CITY OF ALBUQUERQUE

Hydrology Section Planning Department
David S. Campbell, Director

Timothy M. Keller, Mayor

April 5, 2019

Joel Hernandez, P.E.
Tierra West, LLC
5571 Midway Park Place, NE
Albuquerque, NM 87109

RE: **Los Pastores Shopping Center & McDonalds**
Montgomery/Wyoming
DMP Addendum 3
Engineers Stamp Date: 3/26/2019,
Hydrology File: F19D013C & F19D013A

Dear Mr. Hernandez,

Based on the information provided in your submittal received on 3/26/2019 the DMP Addendum cannot be approved until the following comments are addressed.

1. Why is the total area of the proposed condition different than the total area of the existing conditions? The total area in the basin Data Table and in the AHYMO should be the same for both Existing and Proposed conditions. The area for basin PR-4 is 0.22 acres in the AHYMO and on the Basin Map but 0.06 acres on the Basin Data Table. The basin Map should be to scale and have a graphic scale bar so the areas can be checked.
2. The precipitation values in AHYMO must be changed from Atlas 2 to Atlas 14 since AHYMO S4 is being used. Please use 1.84" for one hour, 2.43" for 6 hour, and 2.84" for 24 hour precipitation values for Zone 3.
3. Please provide text data files for the AHYMO input and excel data files for all of the tables. Use the unit peak discharge rates from the draft DPM to be consistent with AHYMO S4 and Atlas 14.
4. Please describe the changes made to the pond routing input file in the "Proposed" AHYMO between the originally approved report and this Addendum #3? Please provide an explanation in the report.
    a. No physical change to pond, just changes to the calculations.
    b. Flow thru culverts reduced as a result of change from orifice equation to culvert calculations.
    c. Flow over spillway added by adding stage storage discharge for elevations above spillway.
5. Please explain what conditions are represented on the "Pre-development and Existing" basin map and the AHYMO file respectively. Please provide an explanation in the report of revisions to the previously approved analysis, specifically the addition of AP#2 and contributing basins. Correct the flow at AP#2

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in two places on Page 3 of the report from 24.30cfs to 30.85cfs or the new value after the precipitation is corrected in the AHYMO.

6. Please label the contours better on the pond grading detail. The bottom of the pond, Elevation 5418.5, appears to be 70' x 55'and the top, elevation 5421.93, is 88' x 73' but the area used in the volume calculations for the top of the pond is larger by about 5' in each direction. Please resolve the discrepancy by either changing the volume calculations or by changing the drawing.
7. The addendum begins with a concise identification of all of the documents in the DMP, but a statement should be added to the report saying that this Addendum #3 replaces the original 2016 report and the 2nd Addendum for the Pond Certification and conforms to the 1st Addendum. Also please include the engineer's stamp date on the previous reports instead of the approval date.
8. Shouldn't the allowable peak flow rate from the other lots in the Los Pastores Shopping Center stated on page 3 of the report be equivalent to the runoff rate from land treatment Type C, which is 3.45cfs/acre using Atlas 2 and 3.14cfs/acre using Atlas 14? The "Temporary Pond" mitigates the increased flows from the impervious surfaces constructed with the subdivision of the shopping center only, specifically the access roads and the alley.
9. The vicinity map on page 2 needs to include the McDonalds site.
10. Change the downstream street in the conclusion on page 4 from Wyoming to Montgomery.
11. The "Worksheet for broad crested weir" uses the wrong length of weir, but the weir flow rates used in the discharge rating table seem reasonable. Identify in the report the equation used for the weir calculations.
12. A new Drainage Covenant and drainage easement for the new storm drain from the McDonalds site will be required from the owner of the Los Pastores Pond prior to approval of the G&D Plan for the McDonald's Building Permit including all of the new pond details with elevations and flow rates.
13. Show the calculations of the required SWQV and include a statement next to the pond on sheet GR-1 specifically identifying which impervious surfaces are being served.
14. Add a note on Sheet GR-1 near the pond stating that the pond is already constructed as shown on the plan and that no new pond construction is proposed. Provide an engineer's stamp and signature on sheet GR-1.

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If you have any questions, you can contact me at 924-3686 or jhughes@cabq.gov .

Sincerely,

James D. Hughes, P.E.
Principal Engineer, Planning Dept.
Development and Review Services

City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 6/2018)

Project Title: Los Pastores Shopping Center Building Permit #: _____ Hydrology File #: F19D013C

DRB#: _____ EPC#: _____ Work Order#: 719880

Legal Description: Tract A-1-F Los Pastores Shopping Center

City Address: NWC Montgomery & Wyoming Shopping Center

Applicant: Tierra West, LLC Contact: Joel Hernandez

Address: 5571 Midway Park Place NE Albuquerque NM 87109

Phone#: 505-858-3100 Fax#: 505-858-1118 E-mail: jdhernandez@tierrawestllc.com

Other Contact: _____ Contact: _____

Address: _____

Phone#: _____ Fax#: _____ E-mail: _____

TYPE OF DEVELOPMENT: _____ PLAT (# of lots) _____ RESIDENCE _____ DRB SITE ___ ADMIN SITE

IS THIS A RESUBMITTAL? X Yes _____ No

DEPARTMENT _____ TRANSPORTATION X HYDROLOGY/DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

____ ENGINEER/ARCHITECT CERTIFICATION
____ PAD CERTIFICATION
____ CONCEPTUAL G & D PLAN
____ GRADING PLAN
X DRAINAGE REPORT
____ DRAINAGE MASTER PLAN
____ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
____ ELEVATION CERTIFICATE
____ CLOMR/LOMR
____ TRAFFIC CIRCULATION LAYOUT (TCL)
____ TRAFFIC IMPACT STUDY (TIS)
____ STREET LIGHT LAYOUT
____ OTHER (SPECIFY) _____
____ PRE-DESIGN MEETING?

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY

____ PRELIMINARY PLAT APPROVAL
____ SITE PLAN FOR SUB'D APPROVAL
____ SITE PLAN FOR BLDG. PERMIT APPROVAL
____ FINAL PLAT APPROVAL

____ SIA/ RELEASE OF FINANCIAL GUARANTEE
____ FOUNDATION PERMIT APPROVAL
____ GRADING PERMIT APPROVAL
____ SO-19 APPROVAL
____ PAVING PERMIT APPROVAL
____ GRADING/ PAD CERTIFICATION
____ WORK ORDER APPROVAL
____ CLOMR/LOMR
____ FLOODPLAIN DEVELOPMENT PERMIT
X OTHER (SPECIFY) DMP Addendum

DATE SUBMITTED: 03/25/2019 By: Joel Hernandez

COA STAFF: ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____

DRAINAGE MANAGEMENT PLAN

For

Los Pastores Shopping Center
Addendum 3

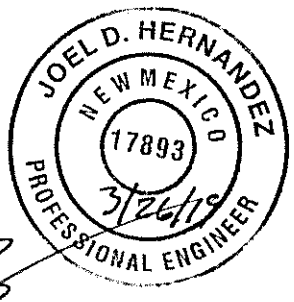
NWC Wyoming and Montgomery
Albuquerque, New Mexico

Prepared by:

Tierra West, LLC
5571 Midway Park Place NE
Albuquerque, New Mexico 87109

March, 2019

I certify that this report was prepared under my supervision, and I am a registered Professional Engineer in the State of New Mexico in good standing.



Joel D. Hernandez, PE
NO. 17893

TW Job No. 2014052

TABLE OF CONTENTS

Appendices

Map Pockets

DRAINAGE MANAGEMENT PLAN- ADDENDUM 3

Introduction

The purpose of this submittal is to provide a Drainage Management Plan for the Los Pastores Shopping Center to guide future development within the Shopping Center, including the proposed McDonald's redevelopment. Tierra West developed the initial Drainage Management Plan, approved on June 6, 2016, for the Shopping Center Owner (W&M Co.), as well as the first Addendum prepared for the public alley Work Order approved on November 1, 2018 and the second Addendum to certify the pad-graded site and temporary pond approved on November 8, 2018. This Addendum report was prepared for the McDonald's project with the consent of the Shopping Center Owner.

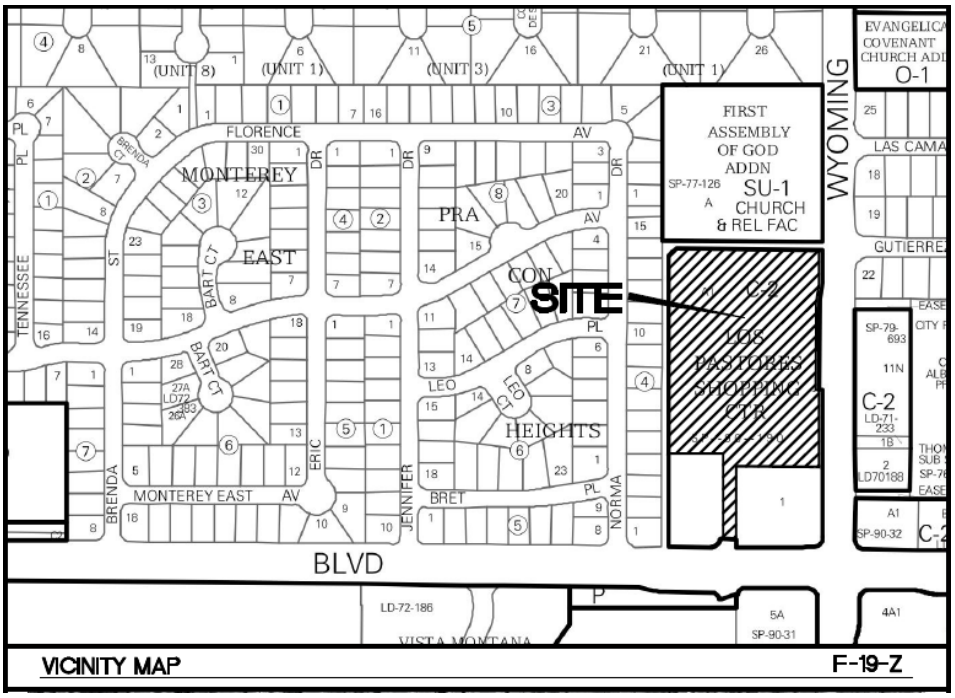
The overall project consists of a 6.45-acre site, most of which is undeveloped, with the exception of the McDonald's which existed prior to grading the pad sites. The development consists of five new tracts/pad sites within a shopping center, along with associated parking, amenity areas, and landscaped areas. The existing McDonald's lease parcel is platted as a separate tract, however, the improvements proposed for the redevelopment of that property will require a separate design and analysis consistent with this report. A Site Development Plan for Building Permit for each individual pad site will require subsequent approval along with grading and drainage approval in general conformance with the drainage scheme outlined in this report. Development of each pad site will be limited to a peak flow rate of 3.89 CFS/acre, retaining on each individual tract as necessary to provide for water quality volume and attenuate developed peak flows to the allowable rate.

As shown in the vicinity map below, site is located on the northwest corner of Montgomery Boulevard NE and Wyoming Boulevard NE and encompasses Tract A-1, Redivision of Tract "A", Los Pastores Shopping Center. A portion of Tract 1 (corner parcel containing a Wells Fargo Bank building), is not a port of this request. The property is bound on the north by an adjacent public alley and an existing church; on the east by Wyoming Boulevard; on the south by Montgomery Boulevard and an existing Wells Fargo Bank; and on the west by an adjacent public alley and a residential subdivision.

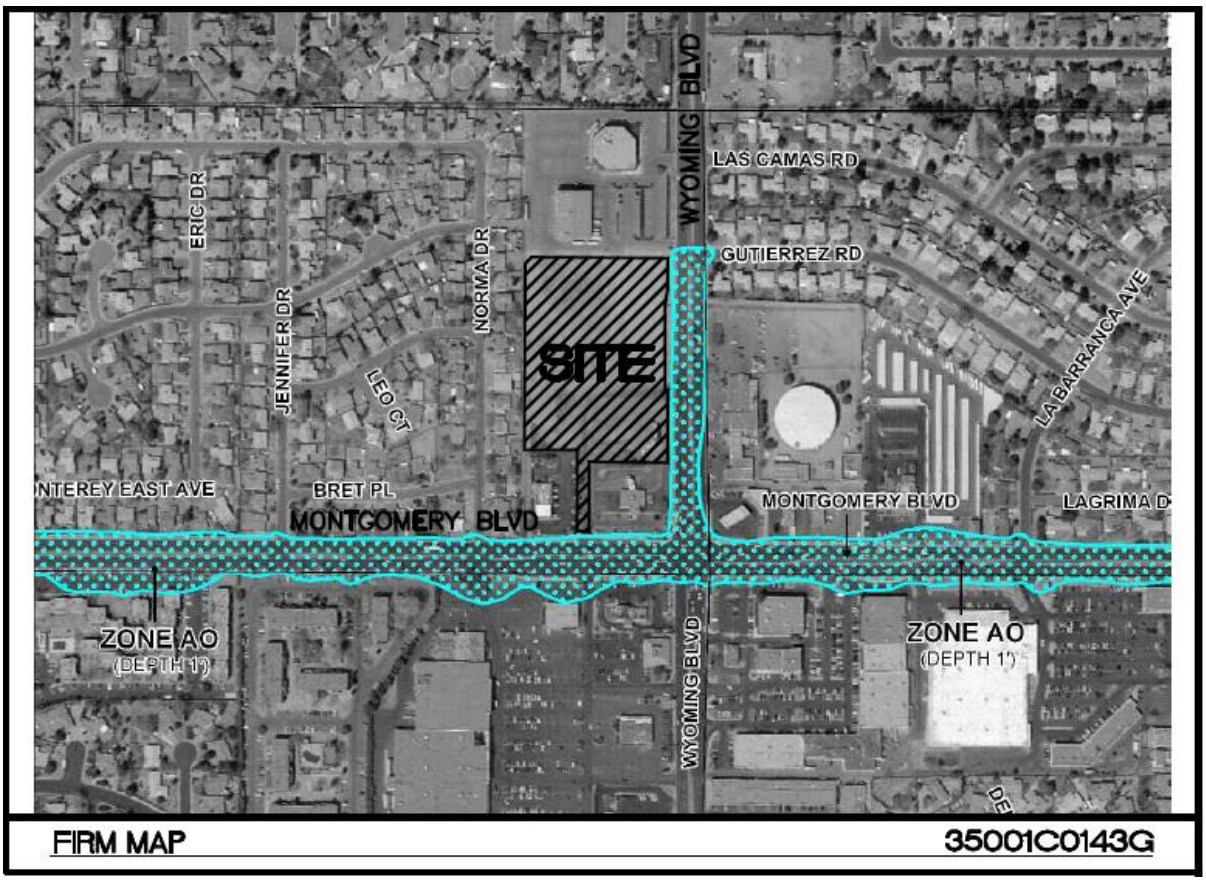
The site lies within Precipitation Zone 3 according to Section 22.2 of the DPM. As shown in the FEMA Flood Map 35001C0143G on page 2, the site lies outside any flood hazard zone.

For the purposes of analysis, this report refers to the "existing" and "pre-developed" condition as the site existed prior to grading in 2016.

Vicinity Map



FEMA FIRMap



Pre-Developed Conditions

For the purposes of analysis, this report refers to and describes the "existing" and "pre-developed" condition as the site existed prior to grading in 2016.

A leased parcel on the southwest portion of the site is developed with a McDonald's Restaurant and parking facilities, while the remaining portion of the property remain undeveloped with the exception of access driveways connecting access from Wyoming Blvd. The site appears to have been previously graded with a moderate to steep slopes on the east, a small slope on the west adjacent to the alley, and a shallow (<3 foot deep) detention/retention pond (existing pond) north of the McDonald's restaurant.

Surface runoff from the site generally flows from the northeast corner of the site toward the existing pond on the southwest portion of the undeveloped area which, in turn, outflows into the unpaved public alley (AP#1 Q=28.2 CFS) draining by surface flow onto Montgomery Boulevard. Offsite flows draining onto the site are limited to surface runoff from the undeveloped alley adjacent to the church on the north as well as from the northerly portion of the existing Wells Fargo Bank building which surface flows over the McDonald's parking lot and drains through a curb cut into the existing pond. The total flows from the site draining into Montgomery Boulevard were calculated at a rate of 24.30 CFS (AP#2). No offsite flows drain onto the site from Wyoming Boulevard as they are contained in the roadway curb and gutter and conveyed into an existing public storm drain system.

Post-Developed Conditions

The drainage intent is to maintain drainage patterns and peak discharge rates matching historic, pre-development flows, which at Analysis Point (AP) #1 is 28.2 CFS and 24.30 CFS at AP#2. To accomplish this, the existing drainage pond was enlarged and maintained in the same location until such time the pad develops, which will require the pond to be re-analyzed and reconfigured, if necessary. The grading and drainage scheme proposes to provide rough-graded pads within each proposed lot that will enable individual development of each lot, provided individual, privately maintained ponds or underground drainage storage structures are built with the development of each lot so as to not exceed pre-development peak flow rate of 3.89 CFS/acre. Paving improvements for the adjacent public alley and internal private access drives can also be constructed with this proposed grading and drainage scheme without exceeding historic flows. As designed, the post-developed flow rate at AP#1 would be 20.5 CFS as a result of the detention pond reconstruction.

Per the attached grading and drainage plan and as indicated on the Post-Developed Conditions Basin Map, the majority of site (except for the alley corresponding to Basin PR-2) will be routed through the proposed detention basin along with the existing flows from Basins EX-3 and PR-4 corresponding to the grading and drainage scheme developed for the McDonald's site by Adams Engineering. The detention pond is designed to retain the "first-flush" within the bottom foot of storage, then release flow through a triple-pipe culvert until the pond water elevation reaches the crest elevation (5421.93) of the concrete spillway. The concrete spillway is also designed as an emergency overflow capable of conveying the full 100-year storm (without accounting for pond attenuation), should the pipe culvert become clogged.

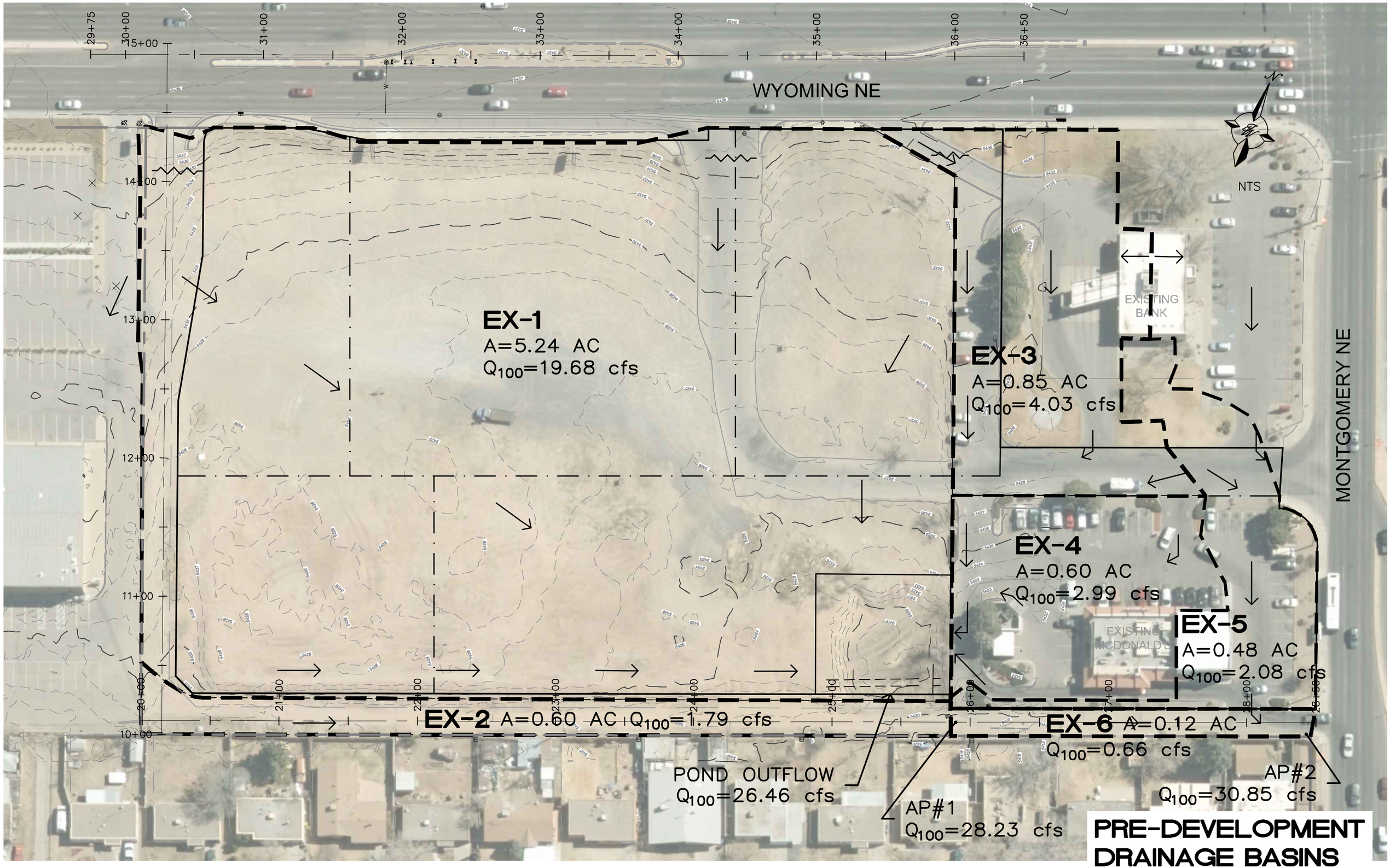
Refer to Appendix B (AHYMO Analysis) for pond sizing calculations.

First-Flush Water Quality Considerations

The pavement anticipated to be constructed in the rough grading phase would require a first-flush retention volume of 2,439 cubic-feet, all of which can be retained within the bottom foot of the detention pond which has a capacity of 3,788 cubic-feet as indicated in the Pond Volume Calculation sheet included in the Appendix.

Conclusion

This Drainage Management Plan provides for grading and drainage elements which are capable of safely conveying the 100-Yr, 6-Hr storm and which meet City requirements. Furthermore, the plan as identified above will not negatively impact the current downstream conditions at Wyoming Boulevard. With this submittal, we request Drainage Report approval for the McDonalds redevelopment plan and future development on the pad sites designed in conformance with this Drainage Management Plan.



PRE-DEVELOPMENT DRAINAGE BASINS

WYOMING NE

MONTGOMERY NE

NTS

PR-1
A=5.48 AC
Q_{100}=21.32 cfs

PR-2 A=0.59 AC Q_{100}=2.88 cfs

PR-4
A=0.22 AC
Q_{100}=1.07 cfs

PR-5
A=0.87 AC
Q_{100}=4.20 cfs

EX-3
A=0.85 AC
Q_{100}=4.03 cfs

EX-6 A=0.12 AC
Q_{100}=0.66 cfs

EXISTING BANK

POND OUTFLOW
Q_{100}=18.59 cfs

AP#1
Q_{100}=20.51 cfs

AP#2
Q_{100}=24.30 cfs

POST-DEVELOPMENT DRAINAGE BASINS

APPENDIX A

HYDROLOGY

LOS PASTORES SHOPPING CENTER

Existing Conditions Basin Data Table

This table is based on the DPM Section 22.2, Zone: 3

BASIN	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100) (cfs/ac.)	Q(100) (CFS)	*Q(100) (CFS)	V(100) (inches)	V(100) (CF)	Area (sq.mi.)
EXISTING CONDITIONS												
EX-1	228107	5.24	0.0%	0.0%	94.0%	6.0%	3.54	*18.56*	*19.68*	*1.35*	*25742*	*0.00818*
EX-2	26192	0.60	0.0%	0.0%	100.0%	0.0%	3.45	*2.07*	*1.79*	*1.29*	*2816*	*0.00094*
EX-3	36853	0.85	0.0%	0.0%	26.0%	74.0%	4.61	*3.90*	*4.03*	*2.08*	*6393*	*0.00132*
EX-4	26012	0.60	0.0%	6.0%	0.0%	94.0%	4.87	*2.91*	*2.99*	*2.27*	*4928*	*0.00093*
EX-5	20890	0.48	0.0%	38.0%	0.0%	62.0%	4.10	*1.97*	*2.08*	*1.81*	*3156*	*0.00075*
EX-6	5207	0.12	0.0%	0.0%	5.0%	95.0%	4.94	*0.59*	*0.66*	*2.31*	*1001*	*0.00019*
TOTAL		**7.88**						***27.45***		***1.35***	***39879***	

* Peak discharge summary from AHYMO results

Proposed Conditions Basin Data Table

BASIN	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100) (cfs/ac.)	Q(100) (CFS)	*Q(100) (CFS)	V(100) (inches)	V(100) (CF)	Area (sq.mi.)	1ST FLUSH
PROPOSED CONDITIONS													
PR-1	238723	5.48	0.0%	0.0%	85.0%	15.0%	3.69	*20.20*	*21.32*	*1.45*	*28856*	*0.00856*	*1015*
PR-2	25620	0.59	0.0%	0.0%	19.0%	81.0%	4.72	*2.78*	*2.88*	*2.16*	*4605*	*0.00092*	*588*
EX-3	36853	0.85	0.0%	0.0%	26.0%	74.0%	4.61	*3.90*	*4.03*	*2.08*	*6393*	*0.00132*	*773*
PR-4	2827	0.06	0.0%	0.0%	20.0%	80.0%	4.71	*0.31*	*1.07*	*2.15*	*506*	*0.00010*	*64*
PR-5	37452	0.86	0.0%	0.0%	22.0%	78.0%	4.67	*4.02*	*4.20*	*2.12*	*6631*	*0.00134*	*828*
PR-6	5207	0.12	0.0%	0.0%	5.0%	95.0%	4.94	*0.59*	*0.66*	*2.31*	*1001*	*0.00019*	*140*
TOTAL		**7.96**						***27.18***		***1.45***	***40359***		***2439***

* Peak discharge summary from AHYMO results

AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4) - Ver. S4.01a, Rel: 01a RUN DATE (MON/DAY/YR) =03/20/2019
INPUT FILE = C:\Users\Joel\Desktop\AHYMO IN\Los Pastores- Pre ADDENDUM3.txt USER NO.= AHYMO_Temp_User:20122010

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	PAGE = 1 NOTATION
START										TIME= 0.00
RAINFALL TYPE= 2 NOAA 14										RAIN24= 3.100
COMPUTE NM HYD	100.10	-	1	0.00818	19.68	0.626	1.43442	1.500	3.760	PER IMP= 6.00
COMPUTE NM HYD	100.20	-	2	0.00094	1.79	0.054	1.07690	1.500	2.967	PER IMP= 0.00
COMPUTE NM HYD	100.30	-	3	0.00132	4.03	0.173	2.45832	1.500	4.770	PER IMP= 74.00
COMPUTE NM HYD	100.40	-	4	0.00093	2.99	0.136	2.74343	1.500	5.031	PER IMP= 94.00
COMPUTE NM HYD	100.50	-	5	0.00075	2.08	0.087	2.17610	1.500	4.343	PER IMP= 62.00
COMPUTE NM HYD	100.60	-	6	0.00020	0.66	0.030	2.77452	1.500	5.140	PER IMP= 95.00
ADD HYD	100.21	1& 3	50	0.00950	23.71	0.799	1.57664	1.500	3.900	
ADD HYD	100.21	50& 4	50	0.01043	26.71	0.935	1.68064	1.500	4.001	
ROUTE RESERVOIR	200.10	50	55	0.01043	26.46	1.018	1.83084	1.550	3.963	AC-FT= 0.133
ADD HYD	100.22	2&55	58	0.01137	28.23	1.072	1.76850	1.550	3.879	
ADD HYD	100.23	5&58	59	0.01212	30.23	1.159	1.79370	1.550	3.897	
ADD HYD	100.23	6&59	59	0.01232	30.85	1.189	1.80961	1.550	3.913	
FINISH										

```
**************************************************************
*             Los Pastores SC @ Wyoming& Mont, ABQ,NM        *
**************************************************************
* 100-YEAR, 24-HR STORM  (UNDER EXIST CONDITIONS) W/ routing  *
**************************************************************
*
START               TIME=0.0
*
*
RAINFALL            TYPE=2 RAIN QUARTER=0.0 IN
                    RAIN ONE=2.14 IN RAIN SIX=2.60 IN
                    RAIN DAY=3.10 IN DT=0.05 HR
*DEVELOPED CONDITIONS
*
*BASIN EX-1
*
COMPUTE NM HYD      ID=1 HYD NO=100.1 AREA=0.00818 SQ MI
                    PER A=0.00 PER B=0.0 PER C=94.0 PER D=6.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
*
*BASIN EX-2
*
COMPUTE NM HYD      ID=2 HYD NO=100.2 AREA=0.00094 SQ MI
                    PER A=0.00 PER B=100.0 PER C=0.0 PER D=0.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
*
*
*BASIN EX-3
*
COMPUTE NM HYD      ID=3 HYD NO=100.3 AREA=0.00132 SQ MI
                    PER A=0.00 PER B=00.0 PER C=26.0 PER D=74.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=3 CODE=1
*
```

```
*
*BASIN EX-4
*
COMPUTE NM HYD      ID=4 HYD NO=100.4 AREA=0.00093 SQ MI
                    PER A=0.00 PER B=6.00 PER C=00.0 PER D=94.0
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=4 CODE=1
*
*BASIN EX-5
*
COMPUTE NM HYD      ID=5 HYD NO=100.5 AREA=0.00075 SQ MI
                    PER A=0.00 PER B=38.0 PER C=00.0 PER D=62.0
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=5 CODE=1
*
*BASIN EX-6
*
COMPUTE NM HYD      ID=6 HYD NO=100.6 AREA=0.0002 SQ MI
                    PER A=0.00 PER B=0.00 PER C=5.0 PER D=95.0
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=6 CODE=1
**
*
*COMBINE EX-1, EX-3, AND EX-4
*
ADD HYD             ID=50 HYD NO=100.21 ID=1 ID=3
ADD HYD             ID=50 HYD NO=100.21 ID=50 ID=4
*
PRINT HYD           ID=50 CODE=1
**
*ROUTE BASINS EX-1, EX-3, AND EX-4 THROUGH EXIST DETENTION POND
ROUTE RESERVOIR     ID=55 HYD NO=200.1 INFLOW ID=50 CODE=24
                    OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                    0.0100         0.0                 19.00
                    0.0100         0.0573              20.00
                    0.1000         0.0914              20.50
                    28.570         0.1366              21.00
```

```
*
*
PRINT HYD           ID=55  CODE=1
*
*
*COMBINE POND OUTFLOW WITH EX-2 FOR TOTAL AT AP#1
*
ADD HYD             ID=58 HYD NO=100.22 ID=2 ID=55
*
PRINT HYD           ID=58 CODE=1
*
*COMBINE ALLEY FLOWS AP#1 WITH EX-5 AND EX-6 FOR TOTAL AT AP#2
*
ADD HYD             ID=59 HYD NO=100.23 ID=5 ID=58
ADD HYD             ID=59 HYD NO=100.23 ID=6 ID=59
*
PRINT HYD           ID=59 CODE=1
*
FINISH
```

```
    AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.01a - Rel: 01a
         RUN DATE (MON/DAY/YR) = 03/20/2019
         START TIME (HR:MIN:SEC) = 13:27:20     USER NO.= AHYMO_Temp_User:20122010
         INPUT FILE = C:\Users\Joel\Desktop\AHYMO IN\Los Pastores- Pre ADDENDUM3.txt

************************************************************
*             Los Pastores SC @ Wyoming& Mont, ABQ,NM      *
************************************************************
* 100-YEAR, 24-HR STORM  (UNDER EXIST CONDITIONS) W/ routing    *
************************************************************
*
START               TIME=0.0
*
*
RAINFALL            TYPE=2 RAIN QUARTER=0.0 IN
                    RAIN ONE=2.14 IN RAIN SIX=2.60 IN
                    RAIN DAY=3.10 IN DT=0.05 HR

               24-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE AREAS (NM & AZ) - D1
               DT =   0.050000 HOURS       END TIME =    24.000002 HOURS
                 0.0000  0.0031  0.0062  0.0096  0.0133  0.0171  0.0214
                 0.0274  0.0368  0.0470  0.0575  0.0690  0.0807  0.0927
                 0.1052  0.1178  0.1320  0.1467  0.1627  0.1887  0.2196
                 0.2611  0.3081  0.3661  0.4435  0.5307  0.6811  0.9149
                 1.3155  1.5971  1.8192  1.9308  2.0287  2.0989  2.1549
                 2.2036  2.2393  2.2720  2.2991  2.3181  2.3331  2.3464
                 2.3590  2.3700  2.3804  2.3905  2.4002  2.4083  2.4129
                 2.4175  2.4219  2.4261  2.4303  2.4343  2.4383  2.4422
                 2.4459  2.4495  2.4531  2.4566  2.4601  2.4634  2.4667
                 2.4699  2.4731  2.4762  2.4792  2.4822  2.4851  2.4880
                 2.4909  2.4937  2.4965  2.4992  2.5019  2.5046  2.5072
                 2.5098  2.5124  2.5149  2.5175  2.5200  2.5224  2.5249
                 2.5273  2.5296  2.5320  2.5343  2.5366  2.5389  2.5412
```

2.5434	2.5456	2.5478	2.5500	2.5521	2.5542	2.5564
2.5584	2.5605	2.5626	2.5646	2.5666	2.5686	2.5706
2.5725	2.5745	2.5764	2.5783	2.5802	2.5821	2.5839
2.5858	2.5876	2.5894	2.5912	2.5930	2.5948	2.5965
2.5983	2.6000	2.6017	2.6035	2.6052	2.6069	2.6086
2.6104	2.6121	2.6138	2.6155	2.6172	2.6190	2.6207
2.6224	2.6241	2.6258	2.6275	2.6292	2.6309	2.6326
2.6343	2.6360	2.6377	2.6394	2.6411	2.6428	2.6445
2.6461	2.6478	2.6495	2.6512	2.6529	2.6545	2.6562
2.6579	2.6595	2.6612	2.6629	2.6645	2.6662	2.6679
2.6695	2.6712	2.6728	2.6745	2.6761	2.6778	2.6794
2.6811	2.6827	2.6844	2.6860	2.6876	2.6893	2.6909
2.6925	2.6942	2.6958	2.6974	2.6990	2.7007	2.7023
2.7039	2.7055	2.7071	2.7087	2.7104	2.7120	2.7136
2.7152	2.7168	2.7184	2.7200	2.7216	2.7232	2.7248
2.7264	2.7279	2.7295	2.7311	2.7327	2.7343	2.7359
2.7374	2.7390	2.7406	2.7422	2.7437	2.7453	2.7469
2.7484	2.7500	2.7516	2.7531	2.7547	2.7562	2.7578
2.7593	2.7609	2.7624	2.7640	2.7655	2.7671	2.7686
2.7701	2.7717	2.7732	2.7747	2.7763	2.7778	2.7793
2.7808	2.7824	2.7839	2.7854	2.7869	2.7884	2.7899
2.7915	2.7930	2.7945	2.7960	2.7975	2.7990	2.8005
2.8020	2.8035	2.8050	2.8065	2.8079	2.8094	2.8109
2.8124	2.8139	2.8154	2.8168	2.8183	2.8198	2.8213
2.8227	2.8242	2.8257	2.8271	2.8286	2.8301	2.8315
2.8330	2.8344	2.8359	2.8373	2.8388	2.8402	2.8417
2.8431	2.8446	2.8460	2.8474	2.8489	2.8503	2.8517
2.8532	2.8546	2.8560	2.8574	2.8589	2.8603	2.8617
2.8631	2.8645	2.8659	2.8674	2.8688	2.8702	2.8716
2.8730	2.8744	2.8758	2.8772	2.8786	2.8800	2.8813
2.8827	2.8841	2.8855	2.8869	2.8883	2.8897	2.8910
2.8924	2.8938	2.8952	2.8965	2.8979	2.8993	2.9006
2.9020	2.9033	2.9047	2.9061	2.9074	2.9088	2.9101
2.9115	2.9128	2.9141	2.9155	2.9168	2.9182	2.9195

```
 2.9208  2.9222  2.9235  2.9248  2.9262  2.9275  2.9288
 2.9301  2.9314  2.9328  2.9341  2.9354  2.9367  2.9380
 2.9393  2.9406  2.9419  2.9432  2.9445  2.9458  2.9471
 2.9484  2.9497  2.9510  2.9523  2.9536  2.9549  2.9561
 2.9574  2.9587  2.9600  2.9612  2.9625  2.9638  2.9651
 2.9663  2.9676  2.9689  2.9701  2.9714  2.9726  2.9739
 2.9751  2.9764  2.9776  2.9789  2.9801  2.9814  2.9826
 2.9839  2.9851  2.9863  2.9876  2.9888  2.9900  2.9912
 2.9925  2.9937  2.9949  2.9961  2.9974  2.9986  2.9998
 3.0010  3.0022  3.0034  3.0046  3.0058  3.0070  3.0082
 3.0094  3.0106  3.0118  3.0130  3.0142  3.0154  3.0166
 3.0178  3.0189  3.0201  3.0213  3.0225  3.0237  3.0248
 3.0260  3.0272  3.0283  3.0295  3.0307  3.0318  3.0330
 3.0341  3.0353  3.0364  3.0376  3.0387  3.0399  3.0410
 3.0422  3.0433  3.0445  3.0456  3.0467  3.0479  3.0490
 3.0501  3.0513  3.0524  3.0535  3.0546  3.0558  3.0569
 3.0580  3.0591  3.0602  3.0613  3.0624  3.0635  3.0646
 3.0658  3.0669  3.0680  3.0690  3.0701  3.0712  3.0723
 3.0734  3.0745  3.0756  3.0767  3.0777  3.0788  3.0799
 3.0810  3.0821  3.0831  3.0842  3.0853  3.0863  3.0874
 3.0885  3.0895  3.0906  3.0916  3.0927  3.0937  3.0948
 3.0958  3.0969  3.0979  3.0990  3.1000

*DEVELOPED CONDITIONS
*
*BASIN EX-1
*
COMPUTE NM HYD      ID=1 HYD NO=100.1 AREA=0.00818 SQ MI
                    PER A=0.00 PER B=0.0 PER C=94.0 PER D=6.00
                    TP=-0.1333 HR MASS RAINFALL=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   1.9377    CFS   UNIT VOLUME =   0.9941       B =   526.28      P60 = 2.1400
     AREA =     0.000491 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
```

```
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000


     K =  0.108912HR    TP =  0.133300HR    K/TP RATIO =  0.817047     SHAPE CONSTANT, N =  4.373953
     UNIT PEAK =   21.884    CFS   UNIT VOLUME =    1.001       B =   379.38      P60 = 2.1400
     AREA =     0.007689 SQ MI    IA =   0.35000 INCHES    INF =   0.83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000

PRINT HYD           ID=1 CODE=1

                                    PARTIAL HYDROGRAPH   100.10


    RUNOFF VOLUME =     1.43442 INCHES     =       0.6258 ACRE-FEET
    PEAK DISCHARGE RATE =      19.68 CFS  AT   1.500 HOURS   BASIN AREA =  0.0082 SQ. MI.



*
*
*BASIN EX-2
*
COMPUTE NM HYD      ID=2 HYD NO=100.2 AREA=0.00094 SQ MI
                    PER A=0.00 PER B=100.0 PER C=0.0 PER D=0.00
                    TP=-0.1333 HR MASS RAINFALL=-1

     K =  0.133656HR    TP =  0.133300HR    K/TP RATIO =  1.002670     SHAPE CONSTANT, N =  3.520654
     UNIT PEAK =   2.2695    CFS   UNIT VOLUME =   0.9952       B =   321.84      P60 = 2.1400
     AREA =     0.000940 SQ MI    IA =   0.50000 INCHES    INF =   1.25000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000

PRINT HYD           ID=2 CODE=1

                                    PARTIAL HYDROGRAPH   100.20
```

```
    RUNOFF VOLUME =     1.07690 INCHES     =       0.0540 ACRE-FEET
    PEAK DISCHARGE RATE =       1.79 CFS  AT   1.500 HOURS   BASIN AREA =  0.0009 SQ. MI.



*
*
*BASIN EX-3
*
COMPUTE NM HYD      ID=3 HYD NO=100.3 AREA=0.00132 SQ MI
                    PER A=0.00 PER B=00.0 PER C=26.0 PER D=74.00
                    TP=-0.1333 HR MASS RAINFALL=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   3.8565    CFS   UNIT VOLUME =   0.9966       B =   526.28      P60 = 2.1400
     AREA =     0.000977 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000


     K =  0.108912HR    TP =  0.133300HR    K/TP RATIO =  0.817047     SHAPE CONSTANT, N =  4.373953
     UNIT PEAK =  0.97676    CFS   UNIT VOLUME =   0.9884       B =   379.38      P60 = 2.1400
     AREA =     0.000343 SQ MI    IA =   0.35000 INCHES    INF =   0.83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000

PRINT HYD           ID=3 CODE=1

                                  PARTIAL HYDROGRAPH   100.30


    RUNOFF VOLUME =     2.45832 INCHES     =       0.1731 ACRE-FEET
    PEAK DISCHARGE RATE =       4.03 CFS  AT   1.500 HOURS   BASIN AREA =  0.0013 SQ. MI.
```

```
*
*
*BASIN EX-4
*
COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.00093 SQ MI
                     PER A=0.00 PER B=6.00 PER C=00.0 PER D=94.0
                     TP=-0.1333 HR MASS RAINFALL=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   3.4514    CFS   UNIT VOLUME =   0.9959       B =   526.28      P60 = 2.1400
     AREA =     0.000874 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000


     K =  0.133656HR    TP =  0.133300HR    K/TP RATIO =  1.002670     SHAPE CONSTANT, N =  3.520654
     UNIT PEAK =  0.13472    CFS   UNIT VOLUME =   0.9008       B =   321.84      P60 = 2.1400
     AREA =     0.000056 SQ MI    IA =   0.50000 INCHES    INF =   1.25000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000

PRINT HYD            ID=4 CODE=1

                                  PARTIAL HYDROGRAPH   100.40


    RUNOFF VOLUME =     2.74343 INCHES     =       0.1361 ACRE-FEET
    PEAK DISCHARGE RATE =       2.99 CFS  AT   1.500 HOURS   BASIN AREA =  0.0009 SQ. MI.



*
*BASIN EX-5
*
```

```
COMPUTE NM HYD      ID=5 HYD NO=100.5 AREA=0.00075 SQ MI
                    PER A=0.00 PER B=38.0 PER C=00.0 PER D=62.0
                    TP=-0.1333 HR MASS RAINFALL=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   1.8358    CFS   UNIT VOLUME =   0.9928       B =   526.28      P60 = 2.1400
     AREA =     0.000465 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000


     K =  0.133656HR    TP =  0.133300HR    K/TP RATIO =  1.002670     SHAPE CONSTANT, N =  3.520654
     UNIT PEAK =  0.68810    CFS   UNIT VOLUME =   0.9811       B =   321.84      P60 = 2.1400
     AREA =     0.000285 SQ MI    IA =   0.50000 INCHES    INF =   1.25000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000

PRINT HYD           ID=5 CODE=1

                                  PARTIAL HYDROGRAPH   100.50


    RUNOFF VOLUME =     2.17610 INCHES     =       0.0870 ACRE-FEET
    PEAK DISCHARGE RATE =       2.08 CFS  AT   1.500 HOURS   BASIN AREA =  0.0008 SQ. MI.



*
*BASIN EX-6
*
COMPUTE NM HYD      ID=6 HYD NO=100.6 AREA=0.0002 SQ MI
                    PER A=0.00 PER B=0.00 PER C=5.0 PER D=95.0
                    TP=-0.1333 HR MASS RAINFALL=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =  0.75013    CFS   UNIT VOLUME =   0.9865       B =   526.28      P60 = 2.1400
```

```
     AREA =     0.000190 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000


     K =  0.108912HR    TP =  0.133300HR    K/TP RATIO =  0.817047     SHAPE CONSTANT, N =  4.373953
     UNIT PEAK =  0.28460E-01CFS   UNIT VOLUME =   0.8869       B =   379.38      P60 = 2.1400
     AREA =     0.000010 SQ MI    IA =   0.35000 INCHES    INF =   0.83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000

PRINT HYD           ID=6 CODE=1

                                   PARTIAL HYDROGRAPH   100.60


    RUNOFF VOLUME =     2.77452 INCHES     =       0.0296 ACRE-FEET
    PEAK DISCHARGE RATE =       0.66 CFS  AT   1.500 HOURS   BASIN AREA =  0.0002 SQ. MI.



**
*
*COMBINE EX-1, EX-3, AND EX-4
*
ADD HYD                         ID=50 HYD NO=100.21 ID=1 ID=3
ADD HYD                         ID=50 HYD NO=100.21 ID=50 ID=4
*
PRINT HYD           ID=50 CODE=1

                                   PARTIAL HYDROGRAPH   100.21


    RUNOFF VOLUME =     1.68064 INCHES     =       0.9349 ACRE-FEET
    PEAK DISCHARGE RATE =      26.71 CFS  AT   1.500 HOURS   BASIN AREA =  0.0104 SQ. MI.
```

```
**
*ROUTE BASINS EX-1, EX-3, AND EX-4 THROUGH EXIST DETENTION POND
ROUTE RESERVOIR     ID=55 HYD NO=200.1 INFLOW ID=50 CODE=24
                        OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                                0.0100         0.0                 19.00
                                0.0100         0.0573              20.00
                                0.1000         0.0914              20.50
                                28.570         0.1366              21.00

  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *

    TIME      INFLOW    ELEV      VOLUME    OUTFLOW
    (HRS)     (CFS)     (FEET)    (AC-FT)   (CFS)

     0.00       0.00 -Infinity  -Infinity      0.00
     1.20       1.58     20.00      0.057      0.01
     2.40       0.79     20.51      0.093      0.84
     3.60       0.04     20.48      0.090      0.10
     4.80       0.04     20.41      0.085      0.08
     6.00       0.05     20.36      0.082      0.07
     7.20       0.05     20.33      0.080      0.07
     8.40       0.05     20.31      0.078      0.06
     9.60       0.05     20.29      0.077      0.06
    10.80       0.05     20.27      0.076      0.06
    12.00       0.05     20.25      0.075      0.06
    13.20       0.04     20.24      0.074      0.05
    14.40       0.04     20.23      0.073      0.05
    15.60       0.04     20.22      0.072      0.05
    16.80       0.04     20.21      0.071      0.05
    18.00       0.04     20.20      0.071      0.05
    19.20       0.04     20.19      0.070      0.04
    20.40       0.04     20.18      0.069      0.04
```

21.60	0.03	20.17	0.069	0.04
22.80	0.03	20.16	0.068	0.04
24.00	0.03	20.15	0.068	0.04
25.20	0.00	20.11	0.065	0.03
26.40	0.00	20.07	0.062	0.02
27.60	0.00	20.04	0.060	0.02
28.80	0.00	20.02	0.059	0.01
30.00	0.00	20.00	0.057	0.01
31.20	0.00	20.00	0.057	0.01
32.40	0.00	20.00	0.057	0.01
33.60	0.00	20.00	0.057	0.01
34.80	0.00	20.00	0.057	0.01
36.00	0.00	20.00	0.057	0.01
37.20	0.00	20.00	0.057	0.01
38.40	0.00	20.00	0.057	0.01
39.60	0.00	20.00	0.057	0.01
40.80	0.00	20.00	0.057	0.01
42.00	0.00	20.00	0.057	0.01
43.20	0.00	20.00	0.057	0.01
44.40	0.00	20.00	0.057	0.01
45.60	0.00	20.00	0.057	0.01
46.80	0.00	20.00	0.057	0.01
48.00	0.00	20.00	0.057	0.01
49.20	0.00	20.00	0.057	0.01
50.40	0.00	20.00	0.057	0.01
51.60	0.00	20.00	0.057	0.01
52.80	0.00	20.00	0.057	0.01
54.00	0.00	20.00	0.057	0.01
55.20	0.00	20.00	0.057	0.01
56.40	0.00	20.00	0.057	0.01
57.60	0.00	20.00	0.057	0.01
58.80	0.00	20.00	0.057	0.01
60.00	0.00	20.00	0.057	0.01
61.20	0.00	20.00	0.057	0.01

62.40	0.00	20.00	0.057	0.01
63.60	0.00	20.00	0.057	0.01
64.80	0.00	20.00	0.057	0.01
66.00	0.00	20.00	0.057	0.01

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
67.20	0.00	20.00	0.057	0.01
68.40	0.00	20.00	0.057	0.01
69.60	0.00	20.00	0.057	0.01
70.80	0.00	20.00	0.057	0.01
72.00	0.00	20.00	0.057	0.01
73.20	0.00	20.00	0.057	0.01
74.40	0.00	20.00	0.057	0.01
75.60	0.00	20.00	0.057	0.01
76.80	0.00	20.00	0.057	0.01
78.00	0.00	20.00	0.057	0.01
79.20	0.00	20.00	0.057	0.01
80.40	0.00	20.00	0.057	0.01
81.60	0.00	20.00	0.057	0.01
82.80	0.00	20.00	0.057	0.01
84.00	0.00	20.00	0.057	0.01
85.20	0.00	20.00	0.057	0.01
86.40	0.00	20.00	0.057	0.01
87.60	0.00	20.00	0.057	0.01
88.80	0.00	20.00	0.057	0.01
90.00	0.00	20.00	0.057	0.01
91.20	0.00	20.00	0.057	0.01
92.40	0.00	20.00	0.057	0.01
93.60	0.00	20.00	0.057	0.01
94.80	0.00	20.00	0.057	0.01
96.00	0.00	20.00	0.057	0.01
97.20	0.00	20.00	0.057	0.01

98.40	0.00	20.00	0.057	0.01
99.60	0.00	20.00	0.057	0.01
100.80	0.00	20.00	0.057	0.01
102.00	0.00	20.00	0.057	0.01
103.20	0.00	20.00	0.057	0.01
104.40	0.00	20.00	0.057	0.01
105.60	0.00	20.00	0.057	0.01
106.80	0.00	20.00	0.057	0.01
108.00	0.00	20.00	0.057	0.01
109.20	0.00	20.00	0.057	0.01
110.40	0.00	20.00	0.057	0.01
111.60	0.00	20.00	0.057	0.01
112.80	0.00	20.00	0.057	0.01
114.00	0.00	20.00	0.057	0.01
115.20	0.00	20.00	0.057	0.01
116.40	0.00	20.00	0.057	0.01
117.60	0.00	20.00	0.057	0.01
118.80	0.00	20.00	0.057	0.01
120.00	0.00	20.00	0.057	0.01
121.20	0.00	20.00	0.057	0.01
122.40	0.00	20.00	0.057	0.01
123.60	0.00	20.00	0.057	0.01
124.80	0.00	20.00	0.057	0.01
126.00	0.00	20.00	0.057	0.01
127.20	0.00	20.00	0.057	0.01
128.40	0.00	20.00	0.057	0.01
129.60	0.00	20.00	0.057	0.01
130.80	0.00	20.00	0.057	0.01
132.00	0.00	20.00	0.057	0.01
133.20	0.00	20.00	0.057	0.01

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)

134.40	0.00	20.00	0.057	0.01
135.60	0.00	20.00	0.057	0.01
136.80	0.00	20.00	0.057	0.01
138.00	0.00	20.00	0.057	0.01
139.20	0.00	20.00	0.057	0.01
140.40	0.00	20.00	0.057	0.01
141.60	0.00	20.00	0.057	0.01
142.80	0.00	20.00	0.057	0.01
144.00	0.00	20.00	0.057	0.01
145.20	0.00	20.00	0.057	0.01
146.40	0.00	20.00	0.057	0.01
147.60	0.00	20.00	0.057	0.01
148.80	0.00	20.00	0.057	0.01
150.00	0.00	20.00	0.057	0.01
151.20	0.00	20.00	0.057	0.01
152.40	0.00	20.00	0.057	0.01
153.60	0.00	20.00	0.057	0.01
154.80	0.00	20.00	0.057	0.01
156.00	0.00	20.00	0.057	0.01
157.20	0.00	20.00	0.057	0.01
158.40	0.00	20.00	0.057	0.01
159.60	0.00	20.00	0.057	0.01
160.80	0.00	20.00	0.057	0.01
162.00	0.00	20.00	0.057	0.01
163.20	0.00	20.00	0.057	0.01
164.40	0.00	20.00	0.057	0.01
165.60	0.00	20.00	0.057	0.01
166.80	0.00	20.00	0.057	0.01
168.00	0.00	20.00	0.057	0.01
169.20	0.00	20.00	0.057	0.01
170.40	0.00	20.00	0.057	0.01
171.60	0.00	20.00	0.057	0.01
172.80	0.00	20.00	0.057	0.01
174.00	0.00	20.00	0.057	0.01

175.20	0.00	20.00	0.057	0.01
176.40	0.00	20.00	0.057	0.01
177.60	0.00	20.00	0.057	0.01
178.80	0.00	20.00	0.057	0.01
180.00	0.00	20.00	0.057	0.01
181.20	0.00	20.00	0.057	0.01
182.40	0.00	20.00	0.057	0.01
183.60	0.00	20.00	0.057	0.01
184.80	0.00	20.00	0.057	0.01
186.00	0.00	20.00	0.057	0.01
187.20	0.00	20.00	0.057	0.01
188.40	0.00	20.00	0.057	0.01
189.60	0.00	20.00	0.057	0.01
190.80	0.00	20.00	0.057	0.01
192.00	0.00	20.00	0.057	0.01
193.20	0.00	20.00	0.057	0.01
194.40	0.00	20.00	0.057	0.01
195.60	0.00	20.00	0.057	0.01
196.80	0.00	20.00	0.057	0.01
198.00	0.00	20.00	0.057	0.01
199.20	0.00	20.00	0.057	0.01

PEAK DISCHARGE = 26.456 CFS - PEAK OCCURS AT HOUR 1.55
MAXIMUM WATER SURFACE ELEVATION = 20.963
MAXIMUM STORAGE = 0.1332 AC-FT INCREMENTAL TIME= 0.050000HRS

*
*
PRINT HYD ID=55 CODE=1

PARTIAL HYDROGRAPH 200.10

RUNOFF VOLUME = 1.83084 INCHES = 1.0184 ACRE-FEET
PEAK DISCHARGE RATE = 26.46 CFS AT 1.550 HOURS BASIN AREA = 0.0104 SQ. MI.

```
*
*
*COMBINE POND OUTFLOW WITH EX-2 FOR TOTAL AT AP#1
*
ADD HYD                         ID=58 HYD NO=100.22 ID=2 ID=55
*
PRINT HYD           ID=58 CODE=1

                                    PARTIAL HYDROGRAPH   100.22


    RUNOFF VOLUME =     1.76850 INCHES     =       1.0724 ACRE-FEET
    PEAK DISCHARGE RATE =      28.23 CFS  AT   1.550 HOURS   BASIN AREA =  0.0114 SQ. MI.



*
*COMBINE ALLEY FLOWS AP#1 WITH EX-5 AND EX-6 FOR TOTAL AT AP#2
*
ADD HYD                         ID=59 HYD NO=100.23 ID=5 ID=58
ADD HYD                         ID=59 HYD NO=100.23 ID=6 ID=59
*
PRINT HYD           ID=59 CODE=1

                                    PARTIAL HYDROGRAPH   100.23


    RUNOFF VOLUME =     1.80961 INCHES     =       1.1890 ACRE-FEET
    PEAK DISCHARGE RATE =      30.85 CFS  AT   1.550 HOURS   BASIN AREA =  0.0123 SQ. MI.
```

```
*
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 13:27:20
```

AHYMO PROGRAM SUMMARY TABLE (AHYMO-S4) - Ver. S4.01a, Rel: 01a RUN DATE (MON/DAY/YR) =03/20/2019
INPUT FILE = C:\Users\Joel\Desktop\AHYMO IN\Los Pastores Post Addendum3.txt USER NO.= AHYMO_Temp_User:20122010

COMMAND	HYDROGRAPH IDENTIFICATION	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)	TIME TO PEAK (HOURS)	CFS PER ACRE	NOTATION
START										TIME= 0.00
RAINFALL TYPE= 2 NOAA 14										RAIN24= 3.100
COMPUTE NM HYD	100.10	-	1	0.00856	21.32	0.717	1.56994	1.500	3.891	PER IMP= 15.00
COMPUTE NM HYD	100.20	-	2	0.00092	2.88	0.126	2.56372	1.500	4.884	PER IMP= 81.00
COMPUTE NM HYD	100.30	-	3	0.00132	4.03	0.173	2.45832	1.500	4.770	PER IMP= 74.00
COMPUTE NM HYD	100.40	-	4	0.00034	1.07	0.046	2.54866	1.500	4.925	PER IMP= 80.00
COMPUTE NM HYD	100.50	-	5	0.00136	4.20	0.183	2.51855	1.500	4.827	PER IMP= 78.00
COMPUTE NM HYD	100.60	-	6	0.00020	0.66	0.030	2.77452	1.500	5.140	PER IMP= 95.00
ADD HYD	100.21	1& 3	50	0.00988	25.35	0.890	1.68857	1.500	4.009	
ADD HYD	100.21	50& 4	50	0.01022	26.42	0.936	1.71716	1.500	4.039	
ROUTE RESERVOIR	200.10	50	55	0.01022	18.59	0.936	1.71721	1.650	2.843	AC-FT= 0.424
ADD HYD	100.22	2&55	58	0.01114	20.51	1.062	1.78699	1.600	2.877	
ADD HYD	100.23	5&58	59	0.01250	23.79	1.244	1.86656	1.600	2.974	
ADD HYD	100.23	6&59	59	0.01270	24.30	1.274	1.88085	1.600	2.990	
FINISH										

```
**************************************************************
*             Los Pastores SC @ Wyoming& Mont, ABQ,NM        *
**************************************************************
* 100-YEAR, 24-HR STORM  (UNDER PROPOSED CONDITIONS) W/ MCD'S  *
**************************************************************
*
START               TIME=0.0
*
*
RAINFALL            TYPE=2 RAIN QUARTER=0.0 IN
                    RAIN ONE=2.14 IN RAIN SIX=2.60 IN
                    RAIN DAY=3.10 IN DT=0.05 HR
*DEVELOPED CONDITIONS
*
*BASIN PR-1
*
COMPUTE NM HYD      ID=1 HYD NO=100.1 AREA=0.00856 SQ MI
                    PER A=0.00 PER B=0.0 PER C=85.0 PER D=15.0
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=1 CODE=1
*
*
*BASIN PR-2
*
COMPUTE NM HYD      ID=2 HYD NO=100.2 AREA=0.00092 SQ MI
                    PER A=0.00 PER B=0.0 PER C=19.0 PER D=81.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=2 CODE=1
*
*
*BASIN EX-3 (MC D'S 0-1,0-2,0-4)
*
COMPUTE NM HYD      ID=3 HYD NO=100.3 AREA=0.00132 SQ MI
                    PER A=0.00 PER B=0.00 PER C=26.0 PER D=74.00
```

```
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=3 CODE=1
*
*
*BASIN PR-4 (MC D'S A-2)
*
COMPUTE NM HYD      ID=4 HYD NO=100.4 AREA=0.00034 SQ MI
                    PER A=0.00 PER B=0.00 PER C=20.0 PER D=80.0
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=4 CODE=1
*
*
*BASIN PR-5 (MC D'S A-1,3,4,5,6,7,R-1,O-3)
*
COMPUTE NM HYD      ID=5 HYD NO=100.5 AREA=0.00136 SQ MI
                    PER A=0.00 PER B=0.00 PER C=22.0 PER D=78.0
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=5 CODE=1
**
*BASIN EX-6 (ALLEY)
*
COMPUTE NM HYD      ID=6 HYD NO=100.6 AREA=0.0002 SQ MI
                    PER A=0.00 PER B=0.00 PER C=5.0 PER D=95.0
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=6 CODE=1
**
*
*COMBINE PR-1, EX-3, AND PR-4
*
ADD HYD             ID=50 HYD NO=100.21 ID=1 ID=3
ADD HYD             ID=50 HYD NO=100.21 ID=50 ID=4
*
PRINT HYD           ID=50 CODE=1
**
```

```
*ROUTE BASINS PR-1, EX-3, AND PR-4 THROUGH PROPOSED DETENTION POND
ROUTE RESERVOIR     ID=55 HYD NO=200.1 INFLOW ID=50 CODE=24
                    OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                    0.0000         0.1401              20.00
                    1.8200         0.1960              20.50
                    6.1700         0.2568              21.00
                    10.780         0.3227              21.50
                    13.270         0.3836              21.93
                    16.750         0.4133              22.13
                    19.320         0.4285              22.23
                    25.570         0.4596              22.43
*
*
PRINT HYD           ID=55  CODE=1
*
*
*COMBINE POND OUTFLOW WITH PR-2 FOR TOTAL AT AP#1
*
ADD HYD             ID=58 HYD NO=100.22 ID=2 ID=55
*
PRINT HYD           ID=58 CODE=1
*
*COMBINE ALLEY FLOWS AP#1 WITH EX-5 AND EX-6 FOR TOTAL AT AP#2
*
ADD HYD             ID=59 HYD NO=100.23 ID=5 ID=58
ADD HYD             ID=59 HYD NO=100.23 ID=6 ID=59
*
PRINT HYD           ID=59 CODE=1
*
FINISH
```

```
    AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.01a - Rel: 01a
         RUN DATE (MON/DAY/YR) = 03/20/2019
         START TIME (HR:MIN:SEC) = 13:34:30     USER NO.= AHYMO_Temp_User:20122010
         INPUT FILE = C:\Users\Joel\Desktop\AHYMO IN\Los Pastores Post Addendum3.txt

**************************************************************
*             Los Pastores SC @ Wyoming& Mont, ABQ,NM        *
**************************************************************
* 100-YEAR, 24-HR STORM  (UNDER PROPOSED CONDITIONS) W/ MCD'S   *
**************************************************************
*
START               TIME=0.0
*
*
RAINFALL            TYPE=2 RAIN QUARTER=0.0 IN
                    RAIN ONE=2.14 IN RAIN SIX=2.60 IN
                    RAIN DAY=3.10 IN DT=0.05 HR

               24-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE AREAS (NM & AZ) - D1
               DT =   0.050000 HOURS       END TIME =    24.000002 HOURS
                 0.0000  0.0031  0.0062  0.0096  0.0133  0.0171  0.0214
                 0.0274  0.0368  0.0470  0.0575  0.0690  0.0807  0.0927
                 0.1052  0.1178  0.1320  0.1467  0.1627  0.1887  0.2196
                 0.2611  0.3081  0.3661  0.4435  0.5307  0.6811  0.9149
                 1.3155  1.5971  1.8192  1.9308  2.0287  2.0989  2.1549
                 2.2036  2.2393  2.2720  2.2991  2.3181  2.3331  2.3464
                 2.3590  2.3700  2.3804  2.3905  2.4002  2.4083  2.4129
                 2.4175  2.4219  2.4261  2.4303  2.4343  2.4383  2.4422
                 2.4459  2.4495  2.4531  2.4566  2.4601  2.4634  2.4667
                 2.4699  2.4731  2.4762  2.4792  2.4822  2.4851  2.4880
                 2.4909  2.4937  2.4965  2.4992  2.5019  2.5046  2.5072
                 2.5098  2.5124  2.5149  2.5175  2.5200  2.5224  2.5249
                 2.5273  2.5296  2.5320  2.5343  2.5366  2.5389  2.5412
                 2.5434  2.5456  2.5478  2.5500  2.5521  2.5542  2.5564
                 2.5584  2.5605  2.5626  2.5646  2.5666  2.5686  2.5706
                 2.5725  2.5745  2.5764  2.5783  2.5802  2.5821  2.5839
```

2.5858	2.5876	2.5894	2.5912	2.5930	2.5948	2.5965
2.5983	2.6000	2.6017	2.6035	2.6052	2.6069	2.6086
2.6104	2.6121	2.6138	2.6155	2.6172	2.6190	2.6207
2.6224	2.6241	2.6258	2.6275	2.6292	2.6309	2.6326
2.6343	2.6360	2.6377	2.6394	2.6411	2.6428	2.6445
2.6461	2.6478	2.6495	2.6512	2.6529	2.6545	2.6562
2.6579	2.6595	2.6612	2.6629	2.6645	2.6662	2.6679
2.6695	2.6712	2.6728	2.6745	2.6761	2.6778	2.6794
2.6811	2.6827	2.6844	2.6860	2.6876	2.6893	2.6909
2.6925	2.6942	2.6958	2.6974	2.6990	2.7007	2.7023
2.7039	2.7055	2.7071	2.7087	2.7104	2.7120	2.7136
2.7152	2.7168	2.7184	2.7200	2.7216	2.7232	2.7248
2.7264	2.7279	2.7295	2.7311	2.7327	2.7343	2.7359
2.7374	2.7390	2.7406	2.7422	2.7437	2.7453	2.7469
2.7484	2.7500	2.7516	2.7531	2.7547	2.7562	2.7578
2.7593	2.7609	2.7624	2.7640	2.7655	2.7671	2.7686
2.7701	2.7717	2.7732	2.7747	2.7763	2.7778	2.7793
2.7808	2.7824	2.7839	2.7854	2.7869	2.7884	2.7899
2.7915	2.7930	2.7945	2.7960	2.7975	2.7990	2.8005
2.8020	2.8035	2.8050	2.8065	2.8079	2.8094	2.8109
2.8124	2.8139	2.8154	2.8168	2.8183	2.8198	2.8213
2.8227	2.8242	2.8257	2.8271	2.8286	2.8301	2.8315
2.8330	2.8344	2.8359	2.8373	2.8388	2.8402	2.8417
2.8431	2.8446	2.8460	2.8474	2.8489	2.8503	2.8517
2.8532	2.8546	2.8560	2.8574	2.8589	2.8603	2.8617
2.8631	2.8645	2.8659	2.8674	2.8688	2.8702	2.8716
2.8730	2.8744	2.8758	2.8772	2.8786	2.8800	2.8813
2.8827	2.8841	2.8855	2.8869	2.8883	2.8897	2.8910
2.8924	2.8938	2.8952	2.8965	2.8979	2.8993	2.9006
2.9020	2.9033	2.9047	2.9061	2.9074	2.9088	2.9101
2.9115	2.9128	2.9141	2.9155	2.9168	2.9182	2.9195
2.9208	2.9222	2.9235	2.9248	2.9262	2.9275	2.9288
2.9301	2.9314	2.9328	2.9341	2.9354	2.9367	2.9380
2.9393	2.9406	2.9419	2.9432	2.9445	2.9458	2.9471
2.9484	2.9497	2.9510	2.9523	2.9536	2.9549	2.9561
2.9574	2.9587	2.9600	2.9612	2.9625	2.9638	2.9651
2.9663	2.9676	2.9689	2.9701	2.9714	2.9726	2.9739

```
                2.9751  2.9764  2.9776  2.9789  2.9801  2.9814  2.9826
                2.9839  2.9851  2.9863  2.9876  2.9888  2.9900  2.9912
                2.9925  2.9937  2.9949  2.9961  2.9974  2.9986  2.9998
                3.0010  3.0022  3.0034  3.0046  3.0058  3.0070  3.0082
                3.0094  3.0106  3.0118  3.0130  3.0142  3.0154  3.0166
                3.0178  3.0189  3.0201  3.0213  3.0225  3.0237  3.0248
                3.0260  3.0272  3.0283  3.0295  3.0307  3.0318  3.0330
                3.0341  3.0353  3.0364  3.0376  3.0387  3.0399  3.0410
                3.0422  3.0433  3.0445  3.0456  3.0467  3.0479  3.0490
                3.0501  3.0513  3.0524  3.0535  3.0546  3.0558  3.0569
                3.0580  3.0591  3.0602  3.0613  3.0624  3.0635  3.0646
                3.0658  3.0669  3.0680  3.0690  3.0701  3.0712  3.0723
                3.0734  3.0745  3.0756  3.0767  3.0777  3.0788  3.0799
                3.0810  3.0821  3.0831  3.0842  3.0853  3.0863  3.0874
                3.0885  3.0895  3.0906  3.0916  3.0927  3.0937  3.0948
                3.0958  3.0969  3.0979  3.0990  3.1000

*DEVELOPED CONDITIONS
*
*BASIN PR-1
*
COMPUTE NM HYD      ID=1 HYD NO=100.1 AREA=0.00856 SQ MI
                    PER A=0.00 PER B=0.0 PER C=85.0 PER D=15.0
                    TP=-0.1333 HR MASS RAINFALL=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   5.0693    CFS   UNIT VOLUME =   0.9971       B =   526.28      P60 = 2.1400
     AREA =     0.001284 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000


     K =  0.108912HR    TP =  0.133300HR    K/TP RATIO =  0.817047     SHAPE CONSTANT, N =  4.373953
     UNIT PEAK =   20.708    CFS   UNIT VOLUME =    1.001       B =   379.38      P60 = 2.1400
     AREA =     0.007276 SQ MI    IA =   0.35000 INCHES    INF =   0.83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000

PRINT HYD           ID=1 CODE=1
```

PARTIAL HYDROGRAPH 100.10

RUNOFF VOLUME = 1.56994 INCHES = 0.7167 ACRE-FEET
PEAK DISCHARGE RATE = 21.32 CFS AT 1.500 HOURS BASIN AREA = 0.0086 SQ. MI.

```
*
*
*BASIN PR-2
*
COMPUTE NM HYD      ID=2 HYD NO=100.2 AREA=0.00092 SQ MI
                    PER A=0.00 PER B=0.0 PER C=19.0 PER D=81.00
                    TP=-0.1333 HR MASS RAINFALL=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   2.9421    CFS   UNIT VOLUME =   0.9951       B =   526.28      P60 = 2.1400
     AREA =     0.000745 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000


     K =  0.108912HR    TP =  0.133300HR    K/TP RATIO =  0.817047     SHAPE CONSTANT, N =  4.373953
     UNIT PEAK =  0.49749    CFS   UNIT VOLUME =   0.9770       B =   379.38      P60 = 2.1400
     AREA =     0.000175 SQ MI    IA =   0.35000 INCHES    INF =   0.83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000

PRINT HYD           ID=2 CODE=1
```

PARTIAL HYDROGRAPH 100.20

RUNOFF VOLUME = 2.56372 INCHES = 0.1258 ACRE-FEET
PEAK DISCHARGE RATE = 2.88 CFS AT 1.500 HOURS BASIN AREA = 0.0009 SQ. MI.

```
*
*
*BASIN EX-3 (MC D'S 0-1,0-2,0-4)
*
COMPUTE NM HYD      ID=3 HYD NO=100.3 AREA=0.00132 SQ MI
                    PER A=0.00 PER B=0.00 PER C=26.0 PER D=74.00
                    TP=-0.1333 HR MASS RAINFALL=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   3.8565    CFS   UNIT VOLUME =   0.9966       B =   526.28      P60 = 2.1400
     AREA =     0.000977 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000


     K =  0.108912HR    TP =  0.133300HR    K/TP RATIO =  0.817047     SHAPE CONSTANT, N =  4.373953
     UNIT PEAK =  0.97676    CFS   UNIT VOLUME =   0.9884       B =   379.38      P60 = 2.1400
     AREA =     0.000343 SQ MI    IA =   0.35000 INCHES    INF =   0.83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000

PRINT HYD           ID=3 CODE=1

                                  PARTIAL HYDROGRAPH   100.30


    RUNOFF VOLUME =     2.45832 INCHES     =       0.1731 ACRE-FEET
    PEAK DISCHARGE RATE =       4.03 CFS  AT   1.500 HOURS   BASIN AREA =  0.0013 SQ. MI.



*
*
*BASIN PR-4 (MC D'S A-2)
*
COMPUTE NM HYD      ID=4 HYD NO=100.4 AREA=0.00034 SQ MI
                    PER A=0.00 PER B=0.00 PER C=20.0 PER D=80.0
                    TP=-0.1333 HR MASS RAINFALL=-1
```

```
     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   1.0739    CFS   UNIT VOLUME =   0.9891       B =   526.28      P60 = 2.1400
     AREA =     0.000272 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000


     K =  0.108912HR    TP =  0.133300HR    K/TP RATIO =  0.817047     SHAPE CONSTANT, N =  4.373953
     UNIT PEAK =  0.19353    CFS   UNIT VOLUME =   0.9395       B =   379.38      P60 = 2.1400
     AREA =     0.000068 SQ MI    IA =   0.35000 INCHES    INF =   0.83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000

PRINT HYD           ID=4 CODE=1

                                  PARTIAL HYDROGRAPH   100.40


    RUNOFF VOLUME =     2.54866 INCHES     =       0.0462 ACRE-FEET
    PEAK DISCHARGE RATE =       1.07 CFS  AT   1.500 HOURS   BASIN AREA =  0.0003 SQ. MI.



*
*
*BASIN PR-5 (MC D'S A-1,3,4,5,6,7,R-1,O-3)
*
COMPUTE NM HYD      ID=5 HYD NO=100.5 AREA=0.00136 SQ MI
                    PER A=0.00 PER B=0.00 PER C=22.0 PER D=78.0
                    TP=-0.1333 HR MASS RAINFALL=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =   4.1881    CFS   UNIT VOLUME =   0.9966       B =   526.28      P60 = 2.1400
     AREA =     0.001061 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000


     K =  0.108912HR    TP =  0.133300HR    K/TP RATIO =  0.817047     SHAPE CONSTANT, N =  4.373953
```

```
     UNIT PEAK =  0.85154    CFS   UNIT VOLUME =   0.9884       B =   379.38      P60 = 2.1400
     AREA =     0.000299 SQ MI    IA =   0.35000 INCHES    INF =   0.83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000

PRINT HYD           ID=5 CODE=1

                                    PARTIAL HYDROGRAPH   100.50


    RUNOFF VOLUME =     2.51855 INCHES     =       0.1827 ACRE-FEET
    PEAK DISCHARGE RATE =       4.20 CFS  AT   1.500 HOURS   BASIN AREA =  0.0014 SQ. MI.



**
*BASIN EX-6 (ALLEY)
*
COMPUTE NM HYD      ID=6 HYD NO=100.6 AREA=0.0002 SQ MI
                    PER A=0.00 PER B=0.00 PER C=5.0 PER D=95.0
                    TP=-0.1333 HR MASS RAINFALL=-1

     K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE CONSTANT, N =  7.106428
     UNIT PEAK =  0.75013    CFS   UNIT VOLUME =   0.9865       B =   526.28      P60 = 2.1400
     AREA =     0.000190 SQ MI    IA =   0.10000 INCHES    INF =   0.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000


     K =  0.108912HR    TP =  0.133300HR    K/TP RATIO =  0.817047     SHAPE CONSTANT, N =  4.373953
     UNIT PEAK =  0.28460E-01CFS   UNIT VOLUME =   0.8869       B =   379.38      P60 = 2.1400
     AREA =     0.000010 SQ MI    IA =   0.35000 INCHES    INF =   0.83000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =  0.050000

PRINT HYD           ID=6 CODE=1

                                    PARTIAL HYDROGRAPH   100.60
```

```
    RUNOFF VOLUME =     2.77452 INCHES     =       0.0296 ACRE-FEET
    PEAK DISCHARGE RATE =       0.66 CFS  AT   1.500 HOURS   BASIN AREA =  0.0002 SQ. MI.



**
*
*COMBINE PR-1, EX-3, AND PR-4
*
ADD HYD                         ID=50 HYD NO=100.21 ID=1 ID=3
ADD HYD                         ID=50 HYD NO=100.21 ID=50 ID=4
*
PRINT HYD           ID=50 CODE=1

                                    PARTIAL HYDROGRAPH   100.21


    RUNOFF VOLUME =     1.71716 INCHES     =       0.9360 ACRE-FEET
    PEAK DISCHARGE RATE =      26.42 CFS  AT   1.500 HOURS   BASIN AREA =  0.0102 SQ. MI.



**
*ROUTE BASINS PR-1, EX-3, AND PR-4 THROUGH PROPOSED DETENTION POND
ROUTE RESERVOIR     ID=55 HYD NO=200.1 INFLOW ID=50 CODE=24
                        OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                                0.0000         0.1401              20.00
                                1.8200         0.1960              20.50
                                6.1700         0.2568              21.00
                                10.780         0.3227              21.50
                                13.270         0.3836              21.93
                                16.750         0.4133              22.13
                                19.320         0.4285              22.23
                                25.570         0.4596              22.43

  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *  *
```

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
0.00	0.00	20.00	0.140	0.00
1.20	1.66	20.13	0.155	0.49
2.40	0.79	20.50	0.196	1.81
3.60	0.05	20.05	0.145	0.17
4.80	0.04	20.01	0.142	0.05
6.00	0.06	20.01	0.142	0.05
7.20	0.06	20.02	0.142	0.06
8.40	0.05	20.01	0.142	0.05
9.60	0.05	20.01	0.142	0.05
10.80	0.05	20.01	0.142	0.05
12.00	0.05	20.01	0.142	0.05
13.20	0.05	20.01	0.142	0.05
14.40	0.05	20.01	0.142	0.05
15.60	0.04	20.01	0.141	0.05
16.80	0.04	20.01	0.141	0.04
18.00	0.04	20.01	0.141	0.04
19.20	0.04	20.01	0.141	0.04
20.40	0.04	20.01	0.141	0.04
21.60	0.04	20.01	0.141	0.04
22.80	0.04	20.01	0.141	0.04
24.00	0.03	20.01	0.141	0.03
25.20	0.00	20.00	0.140	0.00

PEAK DISCHARGE = 18.592 CFS - PEAK OCCURS AT HOUR 1.65
MAXIMUM WATER SURFACE ELEVATION = 22.202
MAXIMUM STORAGE = 0.4242 AC-FT INCREMENTAL TIME= 0.050000HRS

*
*
PRINT HYD ID=55 CODE=1

PARTIAL HYDROGRAPH 200.10

RUNOFF VOLUME = 1.71721 INCHES = 0.9360 ACRE-FEET

PEAK DISCHARGE RATE = 18.59 CFS AT 1.650 HOURS BASIN AREA = 0.0102 SQ. MI.

*
*
*COMBINE POND OUTFLOW WITH PR-2 FOR TOTAL AT AP#1
*
ADD HYD ID=58 HYD NO=100.22 ID=2 ID=55
*
PRINT HYD ID=58 CODE=1

PARTIAL HYDROGRAPH 100.22

RUNOFF VOLUME = 1.78699 INCHES = 1.0617 ACRE-FEET
PEAK DISCHARGE RATE = 20.51 CFS AT 1.600 HOURS BASIN AREA = 0.0111 SQ. MI.

*
*COMBINE ALLEY FLOWS AP#1 WITH EX-5 AND EX-6 FOR TOTAL AT AP#2
*
ADD HYD ID=59 HYD NO=100.23 ID=5 ID=58
ADD HYD ID=59 HYD NO=100.23 ID=6 ID=59
*
PRINT HYD ID=59 CODE=1

PARTIAL HYDROGRAPH 100.23

RUNOFF VOLUME = 1.88085 INCHES = 1.2740 ACRE-FEET
PEAK DISCHARGE RATE = 24.30 CFS AT 1.600 HOURS BASIN AREA = 0.0127 SQ. MI.

*

```
FINISH

    NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 13:34:30
```

APPENDIX B

HYDRAULICS

Worksheet for Broad Crested Weir - Existing Pond

Project Description

Solve For	Discharge

Input Data

Headwater Elevation		5421.00	ft
Crest Elevation		5420.50	ft
Tailwater Elevation		5420.00	ft
Crest Surface Type	Gravel		
Crest Breadth		5.00	ft
Crest Length		30.00	ft

Results

Discharge	28.57	ft^3/s
Headwater Height Above Crest	0.50	ft
Tailwater Height Above Crest	-0.50	ft
Weir Coefficient	2.69	US
Submergence Factor	1.00	
Adjusted Weir Coefficient	2.69	US
Flow Area	15.00	ft^2
Velocity	1.90	ft/s
Wetted Perimeter	31.00	ft
Top Width	30.00	ft

Culvert Calculator Report
Developed Pond Outflow 1

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	22.93	ft	Headwater Depth/Height	2.93	
Computed Headwater Elev	22.93	ft	Discharge	17.77	cfs
Inlet Control HW Elev.	22.93	ft	Tailwater Elevation	19.90	ft
Outlet Control HW Elev.	22.61	ft	Control Type	Inlet Control	

Grades					
Upstream Invert	20.00	ft	Downstream Invert	19.90	ft
Length	17.00	ft	Constructed Slope	0.005882	ft/ft

Hydraulic Profile					
Profile	CompositeM2PressureProfile		Depth, Downstream	0.95	ft
Slope Type	Mild		Normal Depth	N/A	ft
Flow Regime	Subcritical		Critical Depth	0.95	ft
Velocity Downstream	7.67	ft/s	Critical Slope	0.020420	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.012	
Section Material	HDPE (Smooth Interior)		Span	1.00	ft
Section Size	12 inch		Rise	1.00	ft
Number Sections	3				

Outlet Control Properties					
Outlet Control HW Elev.	22.61	ft	Upstream Velocity Head	0.88	ft
Ke	0.50		Entrance Loss	0.44	ft

Inlet Control Properties					
Inlet Control HW Elev.	22.93	ft	Flow Control	Submerged	
Inlet Type	Square edge w/headwall		Area Full	2.4	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

Rating Table Report
Developed Pond Outflow 1

Range Data:			
	Minimum	Maximum	Increment
Allowable HW E	20.00	21.50	0.50 ft

HW Elev. (ft)	Discharge (cfs)
20.00	0.00
20.50	1.82
21.00	6.17
21.50	10.78

Rating Table Report
Developed Pond Outflow 1

Range Data:			
	Minimum	Maximum	Increment
Allowable HW E	21.93	22.93	0.10 ft

HW Elev. (ft)	Discharge (cfs)
21.93	13.27
22.03	13.79
22.13	14.29
22.23	14.77
22.33	15.23
22.43	15.68
22.53	16.12
22.63	16.55
22.73	16.96
22.83	17.37
22.93	17.77

APPENDIX C

POND VOLUME CALCULATIONS

POND VOLUME CALCULATIONS

EXISTING POND VOLUME CALCULATION AND STAGE-DISCHARGE					
ELEVATION (ft)	AREA (sf)	VOLUME (cf)	CUMULATIVE VOLUME (cf)	CUMULATIVE VOLUME (ac-ft)	Q out
5419	1575	0	0		0
5420	3106	2341	2341	0.0537	0
5420.5	3462	1642	3983	0.0914	0
5421	4411	1968	5951	0.1366	28.57 *

*SEE WEIR CALCULATION, FLOWMASTER WORKSHEET

PROPOSED VOLUME CALCULATION (FIRST-FLUSH ONLY, BELOW EL=5419.5)				
ELEVATION (ft)	AREA (sf)	VOLUME (cf)	CUMULATIVE VOLUME (cf)	
5418.5	3501	0	0	
5419.5	4253	3877	**3877**	Volume Provided>Volume Required=2439 cf, **OK**

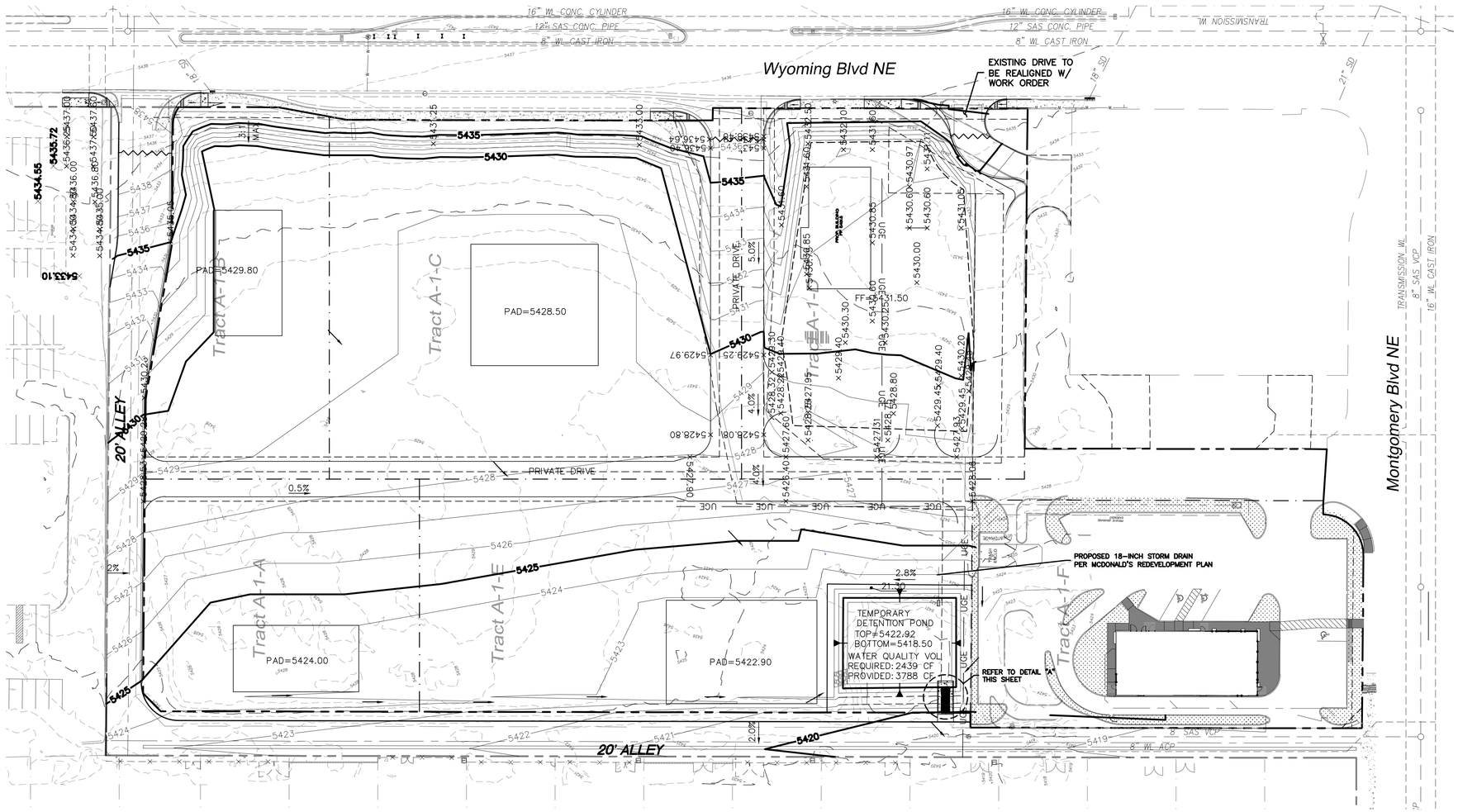
PROPOSED POND VOLUME CALCULATION				
ELEVATION (ft)	AREA (sf)	VOLUME (cf)	CUMULATIVE VOLUME (cf)	CUMULATIVE VOLUME (ac-ft)
5418.50	3501			
5419.50	4253	3877	3877	
5420.00	4656	2227	6104	0.1401
5420.50	5077	2433	8538	0.1960
5421.00	5517	2649	11186	0.2568
5421.50	5974	2873	14059	0.3227
5421.93	6361	2652	16711	0.3836
5422.13	6575	1294	18004	0.4133
5422.23	6673	662	18667	0.4285
5422.43	6872	1355	20021	0.4596
5422.93	7340	3553	23574	0.5412

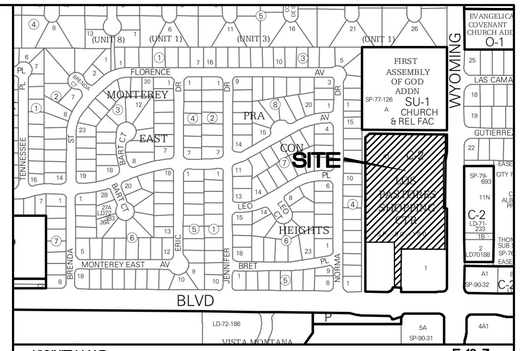
STAGE-DISCHARGE CALCULATIONS

STAGE, VOLUME, DISCHARGE

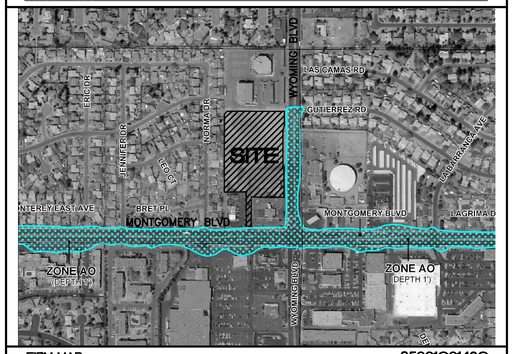
Culvert Inv: 5420.00
Weir Crest: 5421.93

WATER ELEV.	VOLUME (AC-FT)	Q culvert (CFS)	Q weir (CFS)	Q_{TOTAL} (CFS)
5418.50	0			
5419.50	0			
5420.00	0.140134	0.00	0.00	0.00
5420.50	0.195994	1.82	0.00	1.82
5421.00	0.256795	6.17	0.00	6.17
5421.50	0.322744	10.78	0.00	10.78
5421.93	0.383627	13.27	0.00	13.27
5422.13	0.413324	14.29	2.46	16.75
5422.23	0.42853	14.77	4.55	19.32
5422.43	0.459625	15.68	9.89	25.57
5422.93	0.541191	17.77	28.5	46.27





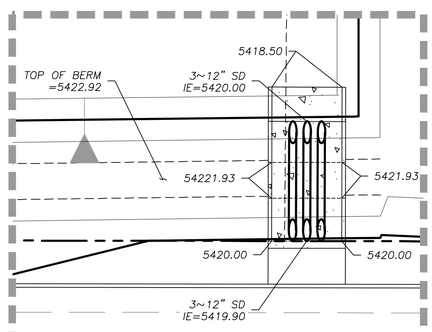
VICINITY MAP F-19-Z



FIRM MAP 35001C0143G

LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- SIDEWALK
- EXISTING CURB & GUTTER
- SINGLE CLEAN OUT
- DOUBLE CLEAN OUT
- EXISTING SD MANHOLE
- EXISTING SAS MANHOLE
- EXISTING FIRE HYDRANT
- EXISTING WATER METER
- EXISTING POWER POLE
- EXISTING GAS VALVE
- U — EXISTING OVERHEAD UTILITIES
- G — EXISTING GAS
- EX. 8" SAS — EXISTING SANITARY SEWER LINE
- EX. WL — EXISTING WATER LINE
- EX. RCP — EXISTING STORM SEWER LINE
- 4900 — EXISTING INDEX CONTOUR
- EXISTING CONTOUR



DETAIL "A"
SC:1"=10'

GRAPHIC SCALE
40 0 20 40
(IN FEET)
1 inch = 40 ft.

CAUTION:
ALL EXISTING UTILITIES SHOWN WERE OBTAINED FROM RESEARCH, AS-BUILTS, SURVEYS OR INFORMATION PROVIDED BY OTHERS. IT SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR TO CONDUCT ALL NECESSARY FIELD INVESTIGATIONS PRIOR TO AND INCLUDING ANY EXCAVATION, TO DETERMINE THE ACTUAL LOCATION OF UTILITIES AND OTHER IMPROVEMENTS, PRIOR TO STARTING THE WORK. ANY CHANGES FROM THIS PLAN SHALL BE COORDINATED WITH AND APPROVED BY THE ENGINEER.

ENGINEER'S SEAL	LOS PASTORES SHOPPING CENTER	DRAWN BY JH
	GRADING + DRAINAGE PLAN WITH MCDONALDS EXHIBIT	DATE 03/22/19
		2014052-GR-1 W MCDS
	TIERRA WEST, LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858-3100 www.tierrawestllc.com	SHEET # GR-1
JOEL D. HERNANDEZ P.E. #17893		JOB # 2014052