Mar 12 '96	Aug 20 '96
174	LA0-1.6	Rad Bkgd Survey	1d	Mar 12 '96	Mar 12 '96
175	LA0-1.6	Mob	1d	Mar 20 '96	Mar 20 '96
176	LA0-1.6	Drill	1d	Mar 21 '96	Mar 21 '96
177	LA0-1.6	Complete	2d	Mar 22 '96	Mar 25 '96
178	LA0-1.6	Demob	1d	Mar 26 '96	Mar 26 '96
179	LA0-1.6	Completion Report	15d	Apr 10 '96	Apr 30 '96
180	LA0-1.6	Develop	1d	Apr 15 '96	Apr 15 '96
181	LA0-1.6	Sample	1d	Apr 16 '96	Apr 16 '96
182	LA0-1.6	Sample Analysis	80d	Apr 17 '96	Aug 6 '96
183	LA0-1.6	Data Interp	10d	Aug 7 '96	Aug 20 '96
184					
185	LA0I-7	LA0I-7 (250 ft)	133d	Mar 13 '96	Sep 13 '96
186	LA0I-7	Rad Bkgd Survey	1d	Mar 13 '96	Mar 13 '96
187	LA0I-7	Mob	1d	Mar 27 '96	Mar 27 '96
188	LA0I-7	Drill	10d	Mar 28 '96	Apr 10 '96
189	LA0I-7	Complete	5d	Apr 11 '96	Apr 17 '96
190	LA0I-7	Demob	1d	Apr 18 '96	Apr 18 '96
191	LA0I-7	Completion Report	15d	May 1 '96	May 21 '96
192	LA0I-7	Develop	2d	May 8 '96	May 9 '96
193	LA0I-7	Sample	1d	May 10 '96	May 10 '96
194	LA0I-7	Sample Analysis	80d	May 13 '96	Aug 30 '96



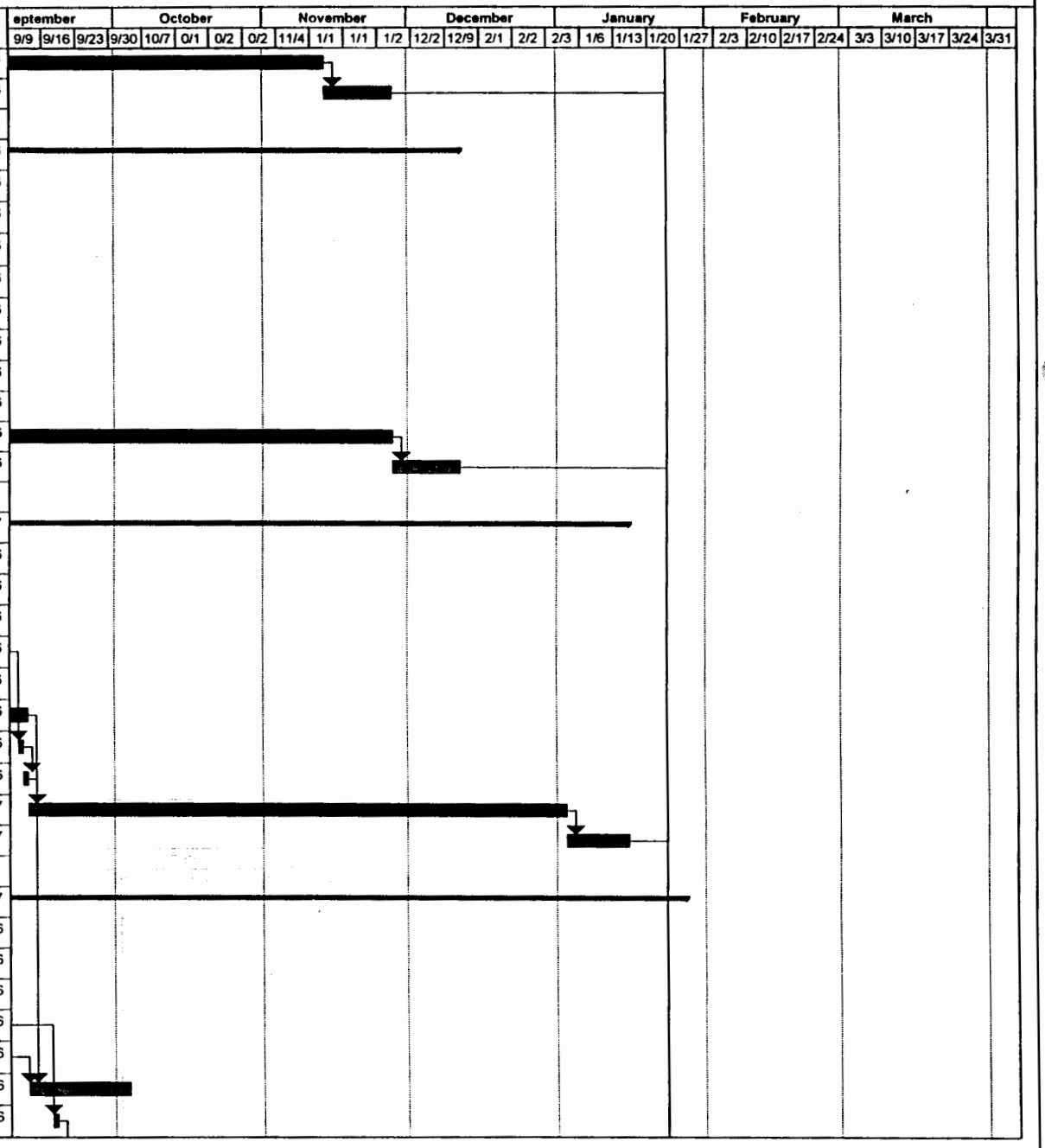
LOS ALAMOS AND PUEBLO CANYONS PILOT STUDY

ID	Reach ID	Task Name	Duratio	Start	Finish
195	LA0I-7	Data Interp	10d	Sep 2 '96	Sep 13 '96
196					
197	P0I-4	P0I-4 (250 ft)	149d	Mar 14 '96	Oct 8 '96
198	P0I-4	Rad Bkgd Survey	1d	Mar 14 '96	Mar 14 '96
199	P0I-4	Mob	1d	Apr 19 '96	Apr 19 '96
200	P0I-4	Drill	10d	Apr 22 '96	May 3 '96
201	P0I-4	Complete	5d	May 6 '96	May 10 '96
202	P0I-4	Demob	1d	May 13 '96	May 13 '96
203	P0I-4	Completion Report	15d	May 22 '96	Jun 11 '96
204	P0I-4	Develop	2d	May 31 '96	Jun 3 '96
205	P0I-4	Sample	1d	Jun 4 '96	Jun 4 '96
206	P0I-4	Sample Analysis	80d	Jun 5 '96	Sep 24 '96
207	P0I-4	Data Interp	10d	Sep 25 '96	Oct 8 '96
208					
209	SC0I-3	SC0I-3 (550 ft)	175d	Mar 15 '96	Nov 14 '96
210	SC0I-3	Rad Bkgd Survey	1d	Mar 15 '96	Mar 15 '96
211	SC0I-3	Mob	1d	May 14 '96	May 14 '96
212	SC0I-3	Drill	17d	May 15 '96	Jun 6 '96
213	SC0I-3	Complete	7d	Jun 7 '96	Jun 17 '96
214	SC0I-3	Demob	1d	Jun 18 '96	Jun 18 '96
215	SC0I-3	Completion Report	15d	Jun 19 '96	Jul 9 '96
216	SC0I-3	Develop	3d	Jul 8 '96	Jul 10 '96
217	SC0I-3	Sample	1d	Jul 11 '96	Jul 11 '96
218	SC0I-3	Sample Analysis	80d	Jul 12 '96	Oct 31 '96
219	SC0I-3	Data Interp	10d	Nov 1 '96	Nov 14 '96
220					
221	LLA0-5	LLA0-5 (100 ft)	151d	May 1 '96	Nov 27 '96
222	LLA0-5	Rad Bkgd Survey	1d	May 1 '96	May 1 '96
223	LLA0-5	Mob	1d	Jun 19 '96	Jun 19 '96
224	LLA0-5	Drill	5d	Jun 20 '96	Jun 26 '96
225	LLA0-5	Complete	3d	Jun 27 '96	Jul 1 '96
226	LLA0-5	Demob	1d	Jul 2 '96	Jul 2 '96
227	LLA0-5	Completion Report	15d	Jul 10 '96	Jul 30 '96
228	LLA0-5	Develop	2d	Jul 22 '96	Jul 23 '96
229	LLA0-5	Sample	1d	Jul 24 '96	Jul 24 '96



LOS ALAMOS AND PUEBLO CANYONS PILOT STUDY

ID	Reach ID	Task Name	Duratio	Start	Finish
230	LLA0-5	Sample Analysis	80d	Jul 25 '96	Nov 13 '96
231	LLA0-5	Data Interp	10d	Nov 14 '96	Nov 27 '96
232					
233	LLA0-1	LLA0-1 (100 ft)	160d	May 2 '96	Dec 11 '96
234	LLA0-1	Rad Bkgd Survey	1d	May 2 '96	May 2 '96
235	LLA0-1	Mob	1d	Jul 3 '96	Jul 3 '96
236	LLA0-1	Drill	5d	Jul 4 '96	Jul 10 '96
237	LLA0-1	Complete	3d	Jul 11 '96	Jul 15 '96
238	LLA0-1	Demob	1d	Jul 16 '96	Jul 16 '96
239	LLA0-1	Completion Report	15d	Jul 31 '96	Aug 20 '96
240	LLA0-1	Develop	2d	Aug 5 '96	Aug 6 '96
241	LLA0-1	Sample	1d	Aug 7 '96	Aug 7 '96
242	LLA0-1	Sample Analysis	80d	Aug 8 '96	Nov 27 '96
243	LLA0-1	Data Interp	10d	Nov 28 '96	Dec 11 '96
244					
245	P0-2	P0-2 (50 ft)	218d	Mar 18 '96	Jan 15 '97
246	P0-2	Rad Bkgd Survey	1d	Mar 18 '96	Mar 18 '96
247	P0-2	Mob	1d	Aug 15 '96	Aug 15 '96
248	P0-2	Drill	2d	Aug 16 '96	Aug 19 '96
249	P0-2	Complete	2d	Aug 20 '96	Aug 21 '96
250	P0-2	Demob	1d	Aug 22 '96	Aug 22 '96
251	P0-2	Completion Report	15d	Aug 23 '96	Sep 12 '96
252	P0-2	Develop	1d	Sep 11 '96	Sep 11 '96
253	P0-2	Sample	1d	Sep 12 '96	Sep 12 '96
254	P0-2	Sample Analysis	80d	Sep 13 '96	Jan 2 '97
255	P0-2	Data Interp	9d	Jan 3 '97	Jan 15 '97
256					
257	P0B-2	P0B-2 (30 ft)	225d	Mar 19 '96	Jan 27 '97
258	P0B-2	Rad Bkgd Survey	1d	Mar 19 '96	Mar 19 '96
259	P0B-2	Mob	1d	Aug 23 '96	Aug 23 '96
260	P0B-2	Drill	2d	Aug 26 '96	Aug 27 '96
261	P0B-2	Complete	1d	Aug 28 '96	Aug 28 '96
262	P0B-2	Demob	1d	Aug 29 '96	Aug 29 '96
263	P0B-2	Completion Report	15d	Sep 13 '96	Oct 3 '96
264	P0B-2	Develop	1d	Sep 18 '96	Sep 18 '96



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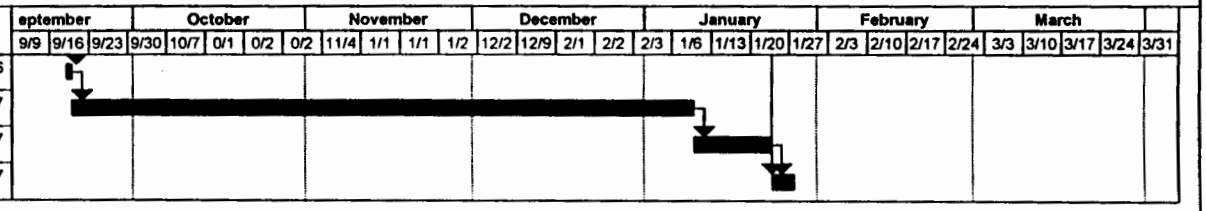
LOS ALAMOS AND PUEBLO CANYONS PILOT STUDY

ID	Reach ID	Task Name	Duratio	Start	Finish
265	POB-2	Sample	1d	Sep 19 '96	Sep 19 '96
266	POB-2	Sample Analysis	80d	Sep 20 '96	Jan 9 '97
267	POB-2	Data Interp	10d	Jan 10 '97	Jan 23 '97
268	POB-2	Survey all Well Locations	2d	Jan 24 '97	Jan 27 '97



FAULTING IN UP P CANYON
MAY [illegible] VERT. FLOW
TO [illegible] AQ

Field Unit IV is using surface geophysical methods to investigate the vadose zone hydrology below canyons at Los Alamos National Laboratory (LANL). In 1996, the surface geophysical investigations will primarily be performed in Pueblo and Los Alamos Canyons. The surface geophysical investigations include the following objectives and geophysical methods.

1. Define areas within canyons where aquifers are present in sediments below canyon floors at shallow depths (10 feet to 70 feet).

This investigation of shallow aquifers is being performed with an integrated application of the following geophysical methods:
- Electromagnetic Frequency Domain (EMFD)
- Electrical Earth Resistivity (EER)
- Temperature (WON'T DEFINE DEPTH - COUPLE W/ REFRACTION TO MAP TOP OF SAT ZONE)
- Seismic Refraction

The objective of this integrated application of surface geophysical methods is to define the location of shallow aquifers and define their dimensions (width, thickness, and depth to the top of the water table).

The pilot studies in Pueblo and Los Alamos Canyons will determine the ability of surface geophysical methods to characterize alluvial aquifers and will define the most efficient application of surface geophysical methods to accomplish this characterization. Results from the surface geophysical investigations will be used to select locations for monitor wells in the alluvial aquifers.

2. Define areas below canyons where perched aquifers are present and characterize the recharge relationship between shallow alluvial aquifers and the deeper perched aquifers.

The surface geophysical methods which will be used in an integrated application to meet these objectives are the following:

- Electromagnetic Frequency Domain (EMFD) deep vertical soundings
- Electromagnetic Time Domain (EMTD) deep vertical soundings
- Electrical Earth Resistivity (EER) deep vertical soundings
- Seismic Reflection (optional if warranted)

3. Characterize recharge relationships between perched aquifers and the deep main aquifers.

This study will be performed with the electromagnetic time domain method as this method will have the deepest penetration (to a depth of 800 -1000 feet depending on electrical properties of rock units) and the highest resolution of variations in the moisture regime in deep rock units. Identification of recharge relationships between perched aquifers and the underlying main aquifer is important, and the application of surface geophysics to accomplish this will be investigated.