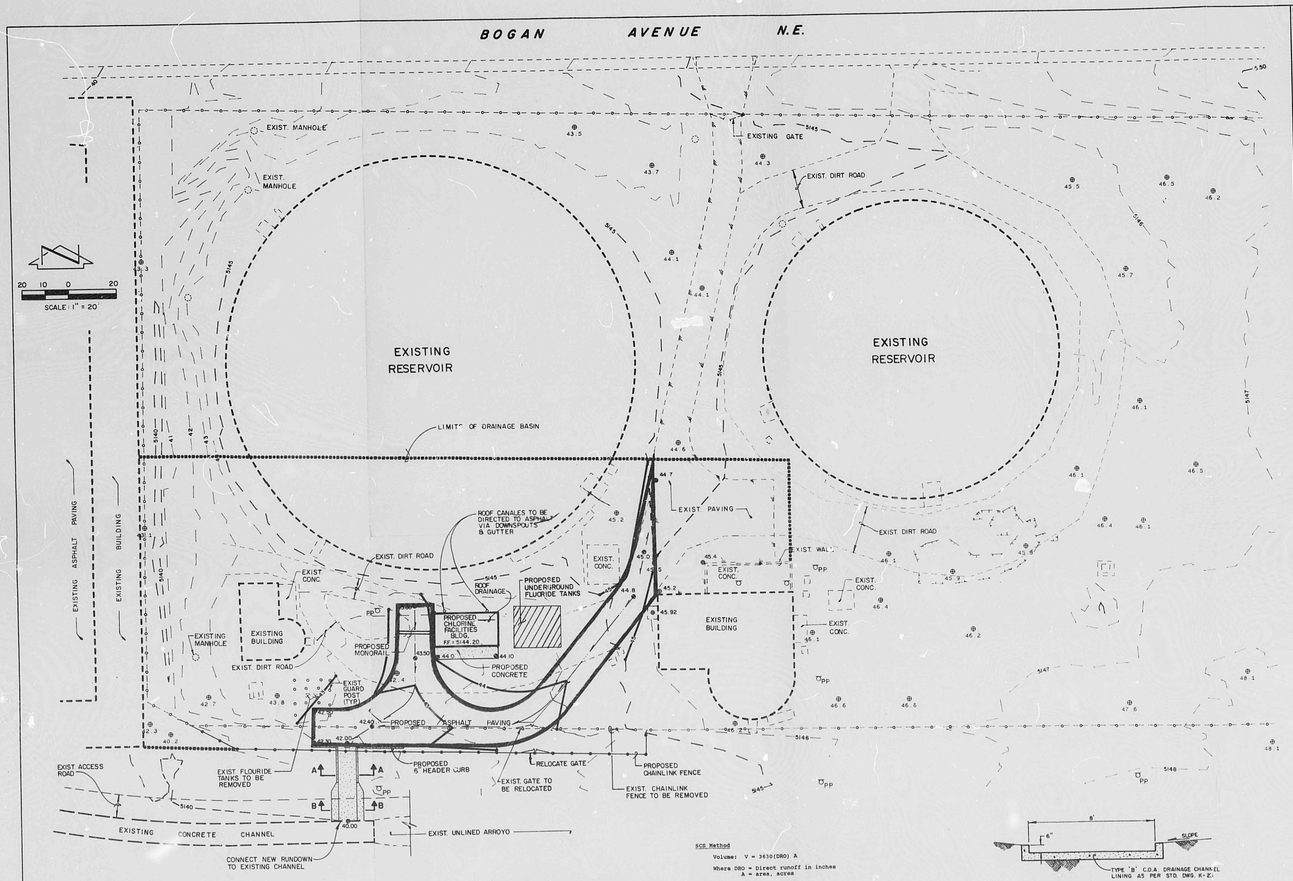
PUBLIC WORKS/HYDROLOGY

F17/D59



DRAINAGE PLAN

The following items concerning the Vol-Andia Reservoir Grading and Drainage Plan are contained hereon:

1. Vicinity Map
2. Grading Plan
3. Calculations

The proposed improvements, as shown by the Vicinity Map, are located adjacent to Bogan Avenue between Jefferson Street and the East Frontage Road of Interstate 25. At present, the site is owned by the City of Albuquerque wells, reservoirs, a pump station and associated appurtenances. The surrounding area is generally developed with commercial and industrial buildings. As shown by Flood Hazard Boundary Maps (or Bernalillo County, the site does not lie within a designated Flood Hazard Zone. There is no apparent downstream flooding. The site slopes from east to west from the site enters this concrete lined channel as sheet flow. Runoff from the northern portion of the well site is collected north to bogan Avenue. Runoff to the west and east of the project site and also enters Bogan Avenue, therefore, no offsite flows enter the project site.

The Grading Plan shows 1) existing and proposed grades indicated by spot elevations and contours at 1'0' intervals, 2) continuity between existing and proposed grades, and 3) the limit and character of the proposed improvements. As shown by this plan, the proposed improvements consist of the construction of a new building, chlorination facilities, underground fluoride tanks, and an access road. As shown by the grading plan, construction of the proposed improvements will be directed towards the concrete channel. The 0.2 cfs increase in runoff as a result of this development will not adversely affect the existing drainage facility.

The Calculations which appear hereon analyze both the existing and developed conditions for the 100-year, 6-hour rainfall event. The Rational Method has been used to quantify the peak rate of discharge and the SCS Method has been used to quantify the volume of runoff. Both Methods have been used in accordance with the City of Albuquerque Development Process Manual, Volume II, and the Mayor's Emergency Rule adopted January 14, 1986.

CALCULATIONS

Ground Cover Information

From SCS Bernalillo County Soil Survey,
Plate 21: Embo - Embodo Tijeras Complex
Hydrologic Soil Group: B
Existing Pervious CN = 70 (DPM Plate 22.2 C-2
Pasture or range (Poor hydrologic condition)
Developed Pervious CN = 75 (DPM Plate 22.2 C-2)

Time of Concentration/Time to Peak

$T_C = 0.0078\ L^{0.77}/S^{0.385}$ (Kirpich Equation)

$T_P = T_C = 10$ min.

Point Rainfall

$P_6 = 3.4$ in. (DPM Plate 22.2 D-1)

Rational Method

Discharge: $Q = CIA$

where C varies
$I = P_6\ (4.84)\ T_C^{-0.51} = 5.07$ in/hr
$P_6 = 2.4$ in (DPM Plate 22.2D-1)
$T_C = 10$ min (minimum)
A = area, acres

SCS Method

Volume: $V = 3630(DRO)\ A$

Where DRO = direct runoff in inches
A = area, acres

Existing Condition

Atotal = 33.725 ac = 0.77 Ac
Roof area = 6.785 ac (0.20)
Paved area = 2.500 ac (0.07)
Undeveloped area = 24.440 ac (0.73)
$C_{100} = (6.785)(0.90) + (2.500)(0.90)$ per Emergency Rule, 1/14/86
$C_{100} = 0.01 + 0.2415 + (0.73)(0.77) = 2.1$ cfs
$A_{imp} = 9.285$ ac; % impervious = 27 %
Composite CN = 77 (DPM Plate 22.2 C-3)
DRO = 0.75 in (DPM Plate 22.2 C-4)
$V_{100} = 3630\ (DRO)\ A = 2,100$ af

Developed Condition

Atotal = 33.725 ac = 0.77 Ac
Roof area = 7.185 ac (0.21)
Paved area = 6.640 ac (0.20)
Undeveloped area = 19.900 ac (0.59)
$C_{100} = 0.90$ (Weighted average per Emergency Rule, 1/14/86)
$Q_{100} = CIA = 0.90(5.07)(0.77) = 2.4$ cfs
$A_{imp} = 13.765$ ac; % impervious = 41 %
Composite CN = 82 (DPM Plate 22.2 C-3)
DRO = 2.90 in. (DPM Plate 22.2 C-4)
$V_{100} = 3630\ (DRO)\ A = 8,513$ af

Comparison

$\Delta Q_{100} = 0.2$ cfs (increase)
$\Delta V_{100} = 415$ af (increase)

VICINITY MAP F-17

LEGAL DESCRIPTION

CITY OF ALBUQUERQUE RESERVOIR SITE, A PORTION OF THE HEINDEER ADDITION TO THE CITY OF ALBUQUERQUE.

LEGEND

- 5430 — EXISTING CONTOUR
- 5430 — PROPOSED CONTOUR
- EXISTING SWALE
- PROPOSED SWALE
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- EXISTING POWER / LIGHT POLE
- PROPOSED ASPHALT
- PROPOSED CONCRETE
- EXISTING RETAINING WALL

BENCH MARKS

1. S.SQUARE, C.O. CONCRETE CURB AT THE NWW RETURN AT THE INTERSECTION OF MONTGOMERY BLVD AND JEFFERSON STREET,N.E.
ELEV = 5412.232 FEET (M.S.L.D)

AS BUILT INFORMATION

CONTRACTOR	DATE
WORK STAKED BY	
INSPECTIONS	
FIELD VERIFICATION BY	DATE
DRAWINGS MARKED FOR CONSTRUCTION BY	DATE
RECORDED BY	

SURVEY INFORMATION

NO.	FIELD NOTES BY	DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS REVISIONS DESIGN	BY

DESIGNED BY — DATE
DRAWN BY — DATE
CHECKED BY — DATE

CHM HILL

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: VOL-ANDIA RESERVIOR
CONCEPTUAL GRADING & DRAINAGE PLAN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
D.R.C. Chair					
Trans. Dev.					
Utility Dev.					

DRAWING NO. | MAP NO. F-17 | SHEET 1 OF 1

RECEIVED APR 24 1987 HYDROLOGY SECTION

R# 25 DATE 3-19-02 OP EGP

CITY OF ALBUQUERQUE

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The photographic process used meets the Basic Microfilm Standards of the National Micrographics Association (MS1A5-1977)

DIRECTOR

NOTARY PUBLIC

OFFICIAL SEAL
Roberta Duran
NOTARY PUBLIC
STATE OF NEW MEXICO
My Commission Expires 07/23/2002

PLAN SHOT TWICE
ONCE ON LIGHT
ONCE ON DARK

CITY OF ALBUQUERQUE
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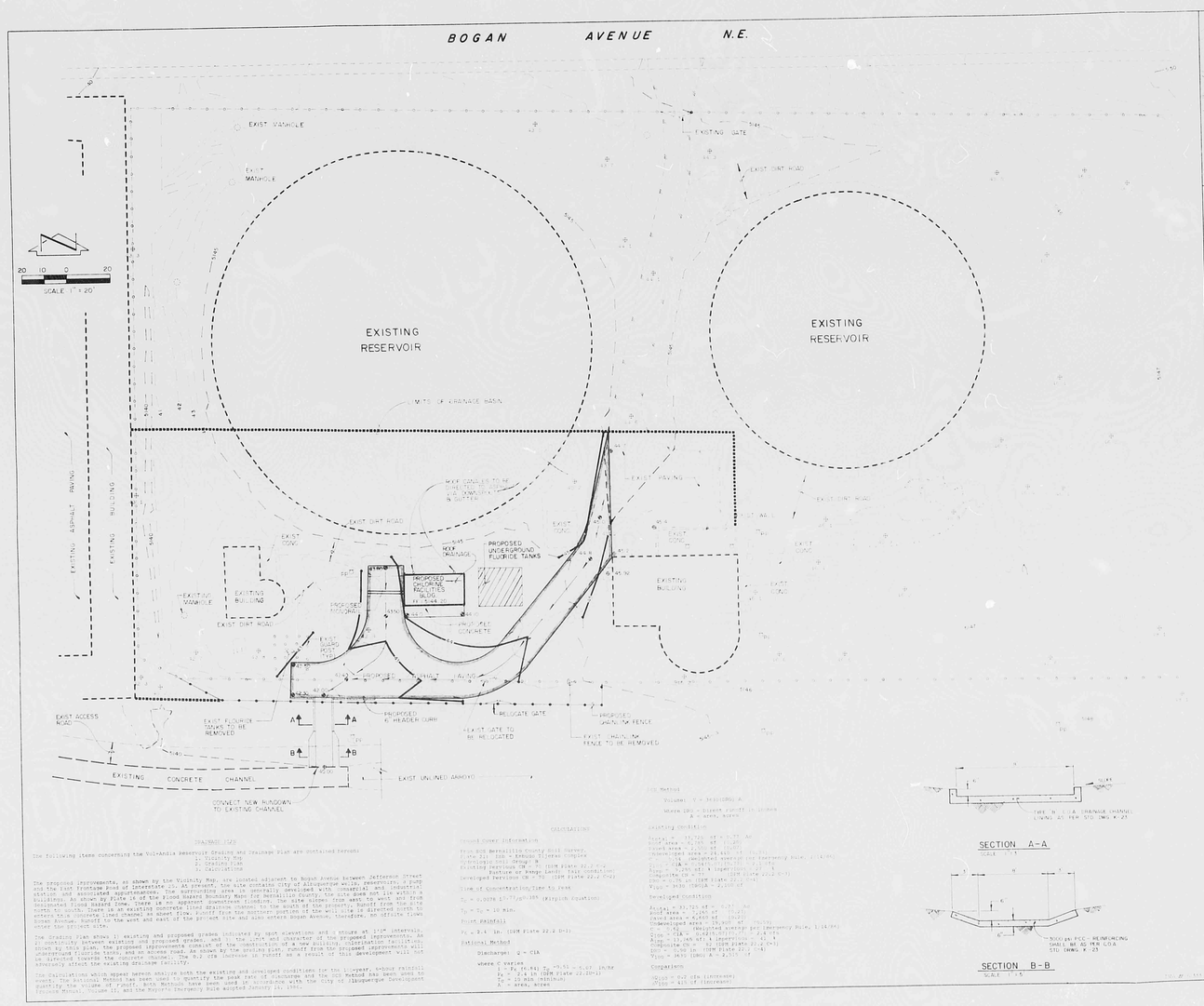
PLANS/PLATS ON FILE

FILE DESC: F17/D59

PLANS/PLATS 1

E 30 D 24 C 20 B 16 A 12 CITY OF ALBUQUERQUE C D F



VICINITY MAP F-17

LEGAL DESCRIPTION

[illegible] A PORTION OF THE HEIGHTS ADDITION TO THE CITY OF ALBUQUERQUE

LEGEND

- 5430 — EXISTING CONTOUR
- 543 — PROPOSED CONTOUR
- EXISTING SWALE
- PROPOSED SWALE
- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION
- EXISTING CHAIN LINK FENCE
- PROPOSED CHAIN LINK FENCE
- EXISTING POWER / LIGHT POLE
- PROPOSED ASPHALT
- PROPOSED CONCRETE
- EXISTING RETAINING WALL

AS BUILT INFORMATION

NO.	DATE	BY	REVISIONS

MICRO FILM INFORMATION

NO.	DATE	BY	REMARKS

BENCH MARKS

ELEVATION [illegible] FEET (NGVD) AT THE AXIS INTSN AT THE INTERSECTION OF MONTGOMERY BLVD. AND JEFFERSON STREET N.E.

SURVEY INFORMATION

FIELD NOTES

ENGINEER'S SEAL

REVISIONS

DESIGN

CHECKED BY

DATE

CH2M HILL

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: VOL-ANDIA RESERVIOR
CONCEPTUAL GRADING & DRAINAGE PLAN

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE
D.R.C. Chair.					
Sanit. Dev.					
Drain. Dev.					

DRAWING NO | MAP NO. F-17 | SHEET 1 OF 1

PLAN SHOT TWICE
ONCE ON LIGHT
ONCE ON DARK

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REL 25 DATE 3-12-82 OP 27

CITY OF ALBUQUERQUE

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Roberta Duran
NOTARY PUBLIC
07/02/82

E 30 D 24 C 20 B 16 A 12

CITY OF ALBUQERQUE

C D F