

DRAINAGE AND TRANSPORTATION INFORMATION SHEET
(Rev. 12/05)

PROJECT TITLE: Los Diamantes Subdivision ZONE MAP/DRG. FILE: **N09 / D013**

DRB#: 1010332

LEGAL DESCRIPTION: Tract 34D-1-A, Lands of Salazar Family Trust, Salazar Quatro Trust, JSJ Investment Company, Falba Hannett and Lands of Curb Inc

CITY ADDRESS: Gibson and 98 th Street

ENGINEERING FIRM: MARK GOODWIN & ASSOCIATES, PA

ADDRESS: PO Box 90606

CITY, STATE: Albuquerque, NM

CONTACT: Diane Hoelzer, PE

PHONE: 828-2200

ZIP CODE: 87199

OWNER: 98th Street LLC

ADDRESS: Box 27560

CITY, STATE: Albuquerque, NM

CONTACT: Rhett Waterman

PHONE: 248-1688

ZIP CODE: 87125

ARCHITECT: N/A

ADDRESS: _____

CITY, STATE: _____

CONTACT: _____

PHONE: _____

ZIP CODE: _____

SURVEYOR: Aldrich Land Surveying

ADDRESS: _____

CITY, STATE: _____

CONTACT: Tim Aldrich

PHONE: 328-3988

ZIP CODE: _____

CONTRACTOR: N/A

ADDRESS: _____

CITY, STATE: _____

CONTACT: _____

PHONE: _____

ZIP CODE: _____

TYPE OF SUBMITTAL:

- ☒ DRAINAGE REPORT
☐ DRAINAGE PLAN 1st SUBMITTAL
☐ DRAINAGE PLAN RESUBMITTAL
☐ CONCEPTUAL G & D PLAN
☒ GRADING PLAN (**dated 3-24-15**)
☐ EROSION CONTROL PLAN
☐ ENGINEER'S CERT (HYDROLOGY)
☐ CLOMR/LOMR
☐ TRAFFIC CIRCULATION LAYOUT
☐ ENGINEER/ARCHITECT CERT (TCL)
☐ ENGINEER/ARCHITECT (DRB SITE PLAN)
☐ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

- ☐ SIA/FINANCIAL GUARANTEE RELEASE
☒ PRELIMINARY PLAT APPROVAL
☐ S. DEV. PLAN FOR SUB'D APPROVAL
☐ S. DEV. FOR BLDG. PERMIT APPROVAL
☐ SECTOR PLAN APPROVAL
☐ FINAL PLAT APPROVAL
☐ FOUNDATION PERMIT APPROVAL
☐ BUILDING PERMIT APPROVAL
☐ CERTIFICATE OF OCCUPANCY (PERM)
☐ CERTIFICATE OF OCCUPANCY (TEMP)
☒ GRADING PERMIT APPROVAL
☐ PAVING PERMIT APPROVAL
☐ WORK ORDER APPROVAL
☐ OTHER (SPECIFY)

WAS A PRE-DESIGN CONFERENCE ATTENDED:

☐ YES

☐ NO

☐ COPY PROVIDED

SUBMITTED BY: Diane Hoelzer, PE

DATE: March 24, 2015

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature, location and scope to the proposed development define the degree of drainage detail. One or more of the following levels of submittal may be required based on the following:

1. **Conceptual Grading and Drainage Plan:** Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
2. **Drainage Plans:** Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
3. **Drainage Report:** Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more.

Los Diamantes Subdivision
Drainage Management Plan

MARK GOODWIN

& ASSOCIATES
CONSULTING ENGINEERS

dmg

Los Diamantes Subdivision Drainage Management Plan



MARK GOODWIN & ASSOCIATES, PA

March 2015

Los Diamantes Subdivision

Table of Contents

C.O.A. Comment Letter
Response Letter

I. Los Diamantes Drainage Management Plan

FIGURE 1 Vicinity Map
FIGURE 2 Preliminary Plat
FIGURE 3 Grading and Drainage Plan- (11"x17" copy)
FIGURE 4 Infrastructure List

APPENDIX A Pond Design
First Flush Calculations
AHYMO printout

APPENDIX B Summary of Street Capacity Calculations
Street Capacity Exhibit /Sub basin Boundaries
HEC-2 Printouts

APPENDIX C Pond Outfall Design Details
Gold Dust Way Inlet Design Details
Standard Grate Detail for Inlet

APPENDIX D Sun Gate Estates Basin Boundary Exhibit 4
Sun Gate Estates Phase I Utility P&P (sht 30-31)
Excerpts from Amole Hubbell 2013 Drainage Report for AMFCA

POCKET 1 GRADING AND DRAINAGE PLAN

CITY OF ALBUQUERQUE

PLANNING DEPARTMENT – Development Review Services



February 3, 2015

Diane Hoelzer, P.E.
Mark Goodwin & Associates, P.A.
P.O. Box 90606
Albuquerque, NM 87199

Richard J. Berry, Mayor

**RE: Los Diamantes Subdivision
Drainage Report, and Grading and Drainage Plan
Engineer's Stamp Date 1-13-2015 (File: N09D013)**

Dear Ms. Hoelzer:

Based upon the information provided in your submittal received 1-14-15, the above referenced plan cannot be approved for Preliminary Plat and Grading Permit until the following comments are addressed:

1. Provide Bench Mark information using NAVD 1988 Datum. Are the elevations shown in the new or old datum?
2. Aerial views show a pond in the NW corner and a channel further south that are not reflected by the existing contours. Are the contours from a historic LIDAR? Google map views show that this site is lower than 98th Street and Blake, but this is not reflected in the contours and flow line elevations. Do you have a current survey? Show Flowline elevations of Gibson, Blake and 98th St.
3. Tract A presently drains through the proposed development. How is Tract A proposed to drain in the interim and future conditions. Since there is no storm drain in 98th street, will Tract A also be discharging to the detention pond?
4. What is the meaning of the hatched line within the pond? It is not on the legend, but appears to be some sort of wall.
5. The outfall structure is 8.5' in diameter that discharges to a 30" SD. For safety reasons, it is preferred to provide a stand pipe/riser, with the top open for emergency overflow.
6. Show Volume and emergency overflow for the detention pond.
7. As-built Shows 30" stub out Inv.= 5097.17, rather than 5099.12 as shown on the Grading plan.
8. How will flows discharge into the pond?
9. Provide Basin Boundary map showing peak flow rate from each basin.
10. Provide Street capacity calculations. On Basin map show the max. peak flows for both the mountable curb sections and the standard curb sections.
11. The referenced Amole-Hubbell report was never approved by the City. It's primary purpose was to evaluate AMAFCA's facilities, but not the storm drain systems. While it provides guidance, further investigation is required to verify the allowed discharge into the 72" Storm Drain in Blake Road.

PO Box 1293

Albuquerque

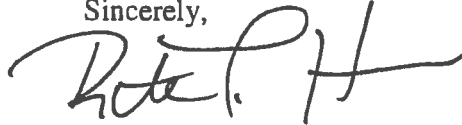
New Mexico 87103

www.cabq.gov

12. Along that same note, what basins was the 72" Storm Drain in Blake road designed to support? Did it follow the Amole-Hubbell? Have there been any changes to the flow rate or design assumptions since its original design? Provide excerpts from this report to verify its present capacity.

If you have any questions, you can contact me at 924-3695.

Sincerely,

A handwritten signature in black ink, appearing to read "Rita H.", with a stylized flourish at the end.

Rita Harmon, P.E.
Senior Engineer, Planning Dept.
Development Review Services

Orig: Drainage file
c.pdf Addressee via Email

Rita



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539

March 24, 2015

Mr. Rita Harmon, PE
Hydrology Division, Planning Dept.
Development and Building Services
City of Albuquerque
PO Box 1293
Albuquerque, NM 87103

**Re: Los Diamantes Subdivision
Revised Engineers stamp date 3-24-15 (N09 / D013)**

Dear Ms. Harmon;

In response to your comment letter dated 2-3-15, your comments are addressed below:

1. The latest topographic survey is now shown on the plan along with the required NAVD 1988 datum.
2. Refer to #1.
3. The current conditions survey that is now shown on the plan indicates that runoff from Tract A is in an eastward direction towards 98th Street. The development of this project will not have an effect on the current "existing" runoff flow pattern thus no temporary pond or drainage swale is necessary for Tract A. In the future, runoff from Tract A will be directed towards the low end of the site, which is in the SE corner. It is likely that a storm drain in the center median of 98th Street will need to be constructed that will convey runoff from Tract A to the existing storm drain in Blake Road. This idea has already been discussed with staff at our recent meeting on this project site.
4. This hatching has been eliminated on the revised plan.
5. The configuration of the outfall has been change to 3' wide by 10.5' long rectangular box outfall. There will be bars placed on top of the structure for safety.
6. OK.
7. OK, the invert elevation has been corrected.
8. Runoff from the project site will be intercepted by a 5'x24' inlet grate in the culdesac and conveyed to pond through a 30" storm pipe.
9. There is only one basin for this site. Refer to the street capacity exhibit in appendix C for a sub basin boundaries as they relate to street capacity calculations
10. OK.
11. At our meeting last week, it was decided to use the as built storm drain from the Sun Gate Estates Phase I Utility Plan (CPN:736782, approved 3-4-05) and the Sun Gate Estates Exhibit 4

Drainage Basin Map (N09/D007) as the guide for calculating the allowable discharge from this project site. At the meeting it was agreed upon that a 50 cfs discharge was acceptable from this project site into the existing 30" storm drain stub located in Blake Road. A pond will be used at the SE corner of the site to retain the first flush and then allow the remaining runoff to discharge into the existing 30" storm drain lateral.

- 12. At our meeting we discussed the 72" storm drain in Blake Road and found information on this storm drain segment as discussed above in item #11.*

Please call me if you have any questions.

Sincerely,

MARK GOODWIN & ASSOCIATES, P.A.



*Diane Hoelzer, PE
Senior Engineer*

DLH/dlh

f:\14031 \Los Diamantes\ HYDRO_LTR_14031.docx

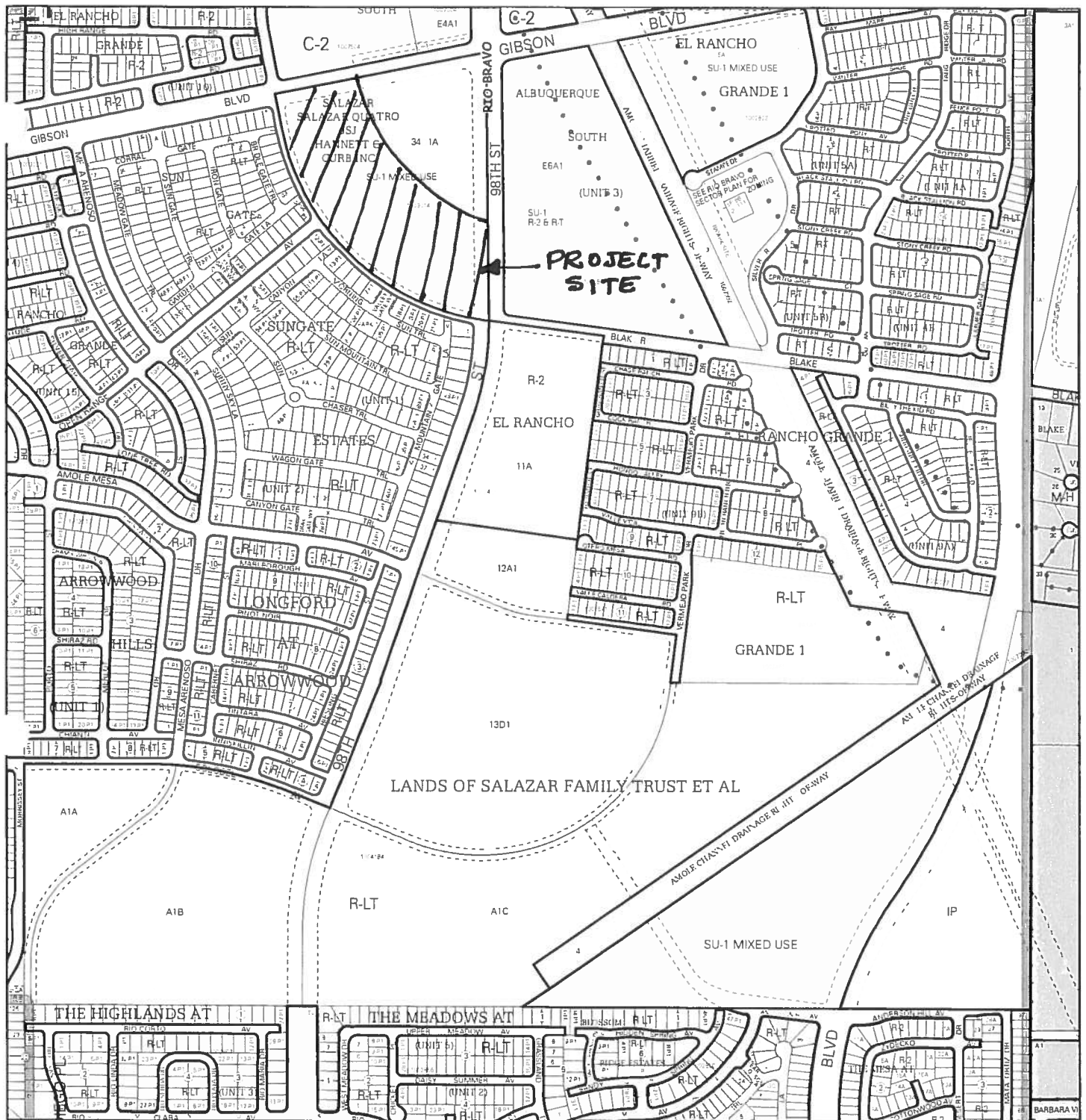
Los Diamantes Drainage Management Plan

The property is bounded by Blake Road to the south and west, by Gibson Blvd. to the north and by 98th Street to the east. The residential portion of the property encompasses 14.52 acres. The residential portion makes up 72% of the total area and will consist of an 80 lot subdivision for single family homes. Since the site is surrounded by developed streets, no offsite flows come onto the project site.

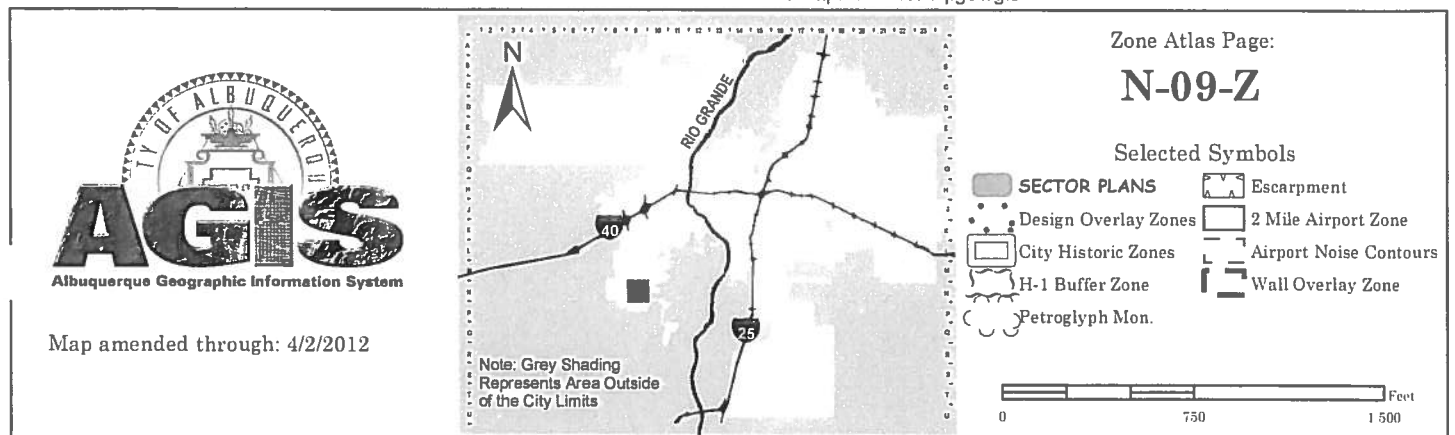
According to the Amole Hubbell Drainage Master Plan Update (excerpts from 2013 Report-Appendix D), this site is identified as sub basin A221 as shown on the Figure 3-7 Proposed Basin Map. The calculated 100 year peak discharge from this sub basin is 118.26 cfs. The report and construction plans indicate that the runoff is intercepted by a storm drain in Blake Road. This project site will discharge into an existing 30" storm pipe stub located at the southeast corner of the project site.

After meeting with City hydrology staff about the allowable discharge from this project site, it was decided that the design discharge from the project site would be based on the Sun Gate Phase I Utility Plan and Profile sheets 30-31 and the Sun Gate Estates Basin Boundary Map Exhibit 4. Both of these drawings can be found in Appendix D. It was further agreed that 50 cfs would be an acceptable allowable discharge value from this project site. When the adjacent commercial site develops, it is likely that an outfall located at the southeast corner of the commercial site will need to be constructed and a storm drain extended in the 98th street median and ultimately connected to the existing 72" storm drain in Blake Road.

Onsite runoff will be conveyed by surface street flow to the southeast corner of the property into a detention pond that will also serve to retain the "first flush" from stormwater. A 10.5' x 3' spillway outfall box will be designed to discharge developed flows into the 72" storm drain in Blake through the connecting 30" storm drain stub while retaining the first flush. The maximum water depth for the first flush will be 1.38 feet. The 100 years "allowable" discharge from the project site will be 51.61 cfs with an actual discharge from the detention pond outfall structure of 49.45 cfs.



For more current information and details visit: <http://www.cabq.gov/gis>



Appendix A

Pond Design

First Flush Calculations

AHYMO printout



D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539

PROJECT Los Diamantes
SUBJECT POND VOLUME CALCS
BY DLH DATE 3-20-15
CHECKED _____ DATE _____
SHEET _____ OF _____

LOSDIAMANTES POND

ELEV.	AREA	VOLUME	Σ VOL.	Σ AC. FT.
108.	13286.5	12529.3	47,766.1	1.0965
107.	11787.1	11028.3	35,236.8	0.8089
106.	10286.5	9535.9	24,208.5	0.5558
105.	8804.5	8062.6	14,672.6	0.3368
104.	7342.8	6610.0	6610.0	0.1517
103.	5903.4		0	0.00

$$\text{VOLUME} = \frac{1}{3} D (A_1 + A_2 + \sqrt{A_1 \cdot A_2})$$

$$\text{FIRST FLUSH VOLUME} = 9,681 \text{ CF}$$

$$\frac{9681 - 6610}{14,672.6 - 6610} = \frac{3071.0}{8062.6} = 0.38$$

$$\text{ELEV. TO FIRST FLUSH RETAINAGE} = \underline{\underline{104.38}}$$

AHYMO RESULTS:

$$Q_{\text{PEAK}} = 51.61 \text{ cfs (From Site)}$$

POND:

$$\text{Peak } Q_{\text{OUT}} = 49.7 \text{ cfs}$$

$$\text{Peak Volume} = 0.3613 \text{ AF}$$

$$\text{Max. WSEL} = 105.1$$

$$\text{Max Depth} = 2.10'$$

$$\text{Max Depth to spillway} = 0.72'$$

$$\text{DESIGN VOL. CAPACITY} = 1.0965 \text{ AF.}$$

LOS DIAMANTES SUBUDIVISION
FIRST FLUSH HYDROLOGY CALCULATIONS

N-value = UNITS/ACRE = $82/14.525 = 5.64$

For N-value less than 6 =} Treatment D = $7*((N)**2+(5*N))**.5 = 54$

Use Land treatment D = 54

Land treatment C = 23

Land treatment B = 23

AHYMO: Zone Atlas: N-9 =} P(60)=1.90", P(36)=2.25", P(24)= 2.70"

RESULTS: Q(100)= 51.61 cfs (100 year 6 hour)

FIRST FLUSH: $(0.34 \text{ inches})(632,738 \text{ SF})(.54))/(12 \text{ inches per foot}) = 9,681 \text{ cu.ft.}$

DLH 3-23-15 (dmg project 14031)

AHYMO PROGRAM (AHYMO 97) -
 RUN DATE (MON/DAY/YR) = 03/20/2015
 START TIME (HR:MIN:SEC) = 11:11:48
 INPUT FILE = LOSDIA.DAT
 - Version: 1997.02d
 USER NO.= AHYMO-I-9702dGoodwinM-AH

*S*****

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*S

*S

START

LOCATION

State of New Mexico soil infiltration values (LAND FACTORS) used for computations.

Land Treatment Initial Abstr.(in) Unif. Infilt.(in/hour)

A 0.65 1.67

B 0.50 1.25

C 0.35 0.83

D 0.10 0.04

RAINFALL

TYPE=1 RAIN QUARTER=0.0

RAIN ONE=1.90 IN RAIN SIX=2.25 IN

RAIN DAY=2.70 IN DT=0.0333 HRS

COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.

DT = .033300 HOURS END TIME = 5.994000 HOURS

.0000	.0018	.0036	.0055	.0074	.0094	.0114
.0134	.0155	.0177	.0199	.0221	.0245	.0268
.0293	.0318	.0344	.0371	.0399	.0428	.0457
.0488	.0520	.0553	.0588	.0624	.0662	.0702
.0744	.0788	.0834	.0887	.0943	.1003	.1126
.1410	.1848	.2477	.3338	.4470	.5915	.7714
.9912	1.2021	1.2887	1.3615	1.4262	1.4850	1.5392
1.5894	1.6364	1.6804	1.7218	1.7609	1.7978	1.8327
1.8658	1.8971	1.9269	1.9552	1.9820	1.9895	1.9955
2.0011	2.0065	2.0117	2.0166	2.0214	2.0259	2.0304
2.0346	2.0387	2.0427	2.0466	2.0504	2.0541	2.0576
2.0611	2.0645	2.0678	2.0711	2.0743	2.0774	2.0804
2.0834	2.0863	2.0891	2.0920	2.0947	2.0974	2.1001
2.1027	2.1053	2.1078	2.1103	2.1127	2.1151	2.1175
2.1199	2.1222	2.1245	2.1267	2.1289	2.1311	2.1333
2.1354	2.1375	2.1396	2.1416	2.1437	2.1457	2.1476
2.1496	2.1515	2.1535	2.1554	2.1572	2.1591	2.1609
2.1627	2.1645	2.1663	2.1681	2.1698	2.1716	2.1733
2.1750	2.1767	2.1783	2.1800	2.1816	2.1832	2.1849
2.1865	2.1880	2.1896	2.1912	2.1927	2.1942	2.1958
2.1973	2.1988	2.2002	2.2017	2.2032	2.2046	2.2061
2.2075	2.2089	2.2103	2.2117	2.2131	2.2145	2.2159
2.2172	2.2186	2.2199	2.2213	2.2226	2.2239	2.2252
2.2265	2.2278	2.2291	2.2304	2.2316	2.2329	2.2342
2.2354	2.2366	2.2379	2.2391	2.2403	2.2415	2.2427
2.2439	2.2451	2.2463	2.2475	2.2486	2.2498	

*S LOS DIAMONTES SUBDIVISION

*** AREA = 14.525 ACRES

*** AREA = 632,738.8 SF

COMPUTE NM HYD ID=1 HYD NO=100 AREA= 0.022695 SQ MI
PER A=0 PER B=23 PER C=23 PER D=54
TP=-.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 48.385 CFS UNIT VOLUME = .9991 B = 526.28 P60 = 1.9000
AREA = .012255 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033300

K = .118483HR TP = .133300HR K/TP RATIO = .888844 SHAPE CONSTANT, N = 3.990548
UNIT PEAK = 27.767 CFS UNIT VOLUME = 1.000 B = 354.54 P60 = 1.9000
AREA = .010440 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033300

PRINT HYD ID=1 CODE=1

PARTIAL HYDROGRAPH 100.00

RUNOFF VOLUME = 1.47740 INCHES = 1.7882 ACRE-FEET
PEAK DISCHARGE RATE = 51.61 CFS AT 1.499 HOURS BASIN AREA = .0227 SQ. MI.

*S ROUTE THRU SE POND

ROUTE RESERVOIR

ID=12 HYD=POND.12 INFLOW=1 CODE=5
OUTFLOW(CFS) STORAGE(ACFT) ELEV(FT)
0.00 0.0000 103.00
0.01 0.22225 104.38
35.77 0.33680 105.00
160.87 0.55580 106.00

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	103.00	.000	.00
.17	.00	103.00	.000	.00
.33	.00	103.00	.000	.00
.50	.00	103.00	.000	.00
.67	.00	103.00	.000	.00
.83	.00	103.00	.000	.00
1.00	.00	103.00	.000	.00
1.17	.20	103.00	.000	.00

1.33	11.42	103.35	.057	.00
1.50	51.61	105.05	.348	42.28
1.67	26.94	104.93	.323	31.61
1.83	15.45	104.68	.278	17.47
2.00	10.35	104.58	.259	11.35
2.16	4.93	104.49	.243	6.34
2.33	2.43	104.43	.231	2.81
2.50	1.52	104.41	.228	1.70
2.66	1.01	104.40	.226	1.11
2.83	.71	104.39	.225	.77
3.00	.52	104.39	.224	.56
3.16	.40	104.39	.224	.43
3.33	.33	104.39	.223	.35
3.50	.29	104.38	.223	.30
3.66	.26	104.38	.223	.27
3.83	.24	104.38	.223	.24
4.00	.22	104.38	.223	.23
4.16	.22	104.38	.223	.22
4.33	.21	104.38	.223	.22
4.50	.22	104.38	.223	.22
4.66	.21	104.38	.223	.21
4.83	.22	104.38	.223	.22
5.00	.22	104.38	.223	.22
5.16	.23	104.38	.223	.23
5.33	.23	104.38	.223	.23
5.49	.24	104.38	.223	.24
5.66	.25	104.38	.223	.25
5.83	.26	104.38	.223	.25
5.99	.27	104.38	.223	.26
6.16	.11	104.38	.223	.16
6.33	.03	104.38	.222	.04
6.49	.01	104.38	.222	.02
6.66	.01	104.38	.222	.01
6.83	.00	104.38	.222	.01
6.99	.00	104.38	.222	.01
7.16	.00	104.38	.222	.01
7.33	.00	104.38	.222	.01
7.49	.00	104.38	.222	.01
7.66	.00	104.38	.222	.01
7.83	.00	104.37	.221	.01
7.99	.00	104.37	.221	.01
8.16	.00	104.37	.221	.01
8.33	.00	104.37	.221	.01
8.49	.00	104.37	.221	.01
8.66	.00	104.37	.221	.01
8.82	.00	104.37	.221	.01
8.99	.00	104.37	.220	.01
9.16	.00	104.37	.220	.01
TIME	INFLOW	ELEV	VOLUME	OUTFLOW
(HRS)	(CFS)	(FEET)	(AC-FT)	(CFS)
9.32	.00	104.37	.220	.01
9.49	.00	104.37	.220	.01
9.66	.00	104.37	.220	.01

TIME	INFLOW	ELEV	VOLUME	OUTFLOW
9.82	.00	104.36	.220	.01
9.99	.00	104.36	.220	.01
10.16	.00	104.36	.219	.01
10.32	.00	104.36	.219	.01
10.49	.00	104.36	.219	.01
10.66	.00	104.36	.219	.01
10.82	.00	104.36	.219	.01
10.99	.00	104.36	.219	.01
11.16	.00	104.36	.219	.01
11.32	.00	104.36	.219	.01
11.49	.00	104.36	.218	.01
11.66	.00	104.36	.218	.01
11.82	.00	104.35	.218	.01
11.99	.00	104.35	.218	.01
12.15	.00	104.35	.218	.01
12.32	.00	104.35	.218	.01
12.49	.00	104.35	.218	.01
12.65	.00	104.35	.217	.01
12.82	.00	104.35	.217	.01
12.99	.00	104.35	.217	.01
13.15	.00	104.35	.217	.01
13.32	.00	104.35	.217	.01
13.49	.00	104.35	.217	.01
13.65	.00	104.35	.217	.01
13.82	.00	104.34	.216	.01
13.99	.00	104.34	.216	.01
14.15	.00	104.34	.216	.01
14.32	.00	104.34	.216	.01
14.49	.00	104.34	.216	.01
14.65	.00	104.34	.216	.01
14.82	.00	104.34	.216	.01
14.99	.00	104.34	.216	.01
15.15	.00	104.34	.215	.01
15.32	.00	104.34	.215	.01
15.48	.00	104.34	.215	.01
15.65	.00	104.34	.215	.01
15.82	.00	104.33	.215	.01
15.98	.00	104.33	.215	.01
16.15	.00	104.33	.215	.01
16.32	.00	104.33	.214	.01
16.48	.00	104.33	.214	.01
16.65	.00	104.33	.214	.01
16.82	.00	104.33	.214	.01
16.98	.00	104.33	.214	.01
17.15	.00	104.33	.214	.01
17.32	.00	104.33	.214	.01
17.48	.00	104.33	.214	.01
17.65	.00	104.33	.213	.01
17.82	.00	104.32	.213	.01
17.98	.00	104.32	.213	.01
18.15	.00	104.32	.213	.01
18.32	.00	104.32	.213	.01
18.48	.00	104.32	.213	.01

(HRS)	(CFS)	(FEET)	(AC-FT)	(CFS)
18.65	.00	104.32	.213	.01
18.81	.00	104.32	.213	.01
18.98	.00	104.32	.212	.01
19.15	.00	104.32	.212	.01
19.31	.00	104.32	.212	.01
19.48	.00	104.32	.212	.01
19.65	.00	104.32	.212	.01
19.81	.00	104.31	.212	.01

PEAK DISCHARGE = 49.744 CFS - PEAK OCCURS AT HOUR 1.53
 MAXIMUM WATER SURFACE ELEVATION = 105.112
 MAXIMUM STORAGE = .3613 AC-FT INCREMENTAL TIME= .033300HRS

PRINT HYD ID=12 CODE=50

HYDROGRAPH FROM AREA POND.12

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	3.996	.2	7.992	.0	11.988	.0
.666	.0	4.662	.2	8.658	.0	12.654	.0
1.332	.0	5.328	.2	9.324	.0	13.320	.0
1.998	11.3	5.994	.3	9.990	.0	13.986	.0
2.664	1.1	6.660	.0	10.656	.0	14.652	.0
3.330	.3	7.326	.0	11.322	.0	15.318	.0

RUNOFF VOLUME = 1.30257 INCHES = 1.5766 ACRE-Feet
 PEAK DISCHARGE RATE = 49.74 CFS AT 1.532 HOURS BASIN AREA = .0227 SQ. MI.

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 11:11:48

Appendix B

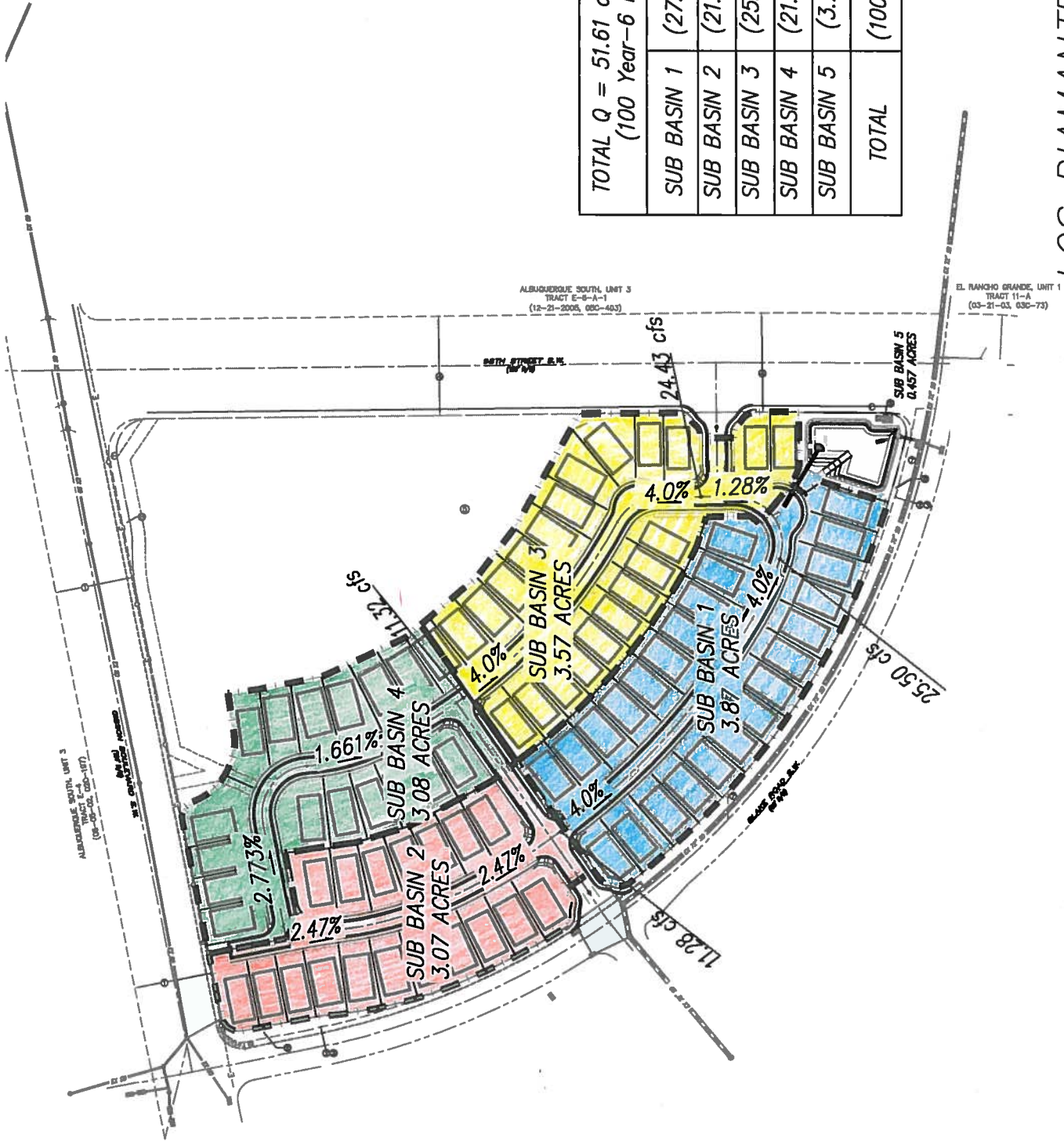
Summary of Street Capacity Calculations

Street Capacity Exhibit / Sub basin Boundaries

HEC-2 Printouts

Los Diamantes Subdivision

Summary of Street Capacity Calculations									
LOCATION	WIDTH	CROW N	STD or MTB	SLOPE %	Q cfs	DEPTH ft.	EG (ft)	INLET Q cfs	TYPE INLET
SORRAL WAY	26	Y	MTB	1.66	11.32	0.36	0.49	n/a	
DEL TIMBRE LANE	26	Y	MTB	2.47	11.28	0.33	0.52	n/a	
DEL TIMBRE LANE	28	Y	STD	4.00	25.50	0.39	0.82		
SORRAL WAY	28	Y	STD	4.00	24.43	0.39	0.80		
DEL TIMBRE LANE	28	Y	STD	1.00	25.50	0.48	0.67	25.5	Sump Inlet
SORRAL WAY	28	Y	STD	1.00	24.43	0.47	0.65	24.43	Sump Inlet



TOTAL Q = 51.61 cfs (from AHYMO results)
(100 Year-6 Hour storm event)

SUB BASIN 1	(27.55%)	14.22 cfs
SUB BASIN 2	(21.86%)	11.28 cfs
SUB BASIN 3	(25.41%)	13.11 cfs
SUB BASIN 4	(21.93%)	11.32 cfs
SUB BASIN 5	(3.25%)	1.68 cfs
TOTAL	(100.00%)	51.61 cfs

LOS DIAMANTES SUBDIVISION STREET CAPACITY EXHIBIT

```

1*****
* HEC-2 WATER SURFACE PROFILES *****
*
* Version 4.6.2; May 1991
*
* RUN DATE 19MAR15 TIME 11:24:35
*****

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X X XXXXXXXX XXXXX XXXXX
X X X X X X
X X X X X
XXXXXXXXXX XXXX XXXXX
X X X X X XXXXX
X X X X X

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THIS RUN EXECUTED 19MAR15 11:24:35
*****
HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991
*****

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T1 LOS DIAMANTES - STREET CAPACITY CALCULATIONS
T2 47' ROW 26' F-F MTB CURB AND GUTTER WITH CROWN
T3

```

J1	ICHECK	INQ	NINV	IDIR	STPT	METRIC	HVINS	Q	WSEL	FQ
0	2	0	1	.01661	0	0	0	0	0	0

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

	38	43	1	2	26	4	68	3
NC	.017	.017	.017	.1	.3			
QT	2	11.32	11.28					
X1	1	9	0	47	0	0	0	0
GR	.53	0	.33	9.87	0	11.47	.125	0
GR	.125	34.5	0	35.53	.33	37.13	.53	.345
								23.5

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XLN	KNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

```

CCHV= .100 CEHV= .300
*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
1.000 .36 .39
11.3 .0 11.3 .0

```

```

.53
.53

```

.00 .00 2.91 .00 .00 .017 .000 .000 .00 8.63
.016820 0. 0. 0. 14 7 .00 29.74 38.37

T1
T2
T3 26' FF

J1 ICHECK INQ NINV IDIR STRT METRIC HVINS Q WSEL FQ

0 3 0 1 .0247

J2 NPROF IPLOT PRFVS XSECV XSECH FN ALLDC IBW CHNIM ITRACE

2 0 0 -1 0 0 0 0 0 0 0

SECNO DEPTH CWSEL CRIWS WSELK EG HV OLOSS L-BANK ELEV
Q QLOB QCH QROB ALOB ACH AROB TWA R-BANK ELEV
TIME VLOB VCH VROB XNL XNCH XNR ELMIN SSTA
SLOPE XLOBL XLCH XLOBR ITRIAL IDC ICONT CORAR TOPWID ENDST

*PROF 2

CCHV= .100 CEHV= .300

*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

3265 DIVIDED FLOW

1.000 .33 .33 .39 .00 .52 .18 .00 .00 .53
11.3 .0 11.3 .0 .0 3.3 .0 .0 .0 .53
.00 .00 3.42 .00 .000 .017 .000 .000 .00 9.64
.024862 0. 0. 0. 0 14 7 .00 26.69 37.36

THIS RUN EXECUTED 19MAR15 11:24:35

HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUMMARY PRINTOUT

SECNO	Q	CWSEL	CRWS	VCH	TOPWID	FRCH	EG
1.000	11.32	.36	.39	2.91	29.74	1.42	.49
1.000	11.28	.33	.39	3.42	26.69	1.74	.52

SUMMARY OF ERRORS AND SPECIAL NOTES

 * U.S. ARMY CORPS OF ENGINEERS *
 * HYDROLOGIC ENGINEERING CENTER *
 * 609 SECOND STREET, SUITE D *
 * DAVIS, CALIFORNIA 95616-4687 *
 * (916) 756-1104 *
 * *****

[illegible]

THIS RUN EXECUTED 19MAR15 11:31:58

HEC-2 WATER SURFACE PROFILES

Version 4.6.2: May 1991

T1 LOS DIAMANTES - STREET CAPACITY CALCULATIONS
49' ROW 28' F-F STD CURB AND GUTTER WITH CROWN

J1	ICHECK	INO	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
----	--------	-----	------	------	------	--------	-------	---	------	----

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

[illegible]

SECCNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XTORI.	XICH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

```
CCHV=
.100 CEHV=
.300
```

*SECNO 1-000

SECRET 1:000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

2000 HOUSE NOT CARRYING AVG OF 2000-2001, 2002-2003	2000 HOUSE NOT CARRYING	AVG OF 2000-2001, 2002-2003	2000-2001	2002-2003	2000-2001	2002-2003
1.000	.39	.39	.51	.00	.82	.43
25.5	.0	25.5	.0	.0	4.8	.0
.00	.00	5.29	.00	.00	.017	.000
						.00
						.87
						10.40

.039748 0. 0. 0. 0. 11 5 .00 28.20 38.60

T1
T2
T3 28' FF

J1 ICHECK INQ 3 0 1 .040

J2 NPROF IPLOT PRFVS XSECV XSECH FN ALLDC IBW CHNIM ITRACE

2 0 -1 0 0 0 0 0 0 0 0 0

SECNO DEPTH CWSL CRIWS WSELK EG HV HL OLOSS L-BANK ELEV
Q QLOB QCH QROB QROB ALOB AROB ACH AROB TWA R-BANK ELEV
TIME VLOB VCH VROB VROB XNL XNCH XNR XNR WTN ELMIN SSTA
SLOPE XLOBL XLCH XLCH XLOBR XLOBR ITRIAL IDC IDC CORAR TOPWID ENDST

*PROF 2

CCHV= .100 CEHV= .300

*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

1.000 .39 .39 .50 .00 .80 .42 .00 .00 .87
24.4 .0 24.4 .0 .0 4.7 .0 .0 .87
.00 .00 5.20 .00 .000 .017 .000 .00 10.40
.039674 0. 0. 0. 0 0 11 5 .00 28.20 38.60

THIS RUN EXECUTED 19MAR15 11:31:58

HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUMMARY PRINTOUT

SECNO	Q	CWSEL	CRWS	VCH	TOPWID	FRCH	EG
1.000	25.50	.39	.51	5.29	28.20	2.25	.82
1.000	24.43	.39	.50	5.20	28.20	2.24	.80

SUMMARY OF ERRORS AND SPECIAL NOTES

```

1*****
* HEC-2 WATER SURFACE PROFILES
*
* Version 4.6.2; May 1991
*
* RUN DATE 20MAR15 TIME 13:35:06
*****

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*****
* U.S. ARMY CORPS OF ENGINEERS
* HYDROLOGIC ENGINEERING CENTER
* 609 SECOND STREET, SUITE D
* DAVIS, CALIFORNIA 95616-4687
* (916) 756-1104
*****

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X X XXXXXXXX XXXXX XXXXX
X X X X X X
X X X X X
XXXXXXXXXX XXXX XXXXX
X X X X X
X X X X X
X X XXXXXXXX XXXXX

```

THIS RUN EXECUTED 20MAR15 13:35:06

```

*****
HEC-2 WATER SURFACE PROFILES
Version 4.6.2; May 1991
*****

```

T1 LOS DIAMANTES - STREET CAPACITY CALCULATIONS
T2 49' ROW 28' F-F STD CURB AND GUTTER WITH CROWN
T3

J1	ICHECK	INQ	NINV	IDIR	STRT	METRIC	HVINS	Q	WSEL	FQ
0	2	0	1	.010	0	0	0	0	0	0

J3 VARIABLE CODES FOR SUMMARY PRINTOUT

	38	43	1	2	26	4	68	3
NC	.017	.017	.017	.1	.3			
QT	2	25.50	24.43					
X1	1	9	0	49	0	0	0	0
GR	.87	0	.67	10.33	0	10.5	.125	12.5
GR	.125	36.5	0	38.5	.67	38.67	.87	49

SECNO	DEPTH	CWSEL	CRWS	WSELK	EG	HV	HL	OLOSS	L-BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	R-BANK ELEV
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SILOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CCHV= .100 CEHV= .300

*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED
1.000 .48 .51
25.5 .0 25.5 .0

.19 .00 .87
.0 .0 .87

.00 .00 3.47 .00 .00 .017 .000 .000 .00 10.38
.009861 0. 0. 0. 0 11 5 28.24 38.62

T1

T2

T3 28' FF

J1 ICHECK INQ NINV IDIR STRT METRIC HVINS Q WSEL FQ

0 3 0 1 .010

J2 NPROF IPLOT PRFVS XSECV XSECH FN ALLDC IBW CHNIM ITRACE

2 0 -1 0 0 0 0 0 0 0

SECNO DEPTH CWSEL CRIWS WSELK EG HV HL L-BANK ELEV
Q QLOB QCH QROB ALOB ACH AROB VOL TWA R-BANK ELEV
TIME VLOB VCH VROB XNL XNCH XNR ICNT CORAR ELMIN SSTA
SLOPE XLOBL XLCH XLOBR ITRIAL IDC IDC TOPWID ENDST

*PROF 2

CCHV= .100 CEHV= .300

*SECNO 1.000

2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

1.000 .47 .47 .50 .00 .65 .18 .00 .00 .87
24.4 .0 24.4 .0 .0 7.1 .0 .0 .0 .87
.00 .00 3.42 .00 .00 .017 .000 .000 .00 10.38
.009895 0. 0. 0. 0 11 5 28.24 38.62

THIS RUN EXECUTED 20MAR15 13:35:06

HEC-2 WATER SURFACE PROFILES

Version 4.6.2; May 1991

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

SUMMARY PRINTOUT

SECNO	Q	CWSEL	CRWS	VCH	TOPWID	FRCH	EG
1.000	25.50	.48	.51	3.47	28.24	1.20	.67
1.000	24.43	.47	.50	3.42	28.24	1.20	.65

SUMMARY OF ERRORS AND SPECIAL NOTES

Appendix C

Pond Outfall Design Detail

Gold Dust Way Inlet Design Detail

Standard Grate Detail for Inlet

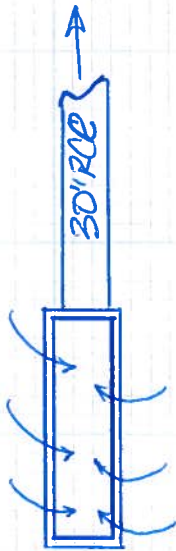


D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539

PROJECT LOS DIAMANTES
SUBJECT OUTFALL TO BLAKE SD
BY DLH DATE 3-23-15
CHECKED _____ DATE _____
SHEET _____ OF _____

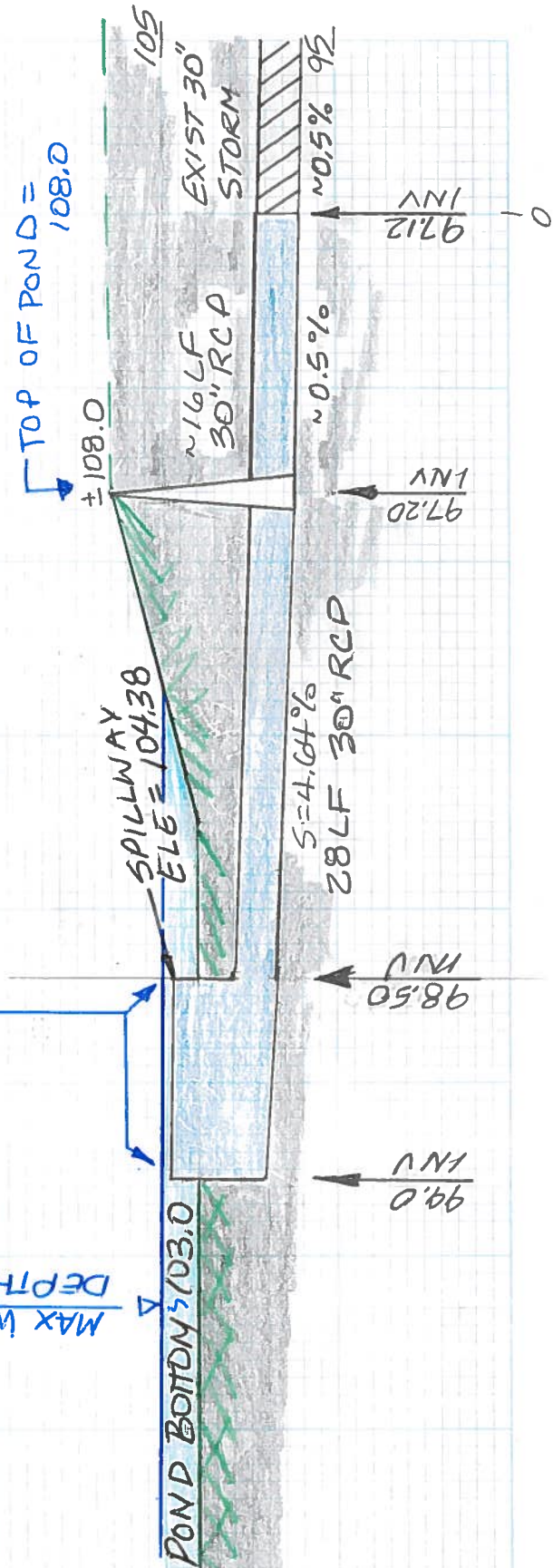
OUTFALL TO BLAKE ROAD STORM DRAIN



MAX WSEL = 105.1
DEPTH = 2.1'

OUTFALL STRUCTURE = 10.5' x 3.0' OPENING
AT SPILLWAY ELE = 104.38
(A GRATED COVER TO BE
DESIGNED AT DRC TO
KEEP KIDS OUT)

110.





D. Mark Goodwin & Associates, P.A.
Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199
(505) 828-2200 FAX 797-9539

PROJECT LDS DIAMANTES
SUBJECT INLET TO POND
BY DLH DATE 3-23-15
CHECKED _____ DATE _____
SHEET _____ OF _____

INLET GOLD DUST WAY CULDESAC TO POND

GRATE INLET DESIGN Q = 51.6 cfs.

$Q = CLH^{3/2}$ WEIR EQUATION

$51.6 \text{ cfs} = 3(L)(1.5)^{3/2} \Rightarrow L = 48.65$

USE $L = 24' \times 2 = 48'$ (BOTH SIDES)

$Q = 3(24)(1.5)^{3/2} = 25.45 \times 2 = 50.91 \text{ cfs.}$

$\frac{51.6 \text{ cfs}}{2} = 3(24)H^{3/2} \Rightarrow H = 0.504' \text{ CHECK } \checkmark$

PROP. LINE

4' SIDEWALK

TOP OF POND ~ 108.0

24'x5' GRATED INLET
N4.5'DEEP

1.5%
SLOPE

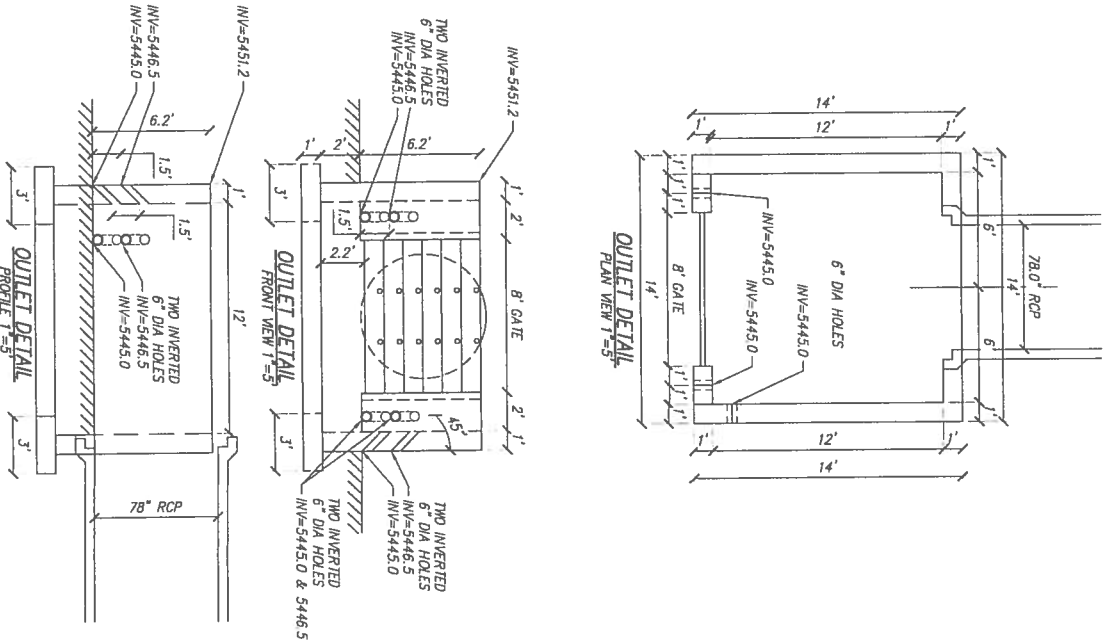
104.45
INVERT

104.50
INVERT

30" RCP STORM @ 1.5% SLOPE

GRIP LAP

POND
BOTTOM
103.0



NOTES:

1. 1/4" WELDED AND HOT DIP GALVANIZED STEEL ALL COMPONENTS.
2. WELDS ARE 3/16" FILLET.

EXTERIOR WELDS ARE 3/16" SINGLE SIDED FILLET, INTERIOR ARE DUAL SIDED.

EXTERIOR WELDS ARE
3/16" SINGLE SIDED
FILLET, INTERIOR ARE
DUAL SIDED.

7			
6			
5			
4			
3			
2			
1			
NO.	DESCRIPTION	DATE	BY
REVISIONS (OR CHANGE NOTICES)			

dmg MARK GOODWIN & ASSOCIATES, P.A.
CONSULTING ENGINEERS
P.O. BOX 80808
ALBUQUERQUE, NEW MEXICO 87199
(505) 828-2200, FAX (505) 797-9535

STORM DRAINAGE DETAILS

ENGINEER'S SEAL

PROJECT NO. A11013

JLH

SPS

DMG

1/13/12

DPW CHK:

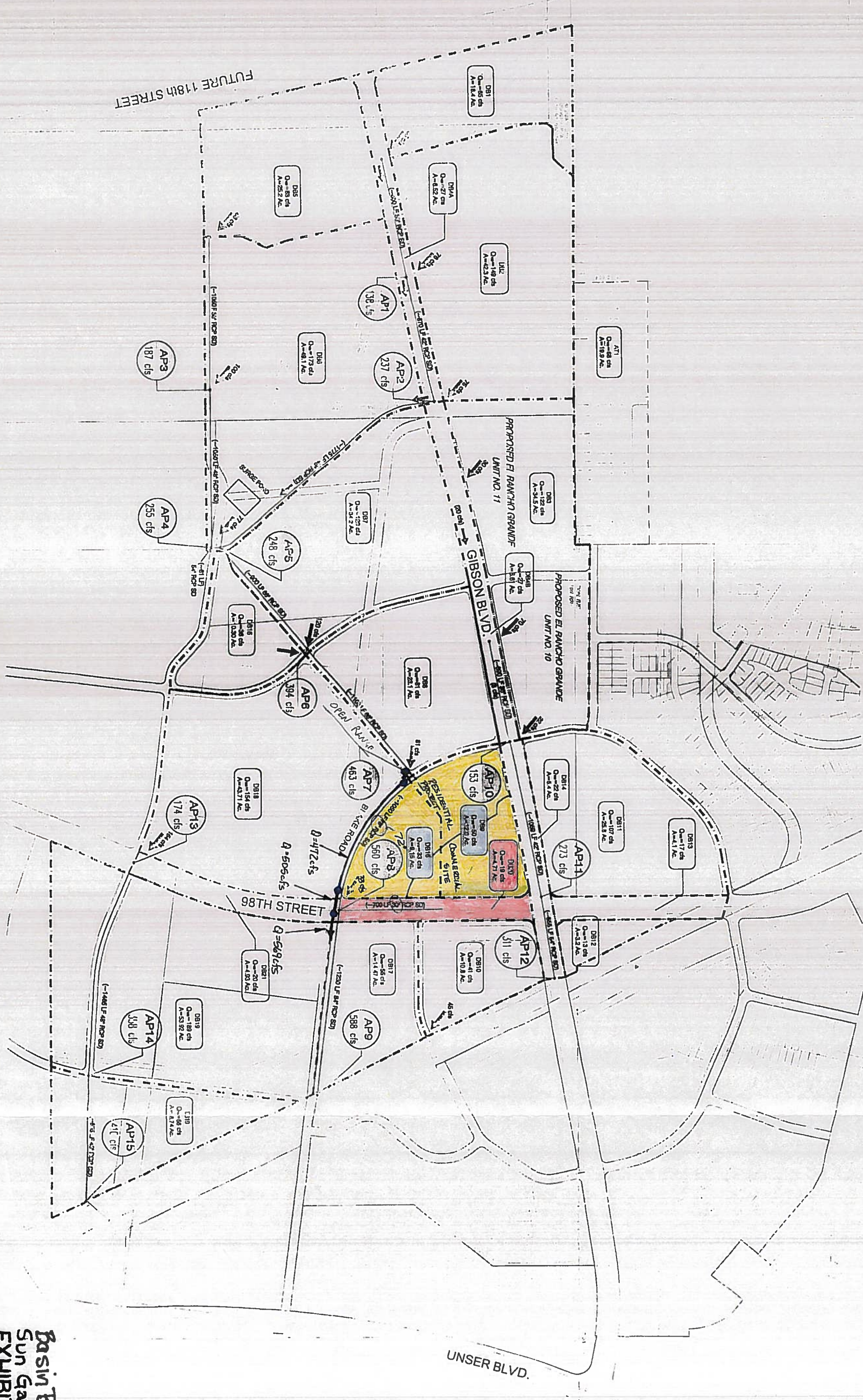
THE

Appendix D

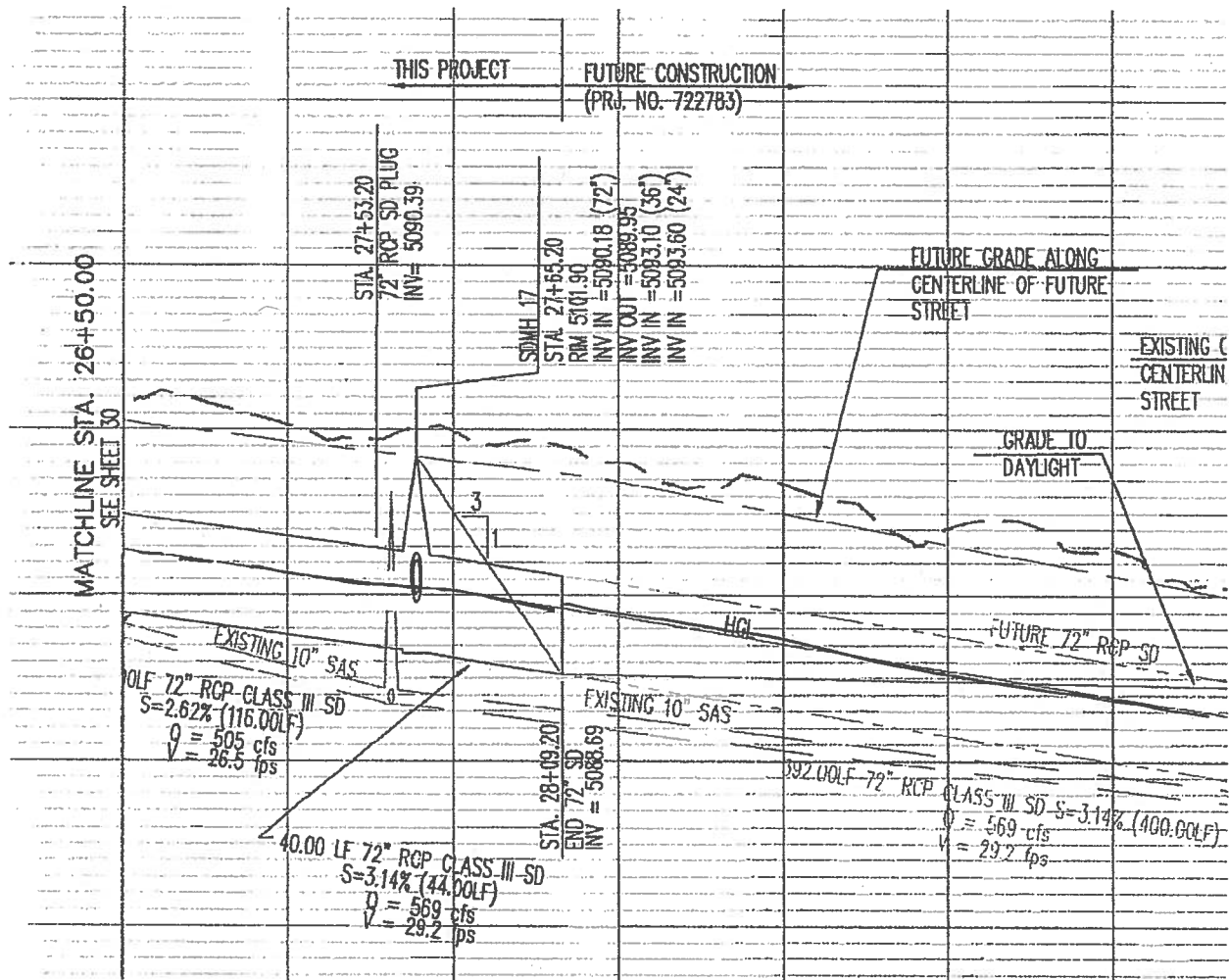
Sun Gate Estates Basin Boundary Exhibit 4

Sun Gate Estates Phase I Utility P&P sheet 30-31

Excerpts from Amole Hubbell 2013 Master Drainage Plan (AMAFCA)



Basin Boundary -
Sun Gate Estates
EXHIBIT 4



3-11-15

Based on NO9/D007 and as-builts from
 Sun Gate Estates ph 1 736782 we determined
 the down stream capacity to

472 to 505 at sth
 before sth at pul

569 at 98th st

Look like a pipe storm drain in 98th is required

Curt Echols / Darlene Hager

3-11-15

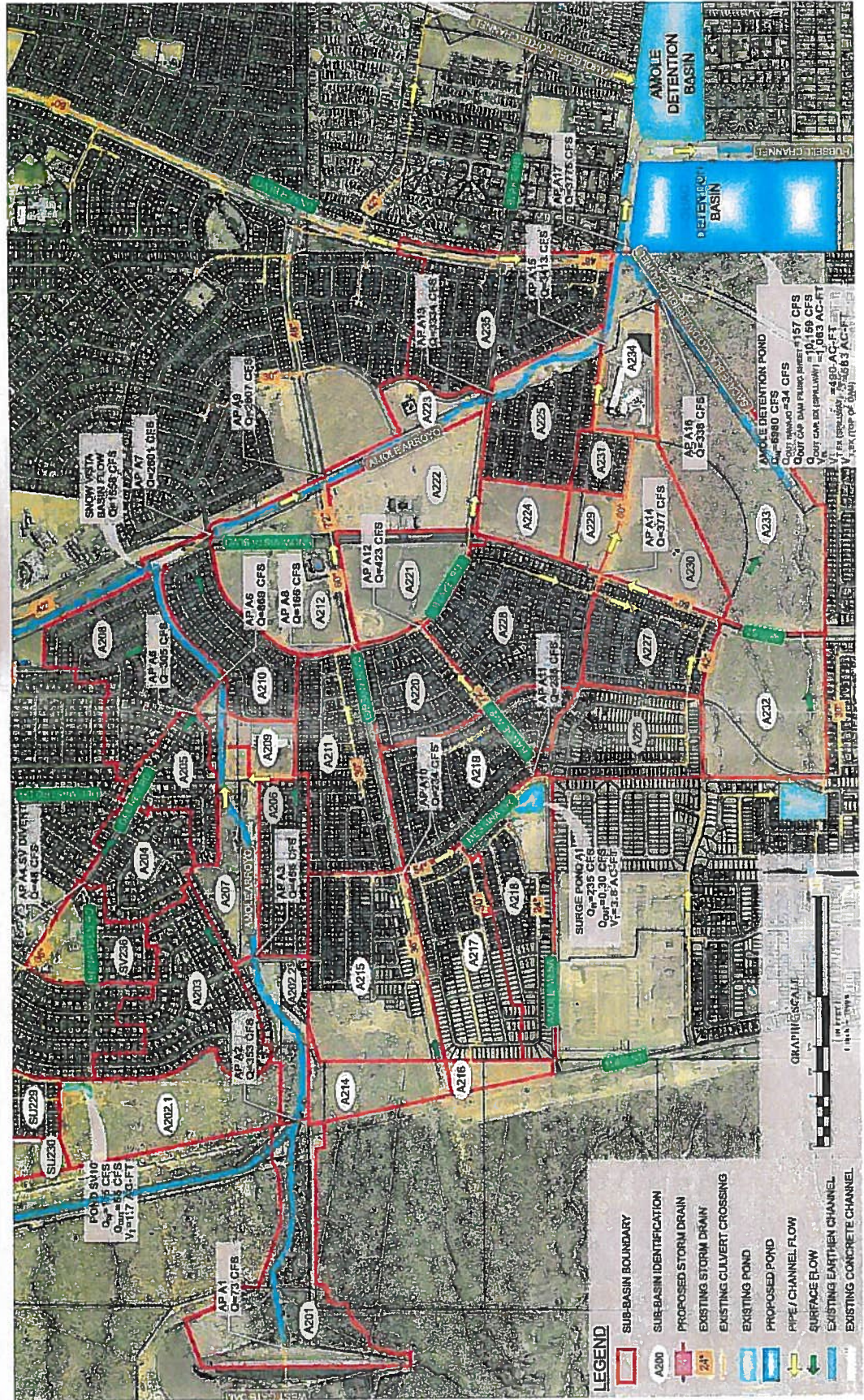


Figure 3-7: Amole Basin - Proposed Basin Map

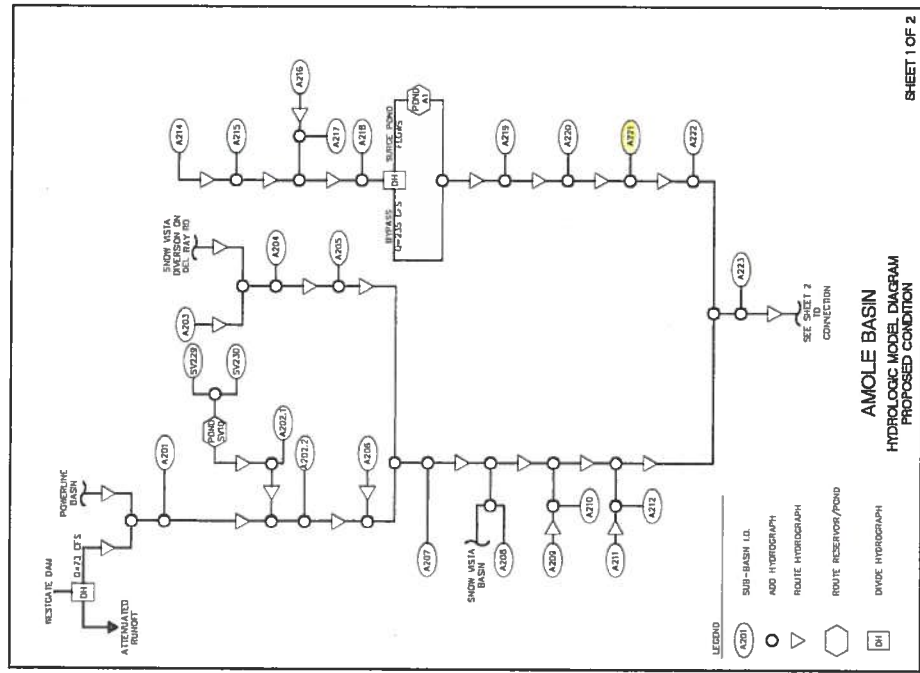


Figure 3-8: Amole Basin - Proposed Hydrologic Model Diagram

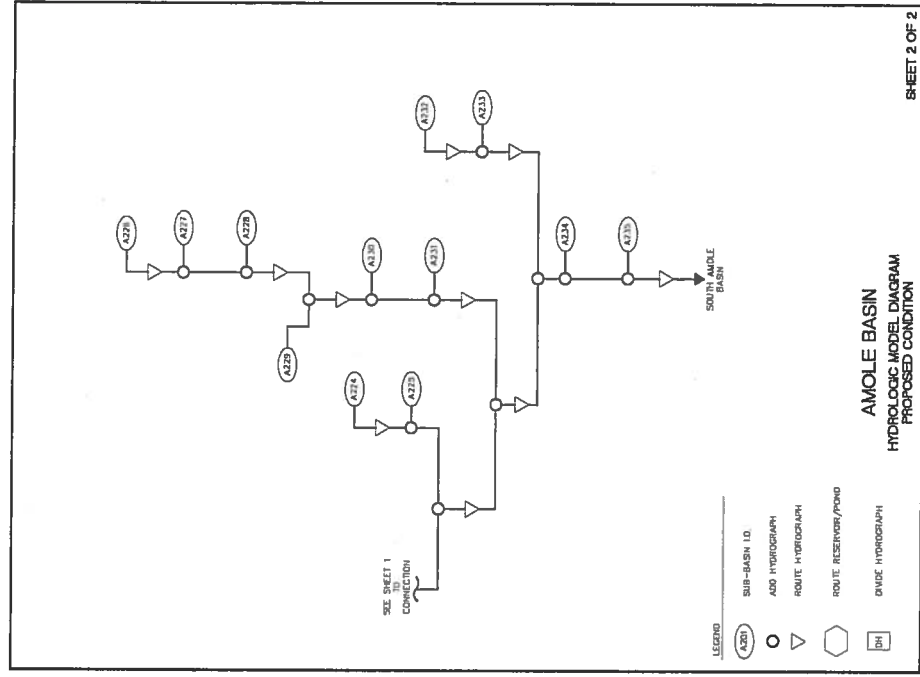


Figure 3-8 Continued: Amole Basin - Proposed Hydrologic Model Diagram

Table 3-8: Amole Basin - Proposed Sub-Basin Peak Discharge and Volumes

Sub-Basin	Area (ac)	Q _{peak} (cfs)	V _{peak} (ac-ft)
A201	46	122.09	4.373
A202.1	38	60.67	3.969
A202.2	17	53.58	1.938
A203	40	143.75	5.299
A204	22	78.99	2.908
A205	18	61.77	2.435
A206	20	74.47	2.828
A207	26	60.01	1.945
A208	43	164.52	6.375
A209	8	18.08	0.571
A210	28	111.71	4.491
A211	42	165.76	6.637
A212	40	174.78	7.656
A214	16	61.49	2.335
A215	51	191.61	7.261
A216	6	21.87	0.830
A217	37	133.19	4.615
A218	36	128.79	4.429
A219	41	159.68	6.256
A220	23	89.59	3.514
A221	27	118.26	5.098
A222	29	128.19	5.539
A223	13	57.77	2.479
A224	13	48.08	1.826
A225	30	119.33	4.782
A226	31	122.90	4.929
A227	28	104.57	4.474
A228	45	167.59	6.379
A229	9	33.43	1.269
A230	28	112.97	4.625
A231	8	30.23	1.209
A232	42	171.36	7.021
A233	73	245.20	12.206
A234	23	89.40	3.501
A235	52	194.03	7.857

3.5 Amole Del Norte

3.5.1 98th & Central Basin

Existing Conditions

The 98th & Central Basin is approximately 0.81 sq. mi. This sub-area is generally bounded on the east by 98th Street and north by I-40, while on the south by Central Avenue and the west by the Powerline Channel. A two cell pond made up of Pond NE2 and Pond NE3 receives the area's runoff. The land uses in 98th & Central Area are platted undeveloped, industrial, commercial, and low density residential. Cross-lot drainage is the sub-area's main drainage issue due to the large undeveloped land. No off-site runoff enters the sub-area north of I-40.

Pond NE1 was designed to retain Sub-Basin NE105; however, hydrologic analyses concludes this pond is close to overtopping during the 100-year, 24-hour storm event; therefore, runoff will overflow the pond onto Avalon Road. This sub-area lacks drainage conveyance infrastructure. Without the conveyance infrastructure in place, developed and undeveloped lots experience large amounts of cross-lot drainage. There is only one storm drain system in the sub-area, beginning near the intersection of Volcano Road and 98th Street and runs through Pond NE2 outletting into Pond NE3. Since the majority of the sub-area is not conveyed via a sub-surface drainage system, large amounts of runoff spill into the pond. The two-cell pond outlets into a storm drain system located in the Tierra Bayita Area, which ultimately connects to the Tierra Bayita Channel. Refer to Appendix A for hydrologic data and existing hydrologic model diagram.

Proposed Conditions

The proposed land uses in 98th & Central Area are platted mass graded, industrial, commercial, high and low dense residential, and school. Proposed conditions and development have added a sub-surface storm drainage system to collect runoff and convey it

to basin ponds to prevent excessive street flow. No off-site runoff enters the sub-area north of I-40.

The proposed conditions assume that the pond NE1 is abandoned and proposed storm drainage is allowed to collect and flow along the surface to Pond NE2 and NE3. As stated above, this surface flow shall be addressed with the residential development plans. A drainage conveyance system shall be installed to collect runoff from the area and convey it to Pond NE2 and NE3. To help alleviate flows to the Coors N-S pond, we recommend the use of an 18" orifice plate at the outlet structures of these ponds. Shallow cross-lot drainage will remain in upstream portions of this basin, although it is the intent of the plan to eliminate as much of the cross-lot drainage as possible with the proposed system. After development, the runoff from the area will be conveyed through drainage conveyance systems eliminating excess flow to the pond. Refer to Table 3-9 for hydrologic data and Figure 3-10 for proposed hydrologic model diagram.

Recommendations:

Below are the recommendations from 1999 Amole-Hubbell DMP for the basin along with the status of the recommendation.

- *Project AD1: Tower Sage Detention Basin and Outfall – COMPLETED*

Additional Recommendations for the basin based on updated basin analysis are below:

- Relocate the spillway for Pond NE2 to discharge to the south onto Central Avenue. Cost \$222,800.
- Install storm drain system proposed in 98th & Central Basin per this DMP.
- Install 18" orifice in the outlet structures of ponds NE2 and NE3.