

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

September 3, 1999

Richard Devine, PE
Smith Engineering Co.
1316 Jackie Road
Rio Rancho, NM 87124

**RE: GRADING & DRAINAGE PLAN FOR HUNTER'S RUN PARK (B-13/D7)
RECEIVED AUG 10, 1999 FOR DRC WORK ORDER
ENGINEER'S STAMP DATED 8/5/99**

Dear Mr. Devine:

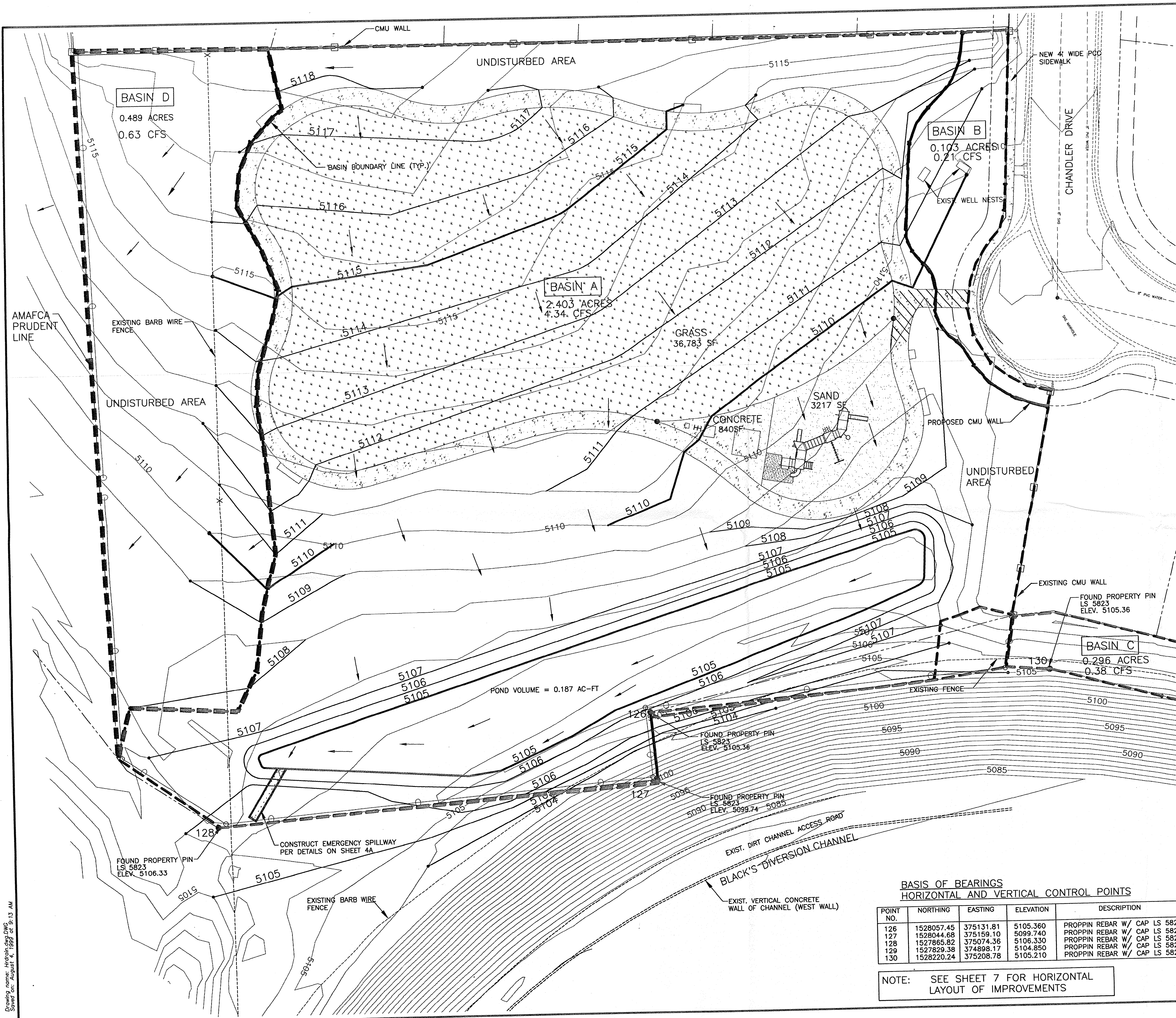
Based on the information included in the submittal referenced above, City Hydrology accepts the Grading & Drainage Plan for Work Order. Include a copy of the approved Grading & Drainage Plan, dated 8/5/99, in the set of construction drawing that will be submitted to the Design Review Committee for Work Order 5735.91.

If I can be of further assistance, You may contact me at 768-2727.

Sincerely,

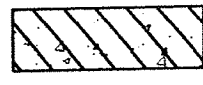
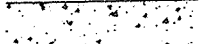
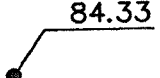
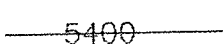
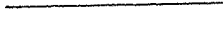
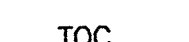
John P. Curtin, P.E.
Project Manager, PWD/Hyd

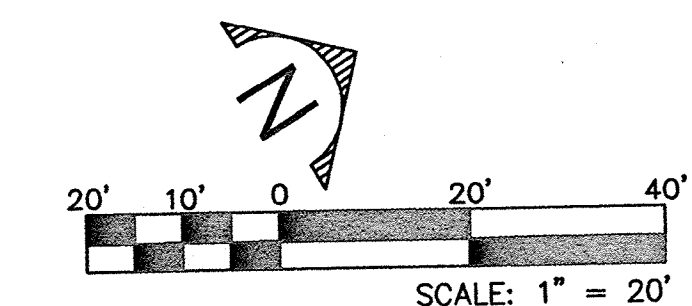
c: Inspector



○ KEYED NOTES:

LEGEND:

- | | |
|---|---|
|  | EXISTING CHAIN LINK FENCE |
|  | EXISTING WOOD FENCE |
|  | EXISTING RAWD IRON FENCE |
|  | EXISTING OVERHEAD ELECTRIC |
|  | EXISTING SAS MANHOLE |
|  | NEW STORM DRAIN MANHOLE |
|  | EXISTING STORM DRAIN MANHOLE |
|  | 6" CONCRETE SIDEWALK
FOR COA MAINTENANCE
ACCESS |
|  | EXISTING CONCRETE SIDEWALKS
AND CURB LINES |
|  | NEW 4" CONCRETE SIDEWALKS
AND CURB LINES |
|  | HORIZONTAL AND VERTICAL
CONTROL POINT |
|  | NEW STORM DRAIN FLOW ARROW |
|  | NEW SPOT ELEVATION |
|  | NEW INDEX CONTOUR LINE |
|  | NEW CONTOUR LINE |
|  | EXISTING INDEX CONTOUR LINE |
|  | EXISTING CONTOUR LINE |
|  | EXISTING WATER VALVE |
| COA | CITY OF ALBUQUERQUE |
| TOT | TOP OF CURB |
| FL | FLOWLINE |
| TOP | TOP OF PIPE |
| X 87.5 | EXISTING SPOT ELEVATION |
| IE | INVERT ELEVATION |
|  | EXISTING FIRE HYDRANT |
|  | EXISTING FIBER-OPTIC MANHOLE |
| F-0 MH | |
|  | EXISTING CATCH BASIN |
|  | NEW CATCH BASIN |



198633

 **Smith Engineering Company**
A Full Service Engineering Company

5400 Uptown Boulevard, N.E. Suite 6000 Albuquerque, New Mexico 87110

CITY OF ALBUQUERQUE
CAPITAL IMPLEMENTATION PROGRAM
LANDSCAPE ARCHITECTURE AND CONSTRUCTION SERVICES

TITLE: HUNTER'S RUN PARK IMPROVEMENTS
DRAINAGE PLAN & DRAINAGE BASIN DEFINITION

	Design Review Committee	City Engineer Approval	Last Design Update	Mo. / Day / Yr.	Mo. / Day / Yr.

City Project No.	573591	Zone Map No.	B-13-Z	Sheet	4	Of	15
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<u>BASIS OF BEARINGS</u>						
<u>HORIZONTAL AND VERTICAL CONTROL POINTS</u>						
POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION		
126	1528057.45	375131.81	5105.360	PROPPIN	REBAR W/	CAP LS 5823
127	1528044.68	375159.10	5099.740	PROPPIN	REBAR W/	CAP LS 5823
127	1527865.82	375074.36	5106.330	PROPPIN	REBAR W/	CAP LS 5823
128	1527829.38	374898.17	5104.850	PROPPIN	REBAR W/	CAP LS 5823
130	1528220.24	375208.78	5105.210	PROPPIN	REBAR W/	CAP LS 5823

NOTE: SEE SHEET 7 FOR HORIZONTAL LAYOUT OF IMPROVEMENTS

TC ASSUMED TO BE 0.12 HOURS

[illegible]

Precipitation Zone =		EXISTING CONDITIONS															
Table A-8 (DPM)		Excess Precipitation - E - (in.)															
FORMULAS:		Weighted E (in.) = Ea*Aa+Eb*Ba+Ec*Ca+Ed*Da / (total area "a")													-- Note - "a" = area in acres		
		Total Runoff Volume (ac-ft) = Weighted E (in.) * (total area "a") / (12 in./ft)															
Basin & Condition or Analysis Point	Return Period 6-hr	Rainfall Excess -E per Land Treatment Type (inches) and Land Treatment Type (acres)												Total Area (ac)	Weighted E (inches)	Runoff Volume (ac-ft)	
		EaA	A	A		EaB	B	B	EaC	C	C	EaD	D				D
		(ac)	(%)			(ac)	(%)		(ac)	(%)		(ac)	(%)				
ENTIRE SITE	100	0.44	2.2700	69.0	0.67	0.8400	25.5	0.99	0.0000	0.0	1.97	0.1800	5.5	3.2900	0.58	0.1597	
ENTIRE SITE	10	0.08	2.2700	69.0	0.22	0.8400	25.5	0.44	0.0000	0.0	1.24	0.1800	5.5	3.2900	0.18	0.0491	
DEVELOPED CONDITIONS																	
Basin & Condition or Analysis Point	Return Period 6-hr	Rainfall Excess -E per Land Treatment Type (inches) and Land Treatment Type (acres)												Total Area (ac)	Weighted E (inches)	Runoff Volume (ac-ft)	
		EaA	A	A		EaB	B	B	EaC	C	C	EaD	D				D
		(ac)	(%)			(ac)	(%)		(ac)	(%)		(ac)	(%)				
A	100	0.44	1.3230	55.1	0.67	0.8900	37.0	0.99	0.0000	0.0	1.97	0.1895	7.9	2.403	0.65	0.1293	
A	100	0.08	1.3230	55.1	0.22	0.8900	37.0	0.44	0.0000	0.0	1.24	0.1895	7.9	2.403	0.22	0.0447	
B	100	0.44	0.0000	0.0	0.67	0.1030	100.0	0.99	0.0000	0.0	1.97	0.0000	0.0	0.103	0.67	0.0058	
B	100	0.08	0.0000	0.0	0.22	0.1030	100.0	0.44	0.0000	0.0	1.24	0.0000	0.0	0.103	0.22	0.0019	
C	100	0.44	0.2960	100.0	0.67	0.0000	0.0	0.99	0.0000	0.0	1.97	0.0000	0.0	0.296	0.44	0.0109	
C	100	0.08	0.2960	100.0	0.22	0.0000	0.0	0.44	0.0000	0.0	1.24	0.0000	0.0	0.296	0.08	0.0020	
D	100	0.44	0.4890	100.0	0.67	0.0000	0.0	0.99	0.0000	0.0	1.97	0.0000	0.0	0.489	0.44	0.0179	
D	100	0.08	0.4890	100.0	0.22	0.0000	0.0	0.44	0.0000	0.0	1.24	0.0000	0.0	0.489	0.08	0.0033	
TOTALS														3.291		0.164	
BASIN A IS THE ONLY AREA THAT DRAINS TO THE BLACK DIVERSION CHANNEL AND NEEDS TO BE CONTAINED ON SITE																	
VOLUME FOR 10 DAY STORM																	
V 10 DAYS = V360*Ad*(P10days-P360)/12*in/ft = 0.153 acft																	
WHERE P10days = 3.67																	
AND P 360 = 2.20																	

HUNTER'S RUN PARK DRAINAGE ANALYSIS

Hunter's Run Park is located on a 3.29 acre parcel of undeveloped land located in the northwest section of Albuquerque at the confluence of the Black's Diversion Channel and the Calabacillas Arroyo. The Northwest corner of the park borders Chandler Drive, which intersects 7 Bar Loop Road one block to the North. Access to the park will be off of Chandler Drive. The soils at this site are classified as BCC (Blueprint Series). This soil is a loamy fine sand found on slopes from 1% to 9%. The local climate in this area is considered semi-arid and is hot and dry with an average annual rainfall of 8 inches. The project is classified as zone x on the flood insurance rate firm map #35001-c1018d.

The master drainage plan for the Hunter's Run Subdivision is titled "Drainage Report for Hunter's Run Subdivision", Tierra West Development Management Services. Revised November 1994 by Ron Bohannon, P.E. The following information is a summary of the drainage information for the park site as provided in that report:

Basin 1a is designated park area and "The City would like the park left natural, so it could sheet flow to Black's Diversion Channel".

Basin 1A Data and Q_p 100 yr:

Area = 0.005141 sq. mi. (3.29 acres), T_p = 0.133 hours. Land treatment percentages (A=0%, B=93%, C=0%, D=7%), $Q_p/100yr = 7.2$ cfs, 100 year volume = 0.208 ac-ft.

HYDROLOGIC ANALYSIS

The City of Albuquerque's Development Process Manual (DPM) Section 22.2 was used to compute the 100-yr 6-hr peak discharge and runoff volumes for the site. The 100 year, 10 day storm volume was also computed. Precipitation is in zone 1. Tables A-8 and A-9 were used for these calculations. The park was viewed as one basin based on developed runoff patterns. The existing condition flows were computed for comparison purposes only. There are no off-site flows entering the site for either existing or developed conditions.

A. Existing Conditions - onsite

There is no off-site drainage entering the park site. The existing site is undeveloped and is vegetated with native grasses and sage brush. The southern edge of the park site drains to the Calacabillas Arroyo - refer to Basin D. The northern edge of the park drains to Chandler Drive - refer to Basin B. The rest of the park area flows to the Black's Diversion Channel. There is an existing shallow swale approximately 1 foot high that intercepts drainage on the western side of the park before the flows reach the steep slopes down to the Black's Diversion Channel. There is virtually no existing erosion on the site. The average slope is around 3% to 4%. There are no drainage facilities on the site. Due to the relatively small area, the existing conditions were calculated using the entire area of the park. An estimated 4.2 cubic feet per second was calculated for the existing 100 year event. Land treatment type "A" was used for the calculations.

The Black's Diversion Channel, at this location, is constructed of vertical concrete walls with a flat concrete bottom. The walls adjacent to the park are approximately 4 feet higher than the service road which runs along the west side of the channel. There are 6" diameter holes through the wall at 50 feet on center (+/-) to drain the adjacent AMAFCA right of way.

B. Developed Conditions

The developed park will have paved impermeable areas including concrete sidewalks and bench sites. There will also be a drip irrigated landscaped areas for native shrubs and trees, irrigated grass areas and a sand area for children's playground. The park site was subdivided into four basins based on existing drainage patterns. The following is a summary of the site:

Basin A consists of 2.403 acres. 55% of the site (1.323 ac) is either undisturbed or slightly modified (graded only) soil, or sand; land treatment A was used. 37.0% of the site (0.89 ac) is irrigated grass; land treatment B was used. 7.9% of the site (0.19 ac) is concrete sidewalk and bench pads; land treatment D was used. The sidewalks will have a 2% cross slope directed toward the turf area on the north, south, and west side and toward the landscaped drainage collection area on the south side of the site. No flows are anticipated to be discharged from the site.

Basin B consists of 0.103 acres which drains to Chandler Drive. Land treatment type B was used to compute 0.21 cfs.

Basin C is the area of the park that was determined to be undevelopable. It is the narrow strip of property that runs along the Blacks Diversion channel on the east and the back yards of homes on the west. Land treatment type A was used to compute 0.38 cfs.

Basin D consists of 0.489 acres which drains to the Calabacillas Arroyo. Land treatment A was used to compute 0.63 cfs

After discussions with the City of Albuquerque Hydrology staff, it was decided that due to the very small 100 year, 10 day storm volume, compounded with the tremendous expense of removing and replacing about 45 linear feet by 12 feet high portion of Black's Diversion Channel wall to accommodate an 18" drainage pipe, the most viable solution is to discharge the 100 year, 10 day storm volume from Basin A into a landscaped area incorporated within the park area. Refer to sheet 4A for details. In the unlikely event that a storm volume exceeds the capacity of the discharge area, an emergency spillway will direct the excess discharge toward the Calabalcabas Arroyo.

The total park discharge ending up at the pond will be 4.34 cfs. The total 100 year, 10 day volume entering the pond will be 0.153 ac-ft (6665 cubic feet) based on the 10 day storm. The designed volume of the landscaped area is to be 0.293 ac-ft (12,750 cubic feet).

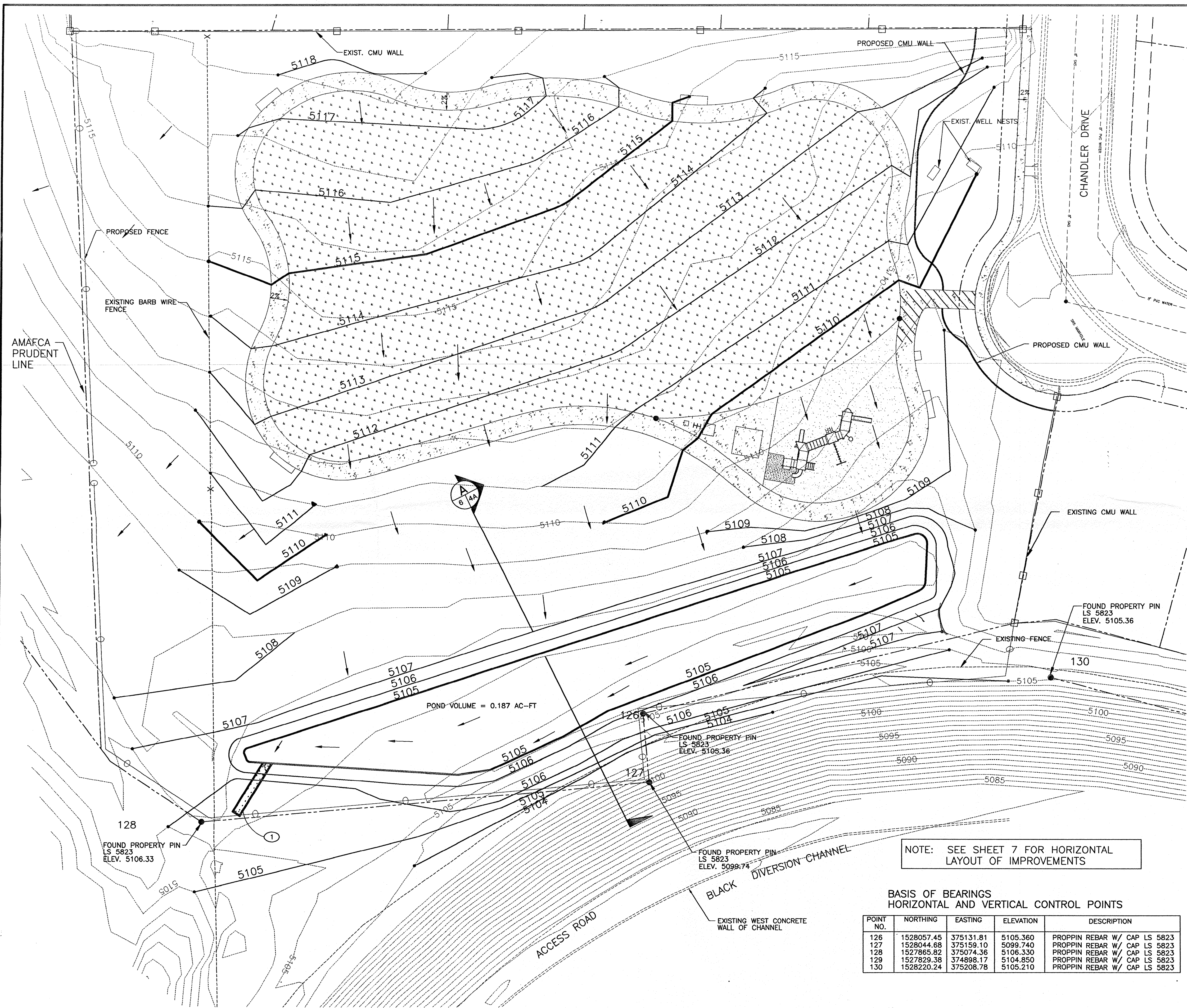
Summary

The allowable 100 year discharge from the park site as stated in the master drainage study is 7.2 cfs. The proposed calculated discharge for the entire site is 5.5 cfs which is less than the allowable. The storage capacity of the landscaped drainage collection area exceeds the mandatory 10 day volume by 48% +/-.

 Smith Engineering Company A Full Service Engineering Company 6400 Olympic Boulevard, N.E. Suite 3000 Albuquerque, New Mexico 87110	198633									
			NO.		DATE					
CITY OF ALBUQUERQUE CAPITAL IMPLEMENTATION PROGRAM LANDSCAPE ARCHITECTURE AND CONSTRUCTION SERVICES										
TITLE: HUNTER'S RUN PARK IMPROVEMENTS										
DRAINAGE CALCULATIONS AND ANALYSIS										
Design Review Committee			City Engineer Approval			Last Design Update	Mo. / Day / Yr.		Mo. / Day / Yr.	
City Project No. 573591			Zone Map No. B-13-Z			Sheet 5		Of 15		

Drawing name: HRDRNCALC.dwg.DWG
Saved on: August 4, 1999 at 12:07 PM

Grading, Drainage, and Erosion Control
Sheet No. 10-03 AM

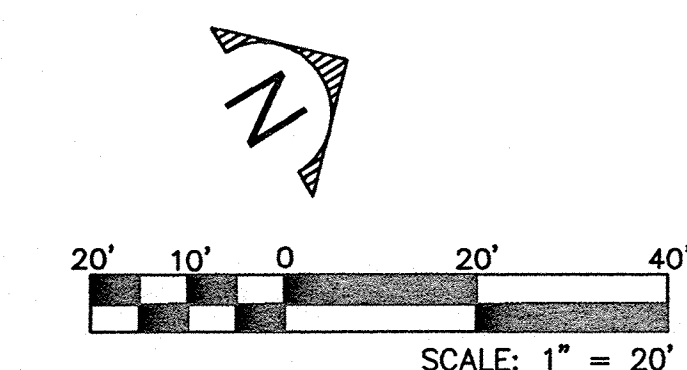


KEYED NOTES:
1 BUILD PCC EMERGENCY SPILLWAY SEE DETAILS ON SHEET 4A

LEGEND:
4" CONCRETE SIDEWALK
6" CONCRETE SIDEWALK FOR COA MAINTENANCE ACCESS

ESTIMATED EARTHWORK
PRISMOIDAL METHOD
ORIGINAL SURFACE
REVISED
CUT COMPACTION FACTOR 0.00 %
FILL COMPACTION FACTOR 25.00 % SWELL
RAW CUT VOLUME 860 CY
CMP FILL VOLUME 763 CY

EARTHWORK VOLUMES ARE FOR CONTRACTOR'S INFORMATION ONLY. ACTUAL VOLUMES MAY BE PLUS OR MINUS QUANTITIES



198633
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6400 Uptown Boulevard, N.E. Suite 600B Albuquerque, New Mexico 87110

NOTE: SEE SHEET 7 FOR HORIZONTAL LAYOUT OF IMPROVEMENTS

BASIS OF BEARINGS HORIZONTAL AND VERTICAL CONTROL POINTS				
POINT NO.	NORTHING	EASTING	ELEVATION	DESCRIPTION
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CITY OF ALBUQUERQUE CAPITAL IMPLEMENTATION PROGRAM LANDSCAPE ARCHITECTURE AND CONSTRUCTION SERVICES	
TITLE: HUNTER'S RUN PARK IMPROVEMENTS	
GRADING AND DRAINAGE PLAN	
Design Review Committee	City Engineer Approval
Last Design Update	
City Project No. 573591	Zone Map No. B-13-Z
Sheet 6	Of 15

SURVEY INFORMATION		BENCH MARKS		AS BUILT INFORMATION	
FIELD NOTES	DATE	TEMP. BENCHMARKS PROPERTY PINS 1/2 REBAR WITH CAP LS 5823 - SEE HORIZONTAL GEOMETRY PLAN SHEET 7 FOR LOCATIONS AND COORDINATES	CONTRACTOR	WORKED BY	DATE
NO.	BY			INSPECTOR'S ACCEPTANCE BY	DATE
				VERIFICATION BY	DATE
				DRAWN BY	DATE
				RECORDED BY	DATE
				NO.	

REMARKS	BY	DATE
DESIGN		AUGUST, 1999
REVISIONS		AUGUST, 1999
		AUGUST, 1999