



June 1996

86-060-20

TECHNICAL SUPPORT FOR PROPOSED  
MODIFICATION TO THE CHURCH ROCK SITE  
TAILINGS RECLAMATION PLAN  
NRC LICENSE SUA-1475

REVISION 1

Prepared for:

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## LIST OF FIGURES

<b><u>FIGURE NUMBER</u></b>	<b><u>DRAWING NUMBER</u></b>	<b><u>TITLE</u></b>
1	86-060-E1055	Proposed Amendments to Final Reclamation Plan, South End
2	86-060-A1053	Existing Surface Features Southwest of Buried Jetty
3	86-060-B1054	Surface Profiles



**TECHNICAL SUPPORT FOR PROPOSED MODIFICATION TO  
THE CHURCH ROCK SITE TAILINGS RECLAMATION PLAN  
NRC LICENSE SUA-1475  
REVISION 1**

## **1.0 INTRODUCTION**

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United Nuclear Corporation (United Nuclear) is requesting a modification to the Church Rock Site Tailings Reclamation Plan as Approved by NRC March 1, 1991, License No. SUA-1475 (Reclamation Plan). This modification request replaces the document submitted in April 1996 and is based on discussions between United Nuclear and the Nuclear Regulatory Commission (NRC) during a site visit on June 11, 1996. This document provides a discussion of the proposed modification as well as a revised figure, which is enclosed for insertion into the approved Reclamation Plan dated March 1, 1991. The modification request summarized below is discussed in detail in Section 2.

It is proposed that recontouring plans for the area south of the buried jetty and west of the South Tailings Cell be altered. Instead of recontouring the entire area between the South Cell and the Pipeline Arroyo, the existing surface features will remain in place. The existing surface drainages will be cleaned out and regraded as necessary to ensure positive drainage parallel to the face of the tailings pile until the channels discharge into the Pipeline Arroyo.

## **2.0 REGRADING SOUTH OF THE BURIED JETTY**

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### **2.1 Introduction**

This proposed modification addresses regrading of the area shown on Figure 1, which is located west of the reclaimed tailings disposal area and south of the Buried Jetty. The engineered contours require that a large volume be moved. These contours were developed to promote positive drainage away from the tailings area. However, review of the existing surface features indicates that the existing roadways and natural drainage channels actually provide equal or better long-term protection for the tailings. The existing surface features direct runoff into flow paths parallel to the face of the tailings, thus inhibiting the development of headward erosion toward the reclaimed tailings pile.

### **2.2 Discussion**

Figure 1 shows that the engineered contours required by the Reclamation Plan result in a smooth slope from the tailings to the Pipeline Arroyo. As shown on Figure 2, this area is currently occupied by two roadways and portions of a toe dam which was built in 1979 to protect the tailings impoundment. These features, with the runoff control ditch, produce a drainage pattern that results in several small channels directing runoff parallel to the face of the tailings pile. These channels flow southwest to discharge into the Pipeline Arroyo.

The existing channels have a beneficial effect because, by promoting flow parallel to the tailings embankment, headward erosion into the tailings and the development of gullies in the reclaimed cover is inhibited. Figure 3 shows a series of surface profiles which illustrate that the existing surface features produce a terraced effect, which slows and breaks up flow off the tailings embankment. The surface profiles also show that the probable maximum flood (PMF) flow is entirely contained in the channels farthest from the tailings and within the Pipeline Arroyo beyond a point about 300 feet southwest of the buried jetty. An additional safety factor is provided by the fact that the closest

tailings material contained in the reclaimed disposal area is located 75 to 100 feet from the outside edge of the reconfigured outslope of the reclaimed tailings embankment.

It is proposed that the existing roadways and drainage channels be left in place. The channels will be cleaned out, and any existing obstructions will be removed to ensure that positive drainage exists along the entire length of each channel. The upper ends of the drainage channels adjacent to the buried jetty will be regraded as necessary to maintain a gradual slope from the top of the buried jetty to the channel bottoms.

Also, the depression located south of the South Cell Drainage Channel (SCDC), highlighted on Figure 1, will be backfilled with material excavated from the SCDC. The backfill will be contoured to maintain the natural drainage toward the SCDC and the Pipeline Arroyo.

## **2.3 Revised Pages**

A revised Figure 5-1 is included as an attachment. The engineered contours for the area under discussion (shown on the original figure) have been removed, indicating that the existing contours will be left in place.

**SMITH**

**FIGURES**

**SMITH**

**ATTACHMENT**



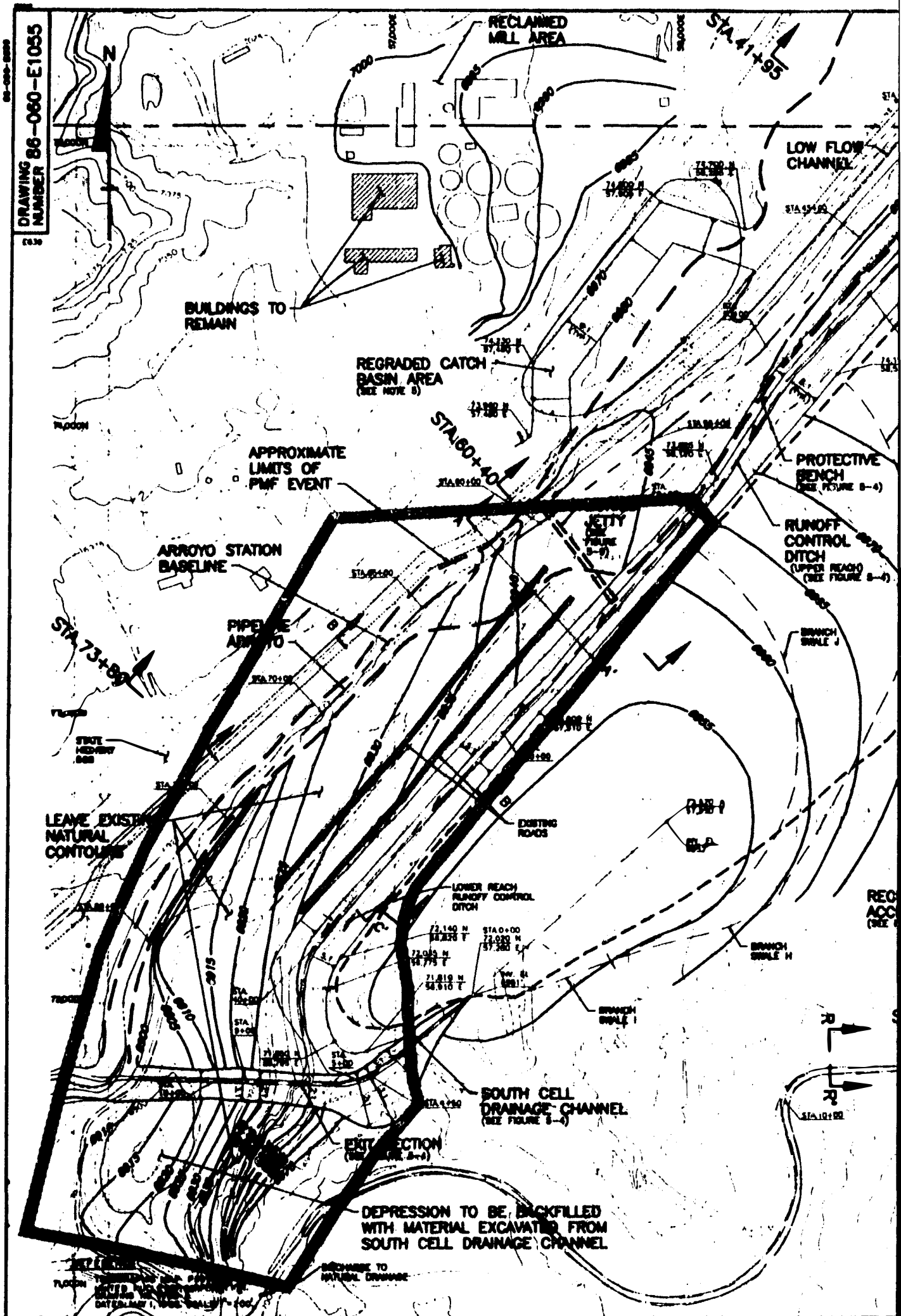


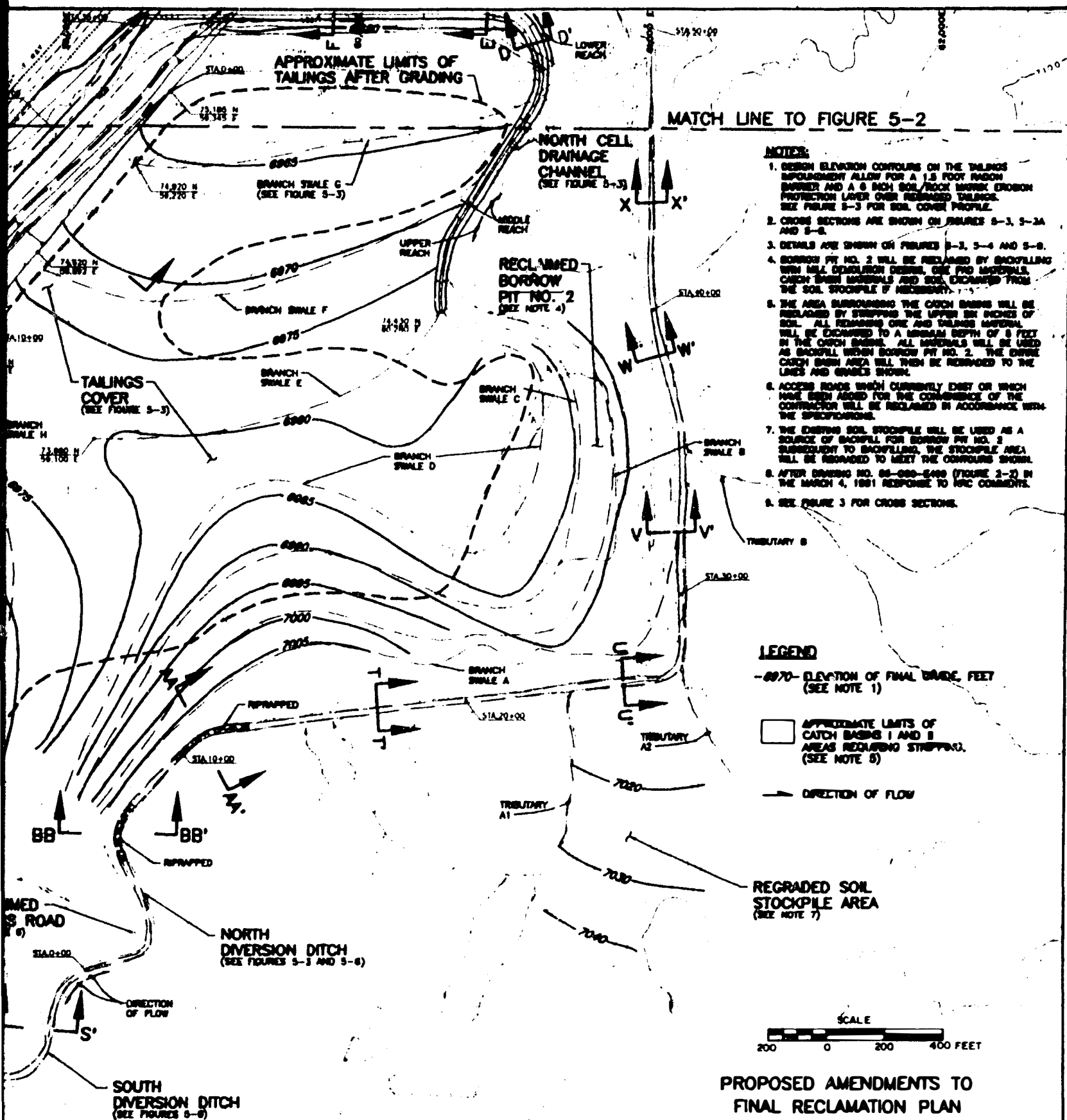
## TAILINGS RECLAMATION PLAN

### REVISION CONTROL SHEET

Chapter/Section		Revision	Pages	Effective Date
Figure 5-1		1.0	NA	

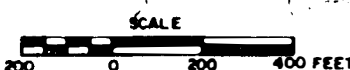
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- NOTES:**
1. DESIGN ELEVATION CONTOURS ON THE TAILINGS SPOILHEAP ALLOW FOR A 1.5 FOOT RADON BURIED AND A 6 INCH SOIL/ROCK BURIED EROSION PROTECTION LAYER OVER REGRADED TAILINGS. SEE FIGURE 5-3 FOR SOIL COVER PROFILE.
  2. CROSS SECTIONS ARE SHOWN ON FIGURES 5-3, 5-2A AND 5-2B.
  3. DETAILS ARE SHOWN ON FIGURES 5-3, 5-4 AND 5-5.
  4. BORROW PIT NO. 2 WILL BE RECLAIMED BY BACKFILLING WITH BALL CONSTRUCTION DEBRIS, ONE PRO MATERIALS, CATCH BASIN MATERIALS AND SOIL EXCAVATED FROM THE SOIL STOCKPILE IF NECESSARY.
  5. THE AREA SURROUNDING THE CATCH BASINS WILL BE RECLAIMED BY STRIPPING THE UPPER SIX INCHES OF SOIL. ALL REMAINING ONE AND TAILINGS MATERIAL WILL BE EXCAVATED TO A MINIMUM DEPTH OF 8 FEET IN THE CATCH BASINS. ALL MATERIALS WILL BE USED AS BACKFILL WITHIN BORROW PIT NO. 2. THE CATCH BASIN AREA WILL THEN BE REGRADED TO THE LINES AND GRADIES SHOWN.
  6. ACCESS ROADS WHICH CURRENTLY EXIST OR WHICH HAVE BEEN ADDED FOR THE CONSTRUCTION OF THE CONTRACTOR WILL BE RECLAIMED IN ACCORDANCE WITH THE SPECIFICATIONS.
  7. THE EXISTING SOIL STOCKPILE WILL BE USED AS A SOURCE OF BACKFILL FOR BORROW PIT NO. 2. SUBSEQUENT TO BACKFILLING, THE STOCKPILE AREA WILL BE REGRADED TO MEET THE CONTOURS SHOWN.
  8. AFTER DRAINING NO. 66-680-6400 (FIGURE 2-2) IN THE MARCH 4, 1981 RESPONSE TO NRC COMMENTS.
  9. SEE FIGURE 3 FOR CROSS SECTIONS.

- LEGEND**
- 6970- ELEVATION OF FINAL GRADE, FEET (SEE NOTE 1)
  - APPROXIMATE LIMITS OF CATCH BASINS 1 AND 2 AREAS REQUIRING STRIPPING. (SEE NOTE 5)
  - DIRECTION OF FLOW



PROPOSED AMENDMENTS TO  
FINAL RECLAMATION PLAN  
SOUTH END  
PREPARED FOR

UNC MINING AND MILLING  
GALLUP, NEW MEXICO

**SMITH**

1/10/81 No. DATE	ISSUED FOR REVISED TECHNICAL SUPPORT DOCUMENT ISSUE / REVISION	DESIGNED BY CHECKED BY APPROVED BY	DATE: 6-20-96 SCALE:	FIGURE 1	DRAWING NUMBER 86-080-E1055
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STATE HIGHWAY 566

PIPELINE ARROYO

ROADWAY

ROADWAY

A diagram showing a cross-section of a ditch. The ditch is formed by two parallel lines: a solid line on the left and a dashed line on the right. The text "RUNOFF CONTROL DITCH" is written along the dashed line.

- BURIED  
JETTY

- TOE DAM

**SCALE**

200 0 200 FEET

**NOTE:**

1. SEE FIGURE 3 FOR CROSS SECTIONS.

### EXISTING SURFACE FEATURES SOUTHWEST OF BURIED JETTY

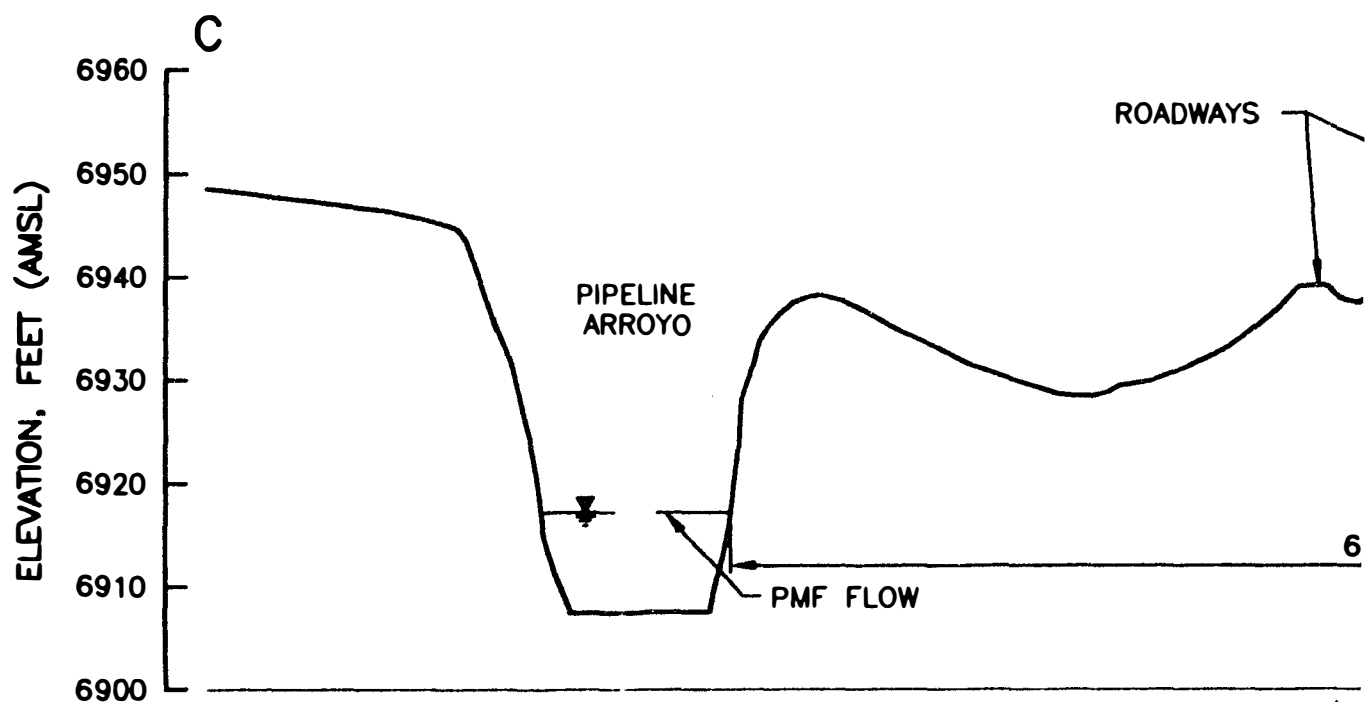
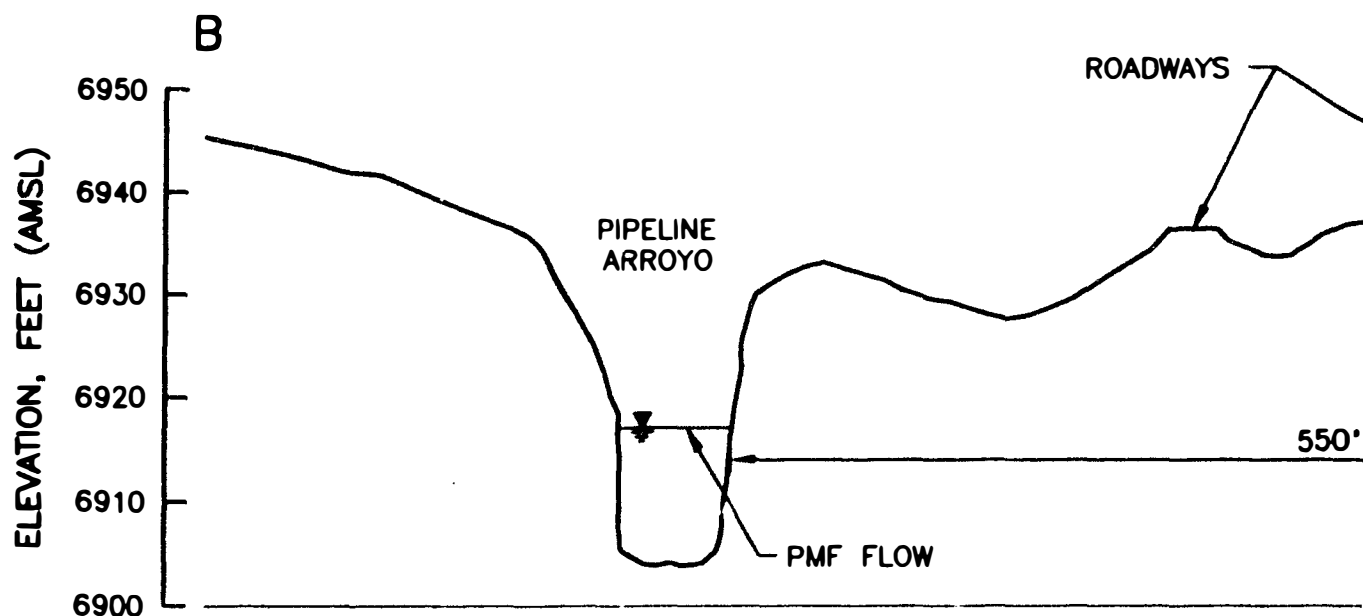
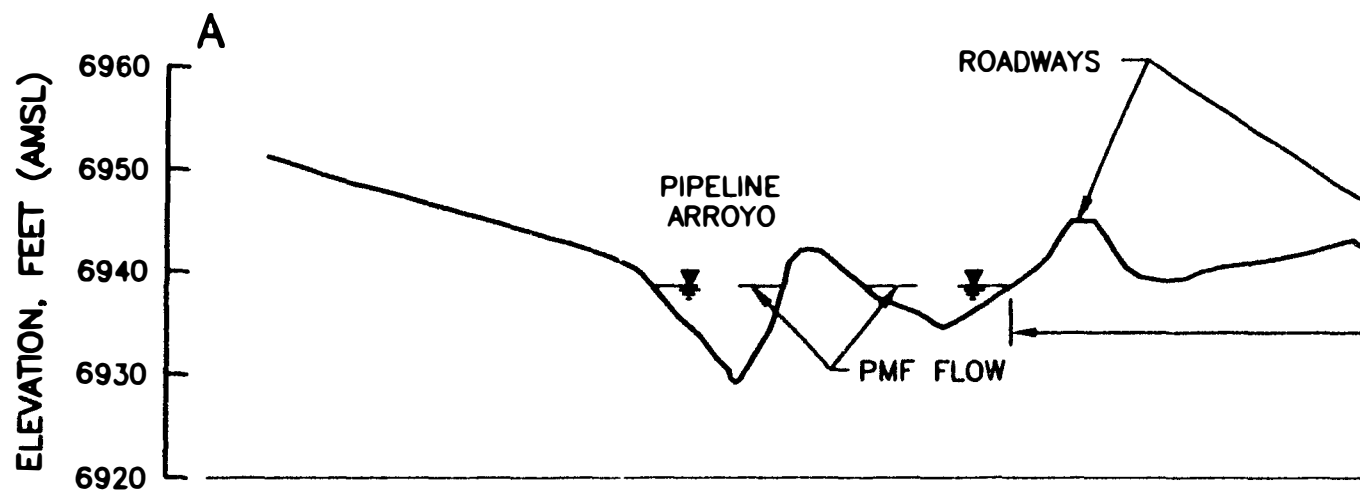
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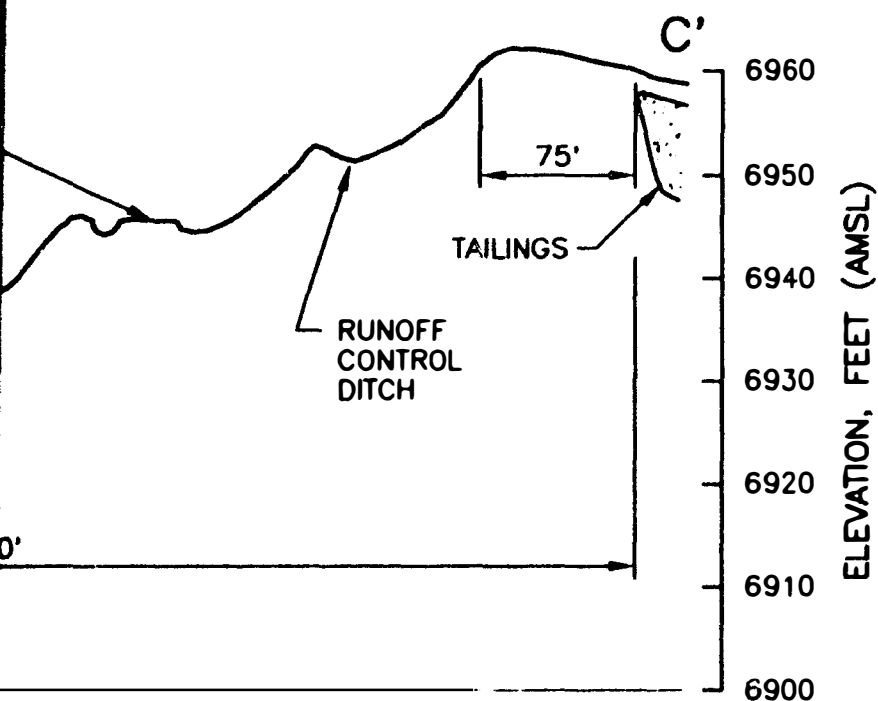
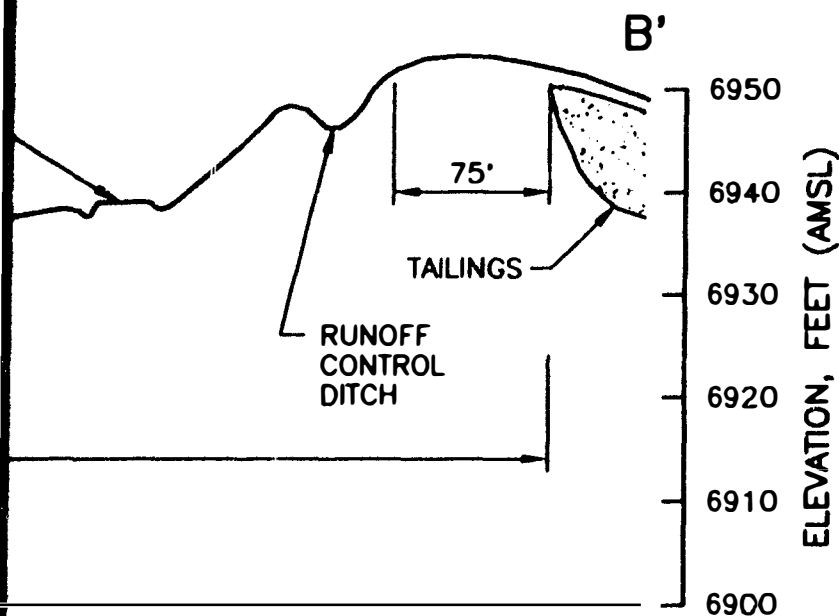
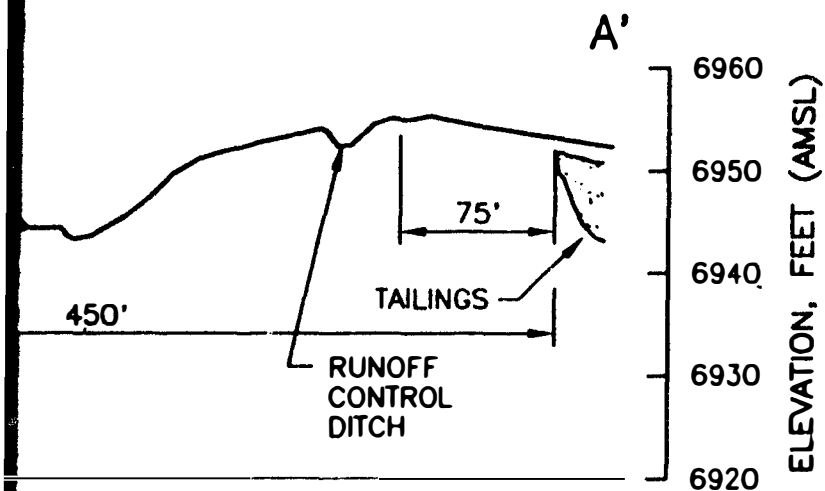
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No.	DATE	ISSUE / REVISION	OWN. BY	CK'D BY	AP'D BY	DATE: 6-18-96	FIGURE 2	DRAWING NUMBER 86-060-A1053
						SCALE: AS SHOWN		

DRAWING  
NUMBER 86-060-B1054

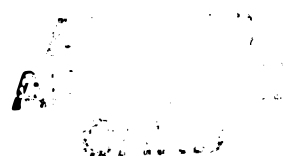


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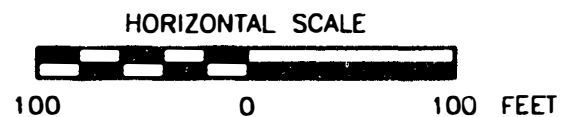
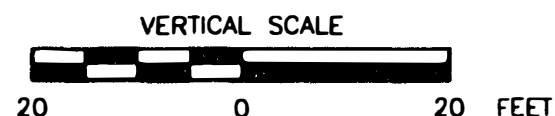


**NOTE:**

1. SEE FIGURES 1 AND 2 FOR LOCATION OF CROSS SECTIONS.



Also Available on  
Aperture Card



VERTICAL EXAGGERATION = 5X

**9606260054-02**

SURFACE PROFILES

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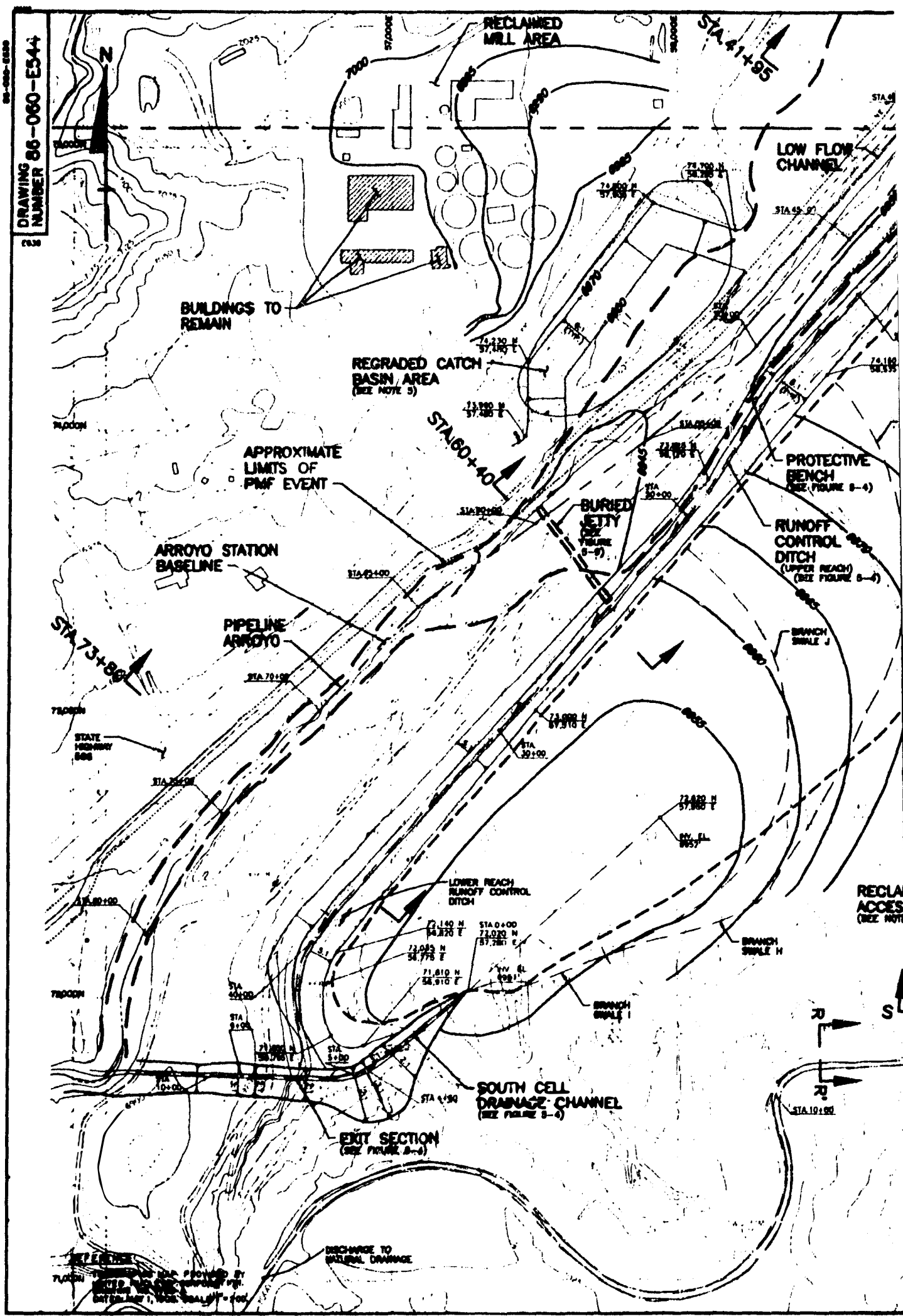
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DATE: 6-18-96  
SCALE: AS SHOWN

FIGURE 3

DRAWING NUMBER  
86-060-B1054

DRAWING NUMBER 86-060-E544







# **OVERSIZE DOCUMENT PAGE PULLED**

## **SEE APERTURE CARDS**

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