Red Mountain Engineers, Inc.
Engineers • Surveyors

L-14/D44



# NATIONAL HISPANIC CULTURE CENTER

## DRAINAGE REPORT
**October 12, 1999**

The proposed site is approximately 15.5 acres ±. Due to space limitations, underground detention tanks are called for in the final design. Analysis showed that adequate area for detention ponds was not available. As a consequence, an underground storage - detention system was selected to meet the City of Albuquerque drainage requirements.

## ON - SITE ANALYSIS

All the on - site analysis was performed using the guide lines presented in chapter 22 of the DPM Manual, July 1997. The site lies within zone 2 (table A -1) of Bernalillo County. The design storm used was the 100 yr. - 6 hr event. Because space limitations did not allow for surface ponds, an underground detention system was selected. The underground detention system has been designed to store and release the fully developed site volumes. Since all the storm water for the site must be routed through the detention system, no allowance was made for pre-developed conditions. The storage system selected is pressure rated to prevent groundwater infiltration or tank leakage.

At full development, the total storm water volume that will be routed through the detention tanks is approximately 89,000 c.f. This volume was calculated using 14 acres of total contributing site and an average excess precipitation of 1.75 inches (Eave.). A portion of the sites perimeter along the Albuquerque Riverside Drain and the south boundary were deducted from the total detained area. These landscaped/natural condition areas have historically drained off-site and shall continue to do so.

The underground detention system is divided into a north and south detention system. The northern system consists of the 2500 L.F. of 5' diameter H.D.P.E pipe and the southern system of 1920 L.F. of 5' diameter H.D.P.E. pipe. In addition, 80 L.F. total of 5' diameter manifold equalizer is provided. Total storage volume for the above mentioned pipe is 88335 c.f. Additional storage is provided by the lateral H.D.P.E. drain pipes, catch basins, sump pits and small on site ponds that drain into the underground tanks.

P.O. Box 16115, Santa Fe, NM 87506-6115 Phone: (505) 473-7373 Fax: (505) 473-4865

The detention systems are designed to drain via a pumped discharge to the two existing drop inlets on 4th street. The two systems will drain into two separate 8 foot diameter sump pits, each with two - 250 g.p.m. pumps. When water is detected via a float sensor, a minimum six hour time delay clock will be activated. At the end of six hours, only one of the two pumps will be activated unless a pre determined water level is reached calling for both pumps. In either case, the maximum discharge would be 500 g.p.m./sump pit or a total of 1000 g.p.m. from the entire detention system into the Albuquerque storm drain system (1000 g.p.m. = 2.23 cfs). Both detention systems when full are designed to drain within 12 - 14 hours of a storm event.

## OFF - SITE ANALYSIS

The assumption was made that during a storm the existing storm drainage system on 4th street is at capacity . Based on this assumption, a timer system was added to control the pumps. The minimum time before pumping would begin is six hours after a storm event and this delay can be adjusted for up to twelve hours. For the maximum 500 g.p.m. discharge rate per sump pit (two total), an 8 inch pressure rated discharge line is to be connected to each drop inlet along 4th street (two total). These drop inlets are interconnected by a 24" R.C.P. pipe which slopes from the north to the south.

Based on C.O.A. manhole "As-Built" information, the average slope of this 24" R.C.P. is 0.3%. Based on the following information and assumptions;

n = 0.020
S = 0.3%
Q = 2.4 C.F.S.
Dia = 24 inches R.C.P.



And using the FLOW MASTER program to evaluate;

Flow Depth = 0.75 ft
Velocity = 2.24 f.p.s.
Pipe is 38% full
Full capacity = 8 c.f.s.

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Full capacity = 8 c.f.s.

FIGURE 6

CITY OF ALBUQUERQUE

**NOTICE OF D.R.C. MEETING**

9/2/99 V
(DATE)

**DRB NO:** 98-275
PROJECT NO: 623581
ZONE ATLAS: L-14 / D44

**PROJECT NAME:** National Hispanic Cultural Center of NM.
**LOCATION:** 4th St. SW, South of Dr. Martin Luther King Jr. Ave.

**TYPE OF PROJECT:** AHBA ✓ CIP ____ PWC ____ SAD ____ ALL PRIVATE ____

**Contact Person:** Stan Holland **Phone:** 343-1517
**Firm:** Red Mountain Engineers

✓ Scheduled with the D.R.C. on 9/9/99 at 3:00PM Plaza Del Sol/2nd Fl.
____ No DRC Meeting Scheduled. Please return any comments by _____

**The Project Is Scheduled For:**

/ / Design Report Review / / Final Plan Review
/ / Pre-Design Meeting / / Signoff of Plans
M Preliminary Plan Review / / _____
WAS Bernie.

**The Project Relates To:**

/ + Water / + San. Sewer / / Paving / / Storm Drainage / / _____

**The Attached Package Includes:**

/D/ Drawings /S/ Spec's /E/ Estimate /R/ Report /M/ Memo Only

Indicated below are the Departments/Divisions that have received project documents and/or are invited to attend. It will be the Project Managers responsiblity to notify consulting engineering firms of date and time of scheduled meetings.

| | | |
|---|---|---|
| D DRC Chairman | Project Review Section | All Drawings |
| D Traffic Repres. | Transportation Development | All Drawings |
| D Utility Dev.(Bob Kane) | Utility Design | All AHBA Drawings |
| / / Utility Dev.(Billy G.) | Utility Design | All CIP Drawings |
| D Hydro Repres. | Hydrology | All Drawings |
| D Const. Repres MURRAY | Construction | All Drawings |
| D Ray Chavez | Traffic Operations | All Drawings |
| / / Sergio Miranda | Water (Shutoff Plan) | All Water Shutoff |
| D Parks Repres. | Parks & Recreation | ALL Landscaping |
| / / Andre Houle | Street Maintenance | All Paving |
| / / Kevin Broderick | Utility Coordinator | ALL PWC & CIP |
| D Tom Murphy | Transit Department | All Drawings |
| D Joe Luehring | Construction Coordinator | CIP/Memo |
| / / Jim Fink | Line Maintenance | CIP & SAS/Memo |
| / / George Gee | City Architect | Arch. Drawings |
| / / Lee Lunsford | SAD Engineer | SAD/Memo |
| / / Tom Ellis | Park Mangement | Parks/Community Ctrs/APS |
| / / Gene Bustamante | General Services Dept. | Arch. Drawings |
| / / Greg Smith | PWD/Legal | Specs & Dwgs. |
| / / Richard Sertich | Planning Department | CIP/Memos |
| / / CIP Project Manager | CIP | CIP/Memos |
| / / Donald Bartlett | Risk Management | Arch. Drawings |
| / / _____ | _____ | _____ |

DRCNOTIC. 10/19/95

CITY OF
Albuquerque
Public Works Department

Martin J. Chávez, Mayor

Robert E. Gurulé, Director

April 11,1997

Joseph E. Chato PE
Red Mountain Engineering, Inc.
P.O. Box 16115
Santa Fe , New Mexico 87506115

RE: CONCEPTUAL DRAINAGE PLAN FOR THE HISPANIC CULTURAL CENTER
(L14-D44) ENGINEER'S STAMP DATED 3/19/97

Dear Mr. Chato:

Based on the information provided on your March 20,1997 submittal, the above referenced site is acceptable for Sketch Plat approval. Please be advised that prior to Site Development Plan, Preliminary Plat, Final Plat, and Building Permit Approval, the following must be addressed:

1. See attached checklist marked with required information.

2. It is important that you analyze downstream capacity which will assist you in determining the ponding capacity requirement and allowed release rate.

3. Details for the proposed storage tanks and pump specs. And also the hydraulics for all the proposed pipes.

If I can be of further assistance, please feel free to contact me at 924-3986.

C: Andrew Garcia
File

Sincerely

Bernie J. Montoya CE
Engineering Associate

# DRAINAGE REPORT AND DRAINAGE PLAN CHECKLIST

Drainage Report: A drainage report is a comprehensive analysis of the drainage control, flood control and erosion control constraints on and impacts resulting from a proposed platting, development or construction project. Drainage reports are required for subdivisions containing more than 10 lots or constituting 5 acres or more, platting or construction within a designated flood hazard area and for any platting or development adjacent to a major arroyo. Engineer's certification may be required if not strongly recommended for major projects, projects requiring numerous drainage inspections during construction, projects in flood hazard areas and phased projects.

Drainage Plan: A short detailed presentation required for small, simple development approvals. Drainage plans are prepared with or on the detailed grading plan and address both on-site and off-site drainage control, flood control and erosion control issues. Drainage plans are required for building permits, site development plans and landscaping plans for developments involving less than 5 acres.

Although the checklist and information required for both the Drainage Report and Drainage Plan are quite similar, they are not one in the same. Basically the difference between the two is one of detail. The same report which was accepted for the subdivision of a large tract of land may not be adequate for the construction of each subdivided parcel.

NOTE: The following checklist is intended to be used as a guide for preparing your drainage report or plan to meet any or all drainage requirements. It is only a guide. Some items may not be applicable to your particular project; some items may require more detail. Applications require a drainage report or plan are indicated on the Drainage Requirements Matrix provided in DPM Volume I, Chapter 17.

GENERAL INFORMATION:

1. Completed Drainage Information Sheet - (DPM Volume I, Chapter 17).
2. Planning History - planning and zoning action history. Relationship to approved masterplans (streets, drainage, etc.).
3. Site Description:
   A. Vicinity map showing location of the development in relation to well-known landmarks, municipal boundaries and zone atlas map index number.
   B. Legal description or current plat.
4. Bench Marks - location, description and elevation of the:
   A. Albuquerque Control Survey Vertical Datum.
   B. Temporary bench mark on-site. permanently marked
5. Flood Hazard - delineation of site on pertinent Flood Hazard Boundary Map. on plan drawings
6. Watershed Soils - delineation of site and contributing off-site watersheds on SCS Bernalillo County Soil Survey Maps.

7. Soils - soils investigation report for ponding within 15 ft. from planned or existing structure or closer than 15 ft. from the property line minus the required setback on adjacent property. For ponds 18" deep or less, water may be impounded adjacent to street ROW but not closer than 10' from pavement. For ponds deeper than 18", water shall not pond closer than 15' to the street pavement or curb and gutter.
8. Drainage Report or Drainage Plan

PLAN DRAWINGS:

1. Professional Engineer's stamp with signature and date. On each plan drawing
2. Drafting Standards: (Reference City Standards, DPM Vol. II, Chapter 27).

   A. North Arrow.
   B. Scales - recommended engineering scales:
      (1) 1" = 20' for sites less than 5 acres
      (2) 1" = 50' for sites 5 acres or more
   C. Legend - see DPM Manual, Vol. 2, tables 27.3a - 27.3d for recommended standard symbols
   D. Plan drawings size 24" x 36"
   E. Notes defining property line, asphalt sidewalks, planting areas, ponding areas, and all other areas whose definition would increase clarity.

3. Existing Conditions:

   A. On-site:
      (1) Existing Contours - vertical intervals for contour maps shall not exceed the following:
         (a) One foot intervals for slopes under 1% with sufficient spot elevations at key points to adequately show the site's topography.
         (b) Two feet for slopes between 1% and 5%.
         (c) Five feet for slopes in excess of 5%.
      (2) Spot elevations adequately showing conditions on-site.
      (3) Contours and spot elevations extending a <u>minimum</u> of 25' beyond property line.
      (4) Identification of all existing structures located on-site or on adjacent property extending a minimum of 25' beyond property line with particular attention to retaining and garden walls.
      (5) Identification of all existing drainage facilities located on-site or on adjacent property.
      (6) Pertinent elevation(s) of structures and facilities defined in (4) and (5) above with Mean Sea Level designation.
      (7) Indication of all existing easements and rights-of-way on or adjacent to the site with dimensions and purpose shown.
      (8) Existing City top of curb and flow line elevations with Mean Sea Level designation. or Bridge & 4th St.

(9) Flow Volumes and Rates - calculations showing on-site undeveloped and developed flow volumes and rates.
(10) Flow Depth and Velocity:
(a) On-site flow velocities determined.
(b) On-site flow depths determined.
(c) Locations indicated for (a) and (b).

B. Off-site:
(1) Watershed Area - delineation of off-site contributing watersheds on City of Albuquerque Ortho-Topo Area Maps at scale 1" = 200' or 1" = 500'.
(2) Storm Flows - quantification of off-site rate of flow caused by contributing watersheds for the:
(a) 10 year frequency storm.
(b) 100 year frequency storm.
(3) Flow Depth and Velocity
(a) Off-site flow velocities determined.
(b) Off-site flow depths determined.
(c) Locations indicated for (a) and (b) above.
(4) Other Conditions - discussion of any off-site conditions or drainage facilities that affect site drainage.
(5) Existing easements and rights-of-way.

4. Proposed Conditions: Proposed conditions should generally be superimposed on the drawings showing existing on-site and off-site conditions. Separate sheets may be used for on-site and offsite areas depending upon circumstances.

A. On-site:
(1) Definition of required drainage facilities.
(a) Pond volume calculations including routing if applicable.
(b) Positive discharge of pond with required rate and outlet calculations.
(c) Pond emergency spillway calculations.
(d) Pond fencing required for depths greater than 18".
(e) Pond landscaping provisions and commitments.
(f) Pond maintenance provisions and commitments if required. See Drainage Covenant.
(g) Channel characteristics including flow depths and velocities.
(h) Storm sewer characteristics including capacity and hydraulic grade line calculations. Existing line on 4th St
(i) Hydraulic characteristics of other storm drainage facilities listed in AMAFCA Resolution.
(2) Proposed Contours - vertical intervals for contour maps shall not exceed the following:
(a) One foot intervals for slopes under 1% with sufficient spot elevations at key points to adequately show the site's topography.
(b) Two feet for slopes between 1% and 5%.
(c) Five feet for slopes in excess of 5%.

(3) Indication of all proposed easements and rights-of-way on or adjacent to the site with dimensions and purpose shown.

(4) City Engineer approved street and alley grades when site abuts a dedicated unpaved street or alley. These grades are available at no charge from the City Engineer's Office. An advance request will expedite your project. NOTE: There may be a delay depending upon current workload to have the City Engineer supply grades. However, to expedite the plans, the City Engineer will review grades provided by a Professional Engineer.

(5) Internal contributory drainage areas, including roof areas, outlined on plan.

(6) Flow lines defined by arrows and spot elevations with Mean Sea Level designation.

(7) Pond(s) 100 year water surface elevation outlined and indicated on plan.

(8) Finish building floor elevation(s) with complete Mean Sea Level designation.

(9) Slopes (cut or fill) with height of less than 3', not steeper than 2:1. Slopes with height greater than 3', not steeper than 3:1.

(10) Elevations along property lines. Relationship to adjacent top of curb. Retaining walls indicated for vertical grade changes greater than 18".

(11) Details of ponds, swales, rundowns, curb cuts, water blocks, emergency spillways, retaining walls, pond outlets, safety fences, slopes, and all other significant drainage structures with contours, cross-sections, spot elevations and supporting calculations when appropriate. All cross-sections must be drawn to standard engineering scale or adequately dimensioned.

(12) The following phases of development outlined and numbered in sequential order of construction with a proposed erosion plan (see Erosion Control Plan Checklist):
- (a) Rough grading
- (b) Phased development
- (c) Construction phase
- (d) Permanent phase

(13) Required spot elevations for the standard City drivepad.

(14) Proposed construction of private storm drain improvements within the City right-of-way.

(15) Rights-of-Way and Easements - delineation of R/W and/or easement configuration necessary to accommodate above.

(16) Nuisance Waters - adequate provisions for nuisance waters provided on-site.

B. Off-site:

(1) Definition, location, and configuration of required drainage facilities.

(2) Verification of adequacy of downstream capacity.

(3) Rights-of-way and easements to accommodate (1) above.

# DRAINAGE INFORMATION SHEET

PROJECT TITLE: Hispanic Cultural Center ZONE ATLAS/DRNG. FILE #: New L14/D44

DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: See attached Survey data / drawing.

CITY ADDRESS: 4th + Bridge. Mail address unknown.

ENGINEERING FIRM: Red Mountain Engineers CONTACT: John Blasingame

ADDRESS: 1216 Parkway Dr. Santa Fe NM 87505 PHONE: /

OWNER: State of New Mexico / Cultural Affairs CONTACT: Ron Vigil

ADDRESS: 1701 4th St. NW Albuquerque NM 87102 PHONE: 246-2261

ARCHITECT: Antoine Predock Arch CONTACT: Mark Donahue

ADDRESS: 300 12th St. NW PHONE: 843-7390

SURVEYOR: Red Mountain Engineers CONTACT: Greg Stiener

ADDRESS: 4600 Montgomery NE Albuquerque NM PHONE: 889-3004

CONTRACTOR: Unknown at this time CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

- ✓ DRAINAGE REPORT
- ____ DRAINAGE PLAN
- ✓ CONCEPTUAL GRADING & DRAINAGE PLAN
- ____ GRADING PLAN
- ____ EROSION CONTROL PLAN
- ____ ENGINEER'S CERTIFICATION
- ____ OTHER _____

PRE-DESIGN MEETING:

- ____ YES
- ✓ NO
- ____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

- ✓ SKETCH PLAT APPROVAL
- ____ PRELIMINARY PLAT APPROVAL
- ____ S. DEV. PLAN FOR SUB'D. APPROVAL
- ____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
- ____ SECTOR PLAN APPROVAL
- ____ FINAL PLAT APPROVAL
- ____ FOUNDATION PERMIT APPROVAL
- ____ BUILDING PERMIT APPROVAL
- ____ CERTIFICATE OF OCCUPANCY APPROVAL
- ____ GRADING PERMIT APPROVAL
- ____ PAVING PERMIT APPROVAL
- ____ S.A.D. DRAINAGE REPORT
- ____ DRAINAGE REQUIREMENTS
- ____ SUBDIVISION CERTIFICATION
- ____ OTHER _____ (SPECIFY)

DATE SUBMITTED: 3/20/97

BY: JR Blasingame (John Blasingame)

# Preliminary Drainage Report

# Hispanic Cultural Center
# Albuquerque, New Mexico

Prepared for:
City of Albuquerque
Albuquerque, New Mexico

Prepared by:
Red Mountain Engineers, Inc.
P.O. Box 16115
Santa Fe, NM 87506-6115

March 19, 1997

Red Mountain Engineers, Inc.
Engineers • Surveyors

# Preliminary Drainage Report
# For
# Hispanic Cultural Center
# Albuquerque, NM

**March 19,1997**

**Prepared for:**

**City of Albuquerque**
**Albuquerque, New Mexico**

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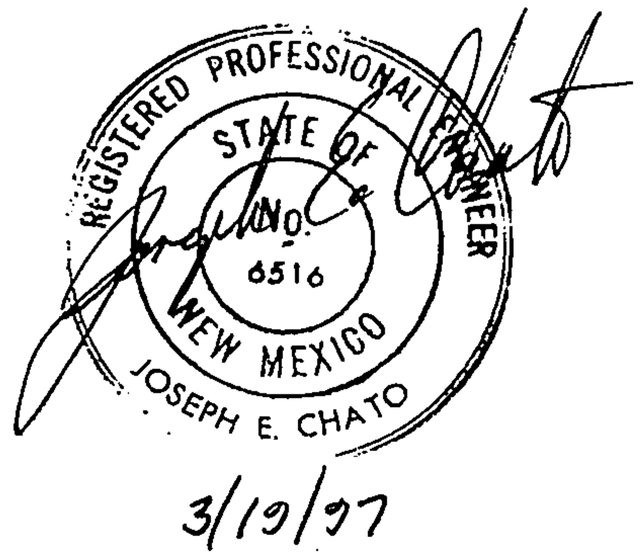



3/19/97

## SITE DESCRIPTION

The proposed New Mexico Hispanic Cultural Center is to be located at the southwest corner of Bridge Boulevard and Fourth Street SW in Albuquerque, New Mexico. The site presently consists of four (4) developed parcels: Pete Padilla Park, Job Training and Family Services Division offices, commercial developments and residential developments.

The existing land use of Pete Padilla Park includes grass, trees, playground, concrete basketball court, a steel canopy, and asphalt parking.

The Job Training and Family Services Division offices consist of eight (8) buildings, asphalt parking, with remaining undeveloped areas.

The commercial development is comprised of four (4) buildings, five (5) storage units, asphalt parking, concrete walks and drive pads.

The residential development consists of two (2) buildings and an unpaved drive.

The existing topography of the site slopes down toward the south to southwest portion of the site, with elevations ranging from 4940 ft. to 4945 ft. M.S.L.

## POST DEVELOPED SITE RUNOFF

The post developed site runoff will be detained with a series of underground detention systems. The amount of runoff volume to be detained was computed in accordance with the Development Process Manual - Volume 2, Design Criteria Section 22.2. Calculations are attached in Appendix A. The 100 yr.-6 hr. runoff volume was determined to be 1.96 ac.-ft. (85,378 cu. ft.) and is used for the sizing of the detention systems. A series of catch basins will be placed in various locations throughout the site to capture the runoff and drain to the detention systems. Two (2) systems will be located within the northern portion of the site. Three (3) systems will be located within the southern half of the site. Refer to the attached figure for the exact locations of the detention systems and catch basins.

Each detention system will have a release and an overflow that will be routed to a common sump. The overflow will be set to a height that is dependent upon the required volume to be detained. One (1) sump at the northeast portion will collect and pump the release and overflow of the upper two (2) detention systems to the Fourth Street storm sewer. The second sump at the southeast portion of the site will collect and pump the release and overflow for the lower three (3) detention systems to the Fourth Street storm sewer. Refer to the attached figure for the sump locations. The releases and pump sizes will be designed to drain the detention systems within a 24 hour period.

## SUMMARY

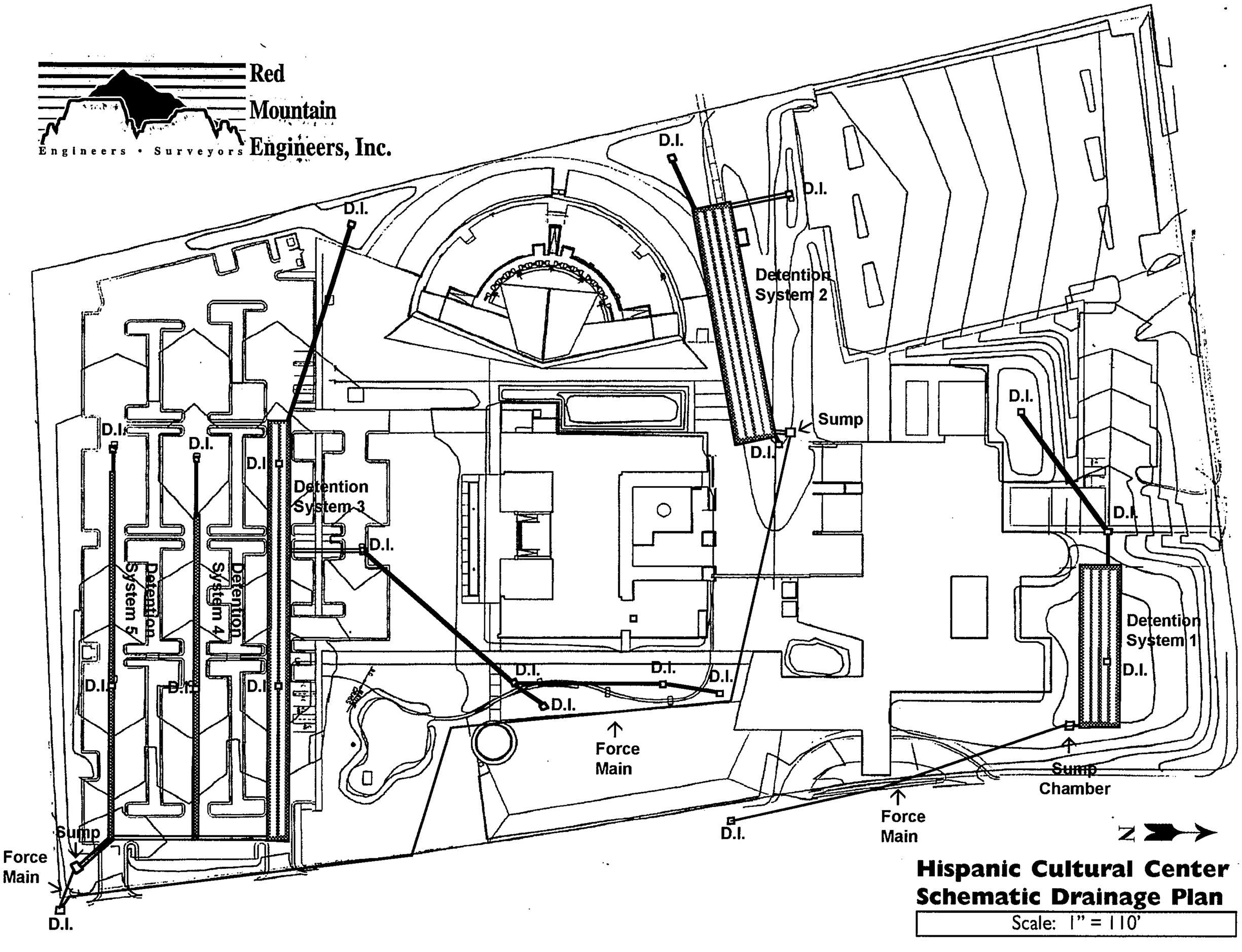
As to whether or not the City of Albuquerque storm sewer is capable to handle the site discharge

is an issue that remains to be resolved. Direction from the City of Albuquerque Hydrology will be beneficial and is crucial to the final design of the detention systems.

The AHYMO program was utilized to determine the amount of runoff to each detention system. The AHYMO runs are attached in Appendix B. It was determined that contributing runoff to the detention systems was insufficient to capture the required storage. An excess of approximately 0.12 ac-ft (5200 cu. ft.) is required to be detained. Runoff from small areas along the parameter of the site was not captured and accounts for the insufficient storage. To attain the required storage, 100% of the site will need to be detained. This issue also requires the input from the City of Albuquerque Hydrology as to what we can do to resolve this matter.

Red Mountain Engineers, Inc.

Engineers • Surveyors




# Hispanic Cultural Center
# Schematic Drainage Plan

Scale: 1" = 110'

# Appendix A

# DPM Drainage Calculations

Red Mountain Engineers, Inc.
Engineers • Surveyors

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FAX (505) 889-2797

JOB HISPANIC CULTURAL CENTER #96805
SHEET NO. 1 OF 1
CALCULATED BY ALW DATE 3/5/96
CHECKED BY _____ DATE _____
SCALE NONE

HYDROLOGY CALCULATIONS: CITY OF ALBUQUERQUE

DEVELOPMENT PROCESS MANUAL VOLUME 2, DESIGN CRITERIA
SEC. 22.2.

SITE LIES WITHIN PRECIPITATION ZONE TWO (2).

PEAK DISCHARGE FOR SMALL WATERSHEDS; 100yr.-6HR., $T_C$ = 0.2 HR.

TOTAL AREA = 15.79 AC.

LAND TREATMENT OF POST DEVELOPMENT:

$A_B$ = 5.17 ac.
$A_C$ = 3.00 ac.
$A_D$ = 7.62 ac

$Q_{100}$ = (2.28 cfs/ac.)(5.17 ac.) + (3.14 cfs/ac.)(3.00ac) + (4.70 cfs/ac)(7.62ac)

= 57.02 cfs. 57.05

VOLUMETRIC RUNOFF: 100YR -6HR, $E_B$ = 0.78 IN, $E_C$ = 1.13 IN., $E_D$ = 2.12 IN

$E_{100}$ = (0.78 IN)(5.17ac) + (1.13 IN)(3.00ac) + (2.12 IN)(7.62 ac)/15.79 ac.

= 1.49 IN

$V_{360}$ = (1.49 IN)(15.79 ac.)($\frac{1 FT}{12 IN}$) = 1.96 ac-FT = 85,378 cu. ft.

# Appendix B

# AHYMO Contributing Flow Calculations

```
* AHYMO PROGRAM (AHYMO392) - AMAFCA VERSION OF HYMO - MARCH, 1992
     RUN DATE (MON/DAY/YR) = 03/13/1997
     START TIME (HR:MIN:SEC) = 11:22:07     USER NO.= J_CHATO_.S92
     INPUT FILE = D:\AHYMO\96805DMP.DAT

*    HISPANIC CULTURAL CENTER POST DEVELOPED DRAINAGE (96805DMP.DAT)
*          USING MODIFIED METHODS FOR D.P.M. CHAPTER 22
*         AND THE INITIAL ABSTRACTION - INFILTRATION METHOD
*
START           RAINFALL BEGINS AT 0.0 HRS
RAINFALL         TYPE=1 RAIN QUARTER=0 RAIN ONE=2.0
            RAIN SIX=2.3 RAIN DAY=2.65 DT=0.133333 HR

        COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
        DT =   .133333 HOURS      END TIME =    5.999986 HOURS
          .0000  .0052  .0110  .0173  .0243  .0324  .0417
          .0528  .0708  .1679  .6008 1.3315 1.5942 1.7860
         1.9372 2.0593 2.0816 2.0999 2.1157 2.1295 2.1418
         2.1531 2.1634 2.1730 2.1819 2.1902 2.1981 2.2056
         2.2127 2.2194 2.2259 2.2321 2.2380 2.2438 2.2493
         2.2546 2.2598 2.2647 2.2696 2.2743 2.2789 2.2833
         2.2876 2.2919 2.2960 2.3000

*
*S COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 -PEAK AT 1.4 HR.
*
*S CONTRIBUTING FLOWS TO DETENTION SYSTEM 1
*
COMPUTE NM HYD     ID=1 HYD NO=101.0 DA=0.00259
            PER A=0 PER B=2.4 PER C=64.5 PER D=33.1
            TP =-0.067 RAIN=-1

  K =  .036515HR   TP =  .067000HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  6.7339   CFS  UNIT VOLUME =   .4571     B =  526.28     P60 = 2.0000
  AREA =     .000857 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333


  K =  .054393HR   TP =  .067000HR   K/TP RATIO =  .811830    SHAPE CONSTANT, N =  4.405183
  UNIT PEAK =  9.8619   CFS  UNIT VOLUME =  .6077     B =  381.34     P60 = 2.0000
  AREA =     .001733 SQ MI   IA =   .35538 INCHES   INF =   .84507 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333

*
PRINT HYD        ID=1 CODE=1

                  PARTIAL HYDROGRAPH  101.00


  RUNOFF VOLUME =    1.40489 INCHES    =      .1941 ACRE-FEET
  PEAK DISCHARGE RATE =     6.88 CFS  AT   1.467 HOURS   BASIN AREA =   .0026 SQ. MI.


*
*S CONTRIBUTING FLOWS TO DETENTION SYSTEM 2
*
COMPUTE NM HYD     ID=2 HYD NO=102.0 DA=0.00177
            PER A=0 PER B=50.4 PER C=0 PER D=49.6
            TP =-0.067 RAIN=-1

  K =  .036515HR   TP =  .067000HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  6.8959   CFS  UNIT VOLUME =  .4571     B =  526.28     P60 = 2.0000
  AREA =     .000878 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333
```

```
   K =  .066330HR   TP =  .067000HR   K/TP RATIO =  .990000    SHAPE CONSTANT, N =  3.566429
   UNIT PEAK =  4.3292   CFS  UNIT VOLUME =   .6545     B =  325.15     P60 = 2.0000
   AREA =     .000892 SQ MI   IA =   .50000 INCHES   INF =  1.25000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333

*
PRINT HYD         ID=2 CODE=1

                        PARTIAL HYDROGRAPH   102.00


   RUNOFF VOLUME =    1.40245 INCHES    =       .1324 ACRE-FEET
   PEAK DISCHARGE RATE =      4.60 CFS  AT   1.467 HOURS   BASIN AREA =   .0018 SQ. MI.



*
*S CONTRIBUTING FLOWS TO DETENTION SYSTEM 3
*
COMPUTE NM HYD     ID=3 HYD NO=103.0 DA=0.00698
              PER A=0 PER B=27.2 PER C=38.5 PER D=34.3
              TP =-0.067 RAIN=-1

   K =  .036515HR   TP =  .067000HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =  18.806   CFS  UNIT VOLUME =   .4575     B =  526.28     P60 = 2.0000
   AREA =     .002394 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333


   K =  .059074HR   TP =  .067000HR   K/TP RATIO =  .881708    SHAPE CONSTANT, N =  4.025152
   UNIT PEAK =  24.424   CFS  UNIT VOLUME =   .6300     B =  356.84     P60 = 2.0000
   AREA =     .004586 SQ MI   IA =   .41210 INCHES   INF =  1.00388 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333

*
PRINT HYD         ID=3 CODE=1

                        PARTIAL HYDROGRAPH   103.00


   RUNOFF VOLUME =    1.32132 INCHES    =       .4919 ACRE-FEET
   PEAK DISCHARGE RATE =      17.93 CFS  AT   1.467 HOURS   BASIN AREA =   .0070 SQ. MI.



*
*S CONTRIBUTING FLOWS TO DETENTION SYSTEM 4
*
COMPUTE NM HYD     ID=4 HYD NO=104.0 DA=0.001
              PER A=0 PER B=0 PER C=0 PER D=100
              TP =-0.067 RAIN=-1

   K =  .036515HR   TP =  .067000HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
   UNIT PEAK =  7.8549   CFS  UNIT VOLUME =   .4571     B =  526.28     P60 = 2.0000
   AREA =     .001000 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
   RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333

*
PRINT HYD         ID=4 CODE=1

                        PARTIAL HYDROGRAPH   104.00


   RUNOFF VOLUME =    2.06827 INCHES    =       .1103 ACRE-FEET
   PEAK DISCHARGE RATE =      3.15 CFS  AT   1.467 HOURS   BASIN AREA =   .0010 SQ. MI.
```

```
*
COMPUTE NM HYD     ID=5 HYD NO=104.1 DA=0.00059
                   PER A=0 PER B=78.0 PER C=0 PER D=22.0
                   TP =-0.067 RAIN=-1

  K =  .036515HR   TP =  .067000HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  1.0196   CFS  UNIT VOLUME =   .4555     B =  526.28     P60 = 2.0000
  AREA =     .000130 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333


  K =  .066330HR   TP =  .067000HR   K/TP RATIO =  .990000    SHAPE CONSTANT, N =  3.566429
  UNIT PEAK =  2.2333   CFS  UNIT VOLUME =   .6530     B =  325.15     P60 = 2.0000
  AREA =     .000460 SQ MI   IA =   .50000 INCHES   INF =  1.25000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333

*
PRINT HYD          ID=5 CODE=1

                        PARTIAL HYDROGRAPH   104.10

  RUNOFF VOLUME =    1.03783 INCHES    =       .0327 ACRE-FEET
  PEAK DISCHARGE RATE =      1.36 CFS  AT   1.467 HOURS   BASIN AREA =   .0006 SQ. MI.


*
COMPUTE NM HYD     ID=6 HYD NO=104.2 DA=0.0015
                   PER A=0 PER B=23.7 PER C=2.4 PER D=73.9
                   TP =-0.067 RAIN=-1

  K =  .036515HR   TP =  .067000HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  8.7071   CFS  UNIT VOLUME =   .4571     B =  526.28     P60 = 2.0000
  AREA =     .001109 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333


  K =  .065191HR   TP =  .067000HR   K/TP RATIO =  .973007    SHAPE CONSTANT, N =  3.629978
  UNIT PEAK =  1.9265   CFS  UNIT VOLUME =   .6498     B =  329.70     P60 = 2.0000
  AREA =     .000392 SQ MI   IA =   .48621 INCHES   INF =  1.21138 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333

*
PRINT HYD          ID=6 CODE=1

                        PARTIAL HYDROGRAPH   104.20

  RUNOFF VOLUME =    1.73007 INCHES    =       .1384 ACRE-FEET
  PEAK DISCHARGE RATE =      4.31 CFS  AT   1.467 HOURS   BASIN AREA =   .0015 SQ. MI.


*
COMPUTE NM HYD     ID=7 HYD NO=104.3 DA=0.00071
                   PER A=0 PER B=20.2 PER C=0 PER D=79.8
                   TP =-0.067 RAIN=-1

  K =  .036515HR   TP =  .067000HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  4.4504   CFS  UNIT VOLUME =   .4571     B =  526.28     P60 = 2.0000
  AREA =     .000567 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333


  K =  .066330HR   TP =  .067000HR   K/TP RATIO =  .990000    SHAPE CONSTANT, N =  3.566429
  UNIT PEAK =  .69601   CFS  UNIT VOLUME =   .6443     B =  325.15     P60 = 2.0000
  AREA =     .000143 SQ MI   IA =   .50000 INCHES   INF =  1.25000 INCHES PER HOUR
```

RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .133333

*

PRINT HYD ID=7 CODE=1

PARTIAL HYDROGRAPH 104.30

RUNOFF VOLUME = 1.80141 INCHES = .0682 ACRE-FEET
PEAK DISCHARGE RATE = 2.08 CFS AT 1.467 HOURS BASIN AREA = .0007 SQ. MI.

*

COMPUTE NM HYD ID=8 HYD NO=104.4 DA=0.00102
PER A=0 PER B=45.6 PER C=0 PER D=54.4
TP =-0.067 RAIN=-1

K = .036515HR TP = .067000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 4.3585 CFS UNIT VOLUME = .4571 B = 526.28 P60 = 2.0000
AREA = .000555 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .133333

K = .066330HR TP = .067000HR K/TP RATIO = .990000 SHAPE CONSTANT, N = 3.566429
UNIT PEAK = 2.2572 CFS UNIT VOLUME = .6530 B = 325.15 P60 = 2.0000
AREA = .000465 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .133333

*

PRINT HYD ID=8 CODE=1

PARTIAL HYDROGRAPH 104.40

RUNOFF VOLUME = 1.46586 INCHES = .0797 ACRE-FEET
PEAK DISCHARGE RATE = 2.71 CFS AT 1.467 HOURS BASIN AREA = .0010 SQ. MI.

*

*S CONTRIBUTING FLOWS TO DETENTION POND

*

COMPUTE NM HYD ID=10 HYD NO=106.0 DA=0.00075
PER A=0 PER B=43.2 PER C=0 PER D=56.8
TP =-0.067 RAIN=-1

K = .036515HR TP = .067000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.3462 CFS UNIT VOLUME = .4571 B = 526.28 P60 = 2.0000
AREA = .000426 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .133333

K = .066330HR TP = .067000HR K/TP RATIO = .990000 SHAPE CONSTANT, N = 3.566429
UNIT PEAK = 1.5723 CFS UNIT VOLUME = .6501 B = 325.15 P60 = 2.0000
AREA = .000324 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .133333

*

PRINT HYD ID=10 CODE=1

PARTIAL HYDROGRAPH 106.00

RUNOFF VOLUME = 1.49756 INCHES = .0599 ACRE-FEET
PEAK DISCHARGE RATE = 2.01 CFS AT 1.467 HOURS BASIN AREA = .0008 SQ. MI.

```
*
*S CONTRIBUTING FLOWS TO DETENTION SYSTEM 5
*
COMPUTE NM HYD     ID=9 HYD NO=105.0 DA=0.00156
                   PER A=0 PER B=41.0 PER C=0 PER D=59.0
                   TP =-0.067 RAIN=-1

  K =  .036515HR   TP =  .067000HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  7.2296   CFS  UNIT VOLUME =   .4571     B =  526.28     P60 = 2.0000
  AREA =     .000920 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333


  K =  .066330HR   TP =  .067000HR   K/TP RATIO =  .990000    SHAPE CONSTANT, N =  3.566429
  UNIT PEAK =  3.1039   CFS  UNIT VOLUME =   .6530     B =  325.15     P60 = 2.0000
  AREA =     .000640 SQ MI   IA =   .50000 INCHES   INF =  1.25000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333

*
PRINT HYD          ID=9 CODE=1

                   PARTIAL HYDROGRAPH  105.00


  RUNOFF VOLUME =    1.52663 INCHES    =      .1270 ACRE-FEET
  PEAK DISCHARGE RATE =      4.22 CFS  AT   1.467 HOURS   BASIN AREA =   .0016 SQ. MI.


*
COMPUTE NM HYD     ID=11 HYD NO=105.1 DA=0.0019
                   PER A=0 PER B=52.5 PER C=0 PER D=47.5
                   TP =-0.067 RAIN=-1

  K =  .036515HR   TP =  .067000HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  7.0890   CFS  UNIT VOLUME =   .4571     B =  526.28     P60 = 2.0000
  AREA =     .000903 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333


  K =  .066330HR   TP =  .067000HR   K/TP RATIO =  .990000    SHAPE CONSTANT, N =  3.566429
  UNIT PEAK =  4.8408   CFS  UNIT VOLUME =   .6545     B =  325.15     P60 = 2.0000
  AREA =     .000998 SQ MI   IA =   .50000 INCHES   INF =  1.25000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333

*
PRINT HYD          ID=11 CODE=1

                       PARTIAL HYDROGRAPH  105.10


  RUNOFF VOLUME =    1.37470 INCHES    =      .1393 ACRE-FEET
  PEAK DISCHARGE RATE =      4.90 CFS  AT   1.467 HOURS   BASIN AREA =   .0019 SQ. MI.


*
COMPUTE NM HYD     ID=12 HYD NO=105.2 DA=0.00069
                   PER A=0 PER B=24.2 PER C=0 PER D=75.8
                   TP =-0.067 RAIN=-1

  K =  .036515HR   TP =  .067000HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  4.1082   CFS  UNIT VOLUME =   .4571     B =  526.28     P60 = 2.0000
  AREA =     .000523 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  .133333
```

K = .066330HR TP = .067000HR K/TP RATIO = .990000 SHAPE CONSTANT, N = 3.566429
UNIT PEAK = .81034 CFS UNIT VOLUME = .6443 B = 325.15 P60 = 2.0000
AREA = .000167 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .133333

*

PRINT HYD ID=12 CODE=1

PARTIAL HYDROGRAPH 105.20

RUNOFF VOLUME = 1.74857 INCHES = .0643 ACRE-FEET
PEAK DISCHARGE RATE = 2.00 CFS AT 1.467 HOURS BASIN AREA = .0007 SQ. MI.

*

COMPUTE NM HYD ID=13 HYD NO=105.3 DA=0.00088
PER A=0 PER B=42.2 PER C=0 PER D=57.8
TP =-0.067 RAIN=-1

K = .036515HR TP = .067000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 3.9953 CFS UNIT VOLUME = .4571 B = 526.28 P60 = 2.0000
AREA = .000509 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .133333

K = .066330HR TP = .067000HR K/TP RATIO = .990000 SHAPE CONSTANT, N = 3.566429
UNIT PEAK = 1.8022 CFS UNIT VOLUME = .6530 B = 325.15 P60 = 2.0000
AREA = .000371 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .133333

*

PRINT HYD ID=13 CODE=1

PARTIAL HYDROGRAPH 105.30

RUNOFF VOLUME = 1.51078 INCHES = .0709 ACRE-FEET
PEAK DISCHARGE RATE = 2.37 CFS AT 1.467 HOURS BASIN AREA = .0009 SQ. MI.

*

COMPUTE NM HYD ID=14 HYD NO=105.4 DA=0.00031
PER A=0 PER B=94.6 PER C=0 PER D=5.4
TP =-0.067 RAIN=-1

K = .036515HR TP = .067000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = .13149 CFS UNIT VOLUME = .4327 B = 526.28 P60 = 2.0000
AREA = .000017 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .133333

K = .066330HR TP = .067000HR K/TP RATIO = .990000 SHAPE CONSTANT, N = 3.566429
UNIT PEAK = 1.4232 CFS UNIT VOLUME = .6501 B = 325.15 P60 = 2.0000
AREA = .000293 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .133333

*

PRINT HYD ID=14 CODE=1

PARTIAL HYDROGRAPH 105.40

RUNOFF VOLUME = .81853 INCHES = .0135 ACRE-FEET
PEAK DISCHARGE RATE = .66 CFS AT 1.467 HOURS BASIN AREA = .0003 SQ. MI.

```
*
COMPUTE NM HYD     ID=15 HYD NO=105.5 DA=0.00035
                   PER A=0 PER B=41.1 PER C=0 PER D=58.9
                   TP =-0.067 RAIN=-1

  K =  .036515HR   TP =  .067000HR   K/TP RATIO =  :545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  1.6193   CFS  UNIT VOLUME =   .4555     B =  526.28     P60 = 2.0000
  AREA =     .000206 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .133333


  K =  .066330HR   TP =  .067000HR   K/TP RATIO =  .990000    SHAPE CONSTANT, N =  3.566429
  UNIT PEAK =  .69809   CFS  UNIT VOLUME =   .6443     B =  325.15     P60 = 2.0000
  AREA =     .000144 SQ MI   IA =   .50000 INCHES   INF =  1.25000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .133333

*
PRINT HYD          ID=15 CODE=1

                        PARTIAL HYDROGRAPH   105.50

  RUNOFF VOLUME =    1.52531 INCHES    =       .0285 ACRE-FEET
  PEAK DISCHARGE RATE =       .95 CFS  AT   1.467 HOURS   BASIN AREA =   .0004 SQ. MI.


*
COMPUTE NM HYD     ID=16 HYD NO=105.6 DA=0.00025
                   PER A=0 PER B=39.1 PER C=0 PER D=60.9
                   TP =-0.067 RAIN=-1

  K =  .036515HR   TP =  .067000HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  1.1959   CFS  UNIT VOLUME =   .4555     B =  526.28     P60 = 2.0000
  AREA =     .000152 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .133333


  K =  .066330HR   TP =  .067000HR   K/TP RATIO =  .990000    SHAPE CONSTANT, N =  3.566429
  UNIT PEAK =  .47437   CFS  UNIT VOLUME =   .6443     B =  325.15     P60 = 2.0000
  AREA =     .000098 SQ MI   IA =   .50000 INCHES   INF =  1.25000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .133333

*
PRINT HYD          ID=16 CODE=1

                        PARTIAL HYDROGRAPH   105.60

  RUNOFF VOLUME =    1.55173 INCHES    =       .0207 ACRE-FEET
  PEAK DISCHARGE RATE =       .69 CFS  AT   1.467 HOURS   BASIN AREA =   .0003 SQ. MI.


*
COMPUTE NM HYD     ID=17 HYD NO=105.7 DA=0.00049
                   PER A=0 PER B=89.8 PER C=0 PER D=10.2
                   TP =-0.067 RAIN=-1

  K =  .036515HR   TP =  .067000HR   K/TP RATIO =  .545000    SHAPE CONSTANT, N =  7.106420
  UNIT PEAK =  .39259   CFS  UNIT VOLUME =   .4503     B =  526.28     P60 = 2.0000
  AREA =     .000050 SQ MI   IA =   .10000 INCHES   INF =   .04000 INCHES PER HOUR
  RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .133333


  K =  .066330HR   TP =  .067000HR   K/TP RATIO =  .990000    SHAPE CONSTANT, N =  3.566429
```

UNIT PEAK = 2.1354 CFS UNIT VOLUME = .6530 B = 325.15 P60 = 2.0000
AREA = .000440 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .133333

*

PRINT HYD ID=17 CODE=1

PARTIAL HYDROGRAPH 105.70

RUNOFF VOLUME = .88194 INCHES = .0230 ACRE-FEET
PEAK DISCHARGE RATE = 1.07 CFS AT 1.467 HOURS BASIN AREA = .0005 SQ. MI.

*

COMPUTE NM HYD ID=18 HYD NO=107.0 DA=0.00054
PER A=0 PER B=37.5 PER C=0 PER D=62.5
TP =-0.067 RAIN=-1

K = .036515HR TP = .067000HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 2.6510 CFS UNIT VOLUME = .4555 B = 526.28 P60 = 2.0000
AREA = .000338 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .133333

K = .066330HR TP = .067000HR K/TP RATIO = .990000 SHAPE CONSTANT, N = 3.566429
UNIT PEAK = .98272 CFS UNIT VOLUME = .6501 B = 325.15 P60 = 2.0000
AREA = .000203 SQ MI IA = .50000 INCHES INF = 1.25000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .133333

*

PRINT HYD ID=18 CODE=1

PARTIAL HYDROGRAPH 107.00

RUNOFF VOLUME = 1.57287 INCHES = .0453 ACRE-FEET
PEAK DISCHARGE RATE = 1.49 CFS AT 1.467 HOURS BASIN AREA = .0005 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 11:22:08

L-14-Z

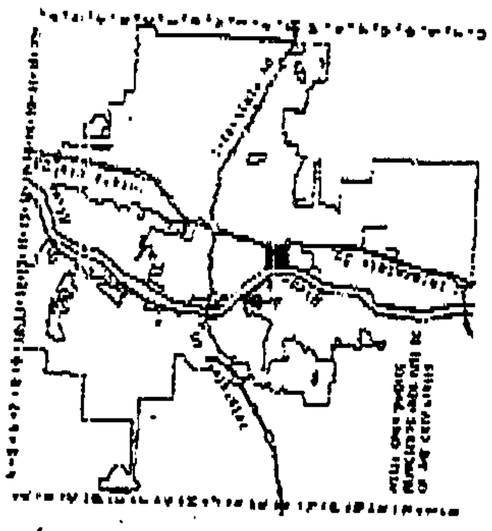
LEGAL DESCRIPTION
T10N
R3E
SEC 19

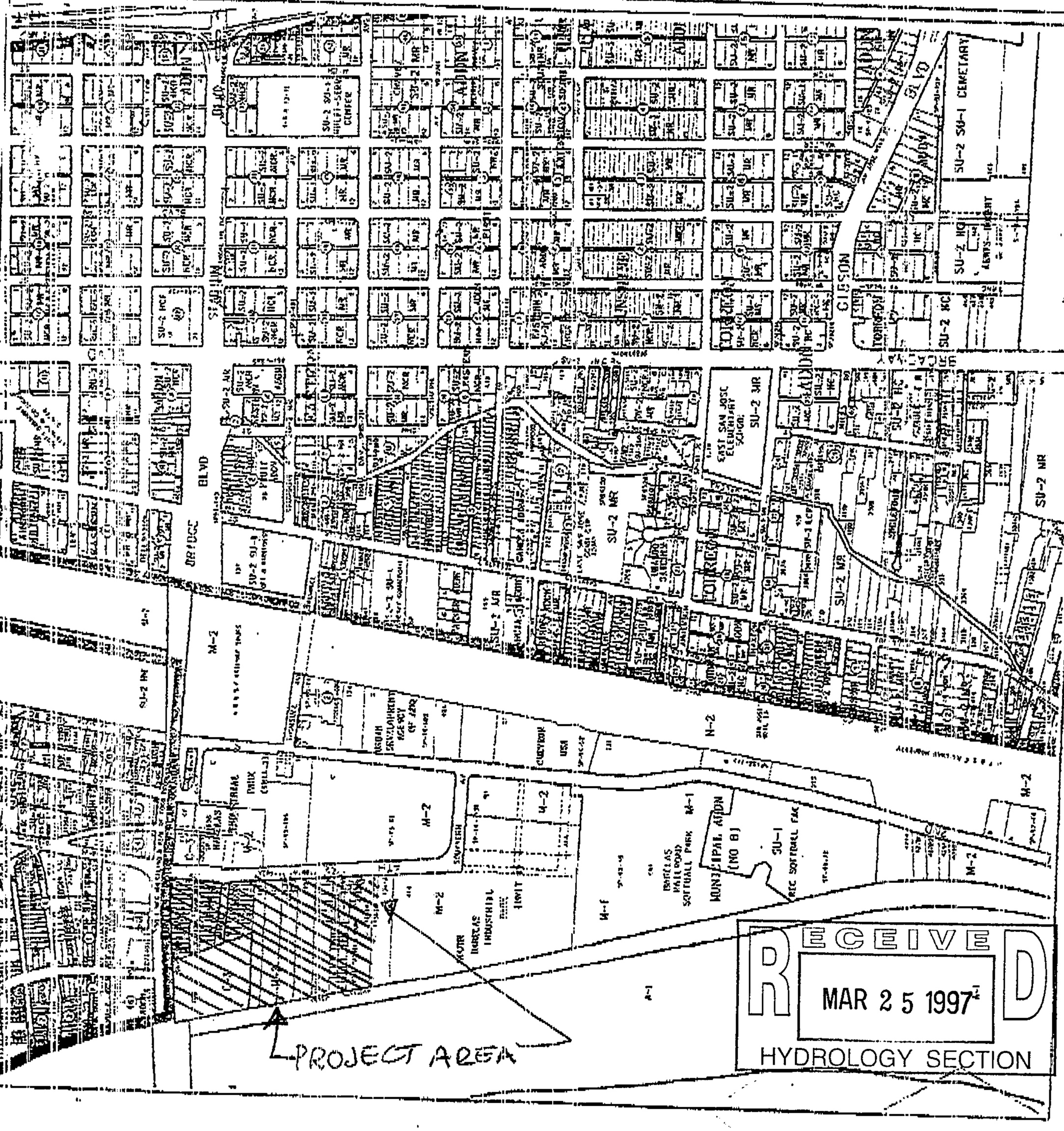
UNIFORM PROPERTY CODE
1401000

SCALE AS SHOWN
1000 500 0 250
PHOTOCOPY-NOT TO SCALE

North

© Planning Department
Map Amended through July 05, 1995





CITY OF
Albuquerque

January 8, 1997

Martin J. Chávez, Mayor

Taschek Environmental Consulting
P. O. Box 1845
Corrales, New Mexico 87048

Attn.: Susan Shipley

Subject: Environmental Assessment for the Hispanic Cultural Center

Dear Ms. Shipley:

The Transportation Development Division of the Public Works Department has reviewed the subject Environmental Assessment (EA). In addition, the December 17, 1996, Public Hearing on the project was attended by one of our transportation planners, Jerold Widdison. Specific comments on the EA appear below, but we would especially emphasize the following general comment:

We understand that the Hispanic Cultural Center is a major undertaking of the State of New Mexico's Office of Cultural Affairs, and we are aware that Mayor Chavez strongly supports the project. Accordingly, it would be helpful if various matters of concern were coordinated with the Public Works Department before the project gets any nearer completion. Although the Hispanic Cultural Center appears to be far along in preliminary architectural and site design, apparently no coordination has been sought with this department to date. We are particularly concerned about the impact that the project--and its many expected visitors--may have on access, traffic congestion, parking, and the like. There is also very limited storm drain capacity in the area. Thus we suggest that the project designers contact our Transportation, Utilities Development, and Hydrology divisions soon. Other City departments, such as Environmental Health and Open Space Division, may also have concerns.

The comments below touch upon the EA:

Page 1.1, regarding "Process": This section leaves unanswered several questions about the scope of the project and the purpose of the EA. Is this document a draft EA or a final EA? Will it be followed by a FONSI or Record of Decision of some sort? In any case, why is the EA being produced--is there an implication that federal funds are being used or that they might be used in the

future? Might there be some other federal involvement? We also notice the statement that "the analysis was conducted in accordance with the New Mexico state Action Plan . . .", and we assume this means the Highway and Transportation Department's Action Plan, which may or may not be an appropriate model. The document does not actually seem in accordance with the Action Plan; for examples, there is no adequate description or data for either a No-action or a No-build alternative, and there is really no meaningful analysis of "Need for the Project." Furthermore, the list of coordination agencies does not mention the state's Historic Preservation Division; that office must provide coordination regarding the historic building on the site and the requirements of the New Mexico Prehistoric and Historic Sites Preservation Act. Altogether, we suggest that this section would be improved by telling why an EA is appropriate and listing the project costs and sources of funds.

Page 1.4, paragraph 7: Here it is stated that right-of-way acquisition will be needed. Does this mean land acquisition for the project, or perhaps additional right-of-way acquisition for Bridge Boulevard or Fourth Street? If the latter, right-of-way might more properly be obtained by or for the City. It would also seem appropriate to request vacation of Manuel Avenue.

Page 3.1, paragraph 1 and Section 3.4: In the site selection process, how was the "no-build alternative" described? Was it proposed that the programs and functions of the Center be carried on in existing buildings or in some other way?

Page 3.5, Site Plan: The Site Plan needs coordination. Attention is needed to such matters as service and delivery access, staff and visitor parking capacities, driveway locations with respect to traffic flow, bus loading, oversize vehicle parking, emergency and security access, etc. In view of the proposed amphitheater and other facilities, the parking area (shown at approximately 188 spaces) is far from adequate. There also seems to be no provision for the light-rail facility or other transportation facilities that have been suggested (see p. 3.4, paragraph 2) for linking the Hispanic Center with the City's Biological Park.

Section 40: Several theater facilities planned for the Center will generate large traffic volumes, which will probably impact Fourth Street, Bridge Boulevard, and other streets. However, no information is provided about attendance and visitor characteristics for the various activities within the complex, nor has any traffic analysis been performed to document impacts of traffic from the complex on the adjacent street system. The mitigation of traffic impacts, such as by street improvements, should also be addressed.

The above comments are provided to outline the basic concerns the Public Works Department has with the December 1996 version of Environmental Assessment. We are particularly concerned with the lack of analysis for transportation impacts associated with the project. If any of this analysis has

been performed but not included in the EA, we request that a copy be sent to David W. Harmon with the Transportation Development Division for his review. If the analysis has not been performed, we feel it is essential to get started on these tasks as soon as possible so as to not delay this project. The proper sizing of these facilities as well as the documentation of traffic impacts and necessary mitigation are essential to minimize the impact of this facility on the surrounding properties and street system.

Sincerely,

Robert E. Gurulé, Director
Public Works Department

c: Mayor Martin J. Chavez
J. Ronald Vigil, New Mexico Office of Cultural Affairs
John R. Castillo, Assistant Director, Public Works Department
David W. Harmon, Transportation Division Manager, Public Works Department
Greg Olson, Acting Manager, Utility Development Division, Public Works Department
Fred Aguirre, City Engineer, Hydrology, Public Works Department
Ray Chavez, Traffic Engineering Operations Manager, Public Works Department
John M. Hartmann, Transportation Planning and Programming Section, Public Works Dept.
Jerold G. Widdison, Transportation Planner, Public Works Department

REG/DWH/JGW

jgw\hcc

Red Mountain
Engineers,
Inc.

Engineers • Surveyors • Planners

# LETTER OF TRANSMITTAL

Date: 3/20/97

Project No: 96805

To: City of Albuquerque
DRB

Project: HCL

Attention:

**Transmitted For:**

- [x] For Your Review and Comment
- [ ] As Requested
- [ ] Resubmit
- [ ] Make Corrections Noted
- [ ] For Approval
- [ ] No Exceptions Taken
- [ ] For Your Use

**The Following Document (s):**

- [x] Drawings
- [ ] Change Order
- [ ] Shop Drawing Submittals
- [ ] Correspondence
- [ ] Specifications
- [x] _____

| Copies | Date | Description |
|---|---|---|
| 1 | | Grading + drainage report w/attachments |
| | | |
| | | |
| | | |
| | | |
| | | |

RECEIVED
MAR 21 1997
HYDROLOGY SECTION

**REMARKS:**

By: John Blasingame

Copy (s) To:

[x] Santa Fe Phone: (505) 473-7373 Fax: (505) 473-4865
[ ] Albuquerque Phone: (505) 889-3004 Fax: (505) 889-2797