Snow Vista Basin

TALAVERA SUBDIVISION

DRAINAGE MANAGEMENT PLAN

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dmg

TALAVERA SUBDIVISION

DRAINAGE MANAGEMENT PLAN

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I. INTRODUCTION

In August 2007, a special use permit was approved for the Talavera Subdivision for a planned development within Bernalillo County. The proposed development consists of 241acres bounded by Timmaron West subdivision and Artisco Village to the east, the Amole Arroyo and Westgate Dam to the south, and properties of Westland to the west. One of the major components for the proposed development includes creating a Drainage Management Plan to identify the on-site and off-site grading and drainage requirements.

The AMFCA approved Amole-Hubbel Drainage Management Plan (Leedshill-Herkenhoff, 1999) identifies required drainage improvements for the Western Albuquerque Metropolitan Area, which directly affect the planned development area. The proposed site lies within Powerline Basin, Snow Vista Basin, and Amole Arroyo Basin as identified in the drainage management plan. In addition, several adjacent developments have expanded the various site-specific details such as the Timmaron West Subdivision and the recent Amole Arroyo improvements. The Talavera Drainage Management Plan will incorporate these drainage studies and recent improvements into the site-specific drainage concepts presented herein. The purpose of the Talavera Subdivision Drainage Management Plan is to obtain approval from AMAFCA and Bernalillo County in conformance with the special use permit.

II. HYDROLOGY

The Talavera Subdivision presently receives off-site flows from approximately 770 acres. The Talavera Subdivision consists of 141 acres within the Powerline Basin, 23 acres within the Snow Vista Basin, and 77 acres within the Amole Arroyo Basin. The majority of the upstream off-site properties are undeveloped land sloping predominantly southeast towards the Powerline Channel. The downstream off-site properties lying to the northeast are fully developed including the drainage infrastructure.

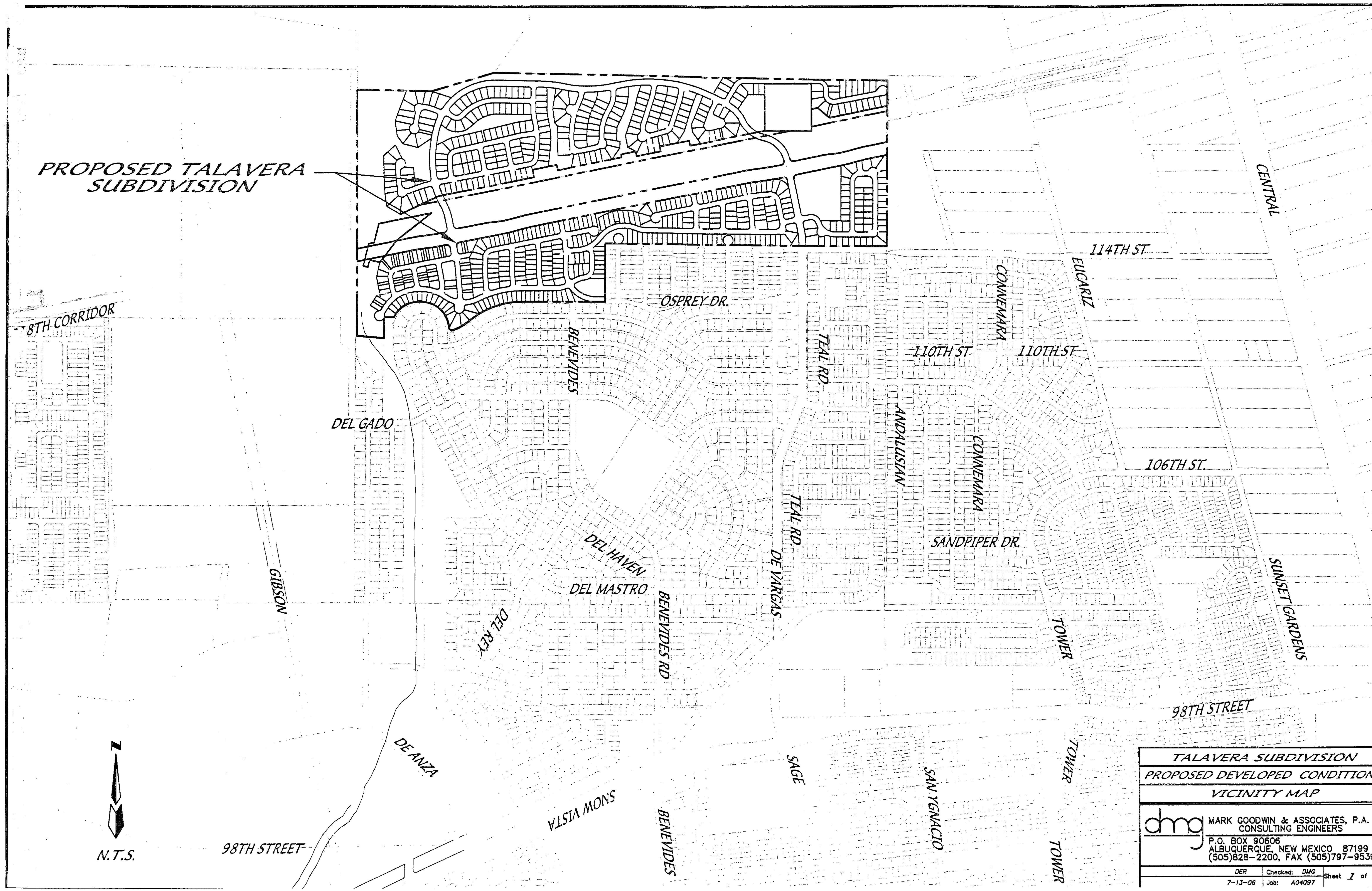
The storm water runoff within the Powerline Basin drains eastward with slopes ranging from 3% to 30%. Under existing conditions the Powerline Basin discharges 501 cfs as documented in the Amole-Hubbel Drainage Management Plan. These flows drain south in the Powerline Channel to combine with the Westgate Dam release at the confluence of the Powerline Channel and the Amole Arroyo.

The drainage area located along the northeast corner of the site, Basin T108, lies within the Snow Vista Basin. Currently temporary ponds on the east property line collect runoff and route through an existing storm drain and ponding system within the Timmaron West Subdivision.

The remaining property along the east side of the Powerline Channel lies within the Amole Arroyo Basin. These 77 acres currently drain south along the eastern property line, and discharges into the Amole Arroyo. In addition, a portion of the Timmaron West Subdivision Unit 5 currently drains into temporary ponds and will contribute to the flows for the proposed development.

Existing and proposed site hydrological conditions were analyzed and modeled for the 100-year, 6-hour storm event. The developed conditions model will provide an interim condition analysis the proposed development projecting a worse case scenario of all the off-site basins. All analysis and calculations supporting this report are located in Appendix B. Existing condition peak flows and developed condition peak flows were determined using the Arid-lands Hydrologic Model (AHYMO).

1.27



TALAVERA SUBDIVISION

PROPOSED DEVELOPED CONDITIONS

VICINITY MAP

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III. PROPOSED DEVELOPED CONDITIONS

The Talavera Subdivision development consists of a combination of proposed developed conditions and existing conditions. In the Snow Vista Basin and Amole Arroyo Basin all the adjacent properties are fully developed, therefore a majority of the infrastructure is currently in place. The Powerline Basin and South Powerline Basin are mostly undeveloped requiring the interim conditions to be evaluated in addition to the fully developed conditions. Since the fully developed conditions for the Powerline Channel requires additional ponding volume within the channel restricting developed flows, the interim conditions will generate higher peak flow rates and additional sediment loading. Therefore the interim conditions will govern the design and required drainage improvements.

A. Off-Site Drainage

The original drainage management plan for the Powerline Basin required multiple linear detention ponds restricting the flows rates to 20 cfs. Currently, a single de-sedimentation pond exists immediately upstream of the proposed Talavera development. The existing de-sedimentation pond currently discharges approximately 120cfs during peak stage conditions. The peak flow rate and volume of water passing are substantially greater than the original drainage management plan. As such the design will maximize the ponding volume within the Powerline Channel located in the Talavera property limits, while restricting the pond volumes to less than 10 ac-ft and water heights to less than 10 ft. The proposed linear ponds will be designed to maintain the 100-year water surface elevation below the existing grade. By maintaining the 100-year water surface elevation below the existing grade, the proposed ponds will not require levees, the flooding risks for properties to the east is greatly reduced, and the operational requirements for AMAFCA will also be reduced.

In order to achieve the design constraints for the drainage improvements within the Powerline channel, the proposed discharge flow rate from the Powerline Basin into the Amole Arroyo will need to be increased to approximately 145 cfs. Currently the Amole Arroyo is designed to accommodate existing flow rates from the Powerline Basin and portions of the South Powerline Basin. These basins were planned to have restricted flows rates for developed conditions. Therefore, the existing conditions will have higher peak flows once developed. The Amole Arroyo at the Blake Road crossing has a designed hydraulic capacity of 784 cfs in order to accommodate these higher flow rates. The hydrologic analysis was expanded for the proposed developed conditions to include the outfall for the Westgate Dam, the South Powerline Basin, and portions of the Amole Arroyo Basin to determine if the increased flow rates from the Powerline Basin combined with the surrounding basins would remain within the Amole Arroyo capacity limitations. The developed conditions model projects a peak discharge flow rate of 662 cfs at the Blake Road crossing, which is well below the design capacity for the Amole Arroyo. (See Basin Map, Figure 2 in Appendix A.)

Powerline Channel Analysis Points

AP	*Description*	*Existing Conditions*	*Proposed Conditions*	*Future Conditions*
12	*N. Talavera Property line*	*633.3 cfs*	*633.3 cfs*	*943.4 cfs*
13	*Powerline Channel Terminus*	*148.0 cfs*	*151.2 cfs*	*89.3 cfs*
14	*Powerline/Amole Arroyo*	*422.8 cfs*	*90.5 cfs*	*90.5 cfs*
14.1	*Del Gado Crossing*	*NA*	*618.7 cfs*	*618.7 cfs*

Need

1. Developed Conditions Model

The developed conditions model utilized the same basins from the Amole-Hubbel DMP as shown in Figure 2. The drainage areas within the Talavera Subdivision were subtracted from the original basins while ensuring the total drainage area remains the same. The off-site drainage basins 10006 thru 10012 will remain in their existing condition continuing to drain along the Powerline Channel and route through the existing Powerline de-sedimentation basin. These basins utilized the percentage of developed areas (impervious area) as modeled in the Amole-Hubbel DMP.

Basins 10013 thru 10017are modeled as fully developed and continue to drain in their existing flow pattern up to the west property line of the Talavera Subdivision. Along the western boundary, the runoff will be diverted and collected into the four (4) existing arroyos. These four arroyos will be improved with storm drains and stabilized natural arroyos for open space and sediment transport. These arroyos will drain into the Powerline Channel and route through strategically located ponds within the Powerline Channel.

The impervious areas within Basins 10013 and 10017 were reevaluated for conformance with the Southwest Area Plan. All areas with slopes greater than 9% were considered undevelopable, and modeled in their existing conditions. The remaining developable area within these basins will use a projected maximum density of 3 DU's per acre for impervious area calculations, as required by the Southwest Area Plan. The slope analysis used a conservative approach, assuming all arroyos would be replaced with storm drains or hardlined systems, generating additional developable land.

Impervious Percentage Calculations for Basin 10014 thru 10018

Basin	A-H DMP Area acres	Talavera* Area acres	Channel* Area acres	9% Slope Area acres	Developable Area acres	New Basin Area acres	Impervious** Percentage
10014	55.10	4.95	3.25	19.30	27.60	46.90	19.6%
10015	62.46	14.69	10.69	8.25	28.84	37.09	25.9%
10016	63.36	14.97	6.15	12.34	29.89	42.24	23.6%
10017	61.44	10.60	4.67	21.77	24.41	46.17	17.6%
10018	42.24	23.80	7.18	11.26	0.0	11.26	0.0%

*Area within basin boundary

**Percentage is base on 3 DU per acre of developable area

2. Off-Site Drainage Improvements

The required drainage improvements will include the following:

- Extending Amole Arroyo shot-crete channel approximately 1700' from the Blake Road crossing to the proposed alignment of 118th Street
- Extending Powerline Channel storm drain outfall from the Talavera property across 118th Street
- Constructing stabilize earth channel and storm drain crossing at 118th Street for the Westgate Dam outfall.

B. On-Site Drainage

The Talavera development includes drainage areas within the Powerline Basin, Snow Vista Basin, and Amole Arroyo Basin as defined by the Amole-Hubbel DMP. The drainage areas within the proposed Talavera Subdivision will collect all storm water within the proposed streets and proposed storm drains. All *proposed storm water ponds will detain the 100-year, 6-hour storm event, discharge at flow rates equivalent to the existing capacities with the Amole Arroyo, and drain within 96 hours.*

1. *Powerline Basins*

The proposed development located west of the Powerline Basins T101 thru T105, will collect storm water within localized storm drain networks for each sub-basin and discharge into strategically located detention ponds within the Powerline Channel. The county approved site plan proposes to grade stabilized natural channels, aligning with the existing arroyos extending into the adjacent western properties. These natural channels will accept existing flows in the interim condition until future development occurs. In the future, these channels will only provide flood relief and convey storm water collected with the natural channel.

2. *Snow Vista Basin*

The Talavera Subdivision consists of 23 acres (Basin T108) within the Snow Vista Basin. This portion of the development will collect all storm water runoff utilizing a local street networks and proposed storm drains. The storm water will be routed though a local 1 ac-ft pond designed to match the downstream storm drain and pond capacities. The proposed drainage plan will tie into the existing facilities within the Timmaron Subdivision Unit 4 in accordance with the Amole-Hubbel Drainage Management Plan and the Timmaron West Subdivision Unit 4 Drainage Management Plan.

3. *Amole Arroyo Basin*

The remaining Talavera property on the (east side of the Powerline Channel) includes 77 acres within the Amole Arroyo Basin. Basins T106 and T107, as shown on the basin map, will collect storm water in a single storm drain and convey the storm water south towards the Amole Arroyo. The storm drain will collect runoff from Basin 363 located within the Timmaron West Subdivision Unit 4 development as detailed in the Drainage Study for Timmaron Unit 3 & 4. These basins will free discharge into the Amole Arroyo approximately 500' upstream of the Blake Road crossing.

Table 1: Drainage Basins Land Treatments

Basin	Drainage Area (ac)	DU	Density	Land Treatment			
				A	B	C	D
T101	7.1	21	2.96	0%	34.1%	34.1%	31.9%
T102	11.1	23	2.07	0%	36.7%	36.7%	26.7%
T103	8.1	35	4.32	0%	30.8%	30.8%	38.5%
T104	18	43	2.39	0%	35.7%	35.7%	28.6%
T105	38.9	130	3.34	0%	33.1%	33.1%	33.9%
T106	18.12	84	4.64	0%	30.1%	30.1%	39.9%
T107	55.8	207	3.71	0%	32.2%	32.2%	35.7%
T108	24.64	52	2.11	0%	26.3%	25.7%	48.0%
T109	11.74	595		0%	7.5%	7.5%	85.0%

4. On-Site Powerline Channel Drainage Improvements

The drainage improvements required within the Powerline Channel include the following:

- *Construction of five (5) linear detention ponds ranging from 5 ac-ft to 8 ac-ft in volume.*
- *Each linear detention pond will require a controlled storm drain outfall and a shot-crete overflow weir.*
- *Build a 10 ft. maintenance road along the full length of the Powerline Channel*
- *Build four (4) 36" to 48" storm drain outfalls extending to the western property line.*

IV. SEDIMENT TRANSPORT

As detailed above, the Talavera Subdivision development will accept off-site flows from the adjacent properties to the west. These properties will remain in their existing condition; as such the design will accommodate the potential sediment loading from these drainage basins. The annual sediment loading estimates were made using the Modified Universal Loss Equation (MUSLE), as adapted to the Albuquerque area in the Design Guide (Mussetter 1994) shown below. Sediment loading calculations are summarized in Appendix D.

$$Y_S = C \cdot 95(V_W Q_P)^{.56} K \cdot LS \cdot C \cdot P$$

Y_S = *the total sediment yield in tons for the storm event*

The sediment analysis utilized the dominant flow rates for the offsite basins to the west. The estimated bed material transport volumes are summarized in Table 2. The average sediment volumes for each basin were estimated using the following equation that was taken from the Design Guide:

$$Y_m = 0.015Y_{100} + 0.015Y_{50} + 0.04Y_{25} + 0.08Y_{10} + 0.2Y_5 + 0.4Y_2$$

Y_m = *magnitude of the average annual event*

Y_i = *magnitude of the event for the 2-yr, 5-yr, 10-yr, 25-yr, and 100-yr storm*

The results indicate a relatively low volume of sediment transported within the individual arroyos on an annual basis. The proposed linear ponds will not be significantly impacted by these sediment volumes. In addition, the sediment loading will prevent the natural channels proposed within the Talavera Subdivision from degrading in the interim condition. In the future, the developed flows will be conveyed in storm drains, greatly reducing the flow rates within the natural channel, and eliminating potential erosion within these natural channels.

Table 2: Average Annual Sediment Loading

Basin	Ys (tons)	A (acres)	Vw (ac-ft)	Ys(t/acres)	Vsed (yds^3)
10014	43.50	55.10	0.149	0.789	32.22
10015	41.40	62.46	0.163	0.663	30.66
10016	28.09	63.36	0.165	0.443	20.81
10017	25.16	61.44	0.160	0.410	18.64

V. CONCLUSIONS

The Talavera Subdivision Drainage Management Plan provides solutions for the development that addresses both the projected future development and the interim drainage conditions. The proposed improvements will also provide future guidance for development within the Powerline Drainage Basin. All proposed drainage improvements addressed herein will be constructed in accordance with the current AMAFCA standards.

VI. REFERENCES

1. Leedshill-Herkenhoff, Inc., 1999. Amole-Hubbel Drainage Management Plan. Prepared for Albuquerque Metropolitan Arroyo and Flood Control Authority.

2. Mussetter, R.A. Lagasse, P.F., and Harvey, M.D., 1994. Erosion and Sediment Design Guide. Prepared for Albuquerque Metropolitan Arroyo and Flood Control Authority.

3. Bohannan Huston, Inc., 2002. Timmaron Subdivision Unit 3& 4 Drainage Study Prepared for Albuquerque Metropolitan Arroyo and Flood Control Authority.

4. D. Mark Goodwin & Associates, P.A., 2004. Drainage Report for the Amole Channel Prepared for Albuquerque Metropolitan Arroyo and Flood Control Authority.

APPENDIX A

BASIN MAPS

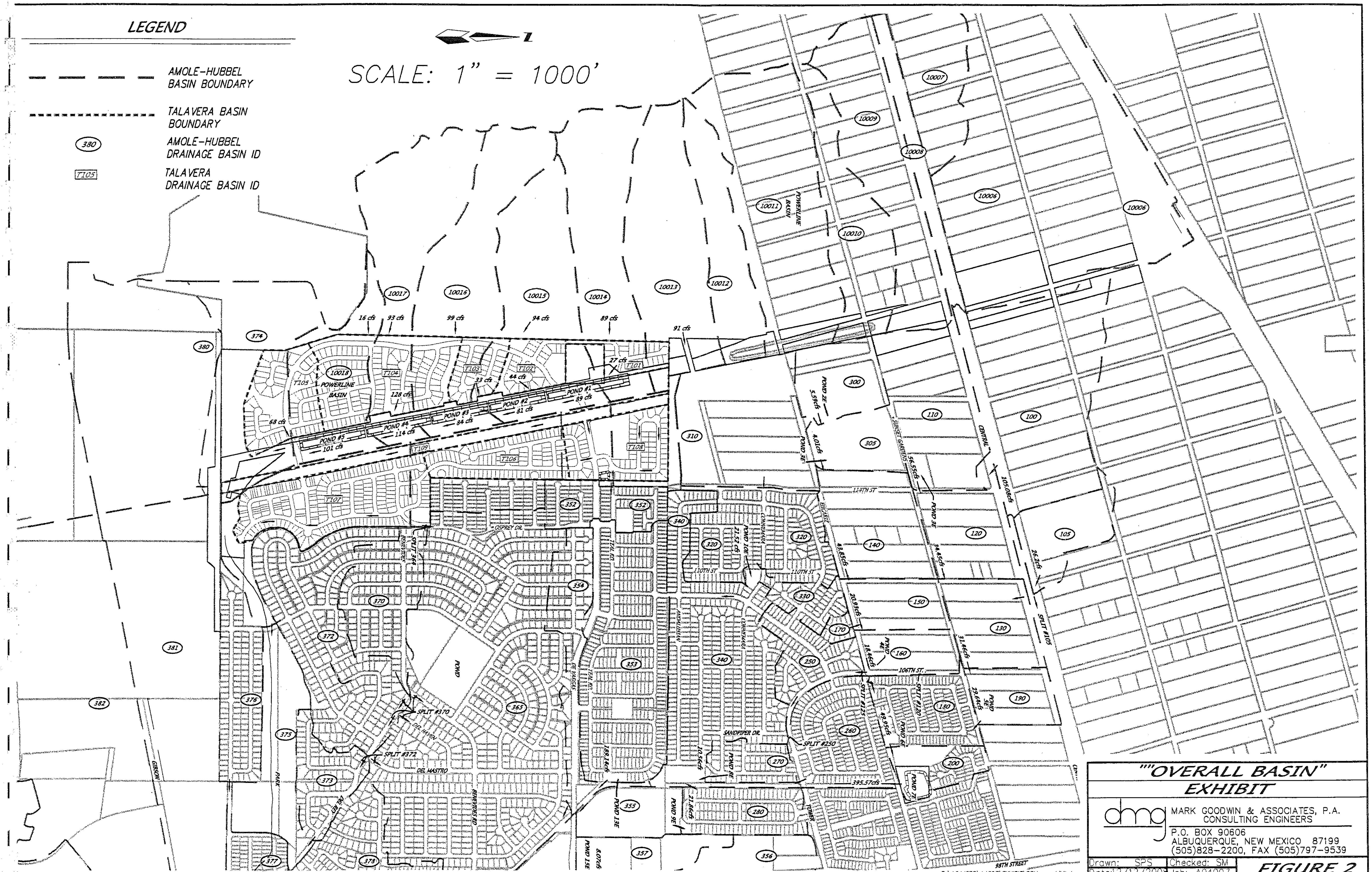
LEGEND
AMOLE-HUBBEL BASIN BOUNDARY
TALAVERA BASIN BOUNDARY
380 AMOLE-HUBBEL DRAINAGE BASIN ID
T105 TALAVERA DRAINAGE BASIN ID
SCALE: 1" = 1000'
N
POWERLINE BASIN
POND #1 89 cfs
POND #2 81 cfs
POND #3 84 cfs
POND #4 114 cfs
POND #5 101 cfs
114TH ST
110TH ST
106TH ST.
98TH STREET
OSPREY DR.
SANDPIPER DR.
DEL MASTRO
DEL HAVEN
CENTRAL
SPLIT #370
SPLIT #372
SPLIT #250
SPLIT #105
POND
395.57cfs
"OVERALL BASIN" EXHIBIT
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FIGURE 2
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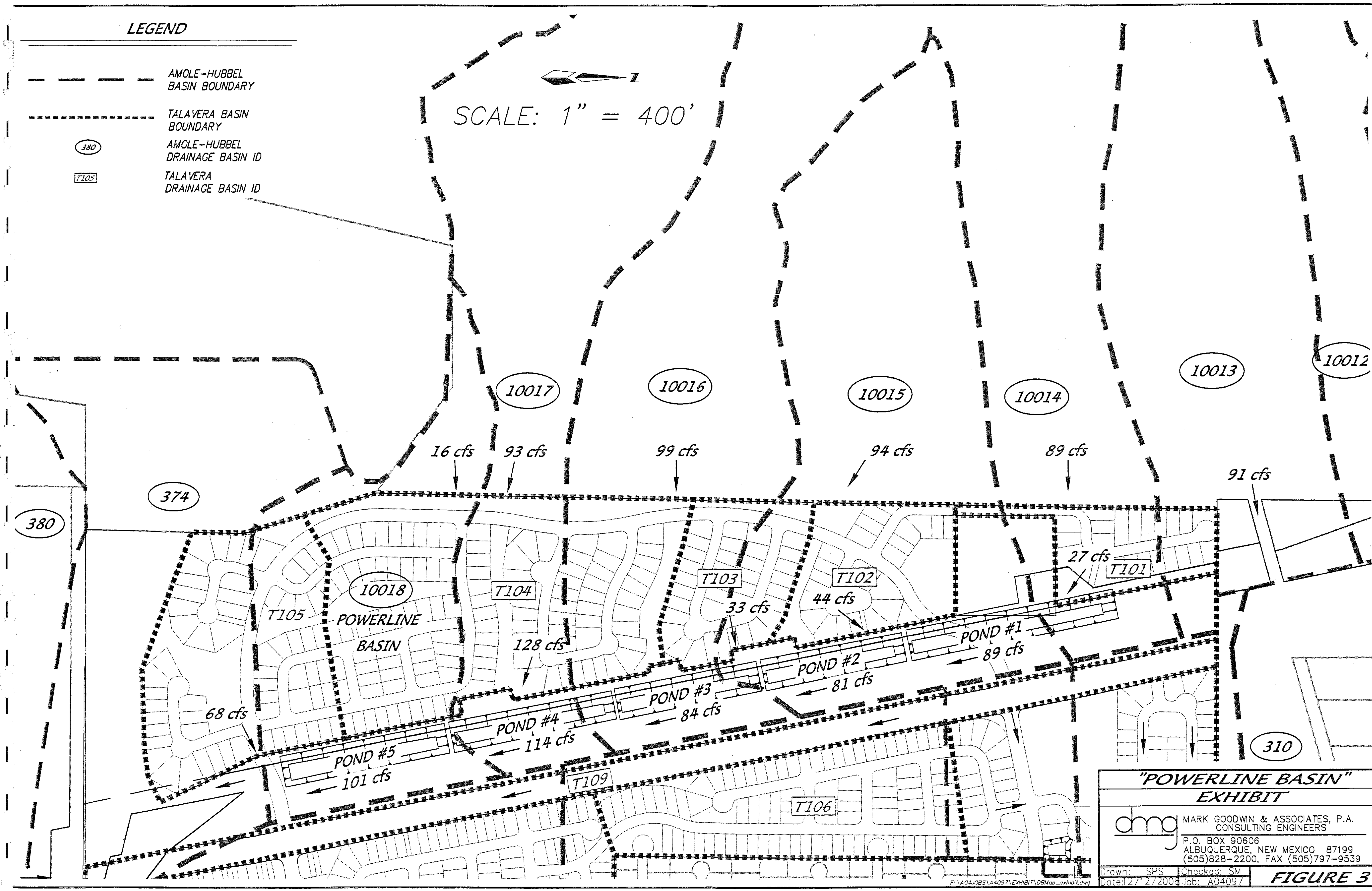

LEGEND
AMOLE-HUBBEL BASIN BOUNDARY
TALAVERA BASIN BOUNDARY
380
AMOLE-HUBBEL DRAINAGE BASIN ID
T105
TALAVERA DRAINAGE BASIN ID
N
SCALE: 1" = 400'
10017
10016
10015
10014
10013
10012
374
380
10018
POWERLINE BASIN
T105
T104
T103
T102
T101
T106
T109
310
16 cfs
93 cfs
99 cfs
94 cfs
89 cfs
91 cfs
27 cfs
33 cfs
44 cfs
128 cfs
68 cfs
POND #1
89 cfs
POND #2
81 cfs
POND #3
84 cfs
POND #4
114 cfs
POND #5
101 cfs
"POWERLINE BASIN" EXHIBIT
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FIGURE 3

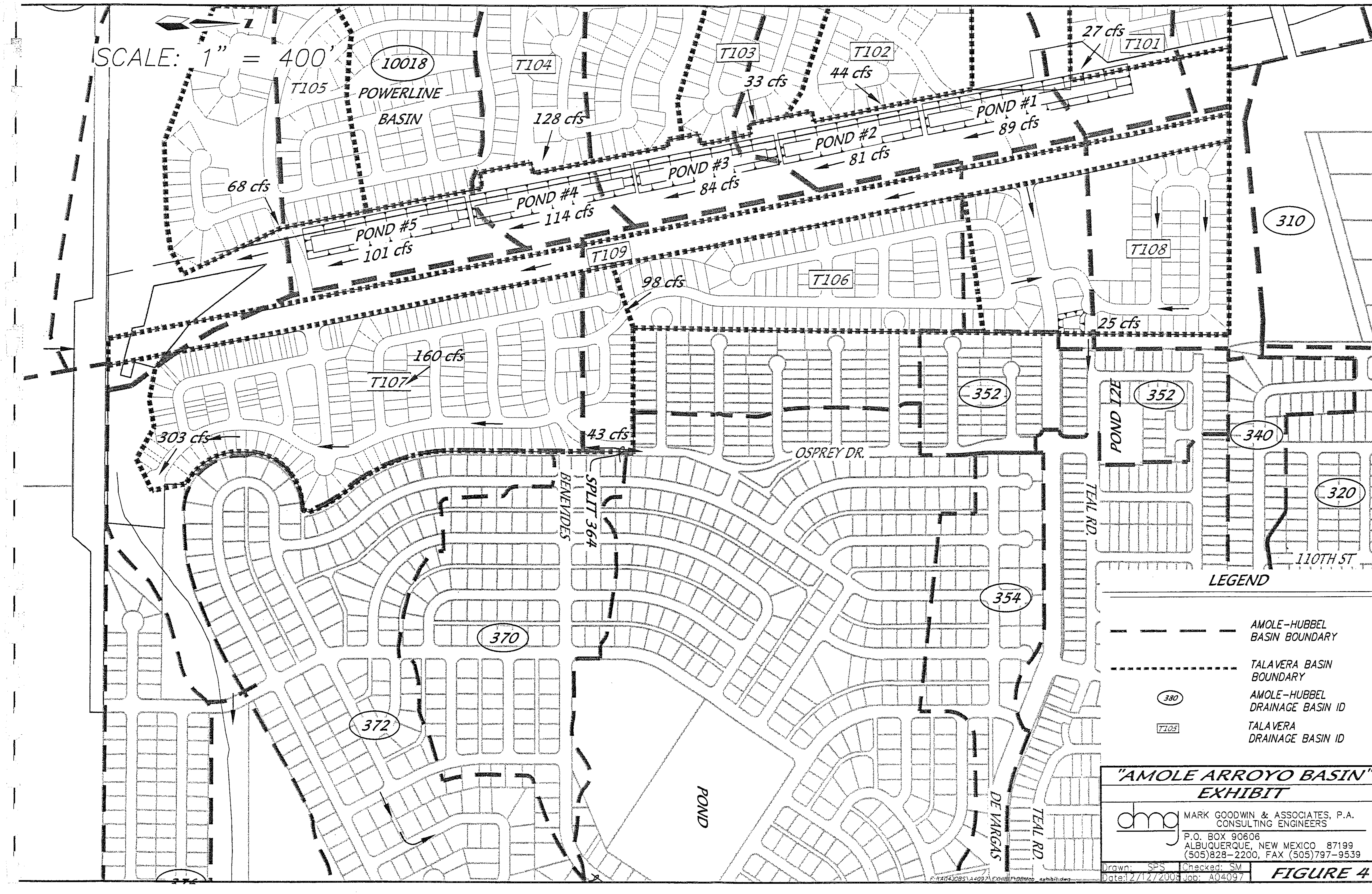
SCALE: 1" = 400'
10018
POWERLINE
BASIN
T105
T104
T103
T102
T101
27 cfs
44 cfs
33 cfs
128 cfs
POND #1
89 cfs
POND #2
81 cfs
POND #3
84 cfs
POND #4
114 cfs
POND #5
101 cfs
68 cfs
T109
98 cfs
T106
T108
310
25 cfs
160 cfs
T107
303 cfs
43 cfs
352
POND 12E
352
340
320
OSPREY DR.
BENEVIDES
SPLIT 364
TEAL RD.
110TH ST
354
370
372
POND
DE VARGAS
TEAL RD.
LEGEND
AMOLE-HUBBEL BASIN BOUNDARY
TALAVERA BASIN BOUNDARY
380
AMOLE-HUBBEL DRAINAGE BASIN ID
T105
TALAVERA DRAINAGE BASIN ID
"AMOLE ARROYO BASIN" EXHIBIT
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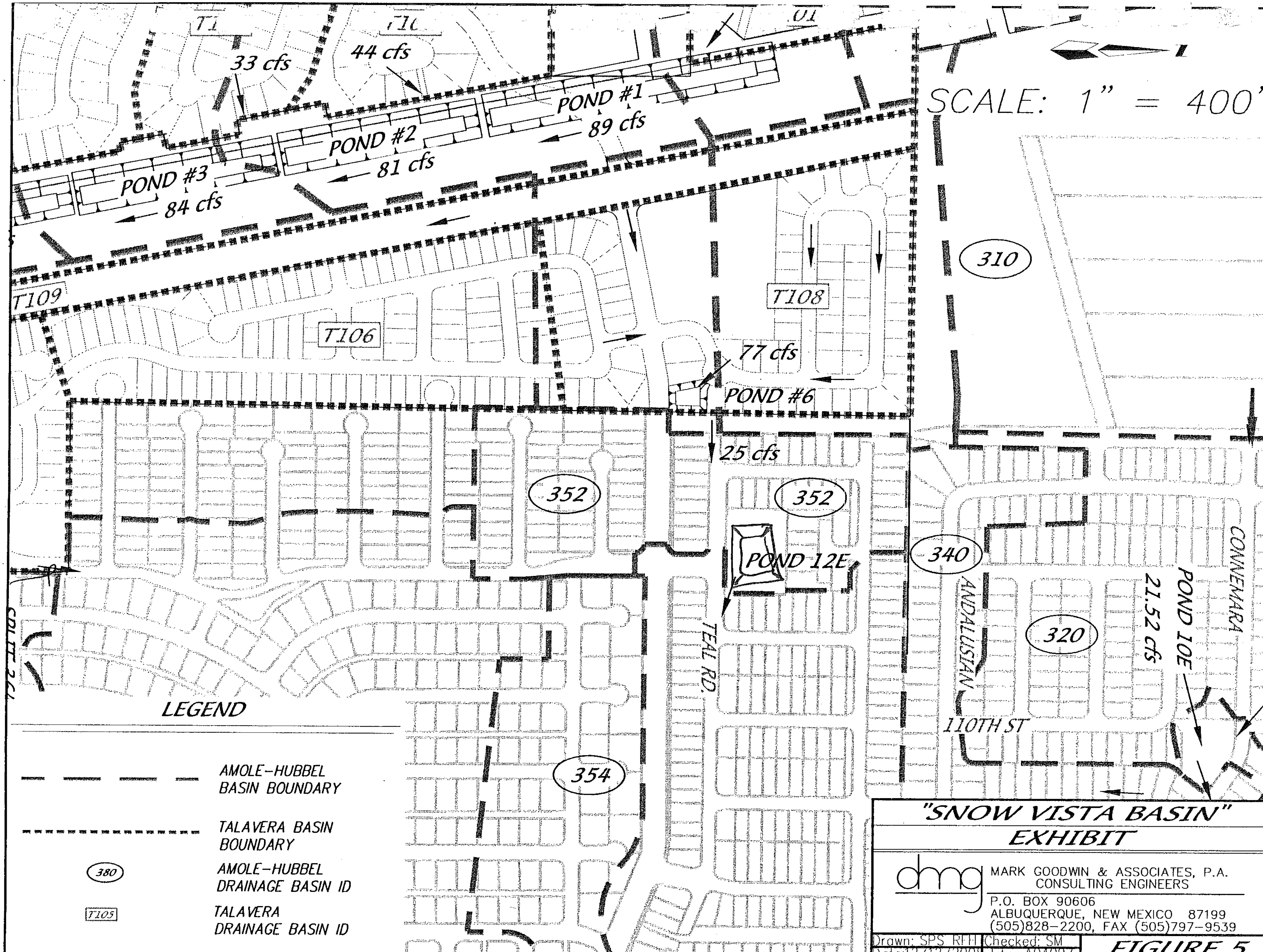
FIGURE 4



"SNOW VISTA BASIN"
EXHIBIT

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FIGURE 5

APPENDIX B

AHYMO OUTPUT EXISTING CONDITIONS

```
                                 FROM  TO                   PEAK        RUNOFF                TIME TO   CFS
                  HYDROGRAPH      ID   ID        AREA     DISCHARGE     VOLUME      RUNOFF      PEAK    PER       PAGE =    2
COMMAND         IDENTIFICATION   NO.  NO.      (SQ MI)      (CFS)      (AC-FT)    (INCHES)   (HOURS)  ACRE      NOTATION

*S ADD THE ROUTED FLOW FROM SUB-BASIN 10006.1 TO THE FLOW FROM SUB-BASIN 10008.
ADD HYD             10008.10  6& 2   7      .30490      492.98      14.821      .91145     1.550    2.526
*S ROUTE FLOW FROM SUB-BASIN 10008.1 DOWN POWERLINE CHANNEL
*S THROUGH SUB-BASIN 10009, 200 FEET SOUTH OF CENTRAL.
ROUTE               10008.50   7     8      .30490      497.16      14.821      .91145     1.550    2.548
*S ADD THE ROUTED FLOW FROM SUB-BASIN 10007.6 TO THE ROUTED FLOW
*S FROM SUB-BASIN 10008.5
ADD HYD             10008.20  5& 8   9      .35270      538.62      16.346      .86900     1.550    2.386
*S ROUTE FLOW FROM SUB-BASIN 10008.2 DOWN POWERLINE CHANNEL
*S THROUGH SUB-BASIN 10009, TO SEDIMENT BASIN ENTRANCE.
ROUTE               10008.60   9    10      .35270      547.43      16.346      .86900     1.550    2.425
*S CALCULATE THE FLOW FROM SUB-BASIN 10009.
*S BASIN 10009 MODELED AS EXISTING, BULK FLOW 19.7%
SEDIMENT BULK                                                                                            PK BF =      1.20
COMPUTE NM HYD      10009.00   -    11      .08150       85.82       2.564      .58979     1.550    1.645 PER IMP=     .00
*S ADD THE ROUTED FLOW FROM SUB-BASIN 10008.6 TO THE FLOW FROM
*S SUB-BASIN 10009, FLOW ENTERS INTO SED BASIN.
*S HYD NO. 10009.1 IS ******* AP 12 ******
ADD HYD             10009.10 10&11  12      .43420      633.25      18.910      .81659     1.550    2.279
*S********************************
*S CALCULATE THE FLOW FROM SUB-BASIN 10010.
*S BASIN 10010 MODELED AS EXISTING, BULK FLOWS 18.4%
SEDIMENT BULK                                                                                            PK BF =      1.18
COMPUTE NM HYD      10010.00   -    13      .05910       73.05       2.079      .65971     1.500    1.931 PER IMP=    1.00
*S ADD THE FLOW FROM SUB-BASIN 10010 TO THE COMBINED FLOW IN THE SED BASIN (1000
ADD HYD             10010.10 13&12  14      .49330      703.35      20.989      .79779     1.550    2.228
*S CALCULATE THE FLOW FROM SUB-BASIN 10011.
*S BASIN 10011 MODELED AS EXISTING, BULK FLOWS 22.8%
SEDIMENT BULK                                                                                            PK BF =      1.23
COMPUTE NM HYD      10011.00   -    15      .12400      164.30       4.492      .67923     1.500    2.070 PER IMP=     .00
*S ADD THE FLOW FROM SUB-BASIN 10011 TO THE COMBINED FLOW IN THE SED BASIN.
ADD HYD             10011.10 15&14  16      .61730      860.63      25.481      .77398     1.550    2.178
*S CALCULATE THE FLOW FROM SUB-BASIN 10012.
*S BASIN 10012 MODELED AS EXISTING CONDITIONS, BULK FLOWS 20.9%
SEDIMENT BULK                                                                                            PK BF =      1.21
COMPUTE NM HYD      10012.00   -    17      .04890       55.72       1.573      .60331     1.500    1.780 PER IMP=     .00
*S ADD THE FLOW FROM SUB-BASIN 10012 TO THE COMBINED FLOW IN THE SED BASIN.
ADD HYD             10011.10 17&16  18      .66620      914.49      27.055      .76145     1.550    2.145
*S  ROUTE TOTAL FLOW THROUGH EXISTING SEDIMENTATION BASIN.
ROUTE RESERVOIR     10012.80  18    19      .66620      151.69      26.631      .74953     1.900     .356 AC-FT=    18.893
*S HYD NO. 10012.8 IS ******* AP 13 ******
*S ROUTE OUTFLOW FROM SED BASIN DOWN POWERLINE CHANNEL THROUGH SUB-BASIN 10013.
ROUTE               10012.60  19    20      .66620      151.22      26.626      .74937     1.950     .355
*S CALCULATE THE FLOW FROM SUB-BASIN 10013.
*S BASIN 10013 MODELED AS EXISTING, BULK FLOWS 15%
SEDIMENT BULK                                                                                            PK BF =      1.15
COMPUTE NM HYD      10013.00   -    21      .08841       91.01       2.537      .53800     1.500    1.608 PER IMP=     .00
*S ADD THE ROUTE FLOW FROM SUB-BASIN 10012.6 TO THE FLOW FROM SUB-BASIN 10013.
ADD HYD             10013.10 20&21  22      .75461      162.14      29.162      .72460     1.900     .336
*S BASIN T101 MODELED AS DEVELOPED
SEDIMENT BULK                                                                                            PK BF =      1.00
COMPUTE NM HYD          T101   -    23      .01823       26.84        .935      .96190     1.500    2.300 PER IMP=   19.46
*S ADD THE FLOW FROM SUB-BASIN T101 TO THE FLOW FROM SUB-BASIN 10013.
ADD HYD             10013.10 23&22  24      .77284      167.40      30.098      .73020     1.850     .338
*S  ROUTE TOTAL FLOW THROUGH POND#1.
ROUTE RESERVOIR     10013.20  24    25      .77284       98.52      30.092      .73006     2.600     .199 AC-FT=     6.433
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN 10013.2 DOWN POWERLINE CHANNEL
*S THROUGH SUB-BASIN 10014.
ROUTE               10013.50  25    26      .77284       98.14      30.088      .72996     2.650     .198
```

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                                FROM  TO                      PEAK         RUNOFF                 TIME TO    CFS       PAGE =    3
                  HYDROGRAPH     ID    ID        AREA      DISCHARGE      VOLUME      RUNOFF      PEAK      PER
COMMAND         IDENTIFICATION   NO.   NO.      (SQ MI)      (CFS)        (AC-FT)    (INCHES)   (HOURS)    ACRE       NOTATION

*S CALCULATE THE FLOW FROM SUB-BASIN 10014.
*S BASIN 10014  MODELED AS DEVELOPED, BULK FLOWS AT 5.0%
SEDIMENT BULK                                                                                                     PK BF =     1.05
COMPUTE NM HYD       10014.00     -     1       .07330       103.14        3.708      .94846     1.500     2.199 PER IMP=   20.30
*S ADD THE ROUTE FLOW FROM SUB-BASIN T101 TO THE FLOW FROM SUB-BASIN 10014.1.
ADD HYD                  T101.1  1&26   2       .84614       124.95       33.796      .74889     1.550      .231
*S BASIN T102 IS CURRENTLY FULLY DEVELOPED
SEDIMENT BULK                                                                                                     PK BF =     1.00
COMPUTE NM HYD             T102   -     3       .03356        43.94        1.469      .82060     1.500     2.046 PER IMP=   13.60
*S ADD THE ROUTED FLOW FROM SUB-BASIN T102 TO THE FLOW FROM SUB-BASIN 10014.
ADD HYD                  T102.1  3& 2   4       .87970       166.18       35.264      .75163     1.500      .295
*S  ROUTE TOTAL FLOW THROUGH POND#2.
ROUTE RESERVOIR          POND.2   4     5       .87970        81.33       35.261      .75156     3.500      .144 AC-FT=     4.941
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN T101.1 DOWN POWERLINE CHANNEL
*S THROUGH SUB-BASIN 10015.
ROUTE                    T101.2   5     6       .87970        81.30       35.253      .75138     3.600      .144
*S CALCULATE THE FLOW FROM SUB-BASIN 10015.
*S BASIN 10015 MODELED AS DEVELOPED, BULK FLOWS 5.0%
SEDIMENT BULK                                                                                                     PK BF =     1.05
COMPUTE NM HYD       10015.00     -     7       .05790        93.41        3.500     1.13356     1.500     2.521 PER IMP=   27.80
*S ADD THE ROUTE FLOW FROM SUB-BASIN POND #2 TO THE FLOW FROM SUB-BASIN 10015.
ADD HYD              10015.10  7& 6     8       .93760       115.90       38.753      .77498     1.550      .193
*S BASIN T103 IS CURRENTLY FULLY DEVELOPED
SEDIMENT BULK                                                                                                     PK BF =     1.00
COMPUTE NM HYD             T103   -     9       .01970        32.95        1.196     1.13827     1.500     2.613 PER IMP=   26.80
*S ADD THE FLOW FROM SUB-BASIN 10015 TO THE FLOW FROM SUB-BASIN T103.
ADD HYD                  T103.1  8& 9  10       .95730       148.08       39.949      .78246     1.500      .242
*S CALCULATE THE FLOW FROM SUB-BASIN 10016.
*S BASIN 10016 MODELED AS DEVELOPED, BULK FLOWS 5.0%
SEDIMENT BULK                                                                                                     PK BF =     1.05
COMPUTE NM HYD       10016.00     -    11       .06600        98.70        3.614     1.02675     1.500     2.337 PER IMP=   23.40
*S ADD THE COMBINED FLOW FROM SUB-BASIN T103.1 TO THE FLOW FROM SUB-BASIN 10016.
ADD HYD              10016.10 11&10    12      1.02330       246.79       43.563      .79821     1.500      .377
*S  ROUTE TOTAL FLOW THROUGH POND#3.
ROUTE RESERVOIR          POND.3  12     1      1.02330        83.37       43.560      .79814     2.450      .127 AC-FT=     5.439
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN POND #3 DOWN POWERLINE CHANNEL
*S THROUGH SUB-BASIN 10017.
ROUTE                10016.50     1    13      1.02330        83.37       43.556      .79808     2.450      .127
*S BASIN T104 IS CURRENTLY FULLY DEVELOPED
SEDIMENT BULK                                                                                                     PK BF =     1.00
COMPUTE NM HYD             T104   -    14       .06873       128.16        4.783     1.30491     1.500     2.914 PER IMP=   33.60
*S ADD THE ROUTED FLOW FROM SUB-BASIN 10016.1 TO THE FLOW FROM SUB-BASIN T104.
ADD HYD                  T104.1 14&13  15      1.09203       161.83       48.339      .82998     1.500      .232
*S CALCULATE THE FLOW FROM SUB-BASIN 10017.
*S BASIN 10017 MODELED AS DEVELOPED, BULK FLOWS 5.0%
SEDIMENT BULK                                                                                                     PK BF =     1.05
COMPUTE NM HYD       10017.00     -    16       .07215        96.43        3.399      .88324     1.500     2.088 PER IMP=   17.50
*S ADD THE COMBINE FLOW FROM SUB-BASIN 10016.1 TO THE FLOW FROM SUB-BASIN 10017.
ADD HYD              10017.10 16&15    17      1.16418       258.27       51.738      .83328     1.500      .347
*S  ROUTE TOTAL FLOW THROUGH POND#4.
ROUTE RESERVOIR      10017.20    17     2      1.16418       114.06       51.727      .83310     2.050      .153 AC-FT=     4.666
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN 10017.1 THRU SUB-BASIN 10018
ROUTE                10017.50     2    16      1.16418       113.94       51.720      .83299     2.100      .153
*S CALCULATE THE FLOW FROM SUB-BASIN 10018.
*S BASIN 10018 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK                                                                                                     PK BF =     1.15
COMPUTE NM HYD       10018.00     -    17       .01760        16.70         .474      .50526     1.500     1.482 PER IMP=     .00
*S ADD THE FLOW FROM SUB-BASIN 10018 TO THE FLOW FROM SUB-BASIN T105.
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ADD HYD            10018.10 17&16  18       1.18178        115.24       52.194        .82811    2.050     .152

                                 FROM  TO                     PEAK        RUNOFF                 TIME TO    CFS      PAGE =   4
                     HYDROGRAPH   ID   ID        AREA      DISCHARGE      VOLUME      RUNOFF      PEAK      PER
COMMAND          IDENTIFICATION   NO.  NO.     (SQ MI)       (CFS)        (AC-FT)    (INCHES)   (HOURS)    ACRE      NOTATION

*S  ROUTE TOTAL FLOW THROUGH POND#5.
ROUTE RESERVOIR     10018.20   18    2       1.18178         86.48       52.190       .82805    4.100     .114 AC-FT=    5.987
*S ADD THE ROUTE FLOW FROM SUB-BASIN 10017.5 TO THE COMBINED FLOW FROM SUB-BASIN
*S BASIN T105 IS CURRENTLY FULLY DEVELOPED
SEDIMENT BULK                                                                                                  PK BF =     1.00
COMPUTE NM HYD            T105     -    19        .04267         68.15        2.423      1.06474    1.500    2.496 PER IMP=  23.30
*S*****AP 14************
*S ADD THE FLOW FROM SUB-BASIN T105 TO THE POWERLINE CHANNEL.
ADD HYD             10018.10 19& 2  20       1.22445         90.50       54.613       .83629    1.500     .115
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN 10018.2 DOWN POWERLINE CHANNEL
*S TO THE AMOLE ARROYO (AP 02).
ROUTE            PL100E1B.HYD   20   21       1.22445         86.66       54.607       .83620    4.100     .111
*S********AMOLE ARROYO BASIN********************
*S BASIN T106 IS CURRENTLY FULLY DEVELOPED, BULK FLOWS 5%
SEDIMENT BULK                                                                                                  PK BF =     1.05
COMPUTE NM HYD            T106     -    22        .04700         97.86        3.651      1.45639    1.500    3.253 PER IMP=  35.46
*S BASIN 363 (TIMMARON WEST SUBDIVISION UNIT 5), BULK FLOWS 5%
SEDIMENT BULK                                                                                                  PK BF =     1.05
COMPUTE NM HYD          363.00     -    23        .01860         44.30        1.817      1.83171    1.500    3.722 PER IMP=  56.00
*S ADD THE FLOW FROM SUB-BASIN 363 TO THE FLOW FROM SUB-BASIN T106.
ADD HYD                 T106.1 23&22  24        .06560        142.16        5.468      1.56279    1.500    3.386
*S ROUTE THE FLOW FROM SUB-BASIN T106 THRU SUB-BASIN T107
ROUTE                   T106.2   24   25        .06560        141.93        5.468      1.56281    1.500    3.381
*S BASIN T106 IS CURRENTLY FULLY DEVELOPED, BULK FLOWS 5%
SEDIMENT BULK                                                                                                  PK BF =     1.05
COMPUTE NM HYD            T107     -     1        .07600        160.12        6.036      1.48915    1.500    3.292 PER IMP=  37.40
*S ADD THE FLOW FROM SUB-BASIN T106.2 TO THE FLOW FROM SUB-BASIN T107.
ADD HYD                 T107.1 25& 1     2        .14160        302.05       11.504      1.52326    1.500    3.333
*S ADD THE FLOW FROM SUB-BASIN T107.1 TO THE FLOW FROM SUB-BASIN 10018.2.
ADD HYD             10018.10  2&21     3       1.36605        360.50       66.111       .90742    1.500     .412
*S ADD THE FLOW FROM POWERLINE BASIN TO THE AMOLE ARROYO BASIN.
ADD HYD                 T106.1  3&21     4       2.59050        430.65      120.718       .87376    1.550     .260
*S***********WESTGATE DAM*******************
STORE HYD                   WG     -     5      18.68360         75.41      278.863       .27985    9.000     .006
*S ADD THE FLOW FROM WESTGATE DAM TO THE AMOLE ARROYO BASIN.
ADD HYD                 T106.1  5& 4     6      21.27410        462.05      291.758       .25714    1.550     .034
*S***********SOUTH POWERLINE BASIN************
*S BASIN 380 FROM THE SOUTH POWERLINE BASIN - (BLUFFS)
SEDIMENT BULK                                                                                                  PK BF =     1.06
COMPUTE NM HYD          D60104     -     7        .42000        215.23       11.119       .49641    1.700     .801 PER IMP=   1.00
*S***********AP 14.1*********************
*S ADD THE FLOW FROM SOUTH POWERLINE BASIN TO THE AMOLE ARROYO BASIN.
ADD HYD                 380.20  7& 6     8      21.69410        618.67      302.878       .26177    1.550     .045
*S**********SNOW VISTA BASIN*****************
*S BASIN T108 IS WITHIN THE PROPOSED DEVELOPMENT, BULK FLOWS 6%
SEDIMENT BULK                                                                                                  PK BF =     1.06
COMPUTE NM HYD            T108     -     2        .03400         76.85        3.054      1.68443    1.500    3.532 PER IMP=  48.00
*S  ROUTE TOTAL FLOW THROUGH POND#6.
ROUTE RESERVOIR         T108.1    2     3        .03400         24.75        3.054      1.68442    1.800    1.137 AC-FT=    1.327
*S BASIN T108 DRAINS IN THE TIMMERON SUBDIVSION UNIT 4
FINISH
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APPENDIX D

AHYMO OUTPUT FUTURE CONDITIONS

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                                                                                AH      UM
AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -                                      - VERSION:  1997.02d      RUN DATE (MON/DAY/YR) =01/06/2009
INPUT FILE = TV-DEV9.DAT                                                                                 USER NO.= AHYMO-I-9702dGoodwinM-AH
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                                FROM  TO                    PEAK        RUNOFF                 TIME TO    CFS      PAGE =   1
                   HYDROGRAPH   ID    ID      AREA        DISCHARGE     VOLUME      RUNOFF       PEAK     PER
COMMAND          IDENTIFICATION NO.   NO.    (SQ MI)        (CFS)       (AC-FT)    (INCHES)    (HOURS)    ACRE      NOTATION

START                                                                                                             TIME=       .00
*S
*S      FUTURE DEVELOPED CONDITIONS TALAVERA SUBDIVISION
*S
*S
*S 100-YR, 24-HR STORM WITH SEDIMENT
*S BY: SCOTT MEDINA
*S LAST REVISION: 12-22-2008
*S**********************************************************************
*S THE PURPOSE OF THIS MODEL IS TO CALCULATE THE RUNOFF FROM THE POWERLINE
*S WATERSHED FOR USE IN DETERMINATION OF DRAINAGE REQUIREMENTS FOR THE TALAVERA
*S THE MODEL ALSO INCLUDES PORTIONS OF THE AMOLE ARROYO LOCATED WITH THE SUBDIVI
*S FLOW FROM THIS BASIN IS CONVEYED TO THE AMOLE DETENTION FACILITY
*S VIA THE AMOLE ARROYO.  BASIN BOUNDARIES WERE DETERMINED FROM NOVEMBER 1995
*S AERIAL, TOPOGRAPHICAL MAPS AND PREVIOUS STUDIES.
*S
*S*****************************************************************
*S ANALYSIS ASSUMPTIONS:
*S*****************************************************************
*S 1. ALL LAND IN THIS BASIN IS MODELED AS DEVELOPED CONDITIONS SCENARIO.
*S
*S 2. A BULKING FACTOR HAS BEEN ADDED TO EACH UNDEVELOPED SUB-BASIN.  THE BULKIN
*S    FACTOR IS BASED ON LAND TREATMENT AND SLOPE.  FOR SLOPES >20% (LAND
*S    TREATMENT C) THE BULKING FACTOR IS 54%, AND SLOPES <20% (LAND TREATMENTS A
*S    AND B) THE BULKING FACTOR IS 15% FOR EXISTING CONDITIONS.  A WEIGHTED
*S    AVERAGE WAS USED FOR SUB-BASINS CONTAINING BOTH SLOPE GROUPS.
*S
*S100 YEAR 24HR STORM
RAINFALL  TYPE= 2                                                                                                 RAIN24=   2.660
*S CALCULATE THE FLOW FROM SUB-BASIN 10006.
*S BASIN 10006 MODELED AS DEVELOPED CONDITIONS, BULK FLOWS 5.0%
SEDIMENT BULK                                                                                                     PK BF =    1.05
COMPUTE NM HYD       10006.00   -     1      .28340       624.24      26.966      1.78407     1.500      3.442 PER IMP=  56.00
*S ROUTE FLOW FROM SUB-BASIN 10006.1 THROUGH 2-12'x6' RCB UNDER CENTRAL.
*S NOTE: THE HYDRAULIC PROPERTIES OF 2-12'x6' RCB IS APPROXIMATELY THE
*S SAME AS A 169" DIA PIPE.
ROUTE                10006.10   1     2      .28340       624.23      26.966      1.78407     1.500      3.442
*S CALCULATE THE FLOW FROM SUB-BASIN 10007.
*S BASIN 10007 MODELED AS UNDEVELOPED, BULK FLOWS 5.0%
SEDIMENT BULK                                                                                                     PK BF =    1.05
COMPUTE NM HYD       10007.00   -     3      .04780       117.58       5.129      2.01176     1.500      3.844 PER IMP=  70.00
*S ROUTE FLOW FROM SUB-BASIN 10007 THROUGH 8'x4' RCB UNDER CENTRAL.
*S NOTE: THE HYDRAULIC PROPERTIES OF 8'x4' RCB IS APPROXIMATELY THE
*S SAME AS A 81" DIA PIPE.
ROUTE                10007.50   3     4      .04780       117.97       5.129      2.01177     1.500      3.856
*S ROUTE FLOW FROM SUB-BASIN 10007.5 TO 200 FEET SOUTH OF CENTRAL AND
*S POWERLINE CHANNEL.
ROUTE                10007.60   4     5      .04780       111.10       5.129      2.01177     1.550      3.632
*S CALCULATE THE FLOW FROM SUB-BASIN 10008.
*S BASIN 10008 IS CENTRAL AVE WEST OF POWERLINE
*S BASIN 10008 IS MODELED AS EXISTING CONDITIONS, BULK FLOWS 20.3%
SEDIMENT BULK                                                                                                     PK BF =    1.05
COMPUTE NM HYD       10008.00   -     6      .02150        31.71       1.376      1.20012     1.550      2.305 PER IMP=  30.00
*S ADD THE ROUTED FLOW FROM SUB-BASIN 10006.1 TO THE FLOW FROM SUB-BASIN 10008.
ADD HYD              10008.10   6& 2  7      .30490       654.31      28.342      1.74289     1.500      3.353
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                            FROM  TO                       PEAK       RUNOFF                 TIME TO   CFS      PAGE =   2
              HYDROGRAPH     ID   ID         AREA       DISCHARGE     VOLUME     RUNOFF      PEAK      PER
COMMAND     IDENTIFICATION   NO.  NO.       (SQ MI)       (CFS)       (AC-FT)   (INCHES)   (HOURS)    ACRE      NOTATION

*S ROUTE FLOW FROM SUB-BASIN 10008.1 DOWN POWERLINE CHANNEL
*S THROUGH SUB-BASIN 10009, 200 FEET SOUTH OF CENTRAL.
ROUTE              10008.50    7    8        .30490      652.16      28.342     1.74289     1.500     3.342
*S ADD THE ROUTED FLOW FROM SUB-BASIN 10007.6 TO THE ROUTED FLOW
*S FROM SUB-BASIN 10008.5
ADD HYD            10008.20  5& 8   9        .35270      751.15      33.470     1.77933     1.500     3.328
*S ROUTE FLOW FROM SUB-BASIN 10008.2 DOWN POWERLINE CHANNEL
*S THROUGH SUB-BASIN 10009, TO SEDIMENT BASIN ENTRANCE.
ROUTE              10008.60    9   10        .35270      763.97      33.470     1.77933     1.550     3.384
*S CALCULATE THE FLOW FROM SUB-BASIN 10009.
*S BASIN 10009 MODELED AS EXISTING, BULK FLOW 5.0%
SEDIMENT BULK                                                                                               PK BF =     1.05
COMPUTE NM HYD     10009.00    -   11        .08150      194.32       8.705     2.00265     1.500     3.725 PER IMP=  69.00
*S ADD THE ROUTED FLOW FROM SUB-BASIN 10008.6 TO THE FLOW FROM
*S SUB-BASIN 10009, FLOW ENTERS INTO SED BASIN.
*S HYD NO. 10009.1 IS ******* AP 12 ******
ADD HYD            10009.10 10&11  12        .43420      943.36      42.175     1.82125     1.550     3.395
*S*******************************
*S CALCULATE THE FLOW FROM SUB-BASIN 10010.
*S BASIN 10010 MODELED AS EXISTING, BULK FLOWS 5.0%
SEDIMENT BULK                                                                                               PK BF =     1.05
COMPUTE NM HYD     10010.00    -   13        .05910      142.22       6.089     1.93170     1.500     3.760 PER IMP=  65.00
*S ADD THE FLOW FROM SUB-BASIN 10010 TO THE COMBINED FLOW IN THE SED BASIN (1000
ADD HYD            10010.10 13&12  14        .49330     1069.03      48.264     1.83448     1.550     3.386
*S CALCULATE THE FLOW FROM SUB-BASIN 10011.
*S BASIN 10011 MODELED AS EXISTING, BULK FLOWS 5.0%
SEDIMENT BULK                                                                                               PK BF =     1.05
COMPUTE NM HYD     10011.00    -   15        .12400      237.20       8.724     1.31917     1.500     2.989 PER IMP=  31.54
*S ADD THE FLOW FROM SUB-BASIN 10011 TO THE COMBINED FLOW IN THE SED BASIN.
ADD HYD            10011.10 15&14  16        .61730     1295.69      56.988     1.73096     1.500     3.280
*S CALCULATE THE FLOW FROM SUB-BASIN 10012.
*S BASIN 10012 MODELED AS EXISTING CONDITIONS, BULK FLOWS 5.0%
SEDIMENT BULK                                                                                               PK BF =     1.05
COMPUTE NM HYD     10012.00    -   17        .04890      101.22       3.928     1.50598     1.500     3.234 PER IMP=  41.00
*S ADD THE FLOW FROM SUB-BASIN 10012 TO THE COMBINED FLOW IN THE SED BASIN.
ADD HYD            10011.10 17&16  18        .66620     1396.91      60.916     1.71445     1.500     3.276
*S  ROUTE TOTAL FLOW THROUGH EXISTING SEDIMENTATION BASIN.
ROUTE RESERVOIR    10012.80   18   19        .66620       89.57      60.202     1.69436     2.700      .210 AC-FT=   41.177
*S HYD NO. 10012.8 IS ******* AP 13 ******
*S ROUTE OUTFLOW FROM SED BASIN DOWN POWERLINE CHANNEL THROUGH SUB-BASIN 10013.
ROUTE              10012.60   19   20        .66620       89.28      60.184     1.69387     2.750      .209
*S CALCULATE THE FLOW FROM SUB-BASIN 10013.
*S BASIN 10013 MODELED AS EXISTING, BULK FLOWS 15%
SEDIMENT BULK                                                                                               PK BF =     1.15
COMPUTE NM HYD     10013.00    -   21        .08841       91.01       2.537      .53800     1.500     1.608 PER IMP=    .00
*S ADD THE ROUTE FLOW FROM SUB-BASIN 10012.6 TO THE FLOW FROM SUB-BASIN 10013.
ADD HYD            10013.10 20&21  22        .75461      114.09      62.721     1.55845     1.550      .236
*S BASIN T101 MODELED AS DEVELOPED
SEDIMENT BULK                                                                                               PK BF =     1.00
COMPUTE NM HYD         T101    -   23        .01823       26.84        .935      .96190     1.500     2.300 PER IMP=  19.46
*S ADD THE FLOW FROM SUB-BASIN T101 TO THE FLOW FROM SUB-BASIN 10013.
ADD HYD            10013.10 23&22  24        .77284      138.87      63.656     1.54437     1.550      .281
*S  ROUTE TOTAL FLOW THROUGH POND#1.
ROUTE RESERVOIR    10013.20   24   25        .77284       80.08      63.638     1.54393     3.850      .162 AC-FT=    4.806
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN 10013.2 DOWN POWERLINE CHANNEL
*S THROUGH SUB-BASIN 10014.
ROUTE              10013.50   25   26        .77284       80.08      63.626     1.54363     3.850      .162

                            FROM  TO                       PEAK       RUNOFF                 TIME TO   CFS      PAGE =   3
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                                                                  AHYM
                  HYDROGRAPH   ID   ID       AREA      DISCHARGE   VOLUME     RUNOFF    PEAK     PER
COMMAND         IDENTIFICATION NO.  NO.     (SQ MI)      (CFS)     (AC-FT)   (INCHES)  (HOURS)  ACRE     NOTATION

*S CALCULATE THE FLOW FROM SUB-BASIN 10014.
*S BASIN 10014  MODELED AS DEVELOPED, BULK FLOWS AT 5.0%
SEDIMENT BULK                                                                                        PK BF =     1.05
COMPUTE NM HYD       10014.00   -    1        .07330      103.14      3.708      .94846    1.500    2.199 PER IMP=  20.30
*S ADD THE ROUTE FLOW FROM SUB-BASIN T101 TO THE FLOW FROM SUB-BASIN 10014.1.
ADD HYD               T101.1  1&26   2        .84614      126.67     67.333     1.49207    1.550     .234
*S BASIN T102 IS CURRENTLY FULLY DEVELOPED
SEDIMENT BULK                                                                                        PK BF =     1.00
COMPUTE NM HYD          T102    -    3        .03356       43.94      1.469      .82060    1.500    2.046 PER IMP=  13.60
*S ADD THE ROUTED FLOW FROM SUB-BASIN T102 TO THE FLOW FROM SUB-BASIN 10014.
ADD HYD               T102.1  3& 2   4        .87970      167.68     68.802     1.46646    1.550     .298
*S  ROUTE TOTAL FLOW THROUGH POND#2.
ROUTE RESERVOIR       POND.2    4    5        .87970       77.67     68.792     1.46623    4.950     .138 AC-FT=     4.319
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN T101.1 DOWN POWERLINE CHANNEL
*S THROUGH SUB-BASIN 10015.
ROUTE                 T101.2    5    6        .87970       77.68     68.765     1.46567    5.000     .138
*S CALCULATE THE FLOW FROM SUB-BASIN 10015.
*S BASIN 10015 MODELED AS DEVELOPED, BULK FLOWS 5.0%
SEDIMENT BULK                                                                                        PK BF =     1.05
COMPUTE NM HYD       10015.00   -    7        .05790       93.41      3.500     1.13356    1.500    2.521 PER IMP=  27.80
*S ADD THE ROUTE FLOW FROM SUB-BASIN POND #2 TO THE FLOW FROM SUB-BASIN 10015.
ADD HYD              10015.10  7& 6  8        .93760      116.01     72.266     1.44516    1.550     .193
*S BASIN T103 IS CURRENTLY FULLY DEVELOPED
SEDIMENT BULK                                                                                        PK BF =     1.00
COMPUTE NM HYD          T103    -    9        .01970       32.95      1.196     1.13827    1.500    2.613 PER IMP=  26.80
*S ADD THE FLOW FROM SUB-BASIN 10015 TO THE FLOW FROM SUB-BASIN T103.
ADD HYD               T103.1  8& 9  10        .95730      148.14     73.462     1.43885    1.500     .242
*S CALCULATE THE FLOW FROM SUB-BASIN 10016.
*S BASIN 10016 MODELED AS DEVELOPED, BULK FLOWS 5.0%
SEDIMENT BULK                                                                                        PK BF =     1.05
COMPUTE NM HYD       10016.00   -   11        .06600       98.70      3.614     1.02675    1.500    2.337 PER IMP=  23.40
*S ADD THE COMBINED FLOW FROM SUB-BASIN T103.1 TO THE FLOW FROM SUB-BASIN 10016.
ADD HYD              10016.10 11&10 12       1.02330      246.85     77.076     1.41227    1.500     .377
*S  ROUTE TOTAL FLOW THROUGH POND#3.
ROUTE RESERVOIR       POND.3   12    1       1.02330       83.26     77.064     1.41204    2.350     .127 AC-FT=     5.420
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN POND #3 DOWN POWERLINE CHANNEL
*S THROUGH SUB-BASIN 10017.
ROUTE                10016.50    1  13       1.02330       83.27     77.052     1.41183    2.350     .127
*S BASIN T104 IS CURRENTLY FULLY DEVELOPED
SEDIMENT BULK                                                                                        PK BF =     1.00
COMPUTE NM HYD          T104    -   14        .06873      128.16      4.783     1.30491    1.500    2.914 PER IMP=  33.60
*S ADD THE ROUTED FLOW FROM SUB-BASIN 10016.1 TO THE FLOW FROM SUB-BASIN T104.
ADD HYD               T104.1 14&13  15       1.09203      161.84     81.835     1.40510    1.500     .232
*S CALCULATE THE FLOW FROM SUB-BASIN 10017.
*S BASIN 10017 MODELED AS DEVELOPED, BULK FLOWS 5.0%
SEDIMENT BULK                                                                                        PK BF =     1.05
COMPUTE NM HYD       10017.00   -   16        .07215       96.43      3.399      .88324    1.500    2.088 PER IMP=  17.50
*S ADD THE COMBINE FLOW FROM SUB-BASIN 10016.1 TO THE FLOW FROM SUB-BASIN 10017.
ADD HYD              10017.10 16&15 17       1.16418      258.27     85.234     1.37276    1.500     .347
*S  ROUTE TOTAL FLOW THROUGH POND#4.
ROUTE RESERVOIR      10017.20   17   2       1.16418      114.07     85.197     1.37216    2.050     .153 AC-FT=     4.667
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN 10017.1 THRU SUB-BASIN 10018
ROUTE                10017.50    2  16       1.16418      113.95     85.174     1.37180    2.100     .153
*S CALCULATE THE FLOW FROM SUB-BASIN 10018.
*S BASIN 10018 IS CURRENTLY UNDEVELOPED, BULK FLOWS 15%
SEDIMENT BULK                                                                                        PK BF =     1.15
COMPUTE NM HYD       10018.00   -   17        .01760       16.70       .474      .50526    1.500    1.482 PER IMP=    .00
*S ADD THE FLOW FROM SUB-BASIN 10018 TO THE FLOW FROM SUB-BASIN T105.
ADD HYD              10018.10 17&16 18       1.18178      115.25     85.649     1.35889    2.050     .152
*S  ROUTE TOTAL FLOW THROUGH POND#5.
ROUTE RESERVOIR      10018.20   18   2       1.18178       86.02     85.635     1.35868    3.900     .114 AC-FT=     5.906
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                                  FROM  TO                  PEAK         RUNOFF                 TIME TO    CFS      PAGE =    4
                     HYDROGRAPH    ID   ID        AREA    DISCHARGE     VOLUME      RUNOFF      PEAK      PER
COMMAND            IDENTIFICATION  NO.  NO.     (SQ MI)     (CFS)       (AC-FT)    (INCHES)    (HOURS)    ACRE      NOTATION

*S ADD THE ROUTE FLOW FROM SUB-BASIN 10017.5 TO THE COMBINED FLOW FROM SUB-BASIN
*S BASIN T105 IS CURRENTLY FULLY DEVELOPED
SEDIMENT BULK                                                                                                   PK BF =     1.00
COMPUTE NM HYD          T105    -    19      .04267      68.15       2.423     1.06474    1.500     2.496 PER IMP=   23.30
*S********AP 14*********************
*S ADD THE FLOW FROM SUB-BASIN T105 TO THE POWERLINE CHANNEL.
ADD HYD             10018.10 19& 2  20      1.22445      90.50      88.058     1.34843    1.500      .115
*S ROUTE THE COMBINED FLOW FROM SUB-BASIN 10018.2 DOWN POWERLINE CHANNEL
*S TO THE AMOLE ARROYO (AP 02).
ROUTE              PL100E1B.HYD  20   21    1.22445      86.22      88.038     1.34813    3.900      .110
*S********AMOLE ARROYO BASIN********************
*S BASIN T106 IS CURRENTLY FULLY DEVELOPED, BULK FLOWS 5%
SEDIMENT BULK                                                                                                   PK BF =     1.05
COMPUTE NM HYD          T106    -    22      .04700      97.86       3.651     1.45639    1.500     3.253 PER IMP=   35.46
*S BASIN 363 (TIMMARON WEST SUBDIVISION UNIT 5), BULK FLOWS 5%
SEDIMENT BULK                                                                                                   PK BF =     1.05
COMPUTE NM HYD        363.00    -    23      .01860      44.30       1.817     1.83171    1.500     3.722 PER IMP=   56.00
*S ADD THE FLOW FROM SUB-BASIN 363 TO THE FLOW FROM SUB-BASIN T106.
ADD HYD               T106.1 23&22  24      .06560     142.16       5.468     1.56279    1.500     3.386
*S ROUTE THE FLOW FROM SUB-BASIN T106 THRU SUB-BASIN T107
ROUTE                 T106.2   24   25      .06560     141.93       5.468     1.56281    1.500     3.381
*S BASIN T106 IS CURRENTLY FULLY DEVELOPED, BULK FLOWS 5%
SEDIMENT BULK                                                                                                   PK BF =     1.05
COMPUTE NM HYD          T107    -     1      .07600     160.12       6.036     1.48915    1.500     3.292 PER IMP=   37.40
*S ADD THE FLOW FROM SUB-BASIN T106.2 TO THE FLOW FROM SUB-BASIN T107.
ADD HYD               T107.1 25& 1    2      .14160     302.05      11.504     1.52326    1.500     3.333
*S ADD THE FLOW FROM SUB-BASIN T107.1 TO THE FLOW FROM SUB-BASIN 10018.2.
ADD HYD             10018.10  2&21    3     1.36605     360.50      99.542     1.36628    1.500      .412
*S ADD THE FLOW FROM POWERLINE BASIN TO THE AMOLE ARROYO BASIN.
ADD HYD               T106.1  3&21    4     2.59050     430.65     187.580     1.35770    1.550      .260
*S***********WESTGATE DAM********************
STORE HYD                 WG    -     5    18.68360      75.41     278.863      .27985    9.000      .006
*S ADD THE FLOW FROM WESTGATE DAM TO THE AMOLE ARROYO BASIN.
ADD HYD               T106.1  5& 4    6    21.27410     462.05     358.620      .31607    1.550      .034
*S***********SOUTH POWERLINE BASIN************
*S BASIN 380 FROM THE SOUTH POWERLINE BASIN - (BLUFFS)
SEDIMENT BULK                                                                                                   PK BF =     1.06
COMPUTE NM HYD        D60104    -     7      .42000     215.23      11.119      .49641    1.700      .801 PER IMP=    1.00
*S********AP 14.1********************
*S ADD THE FLOW FROM SOUTH POWERLINE BASIN TO THE AMOLE ARROYO BASIN.
ADD HYD               380.20  7& 6    8    21.69410     618.67     369.739      .31956    1.550      .045
*S**********SNOW VISTA BASIN*****************
*S BASIN T108 IS WITHIN THE PROPOSED DEVELOPMENT, BULK FLOWS 6%
SEDIMENT BULK                                                                                                   PK BF =     1.06
COMPUTE NM HYD          T108    -     2      .03400      76.85       3.054     1.68443    1.500     3.532 PER IMP=   48.00
*S  ROUTE TOTAL FLOW THROUGH POND#6.
ROUTE RESERVOIR       T108.1    2     3      .03400      24.75       3.054     1.68442    1.800     1.137 AC-FT=    1.327
*S BASIN T108 DRAINS IN THE TIMMERON SUBDIVSION UNIT 4
FINISH
□(s10H
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APPENDIX E

SEDIMENT LOADING CALCULATIONS

LS Factors

Basin	Length (ft)	S avg (ft/ft)	n	LS
10014	2500	5	0.5	2.667
10015	1800	5	0.5	2.263
10016	2000	4.5	0.4	1.510
10017	1900	4.3	0.4	1.404

100-yr

Basin	Qp (cfs)	Vw (ac-ft)	K	LS	CP	Ys (tons)	A (acres)	Ys(t/acres)
10014	73.6	2.41	0.17	2.67	0.4	939.227	55.10	17.045
10015	83.8	2.33	0.17	2.26	0.4	840.991	62.46	13.464
10016	85.1	2.37	0.17	1.51	0.4	571.576	63.36	9.021
10017	82.4	2.29	0.17	1.40	0.4	511.863	61.44	8.331

50-yr

Basin	Qp (cfs)	Vw (ac-ft)	K	LS	CP	Ys (tons)	A (acres)	Ys(t/acres)
10014	54.88	1.526	0.17	2.67	0.4	616.953	55.10	11.196
10015	62.52	1.729	0.17	2.26	0.4	603.937	62.46	9.669
10016	63.46	1.754	0.17	1.51	0.4	409.742	63.36	6.467
10017	61.45	1.701	0.17	1.40	0.4	367.700	61.44	5.985

25-yr

Basin	Qp (cfs)	Vw (ac-ft)	K	LS	CP	Ys (tons)	A (acres)	Ys(t/acres)
10014	35.34	0.989	0.17	2.67	0.4	378.206	55.10	6.863
10015	40.21	1.121	0.17	2.26	0.4	370.051	62.46	5.924
10016	40.81	1.137	0.17	1.51	0.4	251.021	63.36	3.962
10017	39.53	1.103	0.17	1.40	0.4	225.345	61.44	3.668

10-yr

Basin	Qp (cfs)	Vw (ac-ft)	K	LS	CP	Ys (tons)	A (acres)	Ys(t/acres)
10014	14.57	0.41	0.17	2.67	0.4	140.632	55.10	2.552
10015	16.56	0.464	0.17	2.26	0.4	137.398	62.46	2.200
10016	16.8	0.471	0.17	1.51	0.4	93.222	63.36	1.471
10017	16.28	0.457	0.17	1.40	0.4	83.716	61.44	1.363

5-yr

Basin	Qp (cfs)	Vw (ac-ft)	K	LS	CP	Ys (tons)	A (acres)	Ys(t/acres)
10014	3.14	0.088	0.17	2.67	0.4	25.152	55.10	0.456
10015	3.56	0.1	0.17	2.26	0.4	24.596	62.46	0.394
10016	3.61	0.101	0.17	1.51	0.4	16.637	63.36	0.263
10017	3.50	0.096	0.17	1.40	0.4	14.773	61.44	0.240

Average Annual Sediment Loading

Basin	Ys (tons)	A (acres)	Vw (ac-ft)	Ys(t/acres)	Vsed (yds^3)
10014	43.50	55.10	0.149	0.789	32.22
10015	41.40	62.46	0.163	0.663	30.66
10016	28.09	63.36	0.165	0.443	20.81
10017	25.16	61.44	0.160	0.410	18.64