DOPHE 136

HAZARDOUS MATERIALS

SWJFRRFP1A

BOX#

104 SW 8643

SW/JFR/RFP 1A ID:

JUN 24'98 12:09 No.001 P.02

ENVIRONMENTAL COMPLIANCE

MAY 5 1998

JEFFCO HEALTH

98-DOE-03701

Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

APR 23 1998

Mr. Ken Starr, PE
Director, Environmental Compliance Division
Jefferson County Department of Health and Environment
1801 19th Street
Golden, CO 80401

Dear Mr. Starr:

In response to your letter of March 3, 1998, the Rocky Flats Environmental Technology Site (Site) expects to receive documentation confirming that the new landfill will be a certifiable facility. All quality control reports attesting to the landfill's status will be included in that submittal. However, the Site will not seek certification from Jefferson County.

Given the success of off-site disposition of solid sanitary waste through Waste USA, Inc., the need for a new landfill grows more unlikely with time. Therefore, the landfill cell will remain an unused improvement until a justification for certification with the county may become evident. The support buildings to the landfill will be used for other designated purposes.

The slippage experienced in the riser conduits does not compromise the operability of the leakage detection and leachate collection systems. Closed circuit television inspection down the riser conduit has shown no indication that the liner has been compromised. Should some unforeseen, future event cause the Site to seek county certification of the landfill, the cell would at that time require a rebaselining of its condition prior to submittal. If you have any additional questions, please call Joe Rau at 303-966-7410.

Sincerely,

Joseph A. Legare
Assistant Manager
for Environmental Compliance

Enclosure
Letter, Ken Starr to Joe Rau, March 3, 1998

cc w/Enc:
J. Rau, ECD, RFFO
A. Rodgers, K-H
D. Mittlestadt, RMRS

Jefferson County Department of Health and Environment
Promoting Health and Preventing Injury and Disease

March 3, 1998

Mr. Joe Rau
Lead Infrastructure Team
Environmental Compliance Division
US Department of Energy Rocky Flats Field Office
Building 460
P.O. Box 928
Golden, Colorado 80402-0928

Re: Rocky Flats Environmental Technology Site New Sanitary Landfill

Dear Mr. Rau:

I have recently been informed by Jefferson County's Rocky Flats Environmental Technology Site New Sanitary Landfill (landfill) Quality Assurance Oversight Contractor, O'Brien & Gere Engineers, Inc. (O'Brien & Gere), that all repairs have been made to the landfill and that the project has been completed. However, I believe that some issues have not been adequately addressed with regard to riser pipe movement and landfill certification.

In the past, much discussion and documentation occurred with regard to the stability of the riser pipe assemblies and potential damage that could occur due to riser pipe movement. The calculations and discussions presented by the various consulting firms involved, indicated that long term stability of these riser pipes ***should*** not be a concern. This information was presented in October/November 1996, at which time no significant displacements of the riser pipes had been observed.

However, it appears that movement of these riser pipes has occurred since the October/November 1996 time period. O'Brien & Gere indicated in an April 29, 1997 Memorandum that, "A separation in the north leachate collection pipe at a weld approximately 1.5 feet down from the top concrete valve pit was observed, with a 1.5" to 2" separation. " In addition, they reported that, "The south leachate collection pipe reportedly was displaced approximately 1" to 2" down, based on Mr. Mittlestadt's observation of the pipe end's location along the wall of the valve building." According to O'Brien & Gere, additional movement has occurred since their April 29, 1997 inspection. O'Brien & Gere recently observed increased riser pipe movement and estimated the movement to be approximately 3 to 3.5 inches.

After the riser pipe movement was initially observed, it was my understanding that potential damage

5472

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Fax: (303) 275-7503

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Hwys. 73 & 285
Mountain Resource Center
Conifer, CO 80433
(303) 838-7552

Environmental Health
[illegible]

to the landfill liner system, due to this movement, would be investigated and/or addressed. To date, neither O'Brien & Gere nor I have received documentation regarding this issue. In addition, we have not been informed as to the status of the certification of this landfill.

If you or your staff has information regarding these issues, please transmit the documentation to me.

Thank you for your time and effort regarding this matter.

Sincerely,

Ken Starr

Ken Starr, PE
Director, Environmental Compliance Division

cc: Jefferson County Government
Mark B. Johnson, MD, MPH / Health and Environment
Kathe Bjork, DVM, MSPH / Health and Environment
Karen Berry / Planning & Zoning
Tim Rehder / US EPA Region VIII
Roger Doak / CDPHE
Steve Laudeman, PE / CDPHE
John Rinko, PE / O'Brien & Gere
file

STATE OF COLORADO

Roy Romer, Governor
Patti Shwayder, Acting Executive Director

Dedicated to protecting and improving the health and environment of the people of Colorado

HAZARDOUS MATERIALS AND WASTE MANAGEMENT DIVISION

4300 Cherry Creek Dr. S.
Denver, Colorado 80222-1530
Phone (303) 692-3300
Fax (303) 759-5355

222 S. 6th Street, Room 232
Grand Junction, Colorado 81501-2768
Phone (303) 248-7164
Fax (303) 248-7198

Colorado Department of Public Health and Environment

April 29, 1996

Don Mittlestadt
RMRS
Rocky Flats Environmental Technology Site, T130-F
P.O. Box 464
Golden, Colorado 80402-0464

RE: New Sanitary Landfill
Rocky Flats Environmental Technology Site
Construction Quality Assurance (CQA) Concerns

Dear Mr. Mittlestadt:

The Solid Waste Unit of the Hazardous Materials and Waste Management Division (the Division) received a letter dated April 18, 1996 from Jefferson County Department of Health and Environment (JCDHE) regarding CQA concerns at the above referenced facility. Attached to the JCDHE letter is a letter of April 9, 1996 from O'Brien & Gere Engineers, Jefferson County's designated oversight contractor during construction of the New Sanitary Landfill at Rocky Flats site.

As O'Brien & Gere's letter explains, construction of cell #1 was halted in December 1995 and is scheduled to resume in April 1996. Based on O'Brien & Gere's observations, it appears that the Contractor did not take the appropriate measures to protect the liner during the construction hiatus over the winter months.

As you know all liner construction work must be performed in accordance with the commitments and specifications described in the Construction Quality Assurance Plan (CQAP) for this facility. Construction and protection of the liner system, both clay and geomembrane elements, are critical to the integrity of the landfill cell. The Division requests a written summary be submitted which describes the condition of the liner system at the end of construction season last year and the liner condition at start-up of this year. In addition, provide a response to the technical concerns raised in O'Brien & Gere's letter of April 9, 1996.

Given the fact construction start-up has begun at this site, the Division requests that this matter be given immediate attention by your staff. I have enclosed a copy of the letters for your reference. If you have any questions, please contact me at 692-3437.

Sincerely,

Roger Doak
Geologist
Solid Waste Unit

enclosures

cc: K. Starr, Jefferson County Health Department, w/o enc.
K. Hellner, Jefferson County Planning Department, w/o enc.

sw/jfr/rfp 1a

Jefferson County Department of Health and Environment

Promoting Health and Preventing Injury and Disease

April 18, 1996

Mr. Roger Doak
Geologist, Solid Waste Unit
HM-WMD-B2
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80222-1530

Dear Roger:

The landfill construction activities at the Rocky Flats Environmental Technology Site have again commenced. As you are well aware there have been many delays, and an apparent lack of cooperation exists between the contractor, Park Construction Company, and the various quality control / quality assurance personnel. It is the opinion of the Jefferson County Department of Health and Environment that some of the landfill start-up actions taken thus far, or lack of actions taken, could possibly compromise or lead to the compromise of the integrity of the landfill cell. Therefore, I requested that O'Brien & Gere Engineers, Inc., the County designated oversight contractor, prepare a summary of both my concerns and their concerns. The enclosed document represents these technical issues.

If you have any questions, please contact me at 271-5714.

Sincerely,

Ken Starr, PE
Director, Environmental Compliance

APR 2 0 1996
HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

cc: Mark B. Johnson, MD, MPH

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O'BRIEN & GERE
ENGINEERS, INC.

April 9, 1996

Ken Starr, P.E.
Director, Environmental Compliance
Jefferson County Department of Health and Environment
1801 19th Street
Golden, Colorado 80401-1798

Re: New Sanitary Landfill at Rocky Flats Environmental Technology Site QAO Technical Concerns
File: 6164.001

Dear Mr. Starr:

O'Brien & Gere Engineers has provided quality assurance oversight (QAO) services for Jefferson County during construction of the New Sanitary Landfill at Rocky Flats Environmental Technology Site. This work is being performed consistent with the Certificate of Designation issued by Jefferson County for this project. We are responsible for independent testing and evaluation of cell no. 1 construction in our QAO role.

Construction of cell no. 1 was planned to be completed in one construction season. However, due to several reasons the Contractor, Park Construction Company, was unable to complete this work in 1995. Construction was halted in December 1995 and is scheduled to resume in April 1996. The Contractor left the cell in a condition such that the cell did not weather the winter months well. This included the following conditions which raise technical concerns:

1. The clay liner was cut to final grades on the north and west slopes, and possibly on the south slope pending updated survey information. This exposed the clay liner to the elements with no protective or sacrificial cover. The clay has desiccated and eroded through the winter, therefore, quality assurance/quality control (QA/QC) testing performed last fall is no longer representative of the clay liner. All exposed clay material should be reworked and retested according to the construction specifications. Additionally, the depth of clay liner must be re-surveyed to confirm a minimum thickness of at least two feet is present.

2. About ten panels of geomembrane were deployed on the north slope of the cell. A coupon sample of the secondary 40 mil HDPE liner failed under peel testing. This seam must be addressed and all seams evaluated. The primary 60 mil HDPE liner became dislodged during heavy wind gusts and slid to the toe of slope destroying the material.

3. Park Construction has not provided survey information for the evaporation pond

O'Brien & Gere Engineers, Inc., an O'Brien & Gere Limited Company
12600 West Colfax Avenue / Suite A-260 / Lakewood, CO 80215 / (303) 232-0193 FAX (303) 232-0394
. . .and offices in major U.S. cities

completed last fall and has not released survey information for the clay liner in cell no. 1. This is significant since the latest information indicates the evaporation pond may not have minimum thickness for the clay liner. This information is also needed for cell no. 1 to confirm that the clay liner is a minimum of two feet thick.

4. Reportedly, Park Construction has performed work without proper notification and proper oversight by the QA/QC. This needs to be addressed by RMRS since these actions are not in accordance with the construction specifications.

5. Clay liner material must still be placed on the upper section of the east slope. This work was not performed last fall and needs to be completed before geomembrane can be deployed on the east slope.

6. During our site inspection of March 27, 1996 we observed materials being stored in questionable conditions. Rolls of geotextile were not covered, exposing the material to damaging UV rays which will degrade the geotextile. The exposed material should not be used for construction and should be disposed.

7. There is no assurance Park Construction Company will be finished by the June 24, 1996 deadline they have scheduled. There may be a tendency by the Contractor to take short cuts as work proceeds beyond the scheduled completion date. This increases the importance of QA/QC testing and QAO of the project.

Our greatest technical concern is construction and maintenance of the clay liner and installation and protection of the geomembranes. These are the most important elements of the baseliner system and require the closest monitoring.

Please do not hesitate to contact either John Rinko or me to discuss this project if you have any questions or comments.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Brian W. Corcoran, P.E.
Senior Project Engineer

attachment

cc: James T. Mickam, CPG (O'Brien & Gere)
John Rinko, Jr., P.E. (O'Brien & Gere)

c:\rckyflts\rockytec.let

SW/JFR/RFP 1A

Jefferson County Department of Health and Environment

Promoting Health and Preventing Injury and Disease

April 18, 1996

Mr. Roger Doak
Geologist, Solid Waste Unit
HM-WMD-B2
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80222-1530

Dear Roger:

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If you have any questions, please contact me at 271-5714.

Sincerely,

Ken Starr

Ken Starr, PE
Director, Environmental Compliance

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APR 27 1996
HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

cc: Mark B. Johnson, MD, MPH

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O'BRIEN & GERE
ENGINEERS, INC.

April 9, 1996

Ken Starr, P.E.
Director, Environmental Compliance
Jefferson County Department of Health and Environment
1801 19th Street
Golden, Colorado 80401-1798

Re: New Sanitary Landfill at Rocky Flats Environmental Technology Site QAO Technical Concerns
File: 6164.001

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Please do not hesitate to contact either John Rinko or me to discuss this project if you have any questions or comments.

Very truly yours,

O'BRIEN & GERE ENGINEERS, INC.

Brian W. Corcoran, P.E.
Senior Project Engineer

attachment

cc: James T. Mickam, CPG (O'Brien & Gere)
John Rinko, Jr., P.E. (O'Brien & Gere)

c:\rckyflts\rockytec.let

SW/JFR/RFP 1A Doak

Board of County Commissioners

Gary D. Laura
District No. 1
Betty J. Miller
District No. 2
John P. Stone
District No. 3

October 11, 1995

RECEIVED
OCT 12 1995
HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

Mr. Don Mittlestadt, Project Manager
RMRS
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80204-0464

RE: CD92-2, Rocky Flats Sanitary Landfill

Dear Don:

After visiting the site last week I have some concerns surrounding the seeps in the cell. The seeps were present in the north west corner of the cell at the bottom and on the west side about half way up the slope. The Certificate of Designation requires that any changes in site conditions are reported to the Solid Waste Division, Roger Doak, and to Jefferson County. I consider seeps in the pond and cell a change in conditions. The original stability analysis for the cell liners did not include the presence of ground water as springs, seeps or perched ground water. My concerns center not so much on water getting into the cell as the stability of the liners until waste has been placed in the cell.

The source of the water needs to be **accurately** determined through a thorough evaluation that may require over excavation, testing and monitoring. It may also be prudent to assume a worst case scenario where the presence of the seeps is not a one time isolated event and that the seeps will continue to flow frequently. Will such a condition affect the stability of the liner? This analysis needs to be done before the synthetic liner is placed in the cell.

From our discussions on the site, I know that some items listed above have been done. However, Jefferson County and Roger will need to review the data collected. Please provide a response to the questions raised as soon as possible. Please call me if you have any questions.

Sincerely,

Karen A. Hellner

Karen A. Hellner
Jefferson County Planning

cc: Roger Doak, CDPHE
Ken Starr, Jeffco Health

100 Jefferson County Parkway, Golden, Colorado 80419
(303) 271-6511

SW/JF/RFP 1A

EG&G ROCKY FLATS

INTEROFFICE CORRESPONDENCE

RECEIVED
MAR 31 1995
HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

DATE: 20 March 1995

TO: Distribution

FROM: D. R. Mittlestadt Jr. EG&G/E&S/PM T-130A X2084-D5654

SUBJECT: Minutes of Colorado Department of Public Health and Jefferson County Planning Department Meeting of 20 March 1995 for the New Sanitary Landfill Test Fill Report Submission

PURPOSE

The purpose of this memo is provide the Minutes of the Colorado Department of Public Health and Environment (CDPH&E) and Jefferson County (JEFFCO) meeting of 20 March 1995.

DISCUSSION

The meeting was held at the Colorado Department of Public Health and Environment Department in Denver, CO.

Attendees:	Roger Doak	CDPH&E	Don Mittlestadt	EG&G/PM
	Karen Hellner	JEFFCO/P&Z	Dorthea Hoyt	EG&G/PM-PE
	Herb Finkelman	DOE/AMPME	Greg Kasel	Merrick & Co
	David Lam	EG&G/WP	Doug Scott	EG&G/WPO
	Steven Laudeman	CDPH&E	Craig Sanders	JEFFCO/EHD
	Greg Batchelder Adams Woodward Clyde			

1. D. Mittlestadt provided an overview (Attachment 1-Agenda) of the New Sanitary Landfill Project Test Fill Report and that the Project Team was there to clarify any questions which might arise from the Test Fill Report.

2. G. Batchelder Adams gave the attached briefing on the New Sanitary Landfill Test Fill Report (Attachment 2) and opened the floor for questions/discussion.

3. S. Laudeman asked for some clarifications on source variability, test plan, and pre-processing of material. The Project Team clarified the items and there were no further questions.

4. D. Hoyt provided the complete construction package documents to K. Hellner for the Quality Assurance consultant. In addition, she provided a complete bound copy of all the Modifications to the New Sanitary Landfill to date to CDPH&E and JEFFCO.

5. The Project Team requested what position would CDPH&E and JEFFCO take if the site were to potentially open the New Sanitary Landfill sooner than the January 1997 date and

close the existing landfill (OU-7 CERCLA site). JEFFCO would require an amendment to the existing CD, with the required public hearings, notices, etc. CDPH&E agreed that the regulations would have to be followed.

6. A discussion was held after the presentation about the potential use of one of the New Sanitary Landfill future waste cells for the utilization of Solar Pond sludge or other waste. The Project Team has no specific information, however, if a cell were to be used for something other than sanitary waste, then both JEFFCO and CDPH&E would have to agree and an amendment to the CD would have to be initiated.

7. D. Hoyt brought up a clarification on an existing Groundwater Monitoring Well (#0490), which was abandoned in 1993 and is planned to be replaced this spring (May 1995). There was a discussion on whether the data collected from this well is acceptable or not, and where to locate the replacement well. It was decided to replace it in the same vicinity and the historical data will be reviewed for use. R. Doak brought up the issue of point of compliance and the use of inter/intra-well comparison of data, which the Project Team will further investigate and get back to CDPH&E.

8. D. Hoyt brought up a request by the Fire Department to use Class A foam spray in lieu of dirt for a fire in the waste cell. It was agreed that Class A foam would be acceptable.

RESPONSE REQUIREMENTS

None.

DRM/drm

cc:

E.S. Bognar	K. A. Hellner
D.L. Hoyt	R. Doak
D.W. Lam	S. Lauderman
D.L. Scott	C. Sanders
H.N. Finkelman	M. Acevedo
G. Batchelder Adams	G. Kasel

NEW SANITARY LANDFILL

ROCKY FLATS PLANT

TEST FILL REPORT

20 MARCH 1995 MEETING AGENDA

I.	Introduction and Overview	D. Mittlestadt
II.	Clay Borrow	G. Batchelder Adams
III.	Acceptable Zone	G. Batchelder Adams
IV.	Test Fill Construction	G. Batchelder Adams
V.	Test Fill Documentation	G. Batchelder Adams
VI.	Observations and Conclusions	G. Batchelder Adams
VII.	Discussion and Questions	D. Mittlestadt

ROCKY FLATS NEW SANITARY LANDFILL
TEST FILL CERTIFICATION REPORT PRESENTATION
G. BATCHELDER ADAMS, WOODWARD-CLYDE
MARCH 20, 1995

OUTLINE OF PRESENTATION

1. The purpose of my presentation is to present a very brief overview of this test fill report. I will be following the Table of Contents of the report **(See page i).** (Don't read TOC)

2. INTRODUCTION

I will give a brief introduction prior to discussing the details of this report.

The main purpose of constructing the test fill was to demonstrate that the materials, equipment, and construction procedures used to construct the test fill will meet the hydraulic conductivity requirements specified in the project specifications.

The purposes of this Test Fill Certification Report are to present QA/QC observations, test results, and conclusions about the quality of the borrow material; mixing, transporting, and compacting the borrow material; and QA/QC inspections required to ensure the specified permeability is achieved.

Test fill construction by Park Construction Company.
QC supervision by Golder Construction Services.
QA by WC and Merrick.

3. BORROW MATERIAL EVALUATION

- Park proposed to use Western Aggregates' processed Pierre shale as the clay liner material for this project
- Western Aggregates' plant located on CO Route 93, approx. 2.5 miles NW of the site
- Prior to accepting this source, a borrow material evaluation was conducted
- QA review of previously collected boring data and laboratory test results was performed
- Additionally, laboratory tests were performed for this project **(See Table 1, after page 7-1)**
- Based on this data, we are very confident in the quality of this borrow source. Therefore, since this borrow material meets the specification requirements, it was accepted for use as the clay liner material for this project.
- After the borrow material was accepted, a zone of acceptable moisture and density was developed.

4. DEVELOPMENT OF THE ACCEPTABLE ZONE

- This Acceptable Zone of density and moisture was developed prior to test fill construction for use as control during test fill construction and during cell construction.
- Method to develop A.Z. was based on an EPA document, as specified in the contract specifications.
- 18 hydraulic conductivity tests were performed on borrow material at different compactive efforts.
- Acceptable Zone was developed based on this testing. **(See Figure 4)**.
- Once the A.Z. was established, test fill construction could begin.

5. TEST FILL CONSTRUCTION

- Test fill plan and x-section **(See Figure 9)**
- Construction consisted of 5 steps
  1. Subgrade preparation
  2. Mixing pad construction
  3. Clay mixing
  4. Clay placement
  5. Clay compaction with tamping foot compactor
- Survey control for lift thicknesses (8" to 10" loose for 6" compacted)
- In-place tests were performed and samples were collected from each lift during test fill construction which leads into Test Fill Documentation.

6. TEST FILL DOCUMENTATION (QA/QC Testing, sampling, and observations)

- Test fill constructed in accordance with project specifications and drawings.
- Sampling and testing performed on grid pattern established prior to test fill construction. Grid pattern recommended in EPA Technical Guidance Document **(See Figure 5 for Lift No. 1)**
- Summary of the number and type of in-place and laboratory tests **(See Table 4)**
- In-place density and moisture content tests **(See Table 5)**
- In-place density and moisture content test results from Table 5 (after 6 compactor passes) are plotted **(See Figure 10)**
- Shelby tube sample (small, 3" dia. samples)
  - Tests included index (moisture, gradation, plasticity, hydraulic conductivity)
  - Test results - Very consistent material properties. Most hydraulic conductivities about 1 order of magnitude less than the maximum specified.

- A few Shelby tube samples were contaminated with fine gravel. Hydraulic conductivity for these few samples were higher than maximum specified. QC measures have been implemented to address gravel contamination, as will be discussed in Conclusions and Observations. In lieu of just relying on small of Shelby tube samples tested in the laboratory to determine hydraulic conductivity, larger scale field tests were conducted.

- Sealed Double Ring Infiltrometer Tests (SDRI)
  - 2 tests were installed by Golder (in accordance with ASTM procedures) in top lift of the test fill.
  - Installation details **(See Photos)**
  - Test readings and results by Golder **(See Figures 12 & 13)**

7. OBSERVATIONS AND CONCLUSIONS **(See page 6-1)**

- I will not cover all of these 3 pages of observations and conclusions but will only cover a few of the key points.

- 1. Very consistent borrow source since processed material.

- 5. These measures, as well as other measures, have been taken at the borrow source and at the site to minimize gravel contamination.
- 11.

- 12.

- 13.

8. To summarize, based on an evaluation of the borrow source and on laboratory and in-place tests performed on the test fill, I believe that this processed borrow material will provide a clay liner with very consistent material properties and that this borrow material can be installed with permeabilities well below the maximum specified value.

9. Questions/comments

SW/JER/RFP 1A

EG&G ROCKY FLATS

INTEROFFICE CORRESPONDENCE

DATE: 14 March 1995

TO: Distribution

FROM: D. R. Mittlestadt Jr. EG&G/E&S/PM T-130A X2084-D5654

SUBJECT: Minutes of Broomfield Meeting of 9 March 1995, New Sanitary Landfill

PURPOSE

The purpose of this memo is to provide documentation of the Broomfield meeting and tour of 9 March 1995.

DISCUSSION

On 9 March 1995, the City of Broomfield, EG&G, and DOE/RFFO personnel had a site tour and presentation of the New Sanitary Landfill.

Present:	Kathryn Schnoor	Broomfield	M. S. Karol	DOE/AMPME
	Harvey Curtis	Broomfield	D. L. Steward	DOE/AMPME
	Stephanie Neitzel	Broomfield	J. E. Springer	DOE/AMPME
	D. R. Mittlestadt	EG&G/PM	J.J. Rampe	DOE/AMPME
	D.L. Hoyt	EG&G/PM	H.N. Finkleman	DOE/AMPME
	D. L. Scott	EG&G/WP	M. Acevedo	DOE/WP
	Kevin McBrien	Merrick & Co.		

1. The tour of the New Sanitary Landfill was completed first, with a stop on top of the excavated soil stockpile to view the overall site, viewed the Storm Water automatic sampler in Upper Church Water Ditch, viewed the McKay Water Ditch and it's damed-off condition, and viewed the ditch-crossing culvert installation of the Upper Church/McKay ditches in progress. The tour ended at Building 850 for the presentation.

2. The presentation (Attachement #1) was made to Broomfield, with a discussion and questions being answered at the completion of the presentation. It was agreed that all the out-standing issues were clarified and agreed between the parties. EG&G/PM provided to Broomfield a copy of the outline of the procedures (Attachment #2), which will meet the agreements of the Certificate of Designation and resolve the final issue of water management discussed in the Broomfield letter of 16 February 1995. The final draft procedures will be submitted to Jefferson County and Colorado Department of Public Health and Environment for review, comment, and approval in April 1995. Broomfield will also be provided a copy of the procedures for review and comment at that time. The following actions were agreed to;

a. EG&G to provide a copy of procedures to Broomfield for review 17 April 1995.
b. EG&G to provide photos of the McKay ditch dam-off and area around the by-pass, in order to assist Broomfield in assessing their water movement.
c. DOE agreed to provide photos of site for the Broomfield meeting between the Mayor of Broomfield and Mr. Silverman.

RESPONSE REQUIREMENTS

None.

DRM/drm

cc:
E.S. Bognar
D.J. Hand
D.L. Hoyt
D.W. Lam
D.L. Scott
H.N. Finkelman
M. Acevedo
J. P. Schneider
J. E. Springer
Kevin McBrien/Merrick
Kathy Schnoor/Broomfield

Rocky Flats
New Sanitary Landfill

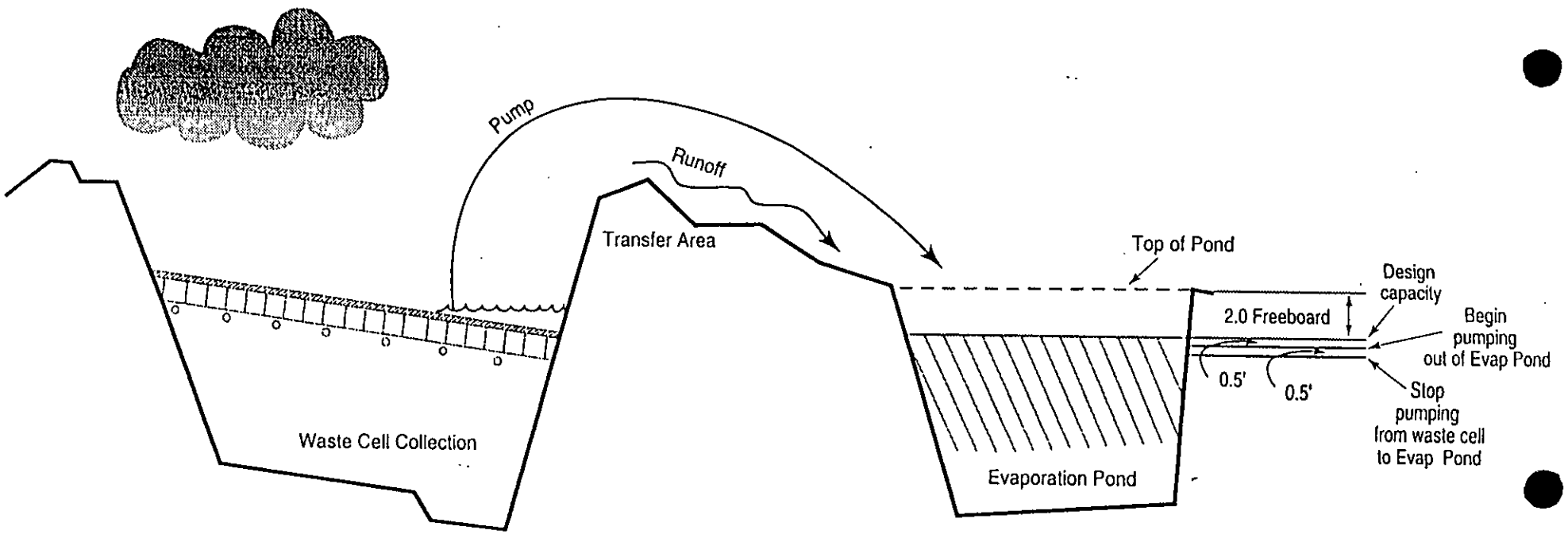
March 8, 1995

ATTACHMENT #1
#4 MARCH 1995

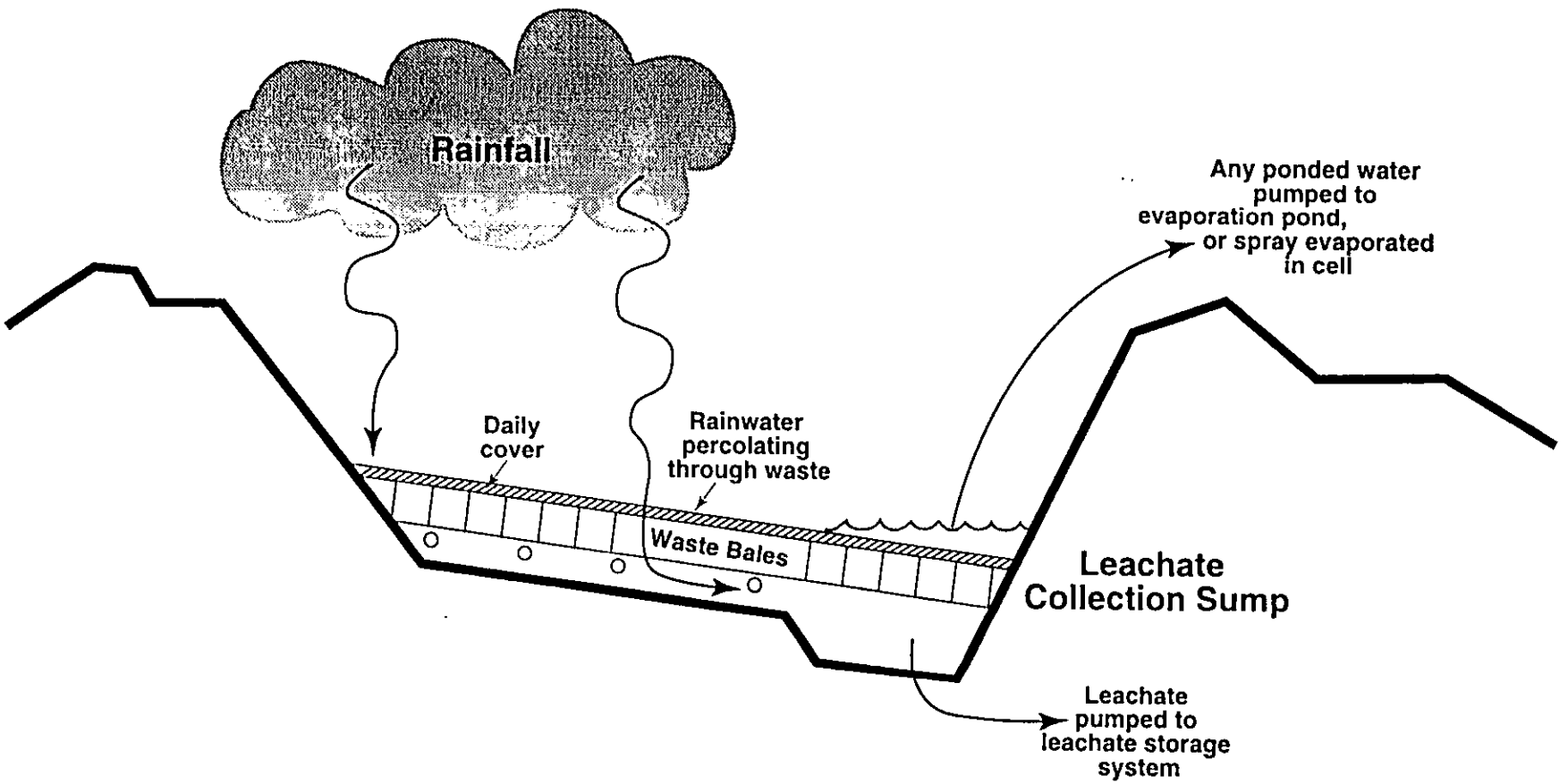
Introduction

- Evaporation Pond Level
  - Without Water Management
- Storm Water Management
  - Options
  - Procedures
- Discussion

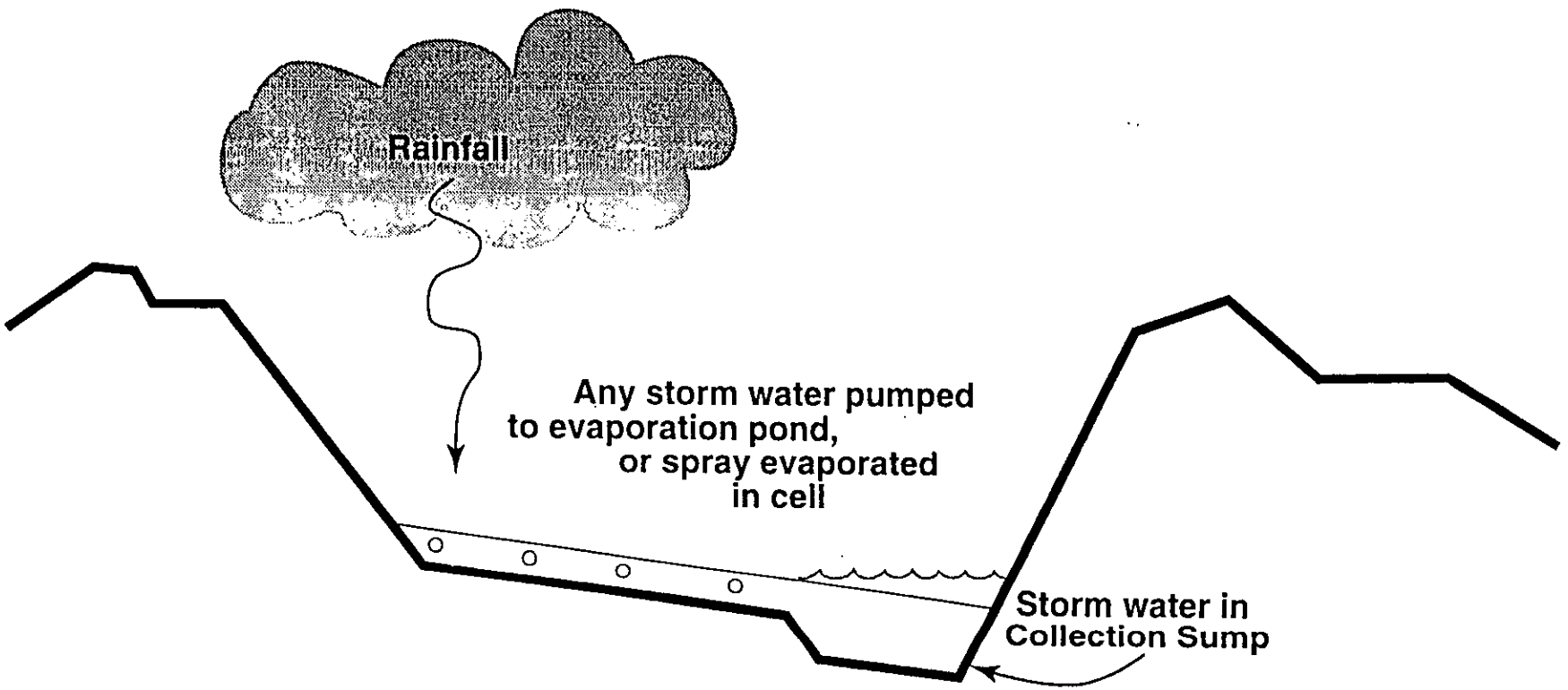
Storm Water Collection Without Water Management



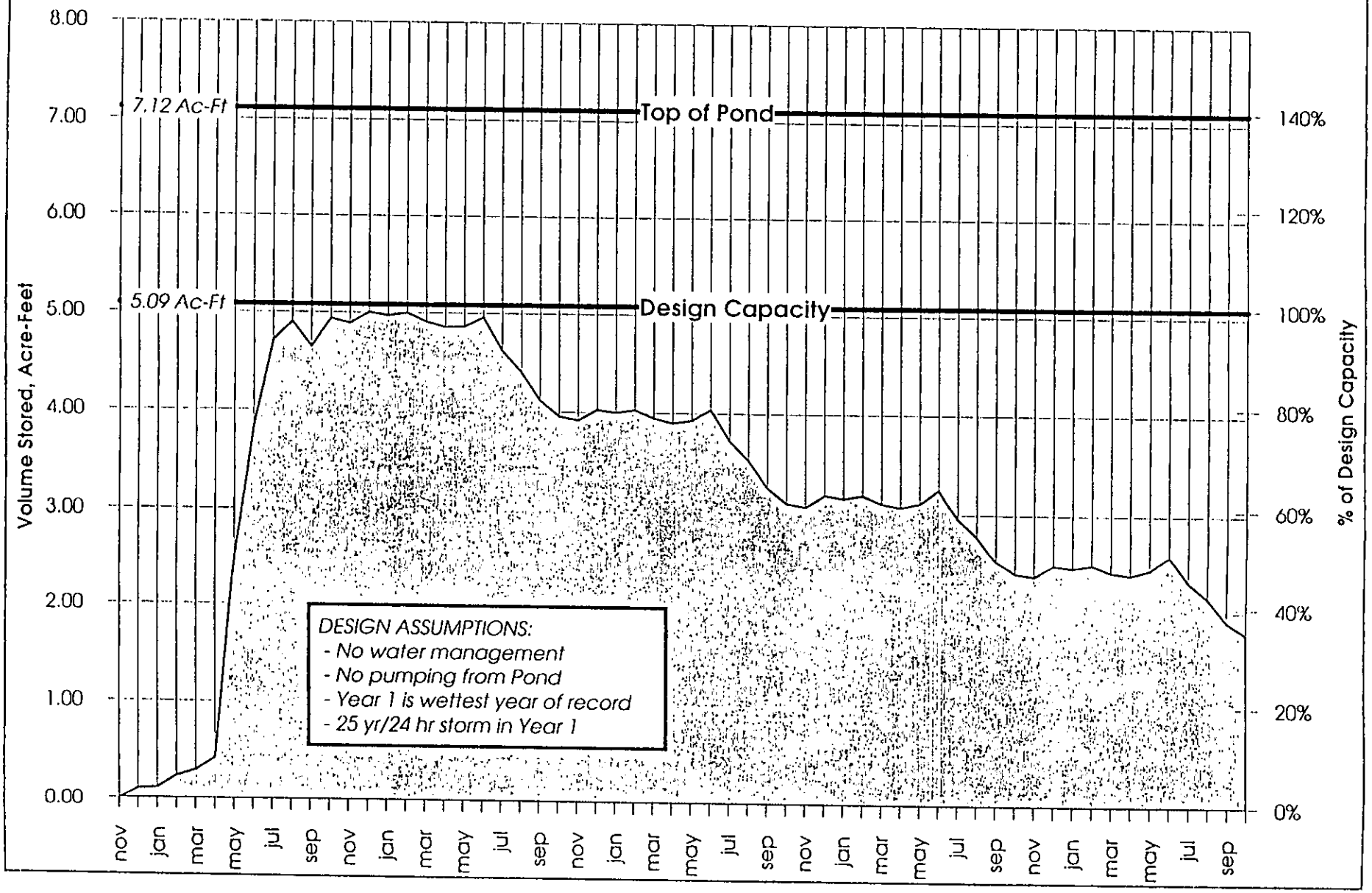
Active Module in Waste Cell



Inactive Module in Waste Cell



Evaporation Pond Level
Five Year Water Balance Cycle



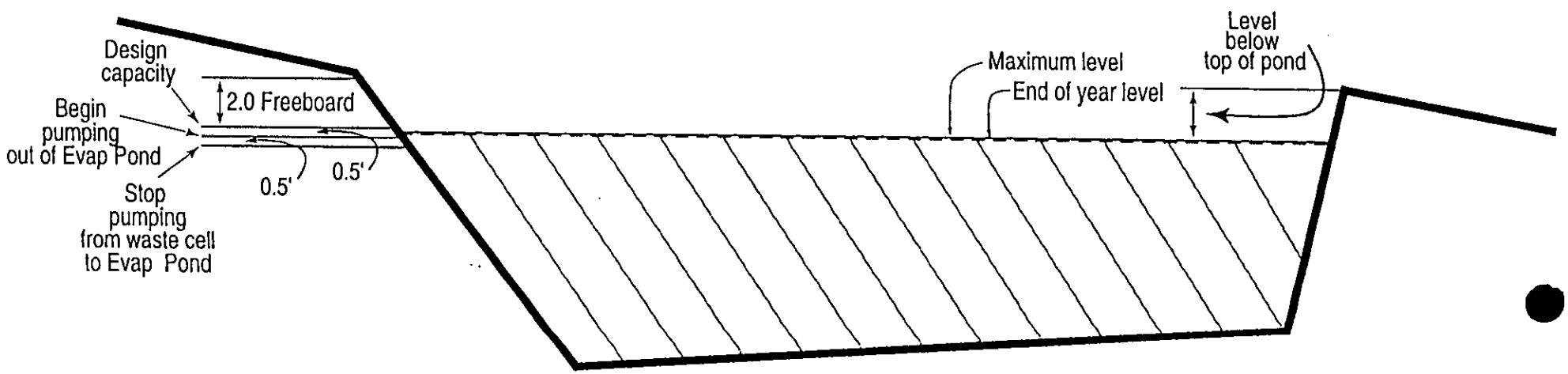
Evaporation Pond - Storage Year 1 with Storm

Calculation Assumptions

Year #1
- *Wettest year of record
- *Least evaporative year of record
- *No water management
- *25 year 24 hour storm event

*Unprecedented event in the historical record

	Max	End of year
Level below top of pond	2.16 ft	2.16 ft
Volume, Acre - feet	4.94	4.94
% of design capacity	97.1%	97.1%



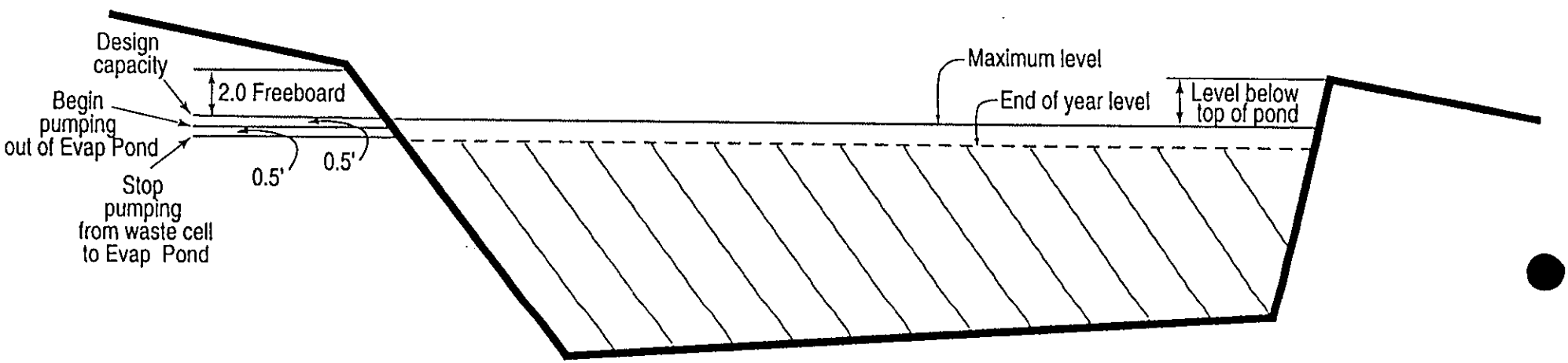
Evaporation Pond - Storage Year 2

Calculation Assumptions

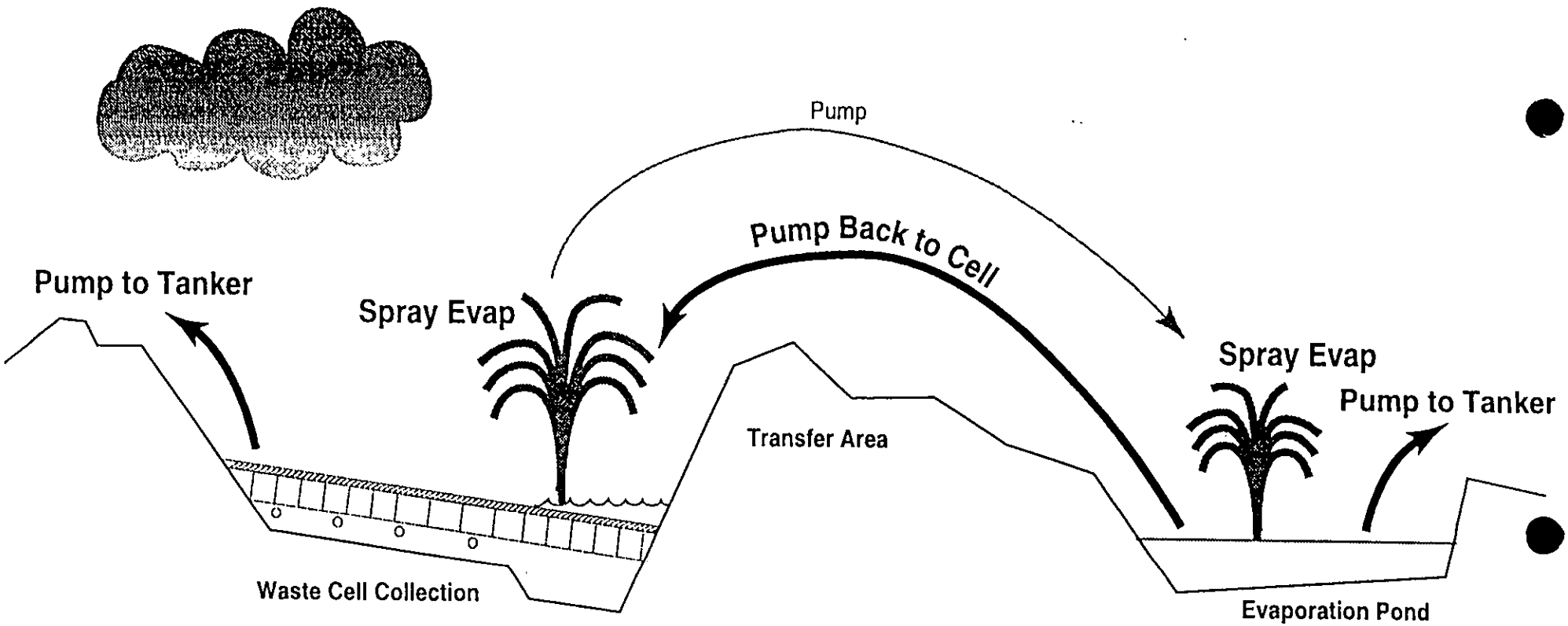
Year #1
- *Wettest year of record
- *Least evaporative year of record
- *No water management
- *25 year 24 hour storm event

Year #2
- *Second year of 5 year water cycle
- *Average evaporation/precipitation

	Max	End of year
Level below top of pond	2.10 ft	3.23 ft
Volume, Acre - feet	5.00	3.96
% of design capacity	98.2%	77.8%



Storm Water Management



New Sanitary Landfill Procedures

Storm Water Management Options in the Cell

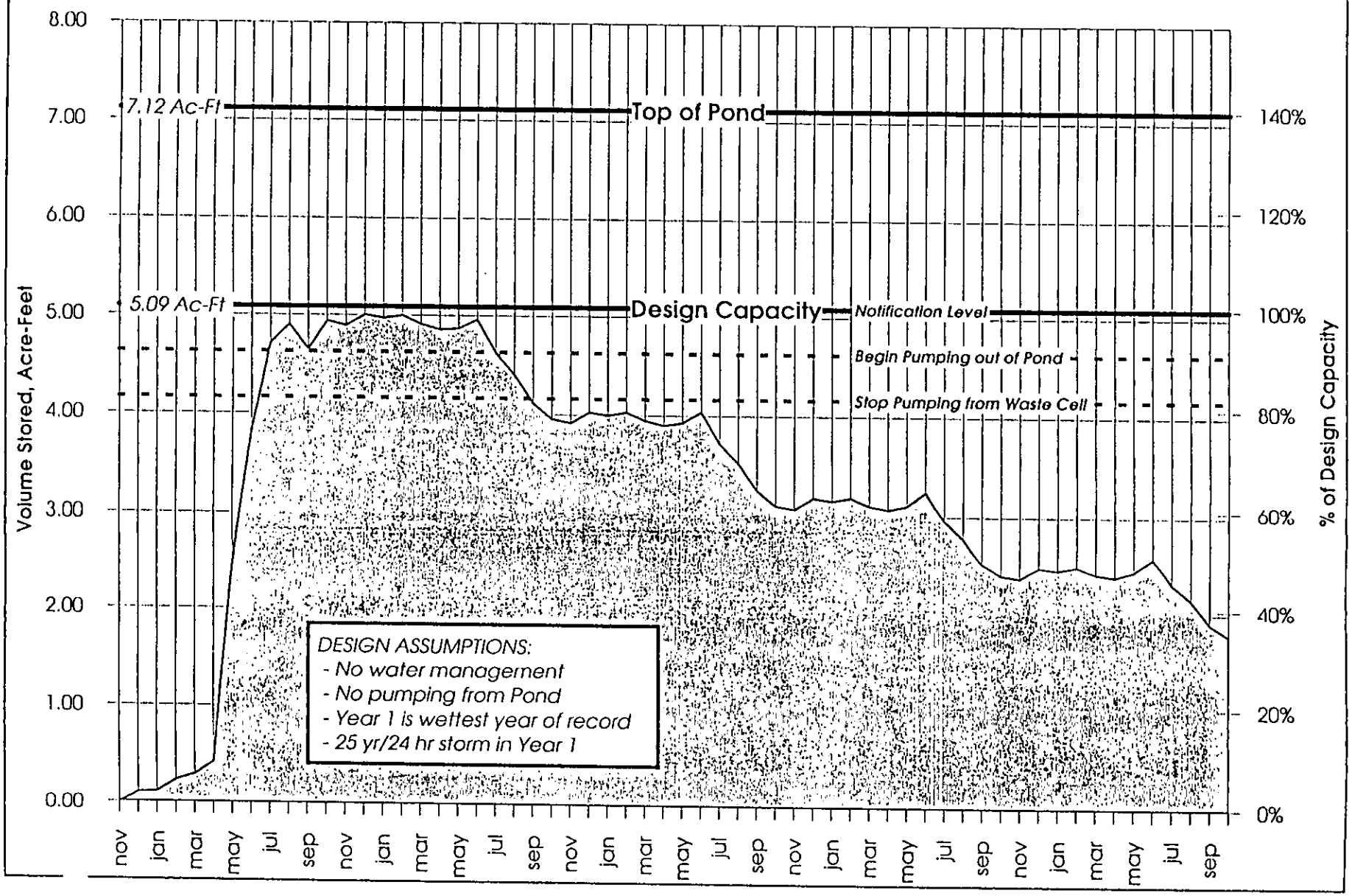
- Natural evaporation
- Pump from cell to pond
- Pump from cell and truck to:
  - Sanitary Treatment Plant
  - Other Rocky Flats Water Treatment Facilities
- Spray evaporation in cell

New Sanitary Landfill Procedures

Storm Water Management Options in the Pond

- Natural evaporation
- Spray evaporation in pond
- Pump from pond and truck to:
  - Sanitary Treatment Plant
  - Other Rocky Flats Water Treatment Facilities
- Pump from pond to cell

Evaporation Pond Level
Five Year Water Balance Cycle



New Sanitary Landfill Procedures

Freeboard Actions/Notifications

- If Evaporation Pond reaches within 3' of top of pond
  - All pumping to pond stops
- If Evaporation Pond reaches within 2.5' of top of pond
  - Begin pumping out of the pond
- If Evaporation Pond reaches within 2' of top of pond
  - Notify Broomfield through Occurrence Notification Center (ONC)
  - Initiate Sampling
  - Continue Pumping out of pond

New Sanitary Landfill

- The Liquids Management procedure will be provided to Broomfield for review
- The Colorado Department of Public Health & Environment and Jefferson County will review this procedure

ATTACHMENT #2
14 MARCH 1995

DRAFT LIQUIDS MANAGEMENT PROCEDURE OUTLINE
ROCKY FLATS NEW SANITARY LANDFILL

March 6, 1995

The following is an outline of the liquid transfers (leachate, storm water) from accumulation areas at the New Sanitary Landfill.

I. LEACHATE COLLECTION SUMPS

A. Transfer of leachate from the Module #1 leachate collection sump to leachate storage tanks.
B. Transfer of leachate from the Module #1 leachate collection sumps to the cell spray system.
C. Transfer of leachate from the Module #2 leachate collection sump to leachate storage tanks.
D. Transfer of leachate from the Module #2 leachate collection sump to the cell spray system.

II. LEAK DETECTION SUMPS

A. Transfer of leachate from the Module #1 leak detection sump to leachate storage tanks.
B. Transfer of leachate from the Module #2 leak detection sump to leachate storage tanks.
C. IF the liquid level in the evaporation pond is below 36 inches, THEN
Transfer of storm water from an inactive module leak detection sump(s) to the evaporation pond.

III. LEACHATE STORAGE TANKS

A. Transfer of leachate from the leachate storage tanks to the cell spray system.
B. Transfer leachate from one leachate collection tank to another.
C. Transfer from leachate storage tank secondary containment sump to the leachate storage tanks.
D. Transfer leachate from the leachate storage tanks to a tanker truck.

IV. STORM WATER

A. MODULE #1 - Ponded Storm Water (on top of daily cover)

1. Natural evaporation in place.
2. IF the freeboard level in the evaporation pond is below 36 inches, THEN
Transfer ponded storm water from module #1 to the evaporation pond.
3. Transfer ponded storm water from module #1 to the spray system within the cell.
4. Transfer ponded storm water in module #1 to a tanker truck.

5. IF the freeboard level in the evaporation pond is below 36 inches, THEN
   Leave ponded storm water in place in module #1 to evaporate naturally.

B. MODULE #2 - Ponded Storm Water (on top of daily cover)

1. Natural evaporation in place.
2. IF the freeboard level in the evaporation pond is below 36 inches, THEN
   Transfer ponded storm water from module #2 to the evaporation pond.
3. Transfer ponded storm water from module #2 to the spray system within the cell.
4. Transfer ponded storm water in module #2 to a tanker truck.
5. IF the freeboard level in the evaporation pond is below 36 inches, THEN
   Leave ponded storm water in place in module #2 to evaporate naturally.

C. INACTIVE MODULE - Storm Water in the Leachate Collection Sump

1. IF the water level in the evaporation pond is 36 inches below the top of freeboard (top the pond), THEN
   Transfer storm water from the inactive module leachate collection sump to the evaporation pond.
2. Transfer storm water from the inactive module leachate collection sump to the cell spray system.
3. Transfer storm water from the inactive module leachate collection sump to a tanker truck.

D. INACTIVE MODULE - Storm Water in the Leak Detection Sump

See II. C. above.

V. EVAPORATION POND

A. Natural Evaporation
B. Enhanced evaporation through spraying in the pond.
C. Transfer storm water from the evaporation pond to a tanker truck for shipment to the Rocky Flats Sanitary Treatment Plant.
D. Transfer storm water from the evaporation pond to a tanker truck for shipment to other Rocky Flats Treatment Plants.
E. Transfer storm water from the evaporation pond to the tanker truck for shipment to cell.

NOTE: See the attached draft excerpt which describes the actions, notification and sampling requirements which will be in the procedure to comply with the "Procedures for Notification and Sampling" prepared by DOE RFFO in September 1994.

VI. BUILDING 280 SUMP

A. Transfer from the Building 280 sump to leachate storage tanks.

VII. BUILDING S281 (Temporary Bale Storage Shed) SUMP

A. Transfer from the Building S281 sump to leachate storage tanks.

DRAFT PROCEDURE
Liquids Management at the Evaporation Pond

March 6, 1995

The evaporation pond is designed to collect storm water from Module #1, Module #2, surface runoff from around the site, and direct precipitation into the pond. Leachate is never transferred to the evaporation pond.

ACTIONS FOR 36 INCHES OF FREEBOARD

Waste Technician

[1] IF the evaporation pond level has approached or reached the level of 36 inches of freeboard, THEN;
- [A] Stop **ALL** transfers of liquid to the evaporation pond immediately
- [B] Notify supervision of the condition immediately

ACTIONS FOR 30 INCHES OF FREEBOARD

Waste Technician

[2] IF the evaporation pond level has approached or reached the level of 30 inches of freeboard, THEN:
- [A] Notify supervision of the condition immediately
- [B] Follow supervisor's instruction and initiate transfer of the liquid out of the pond

Landfill Supervisor

[3] Instruct the Waste Technician to initiate at least one of the following transfers to reduce the liquid level in the evaporation pond, in the following priority:
- [A] Transfer liquid from the evaporation pond to the Sanitary Treatment Plant via tanker truck
- [B] Transfer liquid from the evaporation pond to another Rocky Flats treatment facility via tanker truck
- [C] Enhance evaporation by spraying within the pond
- [D] Transfer liquid from the evaporation pond to the cell for spray evaporation.
- [E] Transfer liquid from the evaporation pond to the cell for ponding and natural evaporation.

ACTIONS FOR 24 INCHES OF FREEBOARD

Waste Technician

[4] IF the evaporation pond level has approached or reached the level of 24 inches of freeboard, THEN:
- [A] Notify supervision of the condition immediately
- [B] Follow supervisor's instructions and initiate transfer of liquid out of the pond

Landfill Supervisor

[5] Instruct the Waste Technician to initiate at least one of the following transfers to reduce the liquid level in the evaporation pond in the following priority:
- [A] Transfer liquid from the evaporation pond to the Sanitary Treatment Plant via tanker truck

[B] Transfer liquid from the evaporation pond to another Rocky Flats treatment facility via tanker truck
[C] Enhance evaporation by spraying within the pond
[D] Transfer liquid from the evaporation pond to the cell for spray evaporation.
[E] Transfer liquid from the evaporation pond to the cell for ponding and natural evaporation.

[6] Notify the Broomfield Police Dispatch through the Occurrence Notification Center (ONC), no later than 4 hours after learning of the 24" freeboard level in the evaporation pond. The ONC should be notified that this is an "UNUSUAL OCCURRENCE".
[7] Initiate sampling of the liquid from the pond by contacting the Surface Water Division for sample collection and the Analytical Laboratory for analysis.

Surface Water Division
[8] Collect samples according to the Surface Water Monitoring Plan for the New Sanitary Landfill, "Emergency Surface Water Monitoring"

NOTE: The Surface Water Monitoring Plan for the New Sanitary Landfill states that a sample will be collected from the landfill evaporation pond.

Analytical Laboratory
[9] Analyze the collected samples for the parameters listed in the Surface Water Monitoring Plan for the New Sanitary Landfill, "Emergency Surface Water Monitoring"

NOTE: The Surface Water Monitoring Plan for the New Sanitary Landfill lists the parameters to be analyzed for in Appendix C, according to the "Procedure for Notification and Sampling" developed by DOE in September 1994.

Landfill Supervisor
[10] Notify the City of Broomfield of the sample results as soon as possible, but no later than 24 hours after receipt.

ACTIONS FOR A RELEASE

Waste Technician
[11] IF the evaporation pond overflows THEN:
[A] Notify Supervision immediately

Landfill Supervisor
[12] Notify the Broomfield Police Dispatch through the Occurrence Notification Center (ONC), no later than 4 hours after learning of the overflow of the evaporation pond. The ONC should be notified that this is an "UNUSUAL OCCURRENCE".
[13] Initiate sampling of the liquid from the pond by contacting the Surface Water Division for sample collection and the Analytical Laboratory for analysis.

DRAFT PROCEDURE
Liquids Management at the Evaporation Pond

March 6, 1995

Surface Water Division

[14] Collect samples according to the Surface Water Monitoring Plan for the New Sanitary Landfill, "Release from the Landfill Evaporation Pond".

NOTE: The Surface Water Monitoring Plan for the New Sanitary Landfill states that a sample will be collected from the following points:

1) *The landfill evaporation pond;*
2) *The affected water supply ditch(es) immediately downstream of the landfill evaporation pond, if flow is present;*
3) *The affected water supply ditch(es) at the Rocky Flats Environmental Technology Site boundary, if flow is present;*
4) *Great Western Reservoir at the point where Walnut Creek enters the reservoir, if flow is present;*
5) *The Great Western Reservoir diversion ditch, if flow is present.*

Analytical Laboratory

[15] Analyze the collected samples for the parameters listed in the Surface Water Monitoring Plan for the New Sanitary Landfill, "Emergency Surface Water Monitoring".

NOTE: The Surface Water Monitoring Plan for the New Sanitary Landfill lists the parameters to be analyzed for in Appendix C, according to the "Procedure for Notification and Sampling" developed by DOE in September 1994.

Landfill Supervisor

[16] Notify the City of Broomfield of the sample results as soon as possible, but no later than 24 hours after receipt.

SW/JFR/RFP 1A

City of Broomfield

OFFICE OF THE MAYOR

One DesCombes Drive • P.O. Box 1415 • Broomfield, Colorado 80038-1415 • Phone (303) 438-6300 • Fax (303) 469-8554

February 16, 1995

FEB 17 1995

A D WASTE MANAGEMENT

Mr. Mark N. Silverman
Manager
Department of Energy, Rocky Flats Field Office
PO Box 928
Golden, CO 80402-0928

RE: City of Broomfield, Rocky Flats Sanitary Landfill Concerns

Dear Mr. Silverman:

Your January 31, 1995 letter indicates increasing concern at a number of misunderstandings between D.O.E.'s staff and the City of Broomfield concerning the landfill site drainage design, and an increasing level of frustration of D.O.E.'s personnel involved. We can sympathize. The City of Broomfield and its representatives have also experienced frustration. This frustration, from the City of Broomfield's perspective, has come from its having to ferret out information concerning the landfill and site drainage design from the various consulting firms representing D.O.E. in this matter. Broomfield has been directed and redirected to different individuals and different firms to obtain information. The City has been promised information that either never arrives or is furnished later than promised, and has received conflicting information and "revised" calculations. Broomfield has expended a great deal of time and money in its attempt to understand the landfill site drainage design. A brief chronology of that effort is attached to this letter.

The attachments to your January 31, 1995 letter indicate that in the first three years of the operations study, the 36-inches of freeboard limit in Broomfield's agreement with D.O.E. will be triggered and pumping water into the evaporation pond will be terminated. Also during the first two years, the 30-inch freeboard minimum is exceeded, which means that water would have to be pumped out of the evaporation pond back to landfill cell or otherwise removed from the site. This information makes it clear that the vague plans that are discussed in the attachments to your letter need to be finalized, i.e., precisely what means will be utilized to take care of the water that has to be pumped from the evaporation pond when the 30-inch freeboard limit is violated and exactly what will be done to remove from the site the water that cannot be placed in the evaporation pond to avoid violating the 36-inch freeboard limit.

Broomfield would appreciate the opportunity to review D.O.E.'s plans as soon as they are formalized.

We appreciate D.O.E.'s and your personal concern in protecting the City's interests, and we are as anxious to resolve this one remaining issue. As you have probably learned, the City executed the Use Agreement for the crossings on the Upper Church Ditch and the McKay Ditch on January 24, 1995 and Steve R. Schiesswhol, RFFO Realty Office, has executed the same. Steve R. Schiesswhol has D.O.E.'s copy of that final agreement. The City has already recorded its copy with the Jefferson County Clerk.

I appreciate your invitation to meet with me on the site, and I look forward to seeing you on March 10, 1995.

Sincerely,

William M. Berens

William M. Berens
Mayor

c: George Di Ciero
Marvin Thurber
Michael Bartleson
Kathy Schnoor
Tim Holeman
Roy S. Howard, Esq.
Karen Hellner, Jefferson County Planning Department
Glenn Mallory, Colorado Department of Health and Environment
Roger Doak, Colorado Department of Public Health and Environment
Board of County Commissioners, County of Jefferson
Leonard Rice, Chairman, Leonard Rice Consulting Water Engineers
John Rampe, Department of Energy, Rocky Flats Field Office
Harvey Curtis, Esq.

CHRONOLOGY OF COMMUNICATIONS BETWEEN THE CITY OF BROOMFIELD AND DOE CONCERNING DRAINAGE DESIGN OF THE NEW SANITARY LANDFILL SITE

1. DOE provided the City of Broomfield with the Title II, Drainage and Erosion Control Plan for the New Sanitary Landfill Design, Rocky Flats Plant, prepared by Merrick and Company and Woodward-Clyde for EG&G Rocky Flats, Inc., dated July 14, 1994. Other than during the construction phase, this plan does not mention that supplemental disposal methods would be used to remove excess stormwater from the evaporation pond. Only spray evaporation for landfill cell leachate was mentioned.

2. Drainage design calculations for the landfill site, prepared by Woodward-Clyde and dated August 19, 1994, were provided to the City of Broomfield. These calculations include sketches that show drainage swales outfalling close to the McKay Ditch and Upper Church Ditch. The design calculations do not incorporate freeboard into the swale design. Sketches and calculations are provided for the evaporation pond, that show the pond is adequately sized to handle specific design storms, but no cumulative water balance calculations are provided. Annual runoff to the pond is stated to 6.6 acre-feet, while the amount evaporated each year is stated as only 2.8 acre-feet, thereby resulting in an annual excess of 3.8 acre-feet. The calculations also tabulated the runoff areas contributing to the evaporation pond and the runoff coefficient used for each of these areas. These areas are 1.6 acres for the evaporation pond, 1.7 acres for other imperviously gravel areas, 1.2 acres for vegetated areas, 3.9 acres for half of cell no. 1.

3. On September 21, 1994, a meeting was held between representatives of the City of Broomfield and DOE and its consultants. A list of questions concerning the evaporation pond and drainage swales was presented to DOE at this meeting. These questions related to assumptions and conclusions not fully addressed in the August 19, 1994 drainage design calculations.

4. On September 22, 1994, Stephanie Neitzel spoke to Rich Tocher, Woodward-Clyde Consultants, concerning questions about the evaporation pond and drainage swale design as presented in the August 19, 1994 calculations. He confirmed that runoff from the landfill cell cover would drain into the west and east swales, with the west swale draining directly towards the Upper Church Ditch and McKay Ditch. He also said that they were working on new drainage calculations because the August 19, 1994 calculations were hard to follow.

5. On September 23, 1994, Rich Tocher told Ms. Neitzel that EG&G was supposed to have the new evaporation pond and drainage swale calculations on that day and that he would fax these to Ms. Neitzel when he received them. Mr. Tocher said that the west swale actually extended from the west side of the landfill site, all along the south side of the landfill site adjacent to the City's ditches, then up along the east side of the

evaporation pond and beneath the access road, outfalling to the east. He also said that the landfill leachate would not contribute to the evaporation pond, but would drain into separate storage tanks.

6. On September 26, 1994, Ms. Neitzel called Mr. Tocher because the calculations had not been received. He referred her to Don Middlestadt, EG&G. Mr. Middlestadt referred her to Dorthea Hoyt, EG&G.

Don Middlestadt of EG&G sent to Leonard Rice a response to the City's questions of September 21, 1994 concerning the site drainage. This response indicated that the west drainage swale includes runoff from the west landfill berm. It was also stated that the site drainage was designed to direct the majority of the collected flow along the west side of the landfill cell to the north, and not the south toward the Upper Church Ditch and McKay Ditch. The new calculations to replace the August 19, 1994 calculations were not included. The response also stated that the evaporation pond calculations were to be corrected to include the full are of cell no. 1, not half, in the runoff areas.

7. On September 27, 1994, Ms. Neitzel spoke to Dorthea Hoyt, EG&G, about the City's drainage swale concerns, in particular, drainage into the McKay Ditch and Upper Church Ditch, and sizing of the swale without freeboard. She indicated that there was some uncertainly as to the design of the west swale. She said that as of right then, the west swale would extend only along the west side of the landfill cell and not along the south side of the landfill site, as indicated by Mr. Tocher. She also said that the swale would divert most of the runoff to the north and away from the Upper Church Ditch and McKay Ditch, because the topography of the 20+ acres contributing to this swale naturally drains to the north and the swale highpoint was near the swale's south point. Ms. Neitzel pointed out that the sketches provided in the August 19, 1994 calculations indicated different topography. The August 19, 1994 sketches showed the swale highpoint at the midpoint of the west swale. Ms. Hoyt said that the drainage swales were being reworked and new calculations were being done and that she did not know what was being done, but would send the new information to Ms. Neitzel when it was completed.

8. On October 10, 1994, representatives from the City of Broomfield met with DOE consulting staff at the Rocky Flats field office. Concerning the west drainage swale, the DOE engineers conceded that the land area contributing to the west swale did not naturally drain to the north and, in fact, 12 1/2 acres drain to the south and 11 1/2 acres drain to the swale midpoint, it was agreed that the drainage swale design would be changed to move the swale highpoint to the south so that most of the runoff would drain to the north. The City's representatives also asked about the evaporation pond's cumulative water balance, which the August 19, 1994 calculations showed as having an annual excess of 3.8 acre-feet. The EG&G engineers agreed that from those calculations, it appeared that the evaporation pond would not evaporate all the runoff. Kevin McBrien, Merrick & Company, said that he would review the calculations and get back with the City on this.

9. On October 18, 1994, Ms. Neitzel called Kevin McBrien to find out the status of his review of the evaporation pond water balance calculations. Mr. McBrien said that at this time it appeared that the pond was designed too small but that he was not finished reviewing the calculations. He said that their review would be completed by October 21, 1994 and that he would get back with Ms. Neitzel.

10. On October 28, 1994, Ms. Neitzel contacted Kevin McBrien since there had been no response. Mr. McBrien said that were meeting that day to discuss the evaporation pond, but that Dorthea Hoyt, and not he, was the person that should be contacted about this matter.

11. On October 31, 1994, Dorthea Hoyt returned Ms. Neitzel's call and said that they would provide the results of the evaporation pond review on November 14, 1994.

12. On November 4, 1994, Paul Cote, DOE, sent a letter to George Di Ciero, City Manager for the City of Broomfield, stating that it was DOE's feeling that they had provided all the information requested, but if there were any unanswered questions, the City was to inform him of that by November 30, 1994.

13. On November 14, 1994, a meeting was held between the City of Broomfield and its representatives and DOE's consulting staff. At that time, Kevin McBrien provided new and detailed evaporation pond water balance calculations, which he said were based on an EPA design method. This method uses a five-year time period using the wettest year of record combined with the least evaporation rate in addition to a 25-year, 24-hour storm, followed by four years of average precipitation and evaporation. He explained that stormwater falling onto the landfill cell and cell sides would either be absorbed into the cell walls and floor or collected into the cell leachate system, and therefore, this water would not be contributing or at least very little, to the evaporation pond. Mr. McBrien also said that the amount of runoff reaching the pond had been recalculated and was reduced to account for runoff water that settles in depressions, evaporates, etc., before reaching the pond: Mr. McBrien further stated that even using this approach, there would still be excess water in the pond and supplemental methods such as spray methods to increase evaporation would be used. We requested back up calculations for assumptions made in the new calculations and further information concerning the design of the leachate system to show that it would be able to adequately handle both the cell leachate and stormwater. Broomfield also requested an explanation of how the leachate system and evaporation pond work together to handle the rainfall on the landfill site. The DOE representatives said that information concerning the leachate system would need to come from another source since they did not design it, but that they would get it for us by Friday, November 18, 1994.

14. On November 16, 1994, Dorthea Hoyt contacted Ms. Neitzel and requested that the City of Broomfield's questions be put in writing. Ms. Neitzel faxed a written request of the information requested at the November 14, 1994 meeting.

15. On November 18, 1994, Dorthea Hoyt contacted Ms. Neitzel to inform her that the information requested could not be provided as promised by that day and that they could not commit to an exact date when that information would be provided.

16. Ms. Neitzel began reviewing the evaporation pond calculations provided by Kevin McBrien on November 14, 1994, and made several calls to Mr. McBrien on or about November 23, 1994, with questions concerning the calculations. Of particular concern was the fact that runoff areas contributing to the pond had been substantially reduced from that shown in the August 19, 1994 calculations. These areas were now 7.28 acres for cell no. 1 and 1.7 acres for other runoff areas. Mr. McBrien recognized that these areas might be a bit short and agreed to revise the calculations. Further, with regard to the substantial reduction of site runoff that reaches the pond due to travel loss, Ms. Neitzel noted that this failed to consider that rainfall falls directly on the evaporation pond and is not lost in its travel to the pond. Mr. McBrien stated that his calculations already took this into consideration, however, the City had not been provided with backup calculations and assumptions used in determining the runoff reductions in Mr. McBrien's calculations. Ms. Neitzel faxed Mr. McBrien roughly done water balance calculations for water only falling on the evaporation pond area and not other areas contributing to the pond. Ms. Neitze's calculations resulted in a higher runoff volume than Mr. McBrien's calculations showed for the entire site. Ms. Neitzel asked that Mr. McBrien review her calculations for anything she might be overlooking or for any incorrect assumption. Mr. McBrien agreed.

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SW/JFR/ FP 1A

City of Broomfield

OFFICE OF THE MAYOR

One DesCombes Drive • P.O. Box 1415 • Broomfield, Colorado 80038-1415 • Phone (303) 438-6300 • Fax (303) 469-8554

FEB 17 1995

AND WASTE MANAGEMENT

February 16, 1995

Mr. Mark N. Silverman
Manager
Department of Energy, Rocky Flats Field Office
PO Box 928
Golden, CO 80402-0928

RE: City of Broomfield, Rocky Flats Sanitary Landfill Concerns

Dear Mr. Silverman:

Your January 31, 1995 letter indicates increasing concern at a number of misunderstandings between D.O.E.'s staff and the City of Broomfield concerning the landfill site drainage design, and an increasing level of frustration of D.O.E.'s personnel involved. We can sympathize. The City of Broomfield and its representatives have also experienced frustration. This frustration, from the City of Broomfield's perspective, has come from its having to ferret out information concerning the landfill and site drainage design from the various consulting firms representing D.O.E. in this matter. Broomfield has been directed and redirected to different individuals and different firms to obtain information. The City has been promised information that either never arrives or is furnished later than promised, and has received conflicting information and "revised" calculations. Broomfield has expended a great deal of time and money in its attempt to understand the landfill site drainage design. A brief chronology of that effort is attached to this letter.

The attachments to your January 31, 1995 letter indicate that in the first three years of the operations study, the 36-inches of freeboard limit in Broomfield's agreement with D.O.E. will be triggered and pumping water into the evaporation pond will be terminated. Also during the first two years, the 30-inch freeboard minimum is exceeded, which means that water would have to be pumped out of the evaporation pond back to landfill cell or otherwise removed from the site. This information makes it clear that the vague plans that are discussed in the attachments to your letter need to be finalized, i.e., precisely what means will be utilized to take care of the water that has to be pumped from the evaporation pond when the 30-inch freeboard limit is violated and exactly what will be done to remove from the site the water that cannot be placed in the evaporation pond to avoid violating the 36-inch freeboard limit.

Broomfield would appreciate the opportunity to review D.O.E.'s plans as soon as they are formalized.

We appreciate D.O.E.'s and your personal concern in protecting the City's interests, and we are as anxious to resolve this one remaining issue. As you have probably learned, the City executed the Use Agreement for the crossings on the Upper Church Ditch and the McKay Ditch on January 24, 1995 and Steve R. Schiesswhol, RFFO Realty Office, has executed the same. Steve R. Schiesswhol has D.O.E.'s copy of that final agreement. The City has already recorded its copy with the Jefferson County Clerk.

I appreciate your invitation to meet with me on the site, and I look forward to seeing you on March 10, 1995.

Sincerely,

William M. Berens

William M. Berens
Mayor

c: George Di Ciero
Marvin Thurber
Michael Bartleson
Kathy Schnoor
Tim Holeman
Roy S. Howard, Esq.
Karen Hellner, Jefferson County Planning Department
Glenn Mallory, Colorado Department of Health and Environment
Roger Doak, Colorado Department of Public Health and Environment
Board of County Commissioners, County of Jefferson
Leonard Rice, Chairman, Leonard Rice Consulting Water Engineers
John Rampe, Department of Energy, Rocky Flats Field Office
Harvey Curtis, Esq.

CHRONOLOGY OF COMMUNICATIONS BETWEEN THE CITY OF BROOMFIELD AND DOE CONCERNING DRAINAGE DESIGN OF THE NEW SANITARY LANDFILL SITE

1. DOE provided the City of Broomfield with the Title II, Drainage and Erosion Control Plan for the New Sanitary Landfill Design, Rocky Flats Plant, prepared by Merrick and Company and Woodward-Clyde for EG&G Rocky Flats, Inc., dated July 14, 1994. Other than during the construction phase, this plan does not mention that supplemental disposal methods would be used to remove excess stormwater from the evaporation pond. Only spray evaporation for landfill cell leachate was mentioned.

2. Drainage design calculations for the landfill site, prepared by Woodward-Clyde and dated August 19, 1994, were provided to the City of Broomfield. These calculations include sketches that show drainage swales outfalling close to the McKay Ditch and Upper Church Ditch. The design calculations do not incorporate freeboard into the swale design. Sketches and calculations are provided for the evaporation pond, that show the pond is adequately sized to handle specific design storms, but no cumulative water balance calculations are provided. Annual runoff to the pond is stated to 6.6 acre-feet, while the amount evaporated each year is stated as only 2.8 acre-feet, thereby resulting in an annual excess of 3.8 acre-feet. The calculations also tabulated the runoff areas contributing to the evaporation pond and the runoff coefficient used for each of these areas. These areas are 1.6 acres for the evaporation pond, 1.7 acres for other imperviously gravel areas, 1.2 acres for vegetated areas, 3.9 acres for half of cell no. 1.

3. On September 21, 1994, a meeting was held between representatives of the City of Broomfield and DOE and its consultants. A list of questions concerning the evaporation pond and drainage swales was presented to DOE at this meeting. These questions related to assumptions and conclusions not fully addressed in the August 19, 1994 drainage design calculations.

4. On September 22, 1994, Stephanie Neitzel spoke to Rich Tocher, Woodward-Clyde Consultants, concerning questions about the evaporation pond and drainage swale design as presented in the August 19, 1994 calculations. He confirmed that runoff from the landfill cell cover would drain into the west and east swales, with the west swale draining directly towards the Upper Church Ditch and McKay Ditch. He also said that they were working on new drainage calculations because the August 19, 1994 calculations were hard to follow.

5. On September 23, 1994, Rich Tocher told Ms. Neitzel that EG&G was supposed to have the new evaporation pond and drainage swale calculations on that day and that he would fax these to Ms. Neitzel when he received them. Mr. Tocher said that the west swale actually extended from the west side of the landfill site, all along the south side of the landfill site adjacent to the City's ditches, then up along the east side of the

evaporation pond and beneath the access road, outfalling to the east. He also said that the landfill leachate would not contribute to the evaporation pond, but would drain into separate storage tanks.

6. On September 26, 1994, Ms. Neitzel called Mr. Tocher because the calculations had not been received. He referred her to Don Middlestadt, EG&G. Mr. Middlestadt referred her to Dorthea Hoyt, EG&G.

Don Middlestadt of EG&G sent to Leonard Rice a response to the City's questions of September 21, 1994 concerning the site drainage. This response indicated that the west drainage swale includes runoff from the west landfill berm. It was also stated that the site drainage was designed to direct the majority of the collected flow along the west side of the landfill cell to the north, and not the south toward the Upper Church Ditch and McKay Ditch. The new calculations to replace the August 19, 1994 calculations were not included. The response also stated that the evaporation pond calculations were to be corrected to include the full are of cell no. 1, not half, in the runoff areas.

7. On September 27, 1994, Ms. Neitzel spoke to Dorthea Hoyt, EG&G, about the City's drainage swale concerns, in particular, drainage into the McKay Ditch and Upper Church Ditch, and sizing of the swale without freeboard. She indicated that there was some uncertainly as to the design of the west swale. She said that as of right then, the west swale would extend only along the west side of the landfill cell and not along the south side of the landfill site, as indicated by Mr. Tocher. She also said that the swale would divert most of the runoff to the north and away from the Upper Church Ditch and McKay Ditch, because the topography of the 20+ acres contributing to this swale naturally drains to the north and the swale highpoint was near the swale's south point. Ms. Neitzel pointed out that the sketches provided in the August 19, 1994 calculations indicated different topography. The August 19, 1994 sketches showed the swale highpoint at the midpoint of the west swale. Ms. Hoyt said that the drainage swales were being reworked and new calculations were being done and that she did not know what was being done, but would send the new information to Ms. Neitzel when it was completed.

8. On October 10, 1994, representatives from the City of Broomfield met with DOE consulting staff at the Rocky Flats field office. Concerning the west drainage swale, the DOE engineers conceded that the land area contributing to the west swale did not naturally drain to the north and, in fact, 12 1/2 acres drain to the south and 11 1/2 acres drain to the swale midpoint, it was agreed that the drainage swale design would be changed to move the swale highpoint to the south so that most of the runoff would drain to the north. The City's representatives also asked about the evaporation pond's cumulative water balance, which the August 19, 1994 calculations showed as having an annual excess of 3.8 acre-feet. The EG&G engineers agreed that from those calculations, it appeared that the evaporation pond would not evaporate all the runoff. Kevin McBrien, Merrick & Company, said that he would review the calculations and get back with the City on this.

9. On October 18, 1994, Ms. Neitzel called Kevin McBrien to find out the status of his review of the evaporation pond water balance calculations. Mr. McBrien said that at this time it appeared that the pond was designed too small but that he was not finished reviewing the calculations. He said that their review would be completed by October 21, 1994 and that he would get back with Ms. Neitzel.

10. On October 28, 1994, Ms. Neitzel contacted Kevin McBrien since there had been no response. Mr. McBrien said that were meeting that day to discuss the evaporation pond, but that Dorthea Hoyt, and not he, was the person that should be contacted about this matter.

11. On October 31, 1994, Dorthea Hoyt returned Ms. Neitzel's call and said that they would provide the results of the evaporation pond review on November 14, 1994.

12. On November 4, 1994, Paul Cote, DOE, sent a letter to George Di Ciero, City Manager for the City of Broomfield, stating that it was DOE's feeling that they had provided all the information requested, but if there were any unanswered questions, the City was to inform him of that by November 30, 1994.

13. On November 14, 1994, a meeting was held between the City of Broomfield and its representatives and DOE's consulting staff. At that time, Kevin McBrien provided new and detailed evaporation pond water balance calculations, which he said were based on an EPA design method. This method uses a five-year time period using the wettest year of record combined with the least evaporation rate in addition to a 25-year, 24-hour storm, followed by four years of average precipitation and evaporation. He explained that stormwater falling onto the landfill cell and cell sides would either be absorbed into the cell walls and floor or collected into the cell leachate system, and therefore, this water would not be contributing or at least very little, to the evaporation pond. Mr. McBrien also said that the amount of runoff reaching the pond had been recalculated and was reduced to account for runoff water that settles in depressions, evaporates, etc., before reaching the pond: Mr. McBrien further stated that even using this approach, there would still be excess water in the pond and supplemental methods such as spray methods to increase evaporation would be used. We requested back up calculations for assumptions made in the new calculations and further information concerning the design of the leachate system to show that it would be able to adequately handle both the cell leachate and stormwater. Broomfield also requested an explanation of how the leachate system and evaporation pond work together to handle the rainfall on the landfill site. The DOE representatives said that information concerning the leachate system would need to come from another source since they did not design it, but that they would get it for us by Friday, November 18, 1994.

14. On November 16, 1994, Dorthea Hoyt contacted Ms. Neitzel and requested that the City of Broomfield's questions be put in writing. Ms. Neitzel faxed a written request of the information requested at the November 14, 1994 meeting.

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SW/IFR/RFP 1A

Department of Energy

ROCKY FLATS FIELD OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

JAN 31 1995

95-DOE-10308

RECEIVED
FEB 02 1995
HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

The Honorable Bill Berens
Mayor
City of Broomfield
Number Six Garden Office Center
P.O. Box 1415
Broomfield, Colorado 80038-1415

Dear Mayor Berens:

As you may know, the Jefferson County Board of County Commissioners recently approved a Certificate of Designation, giving the Department of Energy (DOE) approval to construct a new sanitary landfill at the Rocky Flats Environmental Technology Site. At the approval hearing, staff from the City of Broomfield raised a number of concerns regarding this project, especially protection of the City of Broomfield's water supplies. These concerns have been the subject of extensive communications between our staffs both before and after the hearing. DOE has committed to, and remains intent upon resolving the City's concerns to the best of our abilities so that the new landfill, a vital part of our sitewide cleanup efforts, will go forward with the full support of the City of Broomfield.

I have become increasingly concerned, however, at the number of misunderstandings between our staffs as they continue to discuss technical questions that City staff have raised about the new landfill. These misunderstandings have led, regrettably, to an increasing level of frustration for the technical personnel involved. We have been able to demonstrate to our regulators that the new landfill will meet or exceed all technical requirements placed on it. It is unfortunate that we have not yet been able to successfully communicate to City staff the technical rationale for our conviction that this landfill will be fully protective of the environment and, specifically, fully protective of Broomfield's water supplies. Most recently we received two letters from the City forwarding numerous questions and concerns about landfill design and operation. A general response to these letters is enclosed, along with a point paper providing a more extensive response to City concerns regarding the landfill's drainage system. We are providing this information to your staff through copies of this correspondence.

I will continue to make my technical staff available to discuss the enclosed information with the City. However, we need to conclude our technical dialogue soon, since construction on the project is beginning, and the ongoing responses to the City's questions have resulted in a great deal of additional work for our project team. Given the circumstances, I believe it worthwhile for us to meet to discuss this matter and any remaining concerns that the City may have. At your request, we can provide a formal presentation on the project, and

JAN 31 1995

a tour of the project site. Please have your staff call my office at 966-2025 to arrange such a meeting.

I am convinced that this project will be completely protective of the City's interests. I also believe that it is vital that the City have confidence in DOE's actions as well, on this and other matters of mutual interest. The cleanup of Rocky Flats is of vital concern to the citizens of Broomfield, and we must work together to help achieve that cleanup. I look forward to meeting with you.

Sincerely,

Mark N. Silverman
Manager

Enclosures

cc (w/Enclosures):
G. DiCiero, City of Broomfield
M. Thurber, City of Broomfield
M. Bartelson, City of Broomfield
H. Curtis, Esq.Jefferson County Board of County Commissioners (3 copies)
K. Hellner, Jefferson County Planning Department
G. Mallory, Colorado Department of Public Health and Environment
R. Doak, Colorado Department of Public Health and Environment

cc (w/o Enclosures):
M. Karol, DOE/RFFO
L. Smith, DOE/RFFO
J. Hartman, DOE/RFFO
J. Roberson, DOE/RFFO
P. Cote, DOE/RFFO
J. Springer, DOE/RFFO
S. Schiesswohl, DOE/RFFO
J. Rampe, DOE/RFFO

GENERAL RESPONSE TO CITY OF BROOMFIELD CONCERNS
ROCKY FLATS SANITARY LANDFILL

Following are general responses to the concerns raised by the City of Broomfield in correspondence dated December 1 and 2, 1994, from Marvin Thurber, Public Works Director for the City, to Paul Cote of DOE, Rocky Flats Field Office.

1. An application for a simple ditch crossing permit for the Upper Church and McKay Ditches has not been submitted to the City by DOE for review -- An example ditch crossing agreement was submitted to the City for review in September, and we had anticipated comments on this document as regards its potential applicability to the crossing agreement currently being considered. A simplified version of a crossing agreement was delivered to City staff on December 1, and is currently under discussion. Our goal is to finalize a simple agreement by the end of January.

2. There has been no further discussion since the hearing before the Board of County Commissioners regarding the establishment of a contingency fund to cover contamination of Broomfield facilities by the new sanitary landfill -- As stated by DOE at the hearing, we do not intend to establish a contingency fund for the new landfill, and do not feel that further discussion is warranted on this point. We stated at the hearing that we believe the possibility of contamination of Broomfield's water supplies is remote, and the setting aside of funds to cover such a possibility did not constitute a productive use of taxpayer funds. The Board agreed, and did not make establishment of such a fund a requirement of the Certificate of Designation (CD). DOE did agree to establish operating procedures for the landfill evaporation pond that virtually eliminate the possibility of overflow into the Broomfield's water supply ditches, and formalized this agreement in the CD. Further, DOE agreed, at Broomfield's request, to delay operation of the new landfill until January 1997, thus allowing Broomfield more time to complete the Great Western Reservoir replacement project.

3. Broomfield has not received sufficient information to be assured that the drainage plan for the new landfill is adequate. More specifically, Broomfield believes that there is insufficient capacity in the landfill evaporation pond, based upon DOE's rainfall/runoff calculations, to contain and evaporate the runoff from the landfill site -- Drainage plan information for the new landfill has been transmitted on several occasions, in several different formats. Title II design calculations were provided as part of the Title II engineering package that was given to the City before the Board of County Commissioners hearing in September. In response to a request received from staff to counsel retained by the City, EG&G provided a letter (Correspondence Number DRM-017-94, dated November 30, 1994) which contained a detailed evaluation of our calculations supporting the adequacy of the drainage plan for the landfill. The attachment to this letter, "Analysis of the Stormwater Management System," discussed the conservatism of our initial runoff calculations, upon which the design for the landfilll evaporation pond was based. Our most recent calculations (enclosed), which have been performed in response to the City's most recent requests for information, show that the landfill evaporation pond is adequately sized to receive two consecutive 100-year, 24-hour rainstorms, while already holding a representative amount of water. In addition to these calculations, EG&G has prepared a point paper (enclosed) responding in more detail to the City's questions and concerns regarding landfill drainage.

Beyond the drainage calculations, which we are convinced demonstrate that the landfill drainage system is more than adequate, we have, at the City's request, made important administrative additions to the project that will further provide protection to the City's water

supply. First, we have committed to an operating plan for the evaporation pond that will ensure that water will be pumped out of the pond and into the landfill cell if water levels reach to within 30 inches of the lip of the pond. Second, we have made a major change in our schedule to operate the new landfill. We have agreed, again at the City's request, not to place the new landfill into operation until January 1997, in order to give the City adequate time to finish the Great Western Reservoir Replacement Project. Completion of this project, funded in large part by DOE, will remove Great Western Reservoir as a drinking water supply, thus severing altogether the connection between Broomfield's drinking water and Rocky Flats.

POINT PAPER
Response to Comments/Concerns from the City of Broomfield
Correspondence dated December 1, 1994 and December 2, 1994

The following is a response to concerns addressed in the letter dated December 1, 1994.

1. Comment: "The City of Broomfield had not been furnished with the engineering information to show that the drainage plan was adequate."

   Response: Information on the drainage design was provided on November 30, 1994, in the letter from D. R. Mittlestadt to S. J. Nietzel.

2. Comment: Overall concern with the swales and evaporation pond.

   Response: Information and calculations were provided on November 30, 1994 which responded to questions on both the August 31, 1994 information and on the Title II information provided to Broomfield. This letter showed:

   1) As committed to the City of Broomfield on October 10, 1994, the swale had been modified to direct all flow to the north rather than toward the Upper Church and McKay ditches. As stated in previous correspondence, drainage from the operational cell will not go into the swales.

   2) The size of the evaporation pond has been verified using several methods. It is sized to contain runoff from the site under almost every foreseeable condition. As stated in the Public Hearings, the evaporation pond has the capacity to store average monthly precipitation based upon the five year water balance, in addition to two consecutive 100 year, 24 hour storm events. Also, the Department of Energy committed to adhere to a specific sampling and notification procedure for "emergency or untoward events" involving the evaporation pond (entitled Procedures for Notification and Sampling, New Sanitary Landfill, Rock Flats Plant, Golden, Colorado). This procedure commits to the following:

   > At such time when less than thirty-six (36) inches of freeboard remain in the landfill evaporation pond, all pumping of water into the pond will be stopped. At such time when less than thirty (30) inches of freeboard remain in the evaporation pond, DOE, RFFO will begin pumping water out of the landfill evaporation pond.

   This procedure was finalized, with the City's review and concurrence, prior to the final Public Hearing which was held on September 27, 1994.

   Further, as stated in the Title II Design Basis Document, dated June 14, 1994, and as discussed in the November 30, 1994 letter, it was never intended that all runoff be managed solely through pond evaporation. The Title II Design Basis Document states, "excess runoff might require management such as pumping to the Sanitary Treatment Plant or recycle spray back to the operating landfill working face." In addition, the November 30, 1994 letter states, "Other management techniques (such as spray evaporation within the pond, pumping and shipment to the Rocky Flats Sanitary Treatment Plant, and/or spray evaporation in the cell) would be used to manage excess runoff as needed".

The information submitted to the City demonstrates that the runoff management system for the New Sanitary Landfill far exceeds both the federal and state regulations for solid waste disposal (40 CFR 258 and 6 CCR 1007-3 respectively) which require that the landfill be designed, constructed and maintained to collect and control the water volume resulting from a 24-hour, 25-year storm event.

3. Comment: In the meeting held on November 24, 1994, "preliminary calculations" were presented. "The calculations based on monthly precipitation and evaporation volumes for a five year period indicated that the evaporation would, indeed, not be able to evaporate all of the rainfall runoff from the landfill site. Mr. McBrien proposed that some 'supplemental' runoff disposal and evaporation means would e required to get rid of the excess volume. This included directing the rainwater falling onto the cell into the landfill leachate collection system, in addition to a possible system of spray mechanisms to increase evaporation."

Response: As stated above, in the Title II Design Basis Document, and in the November 30, 1994 letter, it was never intended that all runoff be managed through solely through pond evaporation. Supplemental means for managing runoff were not "proposed" in the November 14, 1994, but were previously established during the completion of the Title II design. These alternative for managing the runoff have been reviewed and accepted by Jefferson County and the Colorado Department of Public Health and Environment as part of our Certificate of Designation Permit Application.

The statement that rainfall would be directed into the leachate collection system is a misunderstanding of the leachate collection system versus the runoff management systems. The discussion in the November 30, 1994 letter attempted to clarify the operation of these two systems. Precipitation falling on the side slopes of the cell would enter the leachate collection system incidentally, unless covered with an impermeable geomembrane. This is a consequence of the design and not a "management technique".

4. Comment:

1. "Does the engineering for the leachate system show that the rainfall falling onto the landfill can be absorbed into the banks and the floor of cell no. 1? and adequately contained an disposed of? Dorthea Hoyt stated she would have Richard Tolker contact us on this point. However, we have yet to hear anything. The contact was expected to occur by Friday, November 18, 1994. Ms. Hoyt has since informed us of a delay to approximately the end of November, though she could not commit to a date."

Response: Referring to the November 30, 1994 letter, the leachate system is designed adequately for leachate generated and runoff that may collect in the leachate sump from the side slopes and floor of the cell.

D. Hoyt committed to contacting R. Tocher herself and then providing a response to the City of Broomfield. It was never intended that R. Tocher would be contacting Broomfield directly. This information in included in the November 30, 1994 letter.

We stated in the meeting on November 14, 1994 that final runoff calculations would be provided to Broomfield, in addition to an answer to their leachate question by November 18, 1994. However, in finalization of this response it became obvious that we should address both the leachate and runoff management system, and how these systems are interrelated. In order to properly address Broomfield's question on the leachate system, D. Hoyt contacted S. Nietzel on November 16, 1994 to request their question in writing. D. Hoyt contacted S. Nietzel on November 18, 1994 to explain that we were developing a response that explained in more detail the leachate/runoff management system and that this would take some additional time to prepare. Therefore, we would not have information (including the final runoff calculations for the pond, a revised swale design, and the description of the leachate/runoff management system) to them until the end of the month. All of this information was provided to Broomfield on November 30, 1994.

5. Comment: 2. "The City of Broomfield asked if Kevin McBrien would give us an opinion that the evaporation pond was adequately designed with his signature and engineering seal affixed."

Response: EG&G does not have any documentation of this request. Furthermore, there is no requirement within the Federal construction process for an engineer to submit a document with signature and seal affixed. Such a request falls outside the scope of the architectural engineering contract for this project, and as such we will not request this of Mr. McBrien.

6. Comment: 3. "Dorthea Hoyt promised that there would be new runoff calculation replacing the August, 1994, draft calculations. We would like to review these."

Response: These were provided on November 30, 1994.

7. Comment: 4. "Has the drainage swale design plan been changed as promised to direct runoff away from the McKay Ditch and Upper Church Ditch?"

Response: As stated response #6, this has been done and information was provided on November 30, 1994.

The following is a response to concerns addressed in the letter dated December 2, 1994.

8. Comment: "A preliminary review of the evaporation pond calculations still shows that the evaporation pond will not be able to evaporate all the rainfall runoff to be discharged into it. In fact, the excess unevaporated water volume shown in DOE's new calculations has now doubled from that shown in the November 14 calculations.

Response: As discussed above, alternate methods of managing the runoff are available if necessary, and it was never the intention that the runoff be managed solely through pond evaporation. In any event, runoff in the pond will be handled in accordance with the procedure for sampling and notification which were developed by DOE and the City of Broomfield in September, 1994.

The difference between the November 14, 1994 preliminary calculations and the November 30, 1994 calculations was due to a transposition of a number in the model. As mentioned previously, the November 14, 1994 calculations were preliminary and needed to be finalized. In any case, however, the pond size is adequate as discussed previously. In order to avoid these types of misunderstandings in the future, we will no longer provide preliminary information.

9. Comment: "The new calculations do not address our question, previously expressed to Kevin McBrien, concerning DOE's method of calculating runoff volume. DOE's method of calculating runoff assumes that all rainfall must travel across the site to reach the evaporation pond. Based on this assumption, DOE has substantially reduced the actual precipitation amounts to arrive at its runoff volume because it is assumed that runoff will percolate into the ground and settle into depressions, and for many rainfall events, no runoff will actually reach the evaporation pond. These assumptions, however, fail to account for the fact that much of the rainfall falls directly into the impervious evaporation pond, which accounts for a substantial portion of the area contributing to the pond runoff. This rainfall will not be 'lost' in its travel to the pond."

Response: The new calculations do account for precipitation that falls directly into the evaporation pond. This is taken into account with Curve #82 which is a "composite curve" developed according Soil Conservation Services procedures for areas with multiple runoff coefficients. However, in order to confirm this analysis, another water balance was prepared on December 12, 1994 which separates out the evaporation pond area rather than accounting for this area in the composite curve. This additional analysis (attached) was conducted by Mr. McBrien as requested by S. Nietzel in a telephone conversation on December 1, 1994. As shown in the attachment, the evaporation pond accounts for less that 10% of the landfill site area and is not a "substantial portion of the area contributing to the pond runoff". In either case, the evaporation pond size is sufficient to accommodate this water, and maintain sufficient freeboard.

ROCKY FLATS New Sanitary Landfill

Calculations for sizing of Stormwater Management System Evaporation Pond

Design Basis: Wettest Year of Record, followed by 4 years of Average Precipitation
Plus the 25 year 24 hour Storm Runoff Volume Added to First Year Runoff

Design Storm Input

Design Storm , 25 year-24 hour 4.00 inches

	Cell No 1 (Curve 82)	Transfer Area Curve 89	Evap Pond (100%)	Total, cf
Runoff, inches	2.20	2.82	4.00	
Area,SF	317,000	54,000	40,000	
Runoff,CF	58,117	12,690	15,533	86,340

Pond Input Section

Bottom	Length	183.00
Bottom	Width	174.00
	Slope	3.00
	depth	6.00
Bottom	Area	28,362
Pond Volume	CF	221,720

Storage Results

End of 5 yr	71,212	Cubic Feet
Max Storage	218,016	Cubic Feet
	5.00	Acre-feet

Year	Precipitation inch/year	Precip Runoff Acre/feet	Storm Runoff Acre/feet	Total Runoff Acre/feet	Evap Volume Acre/feet	Net End of Yr Acre/feet	% of Pond Vol	Maximum Storage Acre/feet	% of Pond Vol
1	23.83	5.36	1.98	7.34	2.40	4.94	97.1%	4.94	97.1%
2	14.48	1.93	0.00	1.93	2.91	3.96	77.7%	5.00	98.3%
3	14.48	1.93	0.00	1.93	2.77	3.11	61.1%	4.04	79.4%
4	14.48	1.93	0.00	1.93	2.65	2.39	46.9%	3.25	63.9%
5	14.48	1.93	0.00	1.93	2.54	1.78	35.0%	2.59	50.8%

Water Balance Calculations DESIGN RUNOFF (Evaporation Pond Separated as 100% Runoff)

YEAR NO.	MONTH	DAYS	POND AREA (SQ.FT.)	PRECIP. DESIGN CONDITION (INCHES)	Runoff Transfer Area Curve 89	Runoff Cell No. 1 Curve 82	Direct Rainfall into Pond (100 %) (inches)	SUM OF RUNOFF VOLUME (CU. FT.)	STORM VOLUME (CU. FT.)	TOTAL INFLOW VOLUME (CU. FT.)	EVAP. (FWS) MONTHLY RATE (INCHES)	EVAP. VOLUME (CU. FT.)	NET VOLUME PER MONTH (CU. FT.)	STORAGE VOLUME APPROX. (CU. FT.)	POND STAGE APPROX. (FT)	TOP POND AREA (SQ. FT.)	NET POND AREA (SQ. FT.)	POND STAGE (FT)	ACTUAL STORAGE VOLUME (CU. FT.)
1	NOV.	30	28,302	0.98	0.00	0.00	0.98	3,806		3,806	1.89	4,467	(661)	(661)	-0.02	41,790	28,315	-0.02	(661)
	DEC.	31	28,315	1.25	0.17	0.05	1.25	6,940		6,940	0.63	1,487	5,453	4,792	0.17		28,705	0.17	4,829
	JAN.	31	28,705	0.43	0.00	0.00	0.43	1,670		1,670	0.49	1,172	498	5,290	0.18		28,736	0.18	5,261
	FEB.	28	28,736	1.19	0.17	0.05	1.19	6,707		6,707	0.63	1,509	5,198	10,488	0.36		29,105	0.36	10,487
	MAR.	31	29,105	1.35	0.02	0.00	1.35	5,333		5,333	1.12	2,716	2,616	13,104	0.45		29,280	0.45	12,978
	APR.	30	29,280	1.90	0.28	0.08	1.90	10,662		10,662	2.24	5,466	5,196	18,300	0.63		29,640	0.63	18,125
	MAY	31	29,640	2.40	0.20	0.08	2.40	12,603	86,340	98,943	3.50	8,645	90,298	108,599	3.66		36,254	3.66	118,079
	JUNE	30	36,254	5.15	2.44	1.58	5.15	72,718		72,718	4.05	14,653	58,065	166,664	4.60		38,418	4.60	152,910
	JULY	31	38,418	3.76	1.99	1.46	3.76	62,125		62,125	7.34	23,499	38,626	205,289	5.34		40,195	5.34	182,252
	AUG.	31	40,195	2.42	0.84	0.47	2.42	25,594		25,594	5.14	17,217	8,377	213,666	5.32		40,128	5.32	181,138
	SEPT.	30	40,128	0.64	0.06	0.01	0.64	3,020		3,020	4.25	14,212	(11,192)	202,474	5.05		39,481	5.05	170,387
	OCT.	31	39,481	2.16	0.73	0.40	2.16	22,240		22,240	2.87	9,443	12,797	215,271	5.45		40,457	5.45	188,647
	TOTALS	365		23.83	6.94	4.18		233,415	86,340	319,755	34.95	104,484							
	ACRE-FEET							5.36	1.98	7.34		2.40							
2	NOV.	30	40,457	0.98	0.00	0.00	0.98	3,806		3,806	1.74	5,866	(2,061)	213,210	5.27		40,018	5.27	179,303
	DEC.	31	40,018	1.25	0.17	0.05	1.25	6,940		6,940	0.64	2,134	4,806	218,016	5.45		40,446	5.45	186,463
	JAN.	31	40,446	0.06	0.00	0.00	0.06	233		233	0.48	1,618	(1,385)	216,631	5.36		40,225	5.36	182,754
	FEB.	28	40,225	0.84	0.02	0.00	0.84	3,352		3,352	0.63	2,112	1,240	217,871	5.42		40,370	5.42	185,188
	MAR.	31	40,370	0.00	0.00	0.00	0.00	0		0	1.15	3,869	(3,869)	214,002	5.30		40,092	5.30	180,545
	APR.	30	40,092	1.24	0.10	0.03	1.24	6,328		6,328	2.62	8,753	(2,426)	211,577	5.28		40,035	5.28	179,592
	MAY	31	40,035	2.23	0.45	0.16	2.23	14,912		14,912	4.32	14,413	499	212,076	5.30		40,083	5.30	180,393
	JUNE	30	40,083	3.03	0.73	0.31	3.03	23,241		23,241	5.74	19,173	4,068	216,143	5.39		40,312	5.39	184,217
	JULY	31	40,312	1.46	0.24	0.08	1.46	8,803		8,803	7.09	23,818	(14,955)	201,188	4.99		39,350	4.99	168,221
	AUG.	31	39,350	1.57	0.25	0.06	1.57	8,807		8,807	5.53	18,134	(9,327)	191,861	4.88		39,077	4.88	163,712
	SEPT.	30	39,077	0.84	0.04	0.00	0.84	3,442		3,442	4.91	15,989	(12,547)	179,315	4.59		38,399	4.59	152,595
	OCT.	31	38,399	0.98	0.06	0.00	0.98	4,076		4,076	3.45	11,040	(6,964)	172,351	4.49		38,103	4.49	146,755
	TOTALS	365		14.48	2.12	0.69		83,998	0	83,998	38.30	126,918							
	ACRE-FEET							1.93	0.00	1.93		2.91							

ROCKY FLATS New Sanitary Landfill

Calculations for sizing of Stormwater Management System Evaporation Pond

Design Basis: Wettest Year of Record, followed by 4 years of Average Precipitation
Plus the 25 year 24 hour Storm Runoff Volume Added to First Year Runoff

Design Storm Input

Design Storm , 25 year-24 hour 4.00 inches

	Cell No. 1 (Curve 82)	Transfer Area Curve 89	Evap Pond (100%)	Total, cf
Runoff, inches	2.20	2.82	4.00	
Area,SF	317,000	54,000	46,000	
Runoff,CF	58,117	12,690	15,533	86,340

Pond Input Section

Bottom	Length	163.00
Bottom	Width	174.00
	Slope	3.00
	depth	6.00
Bottom	Area	28,362
Pond Volume	CF	221,720

Storage Results

End of 5 yr	71,212	Cubic Feet
Max Storage	218,016	Cubic Feet
	5.00	Acre-feet

Year	Precipitation Inch/year	Precip Runoff Acre/feet	Storm Runoff Acre/feet	Total Runoff Acre/feet	Evap Volume Acre/feet	Net End of Yr Acre/feet	% of Pond Vol	Maximum Storage Acre/feet	% of Pond Vol
1	23.63	5.38	1.98	7.34	2.40	4.94	97.1%	4.94	97.1%
2	14.48	1.93	0.00	1.93	2.91	3.96	77.7%	5.00	98.3%
3	14.48	1.93	0.00	1.93	2.77	3.11	61.1%	4.04	79.4%
4	14.48	1.93	0.00	1.93	2.65	2.39	46.9%	3.25	63.9%
5	14.48	1.93	0.00	1.93	2.54	1.78	35.0%	2.59	50.8%

Water Balance Calculations DESIGN RUNOFF (Evaporation Pond Separated as 100% Runoff)

YEAR NO.	MONTH	DAYS	POND AREA (SQ.FT.)	PRECIP. DESIGN CONDITION (INCHES)	Runoff Transfer Area Curve 89	Runoff Cell No. 1 Curve 82	Direct Rainfall into Pond (100 %) (inches)	SUM OF RUNOFF VOLUME (CU. FT.)	STORM VOLUME (CU. FT.)	TOTAL INFLOW VOLUME (CU. FT.)	EVAP. (FWS) MONTHLY RATE (INCHES)	EVAP. VOLUME (CU. FT.)	NET VOLUME PER MONTH (CU. FT.)	STORAGE VOLUME APPROX. (CU. FT.)	POND STAGE APPROX. (FT)	TOP POND AREA (SQ. FT.)	NET POND AREA (SQ. FT.)	POND STAGE (FT)	ACTUAL STORAGE VOLUME (CU. FT.)
3	NOV.	30	38,163	0.98	0.00	0.00	0.98	3,806		3,806	1.74	5,534	(1,728)	170,623	4.47		38,122	4.47	157,925
	DEC.	31	38,122	1.25	0.17	0.05	1.25	6,940		6,940	0.64	2,033	4,907	175,529	4.60		38,435	4.60	163,096
	JAN.	31	38,435	0.06	0.00	0.00	0.06	233		233	0.48	1,537	(1,304)	174,225	4.53		38,267	4.53	160,597
	FEB.	28	38,267	0.84	0.02	0.00	0.84	3,352		3,352	0.63	2,009	1,343	175,568	4.59		38,397	4.59	162,979
	MAR.	31	38,397	0.00	0.00	0.00	0.00	0		0	1.15	3,680	(3,680)	171,888	4.48		38,135	4.48	158,172
	APR.	30	38,135	1.24	0.10	0.03	1.24	6,328		6,328	2.62	8,326	(1,998)	169,890	4.45		38,084	4.45	157,239
	MAY	31	38,084	2.23	0.45	0.18	2.23	14,912		14,912	4.32	13,710	1,201	171,091	4.49		38,172	4.49	158,851
	JUNE	30	38,172	3.03	0.73	0.31	3.03	23,241		23,241	5.74	18,259	4,982	176,073	4.61		38,455	4.61	164,050
	JULY	31	38,455	1.46	0.24	0.08	1.46	8,863		8,863	7.09	22,720	(13,857)	162,215	4.22		37,532	4.22	147,193
	AUG.	31	37,532	1.57	0.25	0.08	1.57	8,807		8,807	5.53	17,296	(8,489)	153,726	4.10		37,248	4.10	142,071
	SEPT.	30	37,248	0.84	0.04	0.00	0.84	3,442		3,442	4.91	15,241	(11,799)	141,928	3.81		36,589	3.81	130,347
	OCT.	31	36,589	0.98	0.06	0.00	0.98	4,076		4,076	3.45	10,519	(6,444)	135,484	3.70		36,343	3.70	126,007
	TOTALS	365		14.48	2.12	0.69		83,998	0	83,998	38.30	120,865							
	ACRE-FEET							1.93	0.00	1.93		2.77							
4	NOV.	30	36,343	0.98	0.00	0.00	0.98	3,806		3,806	1.74	5,270	(1,464)	134,020	3.69		36,308	3.69	118,940
	DEC.	31	36,308	1.25	0.17	0.05	1.25	6,940		6,940	0.64	1,936	5,004	139,024	3.83		36,632	3.83	124,094
	JAN.	31	36,632	0.06	0.00	0.00	0.06	233		233	0.48	1,465	(1,232)	137,791	3.76		36,477	3.76	121,627
	FEB.	28	36,477	0.84	0.02	0.00	0.84	3,352		3,352	0.63	1,915	1,437	139,228	3.82		36,604	3.82	123,650
	MAR.	31	36,604	0.00	0.00	0.00	0.00	0		0	1.15	3,508	(3,508)	135,720	3.71		36,354	3.71	119,871
	APR.	30	36,354	1.24	0.10	0.03	1.24	6,328		6,328	2.62	7,937	(1,609)	134,111	3.69		36,311	3.69	118,989
	MAY	31	36,311	2.23	0.45	0.18	2.23	14,912		14,912	4.32	13,072	1,839	135,950	3.74		36,437	3.74	120,990
	JUNE	30	36,437	3.03	0.73	0.31	3.03	23,241		23,241	5.74	17,429	5,812	141,762	3.89		36,774	3.89	126,355
	JULY	31	36,774	1.46	0.24	0.08	1.46	8,863		8,863	7.09	21,727	(12,864)	128,898	3.51		35,692	3.51	112,351
	AUG.	31	35,692	1.57	0.25	0.08	1.57	8,807		8,807	5.53	16,540	(7,733)	121,165	3.38		35,598	3.38	107,779
	SEPT.	30	35,598	0.84	0.04	0.00	0.84	3,442		3,442	4.91	14,566	(11,124)	110,041	3.09		34,956	3.09	97,087
	OCT.	31	34,956	0.98	0.06	0.00	0.98	4,076		4,076	3.45	10,050	(5,974)	104,067	2.98		34,701	2.98	93,712
	TOTALS	365		14.48	2.12	0.69		83,998	0	83,998	38.30	115,416							
	ACRE-FEET							1.93	0.00	1.93		2.65							

ROCKY FLATS New Sanitary Landfill

Calculations for sizing of Stormwater Management System Evaporation Pond

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Area,SF	317,000	54,000	46,800	
Runoff,CF	58,117	12,690	15,533	Total, cf 86,340

Pond Input Section

Bottom	Length	163 00
Bottom	Width	174.00
	Slope	3.00
	depth	6.00
Bottom	Area	28,362
Pond Volume	CF	221,720

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End of 5 yr	71,212	Cubic Feet
Max Storage	218,016	Cubic Feet
	5.00	Acre-feet

Year	Precipitation Inch/year	Precip Runoff Acre/feet	Storm Runoff Acre/feet	Total Runoff Acre/feet	Evap Volume Acre/feet	Net End of Yr Acre/feet	% of Pond Vol	Maximum Storage Acre/feet	% of Pond Vol
1	23 83	5 36	1.98	7.34	2.40	4.94	97.1%	4.94	97.1%
2	14 48	1.93	0.00	1.93	2.91	3.96	77.7%	5 00	98.3%
3	14.48	1.93	0.00	1.93	2.77	3.11	61.1%	4.04	79.4%
4	14.48	1 93	0.00	1.93	2.65	2.39	46.9%	3.25	63.9%
5	14 48	1.93	0 00	1.93	2.54	1.78	35.0%	2.59	50.8%

Water Balance Calculations DESIGN RUNOFF (Evaporation Pond Separated as 100% Runoff)

YEAR NO.	MONTH	DAYS	POND AREA (SQ FT.)	PRECIP. DESIGN CONDITION (INCHES)	Runoff Transfer Area Curve 89	Runoff Cell No. 1 Curve 82	Direct Rainfall into Pond (100 %) (inches)	SUM OF RUNOFF VOLUME (CU. FT.)	STORM VOLUME (CU. FT.)	TOTAL INFLOW VOLUME (CU. FT.)	EVAP. (FWS) MONTHLY RATE (INCHES)	EVAP. VOLUME (CU. FT.)	NET VOLUME PER MONTH (CU. FT.)	STORAGE VOLUME APPROX. (CU. FT.)	POND STAGE APPROX. (FT)	TOP POND AREA (SQ. FT.)	NET POND AREA (SQ. FT.)	POND STAGE (FT)	ACTUAL STORAGE VOLUME (CU. FT.)
5	NOV.	30	34,701	0.98	0.00	0 00	0.98	3,806		3,806	1.74	5,032	(1,226)	102,641	2.96		34,671	2.96	93,247
	DEC.	31	34,671	1.25	0.17	0.05	1.25	6,940		6,940	0.64	1,849	5,091	107,932	3.11		35,005	3.11	98,452
	JAN.	31	35,005	0.06	0.00	0 00	0.06	233		233	0.48	1,400	(1,167)	106,764	3.05		34,864	3.05	96,247
	FEB.	28	34,864	0 84	0.02	0.00	0.84	3,352		3,352	0.63	1,830	1,522	108,286	3.11		34,990	3.11	98,204
	MAR.	31	34,990	0 00	0.00	0.00	0.00	0		0	1.15	3,353	(3,353)	104,933	3.00		34,750	3 00	94,473
	APR.	30	34,750	1.24	0.16	0.03	1.24	6,328		6,328	2.02	7,587	(1,259)	103,674	2.98		34,715	2 98	93,934
	MAY	31	34,715	2.23	0.45	0.16	2.23	14,912		14,912	4.32	12,497	2,414	106,088	3.06		34,877	3 06	96,458
	JUNE	30	34,877	3.03	0.73	0.31	3.03	23,241		23,241	5.74	16,683	6,558	112,645	3.23		35,268	3 23	102,553
	JULY	31	35,268	1.46	0.24	0.08	1.46	8,863		8,863	7.09	20,838	(11,975)	100,671	2.85		34,427	2.85	89,474
	AUG.	31	34,427	1.57	0 25	0.06	1.57	8,807		8,807	5.53	15,865	(7,058)	93,613	2.72		34,126	2.72	84,837
	SEPT.	30	34,126	0.84	0.04	0.00	0.84	3,442		3,442	4.91	13,963	(10,521)	83,091	2.43		33,499	2.43	75,223
	OCT.	31	33,499	0 98	0 00	0 00	0.98	4,076		4,076	3.45	9,631	(5,555)	77,536	2.31		33,235	2 31	71 212
	TOTALS	365		14.48	2.12	0.69		83,998	0	83,998	38.30	110,529							
	ACRE-FEET							1.93	0.00	1.93		2.54							

1. PRECIPITATION IS BASED ON MONTHLY TOTALS.
2. TOTAL INFLOW = PRECIPITATION.
3. EVAPORATION = FREE WATER SURFACE EVAPORATION
4. STORAGE VOLUME = CUMULATIVE SUM OF PRECIPITATION - EVAPORATION
5. POND STAGE = STORAGE VOLUME / POND AREA

5 /JFR/RFP 1A

Department of Energy

ROCKY FLATS OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

JAN 27 1995

95-DOE-07205

Honorable William M. Berens, Mayor
City of Broomfield
Number Six Garden Office Center
P.O. Box 1415
Broomfield, CO 80038-1415

RECEIVED
FEB - 1 1995
OFFICE OF THE CITY MANAGER
BROOMFIELD, COLORADO

Dear Mayor Berens:

We have been working with your staff on a crossing agreement that will allow the installation of two culvert structures in the Upper Church and McKay ditches where Broomfield owns an easement on the Rocky Flats Environmental Technology Site buffer zone. Two duplicate original agreements are enclosed for approval by the City. When both are signed, please return them to us for final approval. We will return one original for your records. Please direct any questions to Steve Schiesswohl, our Realty Officer at 966-6501. We thank you for your cooperation in this matter.

Sincerely,

Mark N. Silverman
Manager

Enclosure:

cc w/enclosure:
L. Lewis, RFFO
D. Lindsay RFFO
J. Hartman, RFFO
M. Karol, RFFO
B. Brainard-Jordan, RFFO
J. Wienand, RFFO
J. Adams, RFFO
E. Pietsch, RFFO
S. Schiesswohl, RFFO

The Mayor signed Jan 24th. Steve signed Feb 1st
Steve has DOE's signed original.
Brmfld's original is being recorded with Jeff. Co. Clerk

RFFO F 1325.8

United States Government

Department of Energy
Rocky Flats Field Office

memorandum

DATE: FEB 6 1995

REPLY TO ATTN OF: AMA:PIMD:EAP:07234

SUBJECT: Use Agreement, Broomfield Ditch Crossing

TO: John J. Rampe, Environmental and Regulatory Team Leader , Project Management Division

Attached for your information and use is a copy of the Use Agreement RP-95-1000 between the Department of Energy and the City of Broomfield for the purpose of installing culverts and road crossings by DOE across the Upper Church and McKay ditches. This agreement was executed on February 1, 1995, and construction must be completed on the crossing by April 1, 1995. Please send me a copy of the baseline samples report and map and other related information for our files.

Steven R. Schiesswohl, Realty Officer
Property and Information Management Division

cc w/attachments:
D. Lindsay RFFO
D. Brockman, RFFO

Use Agreement No. RP-95-1000
U.S. Department of Energy
Broomfield Ditch Crossing

USE AGREEMENT

This USE AGREEMENT is entered into between the UNITED STATES OF AMERICA (hereinafter referred to as the "Government"), acting through the DEPARTMENT OF ENERGY (hereinafter referred to as "DOE"), and the CITY OF BROOMFIELD (hereinafter referred to as the "Grantor"),

WITNESSETH THAT:

WHEREAS, DOE, through its authorized representatives, agents, contractors, and subcontractors desires to install, pursuant to Public Law 95-91, Department of Energy Organization Act, certain work on the Grantor's easement as shown on the map attached hereto as Exhibit A; and

WHEREAS, the Grantor owns an apparent easement for the Upper Church and McKay ditches. The property is designated in Exhibit A;

NOW THEREFORE, it is agreed that:

1. The Grantor owns and controls certain real property (hereinafter referred to as the "Property"), designated in Exhibit A, and hereby grants to DOE, its authorized representatives, agents, contractors, and subcontractors without payment of any land use charge, right of entry in, across, and over the Property to carry out the activities as described in Exhibits B-1 and B-2 including the installation of culverts and road crossings; PROVIDED, that such right of entry is subject to existing easements for public roads and highways, public utilities, railroads and pipelines; PROVIDED FURTHER, that such grant of right of entry reserves to the Grantor, his heirs, executors, administrators, successors and assigns, all right, title, interest and privilege as may be used and enjoyed. The construction and associated cleanup shall be completed by April 1, 1995 or by a date mutually agreed upon between the Grantor and DOE.

2. The Government shall be responsible for any loss or destruction of, or damage to, the Grantor's real and personal property caused by the activities of DOE in exercising any of the rights hereby granted in this Use Agreement: PROVIDED, that such

responsibility shall be limited to restoration of such real and personal property to a condition comparable to its condition on the effective date of the Use Agreement, subject to the availability of appropriated funds.

3. The provisions of this Use Agreement shall be binding upon and shall inure to the benefit of the heirs, executors, administrators, personal representatives, successors, and assigns of the Grantor. The Grantor shall notify the Realty Officer if the Property is, or at any time during the term of the Agreement should become leased, sold, or otherwise transferred to another party. The "Realty Officer" means the person executing this Use Agreement on behalf of the Government, and any other officer or civilian employee who is properly designated Realty Officer; and the term includes, except as otherwise provided in this Use Agreement, the authorized representative of a Realty Officer acting within the scope of his authority. The Grantor shall also give written notice to any purchaser, lessee, or transferee of the applicability of the rights of the Government contained in this Use Agreement when such purchase, lease, or transfer takes place during the term of this Use Agreement.

4. The effective date of this Use Agreement shall be the date of execution by the Government. The term of this Use Agreement shall commence on the effective date hereof and shall continue unless sooner terminated by mutual agreement or until such time as Title to the underlying Fee is transferred from the United States to a private party.

5. Title to all personal property brought to the Property by DOE during the term of this Use Agreement shall remain in the Government, and such title shall not be effected by incorporation or attachment thereof to any property not owned by the Government, nor shall such personal property, or any part thereof, become a fixture or lose its identity as personal by reason of affixation to any realty. DOE shall remove all such personal property no later than 90 days after the expiration or termination of the Use Agreement.

6. The Grantor shall not be liable for any loss of or damage to the crossing structures or for expenses incidental to such loss or damage, except that the Grantor shall be responsible for any such loss or damage (including expenses incidental thereto) which results from the willful misconduct, gross negligence, or lack of good faith of the Grantor.

7. If the Property is subject to any leases, subleases, or assignments of rights, Grantor shall obtain the consent of Grantor's lessors, lessees, sublessees, and assignees as appropriate, to enter into this Use Agreement. Such consent shall be evidenced by their signatures in the space provided on the signature page.

8. At the Grantor's request, DOE will perform sediment sampling in the Grantor's ditches near the crossing site and analyze the sediments for various contaminants including but not limited to radionucleides, volatile organic compounds, hazardous metals and polychlorobyphenols. A report of the analysis will be used as a baseline for the ditches in this area, in the case of a future event that requires the baseline analysis.

In WITNESS WHEREOF, the parties hereto have executed this Use Agreement in several counterparts.

GRANTOR:
City of Broomfield

By: William M. Berens
Mayor

Attest: Vicki Mar
City Clerk

Date: January 24, 1995

UNITED STATES OF AMERICA
DEPARTMENT OF ENERGY

By: [signature]

Steven R. Schiesswohl
RFFO Realty Officer
Property & Information
Management Division

Rocky Flats Field Office
P.O. Box 928
Golden, Colorado
80402-0928

Date: 2/1/95

Consented to:

Names	Interest	Signature
NONE		

APPROVED AS TO FORM:

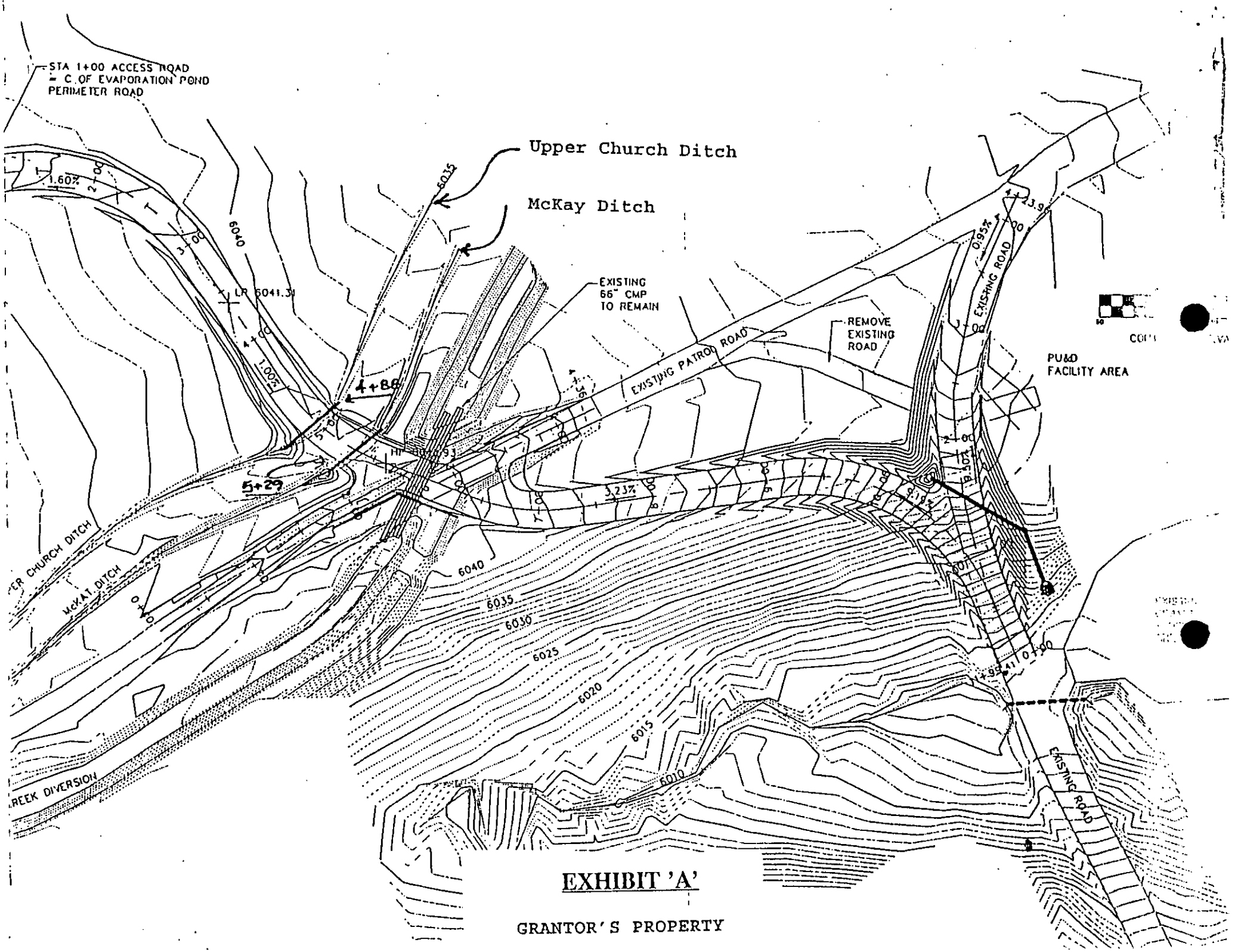
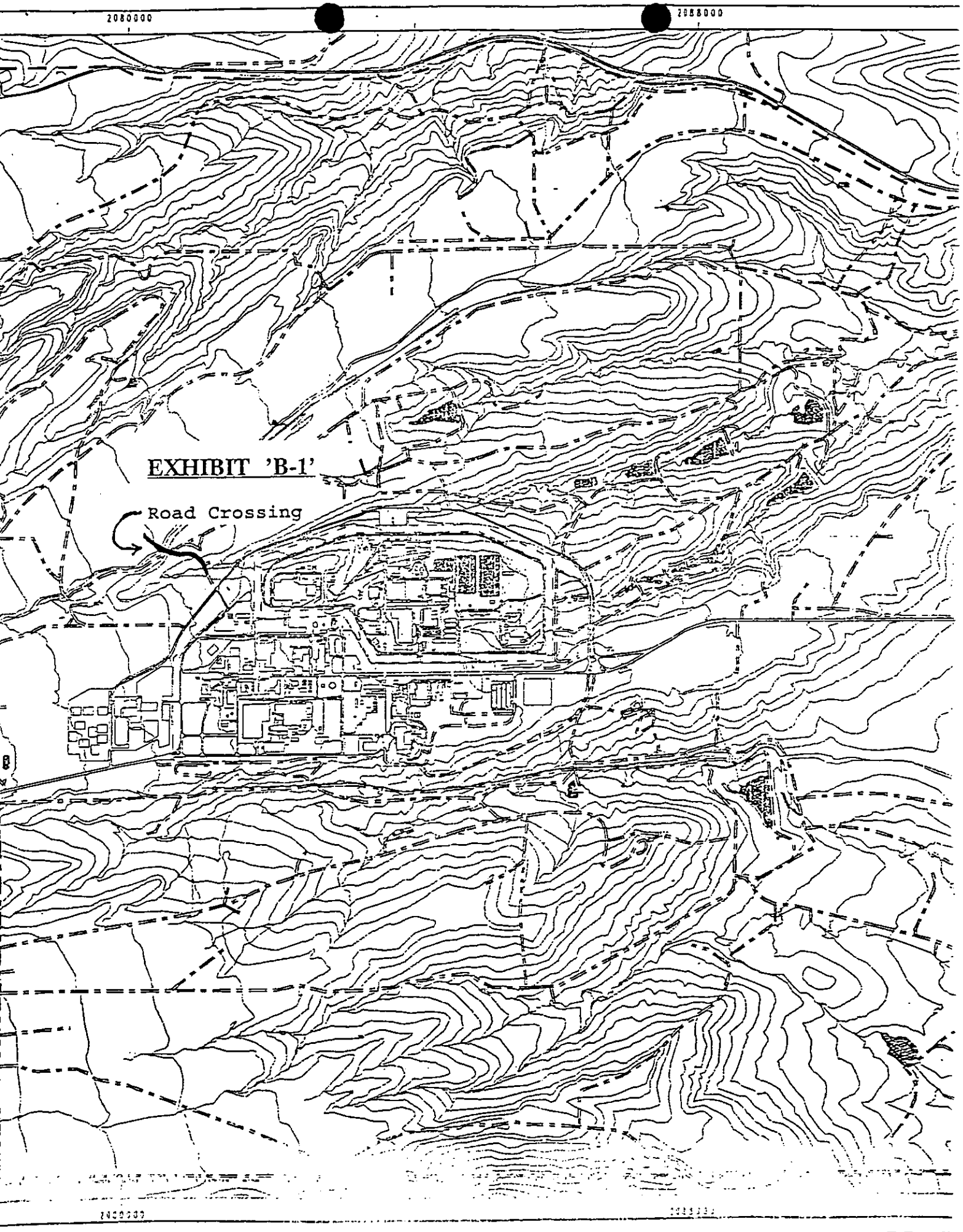
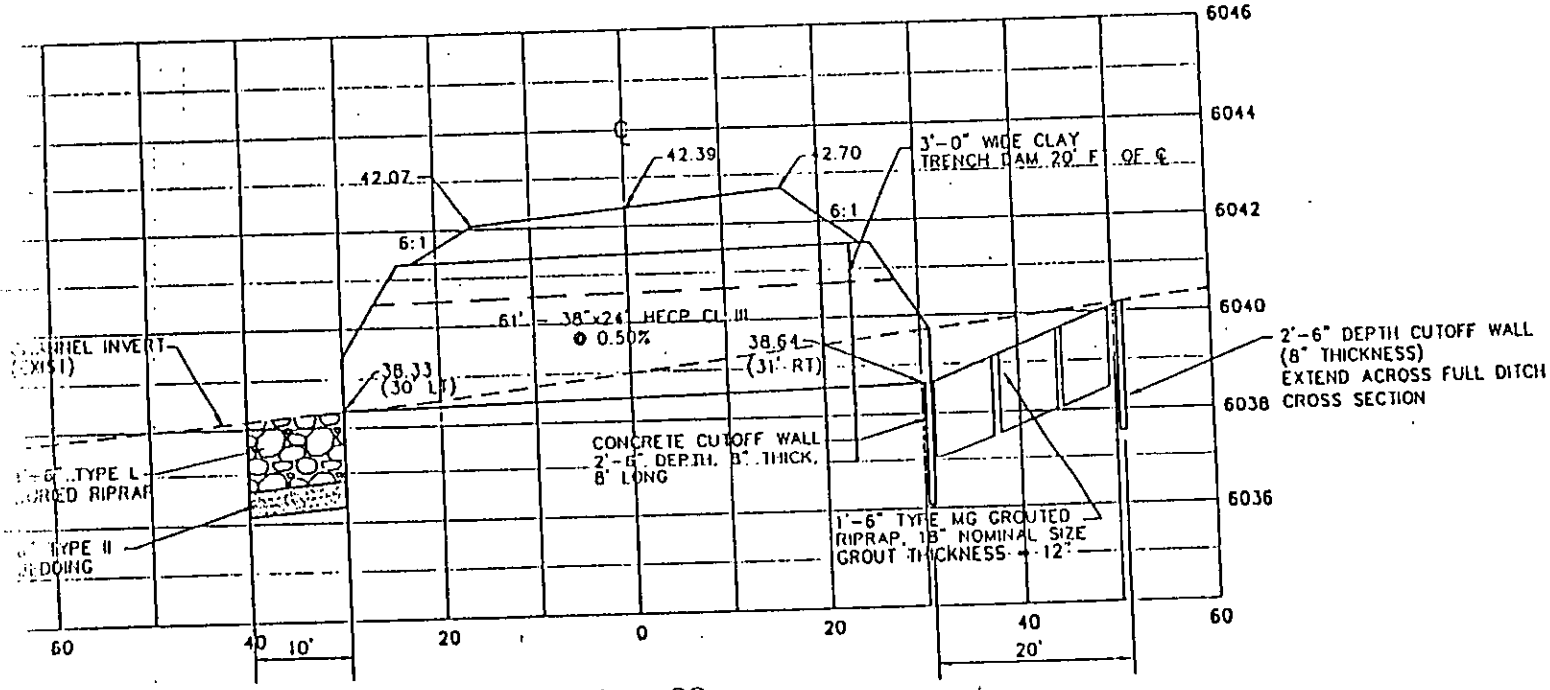


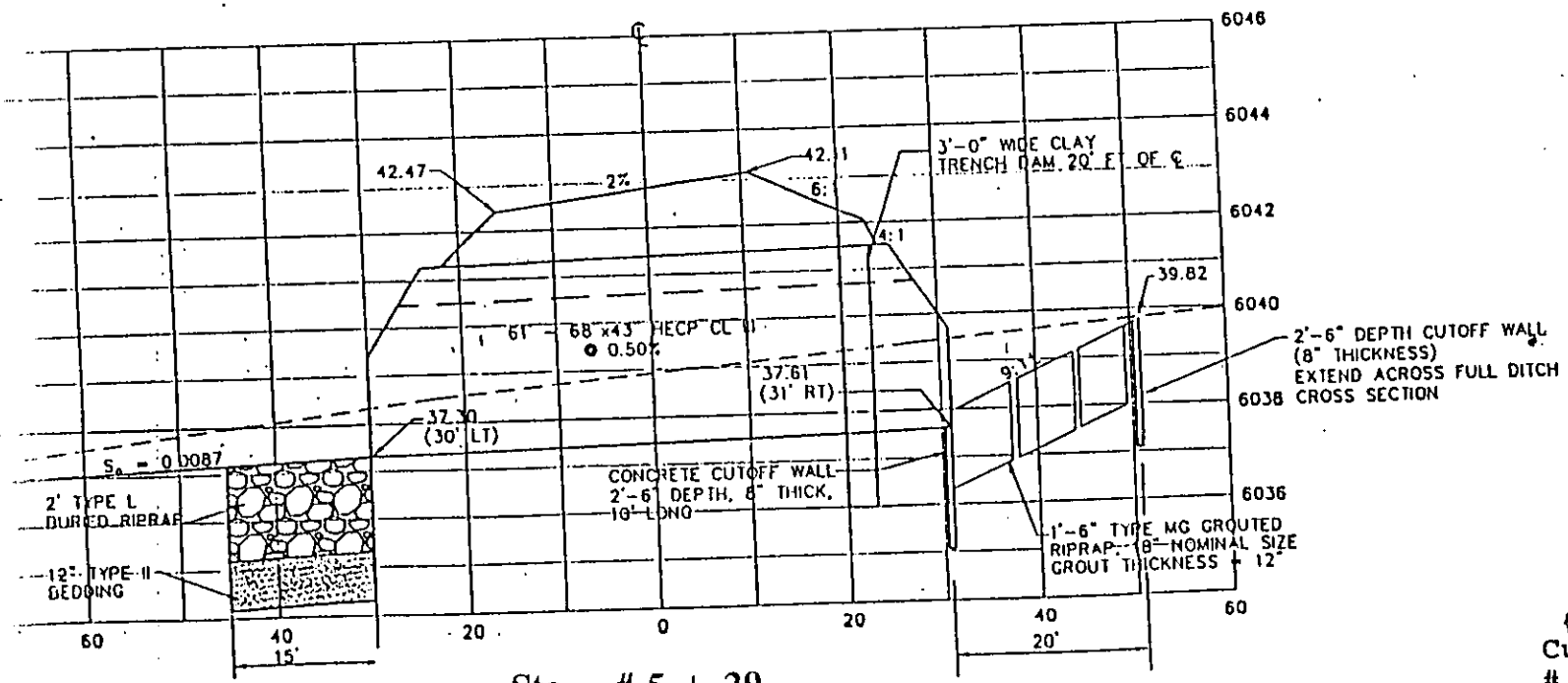
EXHIBIT 'A'

GRANTOR'S PROPERTY


2080000
2085000
EXHIBIT 'B-1'
Road Crossing



Sta. # 4 + 88



Sta. # 5 + 29

T.O.W. E
SEE INTI
DETAIL

EXHIBIT 'B-2'

Culverts at Sta.
4+88 and # 5-29

P SW/JFR/RFP 1A

City of Broomfield

NUMBER SIX GARDEN OFFICE CENTER P.O. BOX 1415 BROOMFIELD, CO 80038-1415 (303) 469-3301

December 15, 1994

Mr. Paul Cote
Acting Director, Waste Water Division
Department of Energy
Rocky Flats Field Office
PO Box 928
Golden, CO 80402-0928

Ms. Carla Sanda
EG&G Rocky Flats, Inc.
Community Relations
PO Box 464, Building T130F
Golden, CO 80402-0464

RE: Rocky Flats Landfill

Dear Mr. Cote and Ms. Sanda:

I am in receipt of your letter dated December 2, 1994 regarding the Rocky Flats Landfill and "future project inquiries". We do not have any "future inquiries" at this time, but we do want a response from the Department of Energy to the City's concerns and questions raised in Mr. Marvin Thurber's letter to Mr. Cote of December 1 and December 2, 1994. We await DOE's prompt response.

Sincerely,

George Di Ciero

George Di Ciero
City Manager

Enclosure

c: Marvin Thurber, Director of Public Works
Board of County Commissioners, County of Jefferson
Glenn Mallory, Colorado Department of Health and Public Environment
Roger Doak, Colorado Department of Health and Public Environment
Karen Helner, Jefferson County Planning Department
Harvey W. Curtis, Esq.
Leonard Rice, Chairman, Leonard Rice Consulting Water Engineers
John Rampe, Department of Energy, Rocky Flats Field Office

GW/JFR/RFP 1A

City of Broomfield

NUMBER SIX GARDEN OFFICE CENTER P.O. BOX 1415 BROOMFIELD, CO 80038-1415 (303) 469-3301

December 15, 1994

Mr. Paul Cote
Acting Director, Waste Water Division
Department of Energy
Rocky Flats Field Office
PO Box 928
Golden, CO 80402-0928

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Enclosure

c: Marvin Thurber, Director of Public Works
Board of County Commissioners, County of Jefferson
Glenn Mallory, Colorado Department of Health and Public Environment
Roger Doak, Colorado Department of Health and Public Environment
Karen Helner, Jefferson County Planning Department
Harvey W. Curtis, Esq.
Leonard Rice, Chairman, Leonard Rice Consulting Water Engineers
John Rampe, Department of Energy, Rocky Flats Field Office

Jefferson County Colorado

BOARD OF COUNTY COMMISSIONERS

RICH FERDINANDSEN
District No. 1
MARJORIE E. CLEMENT
District No. 2
JOHN P. STONE
District No. 3

October 21, 1992

John P. Schneider
Waste Operations Branch
DOE/Rocky Flats
P.O. Box 928
Golden, CO 80402-0928

RE: CD92-2/DOE, Rocky Flats Landfill

Dear Mr. Schneider:

I have reviewed the above referenced proposal and offer the following comments:

Waste Characterization

Please describe in better detail how hazardous wastes will be screened. Will such screening also include identification of hazardous substances by characteristics? If so, please describe details of such screening and testing.

Will wastes with a very low shear strength or a high percentages of liquid be deposited in the landfill?

Please provide a TCLP analysis of the sludge from the RFP treatment plant.

Please provide a current detailed analysis of the leachate from the existing landfill. Please compare the quality of the leachate from the existing landfill with the projected quality of the leachate that will be generated from the proposed landfill. If there are significant differences in quality of the various leachates, please discuss in detail potential impacts to surface and groundwater.

The County is especially concerned about the radiation monitoring program and has requested that the Radiation Control Division of the Colorado Department of Health review the application. Additional question on this portion of the application may follow the review by Colorado Department of Health.

Please describe in detail who currently provides regulatory oversight of radioactive material screening and how such independent monitoring and testing occurs. As you see it, what would be the jurisdictional and regulatory relationship between any such agency and the enforcement provisions of the Certificate of Designation?

Please provide a chemical analysis of the sludge from the water cooling tower.

Site Geology and Hydrogeology

Please characterize in detail the perched groundwater table indicated by data from monitoring well 4586 and TH8. Please describe in detail potential impacts to the proposed landfill. Please provide detailed geologic cross sections.

Please submit a copy of the test results of the falling head borehole hydraulic conductivity test referenced on page 4-15.

Baseline groundwater quality cannot be established from one sample, please submit additional groundwater quality data from onsite and adjacent monitoring wells for both the bedrock and alluvial aquifers.

County policies state that the proposed landfill must not degrade existing surface and groundwater quality. Please discuss in detail potential impacts to existing surface and groundwater quality. Please discuss the projected quality of leachate and attenuation mechanisms of pollutants in both saturated and unsaturated zones and leachate apportionment.

Please discuss the relationship between the alluvial aquifer and adjacent drainages in terms of existing water quality and potential impacts from the proposed landfill.

Facility Design and Configuration

County policies and zoning regulations require that activities from the proposed landfill do not result in accelerated erosion. Please characterize existing sediment loss from the proposed site and the amount of vegetative cover necessary to maintain sediment production levels at or below current rates.

A detailed erosion control plan for all stages of the proposed operation should be submitted.

Please submit the detailed design reports used to evaluate the geotechnical design of the proposed facility.

Detailed drainage plans will need to be submitted for all phases of the operation including but not limited to diversion ditches, drainage swells, culverts, sumps, storm water basins, etc.

Please submit detailed designs for the leachate collection system including material specifications. Will a leachate line clean out port be used? If so, please provide design specifications. Please provide design details of leachate collection pump and lift station.

Please provide details of a settlement monitoring program following placement of both operational and final covers.

How will the leachate head be monitored? At a minimum, the head level should be monitored at the anticipated highest and lowest levels.

Please address comments from the Soil Conservation Service regarding final cover design.

A reclamation performance standard for vegetative cover will need to be established. The post closure liability period will be deemed to start after the standard has been met and settlement monitoring shows that the majority of anticipated settlement has occurred for all cells.

Reclamation plans shall be submitted for any on-site borrow areas.

As stated in comments from the Colorado Department of Health, Solid Waste Division specific details and specifications of the QA/QC program will need to be submitted.

Will groundwater quality samples be filtered?

Are there any surface water monitoring locations in the drainage north of the proposed site? What is the relationship between groundwater flow in the alluvial deposits and surface water flow in this drainage?

Please provide specific details of leachate collection pipe and tank design and monitoring and secondary containment systems.

Please submit final reports for all studies referenced in the application as "in-progress".

Please explain in better detail the flow diagram for leachate collection.

Please explain in detail the "on-site committee exemption".

Please specify maximum building heights and square footage.

Submittal of the material requested above may result in additional questions or concerns which will need to be discussed.

Sincerely,

Karen A. Hellner

Karen A. Hellner
Jefferson County Planning Department

KAH/ljv

COLORADO
DEPARTMENT
OF HEALTH

4210 East 11th Avenue
Denver, Colorado 80220-3716
Phone (303) 320-8333

Telefax Numbers:
Main Building/Denver
(303) 322-9076

Ptarmigan Place/Denver
(303) 320-1529

First National Bank Building/Denver
(303) 355-6559

Grand Junction Office
(303) 248-7198

Pueblo Office
(719) 543-8441

ROY ROMER
Governor

JOEL KOHN
Interim Executive Director

SOLID WASTE DISPOSAL SITES AND FACILITIES CHECKLIST

SANITARY LANDFILL

FACILITY NAME Rocky Flats Landfill - New COUNTY Jefferson

Unincorporated X Incorporated _____ City N/A

GENERAL DATA (4.3) Page

OPERATOR (4.7.1) .....

Name.....: U.S. Department of Energy / Plant Management (EG&G)
Attention: Assistant Manager - Environmental Management
Address..: Rocky Flats office
PO Box 928
City: Golden State Co Zip 80402
Phone.....(303) 966 - 6061

? Qualifications _____ 6-19

Person responsible for correcting non-compliance 6-18

Name..... Assistant Manager - Environmental Management
Address... Rocky Flats office
US Department of Energy
City Golden State CO Zip 80402

Phone.....(303) 966 - 6061

SITE DESCRIPTION (4.3.1)

Mailing Address
Name.....: U.S. Department of Energy
Attention: Rocky Flats office
Address..: PO Box 928

City Golden State Colorado Zip 80402

Phone.....(303) 966 - 5924

Location.....: Twn 2S Rng 70-W Section 10 NE/4 1-3

SW - 1
8/3/91

printed on recycled paper

Area (4.3.2) Total site 49 ac. Disposal area 22 ac. 1-4

Hours of operation (4.7.2) 6-17

7:45 – 4:00 PM M→F

Personal- title, classification (4.7.4) 6-18

Landfill Supervisor (1)
Heavy Equipment Operator (1)
Equipment operator (1)
Laborers (2)
Waste Technicians (2)
Radiation Protection Tech (1)

Attended - capable of collecting a fee (yes/no) .....

Equipment (4.7.5) .....

Capable of placing in most dense volume (2.1.4) (yes/no)

Water and sanitary facilities (yes/no)

Waste streams (4.3.3) .....

Commercial (1.2.18) X
Community (1.2.18)
Industrial (1.2.35) X
Asbestos (1.2.10) Friable & Non Friable
Inert Material (1.2.36)
Construction Demolition Yes
Special (1.2.71) Medical Waste
Sludge (2.2.11) water treatment - 6-2
Quality determination 6-1

Other

Volume (4.7.3)

Total 70-120 CY/~~YEAR~~ day.....

Verification of waste (yes/no) .....

Hazardous Waste Exclusion Plan (2.2.9) (yes/no) .....

Service areas (4.3.4) Rocky Flats Plant

Access to site Plant Roads

GEOLOGICAL DATA (4.4)

Surface unconsolated (alluvium) Data (4.4.1) 4.0
Name Rocky Flats Alluvium
Type med to v.D clayey & clay lenses
Thickness 63-93

Consolidated Formation Data (4.4.2) 4.3
Name Arapahoe Formation
Type Sandy Claystone
Thickness _____ ft., Depth to Bedrock _____ ft.

Geological hazards (4.2.3, 4.4.4) 4.25

Structure (4.4.3)
Regional strike Northeast Dip _____

Geological structures _____

Confining geological layers _____

SITE STANDARDS (4.1)

Topography (4.1.1)

	MAXIMUM	MINIMUM	
Elevation.....	6075	6040	3-1
Grades/Slopes.....			

Precipitation 15.16 inches 3.2

Floodplain (4.1.2, 4.5.5)
Located in 100 year flood plain (yes/no) .....

Aquifer recharge area (4.1.3) (yes/no) 4.7
If yes source _____

Groundwater travel calculation (4.1.4) 4-21

Distance between fill and ground-water
(Upper most aquifer, perched water, water table)
(min 15 ft.) (4.7.7) _____ ft.

Closest downgradient well (Discharge) ..... 3 miles ~~ft.~~ 4-18

Aquifer permeability ..... 3×10^{-5} to 3×10^{-3} cm./sec.

Travel time ..... 80 - 8000 years

Facility life ..... _____ years

Method of groundwater protection (4.2.1) 5-5

2' Clay, 40 Mil HDPE, Geonet, 60 mil HDPE, 1 ft Sand
Geotextile, 1 ft Common fill

Waste isolation (4.1.5)
Main factors _____

Putrescible wastes (2.2.7) .....

Airport restriction Turbojet 10,000' (yes/no)
Piston type 5,000' (yes/no)

HYDROLOGICAL DATA (4.5)

Surface water features within 2 miles (4.5.1) 3-1
(Include springs)

3 intermittent streams, Rock Creek, Walnut Creek Wonder Creek
Interceptor ditches
Springs
Ponds, wetlands

Surface water potential site impact evaluation (4.5.6) (yes/no)

Domestic Wells within 2 miles (yes/no) 4-18

Groundwater potential site impact evaluation (yes/no)_

Groundwater data (4.1.6, 4.5.2) .....

Aquifer Name	Depth (ft.)	Thickness (ft.)	Use	Page

Hydrological data (4.5.2)

	Aquifer	
Name	Rocky Flats Alluvium	Arapahoe
Unconfined/confined	Unconfined	Confined
Hydraulic conductivity (cm./sec)	$4 \times 10^{-8} - 1 \times 10^{-2}$ (5×10^{-5} pet tool)	$1.0 \times 10^{-7} - 5.0 \times 10^{-7}$
Hydraulic gradient (ft./ft.)	.009 - .013	.2 - .5 ft/ft
Seepage velocity (ft/day)		
Specific yield (Percent %)	0.15 - .30	
Specific retention (Percent %)	10 - 15 %	
Porosity, (Percent %)	10 - 30 %	
Flow direction	North East	East
Permeability, (darcys)		
Water table depth (feet)		
Transmissibility (cm^2/sec)		
Storativity, S		

Water balance .....

HELP Model (yes/no)

ENGINEERING DESIGN STANDARDS (4.2, 4.6)

LINER (4.6.2)

Type Composit

Thickness ft.

Constituents 2' Clay / 40 mil HDPE / Geonet / 60 mil HDPE

Compaction Density (min 95%) YES

Atteberg Limits

Design permeability (min 1×10^{-7} cen./sec.) YES

Leachate collection 1 ft Sand + 4" Collection Pipes

Construction QA/QC Plan (yes/no) 5.1.5.2 Page

Test pad (yes/no) 5.1.2.2 Page 5-7

Amount / Source 10,000 CY / Cell x 4 Cells = 40,000 CY
Borrow Area

Construction quality assurance, PE Certification (yes/no)

Construction water (4.2.7) ..... _____
Source _____

Location / Cut Map (4.6.3 a) _____

Location / Fill Map (4.6.3 b) _____

Cell minimum slope (4.7.7) 3H-1V

Type cut, Cut and fill Fig 5.3 Trench N/A

Cell specifications (4.7.7) _____

Number of cells or phases 8 Phases / (4 Cells 2 Modulo/cell)

Size of cell or phase _____

Location of each phase or cell (4.6.3, j) _____

Runon/runoff Control (2.1.4, 4.2.2)

Structure type _____ _____

Diversion design _____ _____

Location map (4.6.3, c) (yes/no) _____

Maximum storm event design (yes/no) _____
Diagrams (4.6.3 c,d) ..... _____
Conceptual plan for surface water
contamination (yes/no) (4.7.13) ..... _____
Agencies notified (yes/no)
Within 5 working days (yes/no)
Remediation plan (yes/no)
Within 30 days (yes/no)
Remediation schedule (yes/no)

Cover material (2.1.1, 4.2.5, 4.6.1, 4.7.8) ..... Foam Also 613

	Daily		Intermediate	
Thickness.....	6	min 6"		min 12"
Frequency.....	Daily			30 days
Amount needed....	120,-160,000 Total	CY		CY
Location.....	Site			

Fencing (4.7.9) and access control (2.2.1) ..... _____

Type _____
Height _____
Materials _____
Gates & signs _____
Public assess control (2.1.5) (yes/no)
Unauthorized vehicle control (2.1.5) (yes/no)
Other types of barriers _____
Location map (4.6.3,i) _____

Monitoring well design (wet/dry wells) (4.2.4)

Accordance w/ Water Well and Pump Installation
Contractors Act (2.2.4)(yes/no) ..... _____
Diagram of well layout (yes/no) (4.6.4)..... _____
Screened interval, material used (4.6.4)..... _____
Tubing size waiver (yes/no)
Modifications _____
_____

Location map (4.6.3,h) _____ _____

Ground-water monitoring (2.2.3, 4.5.7)

Frequency (2.2.5) _____ _____

Parameters (2.2.3 a, 4.5.7) _____ _____
Minimum groundwater parameters (yes/no)

Testing according to SW-846 (yes/no)

Statistical procedure
Cochran's approximation to the benrens-fisher student's t-test method (2.2.3, c) (yes/no)

Other method _____

Pre landfilling groundwater quality (4.5.7) ..... _____

Conceptional plan for negative incident (yes/no) (4.7.13)

Agencies notification
Within 5 working days (yes/no)

Remediation plan (yes/no)
Within 30 days (yes/no)
Remediation schedule (yes/no)

Explosive gas monitoring (2.2.6, 2.2.5, 2.4.4)

Frequency _____

Conceptional plan for negative incident (yes/no) (4.7.13)
Site boundary - 5 % by volume (LEL) (2.2.6) (yes/no)
Structures - 1 % by volume (2.2.6) (yes/no)

Agencies notified (yes/no)
Within 5 working days (yes/no)

Remediation plan (yes/no)
Within 30 days (yes/no)

Remediation schedule (yes/no)

OPERATIONAL DATA (4.7)

Records (2.2.13, 4.7.6) L-23
Waste volumes.....(✓)
Water monitoring.....(✓)
Gas monitoring.....(✓)
Approved operational plan .....(✓)
Construction as-built.....(✓)
Operation variances.....(✓)
Training program.....(✓)
Special waste program.....( )
Site safety plan.....( )

Emergency telephone numbers
Police _____
Hospital _____
Fire department (4.7.11) _____
Control plan _____
Water source _____
Soil stockpile _____

Conceptional Plans (4.7.13, 4.7.10)

Windblown debris plan (4.7.12) (yes/no) ..... _____

Wind characteristics _____

Wind Monitoring Method _____
On-site _____
Off-site _____
National Weather Service Office Location
_____

Pick-up frequency _____

On-site (yes/no)

Off-site (yes/no)

High wind plan (yes/no)

Temporary Fencing (yes/no)

Working face size reduction _____ (yes/no)

Closing criteria Sustained 40 MPH _____ (yes/no)
Gusts 55 MPH _____ (yes/no)

Pricing policy (yes/no)

Nuisance Conditions (4.7.10)

Dust control plan_____

Water source (4.7.14) _____

Volume needed (4.7.14) _____

Odor control plan (2.1.1) _____

Vector control plan (2.1.4) _____

Burning control plan (2.1.4) _____

CLOSURE/POST CLOSURE DATA (2.4, 4.8)

Final surface contours map (4.8.3) .....
Finial grades (yes/no) _____

Final cover (4.2.6) .....

Will 2 feet be adequate (yes/no)

Cap design _____
Thickness _____
Compacted clay _____
Permeability _____

Other materials _____

Uncompacted unspecified soil _____

Revegetation plan _____

_____
SCS approved (yes/no)

Drainage _____

Side slope (max 4:1) _____

Erosion control (yes/no)

Isolation of waste (yes/no)

Construction QA/QC plan

Notification

Division and County Commissioners in writing 60 days prior to closure (2.4.1) (yes/no) _____

General public by placing a sign of satiable size at the entrance 60 days prior to closing (2.4.2) (yes/no) _____

Prevention of further and unauthorized site usage plan, Fencing Gate (2.4.3) (yes/no) _____

Maintenance and Monitoring plan (4.8.1, 4.8.2).... _____

Inspections frequency (4.8.2) _____

Ponding (2.1.4) (yes/no)
Erosion (yes/no)
Runon / Runoff control (2.4.5, 4.8.1) (yes/no)
Diversion structures (4.8.1) (yes/no)

Agencies notified (yes/no)
Within 5 working days (yes/no)

Remediation plan (yes/no)
Within 30 days (yes/no)

Nuisance conditions (4.8.1) (yes/no)
Odors, windblown debris, insects, rodents smoke

Explosive gas monitoring (2.4.4, 4.8.2) (yes/no) _____

Ground-water monitoring (2.4.5, 4.8.2) (yes/no) _____

Blends in with surrounding (2.1.4) (yes/no) _____

Good esthetics appearance upon being filled (2.1.4) (yes/no) _____

Maintenance period 10 years (yes/no) _____

SW/JER/RFP 1A

City of Broomfield

NUMBER SIX GARDEN OFFICE CENTER P.O. BOX 1415 BROOMFIELD, CO 80038-1415 (303) 469-3301

December 2, 1994

Paul Cote, Acting Director - Waste Water Division
Department of Energy
Rocky Flats Field Office
P.O. Box 928
Golden, CO 80402-0928

RE: Rocky Flats Landfill

Dear Mr. Cote:

This letter is to follow up on my letter to you yesterday.

On November 30, 1994, DOE furnished us with new evaporation pond design and drainage swale modification calculations. We have not yet reviewed the drainage swale calculations. A preliminary review of the evaporation pond calculations still shows that the evaporation pond will not be able to evaporate all the rainfall runoff to be discharged into it. In fact, the excess unevaporated water volume shown in DOE's new calculations has now doubled from that shown in the November 14th calculations. Again, supplemental methods of runoff disposal are proposed which include sprayers to increase evaporation, in addition to transport of excess water to the sanitary treatment plant. The specifics concerning these supplemental methods have not been provided.

The new calculations do not address our question, previously expressed to Kevin McBrien, concerning DOE's method of calculating runoff volume. DOE's method of calculating runoff assumes that all rainfall must travel across the site to reach the evaporation pond. Based on this assumption, DOE has substantially reduced the actual precipitation amounts to arrive at its runoff volume because it is assumed that runoff will percolate into the ground and settle into depressions, and for many rainfall events, no runoff will actually reach the evaporation pond. These assumptions, however, fail to account for the fact that much of the rainfall falls directly into the impervious evaporation pond, which accounts for a substantial portion of the area contributing to the pond runoff. This rainfall will not be "lost" in its travel to the pond.

The City is reemphasizing its request for your assistance in obtaining answers to our questions concerning the evaporation pond, information on the leachate system design showing that it can operate and store the rainfall falling into the cell no. 1 in addition to leachate, and in obtaining crossing permits. The information provided shows that the drainage plan included in the site approval will fail.

Sincerely,

Marvin Thurber

Marvin Thurber
Director of Public Works

c: George Di Ciero, City Manager
Board of County Commissioners, County of Jefferson
Glenn Mallory, Colorado Department of Health and Public Environment
Roger Doak, Colorado Department of Health and Public Environment
Karen Helner, Jefferson County Planning Department
Harvey W. Curtis, Esq.
Leonard Rice, Chairman, Leonard Rice Consulting Water Engineers
John Rampe, Department of Energy, Rocky Flats Office

SW/JER/RFP 1A

City of Broomfield

NUMBER SIX GARDEN OFFICE CENTER P.O. BOX 1415 BROOMFIELD, CO 80038-1415 (303) 469-3301

DEC -5 94

December 1, 1994

Paul Cote, Acting Director - Waste Water Division
Department of Energy
Rocky Flats Field Office
P.O. Box 928
Golden, CO 80402-0928

RE: Rocky Flats Landfill

Dear Mr. Cote:

After the approval by the Board of County Commissioners of Jefferson County of the Certificate of Designation for the new sanitary landfill at Rocky Flats on September 27, 1994, issues that were left outstanding between the Department of Energy (DOE) and the City of Broomfield were as follows:

1. The City of Broomfield had not been furnished with the engineering information to show that the drainage plan was adequate.

2. At the conclusion of that meeting, the DOE indicated that it would be submitting simple crossing permit applications for the Upper Church Ditch and the McKay Ditch.

3. We stated that the City of Broomfield was still asking for a contingency fund but that no agreement had been reached and the County had not required the DOE to set up such a fund.

Following that meeting, the following has occurred:

1. The simple crossing permit applications have never been submitted by the DOE.

2. There has been no further discussion by DOE with Broomfield concerning the proposed contingency fund.

3. The major effort since the September 27, 1994 approval has been dealing with the evaporation pond and drainage swales for the Rocky Flats proposed landfill site. As proposed by DOE on that day, the City has been in repeated contact with Richard Tocher of Woodward Clyde Consultants, Dorthea Hoyt of EG&G, Don Mittlestadt of EG&G, and Kevin McBrien of Merrick & Company. A series of meetings have been held to address our questions but the issues have yet to be resolved, as discussed in more detail below. The City has been frustrated in getting at the answers it needs.

The City's investigation and review of drawings and calculations, dated August, 1994, and provided by DOE, indicated that: (1) the drainage swales surrounding the landfill site would discharge runoff from land areas to the west and the landfill cell no. 1 into the Upper Church Ditch and the McKay Ditch; and, (2) the evaporation pond as proposed was too small to adequately evaporate the rainfall runoff from the landfill site. The area contributing rainfall runoff of the evaporation pond, as indicated in DOE's calculations, included runoff from landfill cell no. 1 and adjacent service areas, and rainwater falling directly into the evaporation pond itself.

The City and its consultants held a meeting on this issue on October 10, 1994, which was attended by Dorthea Hoyt of EG&G, Steve Rogers of Woodward Clyde Consultants, Don Mittlestadt of EG&G, David Lam of DOE, and Kevin McBrien of Merrick and Company. At the meeting, DOE agreed to revise the drainage swale design to direct discharge to the north of cell no. 1 and away from the Upper Church Ditch and McKay Ditch. At that time, the City also pointed out that based on DOE's own calculations, the annual rainfall runoff for the landfill site draining into the evaporation pond was 6.6 acre-feet, while the annual amount evaporated from the pond was only 2.8 acre-feet. In other words, water would accumulate in the pond and eventually overflow it. Kevin McBrien promised to provide us with the new engineering on this issue.

A follow up meeting was held at the City of Broomfield which was attended by the City and its consultants, in addition to Don Mittlestadt of EG&G, Dorthea Hoyt of EG&G, and Kevin McBrien of Merrick and Company. At that time, Kevin McBrien presented some new "preliminary" calculations, as he referred to them. The calculations based on monthly precipitation and evaporation volumes for a five year period indicated that the evaporation pond would, indeed, not be able to evaporate all of the rainfall runoff from the landfill site. Mr. McBrien proposed that some "supplemental" runoff disposal and evaporation means would be required to get rid of the excess volume. This included directing rainwater falling onto the cell into the landfill leachate system, in addition to a possible system of spray mechanisms to increase evaporation. This supplemental disposal has not yet to be specifically defined. Further, Kevin McBrien indicated that in his opinion almost all of the rainfall falling onto cell no. 1 would never be collected as runoff and pumped to the evaporation pond, but would instead be absorbed into the sloping banks (3:1) and the floor of cell no. 1. Due to the amount of water, in addition to the landfill leachate, that is now to be stored in cell no. 1, the City at the conclusion of that meeting asked for the following questions to be answered:

1. Does the engineering for the leachate system show that the rainfall falling onto the landfill can be absorbed into the banks and the floor of cell no. 1? and adequately contained and disposed of? Dorthea Hoyt stated she would have Richard Tolker contact us on this point. However, we have yet to hear anything. The contact was expected to occur by Friday, November 18, 1994. Ms. Hoyt has since informed us of a delay to approximately the end of November, though she could not commit to a date.

2. The City of Broomfield asked if Kevin McBrien would give us an opinion that the evaporation pond was adequately designed with his signature and engineering seal affixed.

3. Dorthea Hoyt promised that there would be new runoff calculation replacing the August,

1994, draft calculations. We would like to review these.

4. Has the drainage swale design plan been changed as promised to direct runoff away from the McKay Ditch and Upper Church Ditch?

Since that time, we have been furnished nothing in writing from EG&G, Woodward, Clyde Consultants, or Merrick and Company. Stephanie J. Nietzel, attorney for the City of Broomfield, has been in contact with Kevin McBrien on several occasions requesting information promised at that meeting. In her follow up review of his calculation, she has informed Kevin McBrien that it appears questionable, based on his own precipitation and evaporation rates, that the evaporation pond is sufficiently sized to evaporate even the rainfall falling only onto the pond itself, let alone accommodate runoff from the surrounding service areas.

The bottom line is that the City has been frustrated in getting the information promised on the evaporation pond design, the leachate system design showing that it can operate and store a substantial portion of the rainfall falling into cell no. 1 in addition to leachate, and in obtaining the crossing permits.

Your assistance in this matter would be much appreciated.

Sincerely,

Marvin D. Thurber

Marvin Thurber
Director of Public Works

c: Jefferson County Commissioners
Karen Helner, Jefferson County Planning Department
Glenn Mallory, Colorado Department of Health and Public Environment
Roger Doak, Colorado Department of Health and Public Environment
Harvey W. Curtis, Esq.
Leonard Rice, Chairman, Leonard Rice Consulting Water Engineers
George Di Ciero, City Manager
John Rampe, Deparment of Energy, Rocky Flats Office

SW/JFR/RF[illegible]/IA

STATE OF COLORADO

COLORADO DEPARTMENT OF HEALTH
Dedicated to protecting and improving the health and environment of the people of Colorado

4300 Cherry Creek Dr. S.
Denver, Colorado 80222-1530
Phone (303) 692-2000

Laboratory Building
4210 E. 11th Avenue
Denver, Colorado 80220-3716
(303) 691-4700

Roy Romer
Governor

Patricia A. Nolan, MD, MPH
Executive Director

April 13, 1993

Rich Schassburger
Department of Energy
Rocky Flats Office
P.O. Box 928
Golden, CO 80402-0928

RE: Future RFP solid waste disposal and closure of the Present Landfill

Dear Mr. Schassburger,

As you are aware, the Interagency Agreement (IAG), requires that the Present Landfill be closed in accordance with the IAG and its schedules, and applicable regulations. IAG schedules specify milestone dates which are legally enforceable. Operable Unit 7 (OU 7), as established by the IAG, includes the Present Landfill and the Landfill Pond. Phase I of the RCRA Facilities Investigation/Remedial Investigation (RFI/RI) for OU 7 is currently being implemented. Field sampling is being conducted in support of the Phase I RFI/RI report which is due on October 12, 1993. Subsequently, an Interim Measure/Interim Remedial Action (IM/IRA) will be implemented resulting in construction scheduled to begin on July 17, 1997. This IM/IRA construction will entail the final closure of the landfill.

Ongoing operations such as waste disposal and spray evaporation are interfering with the efforts to effectively implement the requirements of the IAG. Once IM/IRA construction begins, further waste operations will no longer be allowed. The Colorado Department of Health, Hazardous Materials and Waste Management Division (the Division) wants make DOE aware that the IAG schedules will be enforced. To that end, the Division strongly recommends that DOE aggressively pursue alternate solid waste disposal or the construction of a new onsite landfill prior to July, 1997. This includes requesting an appropriate budget allocation for these activities.

If you have any questions concerning these issues, please contact Carl Spreng of the Division at 692-3358.

Sincerely,

Gary W. Baughman
Chief, Facilities Section
Hazardous Waste Control Program

cc: Daniel S. Miller, AGO
Jackie Berardini, CDH-OE
Martin Hestmark, EPA
Mike Karol, DOE
Bob Birk, DOE
Tim O'Roarke, EG&G

STATE OF COLORADO

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(303) 691-4700

Roy Romer
Governor

Patricia A. Nolan, MD, MPH
Executive Director.

March 30, 1993

David Kidd
EG&G Rocky Flats, Inc.
Waste Regulatory Programs, T130C
P.O. Box 464
Golden, Colorado 80402-0464

RE: Disposal of Treated Infectious Waste
Rocky Flats Plant
Jefferson County, Colorado

Dear Mr. Kidd:

Glenn Mallory has ask me to respond to your fax of March 8, 1993. The fax was reviewed to determine its compliance with the Solid Waste Disposal Sites and Facilities Act, Title 30, Article 20, Part 1 as amended, and with the regulations promulgated thereunder 6 CCR 1007-2 (the Regulations).

You conclude the existing on-site landfill at Rocky Flats is exempt from a certificate of designation for disposal of treated infectious waste per Section 13.2.1 of the Regulations. Section 13.2.1 does not apply to a government agency who disposes of their own waste on their own property. Section 1.4.1 of the Regulations states "Those facilities at which any person, **other than a governmental unit**, disposes of his own solid wastes on his own property..." are exempted from obtaining a certificate of designation. A certificate of designation would be required for a government agency to dispose of their own waste on their own property.

Essentially the existing landfill at Rocky Flats is "grandfathered" and operates without a certificate of designation through agreements with the state and Jefferson County. Treated infectious waste may be disposed of at the current landfill, as long as written procedures are established per House Bill 1328 (Article 15, Title 25, Part 4).

If Rocky Flats intends to dispose of medical waste at its proposed solid waste landfill, then this waste stream must be clearly defined in the application for certificate of designation.

If you have any questions regarding this matter please contact me at 303-692-3437.

Sincerely,

Roger Doak
Geologist
Solid Waste Section
Hazardous Materials and Waste Management Division

cc: P. Saunders, Jefferson County Health Department
M. Loye, Jefferson County Planning Department
C. Spreng, HMWMD

file: SW/JFR/~~ARC~~ RFP

1A

Department of Energy

ROCKY FLATS OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

NOV 10 1992

92-DOE-13197

Ms. Jennifer Back
Colorado Department of Health
Solid Waste and Incident Management
Hazardous Materials and Waste Management Division
4300 Cherry Creek Drive South
Denver, Colorado 80222-1530

Dear Ms. Back:

Enclosed is a check in the amount of $10,000.00 for payment of the Colorado Department of Health invoice, dated September 22, 1992, for the review of the Certificate of Designation Application for the Rocky Flats Plant proposed new Solid Waste Disposal Facility.

If you have any questions, please call John Schneider of my staff at 966-5924.

Sincerely,

Thomas E. Lukow, Director
Waste Management and Environment Division

Enclosure

cc w/o Enclosure:
P. Harley, CDH
P. Poulsen, CDH
K. Hellner, Jefferson County Planning Department
P. Edrich, EG&G
A. Schubert, EG&G
J. Wienand, WOB, RFO
J. Schneider, WOB, RFO

NOV 19 1992

Jefferson County Colorado

BOARD OF COUNTY COMMISSIONERS

RICH FERDINANDSEN
District No. 1
MARJORIE E. CLEMENT
District No. 2
JOHN P. STONE
District No. 3

October 12, 1992

Robert M. Quillin, Director
Radiation Control Division
Colorado Department of Health
4300 Cherry Creek Drive South
Denver, CO 80222-1530

RE: Proposed Sanitary Landfill at the Rocky Flats Facility

Dear Mr. Quillin:

Jefferson County, in conjunction with the Colorado Department of Health Solid Waste Division, is currently reviewing an application for a sanitary landfill. The proposal contains a section on screening radioactive materials so that they are not deposited in the landfill.

In talking with Poul Poulsen of the Solid Waste Division, it was mentioned that your division might be able to assist in review of the screening procedure. A copy of the proposed screening procedure is enclosed for your review. If you desire to review the entire application, please contact either Poul Poulsen or myself at 271-5834.

Your assistance in this matter will be appreciated.

Sincerely,

Karen A. Hellner

Karen A. Hellner
Jefferson County Planning Department

KAH/ljv

OCT 14 1992

Enclosure

cc: Kevin Nichols, Jefferson County Planning Department
Poul Poulsen, Colorado Department of Health Solid Waste Division
Paul Saunders, Jefferson County Health Department
John P. Schneider, Department of Energy Waste Operations Branch

Section 6.2. The procedures for handling asbestos waste are described in Section 6.3, and for biomedical waste in Section 6.4. Site management and nuisance control are described in Sections 6.5 and 6.6, respectively.

6.1 SCREENING AND ELIMINATION OF PROHIBITED MATERIALS

All hazardous and radioactive wastes are prohibited from disposal at the proposed landfill. For the purposes of this application, waste with no radioactivity is defined as waste that successfully passes the radiation screening procedures in Section 6.0. There is a possibility that human error or equipment malfunctions could result in disposal of radioactive waste in the landfill. However, it is expected that the risk of error will be small and would pose no greater hazard than is found at other sanitary landfills. Also, the only sludges that are acceptable are untreated sludges from the RFP water treatment plant and the non-metal sludges from the proposed leachate treatment system. Biomedical waste will only be accepted if it is accompanied by documentation showing the waste has been treated in accordance with 6 CCR 1007-2, Section 13.4 (6 CCR 1007-2, Section 13.8.3). A list of specifically prohibited materials is in Table 6-1. This list will be updated as necessary to conform with regulatory changes. A list of materials prohibited from disposal in the landfill will be prominently displayed at the entrance to the landfill site.

The procedures to screen incoming waste to ensure the elimination of unacceptable materials include the following:

1. Screening at the point of generation

Hazardous wastes are prohibited from disposal at the on-site sanitary landfill. RFP personnel who are generators of solid waste will be provided with RCRA training which addresses identification of characteristic and other hazardous wastes. These personnel are also provided with the list of prohibited materials (Table 6-1). These generators take appropriate action to separate acceptable sanitary landfill solid waste from prohibited wastes at the point of generation. Acceptable wastes are either placed in

TABLE 6-1

PROHIBITED WASTE MATERIALS

- Sanitary Sewage Waste (raw sludge from wastewater treatment)
- Water treatment sludges with radioactivity levels exceeding 40 picocuries per gram of dry sludge, and/or containing free liquids, and/or with a pH lower than 6.0
- Pressurized vessels (unvented)
- Paint cans containing lead paint (wet or dry)
- Oil containers containing used oil (not including drums)
- Batteries (nickel-cadmium, lead, mercury, or rechargeable, etc.)
- Automotive batteries
- Metals: copper, steel, aluminum, stainless steel, etc.
- Vessels containing any free liquids
- Product containers containing any free liquids (solvents, acids, etc.)
- Untreated medical equipment and medical waste
- Oil-filled electrical transformers
- Containers having a PCB label
- Containers having hazardous waste labels
- Containers having warning labels (DOT labels such as BE, Poison, etc.)
- Containers having radioactive labels
- Containers containing oil-dry contaminated with petroleum products
- Containers with a significant amount of vermiculite (oil-dry, aqua-set, etc.)
- Tires (non-shredded)
- Bulk or noncontainerized liquids
- Empty containers with an NFPA code of 2 or greater (unless cleaned and defaced)
- Hazardous wastes, as defined in 6 CCR 1007-2, Section 1.2.29
- Acutely hazardous wastes, as defined in 40 CFR 261.33
- Metal sludge (i.e., sludge which fails the TCLP for one or more metals)
- PCB-containing wastes
- Radioactive wastes
- Petroleum-contaminated materials with TPH concentrations above 100 ppm
- Septic tank pumpings or chemical toilet waste
- Wastes from Radiologically-Controlled Areas

dumpsters or, for larger quantities, arrangements are made with RFP waste transporters to deliver the solid waste to the landfill. Prohibited solid hazardous wastes are collected in labeled containers and are transported to hazardous waste storage areas at the plant.

Treatment plant operators are specifically advised as to the proper disposition of their plant's waste sludge. Operators of the sanitary treatment plant do not dispose of the sanitary treatment sludge at the existing on-site landfill and will not dispose of any at the proposed landfill. Sludge from the RFP water treatment plant may be disposed at the landfill provided the sludge:

- radioactivity does not exceed 40 picocuries per gram of dry sludge, in accordance with 6 CCR 1007-2, Section 12.2.1,
- contains no free liquids as determined by the "Paint Filter Liquids Test," in accordance with 6 CCR 1007-2, Section 12.3.1,
- pH is no lower than 6.0, in accordance with 6 CCR 1007-2, Section 12.3.2, and
- permission is received from appropriate authority per 6 CCR 1007-2.

The sludges generated from the proposed leachate treatment system (biological and metal sludges) will be kept separate from each other. The operator will ensure that the metal sludge is properly disposed off-site.

Biomedical waste will be labeled, packaged, and handled in accordance with 6 CCR 1007-2, Section 13.8. Only treated biomedical waste which is accompanied by documentation showing it has been treated will be accepted at the landfill. Untreated biomedical waste will be disposed off site. Medical waste disposal is discussed in Section 6.4.

2. Screening for radioactivity

Following is a summary of the screening method that is expected to be used to ensure that no radioactive waste will be disposed of in the landfill:

- An area within a building at Rocky Flats that is suspected to have radioactive contamination is called a "Radiologically Controlled Area (RCA)". A majority of the waste generated in the RCA is handled and controlled as radioactive waste. Before any materials (e.g., notebooks, pencils, paper) leave an RCA, they must be surveyed in accordance with Radioactive Operating Instruction (ROI) 3.1. According to this procedure, the material is smeared, the smear is then inserted into a SAC-4 instrument, and is released from the area if the alpha activity does not exceed 20 dpm/100cm^2 (disintegrations per minute per 100 square centimeters) or the beta/gamma activity does not exceed 200 dpm/100cm^2. In addition, personnel leaving the area are surveyed in accordance with ROI 3.02. According to this procedure, personnel are surveyed with a Ludlum instrument and may leave the area if the reading from the instrument does not exceed 250 counts per minute of total activity. Thus, based on the above process, any material that leaves an RCA will be presumed not to contain radioactive contamination, but will be monitored prior to disposal in the sanitary landfill.

- Sanitary waste receptacles are located outside of the RCA. The areas where these receptacles are located are periodically monitored to ensure that no radioactive contamination is present. It is recognized, however, that there are some outdoor areas at Rocky Flats that are suspected to have radioactive contamination but are not located within RCAs. These areas are included among the Individual Hazardous Substance Sites (IHSS's) under the Environmental Restoration process at Rocky Flats. The work plan for these for these areas describes the methods to be used to release material and equipment from the areas. In addition, the screening methods discussed below will also be used to ensure radioactively contaminated material that is outside a RCA is not disposed of in the landfill.

- All waste to be disposed of in the proposed landfill will enter the landfill site in trucks that will pass through a drive-through radiation monitor. This monitor is proposed. Particular specifications and criteria have not

been determined. However, the monitor will be similar to drive-through radiation monitors used at other sanitary landfills.

- At the tipping floor and landfill face, waste to be disposed of will be surveyed in accordance with ROI 6.6. According to this procedure, material is surveyed with a hand-held Field Instrument for Detection of Low Energy Radiation (FIDLER) and is acceptable for disposal if it does not exceed background radioactivity levels at the landfill. Any material that exceeds background will be removed from the waste stream and the radioactivity will be quantified.

The screening process discussed above is a summary of the process which is expected to be used at the proposed sanitary landfill. The procedures and instruments discussed above are the state-of-the-art at the time this application was prepared; however, as technological improvements are made, changes may be made to the instruments or procedures used. The proposed landfill will not be operated until the specific process has been reviewed by the Colorado Department of Health and the Jefferson County Health Department.

3. Screening by RFP transporters and landfill operators

A number of Rocky Flats employees associated with the landfill operation will be involved in screening waste. These employees are the truck drivers who transport waste from dumpsters, the landfill Waste Technicians, and the landfill Radiation Protection Technologist. These employees' waste screening duties are discussed below. In addition, all landfill personnel will be alert for prohibited materials.

Truck Drivers

All truck drivers are instructed to inspect the solid waste contents of dumpsters or other loads they are delivering to the on-site landfill for the presence of prohibited items. If a truck driver discovers any prohibited items in a dumpster, the driver will:

- Record in the Site Pick-Up log the kind of item and any unusual occurrence

- Cease operations and contact the Landfill Supervisor

The Landfill Supervisor will notify the appropriate manager who will have the prohibited item(s) removed to the holding area and transported back to the generator or properly disposed. After the removal of the prohibited item(s), the truck driver may transport the remaining waste to the landfill.

Truck drivers will not take biomedical waste packages unless they are labeled with proof of treatment. Transport of sludge from the raw water treatment plant and leachate treatment system is also controlled, such that only these acceptable sludges are collected and transported at one time to the landfill. Sludge will only be buried at the landfill if such disposal is approved by the state.

At the landfill, a list of prohibited wastes will be displayed at the site entrance. Also, the landfill gate entrance will be equipped with a drive-thru radiation monitor to detect radioactive material. If the results of this radioactive screening indicate the presence of such material, transport activity will halt and contingency actions will proceed.

Waste Technician

When the truck arrives at the landfill, the Waste Technician will check the Site Pick-Up Log for completeness and ensure materials needing special handling are accompanied by a signed Waste Processing Request Form (WPRF). Once waste is inside the landfill entrance, sorting efforts will include manual inspection of dumped waste on the tipping floor at Building 280. In-coming wastes will be sorted by category: (1) prohibited wastes that cannot be accepted at the landfill, (2) acceptable wastes that cannot be baled (or "non-baleable" wastes), (3) recyclable items, and (4) baleable wastes. The Waste Technician will inspect waste as it is dumped onto the tipping floor to ensure that no prohibited items are sent to the landfill.

If the waste is free of prohibited items, the Waste Technician will enter the date, time, and landfill grid number (see Section 6.2.4) into the Landfill Operating Log and will write "approved" in the Log comment section.

Should any prohibited items be found in the waste, the Waste Technician will:

- Cease operations and contact the Landfill Supervisor
- Determine where (i.e., at which building) the material was generated
- Enter the date, time, building/generator, type of prohibited material, area to which the material will be sent (i.e., for storage or disposal), and his/her signature into the Nonconformance Log

After the Waste Technician has entered the appropriate information into the Nonconformance Log, the Landfill Supervisor will notify the appropriate manager, who, with the assistance of the Waste Technician, will have the prohibited item(s) removed to a holding area or sent to be properly stored or disposed. If sent to a holding area, the date the prohibited material is removed from the holding area and the signature of the person removing the material will be entered in the Nonconformance Log.

Radiation Protection Technologist

The Radiation Protection Technologist monitors incoming material for radiation using a FIDLER, and enters into the landfill operating log the date, time, his/her signature, and the monitoring readings of the material. If any radiation contamination over background is found, the Radiation Protection Technologist will:

- Cease operations
- Assist the Waste Technician(s) in securing the area
- Contact the Landfill Supervisor
- Check the off-loading area to determine any further contamination
- Determine the building/generator of the contaminated material

The generator will contain the radioactive material and prepare it for transport to an approved location. The Waste Technician will store the material in the holding area until it is transported back to the generator. The Waste Technician will enter the date, time, his/her signature, the building/generator which was the source of the material, and the type of the material into the Nonconformance Log. The Landfill Supervisor will notify the appropriate manager of the dumpster to correct the situation. When the material is removed from the storage area for proper disposal, the date of the removal, the proposed destination, and the signature of the person removing the material must be entered into the Nonconformance Storage Log.

Any transportation of prohibited material to generators will be in accordance with the following conditions:

- Material will be packaged in accordance with the On-Site Transportation Manual

- Radioactive material will be accompanied by a current Material Transfer Tag

6.2 NON-ASBESTOS AND NON-BIOMEDICAL SOLID WASTE HANDLING

6.2.1 General Waste Handling

Some of the waste will be delivered to the landfill by standard compaction vehicles, and the remainder will be transported in an uncompacted state. All on-site waste transportation will be in accordance with and not deviate from Rocky Flat's On-Site Transportation Manual. All transport vehicles will be enclosed or suitably covered, except for those vehicles qualifying for the On-Site Committee exemption (i.e., vehicles carrying boxes which are closed and tied down). General waste handling will include end-dumping of waste materials for inspection and sorting, compaction of waste into bales, tieing the bales with wire, and stacking them into the landfill. A schematic of the materials handling systems is shown in Figure 6-1.

TRACKING SHEET

County: JEFFERSON

Project: NEW Rocky Flats Landfill

Assigned To: Paul E Poulsen

Date Received: Feb 28, 1992

Projected Date out: August 28, 1992

Priority:

Initial Review Date Complete: March 30/92

Date Additional Information Requested:

Date additional Information Received:

Date of Site Visit: 8/19/92

Staff Review Date:

Water/Air Memo sent: 2/30/92

Received: 3/18/92

News Release: 6/29/92

Date Billed: 8/28/92

Date Check Received:

Date Out: 8/28/92 approved/disapproved

Applicant Contact: John Schneider phone (303) 966-5931

County Contact: Cliff Myers phone

File Name: KAREN HELLNER

Comments: Send to MR. JAMES K. HARTMAN
Department of Energy
Rocky Flats Office
P.O. Box 928
Golden, Colorado
80402-0928

SOLID WASTE REVIEW TIME SHEET

PROJECT NAME: Rocky Flats

PROJECT STAFF: Paul E Paulson

DATE	HOURS
2/28/92	2.50
3/3/92	4.00
3/4/92	8.00
3/5/92	2.50
6/26/92	4.00
7/7/92	4.50
8/5/92	6.75
8/6/92	8.00
8/7/92	8.00
8/10/92	8.00
8/11/92	8.00
8/12/92	8.00
8/13/92	8.00
8/14/92	8.00
8/17/92	8.00
8/18/92	8.00
8/19/92	8.00
8/20/92	8.00
8/21/92	8.00
8/24/92	8.00
8/25/92	8.00
8/26/92	8.00
8/27/92	8.00
8/28/92	8.00

PLAN REVIEW HOUR 168.25

HOURS SPENT ON PREOPERATIONAL SITE VISIT

TOTAL HOURS 168.25

72.47 /Hour

TOTAL FEE 12,193.07

Maximum 10,000.00

☐ CHECK HERE IF FACILITY IS OVER 1000 YARDS/DAY.

☐ VOLUME/DAY X $1000.00 PER 1000 YARDS/DAYS.

Department of Energy

ROCKY FLATS OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

RECEIVED
MAR 17 1992
HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

MAR 16 1992

92-DOE-2863

Marjorie E. Clement, Chairman
Jefferson County Board of
County Commissioners
1700 Arapahoe Street
Golden, Colorado 80419

Dear Ms. Clement:

Enclosed is a copy of our letter (92-DOE-1848) that was sent to you incorrectly date stamped. The correct date for the letter is February 19, 1992; please correct your files to reflect this change.

If you have any questions, please contact Joe Wienand at 966-5926.

Sincerely,

Thomas E. Lukow

Thomas E. Lukow, Director
Waste Management and Environment Division

Enclosure

cc w/Enclosure:
T. E. Lukow, WMED, RFO
P. Harley, CDH
P. Poulsen, CDH
K. Hellner, Jefferson County Planning Department
C. Myers, Jefferson County Department of Health & Environment
P. Edrich, EG&G
J. Schneider, WOB, RFO

Department of Energy

ROCKY FLATS OFFICE
P.O. BOX 928
GOLDEN, COLORADO 80402-0928

FEB 19 1992

92-DOE-1592

Mr. Poul E. Poulsen
Colorado Department of Health
Hazardous Material and Waste Management Division
Solid Waste and Incident Management Section
4210 East 11th Avenue
Denver, Colorado 80220-3716

Dear Mr. Poulsen:

I have enclosed the Operational Plan for the Rocky Flats Plant Landfill for your review and comment. I have also submitted a copy of this document to Cliff Myers of the Jefferson County Department of Health and Environment. This operational plan has been developed and submitted to comply with the "Minimum Standards" of the Solid Waste Disposal Sites and Facilities Act, Title 30, Article 20, Part 1, C.R.S. 1972 as amended, and with the Regulations of 6 CCR 1007-2.

This document includes the daily operating specifications and procedures for the facility, a detailed methodology for filling and mounding the landfill, and engineered solutions to improve slope stability of the east face and to improve both the safety and security. The operating specifications and procedures in this document have been implemented. To prevent inappropriate changes to the facility, major modifications will not be initiated until we have received concurrence to our engineering plan from your office.

John Schneider of my staff will be contacting you shortly to discuss this document and your assessment of its contents. Our intent is to keep the Colorado Department of Health and the Jefferson County Department of Health and Environment fully aware of activities at the Rocky Flats Landfill.

If you have any questions, please call Tom Lukow at 966-4561 or John Schneider at 966-5924, pager 966-4000 extension 1744.

Sincerely,

David P. Simonson
Assistant Manager
for Environmental Management

Enclosure

cc w/o Enclosure:
T. Lukow, WMED, RFO
J. Wienand, WOB, RFO
J. Schneider, WOB, RFO
J. Ciucci, EG&G
D. Lobdell, EG&G

RECEIVED
FEB 21 1992
HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

MEMORANDUM

TO: Representatives of Interested Groups and Parties, and D.O.E. and E G and G Rocky Flats; Karen Hellner (County Geologist); Jean Ayars (Assistant County Attorney); Jean Jacobus (Policy Development Unit)

FROM: Mark S. Loye, Jefferson County Aggregate Coordinator (phone: 271-5806)

DATE: January 27, 1992

SUBJECT: Summary of January 21, 1992 Public Meeting on Proposal by the U.S. Dept. of Energy (D.O.E.) and E G and G Rocky Flats to Apply to Jefferson County for a Certificate of Designation for a New Sanitary Landfill for the Rocky Flats Plant

Enclosed please find a copy of the meeting notes for the January 21, 1992 public meeting captioned above. Copies of the meeting attendance list are available upon request from me or Lisa Vernon (271-5845). The attendance list shows that 34 people attended this meeting. At the meeting, the applicants distributed a 17-page informational package which also attempted to answer some of the questions raised in the first public meeting of December 10, 1991. Copies of that document are also available through me or Lisa Vernon, or you may call the E G and G Community Relations Office (Tanya Marrow at 966-6437).

The meeting began with my brief introductory comments. Next, the applicants made a presentation to answer previously-raised questions and to clarify further the plans for the proposed landfill. An extensive question and answer period followed. The enclosed meeting notes provide details of these activities.

At this time, no further preapplication public meetings are planned. My understanding is that any questions raised by the public or regulatory agencies as a result of these two meetings will be answered by the applicants as a part of the planned Certificate of Designation application. This is anticipated to be submitted to Jefferson County within the next several weeks. At that time, the application will be sent out on referral to the State Health Department, other agencies and municipalities and the concerned public. The County will begin its public hearings on the proposal after the State Health Department review has been completed (at least six months after receipt of the application).

Thank you all for your interest and constructive participation in these informational meetings. Please contact me if you have questions.

Mark S. Loye

Mark S. Loye, Aggregate Coordinator

MSL/ljv
Enclosures
cc: Pat Mahan, County Attorney (with enclosures)
Len Mogno, Planning Director (with enclosures)
Joe Crain, Community Planning Director (with enclosures)
Members, Jefferson County Planning Commission (with enclosures)

DOE/EG&G Rocky Flats Landfill Proposal - 1/21/92 - 7:00 p.m.

1. Modified presentation by applicant (John Schneider for DOE)
   -Responses to questions from previous meeting (see handout)
   -Design of landfill (Rich Tocher for Woodward-Clyde)(see handout)
      Site selection criteria
      Cell design/monitoring system
      Background level for ground level - 1990 Environmental Monitoring Report published
      Adequacy of site to handle amount of waste t be deposited

2. Waste Minimization (Mark Shepard for EG&G)

3. Monitoring waste for presence of radioactive contamination content (Dick Link for EG&G)
   -Controls—including monitoring before leaves point of generation when it is a building with radioactive materials.
   -General office generation monitored at the landfill/and building regularly checked - monitor equipment
   -Monitor at landfill as quality check - anything over natural background
   Concern for sensitivity of "Fiddler" to measure low levels of contamination/can it measure background level?
      Read & respond to written submittal
   q: What is under clay liner?
   a: alluvial clay mix
   q: Aquifer recharge zone in area?
   a: 5/8 mile upgrade

Q: What's being done now-compare to future control-monitoring
A: No current sorting building - monitored with hand scanner

Q: How monitor for hazardous waste - now- batteries - paint cans - monitor dumpster-
A: Inspect when spread on floor of landfill - then it is taken out and returned to owner

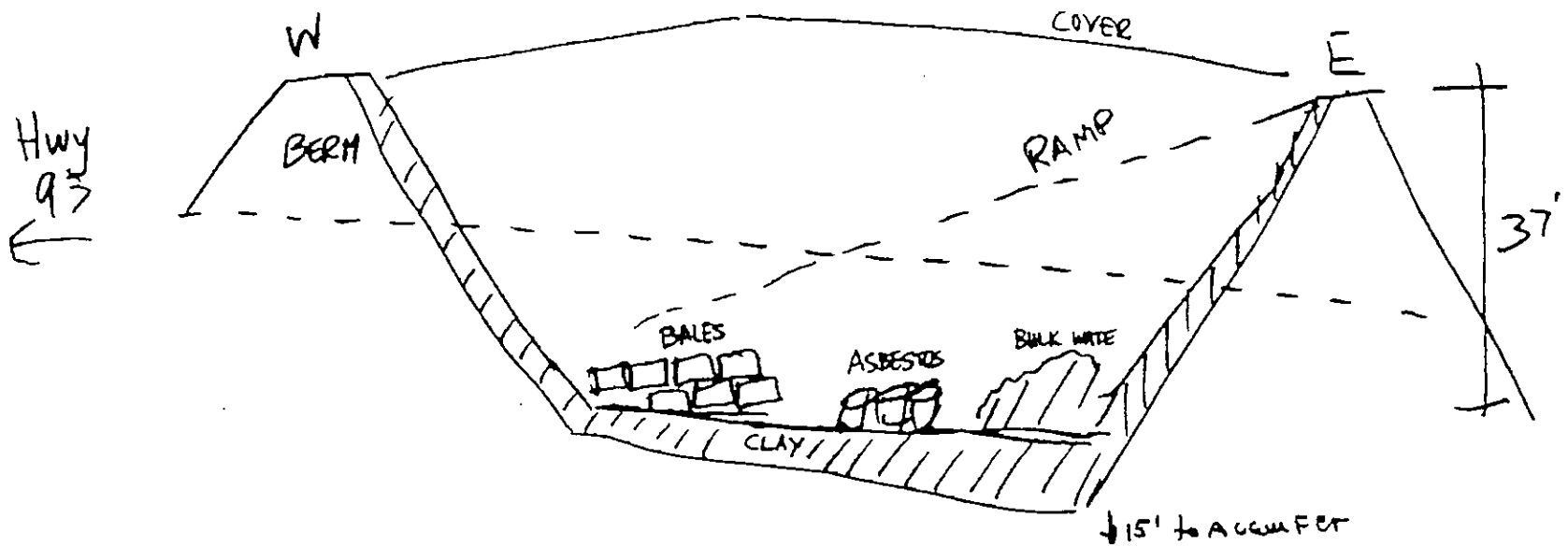
Q: Capacity/cell?
A: 150,000 cu. yds. waste, 50,000 cover - 20-year life

Q: Unforseen things - take up to 5 years to fill - what about decommission

A: Reduced generation - reduce size of cells

Q: Re moisture problem
A: Transevaporation in our favor - remove

Q: Do you know where prevailing winds are?
A: Yes. From NW - see wind rose in CD application



Info: domestic $4.00/cu.yd.
industrial $40.00
hazardous $400.00
Larger volume - lower cost per unit

Q: What government agency primary monitoring responsibility?
A: CDH - quarterly monitoring including water quality.
State: Rocky Flats background monitor/statistical validation/ significant changes upgradient to downgradient, flag problems

Q: Will international bicycle racers smell this landfill?
A: No. Present landfill is odor-free

Procedure for Future

1. Pre-application process - we are here!
2. Certificate of Designation Application - goes to CDH for approximately 6 months - when nearly done goes to Planning Commission (site approval similar to CD process) - then to Board of County Commissioners (decision on CD) - then to rezoning/site approval/referral to HOA's Co. Health/Co. Geologist.
   Historically has taken 2 yrs. for decision
   Contrast commercial cost of disposal vs. private
   Liability issues under Superfund

Q: Do new regulations require this level of technology?
A: Yes. Fed. reg. dictates upgrade for new landfills/have some flexibility in design choice
-P. Paulsen, CDH: This design meets maximum requirement of regs. - for nation
-Econ. of scale/new regs. = affect cost-
-State looking at variety of designs-
-RF/DOE = want low liability/control of waste

Q: Toured Cooper Landfill - Bale fill - $16/cu.yd.
-compaction ratio - conventional vs. bale - 5x higher for bale - less cover material (6") - cover face of bales with foam - 2,000 lbs./bale - greater density per cubic yard

Q: Recyclable will be segregated
A: Sorting is final quality control
-Cafeteria garbage vs. construction waste %?
-Identify elements in waste stream
-Dedicated/segregated area at BFI - $20/cu.ft. (?) per cell
-Transportation costs increase cost of disposal

Inspections by CDH may be unannounced.
Paul: Concern for transportation of waste - Rocky Flats know public concern - want it to be safe - overdesign to address public concern.

EG&G ROCKY FLATS

INTEROFFICE CORRESPONDENCE

DATE 01/17/92

TO Distribution

FROM Occurrence Notification Center, Bldg. 115, x2991

SUBJECT OCCURRENCE NOTIFICATION REPORTS

FACSIMILE COVER SHEET

* COLORADO ON-SITE REPRESENTATIVE
* COLORADO DEPARTMENT OF HEALTH, ROCKY FLATS PROGRAM UNIT
* COLORADO DEPARTMENT OF HEALTH, RESPONSE CENTER
* COLORADO STATE PATROL
* COLORADO OFFICE OF EMERGENCY MANAGEMENT (DODRS)
* DOE FACILITY REPRESENTATIVE
* JEFFERSON COUNTY COMMUNICATIONS CENTER (SHERIFF)

MESSAGE: Included are all Reportable Occurrences at the Off Normal, Unusual Occurrence or Emergency levels.

Reports 63, 64, 65, 66, 67, 68, 69.

TOTAL NUMBER OF PAGES, INCLUDING THIS COVER SHEET: 22

IF YOU DO NOT RECEIVE ALL PAGES, CALL:
COMMERCIAL: (303) 966-2991 -or-
FTS: 345-2991

ONC-5 11/11/91

RFO--EGGR-ENVOPS-1992-0002

UNOFFICIAL COPY
OCCURRENCE REPORT

Notification Report
(Submitted)

6. SYSTEM, BLDG., OR EQUIPMENT: 881 Hillside Const.

7. UCNI? : No

8. PLANT AREA : 881 Hillside

9. DATE AND TIME DISCOVERED :

01/16/92 1000

10. DATE AND TIME CATEGORIZED :

01/16/92 1550

11. DOE NOTIFICATION :

--/--/-- ----

12. OTHER NOTIFICATIONS :

---

13. SUBJECT OR TITLE OF OCCURRENCE :

#0067: Radiological contamination discovered in trash bag.

---

14. NATURE OF OCCURRENCE :

2) Environmental
C. Radioactive/Hazardous Material Contamination

---

15. DESCRIPTION OF OCCURRENCE :

During Surveillance of a trash bag in a cargo container prior to transfer to the plant landfill, the bag was discovered to be contaminated.

---

16. OPERATING CONDITIONS OF FACILITY AT TIME OF OCCURRENCE :

To be determined by Operations Management

---

17. ACTIVITY CATEGORY :

Normal Operations

---

18. IMMEDIATE ACTIONS TAKEN AND RESULTS :

MEMORANDUM

RECEIVED
DEC 27 1991
HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

TO: Representatives of Interested Groups and Parties, and D.O.E. and E G and G Rocky Flats; Karen Hellner (County Geologist); Jean Ayars (Assistant County Attorney); Jean Jacobus (Policy Development Unit)

FROM: Mark S. Loye, Jefferson County Aggregate Coordinator (phone: 271-5806)

DATE: December 16, 1991

SUBJECT: Summary of December 10, 1991 Public Meeting on Proposal by the U.S. Dept. of Energy (D.O.E.) and E G and G Rocky Flats to Apply to Jefferson County for a Certificate of Designation for a New Sanitary Landfill for the Rocky Flats Plant and Notification of January 21, 1992 Meeting

Enclosed please find a copy of the meeting notes for the December 10, 1991 public meeting captioned above. Copies of the meeting attendance list and notes from the workshop session with County Planning and State and County Health staff members are available upon request from me or Lisa Vernon (271-5845). The attendance sheet shows that 55 people attended this meeting. The next public meeting on this proposal will be held from 7:00-10:00 p.m. on Tuesday, January 21, 1992 at the same location, the Planning Commission hearing room at 700 Jefferson County Parkway, in Golden. The purpose of this second meeting will be to receive further public input on the applicant's proposal and answer, if possible, more questions from the public. I encourage you to submit written materials to me prior to this meeting at the address on page one of the meeting notes.

By way of brief summary, the December 10 meeting began with my brief introductory comments. Next, the applicants described their proposal for a new landfill and responded to questions. Please refer to pages 1-3 of the enclosed meeting notes for details. Next, County staff described the application procedures, and further questions and answers ensued. Pages 4-6 of the meeting notes chronicle this part of the meeting. After a break, five workshop sessions were held. One concerned regulatory questions for State and County staff, and the other four were conducted by representatives of the applicants and concerned permitting, design, operations, and groundwater/geology. After the workshops, the full group reconvened to discuss further activities (meeting notes, page 7).

Agenda for January 21, 1992 meeting:

1. Introductory Comments by M. Loye, 7:00 - 7:10 p.m.
2. Discussion of Written Questions and Comments, 7:10 - 7:40 p.m.
3. Comments and Questions from Concerned Public, 7:40 - 8:20 p.m.
4. BREAK, 8:20 - 8:40 p.m.
5. Further Public Questions and Comments, 8:40 - 9:40 p.m.
6. "Where Do We Go From Here?", 9:40 - 10:00 p.m.
7. ADJOURN, 10:00 p.m.

Thank you for your interest and participation in this preapplication, public information process. Please contact me if you have questions.

Mark S. Loye

Mark S. Loye, Aggregate Coordinator

MSL/ljv
Enclosures
cc: Pat Mahan, County Attorney (with enclosures)
Doyle James, Jefferson County Community Resources Director (with enclosures)
Len Mogno, Jefferson County Planning Director (with enclosures)
Joe Crain, Community Planning Administrator (with enclosures)
Members, Jefferson County Planning Commission (with enclosures)

-1- DOE/EG&G Rocky Flats Landfill Proposal - 12/10/91 - 7:00 p.m.

A. Tentative next mtg. - 1/21/92, same time (7:00 p.m.), same location - confirmed as of date of this mailing.

B. Address for comments/questions:
Jefferson County Planning Dept., Attn: Mark S. Loye
700 Jefferson County Parkway, #220
Golden, CO 80401

DOE proposal - new sanitary landfill for onsite disposal - A. Why Need? B. Design proposal
Q: Methane vent to air - impact? Flare? R: Not problem because of amount (small).
Q: Is it O.K. to vent?...snowfall a problem? R: Cap should shield inside so precipitation won't force methane down. *Public* - Need to define path of methane/Rocky Mountain Arsenal problems and problems of old landfills have resulted in new problems which must be met. R: Final materials not yet determined.
Q: Alternative sites? Why bury it all at Rocky Flats? R: Prefer to handle waste from generation to disposal. Want to avoid potential liability caused by other waste sources.
Q: R.I. landfill on another site? R: Meets present regulatory standards at chosen site.

- 2 -
Q: Why need remediation of present landfill? R: Repair past mistakes.
Q: What about recyclables? R: Present recycling program ongoing.
Q: Don't buy containers which can't be recycled. What percentage of materials can be recycled? should maximize this effort. Reduce landfill amount.
Q: Character of waste stream: Now and future. Length of life of current landfill. Compare present with future landfill. R: Will have more detailed information available during work groups later in this meeting.
Q: How check for hazardous waste and radioactivity? R: Source containment - monitored by hand - on truck transport through drive and gate - at sorting floor scan and completed bale scan.
Q: Water - how much at site? R: 200,000 gals.
Q: Final contour 20' higher than surface. How will contour appear? R: Revegetation and contouring - above surface visible from Highways 93 and 128 - 1 mile from highways.
Q: Vegetation? R: Seed mixture chosen for this area. -You want perspective? -Yes. Topos.
Q: Source of soil used at end of day? R: Save some from hole. Bring in some soil from off site to meet regulatory requirements for type: compaction and capacity.

MEMORANDUM

RECEIVED
NOV 27 1991
HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

TO: Representatives of Interested Groups and Parties, Representatives of D.O.E. and E G and G Rocky Flats, Karen Hellner (County Geologist), Jean Ayars (Assistant County Attorney), Jean Jacobus (Policy Development Unit)

FROM: Mark S. Loye, Jefferson County Aggregate Coordinator

DATE: November 19, 1991

SUBJECT: Public Informational Meeting on Proposal by the U.S. Department of Energy (D.O.E) and E G and G Rocky Flats to Apply to Jefferson County for a Certificate of Designation for a New Sanitary Landfill for the Rocky Flats Plant

As Jefferson County Aggregate Coordinator, I invite you to a meeting to be held on Tuesday, December 10, 1991 in the Planning Commission hearing room located immediately adjacent to the Planning Department offices. The address of this building is 700 Jefferson County Parkway (map to locate meeting site enclosed). The meeting will commence at 7:00 p.m. and is scheduled to end at 10:00 p.m.

This meeting has been called in response to the submittal of a project summary and map to me by representatives of D.O.E. and E G and G Rocky Flats. In brief, this submittal indicates that these applicants intend to apply to the County for a Certificate of Designation for a new sanitary landfill located northwest of the main plant site within the plant buffer zone. A copy of the applicants' project summary and site map is enclosed for your review.

The following agenda is proposed for this meeting:

1. Introductory Comments by M. Loye, 7:00 - 7:10 p.m.
2. Applicants' Presentation and Limited Response to Questions, 7:10 - 7:50 p.m.
3. County Presentations on Processes for a Certificate of Designation, 7:50 - 8:20 p.m.
4. Statements by Interested Parties (limited to 2 min. per person), 8:20 - 8:50 p.m.
5. BREAK - 8:50 - 9:05 p.m.
6. Individual Workshop Sessions on Various Issue Areas, 9:05 - 9:50 p.m.
7. Discussion of Possible Future Meetings and Topics, 9:50 - 10:00 p.m.
8. Adjourn, 10:00 p.m.

Be advised that this meeting is informational in nature and is being scheduled prior to the submittal of any formal application. Further questions may be asked and statements made by the interested public at any future informal meetings or during the formal hearing process which will follow submittal of a formal application.

I strongly encourage your attendance at this first, introductory meeting. Please feel free to call me at 271-5806 if you have any questions.

Mark S. Loye

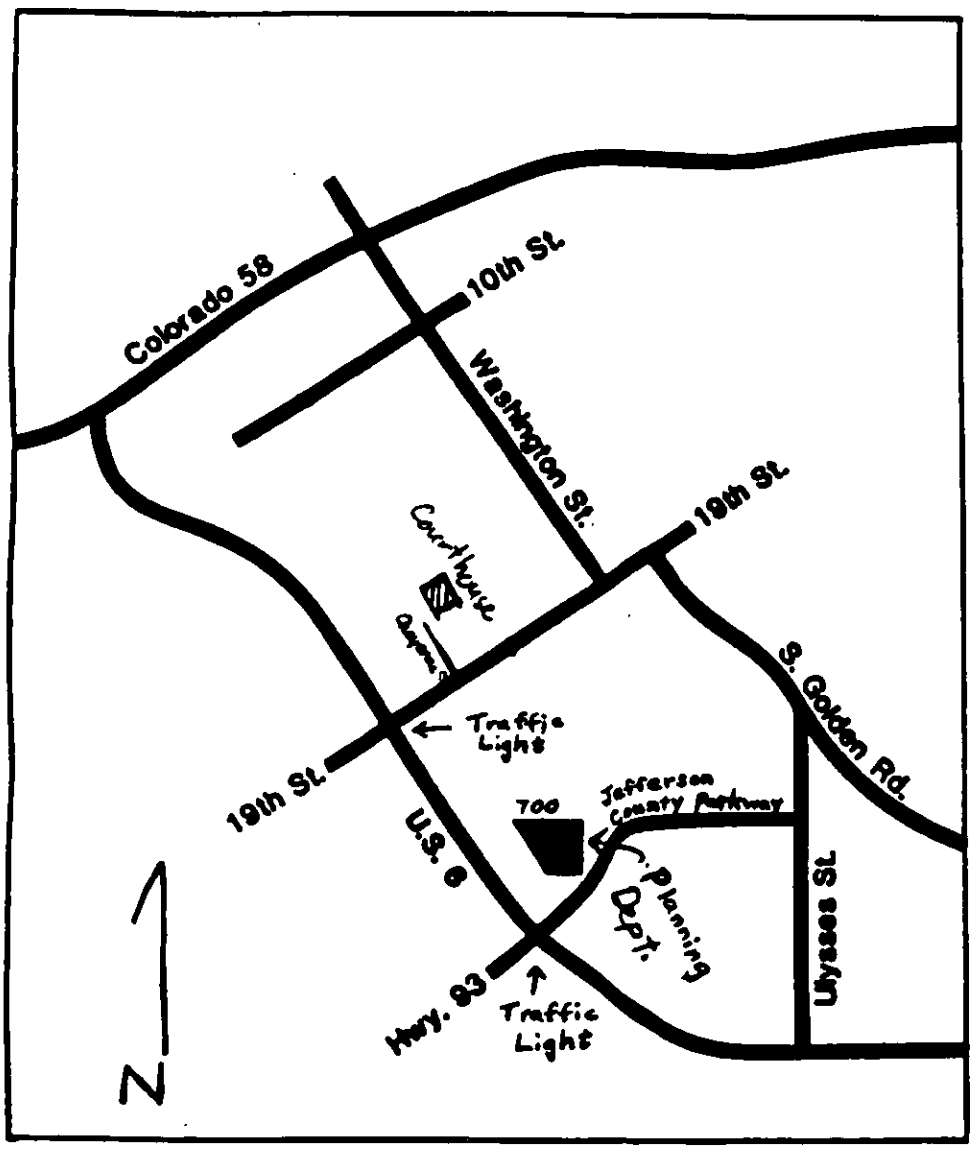
Mark S. Loye, Aggregate Coordinator

MSL/ljv

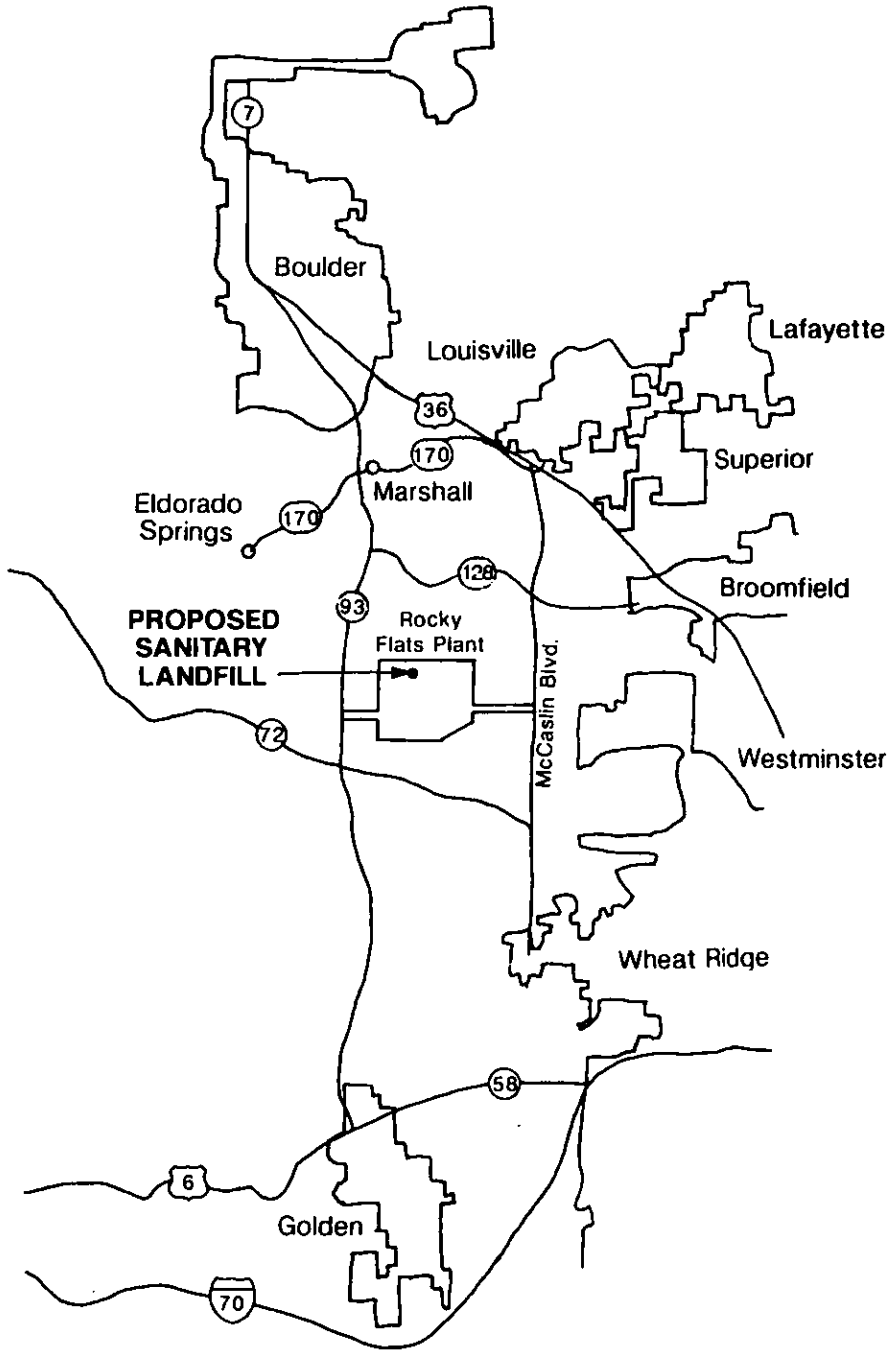
Enclosures

cc: Pat Mahan, County Attorney (with enclosures)
Doyle James, Jefferson County Community Resources Director (with enclosures)
Len Mogno, Jefferson County Planning Director (with enclosures)
Joe Crain, Community Planning Administrator (with enclosures)
Members, Jefferson County Planning Commission (with enclosures)

MEETING LOCATION MAP



700 Jefferson County Parkway, Golden, Colorado 80401
Phone: 278-5800


7
Boulder
Louisville
Lafayette
36
170
Superior
Marshall
Eldorado
Springs
170
128
Broomfield
93
PROPOSED
SANITARY
LANDFILL
Rocky
Flats Plant
McCaslin Blvd.
72
Westminster
Wheat Ridge
58
6
Golden
70

N

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2
4
8
SCALE IN MILES

Rocky Flats Plant
New Sanitary Landfill Proposal

This proposed project would provide sanitary landfill capacity for the Rocky Flats Plant for the next 20 years. The existing landfill is nearing capacity and cannot be expanded, since it is part of the environmental remediation program at Rocky Flats. The new landfill would have a capacity of approximately 800,000 cubic yards to meet sanitary waste disposal needs. This capacity would consist of approximately 650,000 cubic yards of waste—primarily office and cafeteria trash— and 150,000 yards of daily and temporary cover material. Control measures would be used to prevent the disposal of any hazardous or radioactive material in the new landfill.

The new landfill would be located at the Department of Energy Rocky Flats Plant in Jefferson County, Colorado, on a 50-acre undeveloped area northwest of the main plant site, but still within the plant buffer zone.

The landfill would be constructed in stages or cells in order to better control leachate development and take advantage of technological advances that may develop five or 10 years from now. At full build-out, the landfill would consist of four cells. Each cell, constructed to meet the latest regulatory requirements, would include a composite secondary liner, leak detection system, primary liner, leachate collection system, and gas venting system. The landfill cell liner and leachate systems provide state-of-the-art protection against groundwater contamination. The double liners would minimize downward seepage of liquid during the operational and post-closure periods. The outer liner would be a composite consisting of compacted clay overlain by a flexible membrane liner (FML). The inner liner would consist of an FML.

Also, a new building would be constructed at the landfill. The one-story, approximately 11,000-square-feet building would include an office area, a storage area, a garage area with a trash-sorting and compaction facility, and a leachate treatment system.

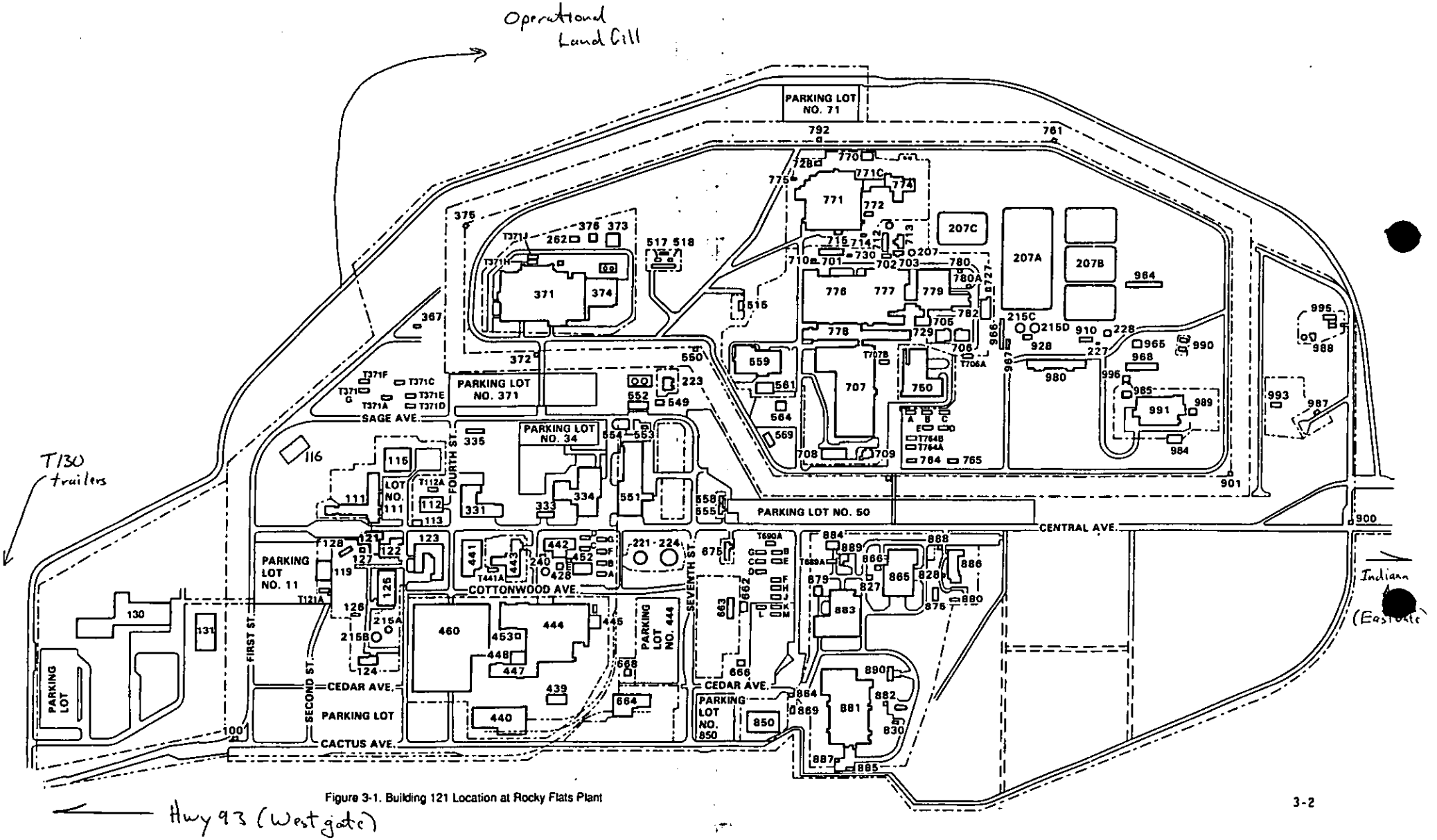


Figure 3-1. Building 121 Location at Rocky Flats Plant

	Atterberg Limits D 318	Sieve D 422 / D 1140	Perm D 5084-90	Moisture 2216-80 Density Nuclear	Moisture Vs Density Proctor D 698-78	Compaction / optimum moisture	Unified Soil Classif	Remarks
(B) Material Evaluation	Y	Y		Laboratory Test Moisture 2216-80	Y			
Construction Quality Evaluation (C)				Field Density/Moisture Density - Sand Cone D-1556-64 Nuclear Method D3017-78				Surveys of As-built Bonding Layer Test Pits
				Index Density D-4254-83				
Hydraulic Conductivity Evaluation (D) 1) Composit Liners 2) Clay Covers 3) Leachate Collection			Perm Test Back Pressure saturated D-5084-90		Moisture Density (Standard Proctor) D-698-78			
Clay Liner (E)								Lift height 8" max.
Special tests (F)								
Crushed Rock (G)								
Frequency H								

Name	Clear Creek County Commissioners
Address	P.O. Box 2000 Georgetown, CO 80444
Landfill	Empire Transfer Station 3 miles northeast on County Road 251 Empire, Colorado
County	Clear Creek
Fee	250
Type/Volume	Type E/NA
Payment	
Posted/Acct	
Notation	

Name	Conejos County
Address	P.O. Box 157 Conejos, CO 81129
Landfill	Sanford Landfill 3.5 miles southeast of Sanford, Colorado
County	Conejos
Fee	500
Type/Volume	Type A/estimated > 1000
Payment	
Posted/Acct	
Notation	Per letter from Conejos County, Landfill Closed.

Name	Conejos Count
Address	P.O. Box 157 Conejos, CO 81129
Landfill	Cauplin ½ mile south of Cauplin, Colorado
County	Conejos
Fee	500
Type/Volume	Type A/estimated > 1000
Payment	
Posted/Acct	Per Accounting - 1/13/92 - Ck# 19850 - $1500.00 - See Conejos County Landfill, Manassa-Romeo Landfill
Notation	

 SW/JFR/RFP 1A

RECEIVED
DEC 5 1995
JEFFERSON COUNTY
PLANNING AND ZONING
RECEIVED
DEC 11 6 1995
HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

ROCKY FLATS ACCELERATED SITE ACTION PROJECT (ASAP)

Introduction

The Rocky Flats Environmental Technology Site is developing and implementing a project, the Accelerated Site Action Project (ASAP), to radically decrease the Site risks and increase land availability for potential other uses as compared to the Site's current course of action. This draft plan document represents the first step in the process to determine a possible feasible alternative to accomplish the vision. Further, the document describes a feasible alternative (among many) for achieving the most rapid and economical stabilization of the Site. This stabilization will make the Site nearly risk free for on- and off-site populations and will provide for alternative uses of most of the Site's 6500 acres.

This feasible alternative begins to bracket what is possible at Rocky Flats before the next phase of planning begins. This was necessary to shatter certain cost and schedule paradigms at the Site that, if left unchecked, could have prevented the eventual cleanup. The following phase (described at the end of this summary) will build on this work to develop and evaluate additional alternatives while continuing to increase the value per dollar spent.

Problem Definition and Project Strategy

The fundamental problem at Rocky Flats is that the current nuclear material stabilization and environmental cleanup activities are far too slow, too uncertain in outcome, and too costly.

The DOE Plutonium Vulnerability Study identified the Site as having the highest-risk facilities in the nation, and these facilities are located within 50 miles of the Denver metropolitan area's 2 million people.

Compounding this problem is that even with past high funding levels, the Site has had difficulty making meaningful progress toward cleanup. In July 1995 a new contractor operating under a new performance-based contract took over operations at Rocky Flats. Now as the Site is poised to make progress, the budget is falling to levels that allow for little expenditure on risk reduction in the face of high nuclear facilities baseline safety costs. The projected outyear funding profile cannot address DOE's commitments for plutonium and waste treatment and stabilization, or environmental cleanup.

Even with the dramatically lower overall costs represented by this feasible alternative, its costs are still significant and will likely not be fully funded without strong alignment among the interested parties.

The Site's new management strategy is based on the following elements:

- To continue to seek ways to achieve early removal of plutonium and waste from the Site.
- To enable the DOE, Contractor, and workforce to bring the Site to a stable, interim closure state at the earliest possible date. Additional closure actions could be accomplished after this date at a lower overhead rate and higher efficiency than the current Site structure allows.
- To challenge current strategies for environmental restoration, waste management, and plutonium stabilization and storage to achieve risk reduction and land use value for much lower costs and with faster schedules.
- To recognize that the march of time represents the greatest cost at the Site. The Site has spent over $700 million per year in the past with little progress. The baseline for keeping the plutonium facilities safe and stable is about $400 million. Therefore, every month of inactivity or indecision on a path forward is costing taxpayers more than $30 million. This opportunity cost, which was simply accepted in the past, must be factored in to all future decisions.
- To aggressively challenge existing baseline activities and costs, including both DOE and environmental regulatory burdens.
- To view and manage Site activities as projects to better align DOE, the Contractor, and the employees and to increase accountability for scope, schedule, and cost.
- To establish a unifying vision of an interim state for the Site that will simultaneously reduce risks and budget outlays and that can be achieved in the professional lifetime of the people working at the Site.

The Feasible Alternative

The key features of this feasible alternative are described below.

Plutonium and Waste. The plutonium and containerized waste will be in safe, stable storage awaiting the earliest possible shipment from the Site.

Land Use Criteria. While actual future land use was not in the scope of this project, the following land uses would be enabled by this alternative.

- The outer 5,000 acres of buffer zone would support unrestricted use, including open space.
- An inner 1,000 acres of buffer zone would meet standards for use as unoccupied open space.
- Of the remaining 500 acres associated with the industrial area or landfills, 300 acres would be cleaned up to allow future industrial or commercial development, if desired. The 200 most contaminated acres, including the current plutonium processing area, would be safely closed with a long-term landfill cap with long-term monitoring to ensure cap performance and integrity. A groundwater diversion system and passive reactive barriers would be installed.
- Bulk low-level cleanup and demolition waste would be placed under the cap.
- Most buildings, except those with a future economic value, would be demolished or covered by the cap. See Exhibit 0.1 for a pictorial representation of the feasible alternative.

Importantly, the feasible alternative will not compromise the ability to clean up the entire Site in the future (i.e., to residential standards), including the demolition of the minimal plutonium and waste storage facilities.

Cost and Schedule. As shown in Exhibits 0.2 and 0.3 this plan can be accomplished for about $6 billion, compared with the current estimate of more than $20 billion. However, it requires larger annual budgets through the year 2002 than are currently anticipated. Alternatively, preliminary estimates indicate that the work represented by this feasible alternative could be accomplished with the currently projected funding scenario by about 2015 for about $10 billion. Even this scenario represents a reduction of more than 50% from the current projection for Rocky Flats in the FY95 Baseline Environmental Management Report (BEMR)

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	10	5	40	118	30	50	480	733
[illegible]	15	5	70	199	65	100	430	884
[illegible]	10	10	70	172	80	250	375	967
[illegible]	10	15	70	142	110	275	325	947
[illegible]	5	15	50	115	90	300	300	875
[illegible]	5	10	10	67	75	325	275	767
[illegible]	10	5	25	11	60	275	200	586
[illegible]	20	5	55	11	25	50	100	266
Subtotal	85	70	390	835	535	1625	2485	6025

ASAP COST PROFILE

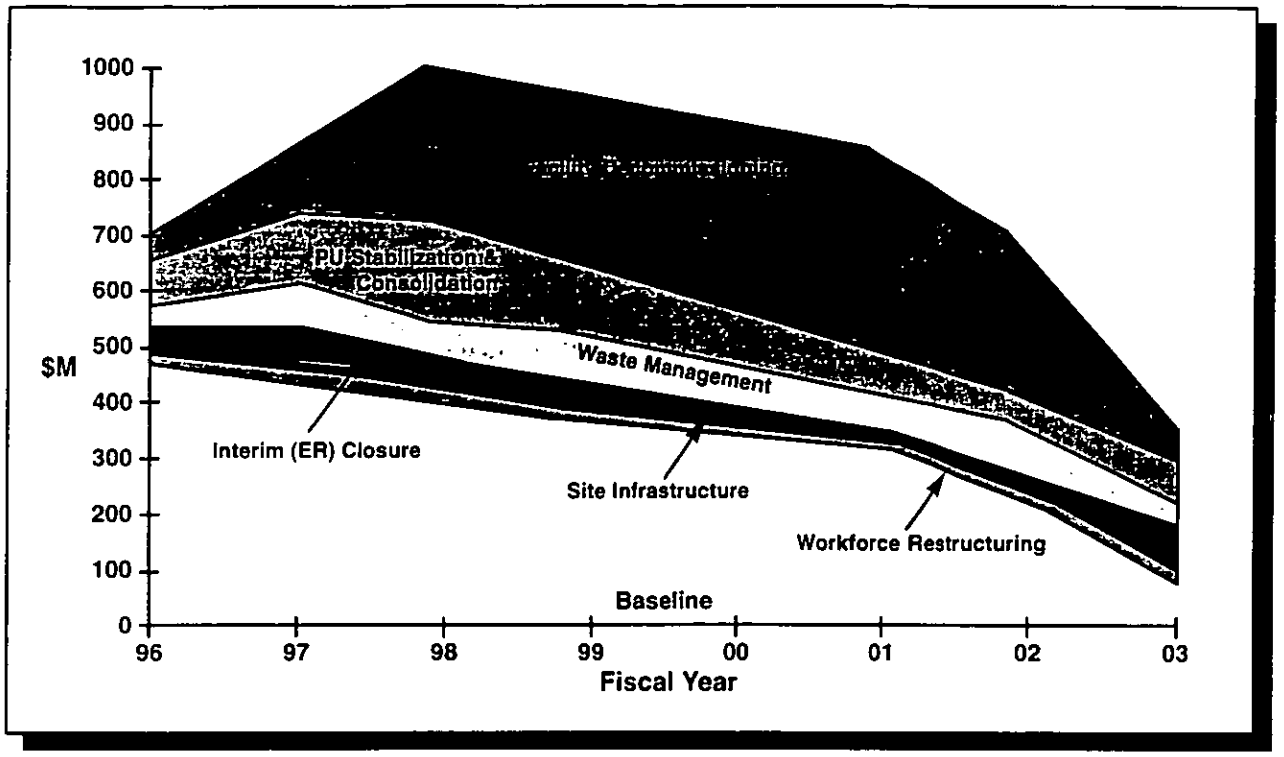


Exhibit 0.4 shows the baseline work logic to accomplish the project by the year 2003. It is important to note that the schedule reflects some activities starting in FY96 that have not been funded. The critical path items are plutonium processing (stabilization), the final decommissioning of building 707 and its support buildings, and the placement of the landfill cap over the Protected Area.

By the end of 2003 (or 2015 at current funding levels), the Site population could drop to less than 300 from the current figure of more than 5,000. The annual operating cost could be less than $40 million, down from more than $600 million currently. The remaining facilities will be configured such that the final closure cost, the demolition of the plutonium and waste storage facilities, will cost less than $200 million. Bringing the 1,500 acres that are currently not designated as residential capable to that standard would cost an additional $5 billion and take an additional decade to complete.

There will also be additional costs, yet to be estimated, associated with the final disposition (shipment) of stored plutonium and waste. These outyear (beyond 2003) costs could be several hundred million dollars depending on disposal costs and criteria.

Key Issues to be Resolved

Some of the key issues to be resolved in subsequent planning phases of the project include the following.

- Considering the logical array of alternatives that address most stakeholder concerns and determining aggregate stakeholder priorities.
- Evaluating methods to expedite plutonium and waste shipment from the Site.
- Achieving a fundable alternative. It is not clear that the current alternative, even with its dramatic cost and schedule savings, will be funded in preference to a longer duration project.
- Achieving consensus on the strategies for plutonium and waste storage and facility decommissioning.
- Determining the level of plutonium and waste processing, consistent with national interests, that should be done before the materials are placed in potentially long-term storage.
- Establishing the prudent planning horizon for the possibility of long-term storage of plutonium and waste.
- Determining the optimum remediation or stabilization strategy for soil and groundwater to identify the cost-benefit tradeoffs.
- Determining the appropriate authorization basis and safety controls necessary to balance safety and efficiency in proceeding with plutonium, waste, and decommissioning activities.

Technical Summary

The draft document that follows this executive summary presents the feasibility analysis that was performed to determine whether an accelerated decommissioning of RFETS is possible. Six major tasks were evaluated as a part of the ASAP: Plutonium Consolidation and Stabilization, Waste Management, Facility Decommissioning, Interim Closure, Site Infrastructure, and Implementation. It is important to note that a number of the following tasks discussed are continuations of currently planned activities, such as major plutonium stabilization, while others, such as facility decommissioning, are new.

Plutonium Consolidation and Stabilization

This task selected a feasible alternative, considering recent analysis and plans, with the following attributes:

- Highly enriched uranyl nitrate (HEUN) solutions will be bottled and shipped off the site.

- Plutonium (Pu) metal and oxides will be packaged to meet DOE-STD-3013-94 in double, welded stainless-steel containers.
- Pu solid residues will be processed to meet safe, long-term storage criteria. Where possible, residues will only be repacked and managed as Transuranic (TRU) waste.
- Pu liquid residues will be moved from their current containers and stabilized for long-term storage.
- The Pu and residues to be managed as Special Nuclear Material (SNM) will be stored in a newly constructed storage facility (vault) after consolidation for staging in Building 371.
- Pu and residue processing will be conducted primarily in Building 707.
- Pu pits will be packaged in approved shipping containers.

The estimated cost for this activity is $800M, of which about $150 to $200M is for the new vault. The critical path schedule for both residue and Pu stabilization is expected to continue through 2001. Continued planning and analysis are needed to shorten the required schedule. The post 2003 operating costs are estimated to be $20M.

Issues that remain to be resolved include the following:

- The on-site Pu storage location (new vault, Building 371, or other alternative);
- The implementation methods to meet the criteria for safe, long-term storage of residues;
- Schedule compression, including technology choices for residue stabilization; and
- The quantity and types of materials to be shipped to Waste Isolation Pilot Plant (WIPP) or other locations.

Waste Management

The feasible alternative is to construct a new hardened TRU waste storage facility. This facility may store up to 3,000 kgs of plutonium within the waste matrix of approximately 20,000 drums. Other parts of the feasible alternative include the following elements:

- Bulk Low-Level Waste (LLW), Low-Level Mixed Waste (LLMW), and remediation and decommissioning waste would be disposed of in an on-site disposal facility located in the industrial area (probably in the Protected Area). Some waste may be shipped off-site and most waste will be disposed of in such a way that will facilitate future off-site disposal if it becomes cost effective.

- Waste treatment would be accomplished only as necessary regardless of regulatory imperatives to ensure safety for long-term storage or disposal.
- Waste would be stored temporarily in existing buildings outside the Protected Area while long-term storage capacity is constructed.
- All landfills and waste facilities would be closed by the end of 2003.

The cost for this alternative is about $550 M with about $100 M required for the new hardened TRU waste storage facility. This new facility would be expected to be operational in the year 2000. Long-term Operations and Maintenance (O&M) costs after 2003 are estimated to be about $5M per year.

Some issues for further consideration include:

- On-site vs. off-site storage/disposal of all waste types;
- Treatment criteria for long-term storage or disposal for all waste types and regulatory alignment with criteria; and
- Lower-cost options for storing TRU waste than in a hardened facility.

Facility Decommissioning

There are more than 425 facilities at the Site to be decommissioned in some fashion. The feasible alternative has the following attributes.

- Most buildings are not radiologically contaminated and will be dismantled except for those deemed economically valuable (e.g., National Conversion Pilot Project (NCPP)).
- The major plutonium buildings and Building 881 will be partially dismantled with the lower-level portions entombed. This would involve removing significant contamination and then filling the basement areas with demolition debris, entombing the basement with material such as impervious clay slurry, and covering with a landfill cap.
- Many of the plutonium buildings must remain operational for several years in order to consolidate and stabilize plutonium and waste. The approach will therefore be to remove administrative and ancillary buildings first in order to clear space and to level the workload. Major plutonium facilities, such as Buildings 371 and 707, will be the last to be completely decommissioned.

Current planning indicates most facilities can be decommissioned by the end of FY02 at a total cost ranging from $1.5 billion to $2 billion.

The remaining issues to be addressed include further refinement of building sequencing and further development of a detailed logic, safety authorization basis, and cost estimates for all buildings. Other issues include:

- Ensuring on-site and off-site safety during decommissioning;
- Determining the cost-benefit tradeoffs regarding the degree of contamination to be left with the building rubble or placed in a disposal cell;
- Defining the regulatory process for decommissioning; and
- Determining the workforce composition and skill mix.

Interim Closure

The feasible alternative for interim closure results in the unrestricted use (from a contamination perspective) of 5,000 of the Site's 6,500 acres. An additional 1,000 acres would be suitable for use as unoccupied open space, and 300 acres would be suitable for industrial reuse. The remaining 200 acres would be placed under a landfill cap, which includes the old landfill (OI5), the current landfill (OU7), the 800 old uranium processing area, and the plutonium processing area (Protected Area).

Groundwater and surface water would be protected to national standards for water leaving the site by upgradient diversion and down-gradient passive reactive barriers.

About 40 of the 173 individual hazardous substance sites (IHSSs) that are high or medium ranked from a risk perspective would be remediated. The remaining 133 Sites have low enough contamination and risk levels that they can be released without further action.

The cost for this activity is about $400M with about half the cost for IHSS remediation and half the cost for landfill caps and water management. Long-term monitoring will cost about $3M per year after 2003.

The final cap is on the critical path schedule. It will take about two years to complete and extend about six months after the last building (Building 707) has been fully decommissioned.

Issues to be resolved include the acceptability of the land use restrictions of the feasible alternative and the standards that apply to those land use criteria. Additionally, there are many who favor a "greenfield" site cleanup that would cost another $5 billion or so to achieve. This alternative will be developed in the next planning phase. Other issues include:

- The methods to be used for surface and groundwater control (e.g., reactive barriers) and water quality standards;

- Integration with the issues to be resolved for waste management and facility decommissioning regarding on-site disposal of waste and decommissioning materials;
- The design of the landfill cap to ensure long-term integrity; and
- The impacts of excavating and placing the more than 2,000,000 cubic meters of material needed for the landfill cap.

Site Infrastructure

The feasible alternative requires a site infrastructure to support the remaining plutonium and waste storage facilities and about 300 total staff. The strategy for site infrastructure is to relocate most infrastructure off-site. This would be accomplished by using public or commercial utilities to provide power, gas, water, sanitary solid waste, etc., service directly to buildings. Sewage would be managed on-site in a small lagoon or septic system. Except for the protective security force, most emergency and health services would also be contracted for off-site. All office and support facilities would be located off-site to reduce the demand for expensive on-site infrastructure.

This commercial approach would have the advantage of bringing utility trunk services to the Site to support future private industrialization at the discretion of land use authorities.

It is estimated to cost about $70M to develop the infrastructure for commercial service to the Site and convert other site infrastructure to the new configuration. The post 2003 annual operating costs are estimated to be $12M. There are no critical path schedule items in this conversion.

Issues to be resolved include verifying the desirability of this fairly radical reconfiguration and the ability and willingness of the commercial and public utilities and emergency services to serve the Site. Additionally, once the configuration is approved, the timing for its implementation (sooner or later) needs to be evaluated.

Implementation

Some key implementation strategies include the following.

Regulatory Alignment. The regulatory structure and process needs must be aligned to accomplish the Site closure mission. Currently, the Site is regulated as an operating facility, which creates regulatory road blocks to an expedited cleanup that would not exist at a typical Superfund site.

Workforce Restructuring. DOE and the contractor will need to carefully coordinate realignment of required work, skills mix, and retraining to provide the most productive use of the workforce. A human resource plan must consider the inevitable downsizing of the workforce.

Stakeholder and Political Alignment. A scope, schedule, and funding package needs to be developed that meets the consensus needs of both the funders (i.e., Congress, DOE/HQ) and the beneficiaries (e.g., Colorado and the nation at large) of the project. A series of working sessions and briefings will be conducted to accomplish this over the next several months.

Site Productivity. The Contractor and DOE need to continue to evaluate procedural and motivational methods to increase the Site's productivity and cost, scope, and schedule accountability. It is believed that this preliminary integrated vision for the Site's new mission will be a key factor in this effort.

Projectizing. The implementation plan calls for projectizing the Site, as indicated by the word 'project' in the ASAP. Projectizing has some significant structural and process implications for DOE, the Contract, and the Contractor. One of the most important enablers would be to align DOE and Contractor performance measures to specific scope accomplishments rather than by fiscal year.

Stakeholder Involvement and Project Precesur Milestones

Background. This ASAP concept, which had its formal beginning on August 1, 1995, had many important precursor events, described below. ASAP incorporates many of the features of previous work at RFETS.

- In 1993, the Site mission was changed from production to cleanup.
- In 1994, the Site responded to the mission change by issuing a request for proposals to procure a new performance-based integrating management contractor for the Site to carry out the new mission.
- In early 1994, the Site began negotiating a new cleanup agreement with the US Environmental Protection Agency (EPA) and the State of Colorado to reflect the fact that the previous agreement, the Interagency Agreement (IAG), did not reflect the mission change.
- In 1994, the Defense Nuclear Facilities Safety Board issued two important recommendations (94-1 and 94-3) dealing with plutonium stabilization and storage at the Site.
- In 1994, the Site issued a Strategic Plan with input from various stakeholder groups.

- In early 1995, a series of public meetings were held regarding the then-proposed solar pond remediation plan, which involved construction of a Corrective Action Management Unit (CAMU) waste disposal facility by the solar ponds.
- In early 1995, the Site had several important interactions with regulators and stakeholders to review the path-forward options for the Site. One of the most important of these was the March 4 summit. At the summit there was a consensus to place a higher priority on risk reduction by stabilizing plutonium than on environmental remediation. On-site disposal was also discussed by many attendees as a way to cut costs to enable more risk reduction. Another important event was the April regulatory summit, at which similar conclusions were reached.
- In early 1995, Kaiser-Hill was selected as the new contractor to carry out the mission. Kaiser-Hill assumed responsibility for the Site on July 1, 1995.
- In June 1995, the Future Site Use Working Group issued a consensus opinion that the buffer zone should generally be open space and the industrial area should be for industrial use.
- A series of meetings were held in the summer of 1995 with the state of Colorado, regulators, and many stakeholders regarding the alternatives for plutonium storage at the Site, including the possibility of constructing a new vault. The possibility of long-term storage of plutonium at the Site was addressed.

Involvement In This Draft Plan. It is important to note that essentially most elements in this plan have enjoyed a stakeholder/regulator dialog in the past. However, this is the first time all the issues have been integrated into one product. The integrated concepts in this plan have been presented to representatives of the following groups:

- US EPA,
- Colorado Governor's Office,
- Colorado Department of Public Health and Environment (CDPHE),
- The Rocky Flats Citizen's Advisory Board,
- DNFSB,
- DOE Headquarters,
- Congressmen Skaggs and Schaefer,
- Rocky Flats Local Impact Initiative, and the
- General public (through the Site's monthly stakeholder meeting).

Participants' key areas of concern appear to be ensuring that:

- Everything is being done to remove the plutonium and waste from the Site at the earliest possible time.
- The plutonium is stored in the safest possible configuration.
- The implications and choices are clearly outlined and openly made.
- There will be an adequate stakeholder involvement program.
- The tradeoffs among cost, schedule, and final cleanup criteria have been properly balanced.
- Future land use options, including both dedicated open space and economic conversion, have been accounted for and enabled.

Next Steps

This document describes the first planning phase of the project. The Site is currently making adjustments in its FY96 operating activities to accommodate the most basic features of the strategy.

The next phase of the plan, to be accomplished by the end of 1995, will be to develop and evaluate alternatives to address the key policy choices and issues described at the front of this summary. This process will also look at outyear (beyond 2003) scenarios to ensure that the final Site strategy is represented.

It is expected that a preferred plan will emerge from this phase that will allow an even greater shift of resources during the FY96 execution year. This process will include rigorous stakeholder and regulator involvement to ensure mutual understanding and to arrive at a "best solution" that balances competing needs and concerns.

Once the draft master plan has been developed, key decisions and issues will be segregated to determine decision pathways and time frames and more detailed stakeholder involvement in the alternatives involved in those second-tier decisions.

Stakeholders will need to consider important milestones over the next few months. Some of these are described below.

- The October 10 and 11 Workout Session between DOE, EPA, CDPHE, the DNFSB, and Kaiser-Hill to conceptually agree on the regulatory framework for the path forward. The new regulatory agreement, which may result from this workout, will be out for public comment in the November 1995 time frame.

- In November 1995, the Assistant Secretary is to make a recommendation regarding plutonium storage at the Site to respond to DNFSB recommendation 94-3.
- Also in November 1995, DOE will receive public comment on the June 1995 Future Site Use Working Group recommendations.
- A formal public review process will be under way soon to decide on the possible construction of a waste facility for storage or disposal of LLW and LLMW on-site. This expands on the disposal concept developed for the solar ponds remediation project and presented to the public in early 1995.
- As part of this process, in the next several months, the public will be evaluating the treatment and storage concepts for containerized waste on site. Additionally, the facility decommissioning alternatives will be discussed.
- The draft Sitewide Environmental Impact Statement (SWEIS) is due out for public comment early in 1996. The SWEIS will reflect the preferred ASAP alternative.

Conceptual View of Interim Closure

Exhibit 0.1
Rev. 0

EXPLANATION

- OUTER BUFFER ZONE (4958.7 Acres)
- INNER BUFFER ZONE (1026.8 Acres)
- CLOSED LANDFILLS (53.1 Acres)
- INDUSTRIAL AREA (316.7 Acres)
- CAP (129.9 Acres)

Standard Map Features

- Buildings or other structures
- Lakes and ponds
- Streams, ditches, or other drainage features
- Fences
- Contours (20' Intervals)
- Rocky Flats boundary
- Paved roads
- Dirt roads

DATA SOURCE:
Buildings, roads, and fences provided by Parsons Engineering Science, Inc. 2040 Rocky Flats, Inc. - 1991.
Hydrology provided by (1987 - date unknown)

Scale = 1 : 20040
1 inch represents approximately 2496.66 feet

State Plane Coordinate Projection
Colorado Central Zone
Datum NAD27

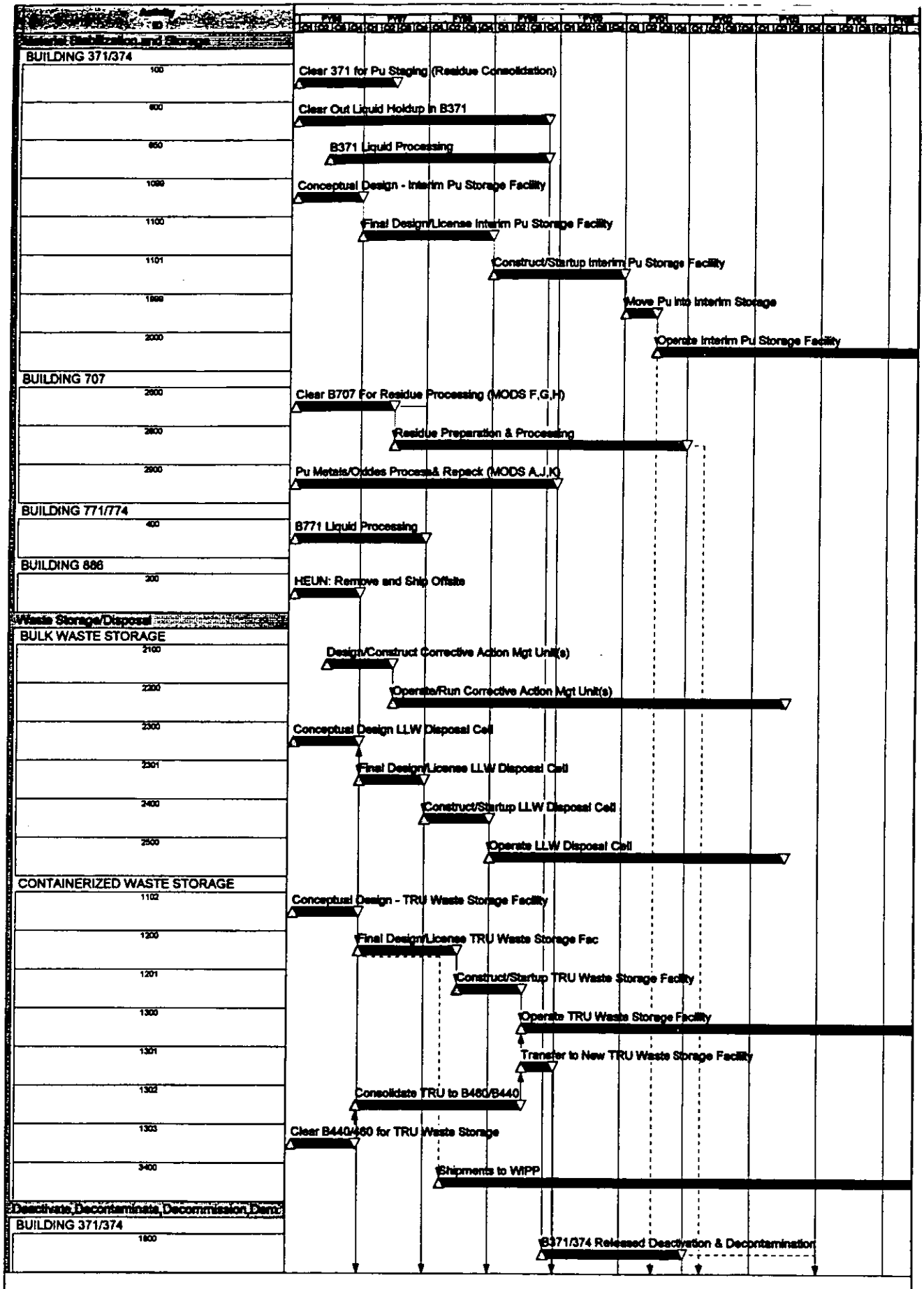
U.S. Department of Energy
Rocky Flats Environmental Technology Site

RMRS Rocky Mountain Remediation Services, L.L.C.
Geographic Information Systems Group
Rocky Flats Environmental Technology Site
P.O. Box 464
Golden, CO 80402-0464

MAP ID: "Draft"

October 08, 1996

/home/ris/512960/projects/kaiser-h/closure.aml



Project Start	03OCT96	Early Bar
Project Finish	01NOV06	Progress Bar
Data Date	03OCT96	Critical Activity
Plot Date	09OCT96	

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ASAP

Sheet 1 of 2

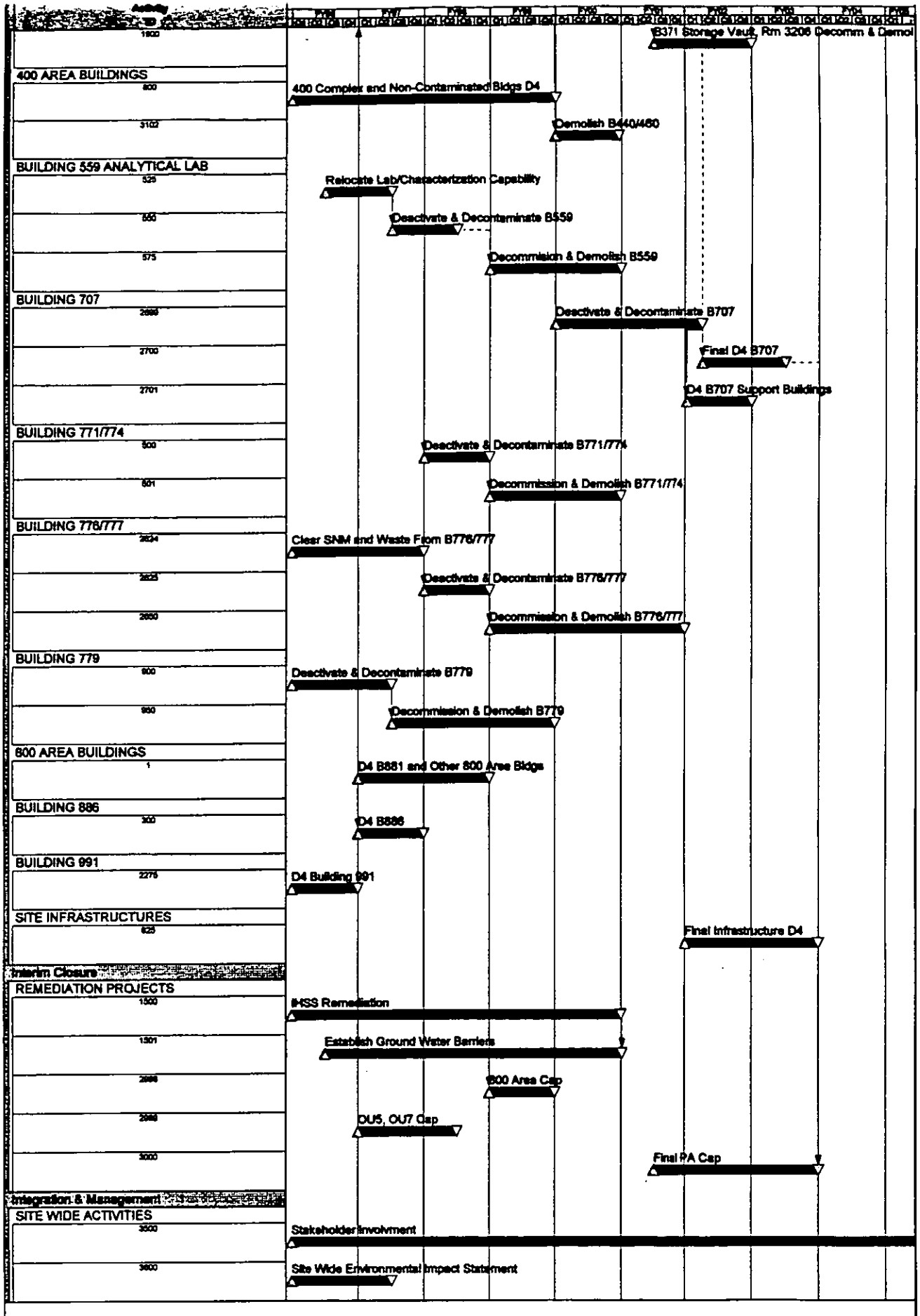
Rocky Flats Environmental Tech. Site

Accelerated Site Action Project

Exhibit 0.4

Revision 1: 9 October 1996

Date	Revision	Checked	Approved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FY96 FY97 FY98 FY99 FY00 FY01 FY02 FY03 FY04 FY05
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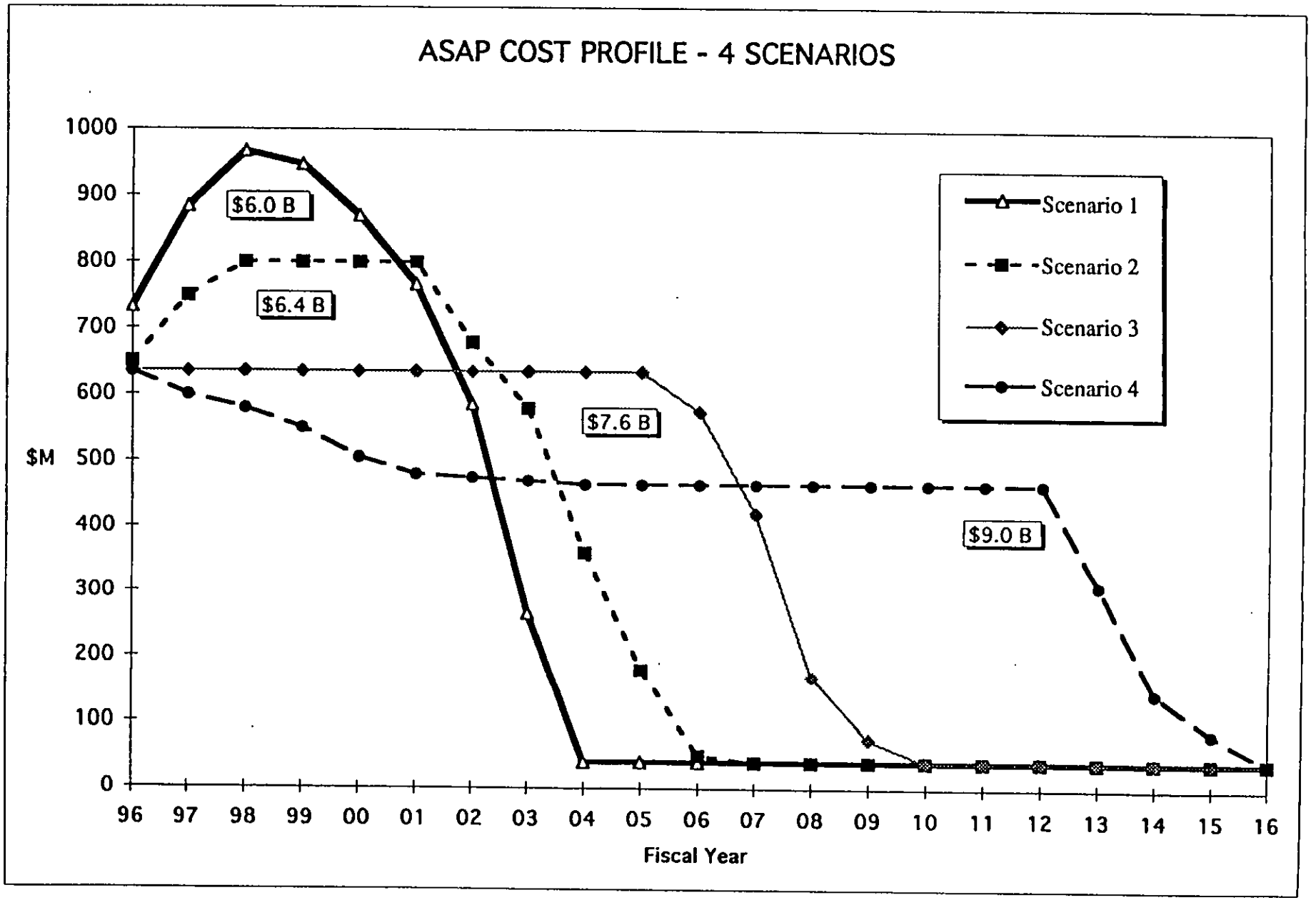
B371 Storage Vault, Rm 3206 Decomm & Demol
400 AREA BUILDINGS
800
400 Complex and Non-Contaminated Bldgs D4
3102
Demolish B440/460
BUILDING 559 ANALYTICAL LAB
525
Relocate Lab/Characterization Capability
550
Deactivate & Decontaminate B559
575
Decommission & Demolish B559
BUILDING 707
2699
Deactivate & Decontaminate B707
2700
Final D4 B707
2701
D4 B707 Support Buildings
BUILDING 771/774
500
Deactivate & Decontaminate B771/774
501
Decommission & Demolish B771/774
BUILDING 776/777
2624
Clear SNM and Waste From B776/777
2625
Deactivate & Decontaminate B776/777
2650
Decommission & Demolish B776/777
BUILDING 779
900
Deactivate & Decontaminate B779
950
Decommission & Demolish B779
800 AREA BUILDINGS
1
D4 B881 and Other 800 Area Bldgs
BUILDING 886
300
D4 B886
BUILDING 991
2275
D4 Building 991
SITE INFRASTRUCTURES
625
Final Infrastructure D4
Interim Closure
REMEDIATION PROJECTS
1300
IHSS Remediation
1301
Establish Ground Water Barriers
2699
800 Area Cap
2699
OU5, OU7 Cap
3000
Final PA Cap
Integration & Management
SITE WIDE ACTIVITIES
3500
Stakeholder Involvment
3600
Site Wide Environmental Impact Statement


ASAP COST PROFILE - 4 SCENARIOS
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Scenario 1
Scenario 2
Scenario 3
Scenario 4
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Fiscal Year

Scenario 1

Lowest Cost With Unconstrained Budget

($ Millions)

FY	WF Rest	Infra	Closure	SNM	Waste	Fac Dec	Base	Total
96	10	5	40	118	30	50	480	733
97	15	5	70	199	65	100	430	884
98	10	10	70	172	80	250	375	967
99	10	15	70	142	110	275	325	947
00	5	10	50	115	90	300	300	870
01	5	10	10	67	75	325	275	767
02	10	5	25	11	60	275	200	586
03	20	5	55	11	25	50	100	266
Subtotal	85	65	390	835	535	1625	2485	6020

Scenario 2

FY-96 (+$15M) Constrained With $800M Cap

($ Millions)

FY	WF Rest	Infra	Closure	SNM	Waste	Fac Dec	Base	Total	Target
96	10	5	20	95	30	10	480	650	650
97	15	5	40	145	60	55	430	750	750
98	10	5	40	190	80	100	375	800	800
99	10	5	45	160	90	165	325	800	800
00	10	10	45	115	95	225	300	800	800
01	10	10	45	110	75	275	275	800	800
02	10	10	45	35	55	325	200	680	800
03	5	10	45	10	35	325	150	580	800
04	5	5	45	10	20	175	100	360	800
05	5	5	40	10	20	50	50	180	800
Subtotal	90	70	410	880	560	1705	2685	6400	7800

Scenario 3

Budget Maintained At FY-96 Level

($ Millions)

FY	WF Rest	Infra	Closure	SNM	Waste	Fac Dec	Base	Total	Target
96	10	0	10	90	30	15	480	635	635
97	10	0	10	120	40	15	440	635	635
98	10	0	10	150	50	15	400	635	635
99	10	0	10	180	50	15	370	635	635
00	10	0	15	175	50	45	340	635	635
01	5	0	40	115	50	105	320	635	635
02	5	0	65	60	65	140	300	635	635
03	5	5	75	10	55	210	275	635	635
04	5	10	65	10	60	285	200	635	635
05	5	15	40	10	55	360	150	635	635
06	5	15	20	10	50	375	100	575	635
07	5	15	30	10	40	245	75	420	635
08	5	10	35	10	15	45	50	170	635
09	10	5	25	10	5	0	20	75	635
Subtotal	100	75	450	960	615	1870	3520	7590	8890

Scenario 4

Current Estimated Budget Forecast

($ Millions)

FY	WF Rest	Infra	Closure	SNM	Waste	Fac Dec	Base	Total	Target
96	10	0	10	100	30	5	480	635	635
97	10	0	10	90	35	5	450	600	600
98	10	0	10	100	35	5	420	580	580
99	5	0	10	105	35	5	390	550	550
00	5	0	10	90	35	5	360	505	505
01	5	0	10	95	35	5	330	480	480
02	5	0	10	105	50	5	300	475	475
03	5	0	10	120	55	5	275	470	470
04	5	0	10	90	60	50	250	465	465
05	5	0	10	75	55	95	225	465	465
06	5	0	15	40	50	155	200	465	465
07	5	0	20	10	40	240	150	465	465
08	5	5	40	10	40	265	100	465	465
09	5	5	60	10	40	255	90	465	465
10	5	10	70	10	30	260	80	465	465
11	5	15	70	10	30	265	70	465	465
12	5	20	45	10	30	295	60	465	465
13	5	15	30	10	30	170	50	310	465
14	10	10	35	10	15	25	40	145	465
15	10	5	25	10	5	0	30	85	465
Subtotal	125	85	510	1100	735	2115	4350	9020	9875

Waste Management Facility
Cost, Capacity and Alternatives

Presentation to Site-Wide Subcommittee
Citizens Advisory Board
by Kaiser-Hill
August 7, 1995

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HAZARDOUS MATERIALS
AND WASTE MANAGEMENT

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WASTE MANAGEMENT FACILITY

- K-H Concerns with the Status Quo
  - Diminishing Budget
  - Lack of Available Onsite Storage
  - Cost to Continue Shipping Waste Offsite
  - Offsite Shipment Risks to the Public and Environment
  - Future Corporate Liability for K-H
  - Future Availability of Offsite Disposal

Karen,
Help! I'm working on a project

WASTE M FACILITY

- Costs
  - Environm Budget for FY96 is H
  - Budget N Increase
  - Higher Cost Per Cubic Yard (CY) Results in Fewer CY Being Cleaned Up
  - Cost for Offsite Alternatives are 5 to 10 Times Higher than Onsite Disposal

WASTE MANAGEMENT FACILITY

- Current Storage Capacity
  - Not Configured for Bulk Storage
  - Permit Modification Required
  - Total Existing Low-Level Mixed (LLM) Capacity is 30,000 CY
  - Total Existing LLM Inventory is 21,000 CY
  - The Only Available Capacity that Could be Freed up Right Away is 4,400 CY

WASTE MANAGEMENT FACILITY

- FY96/97 Waste Issues
  - ER Cleanup Activities Will Generate 90,000 CY in FY96 and FY97
    - From Cleanup of the Top 10 IHSSs and Solar Ponds (OU4)
    - Assumes Volume Reduction by Pretreatment using Thermal Desorption
  - The Cost to Transport/Dispose of Waste and Close OU4 Will be About $116 Million
  - Transportation Risk, National Safety Council Statistics Indicate 11 Accidents During Shipment
  - We Have No Control Over Offsite Placement and Facility Operations
  - Nevada and Utah are Pressing for Less Waste to Their States

WASTE MANAGEMENT FACILITY

- Why an Onsite Waste Management Facility (WMF)
  - ER Waste can be Managed as it is Generated - Allowing Risk Reduction to Proceed
  - A 100,000 CY WMF can be Constructed, Operated and Closed for $40 Million - Allowing $76 Million to be Used for Cleanup Activities
  - Top 10 IHSSs can be Cleaned Up Using the Cost Savings of WMF by End FY97

WASTE MANAGEMENT FACILITY

- Storage and Disposal Alternatives
  - LLM WMF
  - Landfill Concept Similar to One Proposed in OU4
  - Offsite Disposal (NTS and Envirocare)
  - Interim Storage
  - Containerized Storage in Concrete Vaults
  - Silo Disposal
  - Tombular Storage
  - Granite Pyramid

WASTE MANAGEMENT FACILITY
Retrievable Storage Comparison

- Bulk Storage Cell
  - Waste Placed and Compacted in Bulk
  - Waste Will Not be Segregrated
  - Cost of $200-$500 CY
- Mapped and Gridded Storage Cell
  - Waste Placed and Compacted in Bulk
  - Asphalt Floor for Access
  - Cost of $220-$520 CY
- Containerized Storage Cell
  - Waste Placed in Cargo Containers and Logged for Retrieval
  - Asphalt Floor for Access
  - Cost of $370 - $670 CY

WASTE MANAGEMENT FACILITY
Retrievable Storage Comparison (continued)

- Concrete Vault Storage Cell
  - Waste placed in Cargo Containers and Stored in Concrete Lined Vaults
  - Cargo Containers Logged for Retrieval
  - Cost of $1,600-$5,000 CY
- Tombular Storage Cell
  - Waste Placed in Drums and Stored in Individual Concrete Cells
  - Aisleway Access to Each Cell for Retrieval
  - Cost of $4,000-$6,000 CY

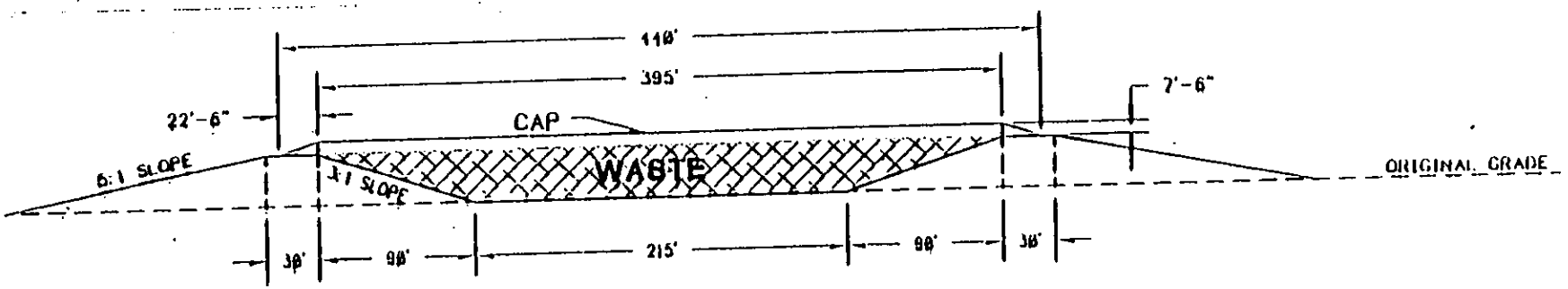
Waste Management Alternatives

Options	Cost per Cubic Yard		Design Features	Issues
	Low	High		
Low-Level Mixed Waste Management Facility	$220	$670	1) Double composite liner system 2) Groundwater monitoring system 3) Leak detection system 4) Leachate collection system 5) Waste packaged in bulk, crates, cargo containers, and/or drums 6) Waste mapped for retrieval	1) Limited access to waste 2) 20 year performance history 3) Early risk reductions 4) Long-term protectiveness 5) Consolidated waste
Landfill Concept Similar to the one proposed at the Solar Ponds	$240	$740	1) Permeable liner 2) Capillary break cover 3) Extensive monitoring system 4) Built using all natural materials 5) Waste packaged in bulk, crates, cargo containers, and/or drums	1) Limited access to waste 2) Limited performance history 3) Early risk reductions 4) Long-term protectiveness 5) Consolidated waste
NTS and Envirocare (Off-site disposal)	$1,000	$4,000	1) Waste packaged in crates, drums and/or cargo containers 2) Waste shipped to an off-site location for disposal (Low Level - NTS; Mixed - Envirocare)	1) Transportation risks 2) High costs will delay risk reduction 3) Long-term liability 4) Capacity/Availability limitations 5) Waste relocated from RFETS
Interim Storage	$1,300	$4,400	1) Waste stored in drums, crates and/or cargo containers 2) Waste placed in butler building for storage	1) No long term effectiveness 2) Solution viable for 30 years 3) High monitoring and maintenance cost 4) Easy waste retrieval 5) Easily monitored 6) High life-cycle cost
Containerized Storage in Concrete Vaults	$1,600	$5,000	1) Double composite liner system 2) Concrete vaults above the liner system 3) Groundwater monitoring system 4) Leak detection system 5) Leachate collection system 6) Waste compacted and stored in cargo containers then placed in the concrete vaults 7) Vaults eventually closed with an earthen barrier	1) Long-term protectiveness enhanced by the containers in the vaults 2) Limited performance history 3) High life-cycle cost 4) Consolidated waste 5) Waste can be stored in vaults prior to final closure

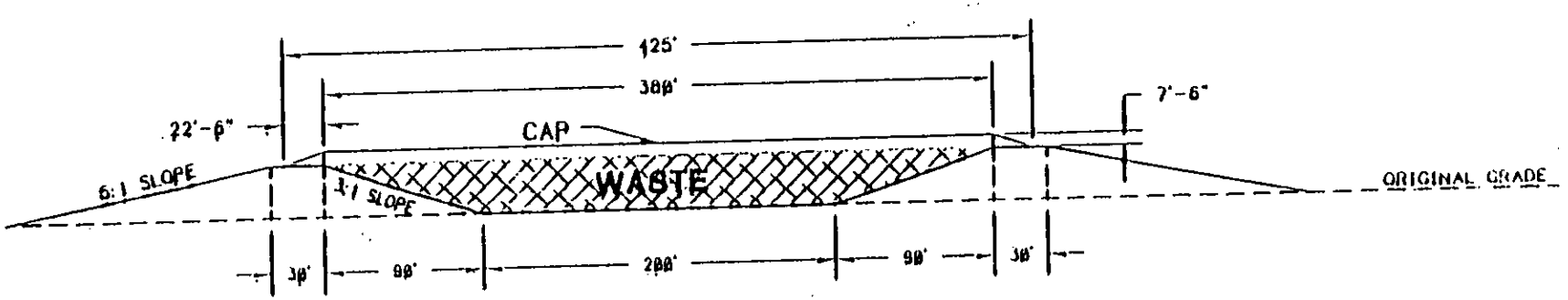
Waste Management Alternatives

Options	Cost per Cubic Yard		Design Features	Issues
	Low	High		
Silo Disposal	$3,000	$4,000	1) Double composite liner system 2) Groundwater monitoring system 3) Leak detection system 4) Leachate collection system 5) Wastes placed in drums and stored in silos 6) Silos eventually closed with an earthen barrier	1) No performance history 2) Wastes difficult to retrieve 3) High life-cycle cost 4) Long-term protectiveness enhanced by the silos
Tombular Storage	$4,000	$6,000	1) Double composite liner system 2) Waste placed in drums and strored in individual concrete cells 3) Aisleway access to waste in the cells 4) Groundwater monitoring system 5) Leak detection system 6) Leachate collection system 7) Covered with an earthen barrier	1) High monitoring cost 2) Long-term protectiveness enhanced by the containers in the cells 3) Very low placement rate 4) No performance history 5) Easily monitored 6) High life-cycle cost 7) Consolidated waste 8) Easy waste retrieval
Granite Pyramid	$30,000	$50,000	1) Waste encased in ceramic drums 2) Drums placed in granite or marble blocks and sealed with a granite or marble plug 3) Blocks stacked to form a pyramid	1) Long-term protectiveness and security 2) Implementation costs are prohibitive 3) Waste very difficult to retrieve

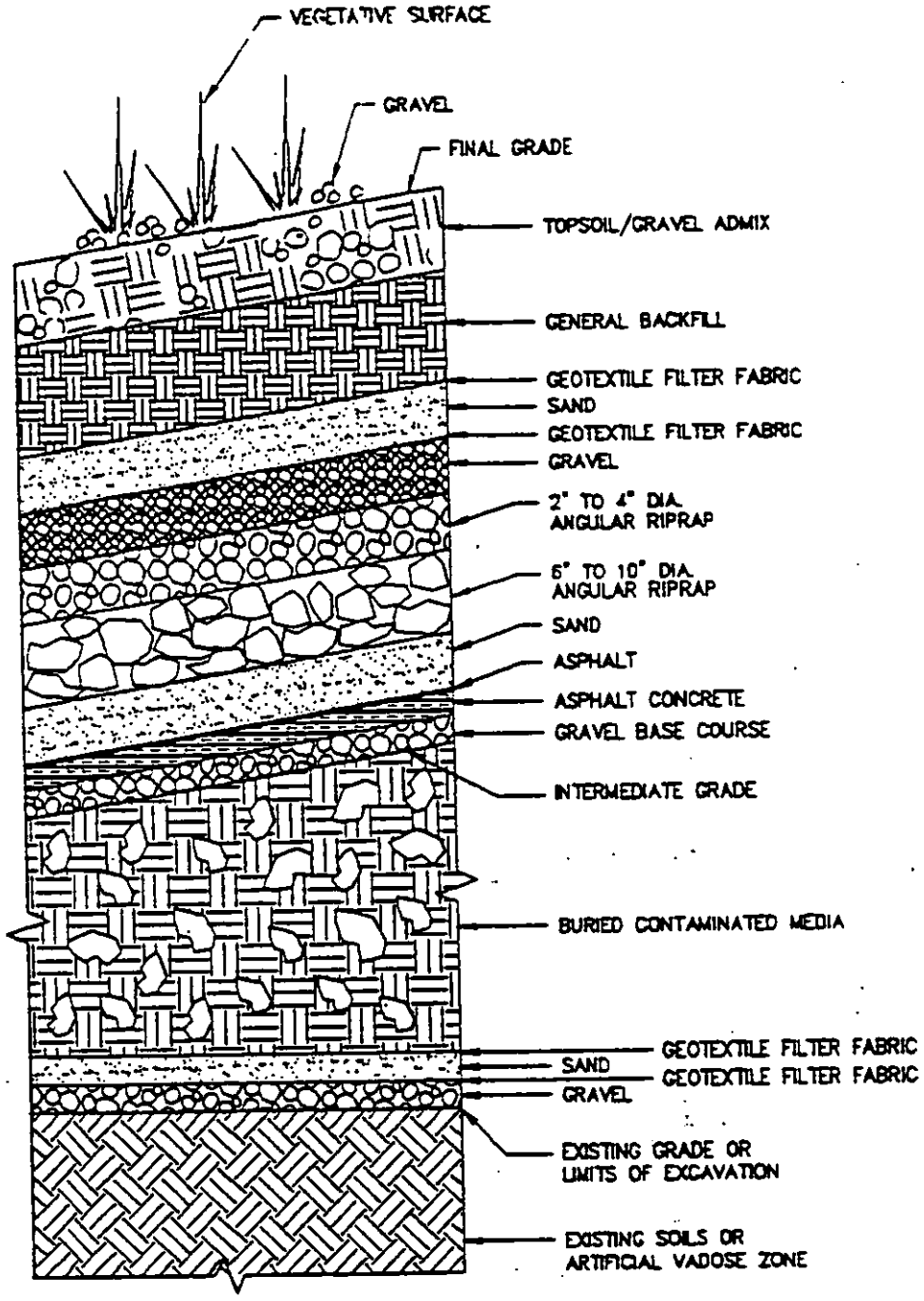
Low Level/Mixed Waste Management Facility



SECTION A
SEE DRAWING NO. 05397-60

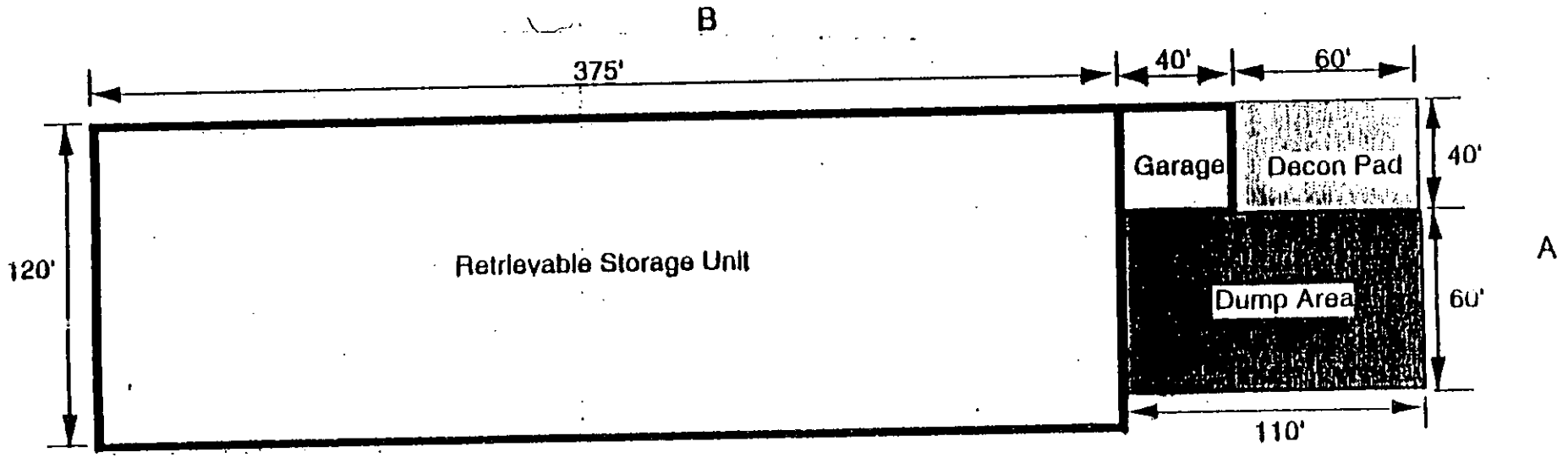


SECTION B
SEE DRAWING NO. 05397-60

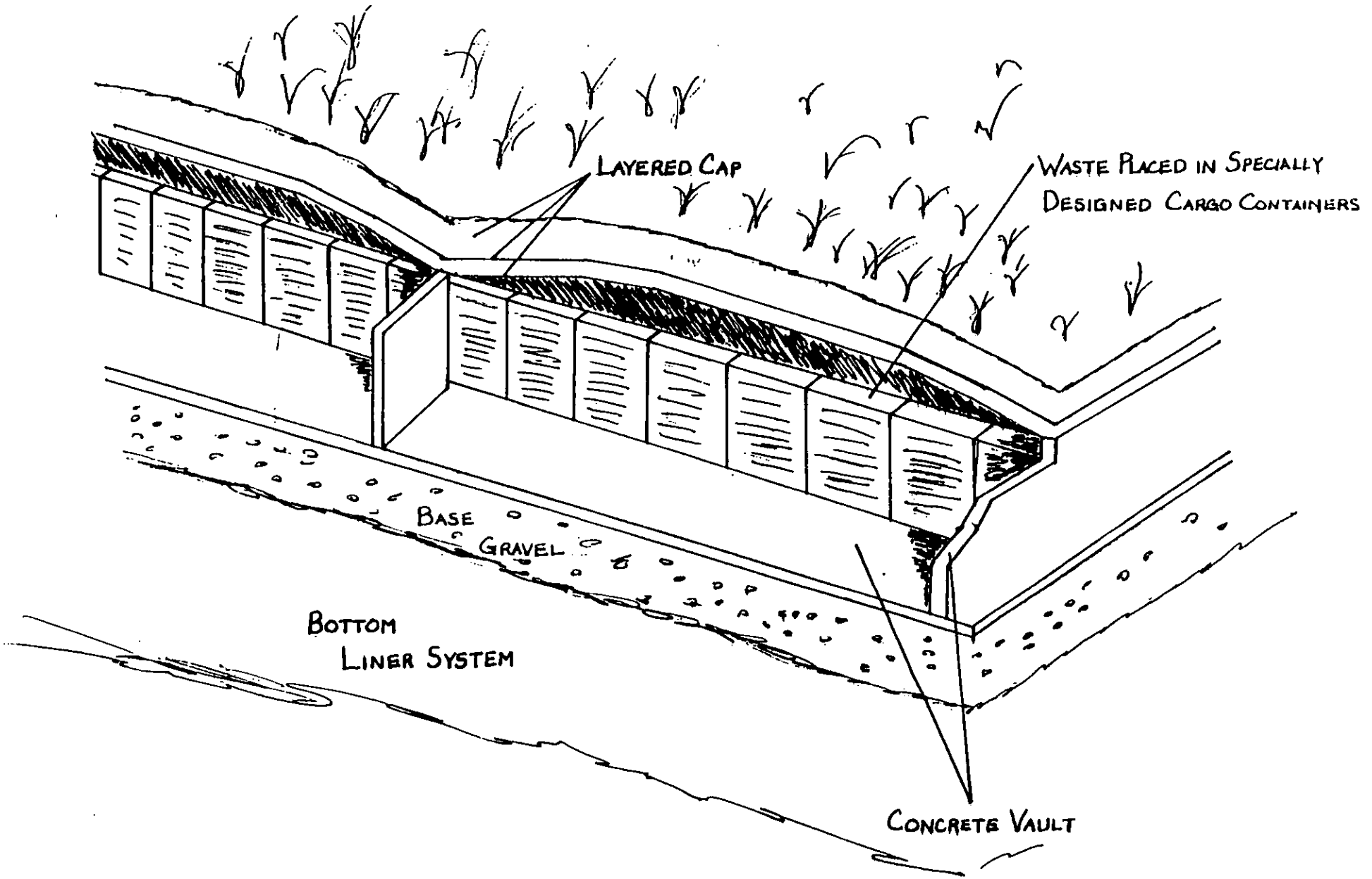


Solar Ponds Landfill Concept

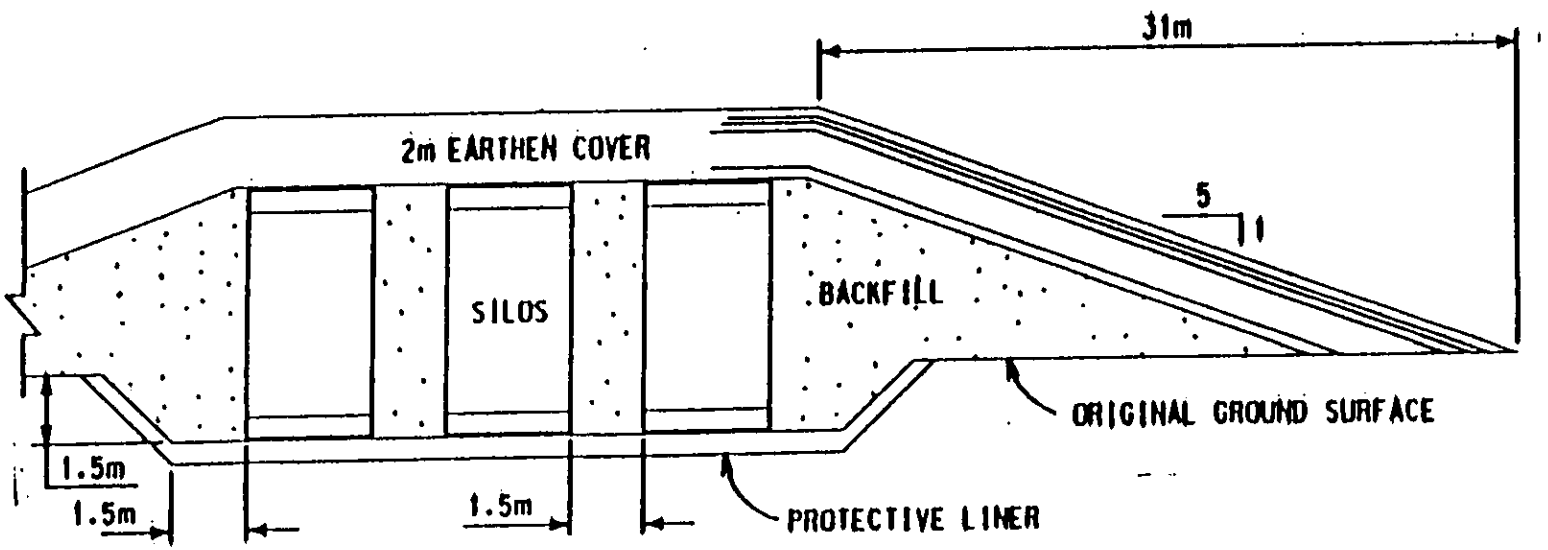
Interim Storage



Containerized Storage in Concrete Vaults

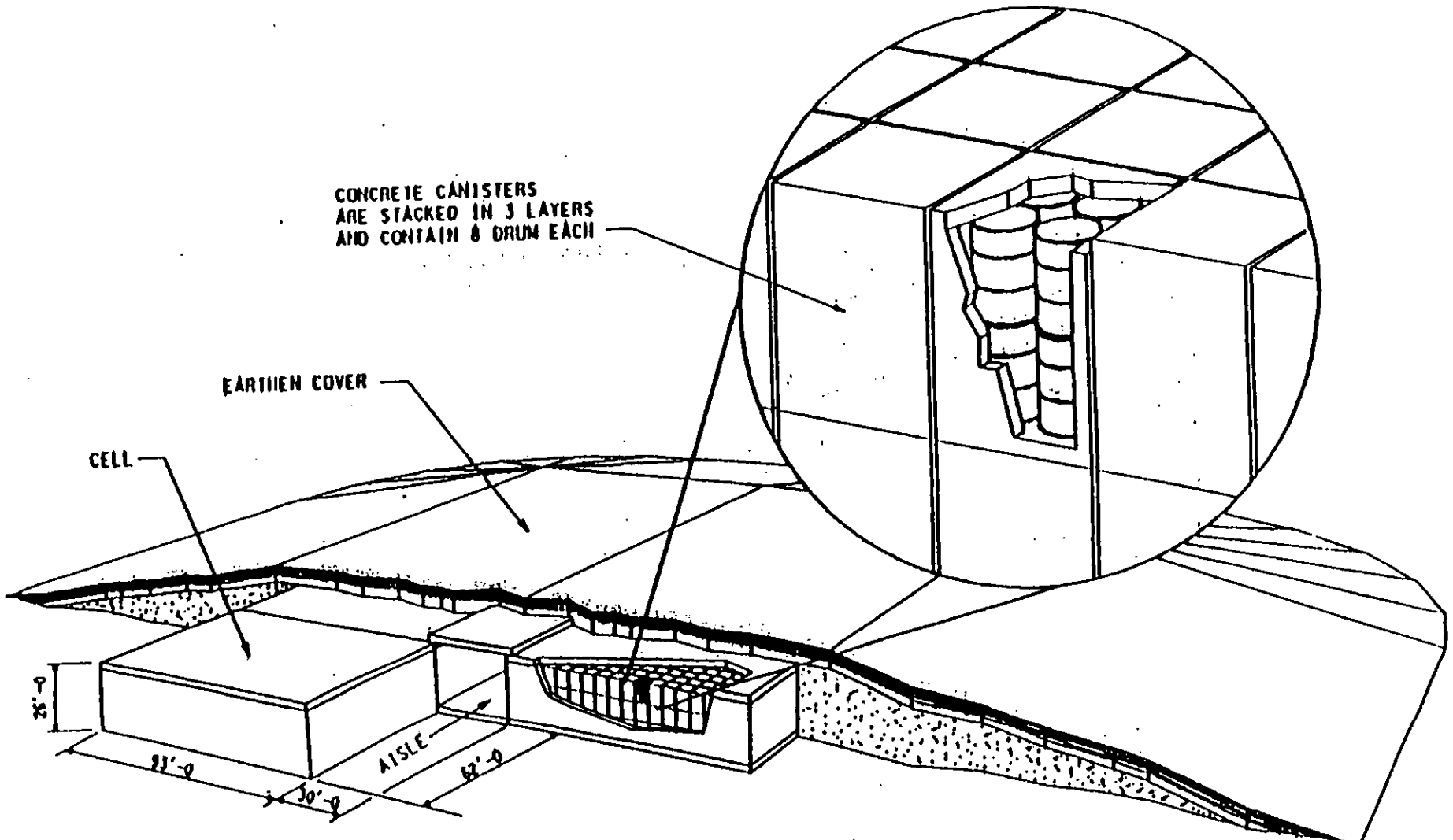


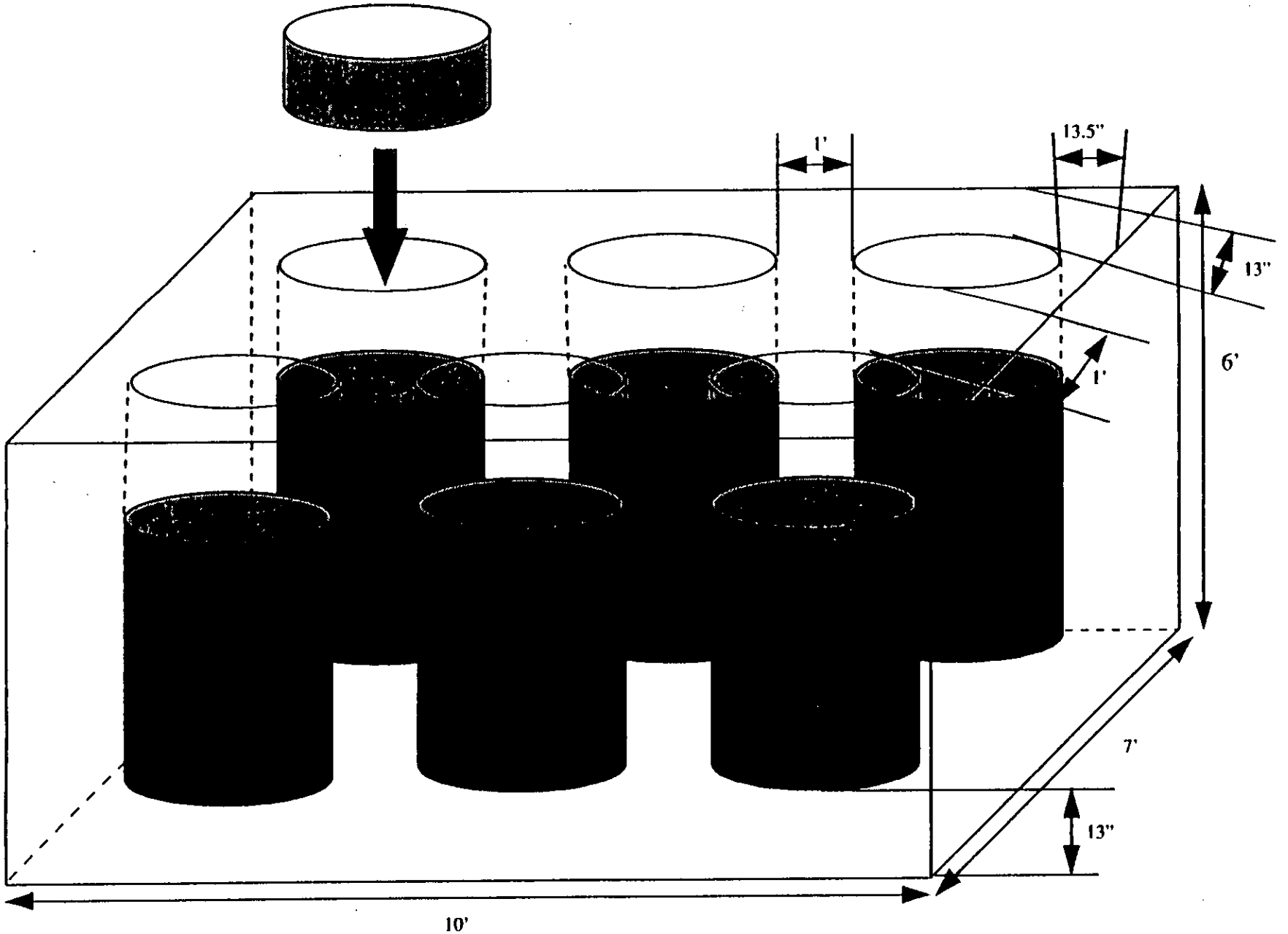
Silo Disposal



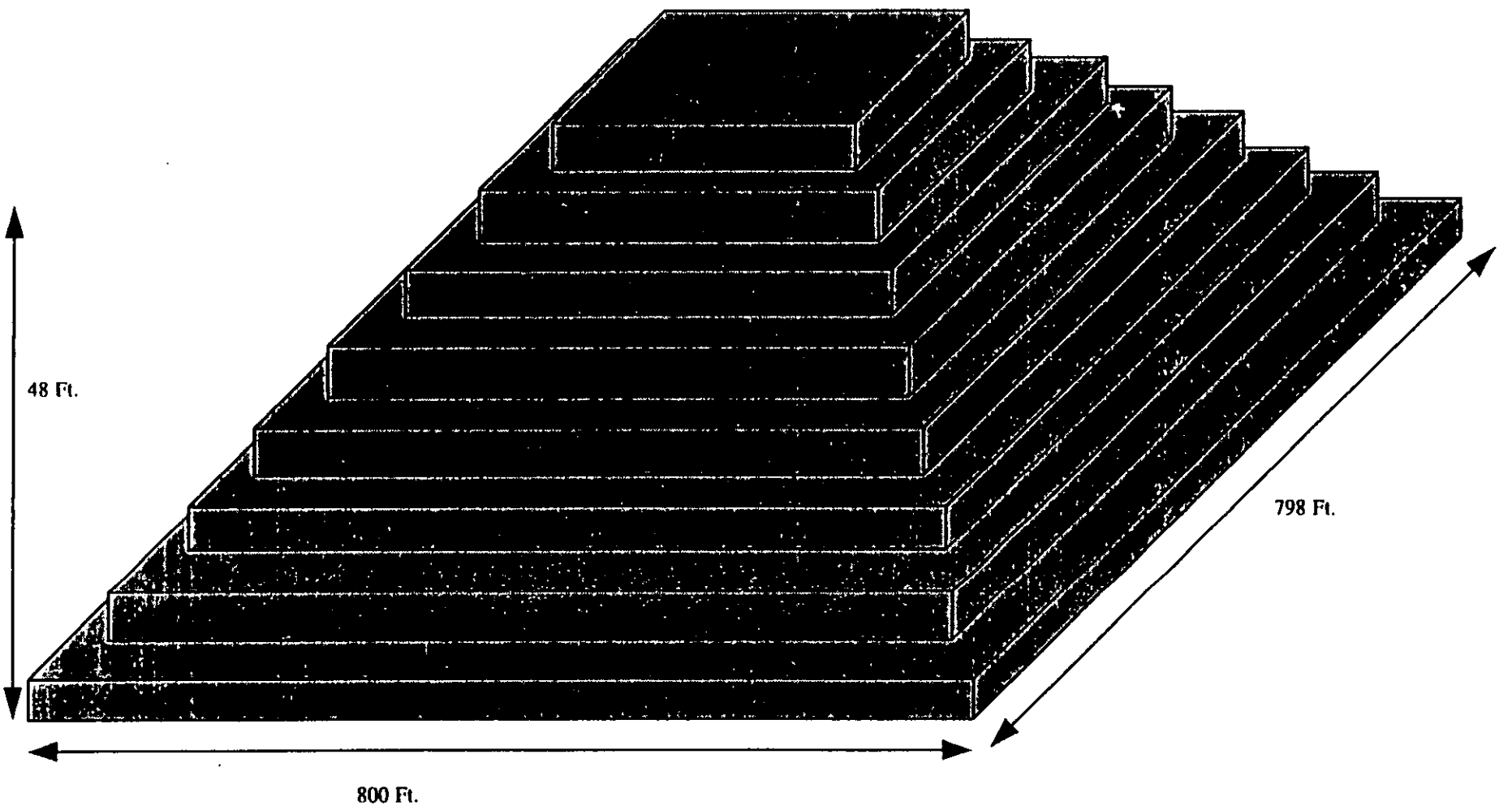
SILO DISPOSAL UNIT
CROSS SECTION

Tombu[illegible] Storage

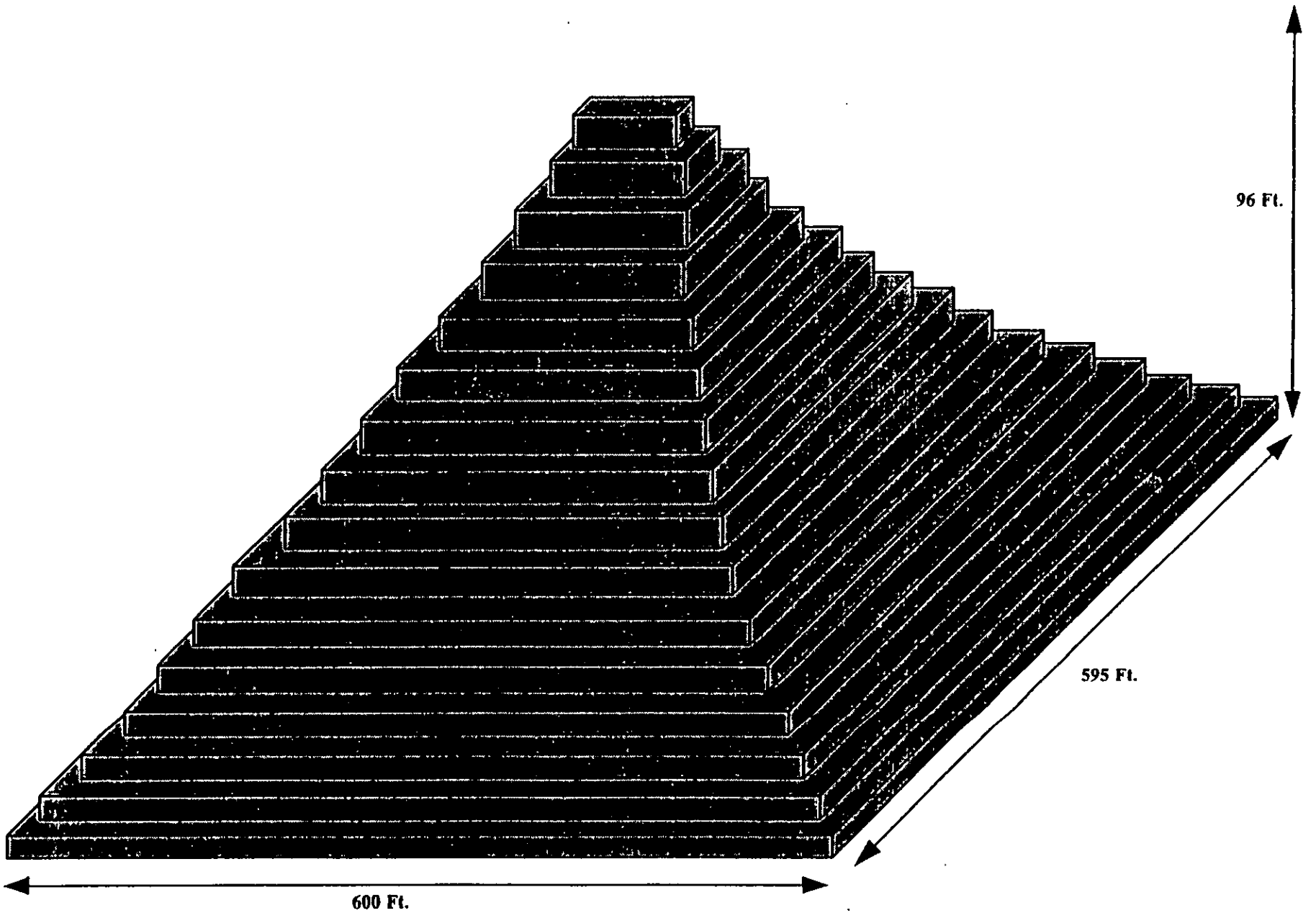




Granite Brick



Pyramid Layout #1



Pyramid Layout #2