APPENDIX 2.7

Hydrographs Computed External To SWMM By Smith Engineering Company For Previous Drainage Plans

CONTAINS :

APPENDIX - Hydrograph Computations External to SWMM

Albuquerque High School Master Plan

Data, Assumptions and Hydrograph Computations by Smith Engineering Company

1 hydrograph computed that outfalls to Odelia Road
1 hydrograph computed that outfalls to Mountain Road

Gateway Center Master Drainage Plan
(now has been built out with Tri Core Labs (west) and Embassy Suites (east)

Data and Hydrograph Computations by Smith Engineering Company

1 hydrograph computed that outfalls to Mountain Road
1 hydrograph computed that outfalls to Lomas Blvd.

Combined - Albuquerque High and Gateway Center Hydrographs to Mountain Road

Combined Hydrographs into One Hydrograph that Outfall to Mountain Road because SWMM Does not allow adding Two external hydrographs to be added at one manhole

Sawmill Master Plan Area

Data and Hydrograph Computations by Smith Engineering Company

1 hydrograph computed that outfalls to Bellamah Avenue Road

Albuquerque High School Master Plan

Data, Assumptions and Hydrograph Computations by Smith Engineering Company

1 hydrograph computed that outfalls to Odelia Road
1 hydrograph computed that outfalls to Mountain Road

CITY OF ALBUQUERQUE

* Controls

September 3, 2008

Jeff Mortensen, PE
High Mesa Consulting Group
6010-B Midway Park Blvd. NE
Albuquerque, NM 87109

Re: Albuquerque High School Master Drainage Plan
Engineer's Stamp dated 7-27-07 (J15/D01)

Dear Mr. Mortensen,

Based upon the information provided in your submittal dated 8-1-08, the above referenced master plan is approved. Any project within basins identified as needing improved drainage facilities (i.e. up-sized storm drain, ponds, etc.) for that basin must include appropriate plans for the improvements needed as well as the site specific grading plans that will support the gym extension, new drop-off area or PAC storage addition.

If you have any questions, you can contact me at 924-3986.

Sincerely,

Bradley L. Bingham

Bradley L. Bingham, PE
Principal Engineer, Planning Dept.
Development and Building Services

C: file

STAPLED TO
7-27-2008 M. D. PLAN UPDATE
PLANS
C-101 THRU C-111

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

BR 8-H2
COA 33027

TABLE AH 2
ALBUQUERQUE HIGH SCHOOL

Odelia Road 100-YR. Hydrograph

Feb. 18. 2011

Purpose - Compute Hydrographs and Add Hydrographs based on Table AH 1 Data and Calculations
Note - Use SWMM subcatchment hydrographs 1st non-zero hydrograph Q value as time of first ordinate on these hydrographs

Odelia Rd. Hydrograph from Alb. High School

Time	Time	Time	**Total Hydrograph**
minutes	hours	hours	cfs
0	0.00		0.0
3	0.05		3.3
6	0.10		13.4
9	0.15		23.4
12	**0.20**		33.5
15	0.25		**43.5**
18	0.30		40.6
21	0.35		37.7
24	0.40		34.8
27	0.45		31.9
30	0.50		29.0
33	0.55		26.1
36	0.60		23.3
39	0.65		20.4
42	0.70		17.5
45	0.75		14.6
48	0.80		11.7
51	0.85		8.8
54	0.90		6.0
57	0.95		3.3
60	1.00		3.3
63	1.05		3.3
66	1.10		3.3
69	1.15		3.3
72	1.20		3.3
75	1.25		3.3
78	1.30		3.3
81	1.35		3.3
84	1.40		3.3
87	1.45		3.3
90	1.50		3.3
93	1.55		3.3
96	1.60		3.3
99	1.65		3.3
102	1.70		3.3

105	1.75	3.3
108	1.80	3.3
111	1.85	3.3
114	1.90	3.3
117	1.95	3.3
120	2.00	3.3
123	2.05	3.3
126	2.10	3.3
129	2.15	3.3
132	2.20	3.3
135	2.25	3.3
138	2.30	3.3
141	2.35	3.3
144	2.40	3.3
147	2.45	3.3
150	2.50	3.3
153	2.55	3.3
156	2.60	3.3
159	2.65	3.3
162	2.70	3.3
165	2.75	3.3
168	2.80	3.3
171	2.85	3.3
174	2.90	3.3
177	2.95	3.3
180	3.00	3.3
183	3.05	3.3
186	3.10	3.3
189	3.15	3.3
192	3.20	3.3
195	3.25	3.3
198	3.30	3.3
201	3.35	3.3
204	3.40	3.3
207	3.45	3.3
210	3.50	3.3
213	3.55	3.3
216	3.60	3.3
219	3.65	3.3
222	3.70	0.0

BR 8-H1
COA 7963.05A

TABLE AH 2
ALBUQUERQUE HIGH SCHOOL

Mountain Road 100-YR. Hydrograph

Feb. 18. 2011

Purpose - Compute Hydrographs and Add Hydrographs based on Table AH 1 Data and Calculations
Note - Use SWMM subcatchment hydrographs 1st non-zero hydrograph Q value as time of first ordinate on these hydrographs

Mountain Rd. Hydrograph from Alb. High School

Time	Time	Time	**Total Hydrograph**
minutes	hours	hours	cfs
0	0.00		0.0
3	0.05		10.4
6	0.10		20.7
9	0.15		31.1
12	**0.20**		**41.4**
15	0.25		38.3
18	0.30		35.2
21	0.35		32.0
24	0.40		28.9
27	0.45		25.8
30	0.50		22.7
33	0.55		19.5
36	0.60		16.4
39	0.65		13.3
42	0.70		10.2
45	0.75		7.0
48	0.80		3.9
51	0.85		0.8
54	0.90		0.0

TABLE AH 1

ALBUQUERQUE HIGH SCHOOL
100-YR. Hydrograph Data and Computations

Purpose - Use Hydrologic Information as presented in
"Master Drianage Plan Update for Albuquerque High School, Alb. NM
Prepared by High Mesa Consulting Group, July 27, 2008

Goal - Develop only terminal hydrographs from site for input into SWMM, not all internal sub-basin hydrographs

Plan of Computation - Use hydrologic results from referenced plan to synthesize hydrographs for outfall points

ODELIA ROAD NE -

Outflow Point 1 - Odelia Road- Phase 2 Basins A1-A, A1-B, A1-C AND A1-D drain into the lower detention pond that discharges to Odelia Road.
Outflow Point 2 - Odelia Road- Phase 2 Basin A2-A
Outflow Point 3 - Odelia Road- Phase 2 Basin A3
Plan - Develop only 1 hydrograph to Odelia Rd. from all three outflow points

MOUNTAIN ROAD NE-

Outflow Point 4 - Mountain Road- Phase 2 Basin B1

Hydrologic Summary of Each Outflow Point

Outflow Point	Comment	Sub-Basin (s)	To Lower Detention Pond	Area	Area	Area	100-yr. Peak Discharge	100-yr. Runoff Volume	100-yr. Runoff Volume	Hydrograph Assumption Applied to Compute Hydrograph for SWMM
				sq ft	acres	sq mi	cfs	cu ft	ac-ft	
1	4- " A1" -sub-basins drain into lower detention pond, then to Odelia Rd.	A1-A	yes	51500	1.1823	0.0018	-----	-----	-----	
	---	A1-B	yes	71995	1.6528	0.0026	-----	-----	-----	
	---	A1-C	yes	25275	0.5802	0.0009	-----	-----	-----	
	---	A1-D	yes	59000	1.3545	0.0021	-----	-----	-----	
	---	Totals to Lower Det. Pond		207770	4.7697	0.0075	-----	-----	-----	
1	---	**Total Dischage Hydrograph from Lower Detention Pond**					**3.3**	**42453**	**0.9746**	Assume 3.3 cfs as a constant outflow rate until entire inflow hydrograph volume drains out, therefore compute total outflow hydrograph duration (SEE CALC 1)

Hydrologic Summary of Each Outflow Point

Outflow Point	Comment	Sub-Basin (s)	To Lower Detention Pond	Area sq ft	Area acres	Area sq mi	100-yr. Peak Discharge cfs	100-yr. Runoff Volume cu ft	100-yr Runoff Volume ac-ft	Hydrograph Assumption Applied to Compute Hydrograph for SWMM
2	Free Dischage to Odelia Rd.	A2-A	-----	372490	8.5512	0.0134	38.6	62420	1.4330	Compute as a triangular hydrograph (SEE CALC 2)
3	Free Dischage to Odelia Rd.	A3	-----	17570	0.4034	0.0006	1.6	2370	0.0544	Compute as a triangular hydrograph (SEE CALC 3)
4	Free Discharge to Mountain Rd.	B1	-----	449200	10.3122	0.0161	41.4	64280	1.4757	Compute as a triangular hydrograph (SEE CALC 4)

CALC 1 - Total Outflow hydrograph time (sec) =

volume (cu ft) / rate (cu ft / sec) =

42453		Time (sec)	Time (min)	**Time (hours)**
3.3	=	12864.5	214	**3.57**

See Table AH 2 for this hydrograph

CALC's 2, 3, and 4 - Use Peak Discharge and Volume To Compute a The Total Time Base (Tb) of a Triangular Hydrograph,

Volume under a triangular hydrograph - V (cu ft) = 0.5 * Tb * Qp (cfs) = (1/2 b*h)

Therefore Tb = V (cu ft) * 2 / Qp (cfs)

Outflow Point	Time Base (Tb) of Triangular Hydrograph sec	Time Base (Tb) of Triangular Hydrograph min	Time Base (Tb) of Triangular Hydrograph hours	100-yr. Peak Discharge cfs	100-yr. Runoff Volume cu ft	
2	3234	54	0.90	38.6	62420	See next set of Calcs
3	2963	49	0.82	1.6	2370	
4	3105	52	0.86	41.4	64280	

CALC's 2, 3, and 4 - Compute Slopes of Triangular Hydrograph Rising and falling limbs based on Assume tp = 12 minutes and Qp

Rising Limb hydrograph slope = (Qp - 0) / (12 - 0) Therefore slope = Qp/12 (12 minutes , so compute Tb in minutes)

Falling Limb hydrograph slope = (Qp - 0) / (12-Tb) Therfore slope = Qp / (12-Tb) (12 minutes, so compute Tb in minutes)

Outflow Point	Rising Limb Slope	Falling Limb Slope	
2	3.22	-0.921	See Table AH 2 for this hydrograph
3	0.13	-0.043	See Table AH 2 for this hydrograph
4	3.45	-1.041	See Table AH 2 for this hydrograph

TABLE AH 2
ALBUQUERQUE HIGH SCHOOL
100-YR. Hydrograph Computations

Purpose - Compute Hydrographs and Add Hydrographs based on Table AH 1 Data and Calculations

Note - Use SWMM subcatchment hydrographs 1st non-zero hydrograph Q value as time of first ordinate on these hydrographs

			Odelia Rd Hydrograph Q Values				Mountain Rd. Hydrograph Q Values		Odelia Rd Hydrograph V Values				Mountain Rd. Hydrograph V Values
Time	Time	Time	Outflow 1	Outflow 2	Outflow 3	**Total Hydrograph 1+2+3**	Outflow 4		Outflow 1	Outflow 2	Outflow 3	**Total Hydrograph 1+2+3**	Outflow 4
minutes	hours	hours	cfs	cfs	cfs	cfs	cfs		cu ft	cu ft	cu ft	cu ft	cu ft
0													
0	0.00		3.3	0.0	0.0	3.3	0.0		0	0	0	0.0	0
3	0.05		3.3	9.7	0.4	13.4	10.4		594	1738.8	70.2	2403.0	1863
6	0.10		3.3	19.3	0.8	23.4	20.7		594	3477.6	140.4	4212.0	3726
9	0.15		3.3	29.0	1.2	33.5	31.1		594	5216.4	210.6	6021.0	5589
12	**0.20**		**3.3**	**38.6**	**1.6**	**43.5**	**41.4**		594	6955.2	280.8	**7830.0**	7452
15	0.25		3.3	35.8	1.5	40.6	38.3		594	6450.66	264.78	7309.4	6889.86
18	0.30		3.3	33.1	1.3	37.7	35.2		594	5953.32	241.56	6788.9	6327.72
21	0.35		3.3	30.3	1.2	34.8	32.0		594	5455.98	218.34	6268.3	5765.58
24	0.40		3.3	27.5	1.1	31.9	28.9		594	4958.64	195.12	5747.8	5203.44
27	0.45		3.3	24.8	1.0	29.0	25.8		594	4461.3	171.9	5227.2	4641.3
30	0.50		3.3	22.0	0.8	26.1	22.7		594	3963.96	148.68	4706.6	4079.16
33	0.55		3.3	19.3	0.7	23.3	19.5		594	3466.62	125.46	4186.1	3517.02
36	0.60		3.3	16.5	0.6	20.4	16.4		594	2969.28	102.24	3665.5	2954.88
39	0.65		3.3	13.7	0.4	17.5	13.3		594	2471.94	79.02	3145.0	2392.74
42	0.70		3.3	11.0	0.3	14.6	10.2		594	1974.6	55.8	2624.4	1830.6
45	0.75		3.3	8.2	0.2	11.7	7.0		594	1477.26	32.58	2103.8	1268.46
48	0.80		3.3	5.4	0.1	8.8	3.9		594	979.92	9.36	1583.3	706.32
51	0.85		3.3	2.7	0.0	6.0	0.8		594	482.58	0	1076.6	144.18
54	0.90		3.3	0.0		3.3	0.0		594	0		594.0	0
57	0.95		3.3			3.3			594			594.0	
60	1.00		3.3			3.3			594			594.0	
63	1.05		3.3			3.3			594			594.0	
66	1.10		3.3			3.3			594			594.0	
69	1.15		3.3			3.3			594			594.0	
72	1.20		3.3			3.3			594			594.0	
75	1.25		3.3			3.3			594			594.0	

TABLE AH 2
ALBUQUERQUE HIGH SCHOOL
100-YR. Hydrograph Computations

Purpose - Compute Hydrographs and Add Hydrographs based on Table AH 1 Data and Calculations

Note - Use SWMM subcatchment hydrographs 1st non-zero hydrograph Q value as time of first ordinate on these hydrographs

			Odelia Rd Hydrograph Q Values				Mountain Rd. Hydrograph Q Values		Odelia Rd Hydrograph V Values				Mountain Rd. Hydrograph V Values
Time	Time	Time	Outflow 1	Outflow 2	Outflow 3	**Total Hydrograph 1+2+3**	Outflow 4		Outflow 1	Outflow 2	Outflow 3	**Total Hydrograph 1+2+3**	Outflow 4
minutes	hours	hours	cfs	cfs	cfs	cfs	cfs		cu ft	cu ft	cu ft	cu ft	cu ft
78	1.30		3.3			3.3			594			594.0	
81	1.35		3.3			3.3			594			594.0	
84	1.40		3.3			3.3			594			594.0	
87	1.45		3.3			3.3			594			594.0	
90	1.50		3.3			3.3			594			594.0	
93	1.55		3.3			3.3			594			594.0	
96	1.60		3.3			3.3			594			594.0	
99	1.65		3.3			3.3			594			594.0	
102	1.70		3.3			3.3			594			594.0	
105	1.75		3.3			3.3			594			594.0	
108	1.80		3.3			3.3			594			594.0	
111	1.85		3.3			3.3			594			594.0	
114	1.90		3.3			3.3			594			594.0	
117	1.95		3.3			3.3			594			594.0	
120	2.00		3.3			3.3			594			594.0	
123	2.05		3.3			3.3			594			594.0	
126	2.10		3.3			3.3			594			594.0	
129	2.15		3.3			3.3			594			594.0	
132	2.20		3.3			3.3			594			594.0	
135	2.25		3.3			3.3			594			594.0	
138	2.30		3.3			3.3			594			594.0	
141	2.35		3.3			3.3			594			594.0	
144	2.40		3.3			3.3			594			594.0	
147	2.45		3.3			3.3			594			594.0	
150	2.50		3.3			3.3			594			594.0	
153	2.55		3.3			3.3			594			594.0	
156	2.60		3.3			3.3			594			594.0	

TABLE AH 2
ALBUQUERQUE HIGH SCHOOL
100-YR. Hydrograph Computations

Purpose - Compute Hydrographs and Add Hydrographs based on Table AH 1 Data and Calculations

Note - Use SWMM subcatchment hydrographs 1st non-zero hydrograph Q value as time of first ordinate on these hydrographs

			Odelia Rd Hydrograph Q Values				Mountain Rd. Hydrograph Q Values		Odelia Rd Hydrograph V Values				Mountain Rd. Hydrograph V Values
Time	Time	Time	Outflow 1	Outflow 2	Outflow 3	**Total Hydrograph 1+2+3**	Outflow 4		Outflow 1	Outflow 2	Outflow 3	**Total Hydrograph 1+2+3**	Outflow 4
minutes	hours	hours	cfs	cfs	cfs	cfs	cfs		cu ft	cu ft	cu ft	cu ft	cu ft
159	2.65		3.3			3.3			594			594.0	
162	2.70		3.3			3.3			594			594.0	
165	2.75		3.3			3.3			594			594.0	
168	2.80		3.3			3.3			594			594.0	
171	2.85		3.3			3.3			594			594.0	
174	2.90		3.3			3.3			594			594.0	
177	2.95		3.3			3.3			594			594.0	
180	3.00		3.3			3.3			594			594.0	
183	3.05		3.3			3.3			594			594.0	
186	3.10		3.3			3.3			594			594.0	
189	3.15		3.3			3.3			594			594.0	
192	3.20		3.3			3.3			594			594.0	
195	3.25		3.3			3.3			594			594.0	
198	3.30		3.3			3.3			594			594.0	
201	3.35		3.3			3.3			594			594.0	
204	3.40		3.3			3.3			594			594.0	
207	3.45		3.3			3.3			594			594.0	
210	3.50		3.3			3.3			594			594.0	
213	3.55		3.3			3.3			594			594.0	
216	3.60		3.3			3.3			594			594.0	
219	3.65		0			0.0			0			0.0	
									42,768	62,454	2,347	107,569	64,351

Conclusion - These computed volumes are very close to volumes shown on Table AH 1 so use these computed hydrographs for SWMM

PROJECT ALB. H. School SHEET NO. ___ OF ___

SUBJECT HYDROGRAPHS TO ODELIA PROJECT NO. 1-14-11

BY ___ DATE 1/1 CHECKED BY PSO DATE 1/1

SEE Page C-110 (sheet 10 of 11)

LOWER Pond Discharge Hyd. to Odelia

cu ft/sec + sec = cu ft

BASINS
A-1-A
A-1-B
A-1-C
A-1-D

T min = 42,493 cu ft / 3.3 cu ft/sec

T min = 12,865 sec

T min = 214 min

T hr = 3.6 hours

A
51,500 A-1-A
1,995 A-1-B
25275 A-1-C
59,000 A-1-D

Qp = 3.3 cfs, Tot. Run. Volume = 42,453 cu ft

ASSUME A FLAT HYD. FOR 3.6 hours at Q = 3.3 cfs

BASIN B1 discharge straight to Manton Rd.

Qp = 41.4 cfs V = 64,280 cu ft

A = 449,200 sq ft

Smith Engineering Company
2201 San Pedro NE Bldg. #4, Suite 200 Albuquerque, New Mexico 87110 505/884-0700 Fax 505/884-2376

PROJECT _____ SHEET NO. _____ OF _____

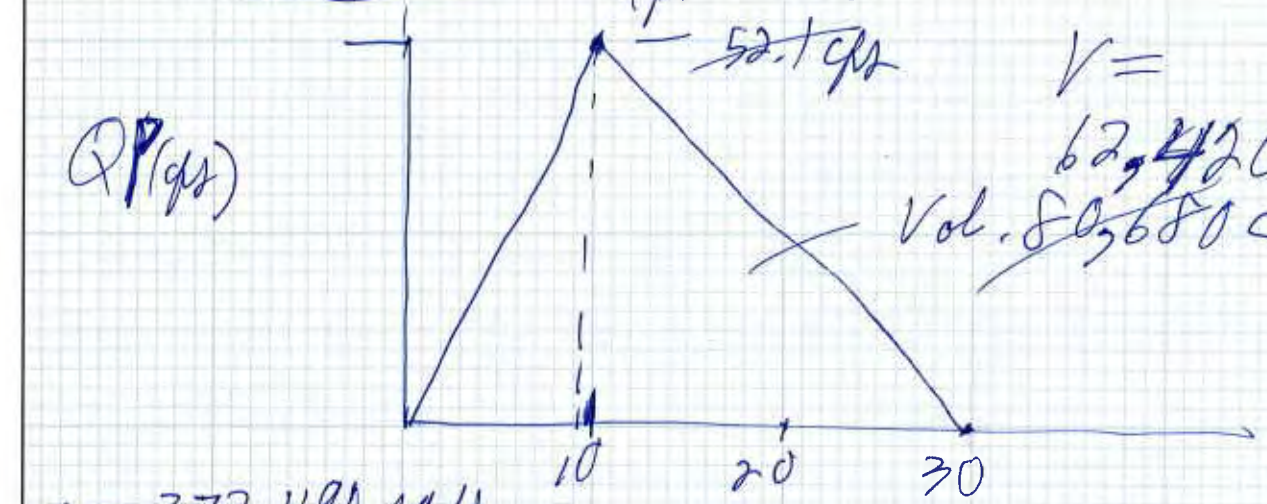
SUBJECT _____ PROJECT NO. _____

BY _____ DATE / / CHECKED BY _____ DATE / /

BASIN A2-A

$Q_p = 38.6$ ~~52.1 cfs~~

$V =$ 62,420 Vol. ~~80,680~~ cu ft.



$A = 372,490$ sq ft

~~$A = 17,570$ sq ft~~

$V = A = \frac{1}{2} Q_p T_b$

$= (0.5)(52.1 \frac{ft^3}{sec})(30 min)(60 \frac{sec}{min})$

$V = \frac{V(2)}{52.1 ft^3/sec} = \frac{80,680 ft^3 (2)}{52.1 ft^3/sec}$

$T_b = 3,097$ sec $= 51.6$ min.

BASIN A3 $Q_p = 1.6$ cfs

$V_{100} = 370$ cfs

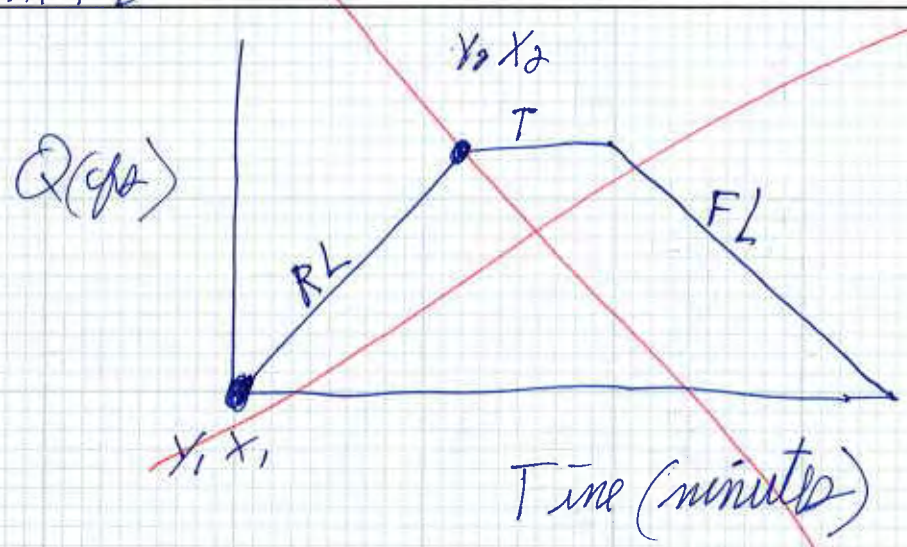
$A = 17,570$ sq ft

PROJECT _____ SHEET NO. _____ OF _____

SUBJECT _____ PROJECT NO. _____

BY _____ DATE / / CHECKED BY _____ DATE / /

$y = mx + b$



SLOPE Rising Limb $= \frac{Y_2 - Y_1}{X_2 - X_1} = \frac{2.8 - 0}{14 - 0} = 0.20$

FOR EACH 3 min. compute Q or y $\quad m = 0.20 = \text{SLOPE}$

SINCE $b = 0$ (y intercept) THEN $y = mx$ (m = SLOPE, x = Time)

$Q = 0.2(T)$

TIME	Q
0	0
3	0.6

Smith Engineering Company
2201 San Pedro NE Bldg. #4, Suite 200 Albuquerque, New Mexico 87110 505/884-0700 Fax 505/884-2376

Gateway Center Master Drainage Plan

(now has been built out with Tri Core Labs (west) and Embassy Suites (east)

Data and Hydrograph Computations by Smith Engineering Company

1 hydrograph computed that outfalls to Mountain Road
1 hydrograph computed that outfalls to Lomas Blvd.

DRAINAGE MANAGEMENT PLAN FOR THE GATEWAY CENTER

BOHANNAN-HUSTON, INC.
Courtyard One
7500 JEFFERSON NE
Albuquerque
NM 87109-4335
voice 505.823.1000
fax 505.821.0892

COPIES OF SELECTED PAGES THAT ILLUSTRATE MINOR DISCREPANCIES IN REPORTED TOTAL PEAK DISCHARGES TO MOUNTAIN RD AND LOMAS BLVD.

THEREFORE - ASSUME THE 100-YR. PEAK DISCHARGES AND RUNOFF VOLUMES AS PRESENTED IN AHYMO SUMMARY TABLE (PAGE 7 OF 7). THIS ASSUMPTION AGREED TO BY AMAFCA STAFF ON 4-11-11

REVISED JANUARY 24, 2000

PREPARED FOR:

SANDIA FOUNDATION
TWO WOODWARD CENTER
700 LOMAS BLVD. NE, SUITE 204
ALBUQUERQUE, NM 87102

40 YEARS

1 OF 7

Table 3

PEAK DISCHARGE SUMMARY

- Total Historic Peak Discharge: 53.4 cfs
- Total Developed Peak Discharge to Residential Area (see Tab;e 2): 20.57 cfs
- Total Allowable Discharge from Ponds and Street:
  53.40 cfs - Historic Peak Discharge
  - 20.57 cfs - Developed Peak Discharge to Residential
  32.83 cfs - Allowable Remaining
- Discharge to Mountain Road
  - Pond 3:
    Basin "A-1": Q_{100}(Hist) = 4.42 cfs Q_{100}(Dev) = 10.20 cfs
    Basin "A-2": Q_{100}(Hist) = 0.41 cfs Q_{100}(Dev) = 0.41 cfs
    Basin "D-1": Q_{100}(Hist) = 3.56 cfs Q_{100}(Dev) = 7.94 cfs
    8.39 cfs 18.55 cfs
    * Max. Release from Pond 3: 8.39/2 = 4.20 cfs
    Actual Release = 2.48 cfs
  - Underground Detention #4:
    Basin "B-1": Q_{100}(Hist) = 9.15 cfs Q_{100}(Dev) = 20.77 cfs
    Basin "B-3": Q_{100}(Hist) = 0.27 cfs Q_{100}(Dev) = 0.27 cfs
    9.42 cfs 21.04 cfs
    * Max. Release from Underground Det #4: 9.38/2 = 4.69 cfs
    Actual Release = 3.42 cfs
  - Basin "A-3": Q_{100}(Dev) = 0.46 cfs
  - Basin "A-4": Q_{100}(Dev) = 3.77 cfs
  - Basin "A-5": Q_{100}(Dev) = 0.98 cfs
  - Basin "D-2": Q_{100}(Dev) = 0.35 cfs
  - Basin "D-3": Q_{100}(Dev) = 0.22 cfs
  - Basin "D-4": Q_{100}(Dev) = 0.21 cfs

  Sub-Total Actual Release 5.99 cfs
  Sub-Total (To Mountain Road) *11.89 cfs*
- Discharge to Lomas Boulevard
  - Pond 2:
    Basin "C-5": Q_{100}(Hist) = 8.33 cfs Q_{100}(Dev) = 13.81 cfs
    * Max. Release from Pond 2: 8.36/2 = 4.18 cfs
    Actual Release = 1.45 cfs
  - Underground Detention #4A:
    Basin "B-2": Q_{100}(Hist) = 4.18 cfs Q_{100}(Dev) = 9.49 cfs
    * Max. Release from Underground Det #4A: 4.18/2 = 2.09 cfs
    Actual Release = 1.45 cfs
  - Pond 5:
    Basin "C-1": Q_{100}(Hist) = 3.49 cfs Q_{100}(Dev) = 7.59 cfs
    * Max. Release from Pond 5: 3.51/2 = 1.76 cfs
    Actual Release = 1.19 cfs
  - Basin "C-2": Q_{100}(Dev) = 0.69 cfs
  - Basin "C-3": Q_{100}(Dev) = 3.16 cfs
  - Basin "C-4": Q_{100}(Dev) = 4.00 cfs
  - Basin "I-2": Q_{100}(Dev) = 1.11 cfs
  - Basin "I-1": Q_{100}(Dev) = 3.66 cfs

  Sub-Total (To Lomas Boulevard) *16.71 cfs*

  TOTAL **28.60 cfs**

2 OF 7

D. Runoff to Lomas Boulevard and Mountain Road

Based on the restriction of limiting the developed site (non-street) flow rates to 50% of historic levels, detention ponds have been provided to achieve discharge reductions for each graded site draining to Lomas Boulevard or Mountain Road. The pond volumes provided for each basin are shown in Table 4. Runoff will be discharged from these ponds directly into the existing storm drainage systems in Lomas Boulevard and Mountain Road. A proposed storm drain system will be designed to collect the proposed controlled discharge from the ponds, as well as runoff from portions of proposed Woodward Place. Storm drains will then convey the flow from the proposed inlets to existing storm drains in Lomas Boulevard and Mountain Road.

Until the site is developed, there will be significantly less runoff produced. Therefore, the underground ponds will not be built until development begins. The surface ponds are sufficient to carry the undeveloped flow from the site. The interim flow to mountain road will be 7.29 cfs. This flow is less than the 11.89 cfs released after development. The interim flow to Lomas Boulevard is 15.16 cfs. This is less than the 16.71 cfs released after development. The AHYMO run shows that the ponds have sufficient volume to carry the interim flow.

Also as a part of this plan, the north leg of the High Street/Lomas Boulevard intersection will be reconstructed to provide an 8" water block on High Street to prevent runoff on Lomas Boulevard from entering High Street.

3 OF 7

TABLE 4

POND VOLUMES SUMMARY

POND	VOLUME (AC. FT.)	PEAK RELEASE (CFS)
2	0.500	1.45
3	0.971	5.90
4	0.759	3.42
4A	0.367	1.45
5	0.366	1.19

V. EROSION CONTROL PLAN

The contractor shall ensure that no soil erodes from the site into public right-of-way or adjacent property. The western boundary of this site slopes down at 3:1. In order to prevent erosion, the slope will be graded to include swales every 10' down the slope. These swales will contain 1.7 times the 100-year flow for each portion of the slope. Therefore, the water will be stopped before it can erode the slope. In addition, the slope shall be seeded with native grasses to control cutting of the swales. See the Grading plan for the temporary erosion control detail and the rough grading of the slope.

VI. CONCLUSION

This plan presents a grading/drainage plan for the "Gateway Center." For each developed site, excluding the street, the flow rate will be reduced to 50% of the historic site runoff and the proposed street will be allowed free discharge. Overall runoff from the site will be the same as historic as a result of on-site detention storage provided.

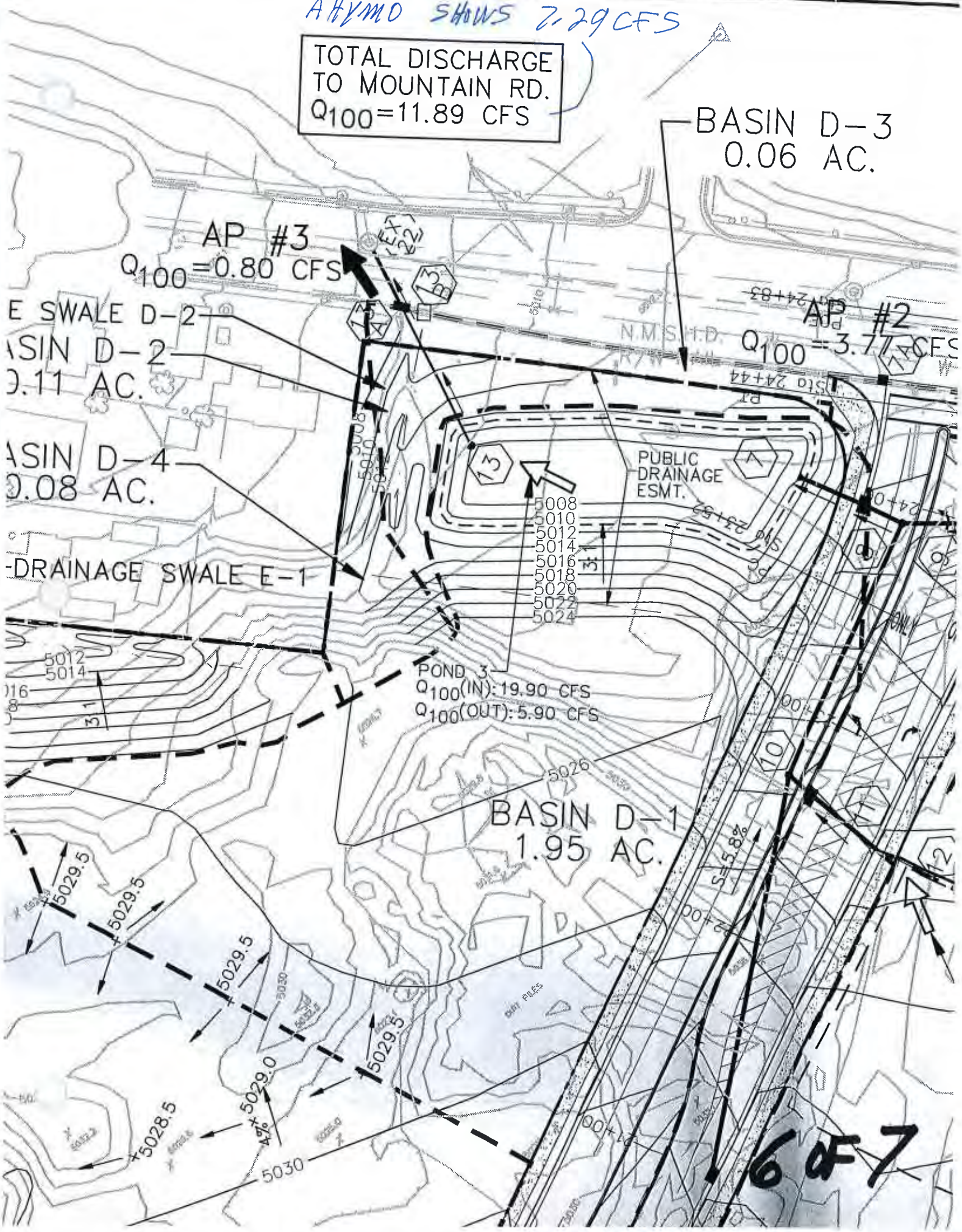
The developed sites draining toward the neighboring residential area, west of the site will have a total discharge of less than 50% of the 100-year storm historic runoff and the proposed street will have free discharge. By controlling the discharge from the developed sites, the overall runoff will be slightly less than historic.

END OF TEXT

TAB. 3 PAGE 9

STATES 16.71 CFS

AHYMO SHOWS 15.16 CFS


AKYMO SHOWS 7.29 CFS
TOTAL DISCHARGE TO MOUNTAIN RD. Q_{100}=11.89 CFS
BASIN D-3 0.06 AC.
AP #3 Q_{100}=0.80 CFS
AP #2 Q_{100}=3.77 CFS
E SWALE D-2
SIN D-2
.11 AC.
SIN D-4
.08 AC.
-DRAINAGE SWALE E-1
PUBLIC DRAINAGE ESMT.
POND 3
Q_{100}(IN): 19.90 CFS
Q_{100}(OUT): 5.90 CFS
BASIN D-1 1.95 AC.
5008
5010
5012
5014
5016
5018
5020
5022
5024
5026
5030
5029.5
5029.0
5028.5
S=5.8%
6 OF 7

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994 RUN DATE (MON/DAY/YR) =11/29/1999
INPUT FILE = USER NO.= BOHN_HNM.STE

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	
*S Developed Gateway											
START										TIME=	.00
RAINFALL TYPE= 1										RAIN6=	2.350
COMPUTE NM HYD	B2	-	1	.00358	6.17	.179	.93603	1.500	2.692	PER IMP=	.00
COMPUTE NM HYD	C3	-	2	.00112	1.94	.056	.93603	1.500	2.700	PER IMP=	.00
COMPUTE NM HYD	C5	-	3	.00530	9.13	.265	.93603	1.500	2.691	PER IMP=	.00
COMPUTE NM HYD	C4	-	4	.00137	2.37	.068	.93603	1.500	2.697	PER IMP=	.00
COMPUTE NM HYD	C1	-	5	.00286	4.93	.143	.93603	1.500	2.693	PER IMP=	.00
COMPUTE NM HYD	I1	-	6	.00137	2.37	.068	.93603	1.500	2.697	PER IMP=	.00
COMPUTE NM HYD	B1	-	7	.00783	13.48	.391	.93603	1.500	2.690	PER IMP=	.00
COMPUTE NM HYD	A4	-	8	.00130	3.13	.111	1.60172	1.500	3.762	PER IMP=	60.00
COMPUTE NM HYD	A1	-	9	.00384	7.30	.217	1.05837	1.500	2.969	PER IMP=	.00
COMPUTE NM HYD	D1	-	10	.00305	5.26	.152	.93603	1.500	2.692	PER IMP=	.00
COMPUTE NM HYD	B3	-	11	.00016	.28	.008	.93603	1.500	2.777	PER IMP=	.00
COMPUTE NM HYD	A2	-	12	.00020	.35	.010	.93603	1.500	2.754	PER IMP=	.00
COMPUTE NM HYD	A3	-	13	.00042	.73	.021	.93603	1.500	2.721	PER IMP=	.00
COMPUTE NM HYD	A5	-	14	.00044	.76	.022	.93603	1.500	2.716	PER IMP=	.00
COMPUTE NM HYD	D3	-	15	.00009	.16	.004	.93603	1.500	2.846	PER IMP=	.00
COMPUTE NM HYD	D2	-	16	.00017	.30	.008	.93603	1.500	2.765	PER IMP=	.00
COMPUTE NM HYD	D4	-	17	.00013	.22	.006	.93603	1.500	2.790	PER IMP=	.00
COMPUTE NM HYD	I2	-	31	.00044	.76	.022	.93603	1.500	2.716	PER IMP=	.00
COMPUTE NM HYD	C2	-	30	.00056	.98	.028	.93603	1.500	2.713	PER IMP=	.00
*S**********											
*S DISCHARGE TO MOUNTAIN ROAD											
ADD HYD	B13	7&11	18	.00799	13.76	.399	.93600	1.500	2.692		
ADD HYD	B134	18& 8	19	.00929	16.89	.510	1.02913	1.500	2.841		
ADD HYD	B134D1	19&10	20	.01234	22.15	.662	1.00611	1.500	2.805		
ADD HYD	A12	9&12	21	.00404	7.65	.227	1.05225	1.500	2.958		
ADD HYD	NORTH	20&21	22	.01638	29.80	.889	1.01749	1.500	2.842		
ROUTE RESERVOIR	POND3	22	33	.01638	6.43	.889	1.01749	1.850	.613	AC-FT=	.539
ADD HYD	A35	13&14	40	.00086	1.50	.043	.93575	1.500	2.719		
ADD HYD	A35D3	40&15	42	.00095	1.66	.047	.93564	1.500	2.731		
ADD HYD	D24	16&17	44	.00030	.52	.015	.93523	1.500	2.776		
ADD HYD	A35D234	42&44	46	.00125	2.18	.062	.93554	1.500	2.741		
*S TOTAL DISCHARGE TO MOUNTAIN ROAD											
ADD HYD	MTN	46&33	48	.01763	7.29	.951	1.01165	1.600	.646		
*S**********											
*S DISCHARGE TO LOMAS BLVD											
ROUTE RESERVOIR	POND2	3	20	.00530	.90	.265	.93597	2.000	.266	AC-FT=	.207
ADD HYD	C45	20& 4	21	.00667	2.68	.333	.93534	1.500	.627		
ADD HYD	B2C3	1& 2	23	.00470	8.10	.235	.93598	1.500	2.694		
*S COMBINE HYDROGRAPHS FOR BASINS B2+C3 AND C5+C4											
ADD HYD	B23C45	23&21	24	.01137	10.78	.567	.93561	1.500	1.481		
ROUTE RESERVOIR	POND5	5	25	.00286	.76	.143	.93599	1.900	.413	AC-FT=	.102
*S COMBINE HYDROGRAPHS FOR BASINS B2+C3+C5+C4 AND C1											
ADD HYD	26.00	24&25	26	.01423	11.06	.710	.93550	1.500	1.215		
ADD HYD	I12	6&31	27	.00181	3.13	.090	.93590	1.500	2.702		
*S COMBINE HYDROGRAPHS FOR BASINS B2+C3+C5+C4+C1+C2											
ADD HYD	28.00	30&26	28	.01479	12.04	.738	.93551	1.500	1.272		
*S TOTAL LOMAS DISCHARGE											
ADD HYD	LOMAS	27&28	29	.01660	15.16	.828	.93556	1.500	1.427		
FINISH											

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Gateway Center Master Drainage Plan

(now has been built out with Tri Core Labs (west) and Embassy Suites (east)

Data and Hydrograph Computations by Smith Engineering Company

1 hydrograph computed that outfalls to Mountain Road
1 hydrograph computed that outfalls to Lomas Blvd.

TABLE GW 1

GATEWAY CENTER
100-YR. Hydrograph Data and Computations

Purpose - Use Hydrologic Information as presented in
Drainage Management Plan for the Gateway Center
Prepared by Bohannan Huston Inc., January 24, 2000

Goal - Develop only terminal hydrographs from site for input into SWMM, not all internal sub-basin hydrographs

Plan of Computation - Use hydrologic results from referenced plan to synthesize hydrographs for outfall points
LOMAS BLVD. NE -
Outflow Point 1 - Lomas Blvd.- Use AHYMO output total hydrograph to Lomas Blvd
MOUNTAIN ROAD NE-
Outflow Point 1 - Mountain Road- Use AHYMO output total hydrograph to Mountain Road

Hydrologic Summary of Each Outflow Point

Outflow Point	Comment	Sub-Basin (s)	Area	Area	Area	100-yr. Peak Discharge	100-yr. Runoff Volume	100-yr. Runoff Volume	Hydrograph Assumption Applied to Compute Hydrograph for SWMM
			sq ft	acres	sq mi	cfs	cu ft	ac-ft	
1	Total to Mountain Road	all	491,496	11.2832	0.01763	7.29	41,426	0.951	Compute as a triangular hydrograph (SEE CALC 2)
2	Total to Lomas Blvd.	all	462,781	10.6240	0.01660	15.16	36,068	0.828	Compute as a triangular hydrograph (SEE CALC 2)

CALC's 1, 2, - Use Peak Discharge and Volume To Compute a The Total Time Base (Tb) of a Triangular Hydrograph,
Volume under a triangular hydrograph - V (cu ft) = 0.5 * Tb * Qp (cfs) = (1/2 b*h)
Therefore Tb = V (cu ft) * 2 / Qp (cfs)

Outflow Point		Time Base (Tb) of Triangular Hydrograph	Time Base (Tb) of Triangular Hydrograph	Time Base (Tb) of Triangular Hydrograph	100-yr. Peak Discharge	100-yr. Runoff Volume		
		sec	min	hours	cfs	cu ft		
1	Total to Mountain Road	11,365	189	3.16	7.29	41,426		See next set of Calcs
2	Total to Lomas Blvd.	4,758	79	1.32	15.16	36,068		

CALC's 1, 2 - Compute Slopes of Triangular Hydrograph Rising and falling limbs based on Assume tp = 12 minutes and Qp
Rising Limb hydrograph slope = (Qp - 0) / (12 - 0) Therefore slope = Qp / 12 (12 minutes , so compute Tb in minutes)
Falling Limb hydrograph slope = (Qp - 0) / (12-Tb) Therefore slope = Qp / (12-Tb) (12 minutes, so compute Tb in minutes)

Outflow Point	Rising Limb Slope	Falling Limb Slope	
1	0.608	-0.041	See Table GW2 for this
2	1.263	-0.225	See Table GW2 for this

TABLE GW 2
GATEWAY CENTER
100-YR. Hydrograph Computations

Purpose - Compute Hydrographs and Add Hydrographs based on Table GW 1 Data and Calculations

Note - Use SWMM subcatchment hydrographs 1st non-zero hydrograph Q value as time of first ordinate on these hydrographs

			Mountain Road		Lomas Blvd		Mountain Rd	Lomas Blvd
			Hydrograph Q Value		Hydrograph Q Values		Hydrograph V Value	Hydrograph V Values
Time	Time	Time	Hyd Q Values	Qp from AHYMO	Hyd Q Values	Qp from AHYMO	Hyd V Values	Hyd V Values
minutes	hours	hours	cfs		cfs		cu ft	cu ft
0								
0	0.00		0.00		0.00		0	0
3	0.05		1.82		3.79		328.32	682.02
6	0.10		3.65		7.58		656.64	1364.04
9	0.15		5.47		11.37		984.96	2046.06
12	**0.20**		7.30	**7.29**	15.16	**15.16**	1313.28	2728.08
15	0.25		7.17		14.49		1290.06	2607.3
18	0.30		7.04		13.81		1267.92	2485.8
21	0.35		6.92		13.14		1245.78	2364.3
24	0.40		6.80		12.46		1223.64	2242.8
27	0.45		6.68		11.79		1201.5	2121.3
30	0.50		6.55		11.11		1179.36	1999.8
33	0.55		6.43		10.44		1157.22	1878.3
36	0.60		6.31		9.76		1135.08	1756.8
39	0.65		6.18		9.09		1112.94	1635.3
42	0.70		6.06		8.41		1090.8	1513.8
45	0.75		5.94		7.74		1068.66	1392.3
48	0.80		5.81		7.06		1046.52	1270.8
51	0.85		5.69		6.39		1024.38	1149.3
54	0.90		5.57		5.71		1002.24	1027.8
57	0.95		5.45		5.04		980.1	906.3
60	1.00		5.32		4.36		957.96	784.8
63	1.05		5.20		3.69		935.82	663.3
66	1.10		5.08		3.01		913.68	541.8
69	1.15		4.95		2.34		891.54	420.3
72	1.20		4.83		1.66		869.4	298.8
75	1.25		4.71		0.98		847.26	177.3
78	1.30		4.58		0.31		825.12	55.8
81	1.35		4.46		0.00		802.98	0
84	1.40		4.34				780.84	
87	1.45		4.22				758.7	
90	1.50		4.09				736.56	
93	1.55		3.97				714.42	
96	1.60		3.85				692.28	
99	1.65		3.72				670.14	
102	1.70		3.60				648	
105	1.75		3.48				625.86	
108	1.80		3.35				603.72	
111	1.85		3.23				581.58	
114	1.90		3.11				559.44	
117	1.95		2.99				537.3	

TABLE GW 2
GATEWAY CENTER
100-YR. Hydrograph Computations

Purpose - Compute Hydrographs and Add Hydrographs based on Table GW 1 Data and Calculations

Note - Use SWMM subcatchment hydrographs 1st non-zero hydrograph Q value as time of first ordinate on these hydrographs

			Mountain Road		Lomas Blvd		Mountain Rd	Lomas Blvd
			Hydrograph Q Value		Hydrograph Q Values		Hydrograph V Value	Hydrograph V Values
Time	Time	Time	Hyd Q Values	Qp from AHYMO	Hyd Q Values	Qp from AHYMO	Hyd V Values	Hyd V Values
minutes	hours	hours	cfs		cfs		cu ft	cu ft
120	2.00		2.86				515.16	
123	2.05		2.74				493.02	
126	2.10		2.62				470.88	
129	2.15		2.49				448.74	
132	2.20		2.37				426.6	
135	2.25		2.25				404.46	
138	2.30		2.12				382.32	
141	2.35		2.00				360.18	
144	2.40		1.88				338.04	
147	2.45		1.76				315.9	
150	2.50		1.63				293.76	
153	2.55		1.51				271.62	
156	2.60		1.39				249.48	
159	2.65		1.26				227.34	
162	2.70		1.14				205.2	
165	2.75		1.02				183.06	
168	2.80		0.89				160.92	
171	2.85		0.77				138.78	
174	2.90		0.65				116.64	
177	2.95		0.52				94.5	
180	3.00		0.40				72.36	
183	3.05		0.28				50.22	
186	3.10		0.16				28.08	
189	3.15		0.03				5.94	
192	3.20		0.00				0	
195	3.25							
							41,515	36,114

Conclusion -
These computed volumes are very close to volumes from AHYMO_97 as shown on Table GW1

SWMM MODEL BASIN BR7H1

TABLE GW3
Gateway Center Master Plan

Lomas Blvd 100-YR. Hydrograph

Feb. 18. 2011 COA 1810

Purpose - Compute Hydrographs and Add Hydrographs based on Table GW1 GW2 1 Data and Calculations
Note - Use SWMM subcatchment hydrographs 1st non-zero hydrograph Q value as time of first ordinate on these hydrographs

Lomas Blvd. Hydrograph

Time	Time	Time	**Total Hydrograph**
minutes	hours	hours /min / sec	cfs
0	0.00	0:00	0.00
3	0.05	0:03	3.79
6	0.10	0:06	7.58
9	0.15	0:09	11.37
12	**0.20**	0:12	15.16
15	0.25	0:15	14.49
18	0.30	0:18	13.81
21	0.35	0:21	13.14
24	0.40	0:24	12.46
27	0.45	0:27	11.79
30	0.50	0:30	11.11
33	0.55	0:33	10.44
36	0.60	0:36	9.76
39	0.65	0:39	9.09
42	0.70	0:42	8.41
45	0.75	0:45	7.74
48	0.80	0:48	7.06
51	0.85	0:51	6.39
54	0.90	0:54	5.71
57	0.95	0:57	5.04
60	1.00	1:00	4.36
63	1.05	1:03	3.69
66	1.10	1:06	3.01
69	1.15	1:09	2.34
72	1.20	1:12	1.66
75	1.25	1:15	0.98
78	1.30	1:18	0.31
81	1.35	1:21	0.00

SWMM MODEL BASIN BR7 #2

TABLE GW3
Gateway Center Master Plan

Mountain Road 100-YR. Hydrograph

Feb. 18. 2011 COA7963.05A

Purpose - Compute Hydrographs and Add Hydrographs based on Table GW1 GW2 Data and Calculations
Note - Use SWMM subcatchment hydrographs 1st non-zero hydrograph Q value as time of first ordinate on these hydrographs

Mountain Rd. Hydrograph

Time	Time	Time	**Total Hydrograph**
minutes	hours	hours/min/sec	cfs
0	0.00	0:00	0.00
3	0.05		1.82
6	0.10		3.65
9	0.15		5.47
12	0.20		7.30
15	0.25		7.17
18	0.30		7.04
21	0.35		6.92
24	0.40		6.80
27	0.45		6.68
30	0.50		6.55
33	0.55		6.43
36	0.60		6.31
39	0.65		6.18
42	0.70		6.06
45	0.75		5.94
48	0.80		5.81
51	0.85		5.69
54	0.90		5.57
57	0.95		5.45
60	1.00		5.32
63	1.05		5.20
66	1.10		5.08
69	1.15		4.95
72	1.20		4.83
75	1.25		4.71
78	1.30		4.58
81	1.35		4.46
84	1.40		4.34
87	1.45		4.22
90	1.50		4.09
93	1.55		3.97
96	1.60		3.85
99	1.65		3.72
102	1.70		3.60
105	1.75		3.48

108	1.80	3.35
111	1.85	3.23
114	1.90	3.11
117	1.95	2.99
120	2.00	2.86
123	2.05	2.74
126	2.10	2.62
129	2.15	2.49
132	2.20	2.37
135	2.25	2.25
138	2.30	2.12
141	2.35	2.00
144	2.40	1.88
147	2.45	1.76
150	2.50	1.63
153	2.55	1.51
156	2.60	1.39
159	2.65	1.26
162	2.70	1.14
165	2.75	1.02
168	2.80	0.89
171	2.85	0.77
174	2.90	0.65
177	2.95	0.52
180	3.00	0.40
183	3.05	0.28
186	3.10	0.16
189	3.15	0.03
192	3.20	0.00

Combined - Albuquerque High and Gateway Center Hydrographs That Outfall to Mountain Road

Combined Hydrographs into One Hydrograph into Mountain Road because SWMM Does not allow adding Two external hydrographs to be added at one manhole

TABLE AH GC

Combined Hydrographs from Albuquerque High School Basin BR8-H1 and Gateway Center BR7-H2 That Discarge to Mountain Road

Purpose - The SWMM model will not allow addition of 2 externally computed hydrographs to be added at the same manhole, therefore since both of these hydrographs drain to Mountain Rd. Add these hydographs together to obtain 1 hydrograph to be added at COA MH COA 7963.05A

This Appendix contains the backup computations for each hydrograph (BR7-H2 and BR8-H1)

Note - Use SWMM subcatchment hydrographs 1st non-zero hydrograph Q value as time of first ordinate on these hydrographs

Time hours	BR7-H2 cfs	BR8-H1 cfs	**Total Hydrograph** cfs
0:00	0.00	0.0	0.00
0:03	1.82	10.4	12.17
0:06	3.65	20.7	24.35
0:09	5.47	31.1	36.52
0:12	7.30	**41.4**	48.70
0:15	7.17	38.3	45.44
0:18	7.04	35.2	42.20
0:21	6.92	32.0	38.95
0:24	6.80	28.9	35.71
0:27	6.68	25.8	32.46
0:30	6.55	22.7	29.21
0:33	6.43	19.5	25.97
0:36	6.31	16.4	22.72
0:39	6.18	13.3	19.48
0:42	6.06	10.2	16.23
0:45	5.94	7.0	12.98
0:48	5.81	3.9	9.74
0:51	5.69	0.8	6.49
0:54	5.57	0.0	5.57
0:57	5.45	0.0	5.45
1:00	5.32	0.0	5.32
1:03	5.20	0.0	5.20
1:06	5.08	0.0	5.08
1:09	4.95	0.0	4.95
1:12	4.83	0.0	4.83
1:15	4.71	0.0	4.71
1:18	4.58	0.0	4.58
1:21	4.46	0.0	4.46
1:24	4.34	0.0	4.34
1:27	4.22	0.0	4.22
1:30	4.09	0.0	4.09

1:33	3.97	0.0	3.97
1:36	3.85	0.0	3.85
1:39	3.72	0.0	3.72
1:42	3.60	0.0	3.60
1:45	3.48	0.0	3.48
1:48	3.35	0.0	3.35
1:51	3.23	0.0	3.23
1:54	3.11	0.0	3.11
1:57	2.99	0.0	2.99
2:00	2.86	0.0	2.86
2:03	2.74	0.0	2.74
2:06	2.62	0.0	2.62
2:09	2.49	0.0	2.49
2:12	2.37	0.0	2.37
2:15	2.25	0.0	2.25
2:18	2.12	0.0	2.12
2:21	2.00	0.0	2.00
2:24	1.88	0.0	1.88
2:27	1.76	0.0	1.76
2:30	1.63	0.0	1.63
2:33	1.51	0.0	1.51
2:36	1.39	0.0	1.39
2:39	1.26	0.0	1.26
2:42	1.14	0.0	1.14
2:45	1.02	0.0	1.02
2:48	0.89	0.0	0.89
2:51	0.77	0.0	0.77
2:54	0.65	0.0	0.65
2:57	0.52	0.0	0.52
3:00	0.40	0.0	0.40
3:03	0.28	0.0	0.28
3:06	0.16	0.0	0.16
3:09	0.03	0.0	0.03
3:12	0.00	0.0	0.00

Sawmill Master Plan Area

Data and Hydrograph Computations by Smith Engineering Company

1 hydrograph computed that outfalls to Bellamah Avenue Road

A14-H
COA 7444

TABLE SM 2
SAWMILL MASTER PLAN

BELLAMAH AVE. 100-YR. Hydrograph

Feb. 18. 2011

Purpose - Compute Hydrographs and Add Hydrographs based on Table SM Data and Calculations
Note - Use SWMM subcatchment hydrographs 1st non-zero hydrograph Q value as time of first ordinate on this hydrograph

Samill Hyd to Bellamah Ave.

Time	Time	Time	**Total Hydrograph**
minutes	hours	hours	cfs
0	0.00		0
3	0.05		2.7
6	0.10		2.7
9	0.15		2.7
12	0.20		2.7
15	0.25		2.7
18	0.30		2.7
21	0.35		2.7
24	0.40		2.7
27	0.45		2.7
30	0.50		2.7
33	0.55		2.7
36	0.60		2.7
39	0.65		2.7
42	0.70		2.7
45	0.75		2.7
48	0.80		2.7
51	0.85		2.7
54	0.90		2.7
57	0.95		2.7
60	1.00		2.7
63	1.05		2.7
66	1.10		2.7
69	1.15		2.7
72	1.20		2.7
75	1.25		2.7
78	1.30		2.7
81	1.35		2.7
84	1.40		2.7
87	1.45		2.7
90	1.50		2.7
93	1.55		2.7
96	1.60		2.7
99	1.65		2.7
102	1.70		2.7
105	1.75		2.7
108	1.80		2.7

111	1.85	2.7
114	1.90	2.7
117	1.95	2.7
120	2.00	2.7
123	2.05	2.7
126	2.10	2.7
129	2.15	2.7
132	2.20	2.7
135	2.25	2.7
138	2.30	2.7
141	2.35	2.7
144	2.40	2.7
147	2.45	2.7
150	2.50	2.7
153	2.55	2.7
156	2.60	2.7
159	2.65	2.7
162	2.70	2.7
165	2.75	2.7
168	2.80	2.7
171	2.85	2.7
174	2.90	2.7
177	2.95	2.7
180	3.00	2.7
183	3.05	2.7
186	3.10	2.7
189	3.15	2.7
192	3.20	2.7
195	3.25	2.7
198	3.30	2.7
201	3.35	2.7
204	3.40	2.7
207	3.45	2.7
210	3.50	2.7
213	3.55	2.7
216	3.60	2.7
219	3.65	2.7
222	3.70	2.7
225	3.75	2.7
228	3.80	2.7
231	3.85	2.7
234	3.90	2.7
237	3.95	2.7
240	4.00	2.7
243	4.05	2.7
246	4.10	2.7
249	4.15	2.7
252	4.20	2.7
255	4.25	2.7
258	4.30	2.7
261	4.35	2.7
264	4.40	2.7
267	4.45	2.7
270	4.50	2.7
273	4.55	2.7
276	4.60	2.7

279	4.65	2.7
282	4.70	2.7
285	4.75	2.7
288	4.80	2.7
291	4.85	2.7
294	4.90	2.7
297	4.95	2.7
300	5.00	2.7
303	5.05	2.7
306	5.10	2.7
309	5.15	2.7
312	5.20	2.7
315	5.25	2.7
318	5.30	2.7
321	5.35	2.7
324	5.40	2.7
327	5.45	2.7
330	5.50	2.7
333	5.55	2.7
336	5.60	2.7
339	5.65	2.7
342	5.70	2.7
345	5.75	2.7
348	5.80	2.7
351	5.85	2.7
354	5.90	2.7
357	5.95	2.7
360	6.00	2.7
363	6.05	2.7
366	6.10	2.7
369	6.15	2.7
372	6.20	2.7
375	6.25	2.7
378	6.30	2.7
381	6.35	2.7
384	6.40	2.7
387	6.45	2.7
390	6.50	2.7
393	6.55	2.7
396	6.60	2.7
399	6.65	2.7
402	6.70	2.7
405	6.75	2.7
408	6.80	2.7
411	6.85	2.7
414	6.90	0

TABLE SM 1
SAWMILL VILLAGE MASTER PLAN
100-YR. Hydrograph Computations

Purpose - Compute Hydrograph based on the following.

See Report text for discussion of the Sawmill Village Drainage Management Plan and various amendments

Goal - Develop only terminal hydrograph from site for input into SWMM, not all internal sub-basin hydrographs

Plan of Computation - Use hydrologic results / informaiton from referenced reports / amendments to synthesize a hydrograph.

A hydrograph is necessary for inclusion in the Mid Valley DMP SWMM model and the latest amendment to the Sawmill Village does not include a hydrograph. Therefore, SEC computed a hydrograph with a constant discharge rate of 2.7 cfs that contains the volume from the maximum 100-yr. water surface elevation to the invert elevation of the 18-inch outfall storm drain – elevations.

The most current elevation – storage data for Pond 2 (actually accounts for volume of Ponds 1 and 2) from the February 21, 2007 BHI amendment letter were used to linearly interpolate the detained runoff volume between the 100-yr. maximum water surface elevation and the invert of the 18-inch outfall pipe as presented in the Drainage Management Plan, Sawmill Village May 13, 2008. The data, assumptions and hydrograph computations to develop one constant hydrograph from the site are listed here.

Data - See report text - 4.1 cfs max due to orifice plate and 1.28 cfs outflow from Pond 2
average of these 4.1 + 1.28 / 2 = 2.7 cfs (see report discussion)

Assume Pond 2 will discharge at the average rate of 2.7 cfs until the detained runoff volume of 1.5232 ac-ft is drained out.
That volume is the difference in the 100-yr. maximum water surface elevation and the invert elevation of the 18-inch outfall pipe. as computed below.
The RETAINED pond volume below the invert of the 18-inch outfall pipe is 2.8872 ac-ft computed by SEC below.
The total runoff volume at the maximum water surface elevaion(4949.50) in Pond 2 = 4.4104 ac-ft

Therefore, the detained runoff volume that will outfall from Pond 2 to Bellamah Ave. storm drain = 1.5232 ac-ft.

Calculations -

Linearly interpolate for the actual retention volume - that volume below the 18-inch outfall Pipe from Pond 2.

Use the most recent rating curve that was provided in the Feb.21, 2007 amendment letter (BHI) for the Sawmill Master Plan

First linearly interpolate the actual pond volume at the invert of the 18-inch outfall pipe as follows:

Description	elevation ft	volume ac-ft	
Max. 100-yr. water surface elevation	55.70	4.104	
Pond Invert Elevation	49.50	0	
rating curve value 2-21-07 (included in this appendix)	54.50	3.1105	Note 100-yr Pond 2 ws elev. = 4949.50
invert of 18-inch outfall pipe - not on rating curve	54.24	?	
rating curve value 2-21-07 (included in this appendix)	53.50	2.2515	

By Linear interpolation of the data presented above ? = 2.8872 ac-ft = Pond 2 RETENTION volume at invert of 18-inch pipe

Detained Vollume = 100-yr max. water surface elev. volume minus the pond volume at invert of 18-inch outfall pipe

BHI report states that 4.4104 ac-ft is max water volume, therefore

'= 4.4104 ac-ft - 2.8872 ac - ft = 1.5232 ac-ft = actual runoff volume that will drain out of Pond 2.

Note - Use SWMM subcatchment hydrographs 1st non-zero hydrograph Q value as time of first ordinate on these hydrographs

Hydrograph Q Values to the Bellamah Ave. Stom Drain

Time minutes	Time hours	Time hours	Discharge cfs	Volume Check cu ft	ac-ft
0					
0	0.00		0	0	
3	0.05		2.7	486	
6	0.10		2.7	486	
9	0.15		2.7	486	
12	0.20		2.7	486	
15	0.25		2.7	486	
18	0.30		2.7	486	
21	0.35		2.7	486	
24	0.40		2.7	486	
27	0.45		2.7	486	
30	0.50		2.7	486	
33	0.55		2.7	486	
36	0.60		2.7	486	
39	0.65		2.7	486	
42	0.70		2.7	486	
45	0.75		2.7	486	
48	0.80		2.7	486	
51	0.85		2.7	486	
54	0.90		2.7	486	
57	0.95		2.7	486	
60	1.00		2.7	486	
63	1.05		2.7	486	
66	1.10		2.7	486	
69	1.15		2.7	486	
72	1.20		2.7	486	
75	1.25		2.7	486	
78	1.30		2.7	486	
81	1.35		2.7	486	
84	1.40		2.7	486	
87	1.45		2.7	486	
90	1.50		2.7	486	
93	1.55		2.7	486	
96	1.60		2.7	486	
99	1.65		2.7	486	
102	1.70		2.7	486	
105	1.75		2.7	486	
108	1.80		2.7	486	
111	1.85		2.7	486	
114	1.90		2.7	486	
117	1.95		2.7	486	
120	2.00		2.7	486	
123	2.05		2.7	486	
126	2.10		2.7	486	
129	2.15		2.7	486	
132	2.20		2.7	486	
135	2.25		2.7	486	
138	2.30		2.7	486	
141	2.35		2.7	486	

Hydrograph Q Values to the Bellamah Ave. Stom Drain

Time minutes	Time hours	Time hours	Discharge cfs	Volume Check cu ft	ac-ft
144	2.40		2.7	486	
147	2.45		2.7	486	
150	2.50		2.7	486	
153	2.55		2.7	486	
156	2.60		2.7	486	
159	2.65		2.7	486	
162	2.70		2.7	486	
165	2.75		2.7	486	
168	2.80		2.7	486	
171	2.85		2.7	486	
174	2.90		2.7	486	
177	2.95		2.7	486	
180	3.00		2.7	486	
183	3.05		2.7	486	
186	3.10		2.7	486	
189	3.15		2.7	486	
192	3.20		2.7	486	
195	3.25		2.7	486	
198	3.30		2.7	486	
201	3.35		2.7	486	
204	3.40		2.7	486	
207	3.45		2.7	486	
210	3.50		2.7	486	
213	3.55		2.7	486	
216	3.60		2.7	486	
219	3.65		2.7	486	
222	3.70		2.7	486	
225	3.75		2.7	486	
228	3.80		2.7	486	
231	3.85		2.7	486	
234	3.90		2.7	486	
237	3.95		2.7	486	
240	4.00		2.7	486	
243	4.05		2.7	486	
246	4.10		2.7	486	
249	4.15		2.7	486	
252	4.20		2.7	486	
255	4.25		2.7	486	
258	4.30		2.7	486	
261	4.35		2.7	486	
264	4.40		2.7	486	
267	4.45		2.7	486	
270	4.50		2.7	486	
273	4.55		2.7	486	
276	4.60		2.7	486	
279	4.65		2.7	486	
282	4.70		2.7	486	
285	4.75		2.7	486	
288	4.80		2.7	486	

Hydrograph Q Values to the Bellamah Ave. Stom Drain

Time minutes	Time hours	Time hours	Discharge cfs	Volume Check cu ft	ac-ft
291	4.85		2.7	486	
294	4.90		2.7	486	
297	4.95		2.7	486	
300	5.00		2.7	486	
303	5.05		2.7	486	
306	5.10		2.7	486	
309	5.15		2.7	486	
312	5.20		2.7	486	
315	5.25		2.7	486	
318	5.30		2.7	486	
321	5.35		2.7	486	
324	5.40		2.7	486	
327	5.45		2.7	486	
330	5.50		2.7	486	
333	5.55		2.7	486	
336	5.60		2.7	486	
339	5.65		2.7	486	
342	5.70		2.7	486	
345	5.75		2.7	486	
348	5.80		2.7	486	
351	5.85		2.7	486	
354	5.90		2.7	486	
357	5.95		2.7	486	
360	6.00		2.7	486	
363	6.05		2.7	486	
366	6.10		2.7	486	
369	6.15		2.7	486	
372	6.20		2.7	486	
375	6.25		2.7	486	
378	6.30		2.7	486	
381	6.35		2.7	486	
384	6.40		2.7	486	
387	6.45		2.7	486	
390	6.50		2.7	486	
393	6.55		2.7	486	
396	6.60		2.7	486	
399	6.65		2.7	486	
402	6.70		2.7	486	
405	6.75		2.7	486	
408	6.80		2.7	486	
411	6.85		2.7	486	
414	6.90		0	0	
				66582	1.5285

Total Volume Check

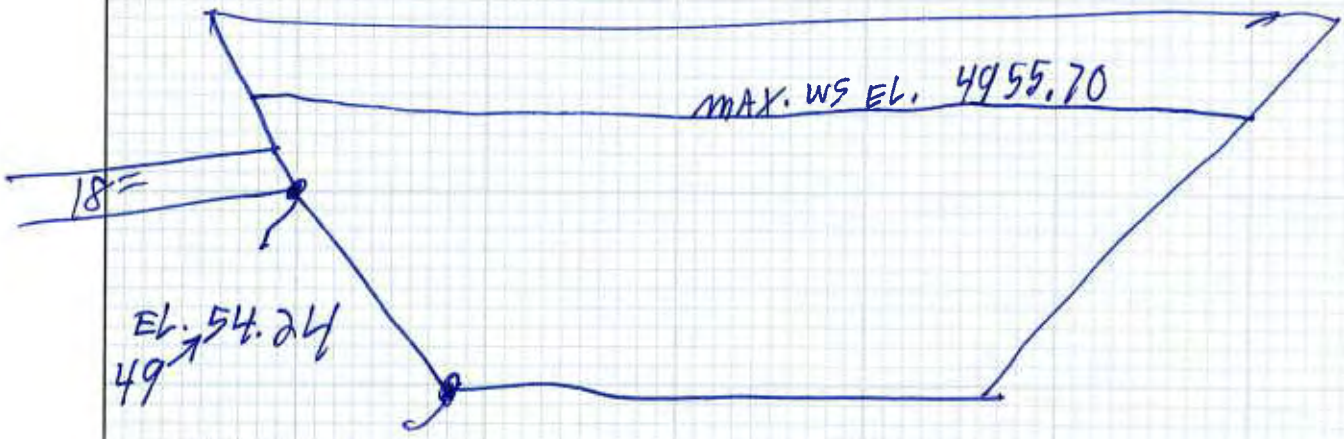
Conclusion : This volume is very close to volume as listed above of 1.5232 ac-ft

PROJECT _____ SHEET NO. _____ OF _____

SUBJECT _____ PROJECT NO. _____

BY _____ DATE / / CHECKED BY _____ DATE / /

SAW-MILL POND 2



EL. 54.24
49

EL 4949.50

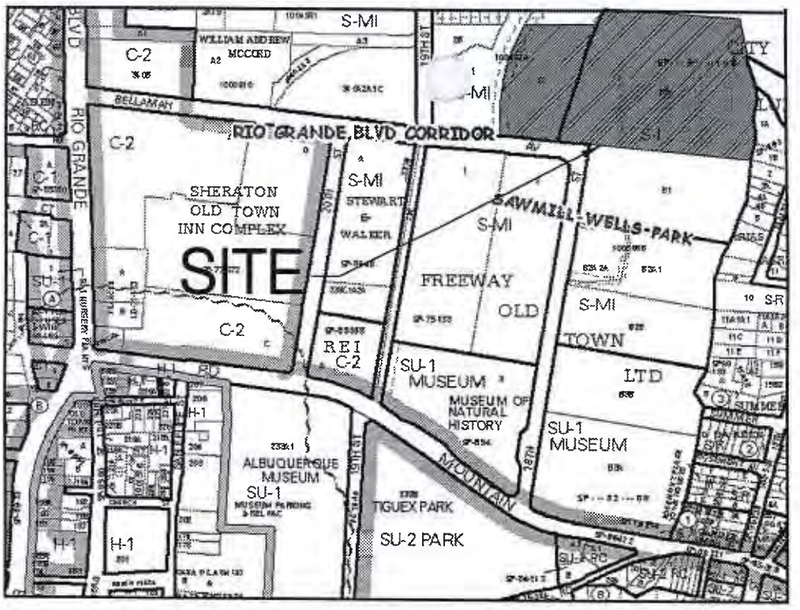
EL.	vol
55.50	4.1659
54.24	vol =

vol / 54.24 =

54.50	3.1105
54.24	X
53.50	2.2515

Smith Engineering Company
2201 San Pedro NE Bldg. #4, Suite 200 Albuquerque, New Mexico 87110 505/884-0700 Fax 505/884-2376

apacity cfs	ACTUAL FLOW cfs
7.43	3.57
0.85	0.48
10.50	4.05
10.50	7.42
41.02	25.65
29.00	20.92
16.00	14.20
16.00	13.92
16.00	9.36
7.43	4.37
2.52	1.75
10.50	4.79
3.56	3.33
2.52	2.13
10.50	3.93
3.56	2.25
3.56	1.92
10.50	5.81
5.04	3.81
1.21	0.68
3.56	3.13



VICINITY MAP
ZONE ATLAS PAGE J-13-Z

GRADING AND DRAINAGE NARRATIVE

Site Location and Background Information

The purpose of this submittal is to present a drainage and grading plan for the proposed Sawmill Village development to the North of Bellamah and 18th street. The design site proposes mixed use development. There will be some residential townhomes, and some commercial sites. The site is in rainfall zone 2 as defined by figure A-1 of the DPM section 22. The existing legal description of the site is Tract 2-D, Arbolera De Vida and Lot B-2-A, Duke City Lumber Company Addition. Please see the vicinity map on this sheet for a graphic depiction of the site location. This conceptual grading and drainage plan is submitted in support of site plan approval.

The Sawmill Master Drainage Plan Area, prepared by Bohannan Huston Inc., addresses drainage off the western site and the surrounding area to the west and north (city hydrology file: H13-D25). This submittal integrates the eastern Lot B-2-A into the Sawmill Master Drainage Plan and modifies the pond construction to be in compliance with the guidance and recommendations set forth in that report.

Existing Conditions

This entire site (Tracts 2-D & B-2-A) is approximately 10 acres and is an old industrial sawmill. The natural slope of the site is very flat. The slope across the site is less than 1% from the northeast to the southwest. There is an existing pond north of Tract 2-D that is part of the Sawmill Master Drainage Plan. It currently discharges into the storm drain in Bellamah at a maximum flow of 4 C.F.S. The site is approximately level with Bellamah and the surrounding properties.

Proposed Conditions

Under proposed conditions the site will slope slightly to the pond north of Tract 2-D and utilize storm drain systems to convey runoff to the pond w/ functional surface slopes. The site will be mostly impervious treatment D and the rest landscaped treatment B and C. The Sawmill Master Drainage Plan sizes the existing pond as a retention system to be conservative. The pond is a retention pond to elevation 4954 at which it can discharge 4 C.F.S. in a detention condition. The existing pond is sized to accept runoff from the Tract 2-D (the portion of the site west of 18th St.). The pond expansion is sized to accept additional runoff from Lot B-2-A. With this project, we propose to expand the volume of the existing pond by approximately 59,000 CF. This expansion can be accomplished without lowering the pond bottom. Accordingly, the depth of retained water below the invert of the outlet pipe will not be increased with this project. The proposed pond expansion volume exceeds the 100yr, 6hr storm volume generated by tract B-2-A.

Flood plain

In accordance with FEMA community map panel #35001C0331 E, the site is not located within a flood plain.

Offsite Flows

There are no significant upstream offsite flows which will impact this site.

Conclusions

This drainage submittal has been prepared in accordance with City of Albuquerque requirements. This plan clearly demonstrates the proposed, general surface grading and drainage. The implementation of this design will result in the safe passage of the 100 year storm event. With this submittal we request hydrology department approval of this Grading and Drainage Plan for building permit.

interiors
planning
engineering

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Sabatini

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505 761-9700
fax 761-4222
dps@dpsdesign.org

ARCHITECT

ENGINEER

BRUCE J. STIDWORTHY
NEW MEXICO
14523
REGISTERED PROFESSIONAL ENGINEER
5/05/08

PROJECT

Sawmill Village
1751 Bellamah Avenue, NW
Albuquerque, New Mexico

1 OF 4

REVISIONS

3.56 | 3.13

GRADING AND DRAINAGE NARRATIVE

Location and Background Information

The purpose of this submittal is to present a drainage and grading plan for the proposed Sawmill Village development to the North of Bellamah and 18th street. The design site proposes mixed use development. There will be some residential townhomes, and some commercial sites. The site is in rainfall zone 2 as defined by figure A-1 of the DPM section 22. The existing legal description of the site is Tract 2-D, Arbolera De Vida and Lot B-2-A, Duke City Lumber Company Addition. Please see the vicinity map on this sheet for a graphic depiction of the site location. This conceptual grading and drainage plan is submitted in support of site plan approval.

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Existing Conditions

This entire site (Tracts 2-D & B-2-A) is approximately 10 acres and is an old industrial sawmill. The natural slope of the site is very flat. The slope across the site is less than 1% from the northeast to the southwest. There is an existing pond north of Tract 2-D that is part of the Sawmill Master Drainage Plan. It currently discharges into the storm drain in Bellamah at a maximum flow of 4 C.F.S. The site is approximately level with Bellamah and the surrounding properties.

Proposed Conditions

Under proposed conditions the site will slope slightly to the pond north of Tract 2-D and utilize storm drain systems to convey runoff to the pond w/ functional surface slopes. The site will be mostly impervious treatment D and the rest landscaped treatment B and C. The Sawmill Master Drainage Plan sizes the existing pond as a retention system to be conservative. The pond is a retention pond to elevation 4954 at which it can discharge 4 C.F.S. in a detention condition. The existing pond is sized to accept runoff from the Tract 2-D (the portion of the site west of 18th St.). The pond expansion is sized to accept additional runoff from Lot B-2-A. With this project, we propose to expand the volume of the existing pond by approximately 59,000 CF. This expansion can be accomplished without lowering the pond bottom. Accordingly, the depth of retained water below the invert of the outlet pipe will not be increased with this project. The proposed pond expansion volume exceeds the 100yr, 6hr storm volume generated by tract B-2-A.

Flood plain

In accordance with FEMA community map panel #35001C0331 E, the site is not located within a flood plain.

Offsite Flows

There are no significant upstream offsite flows which will impact this site.

Conclusions

This drainage submittal has been prepared in accordance with City of Albuquerque requirements. This plan clearly demonstrates the proposed, general surface grading and drainage. The implementation of this design will result in the safe passage of the 100 year storm event. With this submittal we request hydrology department approval of this Grading and Drainage Plan for building permit.

INLET TABLE

Inlet #	Inlet Type	Top of Grate	Actual Flow	Avail Head ft	Capacity
IN1	2'x2' Nyloplast Road & Highway Grate	57.07	3.37	0.5	6.00
IN2	2'x2' Nyloplast Road & Highway Grate	58.00	3.57	0.5	6.00
IN3	2'x2' Nyloplast Road & Highway Grate	58.38	0.91	0.5	6.00
IN4	2'x2' Nyloplast Road & Highway Grate	58.38	1.46	0.5	6.00
IN5	2'x2' Nyloplast Road & Highway Grate	58.76	0.48	0.5	6.00
IN6	2'x2' Nyloplast Road & Highway Grate	59.15	1.20	0.5	6.00
IN7	2'x2' Nyloplast Road & Highway Grate	59.16	2.13	0.5	6.00
IN8	2'x2' Nyloplast Road & Highway Grate	57.97	1.68	0.5	6.00
IN9	2'x2' Nyloplast Road & Highway Grate	59.39	0.28	0.5	6.00
IN10	2'x2' Nyloplast Road & Highway Grate	58.64	2.64	0.5	6.00
IN11	2'x2' Nyloplast Road & Highway Grate	58.45	3.23	0.5	6.00
IN12	2'x2' Nyloplast Road & Highway Grate	58.81	4.37	0.5	6.00
IN13	2'x2' Nyloplast Road & Highway Grate	57.97	2.25	0.5	6.00
IN14	24" Standard Nyloplast Grate	58.80	1.75	0.5	3.60
IN15	2'x2' Nyloplast Road & Highway Grate	57.90	0.68	0.5	6.00
IN16	2'x2' Nyloplast Road & Highway Grate	57.75	3.13	0.5	6.00
IN19	2'x2' Nyloplast Road & Highway Grate	57.30	0.80	0.5	6.00
IN20	2'x2' Nyloplast Road & Highway Grate	57.15	1.02	0.5	6.00
IN21	18" Pedestrian Nyloplast Grate	57.00	0.84	0.5	2.20

* The actual head available varies with each inlet, but in no case is the available head less than 0.5'.

RECEIVED
MAY 13 2008
HYDROLOGY SECTION

ENGINEER

BRUCE J. STIDWORTHY
NEW MEXICO
14523
REGISTERED PROFESSIONAL ENGINEER
5/13/08

PROJECT

Sawmill Village
1751 Bellamah Avenue, NW
Albuquerque, New Mexico

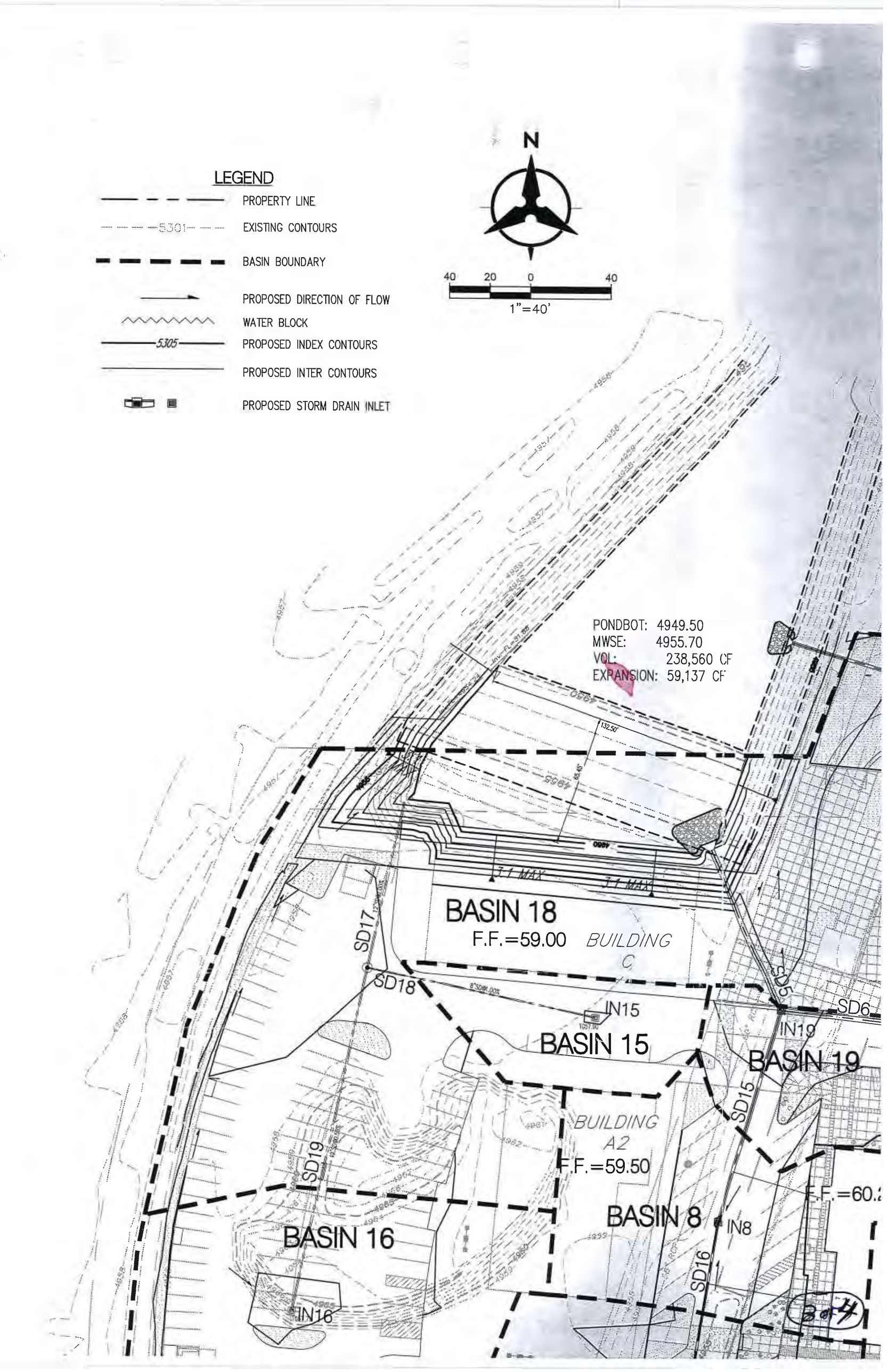
REVISIONS

DRAWN BY	CP
REVIEWED BY	BJS
DATE	May 13, 2008
PROJECT NO.	06124
DRAWING NAME	

DRAINAGE MANAGEMENT PLAN

SHEET NO. 2 OF 4

OF


LEGEND
PROPERTY LINE
5301
EXISTING CONTOURS
BASIN BOUNDARY
PROPOSED DIRECTION OF FLOW
WATER BLOCK
5305
PROPOSED INDEX CONTOURS
PROPOSED INTER CONTOURS
PROPOSED STORM DRAIN INLET
N
40 20 0 40
1"=40'
PONDBOT: 4949.50
MWSE: 4955.70
VOL: 238,560 CF
EXPANSION: 59,137 CF
3:1 MAX
3:1 MAX
BASIN 18
F.F.=59.00
BUILDING C
BASIN 15
BASIN 19
BUILDING A2
F.F.=59.50
BASIN 8
BASIN 16
SD17
SD18
SD19
SD15
SD16
IN15
IN16
IN19
IN8
F.F.=60.2

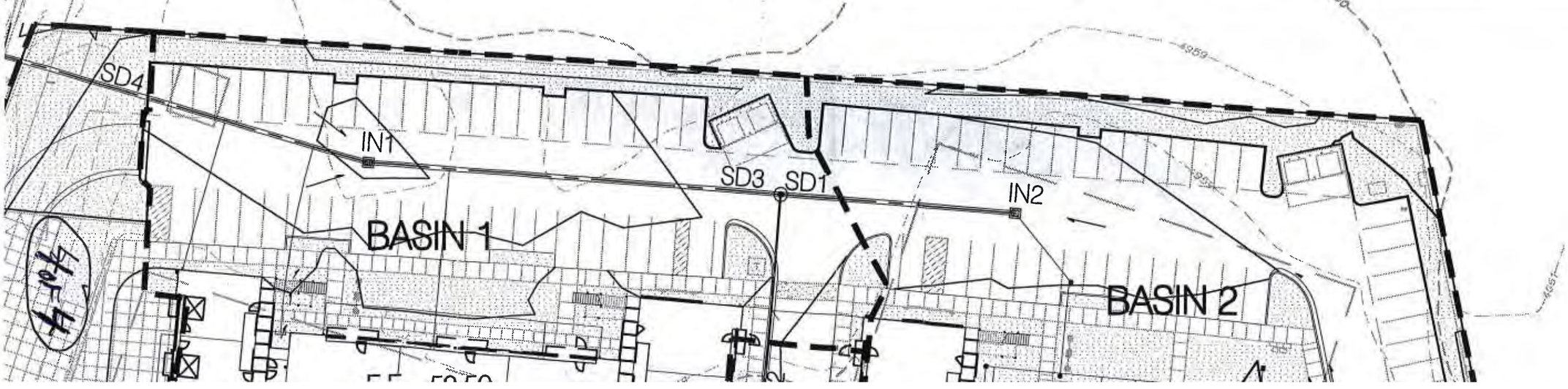
Proposed Ultimate Development Conditions Basin Data Table

This table is based on the DPM Section 22.2, Zone: 2

Basin ID	Area (SQ. FT)	Area (AC.)	Land Treatment Percentages A	B	C	D	Q(100) (cfs/ac.)	Q(100) (CFS)	V(100) (inches)	V(100)6HR (CF)
Tract B-2-A	226055	7.46	0.0%	5.0%	5.0%	90.0%	4.50	***33.58***	*2.00*	*37742*
BASIN 1	32962	0.76	0.0%	10.0%	0.0%	90.0%	4.46	***3.37***	*1.99*	*5455*
BASIN 2	34871	0.80	0.0%	10.0%	0.0%	90.0%	4.46	***3.57***	*1.99*	*5771*
BASIN 3	8640	0.20	0.0%	5.0%	0.0%	95.0%	4.58	***0.91***	*2.05*	*1478*
BASIN 4	13870	0.32	0.0%	5.0%	0.0%	95.0%	4.58	***1.46***	*2.05*	*2373*
BASIN 5	4709	0.11	0.0%	10.0%	0.0%	90.0%	4.46	***0.48***	*1.99*	*779*
BASIN 6	11415	0.26	0.0%	5.0%	0.0%	95.0%	4.58	***1.20***	*2.05*	*1953*
BASIN 7	20804	0.48	0.0%	10.0%	0.0%	90.0%	4.46	***2.13***	*1.99*	*3443*
BASIN 8	16442	0.38	0.0%	10.0%	0.0%	90.0%	4.46	***1.68***	*1.99*	*2721*
BASIN 9	2706	0.06	0.0%	5.0%	0.0%	95.0%	4.58	***0.28***	*2.05*	*463*
BASIN 10	25127	0.58	0.0%	5.0%	0.0%	95.0%	4.58	***2.64***	*2.05*	*4299*
BASIN 11	30743	0.71	0.0%	5.0%	0.0%	95.0%	4.58	***3.23***	*2.05*	*5260*
BASIN 12	42740	0.98	0.0%	10.0%	0.0%	90.0%	4.46	***4.37***	*1.99*	*7073*
BASIN 13	21398	0.49	0.0%	5.0%	0.0%	95.0%	4.58	***2.25***	*2.05*	*3661*
BASIN 14	22666	0.52	0.0%	55.0%	0.0%	45.0%	3.37	***1.75***	*1.38*	*2612*
BASIN 15	6813	0.16	0.0%	15.0%	0.0%	85.0%	4.34	***0.68***	*1.92*	*1090*
BASIN 16	29822	0.68	0.0%	5.0%	0.0%	95.0%	4.58	***3.13***	*2.05*	*5102*
BASIN 17	12858	0.30	0.0%	65.0%	0.0%	35.0%	3.13	***0.92***	*1.25*	*1338*
BASIN 18	62175	1.43	0.0%	10.0%	0.0%	90.0%	4.46	***6.36***	*1.99*	*10290*
BASIN 19	7620	0.17	0.0%	5.0%	0.0%	95.0%	4.58	***0.80***	*2.05*	*1304*
BASIN 20	9458	0.22	0.0%	0.0%	0.0%	100.0%	4.70	***1.02***	*2.12*	*1671*
BASIN 21	8464	0.19	0.0%	15.0%	0.0%	85.0%	4.34	***0.84***	*1.92*	*1354*
TOTAL	426303	9.79	0.0%	12.2%	0.0%	87.8%	4.40	***43.10***	*1.96*	*69490*

STORM DRAIN PIPE TABLE

PIPE #	Contributing Basins and Storm Drains	Size in.	Slope	Capacity cfs	ACTUAL FLOW cfs
NORTH					
SD1	BSN 2	18	0.50%	7.43	3.57
SD2	BSN 5	8	0.50%	0.85	0.48
SD3	BSN 2,5	18	1.00%	10.50	4.05
SD4	BSN 1,2,5	18	1.00%	10.50	7.42
CENTRAL					
SD5	SD6,15 + BSN19	30	1.00%	41.02	25.65
SD6	SD7,21 + BSN3	30	0.50%	29.00	20.92
SD7	SD8, BSN9	24	0.50%	16.00	14.20
SD8	SD9,20 + BSN10	24	0.50%	16.00	13.92
SD9	BSN 11,12,14	24	0.50%	16.00	9.36
SD10	BSN 12	18	0.50%	7.43	4.37
SD11	BSN 14	12	0.50%	2.52	1.75
SD12	SD13 + BSN4	18	1.00%	10.50	4.79
SD13	BSN 6,7	12	1.00%	3.56	3.33
SD14	BSN 7	12	0.50%	2.52	2.13
SD15	BSN 8,13	18	1.00%	10.50	3.93
SD16	BSN 13	12	1.00%	3.56	2.25
SD20	BSN 21	12	1.00%	3.56	1.92
SD21	SD12 + BSN20	18	1.00%	10.50	5.81
WEST					
SD17	BSN 15,16	12	2.00%	5.04	3.81
SD18	BSN 15	8	1.00%	1.21	0.68
SD19	BSN 16	12	1.00%	3.56	3.13



Site Location and

The purpose of th
development to th
development. The
rainfall zone 2 as
site is Tract 2-D.
the vicinity map
drainage plan is s

The Sawmill Maste
western site and
submittal grat
pond construction

Existing Conditions

Bohannan Huston

Courtyard I
7500 Jefferson St. NE
Albuquerque, NM
87109-4335

www.bhinc.com

voice: 505.823.1000
facsimile: 505.798.7988
toll free: 800.877.5332

February 21, 2007

Brad Bingham, P.E.
Hydrology Development Division
City of Albuquerque Planning Department
P. O. Box 1293
Albuquerque, NM 87103

Re: Arbolera de Vida, Unit 2 – Grading and Drainage Certification
DRB Case No 1000029; COA Drainage File # H-13/D25

Dear Brad:

The purpose of this letter is to provide you with verification that the revised grading plan Dekker Perich Sabatini revision to the Approved Grading Plan dated 4-05-06. The overall drainage patterns remain the same as noted in the Approved Grading Plan, but Pond #1 grading has been modified.

Dekker Perich Sabatini's revision was to improve the aesthetics of the park. Per our conversation, you would allow the grading revisions to be as-built as long as I provided verification that the overall pond volumes were not affected.

The two pond system was reanalyzed to be a retention pond assuming no allowable discharge when in fact, 4.0 cfs is allowed to discharge from Pond 2 into Bellamah Ave, this is the given safety factor. In order to facilitate the 100-yr, 24 hr storm event, as stated in the previous addendum dated August 9, 2006, the required detention volume for the two ponds is 4.24 acre-ft (see Sheet 1-A). The previous volume was 4.34 acre-ft (see Sheet 1-C). With the revised grading of Pond #1, the volume is 4.41 acre-ft (see Sheet 1-B) thus increasing the capacity of Pond #1.

If you have any questions or require further information, please feel free to contact me at 823-1000.

Sincerely,

Yolanda Padilla, P.E.
Project Engineer
Community Development and Planning

YP
Enclosures

cc:
Kevin Patton, BHI (w/o encl)
Debbra Colman, Sawmill Community Land Trust (w encl)

C-7CC9C

Detention Pond Volume Calculations

NOTE: Blue shaded cells require user input, all other cells should not be edited.
ASSUMPTIONS:
1. Area less than 40 acres (simplified hydrograph method).
2. 100-year, 6-hour storm event

Peak Flow per Acre - DPM Section 22.2 Table A-9

Zone	A	B	C	D
1	1.29	2.03	2.87	4.37
2	1.56	2.28	3.14	4.7
3	1.87	2.6	3.45	5.02
4	2.2	2.92	3.73	5.25

Basin Name :
Choose Zone (1 - 4) 2
Basin Area = (acres) 25.31

Exist Conditions				Proposed Conditions			
Treatment	Percentage	Area	Q (cfs)	Treatment	Percentage	Area	Q (cfs)
A	90.0%	22.78	35.54	A	0.0%	0.00	0.00
B	10.0%	2.53	5.77	B	8.5%	2.16	4.92
C	0.0%	0.00	0.00	C	31.5%	7.97	25.03
D	0.0%	0.00	0.00	D	60.0%	15.18	71.35
		Q Peak - exist.=	41.31			Peak Q Developed=	101.30

Use my calculated exist cond. flow as the peak controlled discharge (1 = yes, or N) ?? N
If No, what is the maximum allowable discharge ? 0

Excess Precipitation - DPM Section 22.2 Table A-8

Zone	A	B	C	D
1	0.44	0.67	0.99	1.97
2	0.53	0.78	1.13	2.12
3	0.66	0.92	1.29	2.36
4	0.8	1.08	1.46	2.64

Determine Developed E (avg excess precipitation for the developed basin)

%A x E = 0.00
%B x E = 0.07
%C x E = 0.36
%D x E = 1.27
Avg E(in) = 1.69

Determine Tb (hours)

Tb = 0.742

Determine Tc (Note: Tc is assumed to be 0.2 hours, this should be checked using DPM 22.2.B.2)

Tc = 0.2

Determine Tp and Duration of Peak (hours)

Tp = 0.22335
Peak Duration = 0.14995

Compute the required retention volume using the simple hydrograph, Figure A-3 in DPM Section 22.2

Time to Control Q (hrs) = 0.000
Time to end of Control Q (hrs)= 0.741816
Duration of Control Q (hrs)= 0.742

Required Detention Volume (CF) =	162607	100-yr, 6 hr Event	3.73	acre-ft
Required Detention Volume (CF)	184694	100-yr, 24 hr Event	4.24	acre-ft
Required Detention Volume (CF)	250470	100-yr, 10 day Event	5.75	acre-ft

Elevation	Incremental Volume	Cumulative Volume	Acre-Feet	Surface Area
	cu ft	cu ft		sq ft
4949.5000	0.0000	0.0000	0.0000	12813.8035
4950.5000	19612.7201	19612.7201	0.4502	20789.5891
4951.5000	22070.0872	41682.8073	0.9569	23553.1397
4952.5000	-1767.2635	39915.5437	0.9163	39358.6412
4953.5000	58161.6966	98077.2403	2.2515	51188.2706
4954.5000	37415.4832	135492.7234	3.1105	130029.7427
4955.5000	45973.0963	181465.8198	4.1659	155106.0235
4955.6900	10650.6672	192116.4870	4.4104	161881.2429

POND CAPACITY AT CURRENT DESIGN (2/20/07)

→ ALL DATA INVOLVED IN THIS ANALYSIS USES BOTH PONDS WORKING AS ONE.

POND 2 BOTTOM ELEVATION = 4949.50'

ation	Incremental Volume cu ft	Cumulative Volume cu ft	Acre-Feet	Surface Area sq ft
4949.5000	0.0000	0.0000	0.0000	11095.4895
4950.0000	8714.6880	8714.6880	0.2001	12034.2840
4950.5000	9599.2540	18313.9420	0.4204	20112.8467
4951.0000	10520.4642	28834.4062	0.6619	21330.4184
4951.5000	11494.0832	40328.4894	0.9258	23980.7707
4952.0000	9364.1865	49692.6759	1.1408	26056.7959
4952.5000	16710.6767	66403.3525	1.5244	29114.5472
4953.0000	14746.4630	81149.8155	1.8629	35039.8069
4953.5000	15915.6709	97065.4864	2.2283	38598.6645
4954.0000	17106.0162	114171.5027	2.6210	44592.3008
4954.5000	18105.0207	132276.5234	3.0367	46629.6051
4955.0000	20246.7971	152523.3205	3.5015	99109.1048
4955.5000	25618.5811	178141.9016	4.0896	106765.2623
4955.7000	10987.9496	189129.8512	4.3418	107802.2634

ANALYSIS: POND BOTTOM ELEVATION = 4949.50

@ THIS ELEVATION THE 100YR- 24 hr EVENT IS SATISFIED

SHEET 1-C

GENERAL NOTES:

1. EXCEPT AS PROVIDED HEREIN, GRADING SHALL BE PERFORMED AT THE ELEVATIONS AND IN ACCORDANCE WITH THE DETAILS SHOWN ON THIS PLAN.

2. CONTRACTOR SHALL OBTAIN AND ABIDE BY A TOPSOIL DISTURBANCE PERMIT FROM THE CITY OF ALBUQUERQUE ENVIRONMENTAL HEALTH DIVISION, PRIOR TO CONSTRUCTION. THE COST FOR REQUIRED CONSTRUCTION DUST AND EROSION CONTROL MEASURES SHALL BE INCIDENTAL TO THE PROJECT COST. THE CONTRACTOR SHALL CONFORM TO ALL CITY, COUNTY, STATE, AND FEDERAL DUST CONTROL MEASURES AND REQUIREMENTS AND WILL BE RESPONSIBLE FOR PREPARING AND OBTAINING ALL NECESSARY APPLICATIONS AND APPROVALS.

3. ALL WORK RELATIVE TO FOUNDATION CONSTRUCTION, SITE PREPARATION, AND PAVEMENT INSTALLATION, AS SHOWN ON THIS PLAN, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE SOILS REPORT PREPARED BY VINYARD & ASSOC. ALL OTHER WORK, UNLESS OTHERWISE STATED OR PROVIDED FOR HEREIN, SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS (FIRST PRIORITY), AND/OR THE CITY OF ALBUQUERQUE (COA) STANDARD SPECIFICATIONS FOR PUBLIC WORKS (SECOND PRIORITY).

4. TWO WORKING DAYS PRIOR TO EXCAVATION, CONTRACTOR MUST CONTACT LINE LOCATING SERVICE (765-1234) FOR LOCATION OF EXISTING UTILITIES.

5. PRIOR TO GRADING, ALL VEGETATION DEBRIS, AND NEAR SURFACE ORGANICALLY CONTAMINATED SOIL SHALL BE STRIPPED FROM ALL AREAS TO BE GRADED. VEGETATION AND DEBRIS SHALL BE DISPOSED OF OFF-SITE OR STOCK-PILED FOR USE IN PLANTERS AND NON-STRUCTURAL FILLS.

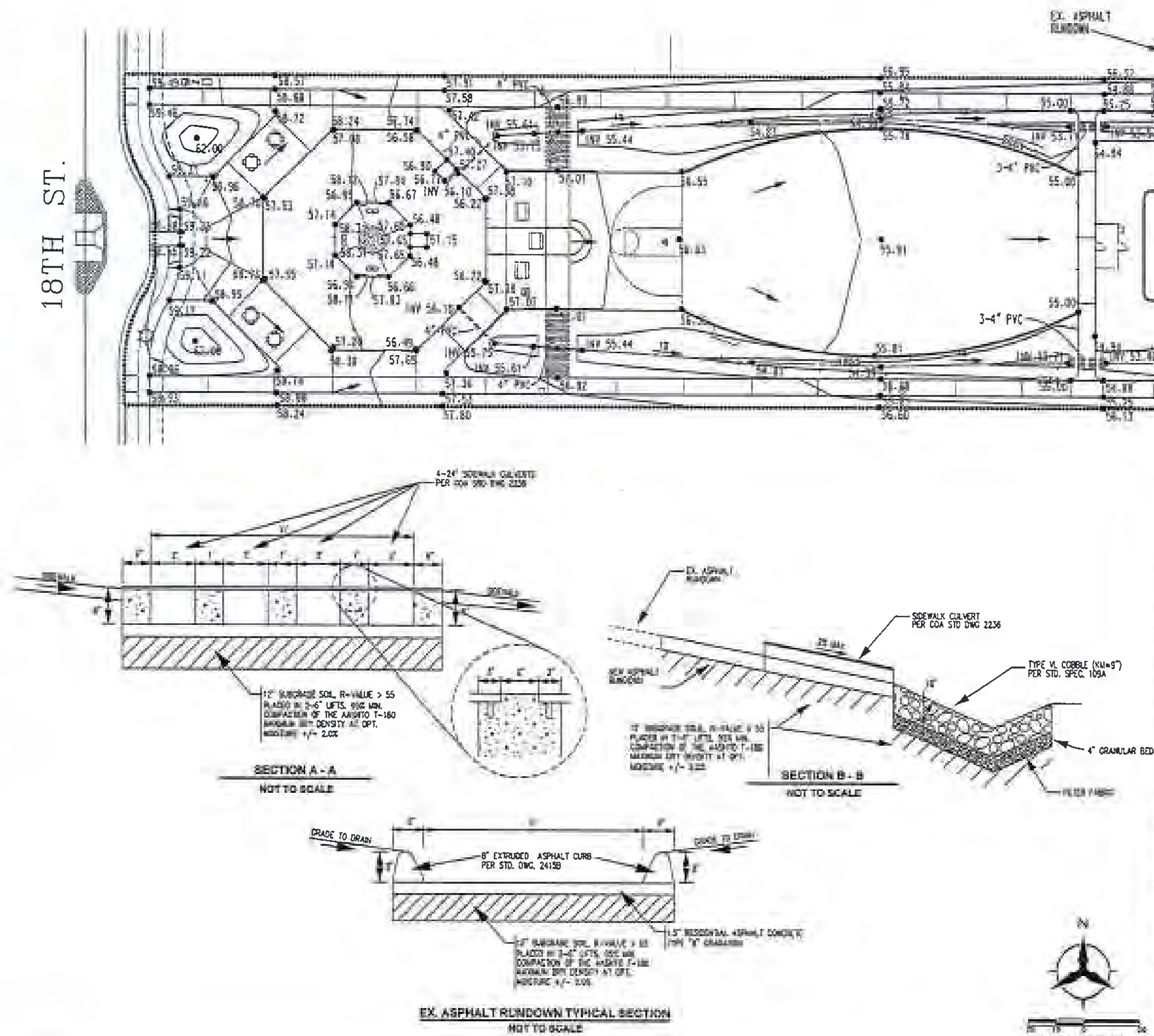
6. EARTH SLOPES SHALL NOT EXCEED 3 HORIZONTAL TO 1 VERTICAL UNLESS SHOWN OTHERWISE.

7. IT IS THE INTENT OF THESE PLANS THAT THIS CONTRACTOR SHALL NOT PERFORM ANY WORK OUTSIDE OF THE PROPERTY BOUNDARIES EXCEPT AS REQUIRED BY THIS PLAN.

8. THE CONTRACTOR IS TO ENSURE THAT NO SOIL ERODES FROM THE SITE ONTO ADJACENT PROPERTY OR PUBLIC RIGHT-OF-WAY. THIS SHOULD BE ACHIEVED BY CONSTUCTING TEMPORARY BERMS AT THE PROPERTY LINES WETTING THE SOIL TO PROTECT IT FROM WIND EROSION.

9. A DISPOSAL SITE FOR ALL EXCESS EXCAVATION AND UNSUITABLE MATERIAL SHALL BE OBTAINED BY THE CONTRACTOR IN COMPLIANCE WITH APPLICABLE ENVIRONMENTAL REGULATIONS AND APPROVED BY THE ENGINEER. ALL COSTS INCURRED IN OBTAINING A DISPOSAL SITE AND HAUL THERETO SHALL BE CONSIDERED INCIDENTAL TO THE PROJECT, AND NO SEPARATE MEASUREMENT OR PAYMENT SHALL BE MADE.

10. ALL SPOT ELEVATIONS ARE TOP OF GROUND OR SIDEWALK UNLESS OTHERWISE NOTED.



LEGEND

PROPOSED CURB AND GUTTER	
EXISTING CURB AND GUTTER	
FUTURE CURB AND GUTTER	
PROPOSED SPOT ELEVATION	●56.00
EXISTING SPOT ELEVATION	●56.00
PROPOSED STORM DRAIN MANHOLE	
EXISTING STORM DRAIN MANHOLE	
PROPOSED SANITARY SEWER MANHOLE	
EXISTING SANITARY SEWER MANHOLE	
PROPOSED FIRE HYDRANT	
PROPOSED GATE VALVE	
EXISTING GATE VALVE	
PROPOSED STREET LIGHT	
SWALE	

Bohannan ▲ Huston

ENGINEERING • SPATIAL DATA • ADVANCED TECHNOLOGIES

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

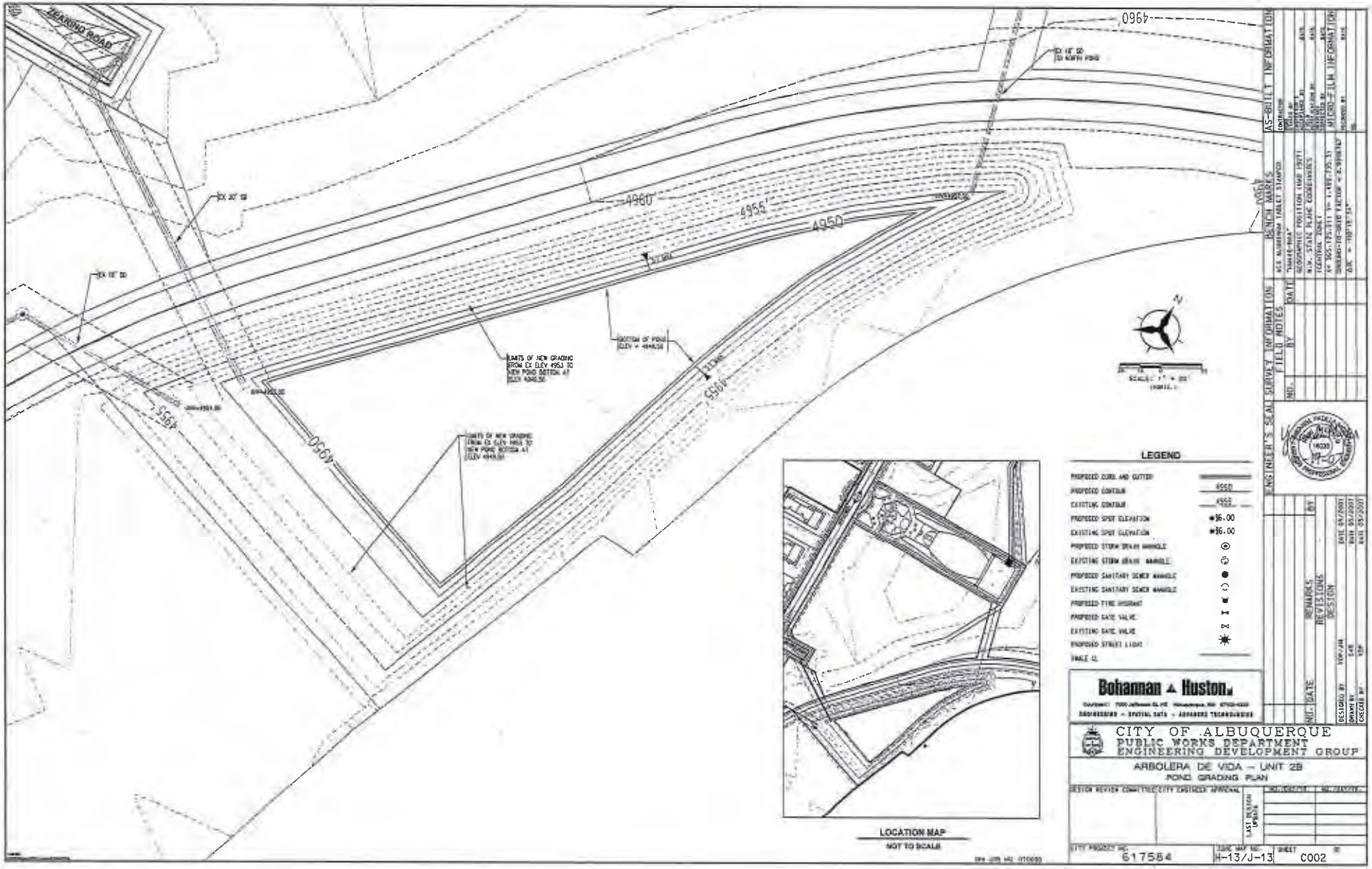
ARBOLERA DE VIDA - UNIT 2B
PARK GRADING PLAN

DESIGN REVIEW COMMITTEE	CITY ENGINEER APPROVAL

CITY PROJECT NO.	ZONE MAP NO.	SHEET	OF
617584	H-13/J-13	C001	

ENGINEER'S SEAL	SURVEY INFORMATION			BENCH MARKS	AS-BUILT INFORMATION
	FIELD NOTES				
	NO.	BY	DATE		

NO.	DATE	REMARKS	BY
		REVISIONS	
		DESIGN	



LOCATION MAP
NOT TO SCALE

LEGEND

PROPOSED CURB AND GUTTER	
PROPOSED CONTOUR	4950
EXISTING CONTOUR	4955
PROPOSED SPOT ELEVATION	●56.00
EXISTING SPOT ELEVATION	×56.00
PROPOSED STORM DRAIN MANHOLE	
EXISTING STORM DRAIN MANHOLE	
PROPOSED SANITARY SEWER MANHOLE	
EXISTING SANITARY SEWER MANHOLE	
PROPOSED FIRE HYDRANT	
PROPOSED GATE VALVE	
EXISTING GATE VALVE	
PROPOSED STREET LIGHT	
FENCE (L)	

Bohannan ▲ Huston

ENGINEERING · SPATIAL DATA · ADVANCED TECHNOLOGIES

AS-BUILT INFORMATION

BENCH MARKS

FIELD NOTES

ENGINEER'S SEAL

NO.	BY	DATE	REMARKS
			REVISIONS
			DESIGN

DESIGNED BY
DRAWN BY
CHECKED BY

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING DEVELOPMENT GROUP

ARBOLERA DE VIDA – UNIT 2B
POND GRADING PLAN

DESIGN REVIEW COMMITTEE CITY ENGINEER APPROVAL

SUBMITTAL	SUPERSEDES

CITY PROJECT NO. 617584

ZONE MAP NO. H-13/J-13

SHEET NO. C002

SEC

Bohannan ▲ Huston 070090 / GRADING

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toll free: 800.877.5332

August 9, 2006

Brad Bingham, P.E.
Hydrology Development Division
City of Albuquerque Planning Department
P. O. Box 1293
Albuquerque, NM 87103

Re: Arbolera de Vida, Unit 2 – Grading and Drainage Certification
DRB Case No 1000029; COA Drainage File # H-13/D25

Dear Brad:

The purpose of this letter is to provide you with revisions to the Approved Grading Plan Stamp date 4-05-06. The overall drainage patterns remain the same as noted in the Approved Grading Plan. The revisions are as follows.

The aforementioned Approved Grading Plan called for an acequia located east of Mis Abuelitos Drive to accept both onsite and offsite runoff and convey it south to the pond. Under this revision the acequia has been removed. An 11 ft wide by 8 in thick asphalt channel located at the southern low point within Mis Abuelitos Drive has been added in place of the acequia. The new asphalt rundown will accept both onsite and offsite flows (Q_{100} = 16.44 cfs) which entered the former acequia, and will convey these flows south to the pond.

The invert of the 18 in storm drain pipe leading from Pond 1 (north) to Pond 2 (south) has an as-built elevation of 4954.50 ft. In order to match this elevation, Pond 1 will need to be re-graded according to the proposed Grading and Drainage plan. The two pond system was analyzed assuming no allowable discharge. In fact, 4.0 cfs is allowed to discharge from Pond 2, this is the given safety factor. In order to facilitate the 100-yr, 24 hr storm event, the required detention volume for the two ponds is 4.24 acre-ft (see Sheet 1-A). According to the calculations on Sheet 1-C, the proposed required detention volume for the two ponds is 4.34 acre-ft. Pond 2 will need to be re-graded so the bottom elevation is at 4949.50 ft in order to meet this required volume.

If you have any questions or require further information, please feel free to contact me.823-1000.

Sincerely,

Yolanda Padilla

Yolanda Padilla, P.E.
Project Engineer
Community Development and Planning

YP
Enclosures

cc:
Debbra Colman, Sawmill Community Land Trust (w encl)

DRAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV. 1/28/2003rd)

PROJECT TITLE: Arbolera De Vida Unit 2 ZONE MAP/DRG. FILE # H-13/D25

DRB #: 1000029 EPC#: WORK ORDER#:

LEGAL DESCRIPTION: Arbolera De Vida Unit 2

CITY ADDRESS: East of Arboleda de Vida and 19th St., South of Old Albuquerque Acequia. West of Mill Pond Rd. and Aspen Blvd. North of Bellamah Avenue.

ENGINEERING FIRM: Bohannan Huston, inc. CONTACT: Yolanda Padilla
ADDRESS: 7500 Jefferson NE – Courtyard I PHONE: (505) 823-1000
CITY, STATE: Albuquerque, NM ZIP CODE: 87109

OWNER: Sawmill Community Land Trust CONTACT: Debbra Colman
ADDRESS: 904 19th St. NW PHONE: (505) 764-0359
CITY, STATE: Albuquerque, NM ZIP CODE: 87104

ARCHITECT: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

SURVEYOR: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

CONTRACTOR: CONTACT:
ADDRESS: PHONE:
CITY, STATE: ZIP CODE:

CHECK TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
____ DRAINAGE PLAN 1st SUBMITTAL, *REQUIRES TCL or equal*
X DRAINAGE PLAN RESUBMITTAL
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEER'S CERTIFICATION (HYDROLOGY)
____ CLOMR/LOMR
____ TRAFFIC CIRCULATION LAYOUT (TCL)
____ ENGINEERS CERTIFICATION (TCL)
____ ENGINEERS CERTIFICATION (DRB APPR. SITE PLAN)
____ OTHER

CHECK TYPE OF APPROVAL SOUGHT:

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

WAS A PRE-DESIGN CONFERENCE ATTENDED:

____ YES
____ NO
____ COPY PROVIDED

DATE SUBMITTED: 8-9-06 BY: Yolanda Padilla

Requests for approvals of Site Development Plans and/or Subdivision Plats shall be accompanied by a drainage submittal. The particular nature , location and scope of the proposed development defines 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 subdivisions containing more than ten (10) lots or constituting five (5) acres or

Detention Pond Volume Calculations

NOTE: Blue shaded cells require user input, all other cells should not be edited.
ASSUMPTIONS:
1. Area less than 40 acres (simplified hydrograph method).
2. 100-year, 6-hour storm event

Peak Flow per Acre - DPM Section 22.2 Table A-9

Zone	A	B	C	D
1	1.29	2.03	2.87	4.37
2	1.56	2.28	3.14	4.7
3	1.87	2.6	3.45	5.02
4	2.2	2.92	3.73	5.25

Basin Name :
Choose Zone (1 - 4) 2
Basin Area = (acres) 25.31

Exist Conditions				Proposed Conditions			
Treatment	Percentage	Area	Q (cfs)	Treatment	Percentage	Area	Q (cfs)
A	90.0%	22.78	35.54	A	0.0%	0.00	0.00
B	10.0%	2.53	5.77	B	8.5%	2.16	4.92
C	0.0%	0.00	0.00	C	31.5%	7.97	25.03
D	0.0%	0.00	0.00	D	60.0%	15.18	71.35
		Q Peak - exist.=	41.31			Peak Q Developed=	101.30

Use my calculated exist cond. flow as the peak controlled discharge (1 = yes, or N) ?? N
If No, what is the maximum allowable discharge ? 0

Excess Precipitation - DPM Section 22.2 Table A-8

Zone	A	B	C	D
1	0.44	0.67	0.99	1.97
2	0.53	0.78	1.13	2.12
3	0.66	0.92	1.29	2.36
4	0.8	1.08	1.46	2.64

Determine Developed E (avg excess precipitation for the developed basin)

%A x E = 0.00
%B x E = 0.07
%C x E = 0.36
%D x E = 1.27
Avg E(in) = 1.69

Determine Tb (hours)

Tb = 0.742

Determine Tc (Note: Tc is assumed to be 0.2 hours, this should be checked using DPM 22.2.B.2)

Tc = 0.2

Determine Tp and Duration of Peak (hours)

Tp = 0.22335
Peak Duration = 0.14995

Compute the required retention volume using the simple hydrograph, Figure A-3 in DPM Section 22.2

Time to Control Q (hrs) = 0.000
Time to end of Control Q (hrs)= 0.741816
Duration of Control Q (hrs)= 0.742

Required Detention Volume (CF) = 162607		100-yr, 6 hr Event	3.73	acre-ft
Required Detention Volume (CF)	184694	100-yr, 24 hr Event	4.24	acre-ft
Required Detention Volume (CF)	250470	100-yr, 10 day Event	5.75	acre-ft

Basin Summary

ARBOLERA DE VIDA - UNIT 2

	BASIN I.D.	AREA (AC)	UNITS #	% LAND TREATMENT A	B	C	D[1]	DISCHARGE (CFS) 10 YR	100YR
				HYRDOLOGICAL VOLUMETRIC & DISCHARGE DATA (EXSISTING)					
	1	18.22	0	90.00%	10.00%	0.00%	0.00%	7.89	29.81
	2	7.01	0	60.00%	40.00%	0.00%	0.00%	4.25	12.95
TOTAL		25.23	0					12.14	42.76
				HYRDOLOGICAL VOLUMETRIC & DISCHARGE DATA (DEVELOPED)					
	A-1	0.22	2	0.00%	16.04%	16.04%	67.92%	0.56	0.89
	A-2	0.05	0	0.00%	5.00%	5.00%	90.00%	0.15	0.22
	A-3	0.20	0	0.00%	5.00%	5.00%	90.00%	0.59	0.90
	B-1	0.66	6	0.00%	16.04%	16.04%	67.92%	1.69	2.68
	B-2	0.15	0	0.00%	5.00%	5.00%	90.00%	0.44	0.67
	B-3	1.19	14	0.00%	16.04%	16.04%	67.92%	3.04	4.83
	B-4	0.08	0	0.00%	5.00%	5.00%	90.00%	0.24	0.36
	B-5	0.24	0	0.00%	5.00%	5.00%	90.00%	0.71	1.08
	C-1	0.28	3	0.00%	16.04%	16.04%	67.92%	0.71	1.12
	C-2	0.05	0	0.00%	5.00%	5.00%	90.00%	0.15	0.23
	C-3	0.77	7	0.00%	16.04%	16.04%	67.92%	1.98	3.14
	C-4	0.72	8	0.00%	16.04%	16.04%	67.92%	1.84	2.92
	C-5	0.91	6	0.00%	16.04%	16.04%	67.92%	2.33	3.69
	C-6	0.91	6	0.00%	16.04%	16.04%	67.92%	2.33	3.69
	D-1	0.26	2	0.00%	16.04%	16.04%	67.92%	0.66	1.05
	D-2	0.92	7	0.00%	16.04%	16.04%	67.92%	2.35	3.73
	D-3	0.28	0	0.00%	5.00%	5.00%	90.00%	0.83	1.26
	D-4	0.22	0	0.00%	5.00%	5.00%	90.00%	0.65	0.99
SUBTOTAL		8.11	61					21.25	33.47
	OFFSITE 1A	3.09	0	0.00%	10.00%	90.00%	0.00%	5.04	9.41
	OFFSITE 1B	1.28	0	0.00%	0.00%	15.00%	85.00%	3.74	5.71
	OFFSITE 2	4.14	0	0.00%	0.00%	15.00%	85.00%	12.10	18.47
	OFFSITE 3	0.92	0	0.00%	0.00%	15.00%	85.00%	2.69	4.10
	OFFSITE 4	2.54	0	0.00%	15.00%	0.00%	85.00%	7.14	11.01
	OFFSITE 5	2.17	0	0.00%	0.00%	15.00%	85.00%	6.34	9.68
	POND 1	1.13	0	0.00%	10.00%	90.00%	0.00%	1.84	3.44
	POND 2	1.93	0	0.00%	10.00%	90.00%	0.00%	3.15	5.88
SUBTOTAL		17.20	0.00					42.03	67.70
TOTAL		25.31						63.3	101.2

NOTES: 1) Impervious percentages were calculated from the DPM equation A-4, with the remaining percentages distributed to land treatment type B, due to the relatively flat terrain

N=UNITS/ACRES = 7.5
%D= 7*SQRT((N*N)+(5*N)) = 67.9 %

*Table A-4
**Table A-11

Elevation	Incremental Volume	Cumulative Volume	Acre-Feet	Surface Area
	cu ft	cu ft		sq ft
4949.5000	0.0000	0.0000	0.0000	11095.4895
4950.0000	8714.6880	8714.6880	0.2001	12034.2840
4950.5000	9599.2540	18313.9420	0.4204	20112.8467
4951.0000	10520.4642	28834.4062	0.6619	21330.4184
4951.5000	11494.0832	40328.4894	0.9258	23980.7707
4952.0000	9364.1865	49692.6759	1.1408	26056.7959
4952.5000	16710.6767	66403.3525	1.5244	29114.5472
4953.0000	14746.4630	81149.8155	1.8629	35039.8069
4953.5000	15915.6709	97065.4864	2.2283	38598.6645
4954.0000	17106.0162	114171.5027	2.6210	44592.3008
4954.5000	18105.0207	132276.5234	3.0367	46629.6051
4955.0000	20246.7971	152523.3205	3.5015	99109.1048
4955.5000	25618.5811	178141.9016	4.0896	106765.2623
→ 4955.7000	10987.9496	189129.8512	4.3418	107802.2634

→ 1 ft freeboard = 4956.7 ~ 4957

ANALYSIS: POND'S BOTTOM ELEVATION = 4949.50

@ THIS ELEVATION THE 100-YR - 24 hr EVENT IS SATISFIED

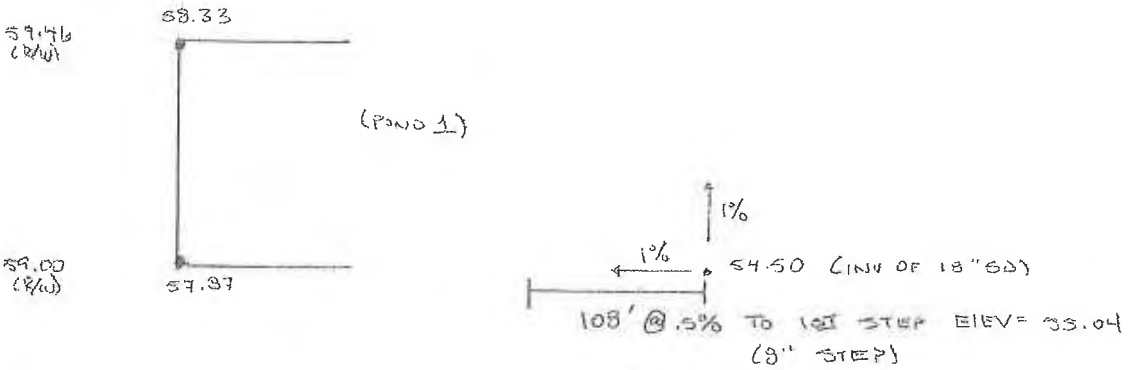
Elevation	Incremental Volume	Cumulative Volume	Acre-Feet	Surface Area
	cu ft	cu ft		sq ft
4954.5000	0.0000	0.0000	0.0000	0.0000
4955.0000	152523.3205	152523.3205	3.5015	99109.1048
4955.5000	25618.5811	178141.9016	4.0896	106765.2623
4955.7000	10987.9496	189129.8512	4.3418	107802.2634

3/19/2004

$V_{1940} = 3.73 + 15.18 (2.75 - 2.35)/12 = 4.24$

$V_{today} = 3.73 + 15.18 (3.95 - 2.35)/12 = 5.75$

MAX WATER ELEVATION = 55.70



POND 2

Bohannan Huston Inc.

PROJECT NAME		SHEET 1-1>	OF	ENGINEERING
PROJECT NO.		BY	DATE	SPATIAL DATA
SUBJECT		CH'D	DATE	ADVANCED TECHNOLOGIES

Asphalt Box Culvert

MANNING'S N = 0.017 SLOPE = 0.010

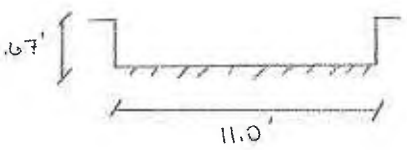
POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.0	0.7	3	11.0	0.0			
2	0.0	0.0	4	11.0	0.7			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)	
0.020	0.020	0.220	0.140	11.040	0.636	11.000	0.026	
0.040	0.040	0.440	0.443	11.080	1.007	11.000	0.056	
0.060	0.060	0.660	0.869	11.120	1.317	11.000	0.087	
0.080	0.080	0.880	1.400	11.160	1.591	11.000	0.119	
0.100	0.100	1.100	2.026	11.200	1.842	11.000	0.153	
0.120	0.120	1.320	2.739	11.240	2.075	11.000	0.187	
0.140	0.140	1.540	3.533	11.280	2.294	11.000	0.222	
0.160	0.160	1.760	4.404	11.320	2.502	11.000	0.257	
0.180	0.180	1.980	5.346	11.360	2.700	11.000	0.293	
0.200	0.200	2.200	6.357	11.400	2.890	11.000	0.330	
0.220	0.220	2.420	7.435	11.440	3.072	11.000	0.367	
0.240	0.240	2.640	8.575	11.480	3.248	11.000	0.404	
0.260	0.260	2.860	9.776	11.520	3.418	11.000	0.442	
0.280	0.280	3.080	11.036	11.560	3.583	11.000	0.480	
0.300	0.300	3.300	12.352	11.600	3.743	11.000	0.518	
0.320	0.320	3.520	13.723	11.640	3.899	11.000	0.556	
0.340	0.340	3.740	15.147	11.680	4.050	11.000	0.595	$Q_{100} = 16.44$ cfs
0.360	0.360	3.960	16.624	11.720	4.198	11.000	0.634	
0.380	0.380	4.180	18.150	11.760	4.342	11.000	0.673	
0.400	0.400	4.400	19.725	11.800	4.483	11.000	0.713	
0.420	0.420	4.620	21.348	11.840	4.621	11.000	0.752	
0.440	0.440	4.840	23.017	11.880	4.756	11.000	0.792	
0.460	0.460	5.060	24.731	11.920	4.888	11.000	0.832	
0.480	0.480	5.280	26.490	11.960	5.017	11.000	0.872	
0.500	0.500	5.500	28.292	12.000	5.144	11.000	0.912	
0.520	0.520	5.720	30.136	12.040	5.269	11.000	0.952	
0.540	0.540	5.940	32.022	12.080	5.391	11.000	0.992	
0.560	0.560	6.160	33.948	12.120	5.511	11.000	1.032	
0.580	0.580	6.380	35.914	12.160	5.629	11.000	1.073	
0.600	0.600	6.600	37.918	12.200	5.745	11.000	1.113	
0.620	0.620	6.820	39.961	12.240	5.859	11.000	1.154	
0.640	0.640	7.040	42.041	12.280	5.972	11.000	1.195	
0.660	0.660	7.260	44.157	12.320	6.082	11.000	1.235	

$d = 0.36'$

$V = 4.18$ FPS

$E = 0.63 < 0.67$ ✓ O.K.



WIER ANALYSIS

text.txt
Mis Abuelitios

MANNING'S N = 0.017 SLOPE = 0.013

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.0	0.9	5	11.0	0.1	9	37.2	0.7
2	8.4	0.7	6	23.0	0.4	10	37.6	0.7
3	8.8	0.7	7	35.0	0.1	11	46.0	0.9
4	9.0	0.0	8	37.0	0.0			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)
0.020	0.020	0.007	0.003	0.683	0.443	1.570	0.023
0.040	0.040	0.026	0.018	1.365	0.703	2.220	0.048
0.060	0.060	0.059	0.054	2.048	0.921	2.870	0.073
0.080	0.080	0.104	0.116	2.730	1.115	3.521	0.099
0.100	0.100	0.163	0.210	3.413	1.294	4.171	0.126
0.120	0.120	0.234	0.342	4.095	1.462	4.821	0.153
0.140	0.140	0.326	0.472	5.797	1.447	6.491	0.173
0.160	0.160	0.458	0.679	7.839	1.483	8.501	0.194
0.180	0.180	0.629	0.989	9.880	1.571	10.511	0.218
0.200	0.200	0.841	1.415	11.922	1.682	12.521	0.244
0.220	0.220	1.094	1.972	13.964	1.803	14.532	0.271
0.240	0.240	1.386	2.672	16.005	1.928	16.542	0.298
0.260	0.260	1.718	3.530	18.047	2.054	18.552	0.326
0.280	0.280	2.091	4.558	20.089	2.180	20.562	0.354
0.300	0.300	2.504	5.771	22.130	2.305	22.572	0.383 $Q_{100} = 7.04$ cfs
0.320	0.320	2.957	7.179	24.172	2.428	24.582	0.412
0.340	0.340	3.451	8.796	26.214	2.549	26.593	0.441
0.360	0.360	3.984	10.632	28.255	2.669	28.603	0.471
0.380	0.380	4.547	13.084	28.797	2.878	29.113	0.509
0.400	0.400	5.111	15.884	28.838	3.108	29.123	0.550
0.420	0.420	5.675	18.894	28.879	3.330	29.133	0.592
0.440	0.440	6.239	22.108	28.920	3.543	29.143	0.635
0.460	0.460	6.804	25.517	28.962	3.750	29.153	0.679
0.480	0.480	7.368	29.116	29.003	3.951	29.164	0.723
0.500	0.500	7.933	32.900	29.044	4.147	29.174	0.767
0.520	0.520	8.499	36.864	29.086	4.338	29.184	0.813
0.540	0.540	9.064	41.002	29.127	4.524	29.194	0.858
0.560	0.560	9.630	45.312	29.168	4.705	29.204	0.904
0.580	0.580	10.195	49.788	29.209	4.883	29.214	0.951
0.600	0.600	10.761	54.428	29.251	5.058	29.224	0.998
0.620	0.620	11.328	59.229	29.292	5.229	29.235	1.045
0.640	0.640	11.894	64.186	29.333	5.397	29.245	1.093
0.660	0.660	12.461	69.298	29.374	5.561	29.255	1.141
0.680	0.680	13.032	73.106	30.325	5.610	30.190	1.169
0.700	0.700	13.664	74.612	33.106	5.461	32.050	1.164
0.720	0.720	14.323	77.822	34.966	5.433	33.910	1.179
0.740	0.740	15.020	81.373	36.827	5.418	35.770	1.197
0.760	0.760	15.754	85.260	38.687	5.412	37.630	1.216
0.780	0.780	16.525	89.483	40.547	5.415	39.490	1.236
0.800	0.800	17.334	94.042	42.408	5.425	41.350	1.258
0.820	0.820	18.179	98.939	44.268	5.442	43.210	1.281
0.840	0.840	19.062	104.176	46.129	5.465	45.070	1.305

$d = 0.32'$

$V = 2.42$ FPS

$E = 0.41$

WEIR ANALYSIS @ LOW POINT TO ENTER CURB CUT

$Q = CLH^{3/2}$ WHERE $C = 2.63$

$7.04 = 2.63\,(L)(0.67)^{3/2}$

$L = 5.0$ FT

Asphalt Culvert at Opening

MANNING'S N = 0.017 SLOPE = 0.010

POINT	DIST	ELEV	POINT	DIST	ELEV	POINT	DIST	ELEV
1	0.0	0.7	3	5.0	0.0			
2	0.0	0.0	4	5.0	0.7			

WSEL FT.	DEPTH INC	FLOW AREA SQ.FT.	FLOW RATE (CFS)	WETTED PER (FT)	FLOW VEL (FPS)	TOPWID PLUS OBSTRUCTIONS	TOTAL ENERGY (FT)	
0.020	0.020	0.100	0.063	5.040	0.634	5.000	0.026	
0.040	0.040	0.200	0.200	5.080	1.001	5.000	0.056	
0.060	0.060	0.300	0.392	5.120	1.305	5.000	0.087	
0.080	0.080	0.400	0.629	5.160	1.573	5.000	0.118	
0.100	0.100	0.500	0.908	5.200	1.816	5.000	0.151	
0.120	0.120	0.600	1.224	5.240	2.040	5.000	0.185	
0.140	0.140	0.700	1.575	5.280	2.250	5.000	0.219	
0.160	0.160	0.800	1.958	5.320	2.447	5.000	0.253	
0.180	0.180	0.900	2.370	5.360	2.634	5.000	0.288	
0.200	0.200	1.000	2.811	5.400	2.811	5.000	0.323	
0.220	0.220	1.100	3.279	5.440	2.981	5.000	0.358	
0.240	0.240	1.200	3.773	5.480	3.144	5.000	0.394	
0.260	0.260	1.300	4.290	5.520	3.300	5.000	0.429	
0.280	0.280	1.400	4.831	5.560	3.451	5.000	0.465	
0.300	0.300	1.500	5.394	5.600	3.596	5.000	0.501	
0.320	0.320	1.600	5.978	5.640	3.736	5.000	0.537	
0.340	0.340	1.700	6.582	5.680	3.872	5.000	0.573	$Q_{.60} = 7.54$ cfs
0.360	0.360	1.800	7.206	5.720	4.003	5.000	0.609	
0.380	0.380	1.900	7.849	5.760	4.131	5.000	0.645	
0.400	0.400	2.000	8.510	5.800	4.255	5.000	0.682	
0.420	0.420	2.100	9.189	5.840	4.376	5.000	0.718	
0.440	0.440	2.200	9.885	5.880	4.493	5.000	0.754	
0.460	0.460	2.300	10.597	5.920	4.607	5.000	0.790	
0.480	0.480	2.400	11.325	5.960	4.719	5.000	0.826	
0.500	0.500	2.500	12.068	6.000	4.827	5.000	0.862	
0.520	0.520	2.600	12.827	6.040	4.933	5.000	0.899	
0.540	0.540	2.700	13.599	6.080	5.037	5.000	0.935	
0.560	0.560	2.800	14.386	6.120	5.138	5.000	0.971	
0.580	0.580	2.900	15.187	6.160	5.237	5.000	1.007	
0.600	0.600	3.000	16.000	6.200	5.333	5.000	1.042	
0.620	0.620	3.100	16.827	6.240	5.428	5.000	1.078	
0.640	0.640	3.200	17.666	6.280	5.520	5.000	1.114	
0.660	0.660	3.300	18.517	6.320	5.611	5.000	1.150	

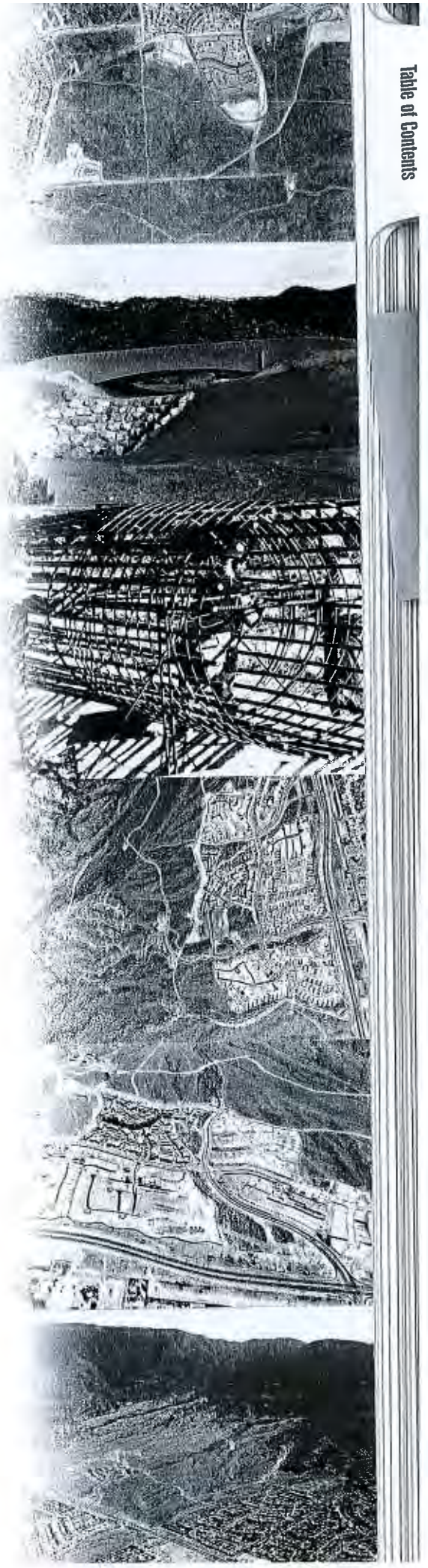
$d = 0.35'$

$V = 3.97$ fps

$E = 0.60 < 0.67$ ✓ O.K.

Will pass overtop

AMENDMENT TO THE DRAINAGE REPORT FOR ARBOLERA DE VIDA UNIT 2 (AKA SAWMILL)



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FEBRUARY 24, 2005

Prepared for:

Sawmill Community Land Trust

PO Box 25181

Albuquerque, NM 87125-5181

Bohannan ▲ Huston

ENGINEERING ▲

SPATIAL DATA ▲

ADVANCED TECHNOLOGIES ▲

AMENDMENT TO THE
DRAINAGE REPORT
FOR
ARBOLERA DE VIDA - UNIT 2
(aka SAWMILL)

FEBRURARY 24, 2005

Prepared for:

SAWMILL COMMUNITY LAND TRUST
PO BOX 25181
ALBUQUERQUE, NM 87125-5181

Prepared by:

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COURTYARD I
7500 JEFFERSON STREET NE
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AMENDMENT PREPARED BY:

2/24/05
Michael J. Balaskovits, E.I. Date

UNDER THE SUPERVISION OF:

2/24/05
Bruce J. Stidworthy, P.E. Date

BRUCE J. STIDWORTHY NEW MEXICO 14523 REGISTERED PROFESSIONAL ENGINEER

Bohannan Huston INC.

TABLE OF CONTENTS FOR AMENDMENT

APPENDICES

EXHIBITS

I. PURPOSE

The purpose of this amended section of the approved drainage report for Arbolera De Vida – Unit 2 (Sawmill) is to demonstrate that Offsite Basin 4 (Sawmill Lofts) can drain directly into the new 18" RCP storm drain that ties into the Bellamah Ave. storm drain. The proposed development of the Sawmill Lofts site includes multiple live/work lofts along with associated landscaped and parking areas.

II. METHODOLOGIES

Site conditions were analyzed for the 100-year, 6-hour storm event in accordance with City of Albuquerque Development Process Manual Section 22.2 and by performing an AHYMO model to more accurately represent the drainage system.

III. SITE LOCATION AND CHARACTERISTICS

The Sawmill Lofts site is located at the northeast corner of Bellamah Ave. and 19th Street. According to Section V.B. of this report, the flow generated within this basin should be collected by a future onsite pond. Further analysis of this report through the AHYMO program resulted in the elimination of this onsite pond and the ability to utilize the new pond (Pond 2) as an outfall for this drainage. (See Appendix F for complete AHYMO Analysis)

IV. PROPOSED AMENDED HYDRAULIC AND HYDROLOGIC CONDITIONS (ARBOLERA DE VIDA – UNIT 2)

The entire Arbolera de Vida, Unit 2 site was reanalyzed using AHYMO resulting in more accurate results. These results developed important characteristics of the site not provided within the approved report. This additional information includes, peak discharge rates, time to peak discharge, maximum water surface elevation, etc. The land treatment percentages, acreages, and contributing basins did not change, however the pond volumes were greater, based on the final DRC plans. The original calculations used for the approved report were based on preliminary plans.

Pond 1-(See Appendix G for full Pond results) EXHIBIT 6
The contributing basins for Pond 1 are outlined in Appendix E. The total acreage of the contributing basins into this pond is 11.32 acres (Basin 1) as shown on sheet E-1.

The three (3) sub basins and their associated land treatment percentages as shown on sheet E-1 are represented in the AHYMO analysis as Basin 1A, 1B, and 1C. The total volume generated by these basins is equal to 1.13 acre-ft with a peak discharge of 36.47cfs. (See Exhibit 6 – Proposed Drainage Basin Map – Updated)

Basin 1 (Hydrograph ID BASIN 1) was routed through Pond 1, which has an outfall into Pond 2. The AHYMO analysis showed that the peak discharge from Pond 1 to Pond 2 is equal to 2.80cfs and occurs at hour 2.17.

Pond 2-(See Appendix G for full Pond Results)
The contributing basins for Pond 2 are outlined in Appendix E as well. Three (3) sub basins and their associated land treatment percentages as shown on sheet E-3 are represented in the AHYMO analysis as Basin 2A, 2B, and 2C. According to the AHYMO analysis, the total volume generated by these basins is equal to ~~1.45~~ 1.33 acre-ft with a peak discharge of 39.87cfs. Offsite Basin 4 was added separately to show this pond had capacity to accept the drainage generated from this site. (Volume generated with Offsite Basin 4 = ~~1.78~~ 2.23 acre-ft, peak discharge = 52.5~~1~~2cfs)

Basin 2 (Hydrograph ID BASIN2) plus the outflow from Pond 1(Hydrograph ID POND-1) was routed through Pond 2. The outflow for Pond 2 enters an 18" storm drain (Invert=54.00), which runs through the parking area of the Sawmill Lofts site and ties into the 18" storm drain in Bellamah Ave. (Plans have been approved by DRC for this 18" storm drain, see City Project number 617582). The peak discharge that enters this 18" storm drain from Pond 2 is 1.28cfs with a maximum water surface elevation of 54.40. This peak discharge occurs at hour 3.57.

The 1.28cfs outfall from Pond 2 is less then the maximum allowable 4.1cfs mentioned in the MDP (see section V. Proposed Hydraulic and Hydrologic Conditions, sheet 3 of approved report), thus allowing for additional capacity to enter this storm drain directly from Offsite Basin 4. In addition, Pond 2 has enough capacity to allow the entire volume generated on Offsite Basin 4 to enter this pond (Contributing basins to Pond 2 + Offsite Basin 4 = 1.78acre-ft < Total Pond Volume = 3.94acre-ft).

V. *OFFSITE BASIN 4 (SAWMILL LOFTS SITE)*

Offsite Basin 4 (2.92 acres – per updated final signed off DRC set and preliminary plat DRB# 1000029) was modeled in AHMYO to determine the time of peak discharge. In accordance with Appendix A of the approved plan, the developed land treatments were used for this analysis (15% land treatment B and 85% land treatment D-Sheet A-1). The peak discharge for the Sawmill Lofts site was 12.64cfs which occurred at hour 1.5. The time to peak for the Sawmill Lofts site will occur sooner then the time to peak for the outflow of Pond 2. (1.5hour < 3.57hour). This is another factor that allows for the Sawmill Lofts site to drain directly to the 18" storm drain.

The onsite drainage for the Sawmill Lofts is transmitted over the site through multiple storm drain lines and surface flow. There are three storm drain lines that spread throughout the site and tie directly into the 18" storm drain via manhole connections. These lines tie into roof drains and area drains within the site. In

addition to the lines mentioned, there are also two inlets located within the parking lot which pick up surface flow.

In order to mitigate flows entering the Bellamah Ave. storm drain, the furthest downstream manhole on site will have an orifice plate constructed at the invert of the outlet. The allowable head on this orifice plate is 5.63ft which is equivalent to the rim elevation of this manhole (Rim=58.65) minus the elevation of the center of the orifice (Invert of 18" pipe = 52.72, Elev. of center of orifice = 53.05. This resulted in an orifice plate to be constructed as a 7" x 7" opening. The orifice plate will reduce the flow generated on the Sawmill Lofts site to the required 4.1cfs as described in the approved plan. (See Appendix H – Orifice Plate Details)

As the 4.1cfs is discharged into the Bellamah Ave. storm drain, the remainder of the drainage (12.64 - 4.1 = 8.54cfs) will discharge back to Pond 2.

VI. *CONCLUSION*

The drainage report for Arbolera De Vida – Unit 2 storm system has been reanalyzed to demonstrate the safe passage of the 100 year, 6 hour storm event for Sawmill Lofts site (Offsite Basin 4). Based on the DPM methodology and utilizing AHYMO as a means to model the storm system, the maximum allowable discharge of 4.1cfs into the Bellamah Ave. storm drain will be maintained.

It is clear that not only does the peak discharge for the Sawmill Lofts site occur at an earlier time then Pond 2, but the maximum peak discharge for Pond 2 is equal to 1.28cfs at a maximum water surface elevation of 54.40. This not only allows time for the Sawmill Lofts site to drain, but also demonstrates that the allowable 4.1cfs is not completely being utilized by the new system.

This amendment has been prepared in support of drainage report approval and building permit approval for the Sawmill Lofts.

(AMENDED) APPENDICES

APPENDIX F: AHYMO ANALYSIS

APPENDIX G: POND RESULTS

APPENDIX H: ORIFICE DETAILS

APPENDIX F

AHYMO ANALYSIS

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - VERSION: 1997.02c RUN DATE (MON/DAY/YR) =02/23/2005
INPUT FILE = FINAL.HYM USER NO.= AHYMO-S-9702c1BohanHu-AH

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
*S AHYMO FILE FOR SAWMILL- ZONE 2, BH PROJ # 05 0073										
*S 6HR, 100YR STORM										
*S Note:										
*S INPUT FILE -- P:\050073\CDP\HYDRO\AHYMO\SAWMILL.HYM										
*S OUTPUT FILE -- P:\050073\CDP\HYDRO\AHYMO\SAWMILL.OUT										
LOCATION	ALBUQUERQUE									RAIN6= 2.350
RAINFALL TYPE= 1										
S BASIN COMPUTATIONS										
*S**********BASIN 1**********										
COMPUTE NM HYD	BASIN-1A	-	1	.00184	4.80	.171	1.73723	1.500	4.071	PER IMP= 67.92
COMPUTE NM HYD	BASIN-1B	-	2	.00078	2.27	.083	1.99749	1.500	4.534	PER IMP= 90.00
COMPUTE NM HYD	BASIN-1C	-	3	.01506	29.40	.873	1.08645	1.500	3.049	PER IMP= .00
ADD HYD	101.00	1& 2	21	.00263	7.07	.254	1.81445	1.500	4.209	
*S**NOTE: ID 22, IS BASIN 1 AS SHOWN ON THE AMENDED BASIN MAP**********										
ADD HYD	BASIN1	21& 3	22	.01769	36.47	1.127	1.19448	1.500	3.221	
*S**********POND 1**********										
ROUTE RESERVOIR	POND-1	22	51	.01769	2.80	.434	.46023	2.166	.247	AC-FT= .969
*S**********BASIN 2**********										
COMPUTE NM HYD	BASIN-2A	-	4	.00850	22.08	.788	1.73723	1.500	4.059	PER IMP= 67.92
COMPUTE NM HYD	BASIN-2B	-	5	.00081	2.36	.087	1.99749	1.500	4.532	PER IMP= 90.00
COMPUTE NM HYD	BASIN-2C	-	6	.00791	15.43	.458	1.08645	1.500	3.050	PER IMP= .00
ADD HYD	103.00	4& 5	23	.00931	24.44	.874	1.75988	1.500	4.100	
*S**NOTE: ID 24, IS BASIN 2 AS SHOWN ON THE AMENDED BASIN MAP**********										
ADD HYD	BASIN2	6&23	24	.01722	39.87	1.332	1.45066	1.500	3.618	
*S**********POND 2**********										
ADD HYD	106.00	51&24	26	.03491	39.88	1.766	.94879	1.500	1.785	
ROUTE RESERVOIR	POND-2	26	52	.03491	1.28	.608	.32664	3.566	.057	AC-FT= 1.485
*S**********BASIN 2 + OFFSITE BASIN 4**********										
*SAWMILL LOFTS SITE(OFFSITE BASIN 4)										
COMPUTE NM HYD	SAWMILL	-	7	.00455	12.64	.465	1.91479	1.500	4.341	PER IMP= 85.00
ADD HYD	105.00	7&24	25	.02177	52.51	1.797	1.54766	1.500	3.769	
*S*******POND 2 (INCLUDING OFFSITE BASIN 4)**********										
ADD HYD	107.00	51&25	27	.03946	52.52	2.231	1.06018	1.500	2.080	
ROUTE RESERVOIR	POND-2	27	52	.03946	2.41	1.071	.50901	2.900	.096	AC-FT= 1.782
FINISH										

AHYMO OUTPUT FILE

```
   AHYMO PROGRAM (AHYMO_97) -                          - Version:  1997.02c
        RUN DATE (MON/DAY/YR) = 02/23/2005
        START TIME (HR:MIN:SEC) = 15:45:58      USER NO.= AHYMO-S-9702c1BohanHu-AH
        INPUT FILE = FINAL.HYM

*S  AHYMO FILE FOR SAWMILL- ZONE 2, BH PROJ # 05 0073
*S  6HR, 100YR STORM
*S  Note:
*S  INPUT FILE -- P:\050073\CDP\HYDRO\AHYMO\SAWMILL.HYM
*
*S  OUTPUT FILE -- P:\050073\CDP\HYDRO\AHYMO\SAWMILL.OUT
*
*********************************************************
LOCATION            ALBUQUERQUE, NEW MEXICO
     City of Albuquerque 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

*
*********************************************************
*
*  100 YEAR RAINFALL TABLE
*********************************************************
*
RAINFALL                TYPE=1  RAIN QUARTER=0.0
                                RAIN ONE=2.01 IN  RAIN SIX=2.35 IN
                                RAIN DAY=2.75 IN  DT=0.03333 HRS

                COMPUTED 6-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2 - PEAK AT 1.40 HR.
                DT =     .033330 HOURS        END TIME =     5.999400 HOURS
                   .0000   .0016   .0033   .0049   .0066   .0084   .0102
                   .0120   .0139   .0158   .0178   .0199   .0219   .0241
                   .0263   .0286   .0309   .0333   .0358   .0384   .0411
                   .0439   .0467   .0497   .0529   .0561   .0596   .0631
                   .0669   .0709   .0751   .0807   .0866   .0930   .1066
                   .1371   .1840   .2514   .3434   .4644   .6186   .8106
                  1.0449  1.2624  1.3533  1.4300  1.4982  1.5602  1.6174
                  1.6704  1.7200  1.7664  1.8102  1.8514  1.8904  1.9273
                  1.9622  1.9953  2.0268  2.0566  2.0850  2.0915  2.0976
                  2.1033  2.1088  2.1140  2.1191  2.1239  2.1285  2.1329
                  2.1373  2.1414  2.1454  2.1494  2.1531  2.1568  2.1604
                  2.1639  2.1673  2.1706  2.1739  2.1771  2.1802  2.1832
                  2.1862  2.1891  2.1919  2.1947  2.1975  2.2002  2.2028
                  2.2054  2.2080  2.2105  2.2130  2.2154  2.2178  2.2202
                  2.2225  2.2248  2.2270  2.2293  2.2315  2.2336  2.2358
                  2.2379  2.2399  2.2420  2.2440  2.2460  2.2480  2.2500
                  2.2519  2.2538  2.2557  2.2576  2.2594  2.2612  2.2631
                  2.2648  2.2666  2.2684  2.2701  2.2718  2.2735  2.2752
                  2.2769  2.2785  2.2802  2.2818  2.2834  2.2850  2.2866
```

```
                2.2881  2.2897  2.2912  2.2928  2.2943  2.2958  2.2973
                2.2987  2.3002  2.3017  2.3031  2.3045  2.3060  2.3074
                2.3088  2.3102  2.3115  2.3129  2.3143  2.3156  2.3169
                2.3183  2.3196  2.3209  2.3222  2.3235  2.3248  2.3261
                2.3273  2.3286  2.3298  2.3311  2.3323  2.3335  2.3348
                2.3360  2.3372  2.3384  2.3396  2.3408  2.3419  2.3431
                2.3443  2.3454  2.3466  2.3477  2.3488  2.3500

*S*  BASIN COMPUTATIONS
*********************************************************
*
*S*******************BASIN 1***************************
*
*********************************************************
*
*BASIN 1A
*CONTRIBUTING BASINS TO 1A -> D-1 & D-2
COMPUTE NM HYD          ID=1  HYD=BASIN-1A  AREA=.001844 SQ MI
                              PER A=0  PER B=16.04  PER C=16.04  PER D=67.92
                              TP=0.1333 HR  MASS RAIN=-1

     K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =    4.9447     CFS   UNIT VOLUME =     .9969       B =    526.28       P60 = 2.0100
     AREA =       .001252 SQ MI     IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


     K =    .119767HR     TP =    .133300HR     K/TP RATIO =    .898476      SHAPE CONSTANT, N =  3.944947
     UNIT PEAK =    1.5598     CFS   UNIT VOLUME =     .9919       B =    351.48       P60 = 2.0100
     AREA =       .000592 SQ MI     IA =     .42500 INCHES     INF =    1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD               ID=1     CODE=10

                                  HYDROGRAPH FROM AREA BASIN-1A

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
      .000       .0          1.333       1.2         2.666        .1         4.000        .0         5.333        .0
      .333       .0          1.666       2.5         3.000        .0         4.333        .0         5.666        .0
      .667       .0          2.000       1.1         3.333        .0         4.666        .0         5.999        .0
     1.000       .0          2.333        .2         3.666        .0         5.000        .0         6.333        .0

     RUNOFF VOLUME =      1.73723 INCHES      =        .1708 ACRE-FEET
     PEAK DISCHARGE RATE =       4.80 CFS  AT   1.500 HOURS   BASIN AREA =    .0018 SQ. MI.


*
*
*BASIN 1B
*CONTRIBUTING BASINS TO 1B -> D-3 & D-4
COMPUTE NM HYD          ID=2  HYD=BASIN-1B  AREA=.000781 SQ MI
                              PER A=0  PER B=5  PER C=5  PER D=90
```

TP=0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 2.7751 CFS UNIT VOLUME = .9955 B = 526.28 P60 = 2.0100
AREA = .000703 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .119767HR TP = .133300HR K/TP RATIO = .898476 SHAPE CONSTANT, N = 3.944947
UNIT PEAK = .20593 CFS UNIT VOLUME = .9346 B = 351.48 P60 = 2.0100
AREA = .000078 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=2 CODE=10

HYDROGRAPH FROM AREA BASIN-1B

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.7	2.666	.0	4.000	.0	5.333	.0
.333	.0	1.666	1.2	3.000	.0	4.333	.0	5.666	.0
.667	.0	2.000	.5	3.333	.0	4.666	.0	5.999	.0
1.000	.0	2.333	.1	3.666	.0	5.000	.0	6.333	.0

RUNOFF VOLUME = 1.99749 INCHES = .0832 ACRE-FEET
PEAK DISCHARGE RATE = 2.27 CFS AT 1.500 HOURS BASIN AREA = .0008 SQ. MI.

*
*
*BASIN 1C
*CONTRIBUTING BASINS TO 1C -> OFFSITE BASINS 1A, 1B, 2 & POND 1
COMPUTE NM HYD ID=3 HYD=BASIN-1C AREA=.015063 SQ MI
PER A=0 PER B=10 PER C=90 PER D=0
TP=0.1333 HR MASS RAIN=-1

K = .109910HR TP = .133300HR K/TP RATIO = .824532 SHAPE CONSTANT, N = 4.330009
UNIT PEAK = 42.557 CFS UNIT VOLUME = 1.000 B = 376.60 P60 = 2.0100
AREA = .015063 SQ MI IA = .36500 INCHES INF = .87200 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=3 CODE=10

HYDROGRAPH FROM AREA BASIN-1C

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.000	.0	2.000	4.0	3.000	.1	4.000	.0
.333	.0	1.333	2.3	2.333	1.1	3.333	.1		
.667	.0	1.666	16.0	2.666	.4	3.666	.0		

RUNOFF VOLUME = 1.08645 INCHES = .8728 ACRE-FEET
PEAK DISCHARGE RATE = 29.40 CFS AT 1.500 HOURS BASIN AREA = .0151 SQ. MI.

```
*
*
ADD HYD                    ID=21 HYD=101 ID I=1 ID II=2
PRINT HYD                ID=21 CODE=10

                              PARTIAL HYDROGRAPH   101.00

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     .000       .0           1.333      1.9          2.666       .1          4.000       .0          5.333       .0
     .333       .0           1.666      3.6          3.000       .1          4.333       .0          5.666       .0
     .667       .0           2.000      1.6          3.333       .0          4.666       .0          5.999       .0
    1.000       .0           2.333       .3          3.666       .0          5.000       .0          6.333       .0

    RUNOFF VOLUME =     1.81445 INCHES     =        .2540 ACRE-FEET
    PEAK DISCHARGE RATE =       7.07 CFS  AT   1.500 HOURS   BASIN AREA =    .0026 SQ. MI.


*
*S**NOTE: ID 22, IS BASIN 1 AS SHOWN ON THE AMENDED BASIN MAP**********
ADD HYD                    ID=22 HYD=BASIN1 ID I=21 ID II=3
PRINT HYD                ID=22 CODE=10

                              HYDROGRAPH FROM AREA BASIN1

     TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
      HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS           HRS       CFS
     .000       .0           1.333      4.2          2.666       .5          4.000       .0          5.333       .0
     .333       .0           1.666     19.7          3.000       .2          4.333       .0          5.666       .0
     .667       .0           2.000      5.6          3.333       .1          4.666       .0          5.999       .0
    1.000       .0           2.333      1.4          3.666       .1          5.000       .0          6.333       .0

    RUNOFF VOLUME =     1.19448 INCHES     =       1.1268 ACRE-FEET
    PEAK DISCHARGE RATE =      36.47 CFS  AT   1.500 HOURS   BASIN AREA =    .0177 SQ. MI.

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*
*S*******************POND 1***************************
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*******************************************************
ROUTE RESERVOIR        ID=51   HYD=POND-1   INFLOW ID=22   CODE=10
                        OUTFLOW              STORAGE          ELEV
                        (CFS)               (AC-FT)          (FT)
                                             0.000            0.0000  52.00
                                             0.010            0.7014  53.00
                                             7.920            1.4607  54.00
                                             9.830            2.2796  55.00
```

BASIN 1

13.188	3.1597	56.00
15.850	4.1027	57.00

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TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	52.00	.000	.00
.33	.00	52.00	.000	.00
.67	.00	52.00	.000	.00
1.00	.00	52.00	.000	.00
1.33	4.21	52.02	.014	.00
1.67	19.68	53.00	.702	.02
2.00	5.56	53.33	.953	2.63
2.33	1.40	53.34	.957	2.68
2.67	.51	53.28	.914	2.22
3.00	.20	53.22	.868	1.75
3.33	.10	53.17	.830	1.35
3.67	.06	53.13	.799	1.03
4.00	.04	53.10	.776	.78
4.33	.03	53.07	.758	.60
4.67	.03	53.06	.744	.46
5.00	.03	53.04	.734	.35
5.33	.04	53.03	.727	.27
5.67	.04	53.03	.721	.21
6.00	.04	53.02	.717	.17
6.33	.00	53.02	.713	.13
6.67	.00	53.01	.710	.10
7.00	.00	53.01	.708	.07
7.33	.00	53.01	.706	.06
7.67	.00	53.00	.704	.04
8.00	.00	53.00	.703	.03
8.33	.00	53.00	.703	.02
8.67	.00	53.00	.702	.02
9.00	.00	53.00	.702	.01
9.33	.00	53.00	.701	.01
9.67	.00	53.00	.701	.01
10.00	.00	53.00	.701	.01
10.33	.00	53.00	.701	.01
10.67	.00	53.00	.700	.01
11.00	.00	53.00	.700	.01
11.33	.00	53.00	.700	.01
11.67	.00	53.00	.699	.01
12.00	.00	53.00	.699	.01
12.33	.00	53.00	.699	.01
12.67	.00	53.00	.699	.01
13.00	.00	53.00	.698	.01
13.33	.00	53.00	.698	.01
13.67	.00	52.99	.698	.01
14.00	.00	52.99	.698	.01
14.33	.00	52.99	.697	.01
14.67	.00	52.99	.697	.01
15.00	.00	52.99	.697	.01

15.33	.00	52.99	.696	.01
15.67	.00	52.99	.696	.01
16.00	.00	52.99	.696	.01
16.33	.00	52.99	.696	.01
16.67	.00	52.99	.695	.01
17.00	.00	52.99	.695	.01
17.33	.00	52.99	.695	.01
17.66	.00	52.99	.695	.01
18.00	.00	52.99	.694	.01
18.33	.00	52.99	.694	.01

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
18.66	.00	52.99	.694	.01
19.00	.00	52.99	.693	.01
19.33	.00	52.99	.693	.01
19.66	.00	52.99	.693	.01

PEAK DISCHARGE = 2.801 CFS - PEAK OCCURS AT HOUR 2.17 ← POND 1
MAXIMUM WATER SURFACE ELEVATION = 53.353
MAXIMUM STORAGE = .9693 AC-FT INCREMENTAL TIME= .033330HRS

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*S*******************BASIN 2*****************************
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*
*BASIN 2A
*CONTRIBUTING BASINS TO 2A -> B-1, B-3, C-1, C-3, C-4, C-5, C-6
COMPUTE NM HYD          ID=4  HYD=BASIN-2A  AREA=.0085 SQ MI
                              PER A=0  PER B=16.04  PER C=16.04  PER D=67.92
                              TP=0.1333 HR  MASS RAIN=-1

     K =   .072649HR    TP =   .133300HR    K/TP RATIO =   .545000     SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =   22.793    CFS   UNIT VOLUME =    .9988       B =   526.28      P60 = 2.0100
     AREA =      .005773 SQ MI    IA =    .10000 INCHES    INF =    .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

     K =   .119767HR    TP =   .133300HR    K/TP RATIO =   .898476     SHAPE CONSTANT, N =  3.944947
     UNIT PEAK =   7.1900    CFS   UNIT VOLUME =    .9985       B =   351.48      P60 = 2.0100
     AREA =      .002727 SQ MI    IA =    .42500 INCHES    INF =   1.04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =   .033330

PRINT HYD               ID=4     CODE=10
```

HYDROGRAPH FROM AREA BASIN-2A

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	11.4	3.333	.1	5.000	.1	6.666	.0

.333	.0	2.000	4.8	3.666	.1	5.333	.1
.667	.0	2.333	1.1	4.000	.1	5.666	.1
1.000	.0	2.666	.4	4.333	.1	5.999	.1
1.333	5.6	3.000	.2	4.666	.1	6.333	.0

RUNOFF VOLUME = 1.73723 INCHES = .7875 ACRE-FEET
PEAK DISCHARGE RATE = 22.08 CFS AT 1.500 HOURS BASIN AREA = .0085 SQ. MI.

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*
*BASIN 2B
*CONTRIBUTING BASINS TO 2B -> B-2, B-4, B-5 & C-2
COMPUTE NM HYD ID=5 HYD=BASIN-2B AREA=.0008125 SQ MI
PER A=0 PER B=5 PER C=5 PER D=90
TP=0.1333 HR MASS RAIN=-1

K = .072649HR TP = .133300HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 2.8870 CFS UNIT VOLUME = .9955 B = 526.28 P60 = 2.0100
AREA = .000731 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

K = .119767HR TP = .133300HR K/TP RATIO = .898476 SHAPE CONSTANT, N = 3.944947
UNIT PEAK = .21424 CFS UNIT VOLUME = .9405 B = 351.48 P60 = 2.0100
AREA = .000081 SQ MI IA = .42500 INCHES INF = 1.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=5 CODE=10

HYDROGRAPH FROM AREA BASIN-2B

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.333	.7	2.666	.0	4.000	.0	5.333	.0
.333	.0	1.666	1.2	3.000	.0	4.333	.0	5.666	.0
.667	.0	2.000	.6	3.333	.0	4.666	.0	5.999	.0
1.000	.0	2.333	.1	3.666	.0	5.000	.0	6.333	.0

RUNOFF VOLUME = 1.99749 INCHES = .0866 ACRE-FEET
PEAK DISCHARGE RATE = 2.36 CFS AT 1.500 HOURS BASIN AREA = .0008 SQ. MI.

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*
*BASIN 2C
*CONTRIBUTING BASINS TO 2C -> OFFSITE BASINS 3, 5 & POND 2
COMPUTE NM HYD ID=6 HYD=BASIN-2C AREA=.007906 SQ MI
PER A=0 PER B=10 PER C=90 PER D=0
TP=0.1333 HR MASS RAIN=-1

K = .109910HR TP = .133300HR K/TP RATIO = .824532 SHAPE CONSTANT, N = 4.330009

UNIT PEAK = 22.336 CFS UNIT VOLUME = .9998 B = 376.60 P60 = 2.0100
AREA = .007906 SQ MI IA = .36500 INCHES INF = .87200 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .033330

PRINT HYD ID=6 CODE=10

HYDROGRAPH FROM AREA BASIN-2C

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.000	.0	2.000	2.1	3.000	.1		
.333	.0	1.333	1.2	2.333	.6	3.333	.0		
.667	.0	1.666	8.4	2.666	.2	3.666	.0		

RUNOFF VOLUME = 1.08645 INCHES = .4581 ACRE-FEET
PEAK DISCHARGE RATE = 15.43 CFS AT 1.500 HOURS BASIN AREA = .0079 SQ. MI.

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*
ADD HYD ID=23 HYD=103 ID I=4 ID II=5
PRINT HYD ID=23 CODE=10

PARTIAL HYDROGRAPH 103.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	12.6	3.333	.2	5.000	.1	6.666	.0
.333	.0	2.000	5.4	3.666	.1	5.333	.1		
.667	.0	2.333	1.2	4.000	.1	5.666	.1		
1.000	.0	2.666	.5	4.333	.1	5.999	.1		
1.333	6.3	3.000	.2	4.666	.1	6.333	.0		

RUNOFF VOLUME = 1.75988 INCHES = .8741 ACRE-FEET
PEAK DISCHARGE RATE = 24.44 CFS AT 1.500 HOURS BASIN AREA = .0093 SQ. MI.

*
*S**NOTE: ID 24, IS BASIN 2 AS SHOWN ON THE AMENDED BASIN MAP**********
ADD HYD ID=24 HYD=BASIN2 ID I=6 ID II=23
PRINT HYD ID=24 CODE=10

HYDROGRAPH FROM AREA BASIN2

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	21.0	3.333	.2	5.000	.1	6.666	.0
.333	.0	2.000	7.5	3.666	.1	5.333	.1		
.667	.0	2.333	1.7	4.000	.1	5.666	.1		
1.000	.0	2.666	.7	4.333	.1	5.999	.1		
1.333	7.5	3.000	.3	4.666	.1	6.333	.0		

RUNOFF VOLUME = 1.45066 INCHES = 1.3322 ACRE-FEET
PEAK DISCHARGE RATE = 39.87 CFS AT 1.500 HOURS BASIN AREA = .0172 SQ. MI.

BASIN 2

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*S********************POND 2*****************************
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*
*
ADD HYD ID=26 HYD=106 ID I=51 ID II=24
PRINT HYD ID=26 CODE=10

PARTIAL HYDROGRAPH 106.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	4.000	.9	7.999	.0	11.999	.0	15.998	.0
.333	.0	4.333	.7	8.333	.0	12.332	.0	16.332	.0
.667	.0	4.666	.6	8.666	.0	12.665	.0	16.665	.0
1.000	.0	5.000	.5	8.999	.0	12.999	.0	16.998	.0
1.333	7.5	5.333	.4	9.332	.0	13.332	.0	17.332	.0
1.666	21.0	5.666	.3	9.666	.0	13.665	.0	17.665	.0
2.000	10.1	5.999	.3	9.999	.0	13.999	.0	17.998	.0
2.333	4.4	6.333	.1	10.332	.0	14.332	.0	18.331	.0
2.666	2.9	6.666	.1	10.666	.0	14.665	.0	18.665	.0
3.000	2.1	6.999	.1	10.999	.0	14.998	.0	18.998	.0
3.333	1.5	7.333	.1	11.332	.0	15.332	.0	19.331	.0
3.666	1.2	7.666	.0	11.665	.0	15.665	.0	19.665	.0

RUNOFF VOLUME = .94879 INCHES = 1.7663 ACRE-FEET
PEAK DISCHARGE RATE = 39.88 CFS AT 1.500 HOURS BASIN AREA = .0349 SQ. MI.

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*
ROUTE RESERVOIR ID=52 HYD=POND-2 INFLOW ID=26 CODE=10

OUTFLOW (CFS)	STORAGE (AC-FT)	ELEV (FT)	
	0.000	0.0000	52.50
	0.010	0.4143	53.00
	0.010	1.1553	54.00
	3.198	1.9869	55.00
	9.830	2.9156	56.00
	13.188	3.9416	57.00
	15.850	5.0638	58.00

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

.00	.00	52.50	.000	.00
.33	.00	52.50	.000	.00
.67	.00	52.50	.000	.00
1.00	.00	52.50	.000	.00
1.33	7.53	52.54	.033	.00
1.67	21.05	54.00	1.155	.01
2.00	10.11	54.04	1.188	.14
2.33	4.42	54.25	1.360	.79
2.67	2.91	54.33	1.432	1.07
3.00	2.07	54.38	1.468	1.21
3.33	1.54	54.39	1.483	1.27
3.67	1.16	54.40	1.485	1.27
4.00	.90	54.39	1.478	1.25
4.33	.71	54.37	1.466	1.20
4.67	.57	54.36	1.452	1.15
5.00	.46	54.34	1.435	1.08
5.33	.39	54.32	1.418	1.02
5.67	.34	54.30	1.401	.95
6.00	.31	54.28	1.384	.89
6.33	.15	54.25	1.367	.82
6.67	.10	54.23	1.349	.75
7.00	.07	54.21	1.331	.68
7.33	.06	54.19	1.315	.62
7.67	.04	54.17	1.300	.56
8.00	.03	54.16	1.286	.51
8.33	.02	54.14	1.274	.46
8.67	.02	54.13	1.262	.42
9.00	.01	54.12	1.251	.38
9.33	.01	54.10	1.242	.34
9.67	.01	54.09	1.233	.31
10.00	.01	54.08	1.225	.28
10.33	.01	54.08	1.218	.25
10.67	.01	54.07	1.212	.23
11.00	.01	54.06	1.206	.21
11.33	.01	54.06	1.201	.19
11.67	.01	54.05	1.197	.17
12.00	.01	54.04	1.192	.15
12.33	.01	54.04	1.189	.14
12.67	.01	54.04	1.185	.13
13.00	.01	54.03	1.182	.11
13.33	.01	54.03	1.180	.10
13.67	.01	54.03	1.177	.09
14.00	.01	54.02	1.175	.09
14.33	.01	54.02	1.173	.08
14.67	.01	54.02	1.171	.07
15.00	.01	54.02	1.170	.07
15.33	.01	54.02	1.168	.06
15.67	.01	54.01	1.167	.05
16.00	.01	54.01	1.166	.05
16.33	.01	54.01	1.165	.05
16.67	.01	54.01	1.164	.04
17.00	.01	54.01	1.163	.04
17.33	.01	54.01	1.162	.04

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   17.66          .01       54.01        1.161         .03
   18.00          .01       54.01        1.161         .03
   18.33          .01       54.01        1.160         .03

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

   18.66          .01       54.01        1.160         .03
   19.00          .01       54.00        1.159         .03
   19.33          .01       54.00        1.159         .02
   19.66          .01       54.00        1.159         .02
PEAK DISCHARGE =          1.276 CFS - PEAK OCCURS AT HOUR     3.57
MAXIMUM WATER SURFACE ELEVATION =         54.397
MAXIMUM STORAGE =          1.4854 AC-FT       INCREMENTAL TIME=      .033330HRS

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*S**********BASIN 2 + OFFSITE BASIN 4******************
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*
*SAWMILL LOFTS SITE(OFFSITE BASIN 4)
COMPUTE NM HYD          ID=7  HYD=SAWMILL LOFTS   AREA=0.00455SQ MI
                              PER A=0  PER B=15  PER C=0  PER D=85
                              TP=0.1333 HR  MASS RAIN=-1

     K =    .072649HR     TP =    .133300HR     K/TP RATIO =    .545000      SHAPE CONSTANT, N =  7.106420
     UNIT PEAK =    15.269     CFS   UNIT VOLUME =     .9987        B =    526.28       P60 = 2.0100
     AREA =       .003868 SQ MI    IA =     .10000 INCHES     INF =     .04000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330


     K =    .132088HR     TP =    .133300HR     K/TP RATIO =    .990905      SHAPE CONSTANT, N =  3.563124
     UNIT PEAK =    1.6635     CFS   UNIT VOLUME =     .9923        B =    324.91       P60 = 2.0100
     AREA =       .000683 SQ MI    IA =     .50000 INCHES     INF =    1.25000 INCHES PER HOUR
     RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =    .033330

PRINT HYD               ID=7      CODE=10

                                HYDROGRAPH FROM AREA SAWMILL

    TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW          TIME      FLOW
     HRS      CFS            HRS      CFS            HRS      CFS            HRS      CFS            HRS      CFS
     .000       .0          1.666       6.4          3.333       .1          5.000       .1          6.666       .0
     .333       .0          2.000       3.0          3.666       .1          5.333       .1
     .667       .0          2.333        .6          4.000       .1          5.666       .1
    1.000       .0          2.666        .3          4.333       .1          5.999       .1
    1.333      3.6          3.000        .1          4.666       .1          6.333       .0

    RUNOFF VOLUME =      1.91479 INCHES     =        .4647 ACRE-FEET
    PEAK DISCHARGE RATE =       12.64 CFS  AT    1.500 HOURS    BASIN AREA =     .0046 SQ. MI.
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POND 2

SAWMILL LOFTS SITE

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*
ADD HYD                    ID=25 HYD=105 ID I=7 ID II=24
PRINT HYD                  ID=25 CODE=10
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PARTIAL HYDROGRAPH 105.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	1.666	27.5	3.333	.3	5.000	.2	6.666	.0
.333	.0	2.000	10.5	3.666	.2	5.333	.2		
.667	.0	2.333	2.4	4.000	.2	5.666	.2		
1.000	.0	2.666	1.0	4.333	.2	5.999	.2		
1.333	11.2	3.000	.5	4.666	.2	6.333	.0		

RUNOFF VOLUME = 1.54766 INCHES = 1.7968 ACRE-FEET
PEAK DISCHARGE RATE = 52.51 CFS AT 1.500 HOURS BASIN AREA = .0218 SQ. MI.

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*S*******POND 2 (INCLUDING OFFSITE BASIN 4)************
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*
ADD HYD                    ID=27 HYD=107 ID I=51 ID II=25
PRINT HYD                  ID=27 CODE=10
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POND #1

PARTIAL HYDROGRAPH 107.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	4.000	1.0	7.999	.0	11.999	.0	15.998	.0
.333	.0	4.333	.8	8.333	.0	12.332	.0	16.332	.0
.667	.0	4.666	.6	8.666	.0	12.665	.0	16.665	.0
1.000	.0	5.000	.5	8.999	.0	12.999	.0	16.998	.0
1.333	11.2	5.333	.5	9.332	.0	13.332	.0	17.332	.0
1.666	27.5	5.666	.4	9.666	.0	13.665	.0	17.665	.0
2.000	13.1	5.999	.4	9.999	.0	13.999	.0	17.998	.0
2.333	5.1	6.333	.2	10.332	.0	14.332	.0	18.331	.0
2.666	3.2	6.666	.1	10.666	.0	14.665	.0	18.665	.0
3.000	2.2	6.999	.1	10.999	.0	14.998	.0	18.998	.0
3.333	1.6	7.333	.1	11.332	.0	15.332	.0	19.331	.0
3.666	1.2	7.666	.0	11.665	.0	15.665	.0	19.665	.0

RUNOFF VOLUME = 1.06018 INCHES = 2.2310 ACRE-FEET
PEAK DISCHARGE RATE = 52.52 CFS AT 1.500 HOURS BASIN AREA = .0395 SQ. MI.

*
*
ROUTE RESERVOIR ID=52 HYD=POND-2 INFLOW ID=27 CODE=10

OUTFLOW (CFS)	STORAGE (AC-FT)	ELEV (FT)	
	0.000	0.0000	52.50
	0.010	0.4143	53.00
	0.010	1.1553	54.00
	3.198	1.9869	55.00
	9.830	2.9156	56.00
	13.188	3.9416	57.00
	15.850	5.0638	58.00

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	52.50	.000	.00
.33	.00	52.50	.000	.00
.67	.00	52.50	.000	.00
1.00	.00	52.50	.000	.00
1.33	11.16	52.56	.051	.00
1.67	27.50	54.00	1.155	.01
2.00	13.11	54.48	1.552	1.53
2.33	5.06	54.69	1.728	2.20
2.67	3.18	54.74	1.774	2.38
3.00	2.21	54.75	1.781	2.41
3.33	1.63	54.74	1.768	2.36
3.67	1.24	54.71	1.743	2.26
4.00	.97	54.67	1.712	2.15
4.33	.77	54.63	1.679	2.02
4.67	.63	54.59	1.644	1.88
5.00	.53	54.55	1.610	1.75
5.33	.46	54.51	1.577	1.63
5.67	.42	54.47	1.546	1.51
6.00	.39	54.44	1.517	1.40
6.33	.16	54.40	1.487	1.28
6.67	.10	54.36	1.457	1.17
7.00	.07	54.33	1.429	1.06
7.33	.06	54.30	1.403	.96
7.67	.04	54.27	1.379	.87
8.00	.03	54.24	1.357	.79
8.33	.02	54.22	1.338	.71
8.67	.02	54.20	1.320	.64
9.00	.01	54.18	1.303	.58
9.33	.01	54.16	1.289	.52
9.67	.01	54.14	1.275	.47
10.00	.01	54.13	1.263	.42
10.33	.01	54.12	1.252	.38
10.67	.01	54.11	1.243	.34
11.00	.01	54.09	1.234	.31

11.33	.01	54.09	1.226	.28
11.67	.01	54.08	1.219	.25
12.00	.01	54.07	1.213	.23
12.33	.01	54.06	1.207	.21
12.67	.01	54.06	1.202	.19
13.00	.01	54.05	1.197	.17
13.33	.01	54.05	1.193	.15
13.67	.01	54.04	1.189	.14
14.00	.01	54.04	1.186	.13
14.33	.01	54.03	1.183	.11
14.67	.01	54.03	1.180	.10
15.00	.01	54.03	1.177	.09
15.33	.01	54.02	1.175	.09
15.67	.01	54.02	1.173	.08
16.00	.01	54.02	1.171	.07
16.33	.01	54.02	1.170	.07
16.67	.01	54.02	1.168	.06
17.00	.01	54.01	1.167	.05
17.33	.01	54.01	1.166	.05
17.66	.01	54.01	1.165	.05
18.00	.01	54.01	1.164	.04
18.33	.01	54.01	1.163	.04

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
18.66	.01	54.01	1.162	.04
19.00	.01	54.01	1.162	.03
19.33	.01	54.01	1.161	.03
19.66	.01	54.01	1.160	.03

PEAK DISCHARGE = 2.412 CFS - PEAK OCCURS AT HOUR 2.90
MAXIMUM WATER SURFACE ELEVATION = 54.753
MAXIMUM STORAGE = 1.7818 AC-FT INCREMENTAL TIME= .033330HRS

*
*
FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 15:45:58

AHYMO INPUT FILE

```
*S  AHYMO FILE FOR SAWMILL- ZONE 2, BH PROJ # 05 0073
*S  6HR, 100YR STORM
*S  Note:
*S  INPUT FILE -- P:\050073\CDP\HYDRO\AHYMO\SAWMILL.HYM
*
*S  OUTPUT FILE -- P:\050073\CDP\HYDRO\AHYMO\SAWMILL.OUT
*
**********************************************************
LOCATION    ALBUQUERQUE, NEW MEXICO
*
**********************************************************
*
*  100 YEAR RAINFALL TABLE
**********************************************************
*
RAINFALL              TYPE=1  RAIN QUARTER=0.0
                   RAIN ONE=2.01 IN  RAIN SIX=2.35 IN
                   RAIN DAY=2.75 IN  DT=0.03333 HRS

*S*  BASIN COMPUTATIONS
**********************************************************
*
*S*******************BASIN 1****************************
*
**********************************************************
*
*BASIN 1A
*CONTRIBUTING BASINS TO 1A -> D-1 & D-2
COMPUTE NM HYD         ID=1  HYD=BASIN-1A  AREA=.001844 SQ MI
                    PER A=0  PER B=16.04  PER C=16.04  PER D=67.92
                    TP=0.1333 HR  MASS RAIN=-1
PRINT HYD              ID=1     CODE=10
*
*
*BASIN 1B
*CONTRIBUTING BASINS TO 1B -> D-3 & D-4
COMPUTE NM HYD         ID=2  HYD=BASIN-1B  AREA=.000781 SQ MI
                   PER A=0  PER B=5  PER C=5  PER D=90
                   TP=0.1333 HR  MASS RAIN=-1
PRINT HYD              ID=2     CODE=10
*
*
*BASIN 1C
*CONTRIBUTING BASINS TO 1C -> OFFSITE BASINS 1A, 1B, 2 & POND 1
COMPUTE NM HYD         ID=3  HYD=BASIN-1C  AREA=.015063 SQ MI
                   PER A=0  PER B=10  PER C=90  PER D=0
                   TP=0.1333 HR  MASS RAIN=-1
PRINT HYD              ID=3     CODE=10
*
*
ADD HYD                   ID=21 HYD=101 ID I=1 ID II=2
PRINT HYD           ID=21 CODE=10
*
*S**NOTE: ID 22, IS BASIN 1 AS SHOWN ON THE AMENDED BASIN MAP**********
ADD HYD                   ID=22 HYD=BASIN1 ID I=21 ID II=3
PRINT HYD           ID=22 CODE=10
*
**********************************************************
*
*S*******************POND 1*****************************
*
```

NOT

```
**********************************************************
ROUTE RESERVOIR        ID=51   HYD=POND-1  INFLOW ID=22  CODE=10
                        OUTFLOW             STORAGE          ELEV
                        (CFS)              (AC-FT)           (FT)
                        0.000               0.0000         52.00
                        0.010               0.7014         53.00
                        7.920               1.4607         54.00
                        9.830               2.2796         55.00
                        13.188              3.1597         56.00
                        15.850              4.1027         57.00
*
*
**********************************************************
*
*S*******************BASIN 2*****************************
*
**********************************************************
*
*BASIN 2A
*CONTRIBUTING BASINS TO 2A -> B-1, B-3, C-1, C-3, C-4, C-5, C-6
COMPUTE NM HYD          ID=4   HYD=BASIN-2A   AREA=.0085 SQ MI
                    PER A=0   PER B=16.04   PER C=16.04   PER D=67.92
                    TP=0.1333 HR   MASS RAIN=-1
PRINT HYD               ID=4      CODE=10
*
*
*BASIN 2B
*CONTRIBUTING BASINS TO 2B -> B-2, B-4, B-5 & C-2
COMPUTE NM HYD          ID=5   HYD=BASIN-2B   AREA=.0008125 SQ MI
                    PER A=0   PER B=5   PER C=5   PER D=90
                    TP=0.1333 HR   MASS RAIN=-1
PRINT HYD               ID=5      CODE=10
*
*
*BASIN 2C
*CONTRIBUTING BASINS TO 2C -> OFFSITE BASINS 3, 5 & POND 2
COMPUTE NM HYD          ID=6   HYD=BASIN-2C   AREA=.007906 SQ MI
                    PER A=0   PER B=10   PER C=90   PER D=0
                    TP=0.1333 HR   MASS RAIN=-1
PRINT HYD               ID=6      CODE=10
*
*
ADD HYD                   ID=23 HYD=103 ID I=4 ID II=5
PRINT HYD           ID=23 CODE=10
*
*S**NOTE: ID 24, IS BASIN 2 AS SHOWN ON THE AMENDED BASIN MAP**********
ADD HYD                   ID=24 HYD=BASIN2 ID I=6 ID II=23
PRINT HYD           ID=24 CODE=10
*
*
*S*******************POND 2*****************************
*
**********************************************************
*
*
ADD HYD                   ID=26 HYD=106 ID I=51 ID II=24
PRINT HYD           ID=26 CODE=10
*
*
ROUTE RESERVOIR         ID=52   HYD=POND-2   INFLOW ID=26   CODE=10
                      OUTFLOW             STORAGE          ELEV
```

NOTE:

```
                        (CFS)            (AC-FT)          (FT)
                         0.000             0.0000        52.50
                         0.010             0.4143        53.00
                         0.010             1.1553        54.00
                         3.198             1.9869        55.00
                         9.830             2.9156        56.00
                        13.188             3.9416        57.00
                        15.850             5.0638        58.00
*
*
*****************************************************
*
*S**********BASIN 2 + OFFSITE BASIN 4******************
*
*****************************************************
*
*
*SAWMILL LOFTS SITE(OFFSITE BASIN 4)
COMPUTE NM HYD          ID=7  HYD=SAWMILL LOFTS   AREA=0.00455SQ MI
                    PER A=0  PER B=15  PER C=0  PER D=85
                    TP=0.1333 HR  MASS RAIN=-1
PRINT HYD               ID=7     CODE=10
*
ADD HYD                   ID=25 HYD=105 ID I=7 ID II=24
PRINT HYD           ID=25 CODE=10
*
*
*****************************************************
*
*S*******POND 2 (INCLUDING OFFSITE BASIN 4)************
*
*****************************************************
*
*
ADD HYD                   ID=27 HYD=107 ID I=51 ID II=25
PRINT HYD           ID=27 CODE=10
*
*
ROUTE RESERVOIR         ID=52   HYD=POND-2  INFLOW ID=27  CODE=10
                      OUTFLOW            STORAGE          ELEV
                        (CFS)              (AC-FT)          (FT)
                         0.000             0.0000        52.50
                         0.010             0.4143        53.00
                         0.010             1.1553        54.00
                         3.198             1.9869        55.00
                         9.830             2.9156        56.00
                        13.188             3.9416        57.00
                        15.850             5.0638        58.00
*
*
FINISH
```

APPENDIX G

POND RESULTS

CALC.

POND 1-

Orifice Coef	0.62
Invert of outfall	53
Orifice Diam (inches)	18

Outflow (cfs)	Storage Volume (ft^3)	Storage Volume (Ac-ft)	Elev.	Head (ft)
0.000	0	0.0000	52.00	0.00
0.010	30552.5	0.7014	53.00	0.00
7.920	63629.0	1.4607	54.00	0.25
9.830	99300.5	2.2796	55.00	1.25
13.188	137638.0	3.1597	56.00	2.25

Pond Bottom = 52.00
Pond Top = 57.00
Max. Water Surface Elevation = 53.35
Storage Volume = 0.9693acre-ft
Peak Occurs at Hour 2.17
Peak Discharge = 2.80cfs

POND 2-

Orifice Coef	0.62
Invert of outfall	54
Orifice Diam (inches)	18

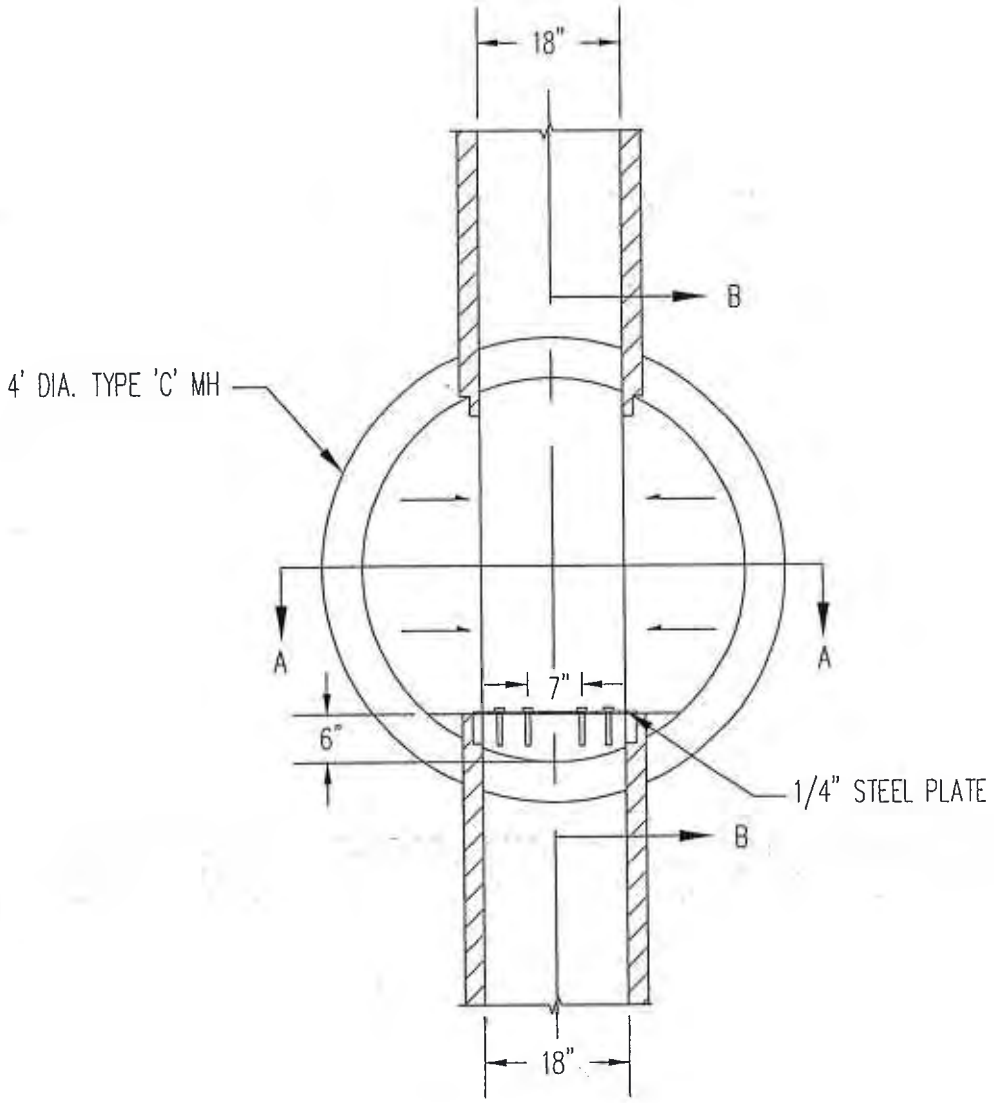
Outflow (cfs)	Storage Volume (ft^3)	Storage Volume (Ac-ft)	Elev.	Head (ft)
0.000	0.0	0.0000	52.50	0.00
0.010	18047.3	0.4143	53.00	0.00
0.010	50324.9	1.1553	54.00	0.00
3.198	86550.4	1.9869	55.00	0.25
9.830	127002.0	2.9156	56.00	1.25
13.188	171697.7	3.9416	57.00	2.25

Pond Bottom = 52.50
Pond Top = 58.00
Without the contribution of Offsite Basin 4
Max. Water Surface Elevation = 54.40
Storage Volume = 1.49acre-ft
Peak Occurs at Hour 3.57
Peak Discharge = 1.28cfs

Basin 2 + Offsite Basin 4
Max. Water Surface Elevation = 54.75
Storage Volume = 1.78acre-ft
Peak Occurs at Hour 2.90
Peak Discharge = 2.41cfs

APPENDIX H

ORIFICE PLATE DETAILS



PLAN
SCALE 1"=2'

Bohannan ▲ Huston Inc.
Courtyard I 7500 Jefferson St. NE Albuquerque, NM 87109-4335
ENGINEERING · SPATIAL DATA · ADVANCED TECHNOLOGIES

architecture
interiors
planning
engineering

Dekker/Perich/Sabatini

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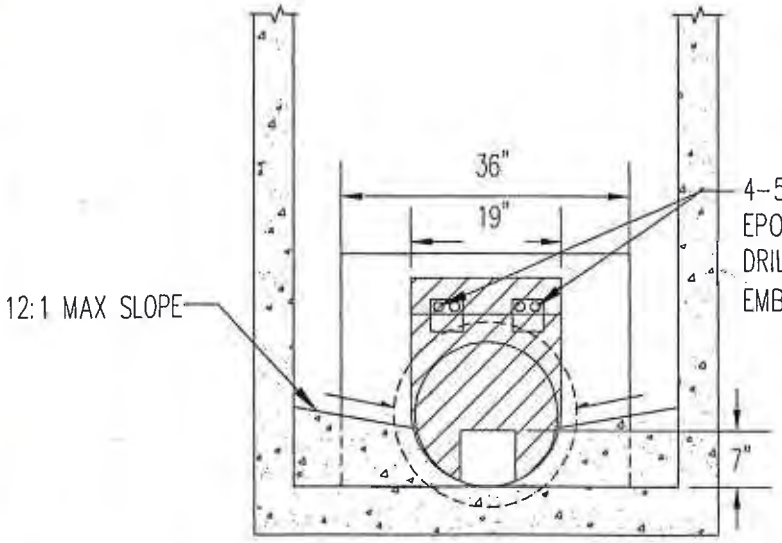
Suite 100
Albuquerque, NM 87109

505 761-9700
fax 761-4222
dps@dpsabq.com

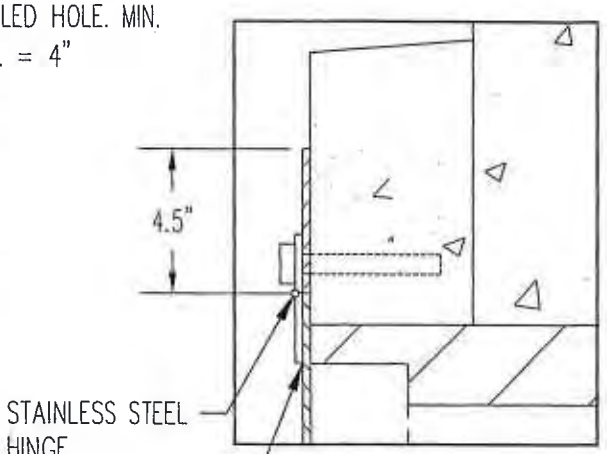
DR#1

SAWMILL LOFTS
SAWMILL COMMUNITY LAND TRUST
1801 19TH STREET
ALBUQUERQUE, NEW MEXICO

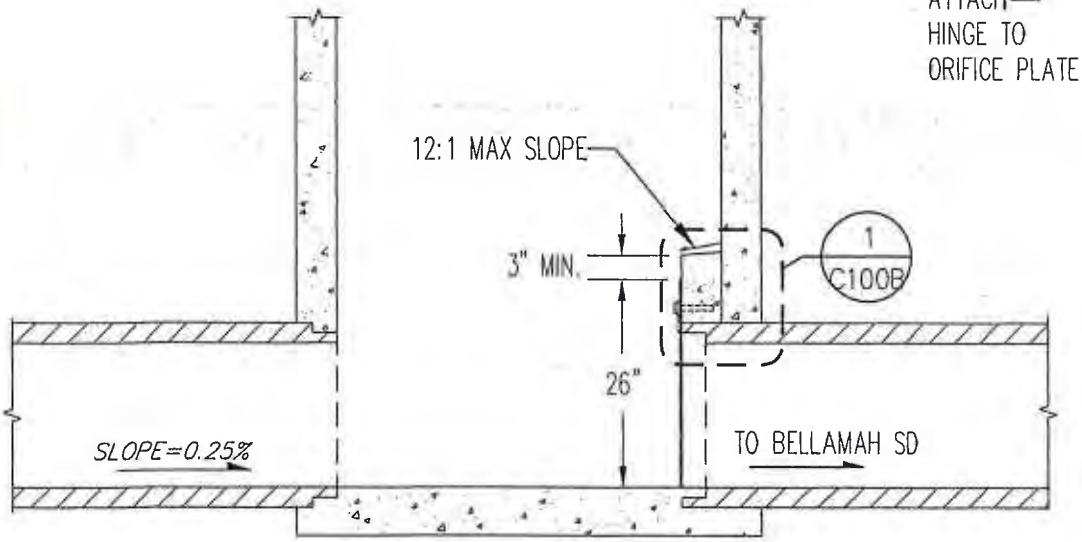
DRAWN BY	CW	SCALE	AS SHOWN
REVIEWED BY	MJB		
DATE ISSUED	02/21/05		C100A
PROJECT NO.	050073		- OF



SECTION A-A
SCALE 1"=2'



DETAIL 1



SECTION B-B
SCALE 1"=2'

Bohannan Huston INC.
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DR#1

SAWMILL LOFTS
SAWMILL COMMUNITY LAND TRUST
1801 19TH STREET
ALBUQUERQUE, NEW MEXICO

DRAWN BY	CW	SCALE	AS SHOWN
REVIEWED BY	MJB		
DATE ISSUED	02/24/05		C100B
PROJECT NO.	050073		- OF

EXHIBITS

EXHIBIT 6: PROPOSED DRAINAGE BASIN MAP (UPDATED)

EXHIBIT 7: SAWMILL LOFTS SITE GRADING AND DRAINAGE PLAN

DRAINAGE REPORT FOR ARBOLERA DE VIDA – UNIT 2 (AKA SAWMILL)

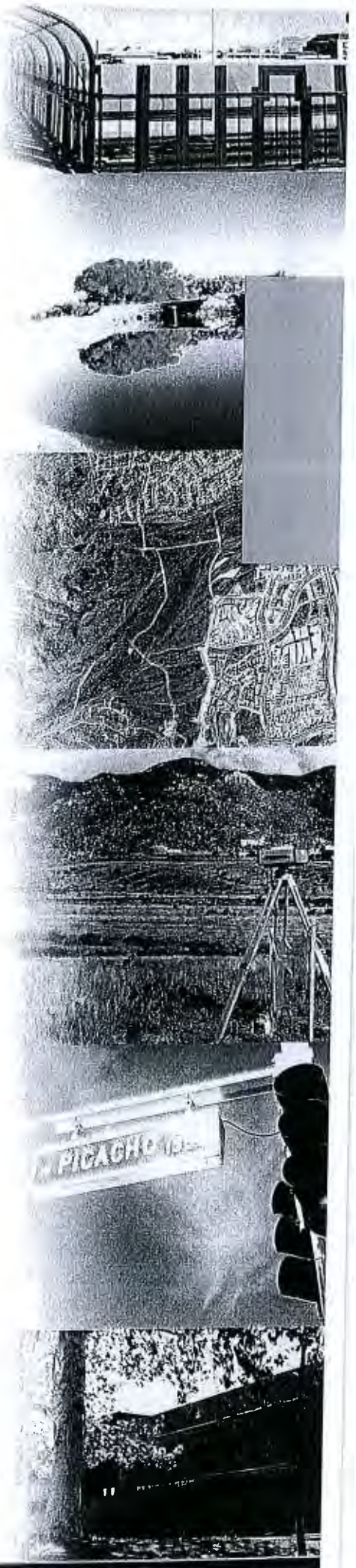
OCTOBER 16, 2003

Prepared for:

Sawmill Community Land Trust

P O Box 25181

Albuquerque NM 87125-5181



Bohannan Huston Inc.

ENGINEERING
SPATIAL DATA
ADVANCED TECHNOLOGIES

C. Pond Analysis

Pond 1 (1.13ac, Q_{100}= 3.44cfs), located east of 18th Street, will retain offsite flows, in addition to the respective onsite flows described above. Pond 1 will need to be sized to hold a minimum 100 year-6 hour volume of 1.13 acre-ft. This volume has the capacity to take in 33.14 cfs. The current design pond volume is 2.5 acre-ft. The pond will have a storm drain which will allow controlled discharge to Pond 2 after it reaches one foot in depth. Pond 1 will also be used as an orchard and will be irrigated by the proposed private acequia which connects to the Old Albuquerque Acequia.

Pond 2 (2.23ac, Q_{100}= 6.78cfs), located just southeast of the proposed railroad, will retain the offsite flows mentioned above, as well as the discharge from Pond 1. Pond 2 will need to be sized to hold a minimum 100 year-6 hour volume of 1.35 acre-ft. This volume has the capacity to take in 59.21cfs. The current design pond volume is 1.9 acre-ft. The pond will have a storm drain which discharges to a storm system after it reaches a depth of eighteen inches. The storm drain will allow a controlled discharge up to 4.00 cfs and connect to the existing storm system that travels west through Bellamah Ave as per the MDP. The pond will also have a storm drain tied to Pond 1, which would allow the retention to back-up into the other pond.

A pond system within basin Offsite 3 will need to be constructed at a later time. It will need to be designed to hold a minimum 100 year-6 hour volume of 0.30 acre-ft. This volume has the capacity to take in 8.10 cfs. It will be possible, in the future, to tie the pond to the proposed storm drain that connects to the existing storm system in Bellamah Ave. and release at a controlled rate of up to 1 cfs.

D. Acéquia

A private acequia will be built to transport discharge from Mis Abuelitos Drive. It will run along the east side of Mis Abuelitos Drive and connect upstream to the existing Old Albuquerque Acequia. It will drain into the onsite Pond 1 and be used to irrigate the

LL BE
SHALL BE MADE.

EVATION SHALL

REA AND MUST

IN PRIOR TO

2"

PROPOSED RETAINING WALL

5305 PROPOSED INDEX CONTOURS

PROPOSED INTER CONTOURS

PROPOSED CURB & GUTTER

EASEMENT

EXISITNG TREE

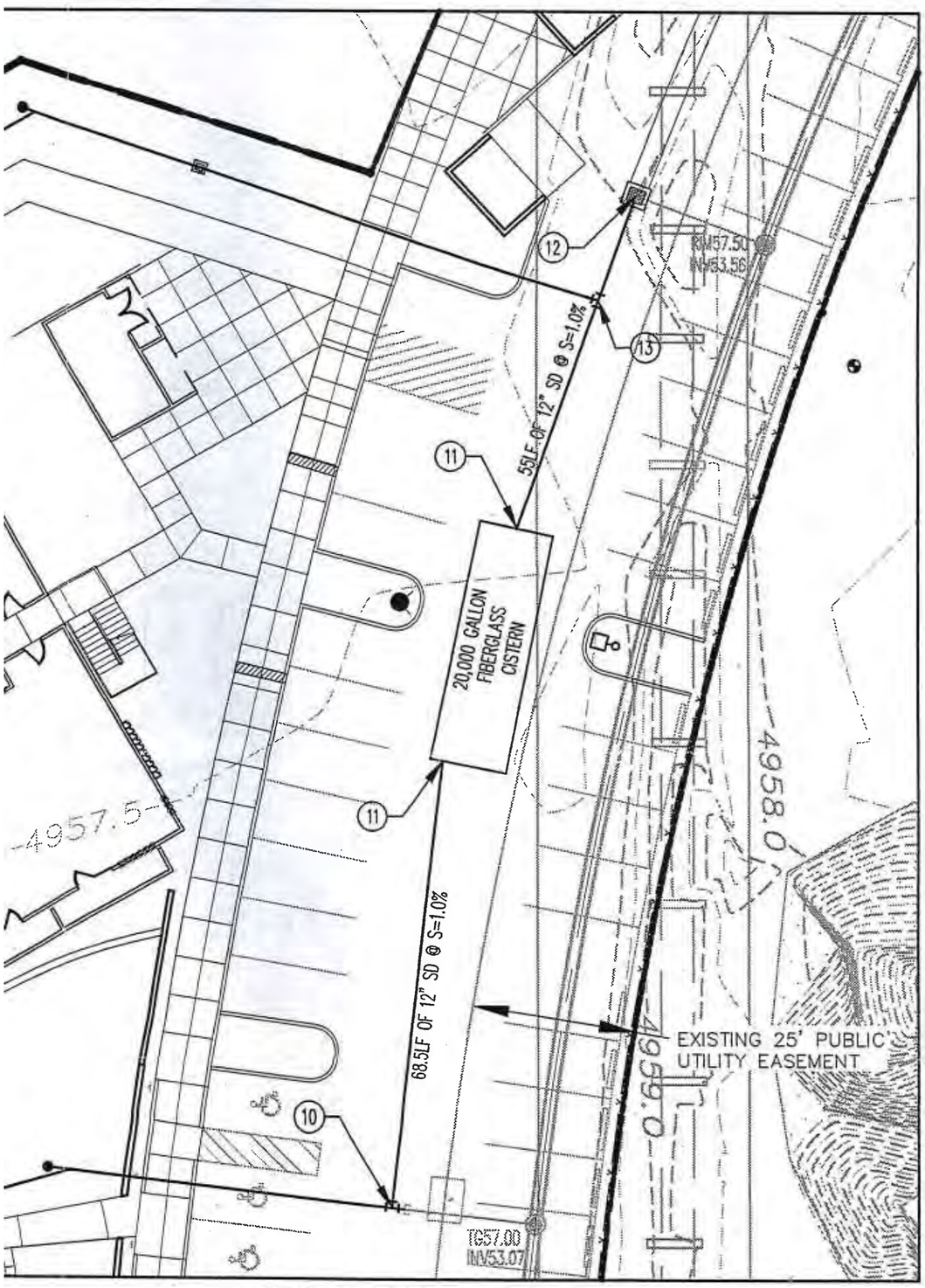
PROPOSED LIGHTING

SD PROPOSED STORM DRAIN LINE

PROPOSED STORM DRAIN MANHOLE

PROPOSED STORM DRAIN INLET

EXISTING STORM DRAIN MANHOLE



ADDITIVE ALTERNATE #3
SCALE 1"=20'

E #3 KEYED NOTES

KING.

N.

EW INLET.

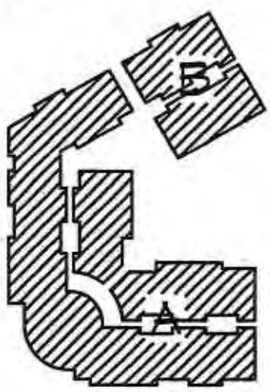
NE VIA 12" TEE FITTING.

Bohannan Huston INC.

RECEIVED

Sawmill Lofts
Sawmill Community Land
1801 Bellamah Avenue
Albuquerque, New Mex.o

KEY PLAN



REVISIONS

1	05.16.05	PLAN CHECK COMMENTS

DRAWN BY	RPS
REVIEWED BY	MJB
DATE	5/18/05
PROJECT NO.	050073
DRAWING NAME	

GRADING AND DRAINAGE PLAN

1 OF 3

SHEET NO. C101

/IARK

IT "I-40-15"

00°14'03"
Zone , NAD 27

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2"

VICINITY MAP

ZONE ATLAS PAGE J-13/H-13

LEGEND

	PROPERTY LINE
5301	EXISTING CONTOURS
X 5301.15	EXISTING GROUND SPOT ELEVATION
	EXISITNG ELECTRICAL POLE
65.23	PROPOSED SPOT ELEVATION TC=TOP OF CURB, FL=FLOW LINE TS=TOP OF SIDEWALK, TB=TOP OF BERM EX=EXISTING, TG=TOP OF GRATE
S=2.0%	PROPOSED DIRECTION OF FLOW
	WATER BLOCK
	PROPOSED RETAINING WALL
5305	PROPOSED INDEX CONTOURS
	PROPOSED INTER CONTOURS
	PROPOSED CURB & GUTTER
	EASEMENT
	EXISITNG TREE
	PROPOSED LIGHTING
SD	PROPOSED STORM DRAIN LINE
	PROPOSED STORM DRAIN MANHOLE
	PROPOSED STORM DRAIN INLET
	EXISTING STORM DRAIN MANHOLE

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interiors
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engineering

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ARCHITECT

ISSUED
5/18/05
FOR CONSTRUCTION

ENGINEER

BRUCE J. STIDWORTHY
NEW MEXICO
14523
REGISTERED PROFESSIONAL ENGINEER
4/7/05

PROJECT

SCALE 1"=20'

Sawmill Lofts
ll Community Land Trust
1801 Bellamah Avenue
buquerque, New Mexico

2 OF 3A

SAWMILL
LOFTS

ORIFICE PLATE TO BE CONSTRUCTED UNDER CITY PROJECT #617582

ELLAMAH AVENUE

2. THE CONTRACTOR S
WHICH APPLY TO THE C
RESPECT TO STORM WA

3. PRIOR TO CONSTRUC
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7. CONSTRUCTION ACT
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8. OVERNIGHT PARKIN
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WATER PERMITS, ETC.).

10. ALL PROPERTY CO
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11. THE CONTRACTOR
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12. ALL BARRICADES
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13. THE CONTRACTOR
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14. THE CONTRACTOR
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