Drainage Report
for

LA CUENTISTA SUBDIVISION, TRACTS B-1 AND B-2

December 2016

Prepared for:

Legacy Sustainable Development, Inc.

Prepared by:

Wilson & Company, Inc.
4900 Lang Avenue NE
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(505) 348-4000
(505) 348-4072

WCI File No: 16-600-006-00

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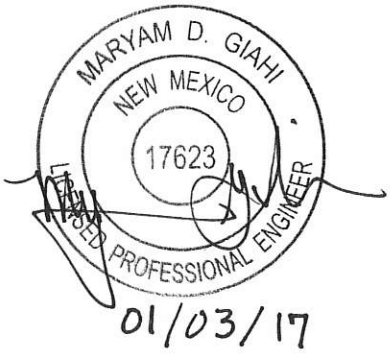

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1. Introduction

La Cuentista Subdivision Tract B now divided into Tracts B-1 and B-2 has an area of 60.18 acres is the fourth of five bulk land tracts which collectively comprise La Cuentista Subdivision. The site is bounded by Paseo Del Norte Boulevard to the north, Calle Plata to the east, Rosa Parks Road to the south and Urraca Street to the west. See Figure 1, Location Map.

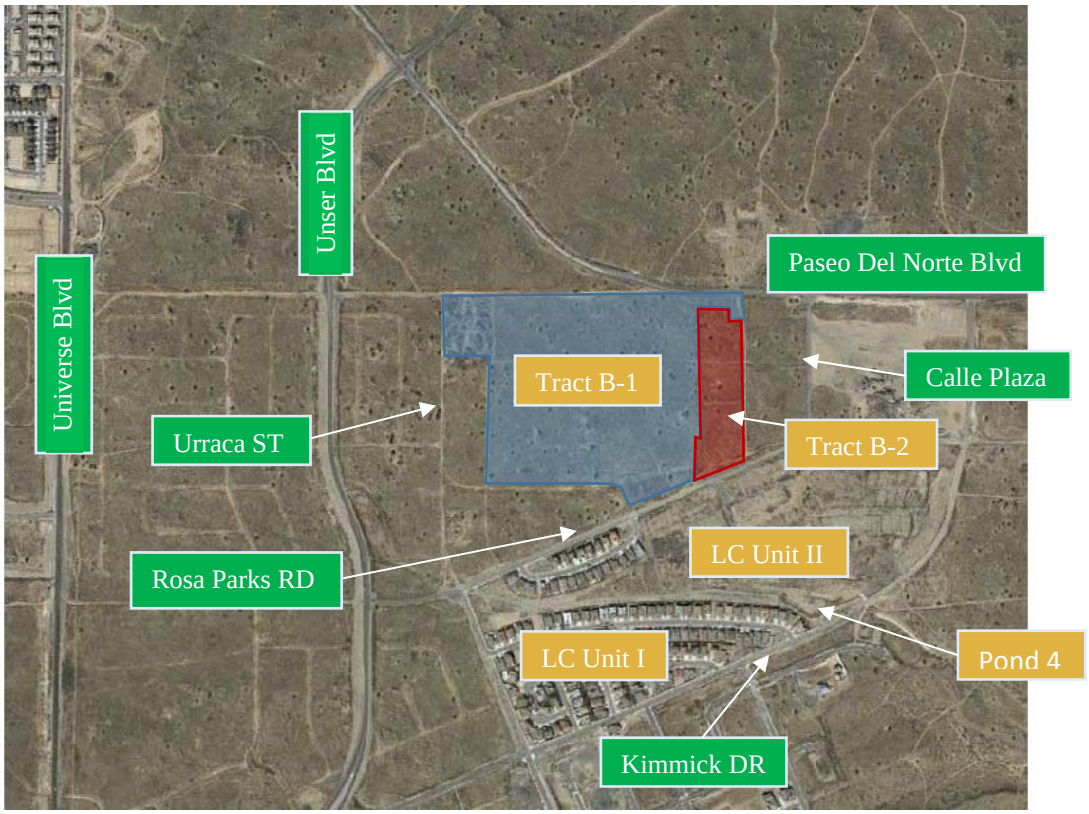

Figure 1, Location Map

The site is located within boundaries of the Volcano Cliffs Sector Development Plan (VCSDP) and designated as Urban Residential (VCUR). See VCSDP Zoning Map in Appendix A.

2. Background

La Cuentista Subdivision Drainage Report dated November 2003 prepared by Wilson & Company, Inc. (WCI) was prepared for the overall site development of Tracts A through E. In January 2007, WCI prepared a Supplement to this Drainage Report due to changes to site designs of Tract A (Unit I) and Tract C (Unit II) and plans for Tract B. With these modifications, the west basin of Tract B drains into a proposed detention pond (Pond 1). The outflow from this pond and the east basin of Tract B drain into a second proposed detention pond (Pond 2) in the southeast corner of Tract B and north of Rasa Parks Road. The outfall from Pond 2 connects into an existing 24 inch storm drain stub out in Rosa Parks Road which connects to curb inlets in the road. This system is capped at the intersection of Rosa Parks Road and Redroot Street. Wilson & Company prepared a Drainage Report Addendum for La Cuentista Subdivision Unit II dated Dec. 2014 which analyzed existing conditions peak flows and runoff volume for the area. See Appendix D, Plate 1- Existing Conditions Map from La

Cuentista Subdivision Unit II Drainage Report Addendum. Plate 1 shows two offsite basins OS1 and OS8 drain a total of 52 cfs through the site into Rosa Parks Road. See Appendix D for selected pages of both reports.

A storm drain system to be constructed with La Cuentista Unit II offsite infrastructure improvements will connect to the capped storm drain in Rosa Parks Road conveying runoff from the pond in Tracts B-1 and B-2and Unit II into Pond 4 in Unit I. The maximum allowable discharge from Tracts B-1 and B-2 is 15 cfs.

3. Methodology

The hydrologic model from the Supplement to the Drainage Report was utilized to compute peak flows and runoff volume from the site. Based on the 2007 model, the AHYMO 97 program was used for hydrologic calculations in development of the previous reports. See AHYMO Summary and input files in Appendices B & C. Rainfall data was updated per NOAA Atlas 14 website. See Appendix A, NOAA Atlas Point Precipitation Frequency Estimates. Land treatment percentages for Tracts B-1 and B-2 were updated per latest land use of 8 dwelling units per acre (du/ac). The Hydraflow Storm Sewers 2007 hydraulic model is used to analyze the storm system. Bentley CulvertMaster V3.3 is used to analyze culvert capacities. Bentley FlowMaster V8.i is utilized to compute street and inlet capacities. See Appendix C for calculations.

4. Existing Conditions

Tracts B-1 and B-2 of La Cuentista lies within the Flood Zone X – an area outside of the 500-year flood plain limits per FEMA Flood Insurance Rate Map (FIRM) number 35001C0112G, Panel 112 of 825 dated September 26, 2008. See Appendix A for FIRM. The site is vegetated with native grasses and shrubs. It slopes generally from west to southeast. Offsite flows have been minimized by construction of Paseo Del Norte Boulevard. Per La Cuentista Subdivision Unit II Drainage Report Addendum, two basins north and south of Unser Boulevard drain through the site. Tract B is divided into two basins east and west which both drain south into Rosa Parks Road then Pond 4 in Unit I and ultimately discharge through the Petroglyph National Monument. See Appendix D, Plate 1- Existing Conditions Map from La Cuentista Subdivision Unit II Drainage Report Addendum.

5. Proposed Conditions

Current Improvements are intended for Tract B-2 with an area of 11.2 ac. The rest of the site will remain undeveloped. The AHYMO model from the 2007 drainage report was updated to include the new rainfall data and land treatments. Two AHYMO models were developed to analyze the Ultimate and Developed Conditions for Tract B-2. Three conditions were developed which are described below:

a. Ultimate Condition – This condition refers to when Tracts B-1 and B-2 are fully developed and the outfall through La Cuentista Unit II is available. A detention pond with footprint shown on Plate 1 is required.
b. Developed Condition – This condition refers to when only Tract B-2 is developed and the outfall through La Cuentista Unit II is available. A detention pond with smaller footprint as shown on Plate 2 is required.

c. Interim Condition – This condition refers to when only Tract B-2 is developed and the outfall through La Cuentista Unit II is not available. A retention pond with footprint shown on Plate 1 is required.

5.1 Ultimate Conditions

In the Ultimate Conditions, no offsite runoff will enter the site. Land treatments in the AHYMO model were modified for density of 8 du/ac for the entire site. The east basin was divided into smaller subbasins to correctly model the development. One pond was modeled to detain runoff from Tracts B-1 and B-2. Maximum allowable discharge from the site is about 15 cfs. See Tables 1 & 2, Ultimate Conditions AHYMO Results and Pond Data. Refer to Appendices B & C, 2007 & Ultimate Conditions AHYMO Summary and Input files.

Table 1 - Ultimate Conditions AHYMO Results, 100-Yr, 24-Hr

Basin ID	Area		Peak Flow	Runoff Volume
	ac	sq mi	cfs	ac-ft
201	36.97	0.0578	129	5.7
202.1	8.43	0.0132	27	1.1
202.2	1.69	0.0026	6	0.3
202.3	11.01	0.0172	38	1.7

Ultimate Conditions Pond Data

Peak Flow (cfs)		Pond Elevation (ft)		Volume (ac-ft)		Max WSEL
In	Out	Top*	Bottom**	Req'd	Prv'd	ft
201	15.5	5344.0	5336.5	5.97	9.48	5341.61

* Includes 1' freeboard

** Elevation 5337.0 to 5336.5 is provided for the first flush volume

In the Ultimate Conditions outflow from Pond 1 will be connected to the existing inlets in Rosa Parks Road. Maximum allowable discharge from the pond is 15.5 cfs. The storm system ultimately discharges into Pond 4 in Unit I. See Appendix E, Plate 1-Ultimate Conditions Drainage Map.

5.2 Developed Conditions

The Current Improvements are proposed for development of Tract B-2. The AHYMO model land treatments for the basin were adjusted. Per La Cuentista Subdivision Unit II Drainage Report Addendum, offsite basins draining into the site were included in the model. The offsite basin area covering Tract B-2 was adjusted in the model. See Appendix E, Plate 2 - Developed Conditions Drainage Map. See Developed Conditions Table 3, AHYMO Results, Table 4, Pond data and Appendix B, Developed Conditions AHYMO Summary and Input files.

Table 3 - Developed Condition AHYMO Results, 100-Yr, 24-Hr				
Basin ID	Area		Peak Flow	Runoff Volume
	ac	sq mi	cfs	ac-ft
OS1	14.74	0.0230	17	0.52
OS8.1	59.51	0.0930	46	2.47
202.1	21.69	0.0339	27	0.77
202.2	3.29	0.0051	4	0.12
202.3	11.01	0.0172	38	1.70

Developed Conditions Pond Data						
Peak Flow (cfs)		Pond Elevation (ft)		Volume (ac-ft)		Max WSEL (ft)
In	Out	Top*	Bottom**	Req'd	Prv'd	
103.4	15.6	5344.0	5336.0	3.42	5.28	5341.66
* Includes 1' freeboard ** Elevation 5337.0 to 5336.0 is provided for the first flush volume						

A sediment capture area was designed to capture sediments from the undeveloped area of west basin sheet flowing into Rosa Parks Road. See Table 5 – Sediment Capture Area Data

Table 5 - Sediment Capture Area Data				
Basin ID	Area		Peak Flow	Runoff Volume
	ac	sq mi	cfs	ac-ft
202.1	21.34	0.0333	1	0.07

5.3 Interim Conditions

In the Ultimate and Developed Conditions Pond 1 was designed as a detention pond. The pond outlet connects to the existing storm stub out from the inlets in Rosa Parks with 24 inch pipe which terminates at the intersection of Rosa Parks and Redroot Street. Redroot Street storm drain outfall is planned to be constructed with La Cuentista Unit II Subdivision this year. If this system is not constructed before Tract B-2 development, Pond 1 will serve as a retention pond. Calculations to retain the 10 day runoff volume per City of Albuquerque (COA) Development Process Manual (DPM) Chapter 22, Section 2, Hydrology was made which is summarized in Table 6.

Table 6 - Retention Pond Calculations							
Basin	Condition	Area (ac)	Land Treatment (%)				Volume (ac-ft) 10 day
OS1	Existing	14.74	90	0	10	0	0.61
OS8.1	Existing	59.51	86	0	10	4	3.05
202.1	Existing	21.69	90	0	10	0	0.89
202.2	Existing	3.29	90	0	10	0	0.14
202.3	Developed	11.01	0	4	31	65	2.49
Total							6.29
*Sheet flows south into Rosa Parks Road							

Maximum water surface elevation in the interim conditions will be 5341.83 ft. When Redroot Street storm drain system construction is completed, the pond will be filled in and converted into a detention pond per Developed Conditions calculations.

6. First Flush Retention Calculations

Pond 1 will accommodate 'first flush' retention volume in compliance with the COA requirements for new developments per the "Significant Drainage Ordinance Changes" effective May 12, 2014. First Flush is defined as the 90th percentile storm event or 0.34 inch (0.44 inch less 0.1inch for initial abstraction). See Table 7 – First Flush Volume Calculation.

Table 7 - First Flush Volume Calculation		
Rainfall Depth (in)	Impervious Area (ac)	$V_{FF\ (ac\text{-}ft)}$
0.34	10.36	0.29

The pond bottom elevation will be lowered one foot below the pond outlet invert elevation to provide a retention volume of 0.50 ac-ft.

7. Hydraulics

Tract B-2 includes an area of 11.2 ac. Improvements include 72 units. Inlets in developed areas of the site will capture street flows and convey runoff into Pond 1. Street and inlet capacity calculations were made utilizing Bentley FlowMaster. See Table 8, Inlet Calculation.

Table 8 - Inlet Calculations							
Analysis Point	Peak Flow (cfs)						
	Accumulated	Inlet		Captured		Bypass	Bypass to
		Sgl A	Dbl C	One side	Total		
AP2	8.0		3.1	3.1	6.2	1.8	AP5
AP3	14.0	-	4.7	4.7	9.5	4.5	AP4
AP4	16.8	8.4	-	8.4	16.8	0.0	-
AP5	7.5	3.8	-	3.8	7.5	0.0	-

A pillbox manhole at analysis point 1 was designed to capture offsite runoff of 46 CFS until Tract B-1 is developed and upstream drainage structures are constructed. See Appendix C, pillbox manhole calculations. Hydraflow Storm Sewers Extension for AutoCAD was used to analyze the proposed storm system. See Appendix C, FlowMaster & Hydraflow Calculations and Grading & Drainage Plan in Appendix E. Inlets were designed with the maximum hydraulic grade line below top of curb elevation and a minimum of leaving one dry driving lane.

Runoff from offsite basins west of Tract B-2 will be collected in a pillbox manhole and conveyed by the onsite storm drain system. This pillbox manhole will be converted into a regular manhole when areas west of Tract B-2 are developed. See Appendix C, FlowMaster Calculations. Pond 1 outlet will tie to the existing inlet in Rosa Parks Road. See CulvertMaster Calculations in Appendix C. The underground storm system will be conveyed through Redroot Street into Pond 4 in Unit I.

8. Conclusion

Per analysis presented in this report, Ponds 1 was designed to detain developed flows from the onsite east and west basins in the ultimate Conditions. Drainage improvements recommended for Tract B-2 are capable of collecting and conveying accumulated runoff to Pond 1. This Pond contains retention volume to store the first flush in compliance with the COA requirements for new developments. Pond 1 outlet will tie into the existing underground storm system in Rosa Parks Road which outfalls into La Cuentista Subdivision Unit I Pond 4.

Appendix A

Related Documents

- VCSDP Zoning Map
- NOAA Atlas Point Precipitation Frequency Estimates
- FEMA FIRM

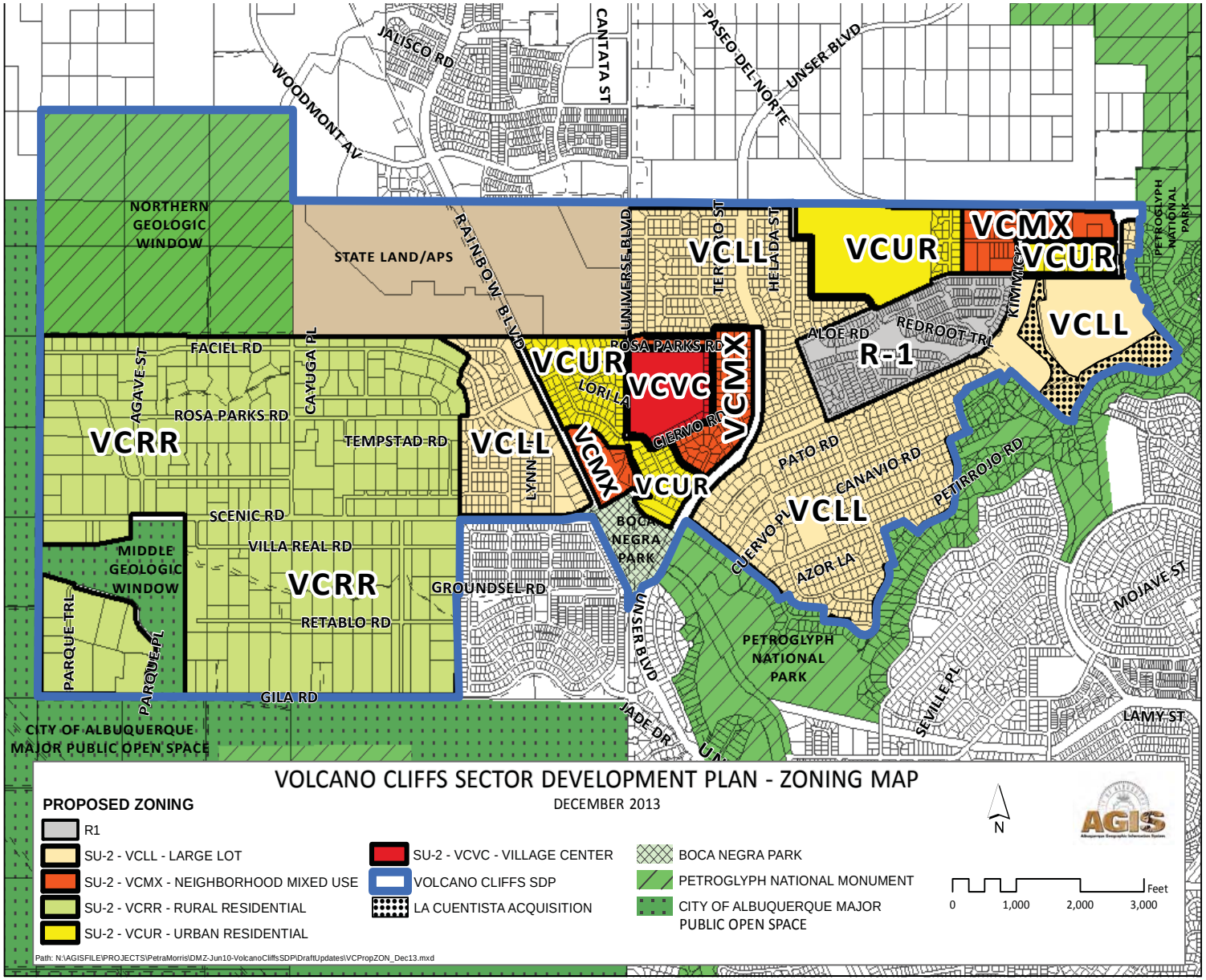

Exhibit 7: Zoning Established by the Volcano Cliffs Sector Development Plan

NOAA Atlas 14, Volume 1, Version 5
Location name: Albuquerque, New Mexico, US*
Latitude: 35.1773°, Longitude: -106.7134°
Elevation: 5352 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.159 (0.136–0.186)	0.206 (0.176–0.242)	0.278 (0.236–0.326)	0.335 (0.285–0.391)	0.412 (0.348–0.481)	0.473 (0.398–0.550)	0.537 (0.449–0.624)	0.606 (0.502–0.704)	0.699 (0.574–0.814)	0.774 (0.630–0.900)
10-min	0.242 (0.208–0.284)	0.314 (0.268–0.367)	0.423 (0.359–0.496)	0.510 (0.433–0.595)	0.627 (0.529–0.732)	0.719 (0.605–0.837)	0.818 (0.683–0.950)	0.922 (0.764–1.07)	1.06 (0.873–1.24)	1.18 (0.958–1.37)
15-min	0.300 (0.257–0.351)	0.389 (0.332–0.455)	0.524 (0.445–0.615)	0.632 (0.537–0.738)	0.778 (0.656–0.907)	0.892 (0.751–1.04)	1.01 (0.847–1.18)	1.14 (0.948–1.33)	1.32 (1.08–1.54)	1.46 (1.19–1.70)
30-min	0.404 (0.347–0.473)	0.524 (0.447–0.613)	0.706 (0.599–0.828)	0.852 (0.724–0.993)	1.05 (0.884–1.22)	1.20 (1.01–1.40)	1.37 (1.14–1.59)	1.54 (1.28–1.79)	1.78 (1.46–2.07)	1.97 (1.60–2.29)
60-min	0.500 (0.429–0.585)	0.648 (0.553–0.759)	0.874 (0.741–1.03)	1.05 (0.895–1.23)	1.30 (1.09–1.51)	1.49 (1.25–1.73)	1.69 (1.41–1.96)	1.91 (1.58–2.21)	2.20 (1.81–2.56)	2.43 (1.98–2.83)
2-hr	0.588 (0.506–0.685)	0.752 (0.645–0.877)	0.998 (0.853–1.16)	1.20 (1.02–1.38)	1.47 (1.25–1.70)	1.70 (1.43–1.95)	1.94 (1.62–2.22)	2.19 (1.81–2.51)	2.54 (2.09–2.91)	2.83 (2.30–3.25)
3-hr	0.629 (0.551–0.732)	0.801 (0.699–0.932)	1.05 (0.920–1.22)	1.26 (1.09–1.45)	1.54 (1.32–1.77)	1.76 (1.51–2.03)	2.00 (1.71–2.30)	2.26 (1.91–2.60)	2.62 (2.19–3.01)	2.92 (2.40–3.36)
6-hr	0.727 (0.638–0.834)	0.920 (0.812–1.06)	1.19 (1.05–1.37)	1.41 (1.23–1.61)	1.70 (1.48–1.94)	1.93 (1.68–2.20)	2.17 (1.87–2.47)	2.42 (2.08–2.75)	2.78 (2.35–3.16)	3.07 (2.58–3.50)
12-hr	0.812 (0.718–0.919)	1.03 (0.907–1.16)	1.31 (1.15–1.48)	1.53 (1.35–1.73)	1.82 (1.60–2.05)	2.06 (1.79–2.31)	2.30 (1.99–2.58)	2.55 (2.19–2.86)	2.88 (2.46–3.25)	3.16 (2.67–3.57)
24-hr	0.927 (0.818–1.06)	1.17 (1.03–1.32)	1.46 (1.29–1.66)	1.70 (1.50–1.92)	2.02 (1.77–2.28)	2.26 (1.98–2.56)	2.52 (2.20–2.85)	2.78 (2.42–3.13)	3.14 (2.70–3.53)	3.41 (2.92–3.84)
2-day	0.974 (0.868–1.09)	1.22 (1.09–1.37)	1.53 (1.37–1.72)	1.78 (1.58–1.99)	2.11 (1.87–2.35)	2.36 (2.09–2.64)	2.62 (2.31–2.93)	2.89 (2.53–3.23)	3.25 (2.83–3.64)	3.53 (3.06–3.96)
3-day	1.13 (1.02–1.25)	1.41 (1.28–1.56)	1.75 (1.58–1.93)	2.01 (1.82–2.22)	2.37 (2.13–2.61)	2.64 (2.37–2.92)	2.92 (2.61–3.22)	3.20 (2.85–3.53)	3.57 (3.17–3.95)	3.86 (3.41–4.27)
4-day	1.29 (1.18–1.41)	1.60 (1.46–1.75)	1.96 (1.79–2.15)	2.25 (2.05–2.45)	2.63 (2.40–2.87)	2.93 (2.66–3.19)	3.22 (2.92–3.51)	3.51 (3.17–3.83)	3.90 (3.51–4.26)	4.19 (3.76–4.59)
7-day	1.47 (1.35–1.61)	1.83 (1.68–1.99)	2.23 (2.04–2.42)	2.54 (2.33–2.76)	2.94 (2.69–3.19)	3.25 (2.97–3.52)	3.55 (3.24–3.85)	3.84 (3.50–4.17)	4.21 (3.83–4.58)	4.49 (4.07–4.89)
10-day	1.63 (1.50–1.78)	2.03 (1.86–2.20)	2.48 (2.28–2.69)	2.84 (2.61–3.07)	3.31 (3.03–3.58)	3.66 (3.35–3.96)	4.01 (3.66–4.34)	4.36 (3.97–4.72)	4.81 (4.36–5.21)	5.15 (4.65–5.58)
20-day	2.05 (1.88–2.23)	2.54 (2.33–2.77)	3.09 (2.84–3.36)	3.50 (3.21–3.80)	4.02 (3.68–4.36)	4.39 (4.02–4.77)	4.76 (4.35–5.16)	5.10 (4.66–5.53)	5.53 (5.04–6.00)	5.84 (5.31–6.34)
30-day	2.45 (2.25–2.65)	3.03 (2.79–3.28)	3.65 (3.36–3.95)	4.11 (3.77–4.43)	4.67 (4.29–5.04)	5.08 (4.65–5.47)	5.46 (5.00–5.88)	5.82 (5.32–6.27)	6.25 (5.70–6.73)	6.55 (5.97–7.05)
45-day	2.99 (2.76–3.24)	3.70 (3.42–4.00)	4.41 (4.07–4.76)	4.92 (4.53–5.30)	5.53 (5.10–5.95)	5.94 (5.48–6.40)	6.32 (5.83–6.80)	6.65 (6.13–7.15)	7.02 (6.48–7.55)	7.25 (6.70–7.79)
60-day	3.44 (3.17–3.72)	4.25 (3.92–4.60)	5.06 (4.68–5.47)	5.64 (5.22–6.09)	6.34 (5.86–6.84)	6.82 (6.30–7.35)	7.25 (6.71–7.82)	7.64 (7.06–8.24)	8.07 (7.47–8.71)	8.34 (7.73–9.00)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the summary of Stillwater Elevations table in the Flood Insurance Study Report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was New Mexico State Plane, Central Zone. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey, SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by Bernalillo County produced at a scale of 1:12,000 from photography dated 1999 or later.

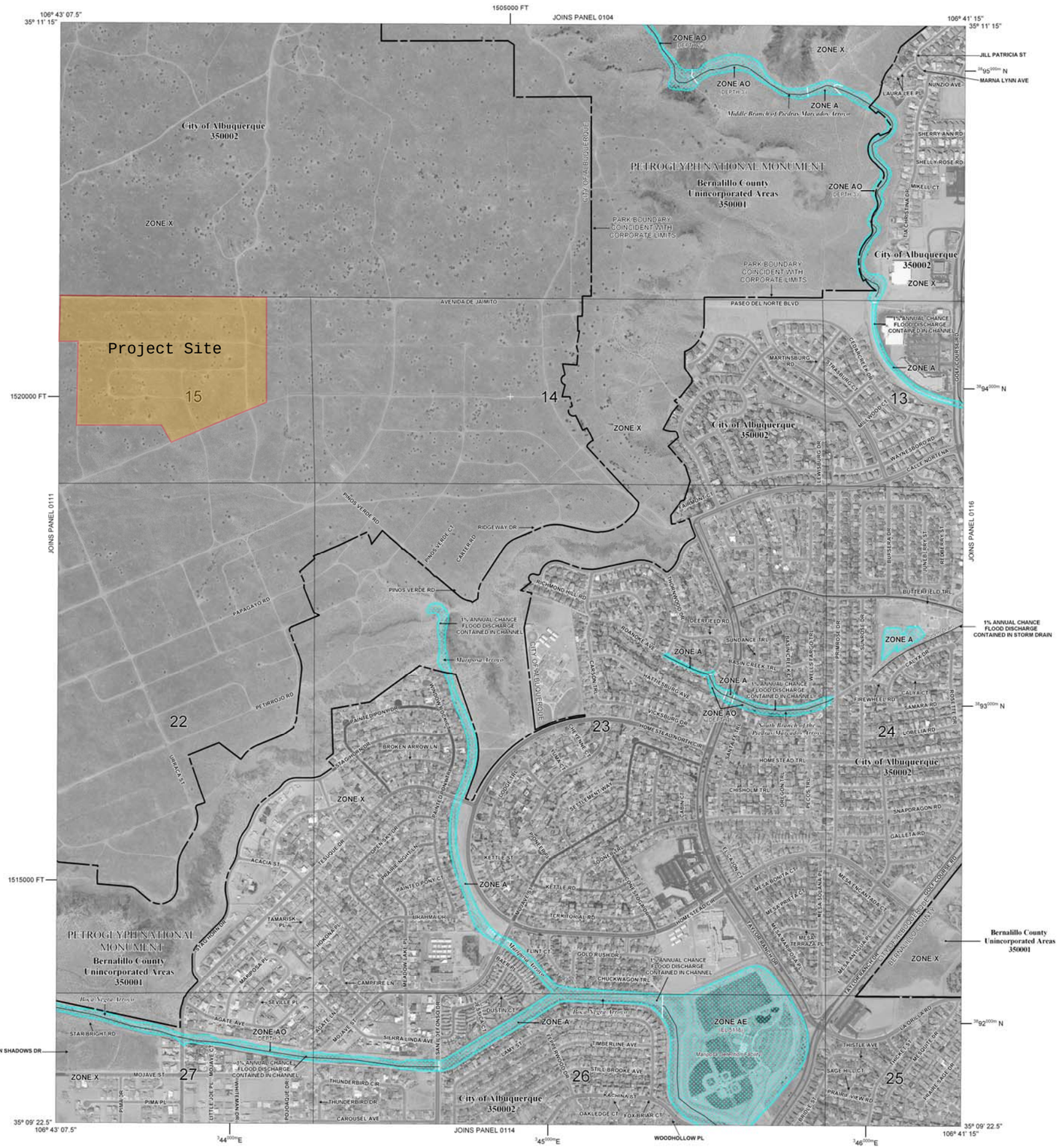
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables for the Flood Insurance Study report may reflect stream channel distances that differ from what is shown on the map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equalled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D Boundary
- CBRS and OPA Boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet* / Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the North American Vertical Datum of 1988

- A — A — Cross section line
- 23 — 23 — Transect line
- 97° 07' 30", 32° 22' 30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 6276000mE — 1000-meter Universal Transverse Mercator grid values, zone 13
- 600000 FT — 5000-foot grid ticks: New Mexico State Plane coordinate system, Central zone (FIPSZONE 3002), Transverse Mercator
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index.

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP PANEL

SEPTEMBER 20, 1996

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

April 2, 2002 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to add roads and road names, to reflect updated topographic information, and to incorporate previously issued Letters of Map Revision.

November 19, 2003 - to update corporate limits and to incorporate previously issued Letters of Map Revision.

September 26, 2008 - to update corporate limits, to change Special Flood Hazard Areas, to add roads and road names, to incorporate previously issued Letters of Map Revision, to reflect updated topographic information, to change Base Flood Elevations, to add Base Flood Elevations.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET
150 0 150 300 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0112G

FIRM

FLOOD INSURANCE RATE MAP

BERNALILLO COUNTY, NEW MEXICO AND INCORPORATED AREAS

PANEL 112 OF 825

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
ALBUQUERQUE, CITY OF	350002	0112	G
BERNALILLO COUNTY UNINCORPORATED AREAS	350001	0112	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
35001C0112G

MAP REVISED
SEPTEMBER 26, 2008

Federal Emergency Management Agency

Appendix B

Hydrology Calculations

- AHYMO Models Summary and Input Files
  - Ultimate Conditions
  - Developed Conditions

Ultimate Conditions AHYMO Summary & Input Files

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02c RUN DATE (MON/DAY/YR) =12/02/2016
INPUT FILE = C:\LC\P100_2~1.DAT USER NO.= AHYMO-C-9803c01UNMLIB-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
										PAGE = 1
S 1- COMPUTING RAINFALL *****ORIGINAL RAINFALL **********										
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.520
S 3- COMPUTE HYD FOR BASIN 301, (assume platted to 5 DU/ACRE, %D=50)										
COMPUTE NM HYD	301.00	-	1	.06800	129.35	5.332	1.47033	1.500	2.972	PER IMP= 50.00
S 4- Route HYDROGRAPH 301 through POND 5 (0.30/0.52ac surface/bottom, 2.20AF										
S Historical flow Basin 301 (100% A)= 74.42CFS use 75+/- thru 34" orifice plat										
ROUTE RESERVOIR	POND.301.1	1	2	.06800	60.70	5.332	1.47033	1.700	1.395	AC-FT= 1.415
S 5- Route POND 5 outflow (BASIN 301) through BASIN 302 via 36"X 1800'RCP										
S (24'/1800'= 0.15 slp) Add to basin 302 at pond 6, (#8)										
ROUTE MCUNGE	301.20	2	3	.06800	60.62	5.333	1.47036	1.700	1.393	CCODE = .2
S 7- COMPUTE HYD FOR BASIN 302 (assume replat to 4 DU/Ac, D=42%, use 45%)										
S Historical flow (100% A)= 57.95CFS										
COMPUTE NM HYD	302.00	-	1	.05800	107.92	4.330	1.39962	1.500	2.907	PER IMP= 45.00
S 8- ADD HYDROGRAPHS 301.2 (ROUTED THROUGH 302) AND 302 - INFLOW TO POND 6										
ADD HYD	302.10	1& 3	2	.12600	151.66	9.662	1.43779	1.500	1.881	
S 9- ROUTE HYDROGRAPH 302.1 through POND 6 (0.2/0.4AC surf/bottom, 1.5AF st										
S Historical flow- 100% A (Basin 301= 74.42)+(Basin 302= 57.95)= 132.37CF										
S discharge through 48" RCP w/ 45" orifice plate										
ROUTE RESERVOIR	POND.302.2	2	1	.12600	110.72	9.662	1.43779	1.700	1.373	AC-FT= 1.087
S 10- Route outflow from POND 6 (BASIN 301 & 302) through										
S 48"x 2300'RCP (50/2300= 2.2% slp) through Basin 214 TO POND 8										
ROUTE MCUNGE	302.30	1	2	.12600	110.64	9.662	1.43787	1.700	1.372	CCODE = .2
S 77- COMPUTE HYD FOR BASIN 214										
COMPUTE NM HYD	214.00	-	1	.08600	159.90	6.420	1.39962	1.500	2.905	PER IMP= 45.00
S 78- ADD HYDROGRAPHS 302.3 AND 214										
ADD HYD	214.10	2& 1	3	.21200	237.22	16.082	1.42235	1.500	1.748	
S 79- Route HYDROGRAPH 214.1 through POND 8 (1.7/2.2AC surf/btm, 11.3AF stor										
ROUTE RESERVOIR	POND.214.2	3	2	.21200	101.14	16.082	1.42235	2.100	.745	AC-FT= 5.585
S 12- COMPUTE HYD FOR BASIN 303 (assume replat to 4 DU/Ac, D=42%, use 45%)										
S BASIN 303 Historical flow (100% A)= 75.29CFS										
COMPUTE NM HYD	303.00	-	1	.06700	124.65	5.001	1.39962	1.500	2.907	PER IMP= 45.00
S 13- ROUTE HYDROGRAPH 303 THROUGH POND 9 (0.3/0.52AC surface/bottom, 2.11AF										
S 303 Hist. flow= 75.29CFS, discharge through 36" RCP w/ 34" orifice pla										
ROUTE RESERVOIR	POND.303.1	1	2	.06700	59.27	5.001	1.39962	1.700	1.382	AC-FT= 1.337
S 14- Route outflow from POND 9 (BASIN 303.1) through 36"x 1300'RCP										
ROUTE MCUNGE	303.20	2	3	.06700	59.23	5.000	1.39935	1.750	1.381	CCODE = .1
S 83- ADD HYDROGRAPHS 303.2 AND 215										
ADD HYD	215.10	1& 3	2	.13400	163.18	10.002	1.39948	1.500	1.903	
S 85- Route HYDROGRAPH 215.1 through POND 10 (1.0/0.7AC surf/btm, 4.65AF sto										
ROUTE RESERVOIR	POND.215.2	2	1	.13400	14.38	10.001	1.39934	2.500	.168	AC-FT= 6.991
S 16- Compute HYD for BASIN 304 (ex.platting 2.33+/- DU/Acre => 35%D, use 40										
S BASIN 304 @ 100% A: Historical flow area= 0.05 sq mi, flow= 41.24cfs										
COMPUTE NM HYD	304.00	-	1	.10800	196.23	7.657	1.32939	1.500	2.839	PER IMP= 40.00
S 17- Route HYDROGRAPH 304 through POND 7 (H=4.0', 0.40/0.25AC surf/bottom,										
S cap.). 304 historical: 100% A;area= 0.05 sq mi; flow= 41.24cfs;										
S discharge through 28" orifice plate into 30' RCP										
ROUTE RESERVOIR	POND.304.1	1	2	.10800	41.88	7.657	1.32938	1.900	.606	AC-FT= 3.712
S 24- COMPUTE HYD FOR BASIN P-203 (2.5 DU/acre, use D=45)										

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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
										PAGE = 2

```
COMPUTE NM HYD        203.00   -     2        .00200         3.73        .149      1.39962    1.500    2.918 PER IMP=  45.00
COMPUTE NM HYD        204.00   -     1        .00800        14.90        .597      1.39962    1.500    2.910 PER IMP=  45.00
*S*   84- ADD HYDROGRAPHS 203 AND 204
ADD HYD               204.20  1& 2   5        .01000        18.63        .746      1.39956    1.500    2.911
*S*   33- Route HYDROGRAPH 204.2 through BASIN 208 IN 24'X570 LF PIPE
ROUTE MCUNGE          204.30    5   10        .01000        18.58        .747      1.39981    1.500    2.903 CCODE =      .2
*S*   35- COMPUTE HYD FOR BASIN P-205 (assume 4 DU/Acre=> 42%D, use 45%D)
COMPUTE NM HYD        205.00   -     1        .01400        26.03       1.045      1.39962    1.500    2.905 PER IMP=  45.00
*S*   36- ROUTE HYDROGRAPH 205 THROUGH PIPE TO CONFLUENCE W/ BASIN 208
ROUTE MCUNGE          205.10    1    2        .01400        25.73       1.045      1.39991    1.500    2.872 CCODE =      .2
COMPUTE NM HYD        208.00   -     1        .01300        19.30        .661       .95381    1.500    2.320 PER IMP=  20.00
*S*   47- ADD HYDROGRAPHS 205.1 and 208
ADD HYD               208.10  1& 2   3        .02700        45.04       1.707      1.18508    1.500    2.606
*S*   48- ADD HYDROGRAPHS 204.3 AND 208.1
ADD HYD               208.20  3&10   1        .03700        63.62       2.453      1.24309    1.500    2.686
*S*51- ROUTE ADDED FLOWS AT HYDROGRAPH 208.2 through PIPE TO POND 4
ROUTE MCUNGE          208.30    1    5        .03700        62.41       2.453      1.24329    1.500    2.635 CCODE =      .2
*S*   38- COMPUTE HYD FOR BASIN P-206 (assume 4 DU/Acre=> 42%D, use 45%D)
COMPUTE NM HYD        206.00   -     1        .00700        13.02        .523      1.39962    1.500    2.906 PER IMP=  45.00
*S*   59- COMPUTE TP FOR BASIN P-210 (let tp=0.133= Min.)                  ***
*S*   60- COMPUTE HYD FOR BASIN P-210 (3.0 DU/acre=> 35%D, use 40%D)
COMPUTE NM HYD        210.00   -     2        .00400         7.29        .284      1.32939    1.500    2.847 PER IMP=  40.00
*S*   - ADD HYDROGRAPHS 206 AND 210
ADD HYD               210.10  1& 2   3        .01100        20.31        .806      1.37403    1.500    2.885
*S*   63- COMPUTE HYD FOR BASIN P-211 (3.7 DU/acre=> 40%D, use 45%D)
COMPUTE NM HYD        211.00   -     1        .01000        18.62        .746      1.39962    1.500    2.909 PER IMP=  45.00
*S*   64- ADD HYDROGRAPHS 210.1 AND 211
ADD HYD               211.10  1& 3   2        .02100        38.93       1.553      1.38620    1.500    2.896
*S*   42- COMPUTE HYD FOR BASIN P-207 (actual 3.7DU/acre, assume 4 DU/Acre=>
COMPUTE NM HYD        207.00   -     1        .00400         7.45        .299      1.39962    1.500    2.909 PER IMP=  45.00
*S*   - ADD HYDROGRAPHS 211.1 AND 207
ADD HYD               207.10  1& 2   3        .02500        46.38       1.851      1.38834    1.500    2.898
*S*   53- Compute HYD for BASIN 209 (3.86du/acre=> 41%D, use 45%D)
COMPUTE NM HYD        209.00   -     1        .00600        11.18        .448      1.39962    1.500    2.911 PER IMP=  45.00
*S*   - ADD HYDROGRAPHS 207.1 AND 209
ADD HYD               209.10  1& 3   2        .03100        57.55       2.299      1.39051    1.500    2.901
*S*   66- COMPUTE TP FOR BASIN P-212 (Let TP=0.133= Min.)                    ***
*S*   67- Computing HYD for BASIN P-212 (2.5 DU/acre=> 30%D, use 35%D)
COMPUTE NM HYD        212.00   -     1        .00500         8.90        .336      1.25947    1.500    2.782 PER IMP=  35.00
*S*   68- ADD HYDROGRAPHS 209.1 AND 212
ADD HYD               212.10  2& 1   3        .03600        66.45       2.635      1.37230    1.500    2.884
*S*   69  ROUTE HYDROGRAPH 212.1 down Kimmick in 48"x 175' RCP to POND 4
ROUTE MCUNGE          212.20    3    2        .03600        66.45       2.635      1.37230    1.500    2.884 CCODE =      .0
*S*   70- Add HYDROGRAPHS 212.2 TO 208.3 (At POND 4)
ADD HYD               212.30  2& 5   6        .07300       128.86       5.088      1.30690    1.500    2.758
*S
*S
*S
*S*   20- COMPUTE HYD FOR BASIN P-201 (8 DU/Acre)
COMPUTE NM HYD        201.00   -     1        .05780       129.32       5.723      1.85664    1.500    3.496 PER IMP=  71.00
COMPUTE NM HYD        202.10   -     2        .01320        27.29       1.096      1.55682    1.500    3.230 PER IMP=  49.00
*S*                ADD BASINSS 201 TO 202.1
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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

ADD HYD               202.12  1& 2  12        .07100       156.61       6.819      1.80089    1.500    3.446
COMPUTE NM HYD        202.20   -     2        .00260         5.83        .257      1.85664    1.500    3.504 PER IMP=  71.00
```

```
                                                                AHYMO.SUM
COMPUTE NM HYD        202.30   -     3        .01720        38.49       1.703      1.85664    1.500    3.497 PER IMP=  71.00
*S*                ADD BASINSS 202.1 TO 202.2
ADD HYD               202.32  3& 2  13        .01980        44.32       1.961      1.85661    1.500    3.498
*S*                ADD BASINSS 201, 202.1, 202.2 TO 202.3
ADD HYD               202.14 12&13  13        .09080       200.93       8.780      1.81304    1.500    3.458
*S*    29- Route HYDROGRAPH 202.14 Through POND 1
*S*       discharge 15 cfs through 18" PIPE into Rosa Parks System
ROUTE RESERVOIR   POND.203.1   13    3        .09080        15.47       7.248      1.49664    2.200     .266 AC-FT=    5.970
*S*   56B- COMPUTE HYD FOR BASIN 213 (3.86du/acre=> 41%D, use 45%D)
COMPUTE NM HYD        213.00   -     1        .06300       117.22       4.703      1.39962    1.500    2.907 PER IMP=  45.00
*S*   56C- Add HYDROGRAPH 202.2 (outflow from POND 2) and 213
ADD HYD               213.10  1& 3   2        .15380       122.05      11.950      1.45690    1.500    1.240
*S*   56D- Add HYDROGRAPHS 212.3 and 213.1 (INFLOW TO POND 4)
ADD HYD               213.20  2& 6   1        .22680       250.91      17.039      1.40862    1.500    1.729
*S*   57- Route BASIN 213.1 through POND 4
ROUTE RESERVOIR   POND.213.3    1    2        .22680        84.31      17.038      1.40853    1.800     .581 AC-FT=    3.593
FINISH
```

```
***  LA CUENTISTA SUBDIVISION                                          ***
***  FULLY DEVELOPED CONDITIONS RUNOFF MODEL - REVISED JANUARY 2007    ***
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * **
***  DESIGN STORM IS THE 100 YEAR - 24 HOUR STORM                       ***
***  COA DPM TYPE 2, 24 HOUR STORM WITH A PEAK INTENSITY AT 1.4 HOURS
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * **
*** AHYMO MODEL FROM DRANAGE REPORT FOR LA CUENTISTA SUBDIVISION - UNIT II   ***
*** DATED JANUARY 2007 PREPARED BY WCI, A SUPPLEMENT TO THE DRAIANGE REPORT  ***
*** FOR LA CUENTISTA SUBDIVISION PREPARED BY WCI DATED NOV. 2003             ***
*** ORIGINAL MODEL INCLUDED 4 DU/AC LOTS
*****************************************************************************
*** ULTIMATE CONDITIONS MODEL UPDATED DECEMBER 2016 FOR TRACT B ********************
*** THIS MODEL USES 8 DU/AC FOR TRACT B    ****************************
*** RAINFALL DATA UPDATED PER NOAA ATLAS 14 WEBSITE                        ***
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * **
*****************************************************************************

* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   1- COMPUTING RAINFALL *****ORIGINAL RAINFALL ****************************
*RAINFALL             TYPE = 2
*                                RAIN QUARTER = 0.00  INCHES

*                                RAIN ONE = 1.87
*                                RAIN SIX = 2.20
*                                RAIN DAY = 2.66
*                                DT  =  0.05     HOURS
*****************************************************************************
START                TIME = 0
*****************************************************************************
RAINFALL             TYPE = 2
                                 RAIN QUARTER = 0.00  INCHES

                                 RAIN ONE = 1.69
                                 RAIN SIX = 2.17
                                 RAIN DAY = 2.52
                                 DT  =  0.05     HOURS
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * **

*S*   3- COMPUTE HYD FOR BASIN 301, (assume platted to 5 DU/ACRE, %D=50)

COMPUTE NM HYD        ID=1       HYDNO=301  DA=0.068  SQ MI
                                 PERCENT A=10 B=15 C=25 D=50
                                 TP=0.133 HOURS   MASSRAIN=-1
PRINT HYD             ID=1       CODE=5
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*  4-  Route HYDROGRAPH 301 through POND 5 (0.30/0.52ac surface/bottom, 2.20AF stor req'd)
*S* Historical flow Basin 301 (100% A)= 74.42CFS use 75+/- thru 34" orifice plate
ROUTE RESERVOIR                  ID=2 HYD=POND.301.1  INFLOWID=1  CODE=5
                                 OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)

                                 0                0              0
                                 21.82           0.154           0.5
                                 30.86           0.316           1
                                 37.80           0.486           1.5
                                 43.65           0.665           2
                                 48.80           0.853           2.5
                                 53.46           1.049           3
                                 57.74           1.255           3.5
                                 61.73           1.470           4
                                 65.47           1.694           4.5
                                 69.02           1.928           5
                                 72.38           2.172           5.5
                                 75.60           2.427           6
PRINT HYD             ID=2       CODE=1
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*  5- Route POND 5 outflow (BASIN 301) through BASIN 302 via 36"X 1800'RCP
*S*       (24'/1800'= 0.15 slp) Add to basin 302 at pond 6, (#8)

COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=-1  SLP=0.015
                      DIAM=3.0  N=0.013

ROUTE MCUNGE            ID=3  HYD NO= 301.2  INFLOW ID=2
                        DT=0.0 L=1400 FT NS=0 SLOPE=0.015
PRINT HYD               ID=3      CODE=5
```

```
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*
*S*    7- COMPUTE HYD FOR BASIN 302 (assume replat to 4 DU/Ac, D=42%, use 45%)
*S*       Historical flow (100% A)= 57.95CFS
COMPUTE NM HYD         ID=1      HYDNO=302  DA=0.058  SQ MI
                                 PERCENT A=10 B=15 C=30 D=45
                                 TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD              ID=1      CODE=5
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*    8- ADD HYDROGRAPHS 301.2 (ROUTED THROUGH 302) AND 302 - INFLOW TO POND 6

ADD HYD                          ID=2    HYD=302.1       ID=1    ID=3
PRINT HYD                        ID=2    CODE=1
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*    9- ROUTE HYDROGRAPH 302.1 through POND 6 (0.2/0.4AC surf/bottom, 1.5AF stor cap)
*S*      Historical flow- 100% A (Basin 301= 74.42)+(Basin 302= 57.95)= 132.37CFS
*S*      discharge through 48" RCP w/ 45" orifice plate
ROUTE RESERVOIR                  ID=1 HYD=POND.302.2  INFLOWID=2  CODE=5
                                 OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
                                    0              0            0
                                 38.23           0.103          0.5
                                 54.07           0.213          1.0
                                 66.22           0.330          1.5
                                 76.46           0.454          2.0
                                 85.49           0.585          2.5
                                 93.65           0.723          3.0
                                101.15           0.869          3.5
                                108.13           1.023          4.0
                                114.69           1.186          4.5
                                120.90           1.356          5.0
                                126.80           1.535          5.5
                                132.43           1.723          6.0
                                132.43           1.919          6.5
                                132.43           2.125          7.0

PRINT HYD                        ID=1    CODE=1
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   10- Route outflow from POND 6 (BASIN 301 & 302) through
*S*       48"x 2300'RCP (50/2300= 2.2% slp) through Basin 214 TO POND 8

COMPUTE RATING CURVE  CID=1  VS NO=1  NO SEGS=-1  SLP=0.022
                      DIAM=4.0  N=0.013

ROUTE MCUNGE            ID=2  HYD NO= 302.3  INFLOW ID=1
                        DT=0.0 L=2300 FT NS=0 SLOPE=0.022
PRINT HYD               ID=2      CODE=5
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **

*S*   77- COMPUTE HYD FOR BASIN 214
COMPUTE NM HYD         ID=1       HYDNO=214  DA=0.086 SQ MI
                                  PERCENT A=10 B=15 C=30 D=45
                                  TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD              ID=1     CODE=5
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   78- ADD HYDROGRAPHS 302.3 AND 214

ADD HYD                          ID=3    HYD=214.1       ID=2    ID=1
PRINT HYD                        ID=3    CODE=1
PUNCH HYD               ID=3

* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   79- Route HYDROGRAPH 214.1 through POND 8 (1.7/2.2AC surf/btm, 11.3AF stor.cap.)
ROUTE RESERVOIR                  ID=2 HYD=POND.214.2  INFLOWID=3  CODE=5
                                 OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)

                                  0               0            0
                                 40.82           0.859          0.5
                                 57.73           1.738          1
                                 70.71           2.635          1.5
                                 81.64           3.552          2
                                 91.28           4.489          2.5
                                 99.99           5.445          3
                                108.00           6.421          3.5
                                115.46           7.417          4
                                122.47           8.434          4.5
                                129.09           9.472          5
                                135.39          10.530           5.5
```

```
                                141.41          11.609          6
                                141.41          12.710          6.5
                                141.41          13.831          7

PRINT HYD                        ID=2    CODE=1

* * * * * * * * * *** FLOW TO mARIPOSA cHANNEL* * * * * * * * * * * * * * * * * **
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * **

*S*   12- COMPUTE HYD FOR BASIN 303 (assume replat to 4 DU/Ac, D=42%, use 45%)
*S*       BASIN 303 Historical flow (100% A)= 75.29CFS
COMPUTE NM HYD          ID=1     HYDNO=303  DA=0.067 SQ MI
                                 PERCENT A=10 B=15 C=30 D=45
                                 TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD               ID=1     CODE=5

* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   13- ROUTE HYDROGRAPH 303 THROUGH POND 9 (0.3/0.52AC surface/bottom, 2.11AF stor. cap.)
*S*       303 Hist. flow= 75.29CFS, discharge through 36" RCP w/ 34" orifice plate
ROUTE RESERVOIR                  ID=2 HYD=POND.303.1  INFLOWID=1  CODE=5
                                 OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
                                 0                 0             0
                                 21.82           0.154           0.5
                                 30.86           0.316           1
                                 37.80           0.486           1.5
                                 43.65           0.665           2
                                 48.80           0.853           2.5
                                 53.46           1.049           3
                                 57.74           1.255           3.5
                                 61.73           1.470           4
                                 65.47           1.694           4.5
                                 69.02           1.928           5
                                 72.38           2.172           5.5
                                 75.60           2.427           6
                                 75.60           2.691           6.5
                                 75.60           2.966           7

PRINT HYD                        ID=2    CODE=1
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*    14- Route outflow from POND 9 (BASIN 303.1) through 36"x 1300'RCP
***        (50/1300=3.9% slp) through BASIN 215 to POND 10

COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=-1  SLP=0.03
                     DIAM=3.0  N=0.013


ROUTE MCUNGE              ID=3  HYD NO= 303.2  INFLOW ID=2
                          DT=0.0 L=1300 FT NS=0 SLOPE=0.039
PRINT HYD                 ID=3     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   83- ADD HYDROGRAPHS 303.2 AND 215

ADD HYD                          ID=2    HYD=215.1       ID=1    ID=3
PRINT HYD                        ID=2    CODE=1
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   85- Route HYDROGRAPH 215.1 through POND 10 (1.0/0.7AC surf/btm, 4.65AF stor.cap.)
ROUTE RESERVOIR                  ID=1 HYD=POND.215.2  INFLOWID=2  CODE=5
                                 OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)

                                  0                 0             0
                                  4.39            0.5             0.5
                                  6.21            1.3             1
                                  8.78            2.6             2
                                 10.75            3.9             3
                                 12.42            5.2             4
                                 13.88            6.5             5
                                 15.21            7.8             6
                                 15.21            9.1             7

PRINT HYD                        ID=1    CODE=1
* * * * * * * * * ** * FLOW TO PIEDRAS MARCADAS * * * * * * * * * * * * * * * * **
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * **

* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   16- Compute HYD for BASIN 304 (ex.platting 2.33+/- DU/Acre => 35%D, use 40%
*S*       BASIN 304 @ 100% A: Historical flow area= 0.05 sq mi, flow= 41.24cfs
```

```
COMPUTE NM HYD        ID=1       HYDNO=304  DA=0.108  SQ MI
                                 PERCENT A=10 B=15 C=35 D=40
                                 TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD             ID=1       CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   17- Route HYDROGRAPH 304 through POND 7 (H=4.0', 0.40/0.25AC surf/bottom, 1.14AF stor.
*S*       cap.). 304 historical: 100% A;area= 0.05 sq mi; flow= 41.24cfs;
*S*       discharge through 28" orifice plate into 30' RCP
ROUTE RESERVOIR                  ID=2 HYD=POND.304.1  INFLOWID=1  CODE=5
                                 OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)

                                  0               0              0
                                 14.80           0.381          0.5
                                 20.93           0.775          1
                                 25.64           1.182          1.5
                                 29.60           1.602          2
                                 33.10           2.035          2.5
                                 36.26           2.482          3
                                 39.16           2.942          3.5
                                 41.86           3.416          4
                                 41.90           3.904          4.5
                                 42.00           4.407          5

PRINT HYD                        ID=2    CODE=1
* * * * * * * * * * ** FLOW TO MARIPOSA BASIN * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **

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

*S*   24- COMPUTE HYD FOR BASIN P-203 (2.5 DU/acre, use D=45)
COMPUTE NM HYD        ID=2       HYDNO=203  DA=0.002  SQ MI
                                 PERCENT A=10 B=15 C=30 D=45
                                 TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD             ID=2     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **

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

***   32- COMPUTE HYD FOR BASIN P-204 (actual 3.3DU/acre, assume 4 DU/Acre=>
***                                42%D, use 45%D)
COMPUTE NM HYD        ID=1       HYDNO=204  DA=0.008 SQ MI
                                 PERCENT A=10 B=15 C=30 D=45
                                 TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD             ID=1     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   84- ADD HYDROGRAPHS 203 AND 204

ADD HYD                ID=5     HYD=204.2       ID=1    ID=2
PRINT HYD              ID=5     CODE=1

* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   33- Route HYDROGRAPH 204.2 through BASIN 208 IN 24'X570 LF PIPE
***
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=-1  SLP=0.04
                    DIAM=2.0  N=0.013


ROUTE MCUNGE            ID=10  HYD NO= 204.3  INFLOW ID=5
                        DT=0.0 L=570 FT NS=0 SLOPE=0.04
PRINT HYD               ID=10     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **

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

*S*   35- COMPUTE HYD FOR BASIN P-205 (assume 4 DU/Acre=> 42%D, use 45%D)
COMPUTE NM HYD        ID=1       HYDNO=205  DA=0.014 SQ MI
                                 PERCENT A=10 B=15 C=30 D=45
                                 TP=0.0 HOURS   MASSRAIN=-1

PRINT HYD             ID=1     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   36- ROUTE HYDROGRAPH 205 THROUGH PIPE TO CONFLUENCE W/ BASIN 208
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=-1  SLP=0.02
                    DIAM=4.0  N=0.013
```

```
ROUTE MCUNGE            ID=2  HYD NO= 205.1  INFLOW ID=1
                        DT=0.0 L=800 FT NS=0 SLOPE=0.02
PRINT HYD               ID=2     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **

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

***   46- COMPUTE HYD FOR BASIN P-208 (actual 0.4DU/acre=> 10%D, use 20%D)
COMPUTE NM HYD          ID=1       HYDNO=208  DA=0.013 SQ MI
                                   PERCENT A=10 B=50 C=20 D=20
                                   TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD               ID=1     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   47- ADD HYDROGRAPHS 205.1 and 208

ADD HYD                           ID=3    HYD=208.1       ID=1    ID=2
PRINT HYD                         ID=3    CODE=1
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   48- ADD HYDROGRAPHS 204.3 AND 208.1

ADD HYD                           ID=1    HYD=208.2       ID=3    ID=10
PRINT HYD                         ID=1    CODE=1
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **

*S*51- ROUTE ADDED FLOWS AT HYDROGRAPH 208.2 through PIPE TO POND 4
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=-1  SLP=0.025
                     DIAM=4.0  N=0.013


ROUTE MCUNGE              ID=5  HYD NO= 208.3  INFLOW ID=1
                          DT=0.0 L=814 FT NS=0 SLOPE=0.025
PRINT HYD                 ID=5     CODE=5

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

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

*S*   38- COMPUTE HYD FOR BASIN P-206 (assume 4 DU/Acre=> 42%D, use 45%D)
COMPUTE NM HYD          ID=1       HYDNO=206  DA=0.007 SQ MI
                                   PERCENT A=10 B=15 C=30 D=45
                                   TP=0.0 HOURS   MASSRAIN=-1

PRINT HYD               ID=1     CODE=5

* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   59- COMPUTE TP FOR BASIN P-210 (let tp=0.133= Min.)                    ***

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

*S*   60- COMPUTE HYD FOR BASIN P-210 (3.0 DU/acre=> 35%D, use 40%D)
COMPUTE NM HYD          ID=2       HYDNO=210  DA=0.004 SQ MI
                                   PERCENT A=10 B=15 C=35 D=40
                                   TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD               ID=2     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   - ADD HYDROGRAPHS 206 AND 210

ADD HYD                           ID=3    HYD=210.1       ID=1    ID=2
PRINT HYD                         ID=3    CODE=1
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **

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

*S*   63- COMPUTE HYD FOR BASIN P-211 (3.7 DU/acre=> 40%D, use 45%D)
COMPUTE NM HYD          ID=1       HYDNO=211  DA=0.010 SQ MI
                                   PERCENT A=10 B=15 C=30 D=45
                                   TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD               ID=1     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   64- ADD HYDROGRAPHS 210.1 AND 211

ADD HYD                           ID=2    HYD=211.1       ID=1    ID=3
PRINT HYD                         ID=2    CODE=1
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **

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

```
*S*   42- COMPUTE HYD FOR BASIN P-207 (actual 3.7DU/acre, assume 4 DU/Acre=>
*                              42%D, use 45%D)
COMPUTE NM HYD        ID=1       HYDNO=207  DA=0.004 SQ MI
                                 PERCENT A=10 B=15 C=30 D=45
                                 TP=0.0 HOURS   MASSRAIN=-1

PRINT HYD             ID=1     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   - ADD HYDROGRAPHS 211.1 AND 207

ADD HYD                          ID=3    HYD=207.1       ID=1    ID=2
PRINT HYD                        ID=3    CODE=1
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **

*S*   53- Compute HYD for BASIN 209 (3.86du/acre=> 41%D, use 45%D)
COMPUTE NM HYD        ID=1       HYDNO=209  DA=0.006 SQ MI
                                 PERCENT A=10 B=15 C=30 D=45
                                 TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD             ID=1     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   - ADD HYDROGRAPHS 207.1 AND 209

ADD HYD                          ID=2    HYD=209.1       ID=1    ID=3
PRINT HYD                        ID=2    CODE=1
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   66- COMPUTE TP FOR BASIN P-212 (Let TP=0.133= Min.)                    ***
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **

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

*S*   67- Computing HYD for BASIN P-212 (2.5 DU/acre=> 30%D, use 35%D)
COMPUTE NM HYD        ID=1       HYDNO=212  DA=0.005 SQ MI
                                 PERCENT A=10 B=15 C=40 D=35
                                 TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD             ID=1     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   68- ADD HYDROGRAPHS 209.1 AND 212

ADD HYD                          ID=3    HYD=212.1       ID=2    ID=1
PRINT HYD                        ID=3    CODE=1
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   69  ROUTE HYDROGRAPH 212.1 down Kimmick in 48"x 175' RCP to POND 4
COMPUTE RATING CURVE CID=1  VS NO=1  NO SEGS=-1  SLP=0.001
                    DIAM=4.0  N=0.013


ROUTE MCUNGE            ID=2  HYD NO= 212.2  INFLOW ID=3
                        DT=0.0 L=175 FT NS=0 SLOPE=0.001
PRINT HYD               ID=2     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   70- Add HYDROGRAPHS 212.2 TO 208.3 (At POND 4)

ADD HYD                          ID=6    HYD=212.3       ID=2    ID=5
PRINT HYD                        ID=6    CODE=1
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
**S MODEL UPDATED FOR TRACT B USING 8 DU/AC ************************************
*S
*S
*S
*******************************************************************************

*S*   20- COMPUTE HYD FOR BASIN P-201 (8 DU/Acre)
COMPUTE NM HYD        ID=1       HYDNO=201  DA=0.0578  SQ MI
                                 PERCENT A=0 B=4 C=25 D=71
                                 TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD             ID=1     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **

***   COMPUTE HYD FOR BASIN P-202.1 (8 DU/Acre, INCLUDES POND AND OPEN SPACE)
COMPUTE NM HYD        ID=2       HYDNO=202.1  DA=0.0132  SQ MI
                                 PERCENT A=0 B=3 C=48 D=49
```

```
                                TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD             ID=2     CODE=5

* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*     ADD BASINSS 201 TO 202.1


ADD HYD                         ID=12   HYD=202.12      ID=1    ID=2
PRINT HYD                       ID=12   CODE=1
*******************************************************************************
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
***   COMPUTE HYD FOR BASIN P-202.2 (8 DU/Acre)
COMPUTE NM HYD        ID=2       HYDNO=202.2  DA=0.0026  SQ MI
                                 PERCENT A=0 B=4 C=25 D=71
                                 TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD             ID=2     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
***   COMPUTE HYD FOR BASIN P-202.3 (8 DU/Acre)
COMPUTE NM HYD        ID=3       HYDNO=202.3  DA=0.0172  SQ MI
                                 PERCENT A=0 B=4 C=25 D=71
                                 TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD             ID=3     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*     ADD BASINSS 202.1 TO 202.2


ADD HYD                         ID=13   HYD=202.32      ID=3    ID=2
PRINT HYD                       ID=13   CODE=1
*******************************************************************************

*S*     ADD BASINSS 201, 202.1, 202.2 TO 202.3


ADD HYD                         ID=13   HYD=202.14      ID=12   ID=13
PRINT HYD                       ID=13   CODE=1
*******************************************************************************
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*    29- Route HYDROGRAPH 202.14 Through POND 1
*S*       discharge 15 cfs through 18" PIPE into Rosa Parks System
ROUTE RESERVOIR                 ID=3 HYD=POND.203.1  INFLOWID=13  CODE=5

                                OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
                                0.0             0.0             5336
                                0.01            0.499           5337
                                0.1             1.548           5338
                                6.23            2.669           5339
                                10.8            3.868           5340
                                13.9            5.147           5341
                                16.5            6.508           5342
                                18.7            7.951           5343
                                20.6            9.478           5344


PRINT HYD                       ID=3    CODE=5

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

*S*   56B- COMPUTE HYD FOR BASIN 213 (3.86du/acre=> 41%D, use 45%D)
COMPUTE NM HYD        ID=1       HYDNO=213  DA=0.063 SQ MI
                                 PERCENT A=10 B=15 C=30 D=45
                                 TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD             ID=1     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   56C- Add HYDROGRAPH 202.2 (outflow from POND 2) and 213

ADD HYD               ID=2     HYD=213.1     ID=1     ID=3
PRINT HYD             ID=2     CODE=1

* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*   56D- Add HYDROGRAPHS 212.3 and 213.1 (INFLOW TO POND 4)
ADD HYD                         ID=1    HYD=213.2       ID=2    ID=6
PRINT HYD                       ID=1    CODE=1
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
```

```
*S*   57- Route BASIN 213.1 through POND 4
ROUTE RESERVOIR                 ID=2 HYD=POND.213.3  INFLOWID=1  CODE=5
                                OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)

                                    0.0          0.0              5298
                                   71.8          0.82             5299
                                   76.5          1.73             5300
                                   81.0          2.72             5301
                                   85.1          3.80             5302
                                   89.1          4.97             5303
                                   93.0          6.23             5304
                                   96.7          7.58             5305
                                  100.2          9.03             5306


PRINT HYD                       ID=2    CODE=1
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
FINISH
```

Developed Conditions AHYMO Summary & Input Files

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02c RUN DATE (MON/DAY/YR) =12/02/2016
INPUT FILE = C:\LC\P100_2~2.DAT USER NO.= AHYMO-C-9803c01UNMLIB-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	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 2										RAIN24= 2.520
COMPUTE NM HYD	202.10	-	1	.03390	27.24	.765	.42296	1.500	1.256	PER IMP= .00
COMPUTE NM HYD	202.20	-	2	.00510	4.10	.115	.42296	1.500	1.257	PER IMP= .00
COMPUTE NM HYD	202.30	-	3	.01720	38.49	1.703	1.85664	1.500	3.497	PER IMP= 71.00
S	ADD HYDROGRAPHS 202.3 and 202.2									
ADD HYD	202.21	3& 2	12	.02230	42.59	1.818	1.52875	1.500	2.985	
*S ADD OFFSITE BASINS OS1 & OS8 FROM ADDENDUM FOR LA CUENTISTA SUBD UNIT II										
*S SUBTRACT DEVELOPED BASIN 202.3 FROM OS8 IN ORIGINAL REPORT (12.59 AC)										
*S										
COMPUTE NM HYD	1.00	-	4	.02300	17.16	.519	.42296	1.500	1.166	PER IMP= .00
*S***	ROUTE BASINS OS1 THRU BASIN OS8									
ROUTE MCUNGE	OS8	4	5	.02300	15.95	.505	.41152	2.450	1.084	CCODE = .1
COMPUTE NM HYD	108.00	-	8	.09300	45.95	2.472	.49835	1.650	.772	PER IMP= 4.00
*S*ADD BASIN OS1 AND OS8										
ADD HYD	OS8.1	5& 8	58	.11600	45.95	2.977	.48113	1.650	.619	
*S ADD ALL THE BASINS DRAINING INTO POND 1										
S	ADD BASINS OS1, OS8.1, 202.2 AND 202.3									
ADD HYD	202.40	12&58	2	.13830	77.77	4.795	.65005	1.550	.879	
S	ADD ALL BASINS INTO THE POND									
ADD HYD	202.50	2& 1	3	.17220	103.41	5.559	.60534	1.550	.938	
S	Route HYDROGRAPH 202.14 Through POND 1									
S	discharge 15 cfs through 18" PIPE into Rosa Parks System									
ROUTE RESERVOIR	POND.202.6	3	31	.17220	15.61	4.558	.49629	2.600	.142	AC-FT= 3.418
FINISH										

```
***  LA CUENTISTA SUBDIVISION                                          ***
***  FULLY DEVELOPED CONDITIONS RUNOFF MODEL - REVISED JANUARY 2007    ***
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * **
***  DESIGN STORM IS THE 100 YEAR - 24 HOUR STORM                       ***
***  COA DPM TYPE 2, 24 HOUR STORM WITH A PEAK INTENSITY AT 1.4 HOURS
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * **
*** AHYMO MODEL FROM DRANAGE REPORT FOR LA CUENTISTA SUBDIVISION - UNIT II   ***
*** DATED JANUARY 2007 PREPARED BY WCI, A SUPPLEMENT TO THE DRAIANGE REPORT  ***
*** FOR LA CUENTISTA SUBDIVISION PREPARED BY WCI DATED NOV. 2003             ***
*** ORIGINAL MODEL INCLUDED 4 DU/AC LOTS
*****************************************************************************
*** DEVELOPED CONDITIONS MODEL UPDATED NOVEMBER 2016 FOR TRACT B INTERIM CONDITIONS *
*** THIS MODEL USES 8 DU/AC (BASIN 202.3)**************************
*** OFFSITE BASINS OS1 & OS8.1 (AREA ADJUSTED) AND BASIN 202.2 IN EXISTING
*** CONDITIONS-ADDENDUM FOR LC UNIT II, DEC 2014
*** RAINFALL DATA UPDATED PER NOAA ATLAS 14 WEBSITE                       ***
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * **
*****************************************************************************


*****************************************************************************
START                TIME = 0
*****************************************************************************
RAINFALL             TYPE = 2
                                 RAIN QUARTER = 0.00  INCHES

                                 RAIN ONE = 1.69
                                 RAIN SIX = 2.17
                                 RAIN DAY = 2.52
                                 DT  =  0.05     HOURS
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * **
*****************************************************************************
***   COMPUTE HYD FOR BASIN P-202.1 (EXISTING CONDITIONS)
COMPUTE NM HYD       ID=1       HYDNO=202.1  DA=0.0339  SQ MI
                                PERCENT A=90 B=0 C=10 D=0
                                TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD            ID=1     CODE=5

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

***   COMPUTE HYD FOR BASIN P-202.2 (EXISTING CONDITIONS)
COMPUTE NM HYD       ID=2       HYDNO=202.2  DA=0.0051  SQ MI
                                PERCENT A=90 B=0 C=10 D=0
                                TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD            ID=2     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * **
*****************************************************************************
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * **

***   COMPUTE HYD FOR BASIN P-202.3 (8 DU/Acre)
COMPUTE NM HYD       ID=3       HYDNO=202.3  DA=0.0172  SQ MI
                                PERCENT A=0 B=4 C=25 D=71
                                TP=0.133 HOURS   MASSRAIN=-1

PRINT HYD            ID=3     CODE=5
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*     ADD HYDROGRAPHS 202.3 and 202.2


ADD HYD                      ID=12   HYD=202.21      ID=3    ID=2
PRINT HYD                    ID=12   CODE=1
*****************************************************************************
*S ADD OFFSITE BASINS OS1 & OS8 FROM ADDENDUM FOR LA CUENTISTA SUBD UNIT II
*S SUBTRACT DEVELOPED BASIN 202.3 FROM OS8 IN ORIGINAL REPORT (12.59 AC)
*S
****                            COMPUTING TP FOR BASIN EX-OS1                                    ***
*****************************************************************************************************
COMPUTE LT TP                LCODE=1   NK=2     ISLOPE=0
                             LENGTH=400 FT   SLOPE=0.0125    K=0.7
                             LENGTH=630 FT   SLOPE=0.0146    K=2
```

```
***  COMPUTING HYD FOR BASIN EX-OS1

COMPUTE NM HYD        ID=4       HYDNO=OS1  DA=0.0230  SQ MI
                                 PERCENT A=90 B=0 C=10 D=0
                                 TP=0.0 HOURS   MASSRAIN=-1

PRINT HYD             ID=4       CODE=5
*******************************************************************************************
*S***  ROUTE BASINS OS1 THRU BASIN OS8

COMPUTE RATING CURVE CID=1  VS NO=1  SEGS=1  MIN ELEV=5368  MAX ELEV=5372
                     CH SLP=0.013  FP SLP=0.013  N=0.03  DIST=350
                     DIST  ELEV       DIST  ELEV
                       0   5372      80   5368
                     284   5368       350   5372


ROUTE MCUNGE            ID=5  HYD NO= OS8  INFLOW ID=4
                        DT=0.0 L=3462 FT NS=0 SLOPE=0.013
PRINT HYD               ID=5      CODE=5

*******************************************************************************************
***                                 COMPUTING TP FOR BASIN EX-OS8.1
*******************************************************************************************
COMPUTE LT TP                   LCODE=1 NK=3    ISLOPE=0
                                LENGTH=400 FT   SLOPE=0.017     K=0.7
                                LENGTH=1600 FT  SLOPE=0.017     K=2
                                LENGTH=1462 FT  SLOPE=0.017     K=3
                                KN=0.033    CENTROID DISTANCE=1730

***  COMPUTING HYD FOR BASIN EX-OS8.1


COMPUTE NM HYD        ID=8       HYDNO=108  DA=0.093  SQ MI
                                 PERCENT A=86 B=0 C=10 D=4
                                 TP=0.0 HOURS   MASSRAIN=-1

PRINT HYD             ID=8       CODE=5

*******************************************************************************************
*S*ADD BASIN OS1 AND OS8

ADD HYD                         ID=58   HYD=OS8.1       ID=5    ID=8

PRINT HYD                       ID=58   CODE=1

*******************************************************************************************
*S ADD ALL THE BASINS DRAINING INTO POND 1

* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*     ADD BASINS OS1, OS8.1, 202.2 AND 202.3


ADD HYD                         ID=2    HYD=202.4       ID=12   ID=58
PRINT HYD                       ID=2    CODE=1

* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
*S*     ADD ALL BASINS INTO THE POND

ADD HYD                         ID=3    HYD=202.5       ID=2    ID=1
PRINT HYD                       ID=3    CODE=1

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

*S*    Route HYDROGRAPH 202.14 Through POND 1
*S*       discharge 15 cfs through 18" PIPE into Rosa Parks System
ROUTE RESERVOIR                 ID=31 HYD=POND.202.6  INFLOWID=3  CODE=5

                                OUTFLOW(CFS)   STORAGE(AC-FT)   ELEV(FT)
                                0.0             0.0             5336
                                0.01            0.501           5337
                                0.1             1.044           5338
                                6.23            1.630           5339
                                10.8            2.261           5340
                                13.9            2.940           5341
                                16.5            3.668           5342
                                18.7            4.446           5343
                                20.6            5.277           5344
```

```
PRINT HYD                       ID=31   CODE=1

* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
* * * * * * * * * *** * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * **
FINISH
```

Appendix C

Hydraulic Calculations

- FlowMaster Calculations
  - Street Capacity
  - Inlet Capacity
- CulvertMaster Calculations
- Hydraflow Calculations
- Pillbox Manhole Calculations

Worksheet for Redroot St-Capacity

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00510	ft/ft
Discharge	14.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.79
0+06	0.67
0+11	0.67
0+11	0.00
0+26	0.30
0+41	0.00
0+41	0.67
0+46	0.67
0+52	0.79

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.79)	(0+06, 0.67)	0.013
(0+06, 0.67)	(0+11, 0.67)	0.030
(0+11, 0.67)	(0+41, 0.67)	0.016
(0+41, 0.67)	(0+46, 0.67)	0.030
(0+46, 0.67)	(0+52, 0.79)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Worksheet for Redroot St-Capacity

Results

Normal Depth		0.36	ft
Elevation Range	0.00 to 0.79 ft		
Flow Area		6.17	ft²
Wetted Perimeter		30.72	ft
Hydraulic Radius		0.20	ft
Top Width		30.00	ft
Normal Depth		0.36	ft
Critical Depth		0.34	ft
Critical Slope		0.00670	ft/ft
Velocity		2.27	ft/s
Velocity Head		0.08	ft
Specific Energy		0.44	ft
Froude Number		0.88	
Flow Type	Subcritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.36	ft
Critical Depth	0.34	ft
Channel Slope	0.00510	ft/ft
Critical Slope	0.00670	ft/ft

Worksheet for Privet St-Capacity

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.00670	ft/ft
Discharge	26.30	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.79
0+06	0.67
0+11	0.67
0+11	0.00
0+26	0.30
0+41	0.00
0+41	0.67
0+46	0.67
0+52	0.79

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.79)	(0+06, 0.67)	0.013
(0+06, 0.67)	(0+11, 0.67)	0.030
(0+11, 0.67)	(0+41, 0.67)	0.016
(0+41, 0.67)	(0+46, 0.67)	0.030
(0+46, 0.67)	(0+52, 0.79)	0.013

Options

Current Roughness Weighted Method	Pavlovskii's Method
Open Channel Weighting Method	Pavlovskii's Method
Closed Channel Weighting Method	Pavlovskii's Method

Worksheet for Privet St-Capacity

Results

Normal Depth		0.43	ft
Elevation Range	0.00 to 0.79 ft		
Flow Area		8.30	ft²
Wetted Perimeter		30.86	ft
Hydraulic Radius		0.27	ft
Top Width		30.00	ft
Normal Depth		0.43	ft
Critical Depth		0.44	ft
Critical Slope		0.00587	ft/ft
Velocity		3.17	ft/s
Velocity Head		0.16	ft
Specific Energy		0.58	ft
Froude Number		1.06	
Flow Type	Supercritical		

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Downstream Velocity	Infinity	ft/s
Upstream Velocity	Infinity	ft/s
Normal Depth	0.43	ft
Critical Depth	0.44	ft
Channel Slope	0.00670	ft/ft
Critical Slope	0.00587	ft/ft

Worksheet for AP2 - Single Grate A - at grade

Project Description

Solve For	Efficiency

Input Data

Discharge		4.00	ft³/s
Slope		0.01050	ft/ft
Gutter Width		2.50	ft
Gutter Cross Slope		0.06	ft/ft
Road Cross Slope		0.02	ft/ft
Roughness Coefficient		0.016	
Local Depression		2.75	in
Local Depression Width		2.95	ft
Grate Width		2.08	ft
Grate Length		3.33	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%
Curb Opening Length		7.00	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency		87.85	%
Intercepted Flow		3.51	ft³/s
Bypass Flow		0.49	ft³/s
Spread		11.11	ft
Depth		0.32	ft
Flow Area		1.36	ft²
Gutter Depression		0.10	ft
Total Depression		0.33	ft
Velocity		2.94	ft/s
Splash Over Velocity		7.39	ft/s
Frontal Flow Factor		1.00	
Side Flow Factor		0.06	
Grate Flow Ratio		0.52	
Equivalent Cross Slope		0.08580	ft/ft
Active Grate Length		1.67	ft
Length Factor		0.37	
Total Interception Length		14.28	ft

Worksheet for AP2 - Single Grate C - at grade

Project Description

Solve For	Efficiency

Input Data

Discharge		0.49	ft³/s
Slope		0.01050	ft/ft
Gutter Width		2.50	ft
Gutter Cross Slope		0.06	ft/ft
Road Cross Slope		0.02	ft/ft
Roughness Coefficient		0.016	
Local Depression		2.75	in
Local Depression Width		3.20	ft
Grate Width		2.08	ft
Grate Length		3.33	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%
Curb Opening Length		3.20	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency		100.00	%
Intercepted Flow		0.49	ft³/s
Bypass Flow		0.00	ft³/s
Spread		3.26	ft
Depth		0.17	ft
Flow Area		0.23	ft²
Gutter Depression		0.10	ft
Total Depression		0.33	ft
Velocity		2.12	ft/s
Splash Over Velocity		7.39	ft/s
Frontal Flow Factor		1.00	
Side Flow Factor		0.10	
Grate Flow Ratio		0.94	
Equivalent Cross Slope		0.12233	ft/ft
Active Grate Length		1.67	ft
Length Factor		0.32	
Total Interception Length		4.78	ft

Worksheet for AP3 - Single Grate A - at grade

Project Description

Solve For	Efficiency

Input Data

Discharge		7.00	ft³/s
Slope		0.00670	ft/ft
Gutter Width		2.50	ft
Gutter Cross Slope		0.06	ft/ft
Road Cross Slope		0.02	ft/ft
Roughness Coefficient		0.016	
Local Depression		2.75	in
Local Depression Width		2.95	ft
Grate Width		2.08	ft
Grate Length		3.33	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%
Curb Opening Length		7.00	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency		75.03	%
Intercepted Flow		5.25	ft³/s
Bypass Flow		1.75	ft³/s
Spread		15.47	ft
Depth		0.41	ft
Flow Area		2.52	ft²
Gutter Depression		0.10	ft
Total Depression		0.33	ft
Velocity		2.78	ft/s
Splash Over Velocity		7.39	ft/s
Frontal Flow Factor		1.00	
Side Flow Factor		0.06	
Grate Flow Ratio		0.38	
Equivalent Cross Slope		0.06933	ft/ft
Active Grate Length		1.67	ft
Length Factor		0.30	
Total Interception Length		17.94	ft

Worksheet for AP3 - Single Grate C - at grade

Project Description

Solve For	Efficiency

Input Data

Discharge		1.83	ft³/s
Slope		0.01050	ft/ft
Gutter Width		2.50	ft
Gutter Cross Slope		0.06	ft/ft
Road Cross Slope		0.02	ft/ft
Roughness Coefficient		0.016	
Local Depression		2.75	in
Local Depression Width		3.20	ft
Grate Width		2.08	ft
Grate Length		3.33	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%
Curb Opening Length		3.20	ft

Options

Calculation Option	Use Both
Grate Flow Option	Exclude None

Results

Efficiency		83.56	%
Intercepted Flow		1.53	ft³/s
Bypass Flow		0.30	ft³/s
Spread		7.71	ft
Depth		0.25	ft
Flow Area		0.72	ft²
Gutter Depression		0.10	ft
Total Depression		0.33	ft
Velocity		2.54	ft/s
Splash Over Velocity		7.39	ft/s
Frontal Flow Factor		1.00	
Side Flow Factor		0.07	
Grate Flow Ratio		0.68	
Equivalent Cross Slope		0.09870	ft/ft
Active Grate Length		1.67	ft
Length Factor		0.16	
Total Interception Length		9.46	ft

Worksheet for AP4 - Single Grate A - sump

Project Description

Solve For	Spread

Input Data

Discharge		6.40	ft³/s
Gutter Width		2.50	ft
Gutter Cross Slope		0.06	ft/ft
Road Cross Slope		0.02	ft/ft
Local Depression		2.75	in
Local Depression Width		17.00	ft
Grate Width		2.08	ft
Grate Length		3.33	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%
Curb Opening Length		6.98	ft
Opening Height		0.67	ft
Curb Throat Type	Horizontal		
Throat Incline Angle		90.00	degrees

Options

Calculation Option	Use Both

Results

Spread	6.88	ft
Depth	0.28	ft
Gutter Depression	0.10	ft
Total Depression	0.33	ft
Open Grate Area	3.12	ft²
Active Grate Weir Length	5.41	ft

Worksheet for AP5 - Single Grate A - sump

Project Description

Solve For	Spread

Input Data

Discharge		2.85	ft³/s
Gutter Width		2.50	ft
Gutter Cross Slope		0.06	ft/ft
Road Cross Slope		0.02	ft/ft
Local Depression		2.75	in
Local Depression Width		17.00	ft
Grate Width		2.08	ft
Grate Length		3.33	ft
Grate Type	P-50 mm (P-1-7/8")		
Clogging		50.00	%
Curb Opening Length		6.98	ft
Opening Height		0.67	ft
Curb Throat Type	Horizontal		
Throat Incline Angle		90.00	degrees

Options

Calculation Option	Use Both

Results

Spread		4.99	ft
Depth		0.14	ft
Gutter Depression		0.10	ft
Total Depression		0.33	ft
Open Grate Area		3.12	ft²
Active Grate Weir Length		5.41	ft

Culvert Calculator Report
Pond Outlet

Solve For: Discharge

Culvert Summary					
Allowable HW Elevation	5,344.00	ft	Headwater Depth/Height	4.67	
Computed Headwater Elev	5,344.00	ft	Discharge	20.65	cfs
Inlet Control HW Elev.	5,343.43	ft	Tailwater Elevation	5,338.50	ft
Outlet Control HW Elev.	5,344.00	ft	Control Type	Outlet Control	

Grades					
Upstream Invert	5,337.00	ft	Downstream Invert	5,336.45	ft
Length	60.00	ft	Constructed Slope	0.009167	ft/ft

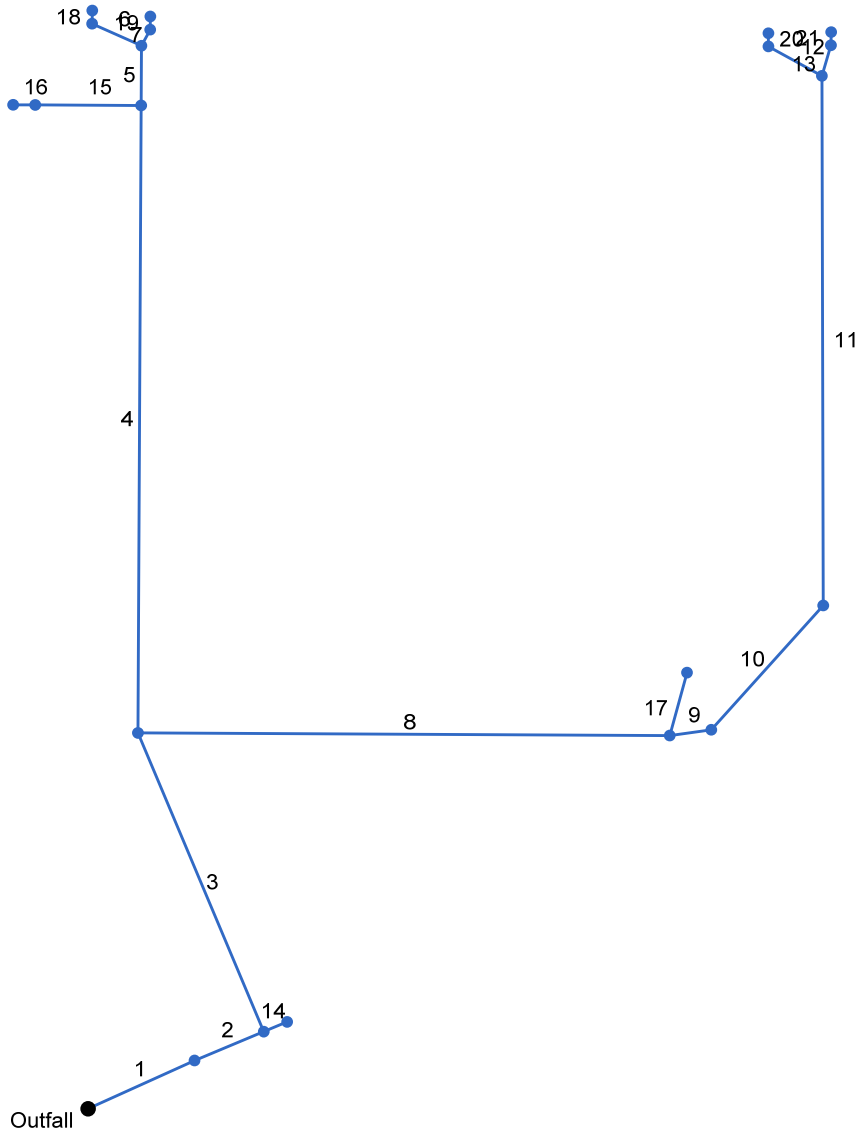
Hydraulic Profile					
Profile	PressureProfile		Depth, Downstream	2.05	ft
Slope Type	N/A		Normal Depth	N/A	ft
Flow Regime	N/A		Critical Depth	1.47	ft
Velocity Downstream	11.68	ft/s	Critical Slope	0.034673	ft/ft

Section					
Section Shape	Circular		Mannings Coefficient	0.013	
Section Material	Concrete		Span	1.50	ft
Section Size	18 inch		Rise	1.50	ft
Number Sections	1				

Outlet Control Properties					
Outlet Control HW Elev.	5,344.00	ft	Upstream Velocity Head	2.12	ft
Ke	0.50		Entrance Loss	1.06	ft

Inlet Control Properties					
Inlet Control HW Elev.	5,343.43	ft	Flow Control	Submerged	
Inlet Type	Square edge w/headwall		Area Full	1.8	ft²
K	0.00980		HDS 5 Chart	1	
M	2.00000		HDS 5 Scale	1	
C	0.03980		Equation Form	1	
Y	0.67000				

TRACT B-2



Project File: Tract B-2.stm	Number of lines: 21	Date: 1/3/2017

MyReport

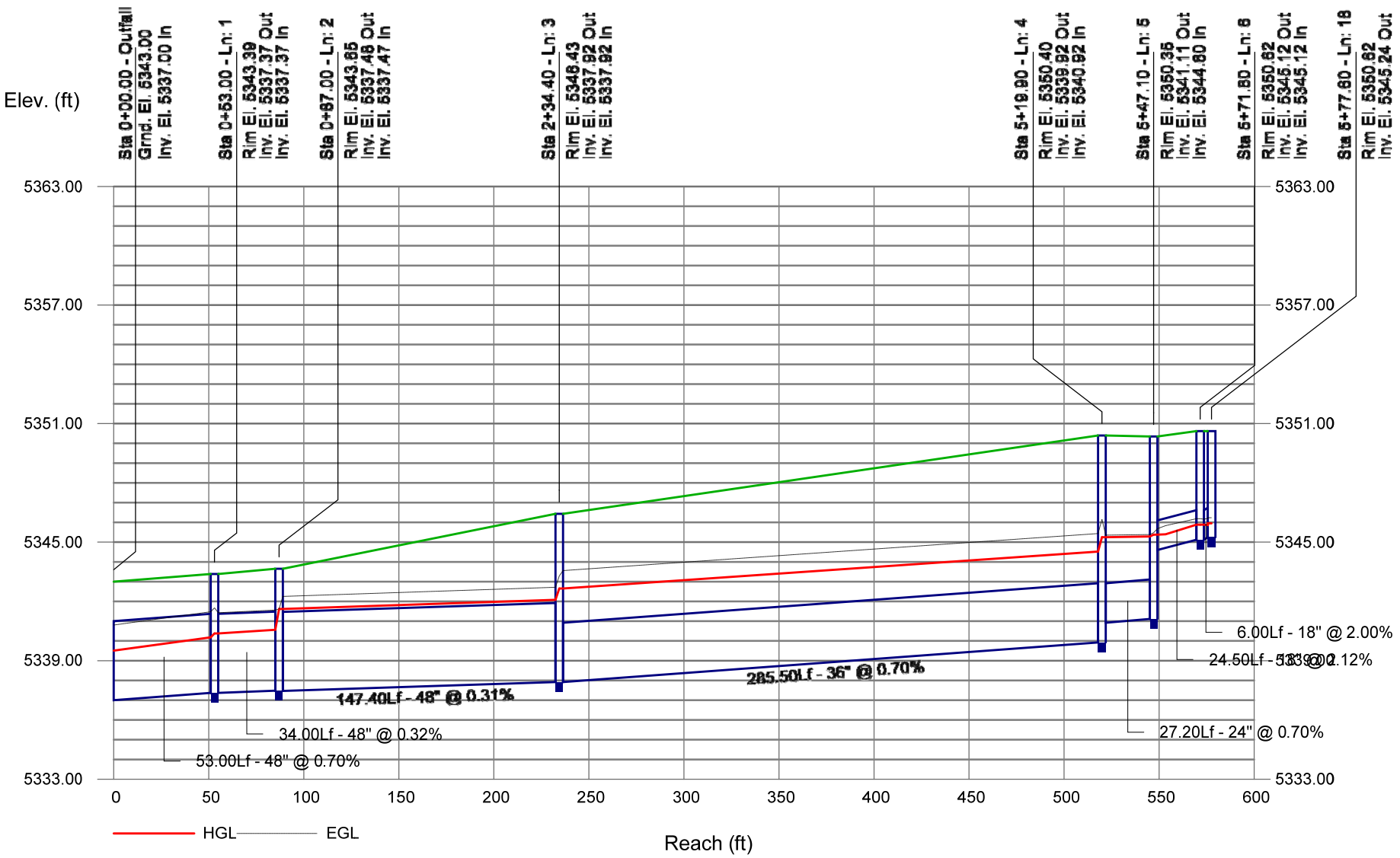
Line No.	Line ID	Line Size (in)	Line Length (ft)	Line Slope (%)	Flow Rate (cfs)	Invert Dn (ft)	Invert Up (ft)	Gnd/Rim El Dn (ft)	Gnd/Rim El Up (ft)	HGL Dn (ft)	HGL Up (ft)	Cover Dn (ft)	Cover Up (ft)	J-Loss Coeff	Vel Ave (ft/s)	Capac Full (cfs)	
1		48	53.00	0.70	86.14	5337.00	5337.37	5343.00	5343.39	5339.51	5340.18	2.00	2.02	0.15	9.76	120.04	
2		48	34.00	0.32	83.24	5337.37	5337.48	5343.39	5343.65	5340.38	5340.56	2.02	2.17	0.90	8.12	81.66	
3		48	147.40	0.31	80.34	5337.47	5337.92	5343.65	5346.43	5341.62	5342.08	2.18	4.51	0.90	6.39	79.34	
4		36	285.50	0.70	54.00	5337.92	5339.92	5346.43	5350.40	5342.65	5344.52	5.51	7.48	0.80	7.64	55.82	
5		24	27.20	0.70	8.00	5340.92	5341.11	5350.40	5350.35	5345.25	5345.29	7.48	7.24	0.93	2.55	18.90	
6		18	24.50	2.12	4.00	5344.60	5345.12	5350.35	5350.62	5345.38	5345.89 j	4.25	4.00	0.50	4.37	15.30	
7		18	8.30	2.05	4.00	5344.60	5344.77	5350.35	5350.62	5345.38	5345.54 j	4.25	4.35	0.50	4.37	15.03	
8		36	241.00	0.50	26.34	5337.92	5339.12	5346.43	5343.64	5342.65	5343.03	5.51	1.52	0.80	3.73	47.07	
9		30	19.00	0.89	19.94	5339.12	5339.29	5343.64	5343.64	5343.20	5343.25	2.02	1.85	0.69	4.06	38.78	
10		30	76.00	0.91	13.54	5339.29	5339.98	5343.64	5343.95	5343.42	5343.51	1.85	1.47	0.72	2.76	39.08	
11		24	241.00	1.01	13.54	5339.98	5342.42	5343.95	5346.90	5343.59	5344.40	1.97	2.48	0.90	4.31	22.76	
12		18	27.70	1.01	6.77	5342.42	5342.70	5346.90	5346.86	5344.67	5344.78	2.98	2.66	0.50	3.83	10.56	
13		18	14.50	0.97	6.77	5342.42	5342.56	5346.90	5346.86	5344.67	5344.73	2.98	2.80	0.50	3.83	10.32	
14		18	11.50	2.00	2.90	5338.84	5339.07	5343.65	5343.39	5341.62	5341.63	3.31	2.82	0.50	1.64	14.85	
15		36	48.00	0.71	46.00	5339.92	5340.26	5350.40	5350.23	5345.25	5345.48	7.48	6.97	0.15	6.51	56.12	
16		36	10.00	0.70	46.00	5340.26	5340.33	5350.23	5350.50	5345.58	5345.63	6.97	7.17	0.80	6.51	55.92	
17		18	29.70	0.54	6.40	5340.11	5340.27	5343.64	5343.64	5343.20	5343.31	2.03	1.87	0.50	3.62	7.71	
18		18	6.00	2.00	3.51	5345.12	5345.24	5350.62	5350.62	5345.89	5345.96 j	4.00	3.88	0.00	4.05	14.86	
19		18	6.00	2.00	3.51	5344.77	5344.89	5350.62	5350.62	5345.54	5345.60 j	4.35	4.23	0.00	4.05	14.86	
20		18	6.00	1.99	5.17	5342.70	5342.82	5346.86	5346.86	5344.89	5344.91	2.66	2.54	0.00	2.93	14.83	
21		18	6.00	2.00	5.17	5342.56	5342.68	5346.86	5346.86	5344.84	5344.85	2.80	2.68	0.00	2.93	14.86	

TRACT B-2 | Number of lines: 21 | Date: 1/3/2017

NOTES: i Inlet control; ** Critical depth

Storm Sewer Profile

Proj. file: Tract B-2.stm



Storm Sewer Profile

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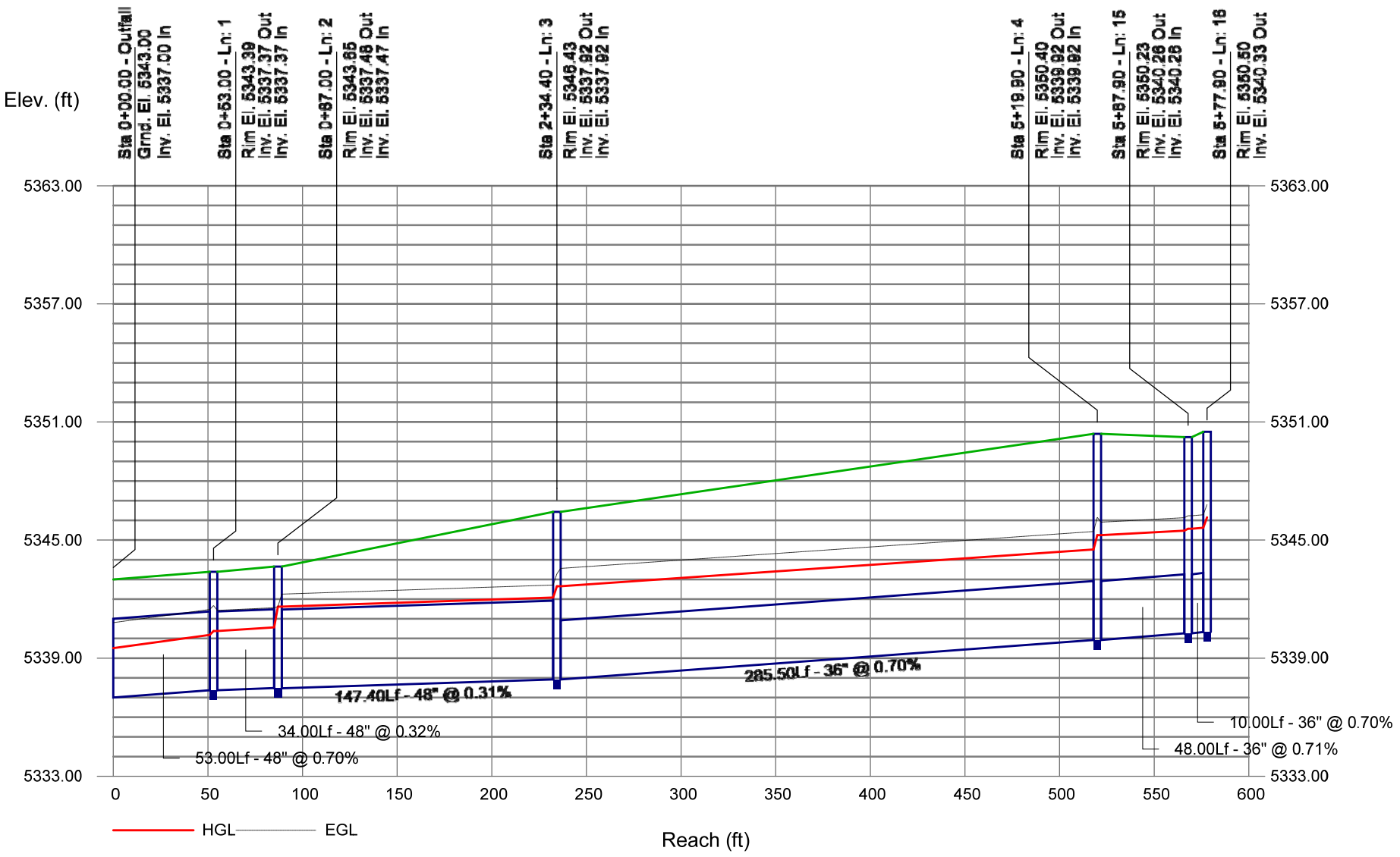

Storm Sewer Profile

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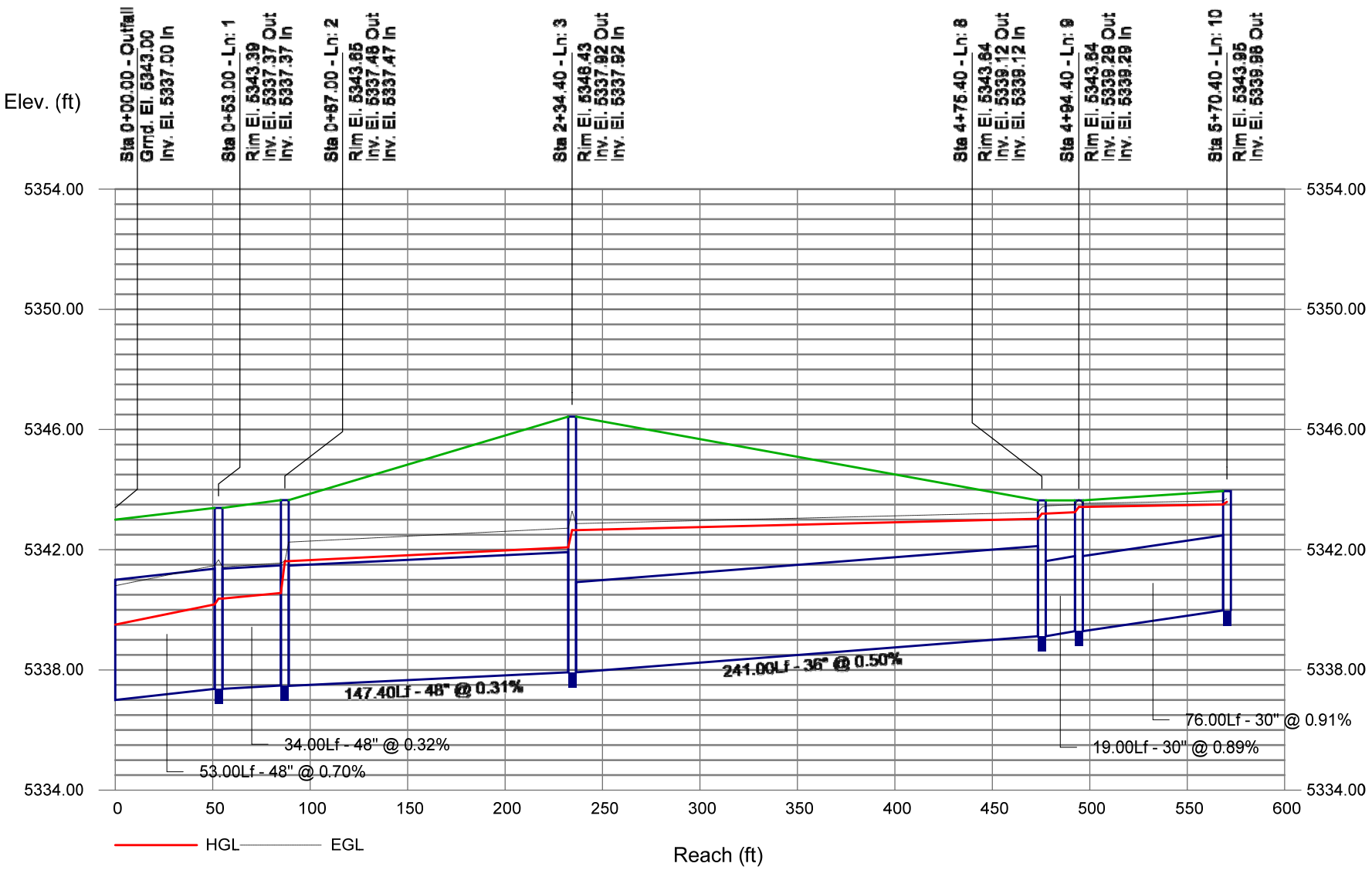

Storm Sewer Profile

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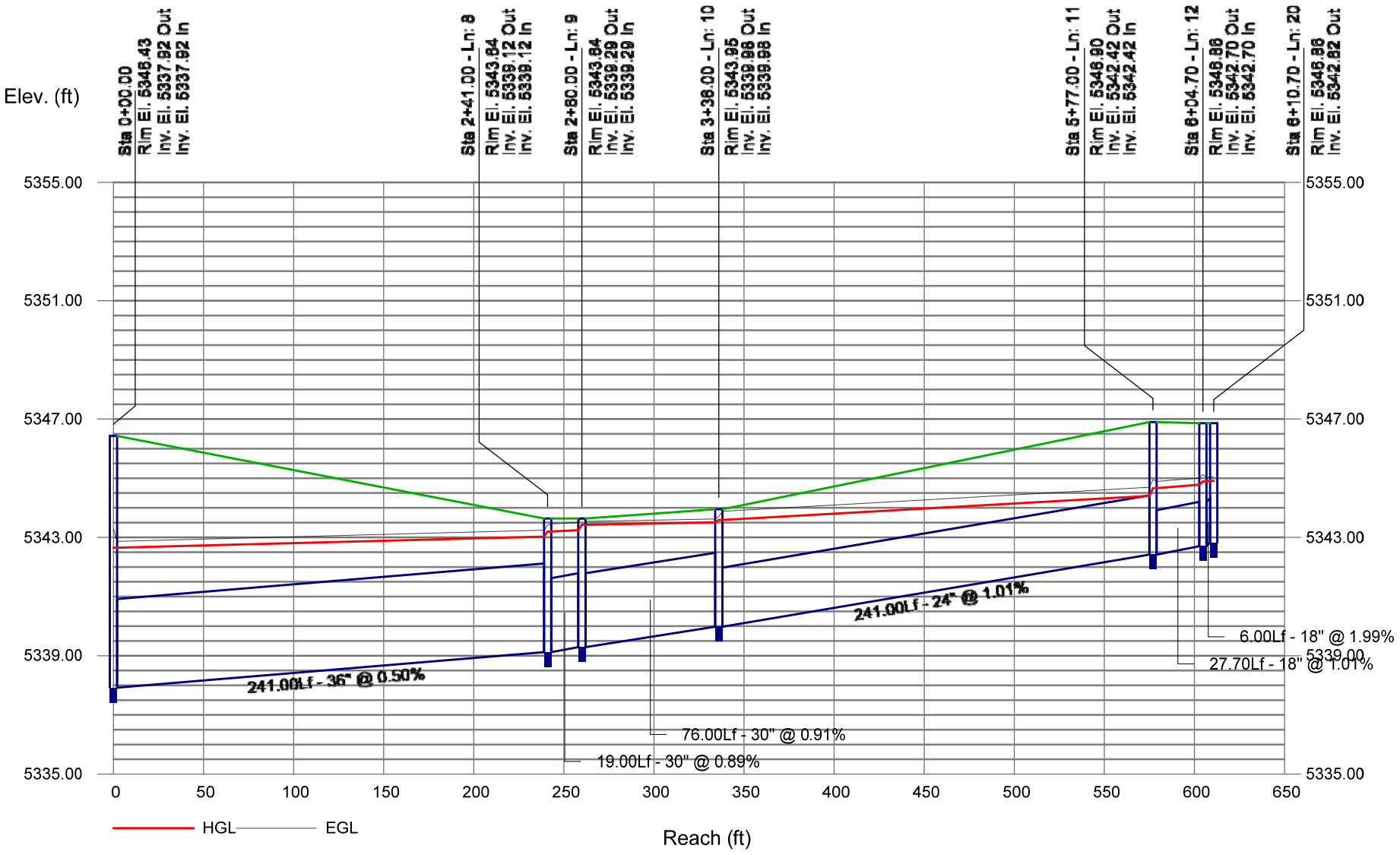

Storm Sewer Profile

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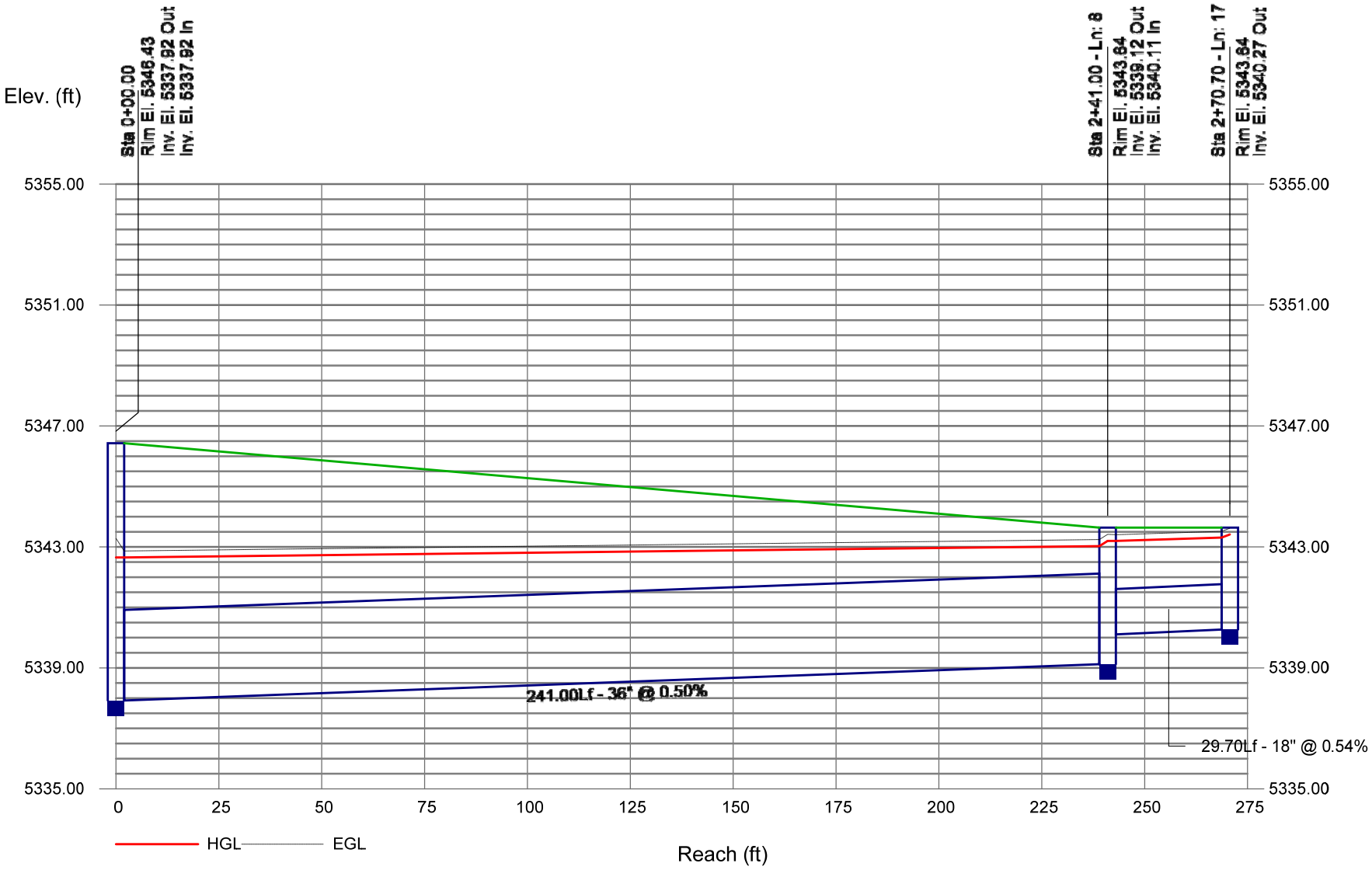

Storm Sewer Profile

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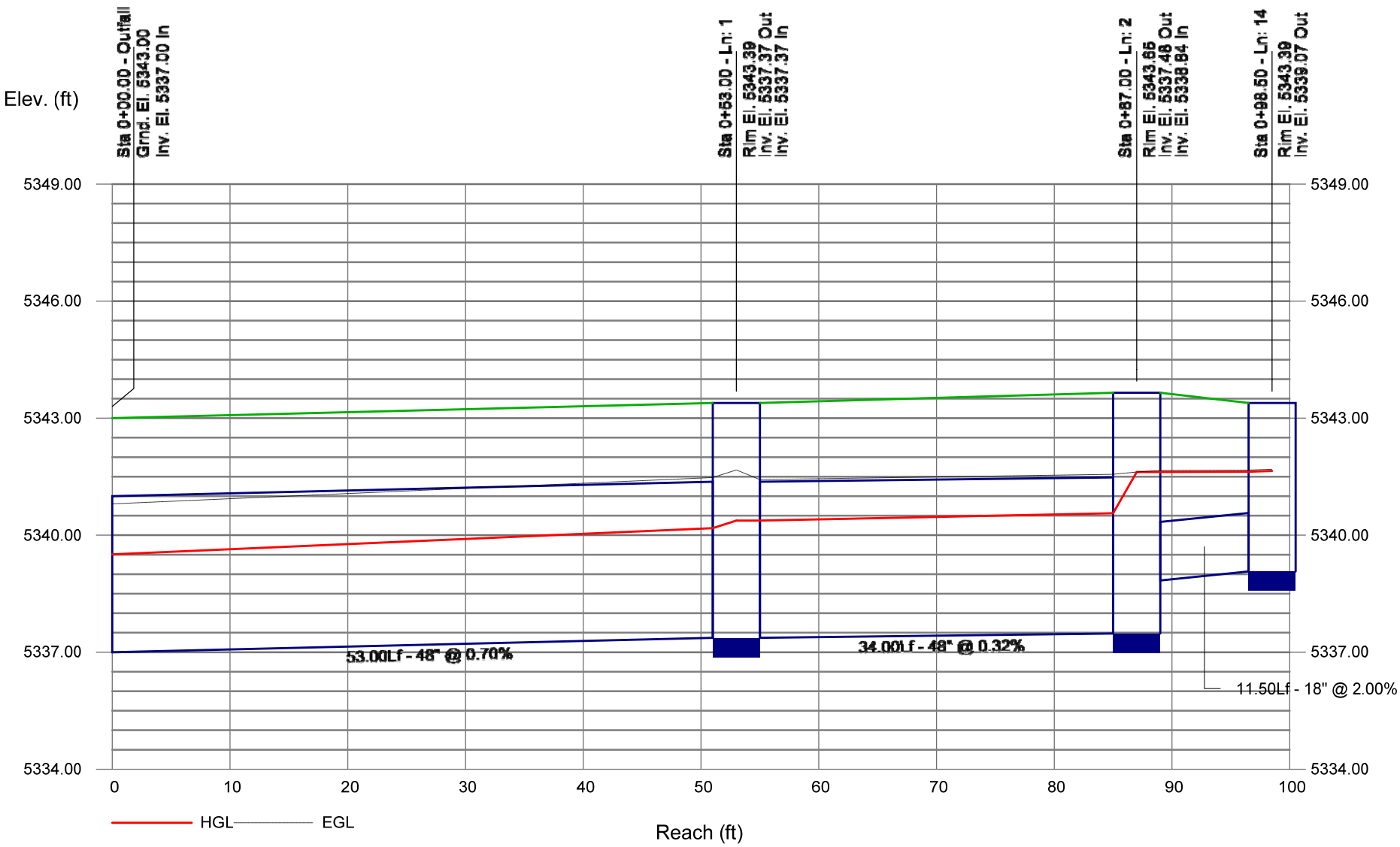


LA CUENTISTA TRACT B-2

PILL BOX MANHOLE INLET - DISCHARGE CALCULATIONS

36" STORM DRAIN

INVERT OF OUTLET PIPE	5340.93	
ORIFICE SIZE (in)	36	
TAILWATER EL:	5342.94	Based on HGL calcs for 46 cfs

	ORIFICE FLOW		
ELEVATIO	A (sf)	h (ft)	Q (cfs)
5343.00	7.07	0.06	8.61
5343.25	7.07	0.31	19.58
5343.50	7.07	0.56	26.32
5343.75	7.07	0.81	31.65
5344.00	7.07	1.06	36.21
5344.25	7.07	1.31	40.25
5344.50	7.07	1.56	43.93
5344.66	7.07	1.72	46.12
5345.00	7.07	2.06	50.48
5346.00	7.07	3.06	61.52
5347.00	7.07	4.06	70.86
5348.00	7.07	5.06	79.11
5349.00	7.07	6.06	86.58
5350.00	7.07	7.06	93.45
5350.23	7.07	7.29	94.96

Orifice Equation, $Q=0.62*A*(2g\Delta h)^{\wedge 1/2}$, submerged orifice

A = area of orifice, Δh = differential head, Q = discharge rate

PILL BOX MANHOLE INLET

INVERT OF PERFORATION(S)	5348.4
HEIGHT OF PERFORATION(S) (in)	14
LENGTH OF PERFORATION(S) (ft)	3.38

4 - 16" L X 14" H X 8" W BLOCK

# PERFORATIONS			1	2	3	4	
ELEVATION	A (sf)	h (ft)	Q (cfs)	Q (cfs)	Q (cfs)	Q (cfs)	
5348.50	3.94	-	-	-	-	-	
5348.75	3.94	-	-	-	-	-	
5349.00	3.94	0.02	2.53	5.07	7.60	10.13	
5349.25	3.94	0.27	10.13	20.26	30.40	40.53	
5349.33	3.94	0.35	11.55	23.10	34.66	46.21	
5349.50	3.94	0.52	14.10	28.21	42.31	56.41	
5350.00	3.94	1.02	19.78	39.57	59.35	79.13	
5350.23	3.94	1.25	21.91	43.81	65.72	87.63	~GROUND ELEVATION AT TOP OF BOX

Appendix D

Referenced Documents

- Selected pages from a Drainage Report for La Cuentista Subdivision – Unit II a Supplement to the Drainage Report for La Cuentista Subdivision
- Selected pages from Drainage Report Addendum for La Cuentista Subdivision – Unit II
- Selected sheets from La Cuentista Subdivision – Unit II Paving Plan & Profile sheets – Rosa Parks Road and Redroot Street

Drainage Report

for

LA CUENTISTA SUBDIVISION – Unit II

A Supplement to the Drainage Report for La Cuentista Subdivision Dated November 2003

Prepared by:

Wilson & Company, Inc.
4900 Lang Ave NE
Albuquerque, New Mexico 87109
(505) 348-4191

January 2007
WCI File No: 0660004701

WILSON &COMPANY

CITY OF ALBUQUERQUE

January 25, 2007

Dan Aguirre, PE
Wilson & Company
4900 Lang Ave
Albuquerque, NM 87109

Re: La Cuentista Subdivision Unit 2 Drainage Report
Engineer Stamp 1-23-07 (D10/D2)

Dear Mr. Aguirre,

Based upon information provided in your submittal dated 1-24-07, the above referenced report is approved for Preliminary Plat action by the DRB. Once that board has approved the plan, please provide a mylar copy for my signature in order to obtain a Grading Permit.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. Refer to the attachment that is provided with this letter for details. If you have any questions please feel free to call the Municipal Development Department, Hydrology section at 768-3654 (Charles Caruso).

Prior to Release of SIA and Financial Guarantees, an Engineer's Certification of this grading plan will be required.

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

Sincerely,

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

C: Chuck Caruso, CoA
file

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Drainage Report

for

LA CUENTISTA SUBDIVISION – Unit II

A Supplement to the Drainage Report for La Cuentista Subdivision Dated November 2003

Prepared by:

Daniel S. Aguirre, PE
NM #11955

Wilson & Company, Inc.
4900 Lang Ave NE
Albuquerque, New Mexico 87109
(505) 348-4191

January 2007
WCI File No: 0660004701

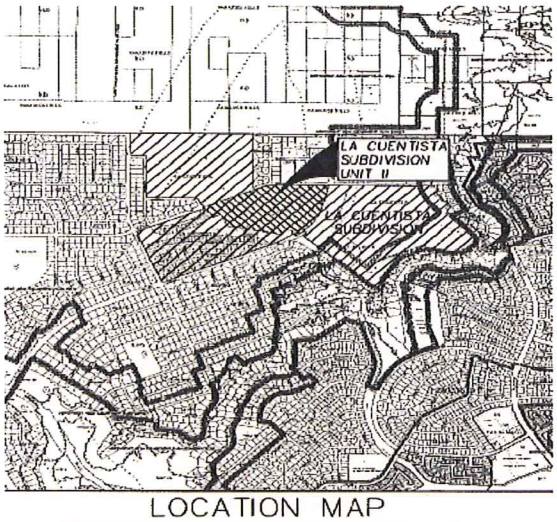
Table of Contents

Summary

La Cuentista Subdivision - Unit II, a residential development, is Tract C and the second of five bulk land tracts which collectively comprise La Cuentista Subdivision. The 35.47 acres of Unit II (Tract C) is approximately 15% of the total La Cuentista Subdivision. The approved "Drainage Report for La Cuentista Subdivision" dated November 2003 by Wilson & Company, Inc., provides site and existing conditions information.

Drainage

Proposed Conditions/Modification:



LOCATION MAP
ZONE ATLAS MAP NO. C-10, C-11

Unit II (Tract C) approximately replicates Basin 213 from the approved Drainage Report. This basin is designated to discharge into Pond 4 along with Unit I (Tract A) discharge. Pond 4, located north of Kimmick Dr., along with the outfall structure to the Petroglyph National Monument allowed per agreement with COA Open Space Division, are currently under construction.

Site design of Unit I (Tract A), Unit II (Tract C) and plans for Tract B require modifications to the approved Drainage Report. Basins 201 and 202 make up Tract B, an as yet undesignated unit of La Cuentista. The approved Drainage Report routed Basin 201 flows through Pond 1 and then through Unit I (Tract A) basins into Pond 4. Basin 202 was routed through Basin 213 to Pond 4. Flows from Basin 201 are herein proposed to route through Basin 202 and a newly designated Pond 2. A maximum flow of 15 cfs from Pond 2 will then be directed into Basin 213 via appropriately sized storm drain pipe, with Basin 213 discharging to Pond 4, as previously designed.

Flows from Basin 301 and 302, previously designed to route through storm drain in Kimmick Drive and into Pond 8 will be routed through Basin 214 to Pond 8.

A review and the updating of hydraulic data led to changes to Tables 3 & 4 from the approved Drainage Report. These are presented below. Additionally, a revised **Proposed Conditions: Drainage Basin Map** (Plate 2) is provided herein.

Table 3: Summary of Fully Developed Flows Basin	Area (acres)	100_{year}-24_{hour} Peak Flow (Q_{100}) cfs
201	22.1	71.8
202	35.0	112.9
203	1.2	4.1
204	5.0	16.4
205	8.8	28.7
206	4.6	14.4
207	2.4	8.2
208	8.5	21.2
209	3.6	12.3
210	2.6	8.0
211	6.2	20.5
212	3.3	9.8
213	40.2	129.3
214	55.1	176.6
215	34.5	110.8
301	43.7	142.6
302	37.3	119.0
303	43.0	137.5
304	69.0	217.1

Table 4: Summary of Discharge Points – Fully Developed Pond #		100_{year} 6_{hour} Peak Flow (Q_{100}) cfs
4		87
8		106
7		42 (40 Allowable)
	Total discharge to Petroglyph NM	235 cfs
10	Calle Norteña/ Piedras Marcadas	15

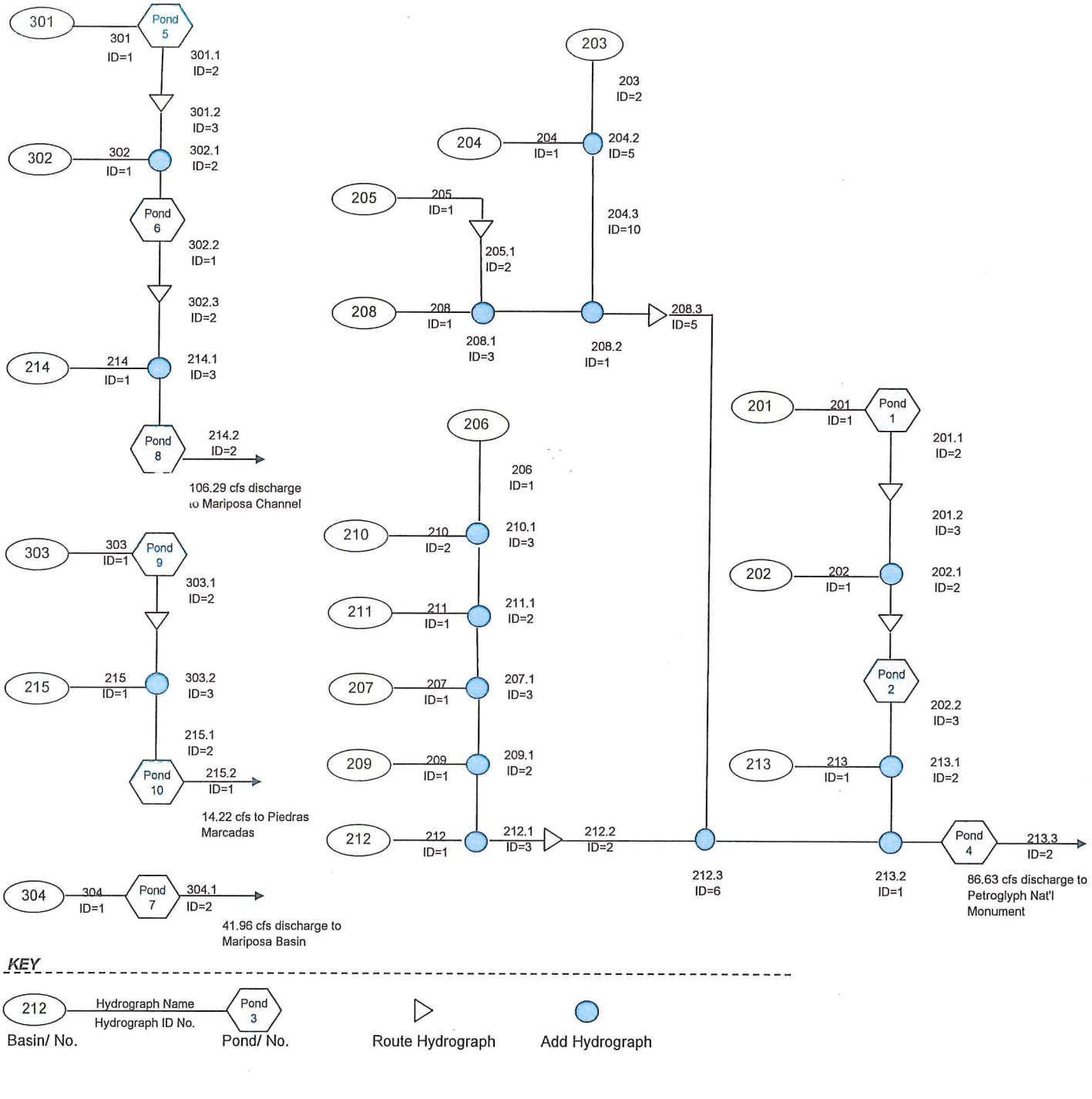
Unit II Proposed Improvement.

The AHYMO discharge from Basin 213 is 130 cfs (See Appendix A). For design purposes for inlets and onsite storm drain, the sub-basin flows, totaling approximately the 130 cfs, are proportionately distributed based on basin areas. See Appendix B for Unit II hydrology and Sub-Basin Boundary Map.

Conclusion

The development of Unit II has been analyzed in this report. The project's design will adhere to the requirements of the approved Drainage Report dated November 2003 and all developed flows in Unit II will be conveyed to Pond 4, discharge through the required water quality standpipe and outfall structure being constructed as part of Unit I, with ultimate discharge to the Petroglyph National Monument. The system is designed to convey existing offsite flows through the site. Off site drainage basins will be required to detain developed flows as future development occurs.

La Cuentista; Hydrologic Model Diagram: Fully Developed Conditions - Revised January 2007



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AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) -                           - VERSION:  1997.02c      RUN DATE (MON/DAY/YR) =01/16/2007
INPUT FILE = C:\AHYMO\P100_24.DAT                                                           USER NO.= AHYMO-C-9803c01UNMLIB-AH

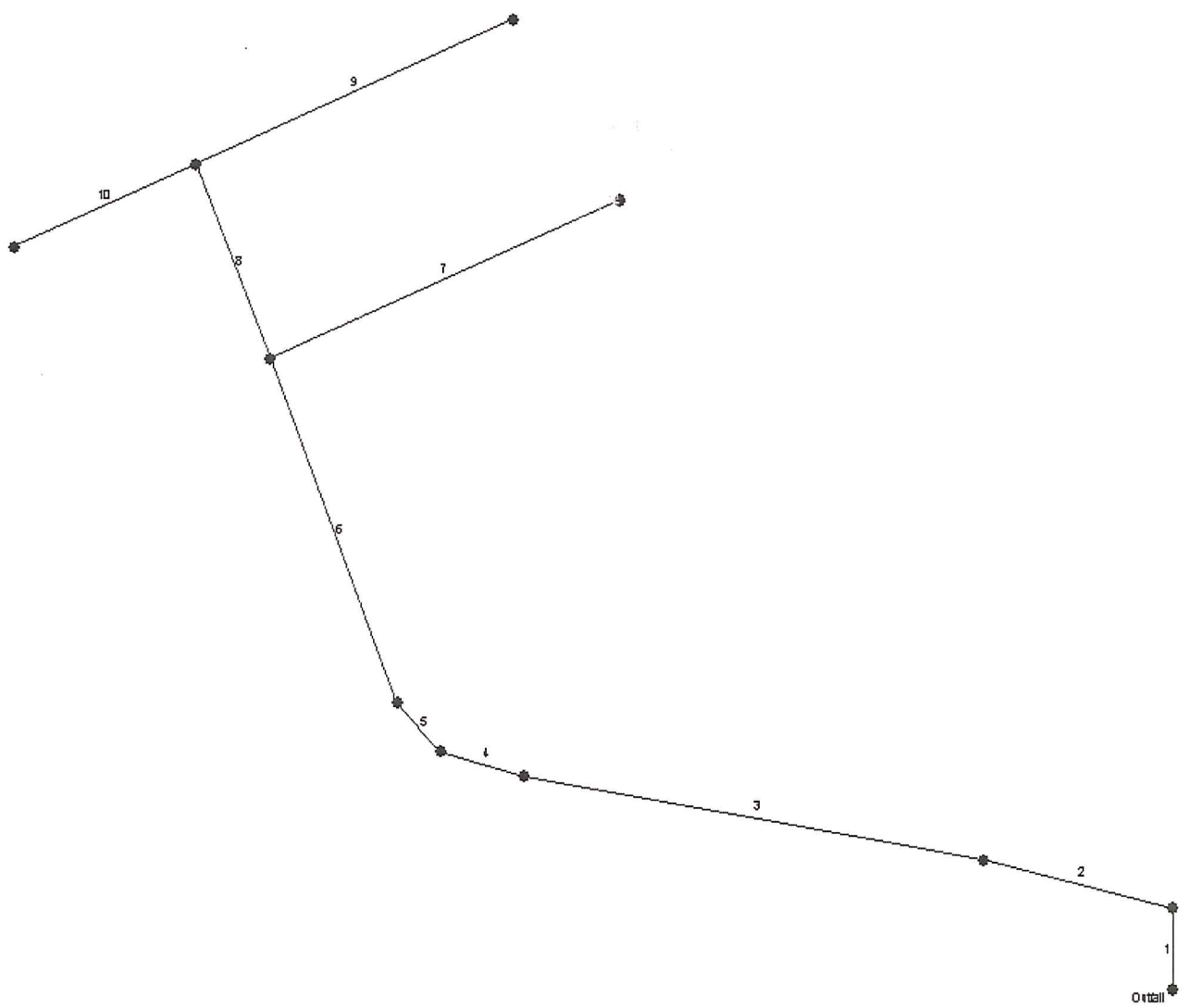
                                   FROM  TO                     PEAK         RUNOFF                  TIME TO    CFS      PAGE =   1
                    HYDROGRAPH      ID   ID        AREA       DISCHARGE      VOLUME      RUNOFF       PEAK      PER
COMMAND           IDENTIFICATION    NO.  NO.      (SQ MI)       (CFS)        (AC-FT)    (INCHES)    (HOURS)    ACRE      NOTATION

START                                                                                                                 TIME=         .00
*S*    1- COMPUTING RAINFALL                                                    ***
RAINFALL   TYPE= 2                                                                                                    RAIN24=     2.660
*S*    2- COMPUTE TP FOR OFFSITE BASIN 301 (SET tp= MIN 0.133 HRS                 ***
*S*    3- COMPUTE HYD FOR BASIN 301, (assume platted to 5 DU/ACRE, %D=50)
COMPUTE NM HYD          301.00     -     1       .06800        142.62        5.767      1.59006     1.500     3.277 PER IMP=    50.00
*S*   4-  Route HYDROGRAPH 301 through POND 5 (0.30/0.52ac surface/bottom, 2.20AF
*S* Historical flow Basin 301 (100% A)= 74.42CFS use 75+/- thru 34" orifice plat
ROUTE RESERVOIR    POND.301.1    1     2       .06800         64.26        5.767      1.59006     1.700     1.477 AC-FT=      1.622
*S*   5- Route POND 5 outflow (BASIN 301) through BASIN 302 via 36"X 1800'RCP
*S*        (24'/1800'= 0.15 slp) Add to basin 302 at pond 6, (#8)
ROUTE MCUNGE            301.20     2     3       .06800         64.25        5.767      1.59027     1.750     1.476 CCODE =        .2
*S*     6- COMPUTE TP FOR BASIN 302 (LET tp= 0.133 MIN)                          ***
*S*     7- COMPUTE HYD FOR BASIN 302 (assume replat to 4 DU/Ac, D=42%, use 45%)
*S*        Historical flow (100% A)= 57.95CFS
COMPUTE NM HYD          302.00     -     1       .05800        119.01        4.693      1.51708     1.500     3.206 PER IMP=    45.00
*S*     8- ADD HYDROGRAPHS 301.2 (ROUTED THROUGH 302) AND 302 - INFLOW TO POND 6
ADD HYD                 302.10   1& 3    2       .12600        164.30       10.460      1.55657     1.500     2.037
*S*     9- ROUTE HYDROGRAPH 302.1 through POND 6 (0.2/0.4AC surf/bottom, 1.5AF st
*S*      Historical flow- 100% A (Basin 301= 74.42)+(Basin 302= 57.95)= 132.37CF
*S*      discharge through 48" RCP w/ 45" orifice plate
ROUTE RESERVOIR    POND.302.2    2     1       .12600        117.19       10.460      1.55658     1.700     1.453 AC-FT=      1.254
*S*    10- Route outflow from POND 6 (BASIN 301 & 302) through
*S*        48"x 2300'RCP (50/2300= 2.2% slp) through Basin 214 TO POND 8
ROUTE MCUNGE            302.30     1     2       .12600        117.10       10.462      1.55684     1.750     1.452 CCODE =        .2
*S*    76- COMPUTE TP FOR BASIN 214 (Let tp= 0.133= Min.)                          ***
*S*    77- COMPUTE HYD FOR BASIN 214
COMPUTE NM HYD          214.00     -     1       .08600        176.58        6.958      1.51708     1.500     3.208 PER IMP=    45.00
*S*    78- ADD HYDROGRAPHS 302.3 AND 214
ADD HYD                 214.10   2& 1    3       .21200        256.75       17.420      1.54071     1.500     1.892
*S*    79- Route HYDROGRAPH 214.1 through POND 8 (1.7/2.2AC surf/btm, 11.3AF stor
ROUTE RESERVOIR    POND.214.2    3     2       .21200        106.29       17.420      1.54071     2.150      .783 AC-FT=      6.213
*S*    11- COMPUTE TP FOR BASIN P-303 (let TP= 0.133 hrs= min)                     ***
*S*    12- COMPUTE HYD FOR BASIN 303 (assume replat to 4 DU/Ac, D=42%, use 45%)
*S*        BASIN 303 Historical flow (100% A)= 75.29CFS
COMPUTE NM HYD          303.00     -     1       .06700        137.50        5.421      1.51708     1.500     3.207 PER IMP=    45.00
*S*    13- ROUTE HYDROGRAPH 303 THROUGH POND 9 (0.3/0.52AC surface/bottom, 2.11AF
*S*        303 Hist. flow= 75.29CFS, discharge through 36" RCP w/ 34" orifice pla
ROUTE RESERVOIR    POND.303.1    1     2       .06700         62.82        5.421      1.51708     1.700     1.465 AC-FT=      1.536
*S*     14- Route outflow from POND 9 (BASIN 303.1) through 36"x 1300'RCP
ROUTE MCUNGE            303.20     2     3       .06700         62.82        5.422      1.51721     1.700     1.465 CCODE =        .2
*S*    81- COMPUTE TP FOR BASIN P-215 (Let tp= 0.133 Min.)                         ***
*S*    82- COMPUTE HYD FOR BASIN P-215
COMPUTE NM HYD          215.00     -     1       .05400        110.81        4.369      1.51708     1.500     3.206 PER IMP=    45.00
*S*    83- ADD HYDROGRAPHS 303.2 AND 215
ADD HYD                 215.10   1& 3    2       .12100        156.91        9.791      1.51715     1.500     2.026
*S*    85- Route HYDROGRAPH 215.1 through POND 10 (1.0/0.7AC surf/btm, 4.65AF sto
ROUTE RESERVOIR    POND.215.2    2     1       .12100         14.22        9.789      1.51696     2.500      .184 AC-FT=      6.835
*S*     15- COMPUTE TP FOR OFFSITE BASIN 304 Let TP= 0.133 hrs= min.)             ***
*S*    16- Compute HYD for BASIN 304 (ex.platting 2.33+/- DU/Acre => 35%D, use 40
```

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	BASIN 304 @ 100% A: Historical flow area= 0.05 sq mi, flow= 41.24cfs									
COMPUTE NM HYD	304.00	-	1	.10800	217.09	8.321	1.44459	1.500	3.141	PER IMP= 40.00
S	17- Route HYDROGRAPH 304 through POND 7 (H=4.0', 0.40/0.25AC surf/bottom,									
S	cap.). 304 historical: 100% A;area= 0.05 sq mi; flow= 41.24cfs;									
S	discharge through 28" orifice plate into 30' RCP									
ROUTE RESERVOIR	POND.304.1	1	2	.10800	41.96	8.321	1.44459	1.950	.607	AC-FT= 4.223
S	23- COMPUTE TP FOR BASIN P-203 (let TP= 0.133= Min.)					***				
S	24- COMPUTE HYD FOR BASIN P-203 (2.5 DU/acre, use D=45)									
COMPUTE NM HYD	203.00	-	2	.00200	4.12	.162	1.51708	1.500	3.218	PER IMP= 45.00
S	31- COMPUTE TP FOR BASIN P-204 (Let tp= 0.133= Min.)					***				
COMPUTE NM HYD	204.00	-	1	.00800	16.43	.647	1.51708	1.500	3.209	PER IMP= 45.00
S	84- ADD HYDROGRAPHS 203 AND 204									
ADD HYD	204.20	1& 2	5	.01000	20.55	.809	1.51703	1.500	3.211	
S	33- Route HYDROGRAPH 204.2 through BASIN 208 IN 24'X570 LF PIPE									
ROUTE MCUNGE	204.30	5	10	.01000	20.45	.809	1.51741	1.500	3.196	CCODE = .2
S	34- COMPUTE TP FOR BASIN P-205 (Let tp= 0.133= Min.)					***				
S	35- COMPUTE HYD FOR BASIN P-205 (assume 4 DU/Acre=> 42%D, use 45%D)									
COMPUTE NM HYD	205.00	-	1	.01400	28.70	1.133	1.51708	1.500	3.203	PER IMP= 45.00
S	36- ROUTE HYDROGRAPH 205 THROUGH PIPE TO CONFLUENCE W/ BASIN 208									
ROUTE MCUNGE	205.10	1	2	.01400	28.31	1.133	1.51746	1.500	3.160	CCODE = .2
S	45- COMPUTE TP FOR BASIN P-208 (Let tp= 0.133= Min.)					***				
COMPUTE NM HYD	208.00	-	1	.01300	21.22	.725	1.04601	1.500	2.550	PER IMP= 20.00
S	47- ADD HYDROGRAPHS 205.1 and 208									
ADD HYD	208.10	1& 2	3	.02700	49.53	1.858	1.29043	1.500	2.866	
S	48- ADD HYDROGRAPHS 204.3 AND 208.1									
ADD HYD	208.20	3&10	1	.03700	69.98	2.667	1.35176	1.500	2.955	
*S*51-	ROUTE ADDED FLOWS AT HYDROGRAPH 208.2 through PIPE TO POND 4									
ROUTE MCUNGE	208.30	1	5	.03700	68.50	2.668	1.35209	1.500	2.893	CCODE = .2
S	37- COMPUTE TP FOR BASIN P-206 (Let tp= 0.133= Min.)					***				
S	38- COMPUTE HYD FOR BASIN P-206 (assume 4 DU/Acre=> 42%D, use 45%D)									
COMPUTE NM HYD	206.00	-	1	.00700	14.36	.566	1.51708	1.500	3.205	PER IMP= 45.00
S	59- COMPUTE TP FOR BASIN P-210 (let tp=0.133= Min.)					***				
S	60- COMPUTE HYD FOR BASIN P-210 (3.0 DU/acre=> 35%D, use 40%D)									
COMPUTE NM HYD	210.00	-	2	.00400	8.04	.308	1.44459	1.500	3.141	PER IMP= 40.00
S	- ADD HYDROGRAPHS 206 AND 210									
ADD HYD	210.10	1& 2	3	.01100	22.40	.875	1.49067	1.500	3.182	
S	62- Compute TP for BASIN P-211 (let tp=0.133= Min.)					***				
S	63- COMPUTE HYD FOR BASIN P-211 (3.7 DU/acre=> 40%D, use 45%D)									
COMPUTE NM HYD	211.00	-	1	.01000	20.53	.809	1.51708	1.500	3.208	PER IMP= 45.00
S	64- ADD HYDROGRAPHS 210.1 AND 211									
ADD HYD	211.10	1& 3	2	.02100	42.93	1.684	1.50323	1.500	3.194	
S	41- COMPUTE TP FOR BASIN P-207 (Let tp= 0.133= Min.)					***				
S	42- COMPUTE HYD FOR BASIN P-207 (actual 3.7DU/acre, assume 4 DU/Acre=>									
COMPUTE NM HYD	207.00	-	1	.00400	8.21	.324	1.51708	1.500	3.208	PER IMP= 45.00
S	- ADD HYDROGRAPHS 211.1 AND 207									
ADD HYD	207.10	1& 2	3	.02500	51.14	2.007	1.50544	1.500	3.196	
S	52- Compute TP for BASIN P-209 (Let tp=0.133= Min.)					***				
S	53- Compute HYD for BASIN 209 (3.86du/acre=> 41%D, use 45%D)									
COMPUTE NM HYD	209.00	-	1	.00600	12.33	.485	1.51708	1.500	3.210	PER IMP= 45.00
S	- ADD HYDROGRAPHS 207.1 AND 209									
ADD HYD	209.10	1& 3	2	.03100	63.47	2.493	1.50768	1.500	3.199	
S	66- COMPUTE TP FOR BASIN P-212 (Let TP=0.133= Min.)					***				

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	67- Computing HYD for BASIN P-212 (2.5 DU/acre=> 30%D, use 35%D)									
COMPUTE NM HYD	212.00	-	1	.00500	9.81	.366	1.37175	1.500	3.066	PER IMP= 35.00
S	68- ADD HYDROGRAPHS 209.1 AND 212									
ADD HYD	212.10	2& 1	3	.03600	73.28	2.858	1.48879	1.500	3.181	
S	69 ROUTE HYDROGRAPH 212.1 down Kimmick in 48"x 175' RCP to POND 4									
ROUTE MCUNGE	212.20	3	2	.03600	73.28	2.858	1.48879	1.500	3.181	CCODE = .0
S	70- Add HYDROGRAPHS 212.2 TO 208.3 (At POND 4)									
ADD HYD	212.30	2& 5	6	.07300	141.78	5.527	1.41950	1.500	3.035	
S	19- COMPUTE TP FOR BASIN 201 (let TP= 0.133= Min.)						***			
S	20- COMPUTE HYD FOR BASIN P-201 (assume 4 DU/Acre=> 42%D, use 45%D)									
COMPUTE NM HYD	201.00	-	1	.03500	71.82	2.832	1.51708	1.500	3.206	PER IMP= 45.00
S	21- Route HYDROGRAPH 201 through POND 1 (0.5/0.25AC surf/btm, 1.65AF stor.									
S	discharge 15.21cfs through 15" orifice plate route to POND 2									
ROUTE RESERVOIR	POND.201.1	1	2	.03500	13.29	2.832	1.51707	2.000	.593	AC-FT= 1.474
S	22- Route outflow from POND 1 (BASIN 201) in 24"PIPE through BASIN 202 TO									
s	NEW POND #2 IN BASIN 202									
ROUTE MCUNGE	201.20	2	3	.03500	13.28	2.830	1.51601	2.050	.593	CCODE = .2
S	27- COMPUTE TP FOR BASIN P-202 (set tp= 0.133= Min.)						***			
COMPUTE NM HYD	202.00	-	1	.05500	112.86	4.450	1.51708	1.500	3.206	PER IMP= 45.00
S	28A- Add HYDROGRAPHS 201.2 and 202									
ADD HYD	202.10	1& 3	2	.09000	120.52	7.280	1.51665	1.500	2.092	
S	29- Route HYDROGRAPH 202.1 Through POND 2 (0.77/0.5AC surf/btm, 3.50AF st									
S	discharge 15.21cfs through 15" orifice plate into Rosa Parks System									
ROUTE RESERVOIR	POND.202.2	2	3	.09000	14.73	7.280	1.51665	2.550	.256	AC-FT= 3.513
S	56A- Compute TP for BASIN 213 (Let tp=0.133= Min.)						***			
S	56B- COMPUTE HYD FOR BASIN 213 (3.86du/acre=> 41%D, use 45%D)									
COMPUTE NM HYD	213.00	-	1	.06300	129.28	5.097	1.51708	1.500	3.206	PER IMP= 45.00
S	56C- Add HYDROGRAPH 202.2 (outflow from POND 2) and 213									
ADD HYD	213.10	1& 3	2	.15300	138.12	12.377	1.51682	1.500	1.410	
S	56D- Add HYDROGRAPHS 212.3 and 213.1 (INFLOW TO POND 4)									
ADD HYD	213.20	2& 6	1	.22600	279.89	17.904	1.48538	1.500	1.935	
S	57- Route BASIN 213.1 through POND 4									
ROUTE RESERVOIR	POND.213.3	1	2	.22600	86.63	17.904	1.48538	1.850	.599	AC-FT= 4.249
FINISH										

Hydraflow Plan View



LA CUENTISTA UNIT II - SD	No. Lines: 10	01-17-2007

Hydraulic Grade Line Computations

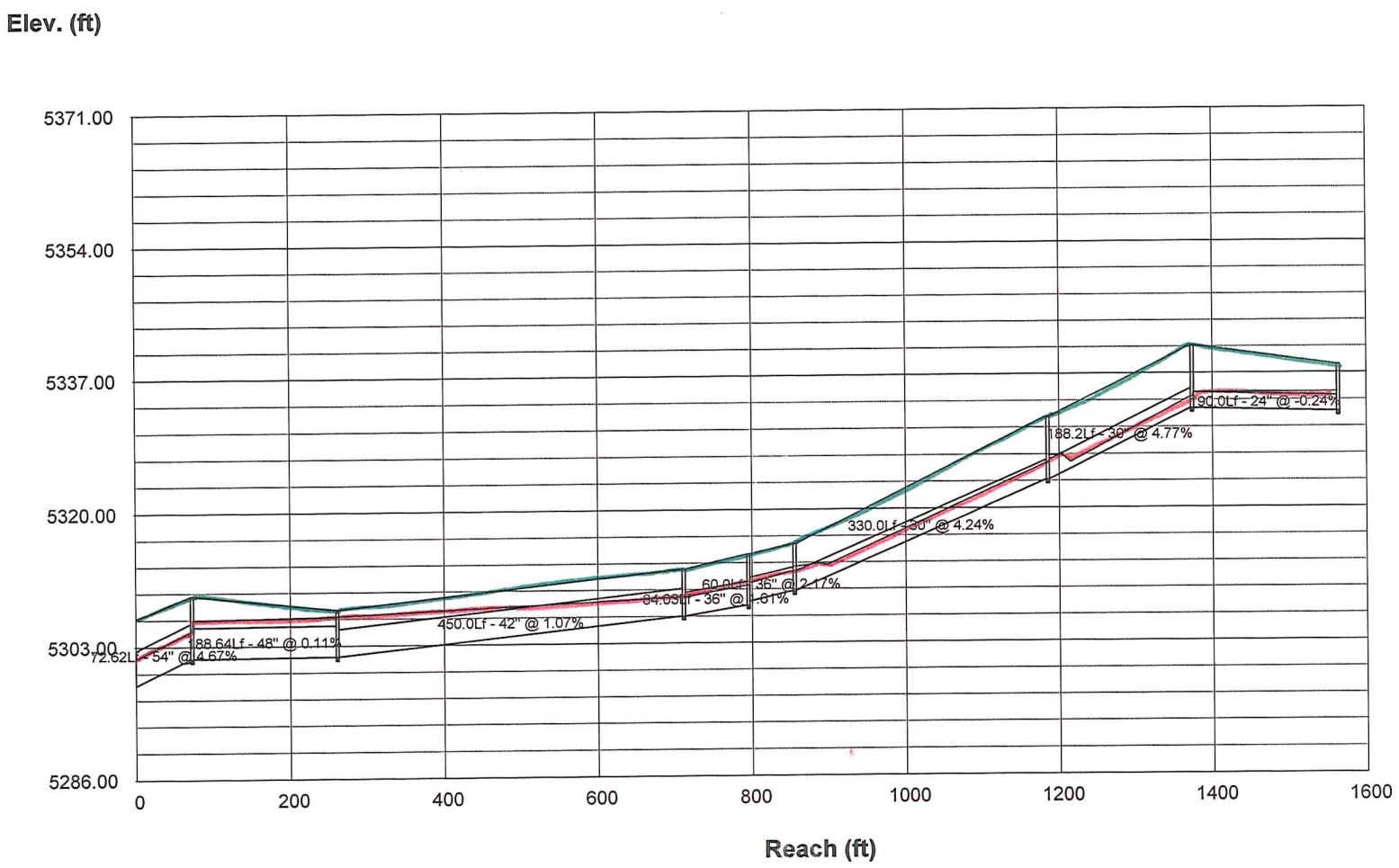
Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
	(in)	(cfs)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	(ft)	Invert elev (ft)	HGL elev (ft)	Depth (ft)	Area (sqft)	Vel (ft/s)	Vel head (ft)	EGL elev (ft)	Sf (%)	Ave Sf (%)	Enrgy loss (ft)	(K)	(ft)
1	54	142.0	5298.00	5301.42	3.42	12.96	10.95	1.87	5303.28	0.609	72.6	5301.39	5304.81	3.42**	12.96	10.95	1.87	5306.67	0.609	0.609	n/a	0.98	1.83
2	48	63.00	5301.39	5306.28	4.00	12.56	5.01	0.39	5306.67	0.192	189	5301.59	5306.65	4.00	12.57	5.01	0.39	5307.04	0.192	0.192	0.363	0.15	0.06
3	42	63.00	5301.59	5306.71	3.50	9.62	6.55	0.67	5307.37	0.392	450	5306.42	5308.85	2.43**	7.13	8.83	1.21	5310.06	0.571	0.482	n/a	0.15	0.18
4	36	63.00	5306.42	5308.85	2.43	6.14	10.27	1.64	5310.49	0.911	84.0	5307.77	5310.30	2.53**	6.36	9.91	1.53	5311.83	0.850	0.881	n/a	0.57	n/a
5	36	63.00	5308.27	5310.59	2.32	5.87	10.74	1.79	5312.38	1.002	60.0	5309.57	5312.10	2.53**	6.36	9.91	1.53	5313.63	0.850	0.926	n/a	0.43	n/a
6	30	39.00	5309.57	5312.64	2.50	4.91	7.95	0.98	5313.63	0.905	330	5323.56	5325.65 j	2.09**	4.38	8.91	1.23	5326.88	0.876	0.890	n/a	1.00	1.23
7	24	10.00	5323.56	5326.72	2.00	3.14	3.18	0.16	5326.88	0.196	365	5324.17	5327.44	2.00	3.14	3.18	0.16	5327.59	0.195	0.196	0.713	1.00	0.16
8	30	18.00	5323.56	5326.67	2.50	4.91	3.67	0.21	5326.88	0.193	188	5332.53	5333.95 j	1.42**	2.87	6.27	0.61	5334.56	0.509	0.351	n/a	1.00	0.61
9	24	16.00	5332.53	5334.53	2.00*	3.14	5.09	0.40	5334.93	0.501	332	5333.00	5336.19	2.00	3.14	5.09	0.40	5336.60	0.500	0.501	1.663	1.00	0.40
10	24	2.00	5332.53	5334.55	2.00	3.14	0.64	0.01	5334.56	0.008	190	5332.07	5334.57	2.00	3.14	0.64	0.01	5334.57	0.008	0.008	0.015	1.00	0.01

LA CUENTISTA UNIT II - SD | Number of lines: 10 | Run Date: 01-17-2007

Notes: * Normal depth assumed.; ** Critical depth.; j-Line contains hyd. jump.

Storm Sewer Profile

Proj. file: ONSITE LA CUENTISTA II-SD_W_UNIT II.stm



Storm Sewer Summary Report

Line No.	Line ID	Flow rate (cfs)	Line size (in)	Line length (ft)	Invert EL Dn (ft)	Invert EL Up (ft)	Line slope (%)	HGL down (ft)	HGL up (ft)	Minor loss (ft)	HGL Junct (ft)	Dns line No.
1		142.0	54 c	72.6	5298.00	5301.39	4.668	5301.42	5304.81	1.83	5304.81	End
2		63.00	48 c	188.6	5301.39	5301.59	0.106	5306.28*	5306.65*	0.06	5306.71	1
3		63.00	42 c	450.0	5301.59	5306.42	1.073	5306.71	5308.85	0.18	5308.85	2
4		63.00	36 c	84.0	5306.42	5307.77	1.607	5308.85	5310.30	n/a	5310.30	3
5		63.00	36 c	60.0	5308.27	5309.57	2.166	5310.59	5312.10	n/a	5312.10	4
6		39.00	30 c	330.0	5309.57	5323.56	4.239	5312.64	5325.65	n/a	5325.65 j	5
7		10.00	24 c	364.6	5323.56	5324.17	0.167	5326.72*	5327.44*	0.16	5327.59	6
8		18.00	30 c	188.2	5323.56	5332.53	4.766	5326.67	5333.95	n/a	5333.95 j	6
9		16.00	24 c	332.2	5332.53	5333.00	0.142	5334.53*	5336.19*	0.40	5336.60	8
10		2.00	24 c	190.0	5332.53	5332.07	-0.242	5334.55*	5334.57*	0.01	5334.57	8

LA CUENTISTA UNIT II - SD | Number of lines: 10 | Run Date: 01-17-2007

NOTES: c = cir; e = ellip; b = box; Return period = 100 Yrs. ; *Surcharged (HGL above crown). ; j - Line contains hyd. jump.

Drainage Report
ADDENDUM
for
LA CUENTISTA
SUBDIVISION, UNIT II

DECEMBER 2014

Addendum to
Drainage report for
La Cuentista
Subdivision Unit II
January 2007

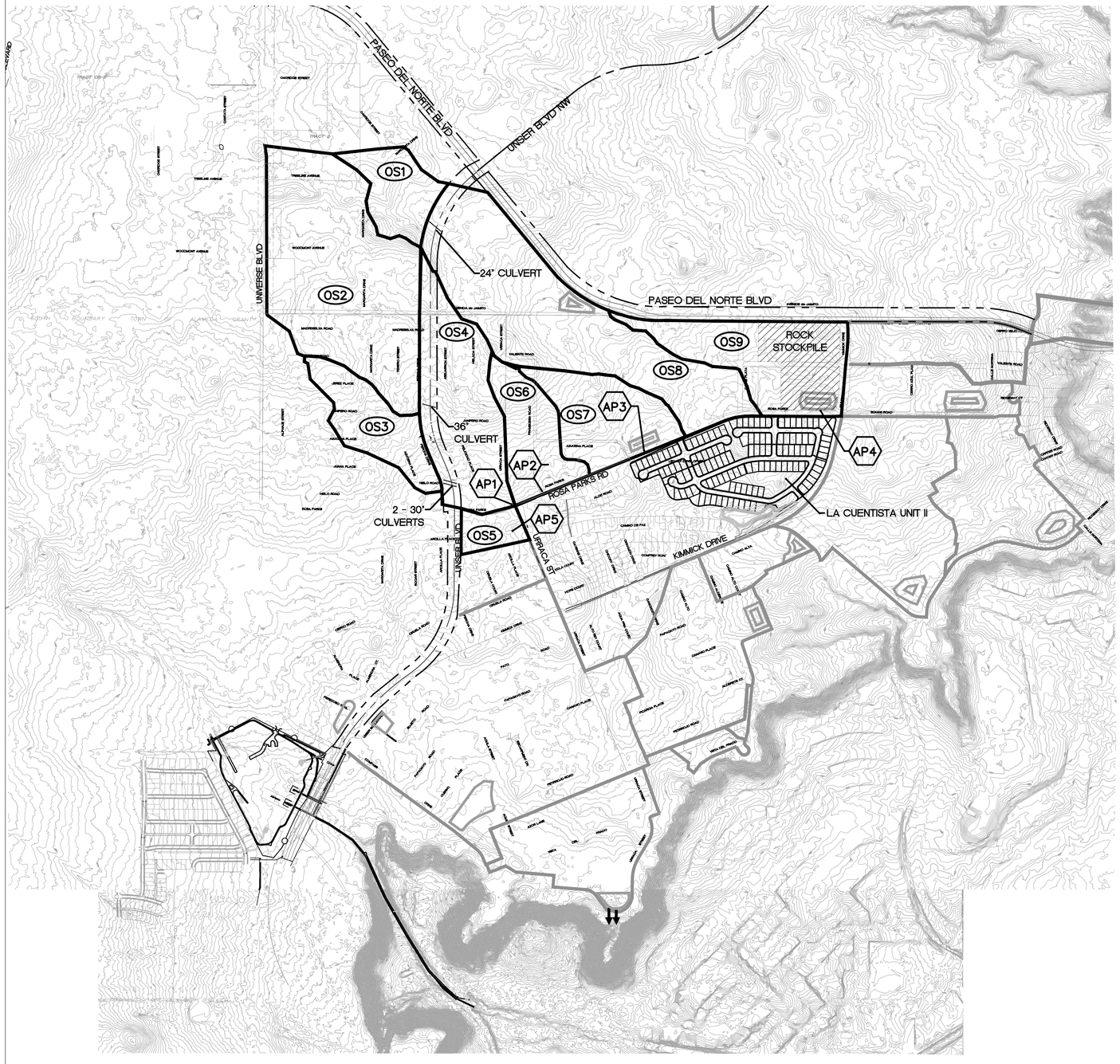
A Supplement to the
Drainage Report for
La Cuentista Subdivision
Date: November 2003

Prepared by:

Wilson & Company, Inc.
4900 Lang Avenue NE
Albuquerque, New Mexico 87109
(505) 348-4000
(505) 348-4072

December 2014
Wilson & Company File No: 14-600-089-00

WILSON &COMPANY



ANALYSIS POINT	FLOW (CFS)
AP1	100
AP2	24
AP3	30
AP4	99
AP5	7

	AREA (Acres)	LT A (%)	LT B (%)	LT C (%)	LT D (%)	Q (cfs)	V (fps)
OS1	14.74 ±	90	0	10	0	18	0.52
OS2	73.15 ±	90	0	10	0	59	2.59
OS3	19.00 ±	90	0	10	0	20	0.67
OS4	38.80 ±	80	0	10	10	55	1.87
OS5	5.91 ±	90	0	10	0	7.0	0.21
OS6	18.80 ±	90	0	10	0	24	0.67
OS7	24.56 ±	90	0	10	0	30	0.87
OS8	71.77 ±	86	0	10	4	52	2.91
OS9	33.91 ±	45	0	55	0	54	1.75

N

GRAPHIC SCALE

600 0 300 600 1200 2400

(IN FEET)
1 inch = 600 ft.

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CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

LA CUENTISTA UNIT II
DRAINAGE REPORT ADDENDUM

EXISTING CONDITIONS MAP

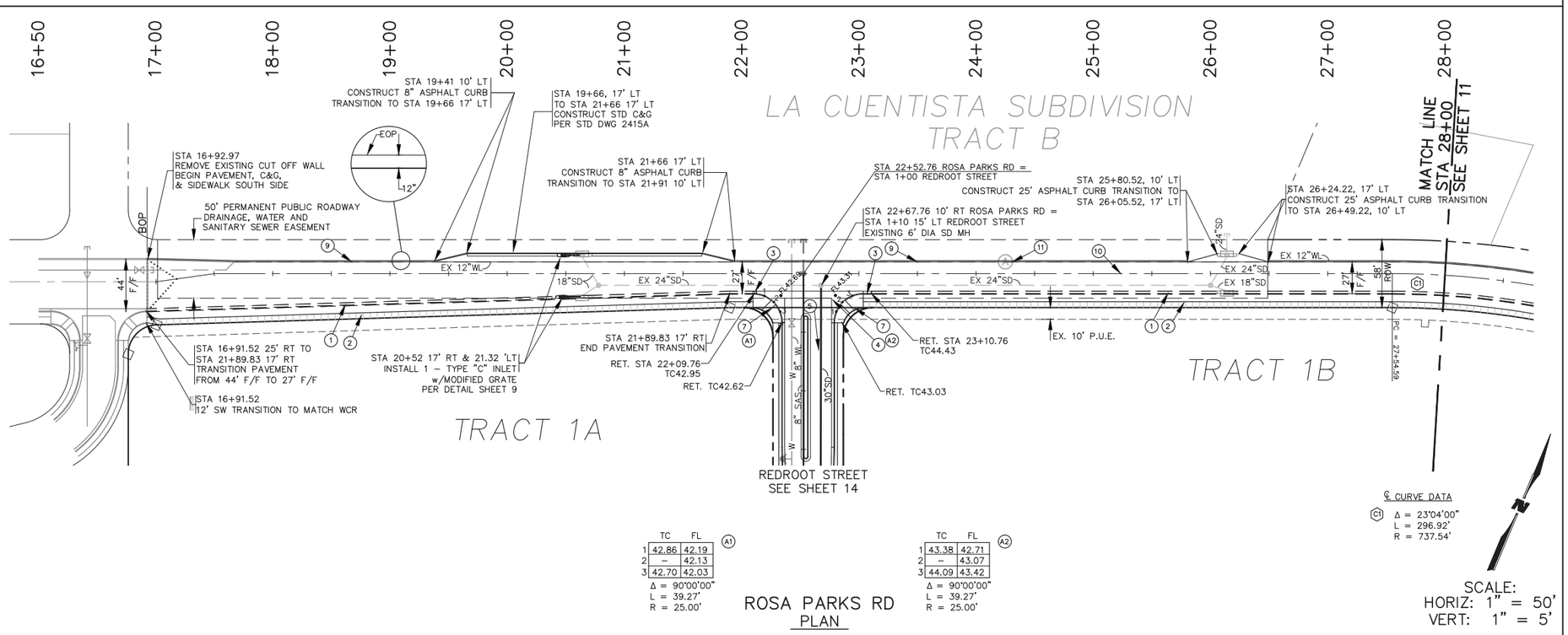
CPN 709786 | DRAWN: KIS DESIGN: DSA | PLATE 1

M:\MSD\1460008900\DOCS\REPORTS\Drainage Report\Exhibits\PLATE 1.dwg 12/19/2014 8:53:21 AM MST

WCI #1460008900
DECEMBER 2014

AHYMO PROGRAM SUMMARY TABLE (AHYMO_97) - - VERSION: 1997.02c RUN DATE (MON/DAY/YR) =12/19/2014
INPUT FILE = C:\BNDAHY~1\LCEX10~1.DAT USER NO.= AHYMO-C-9803c01UNMLIB-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	PAGE = 1 NOTATION
START										TIME= .00
RAINFALL TYPE= 1										RAIN6= 2.170
COMPUTE NM HYD	2.00	-	2	.11430	59.22	2.594	.42560	1.600	.810	PER IMP= .00
COMPUTE NM HYD	3.00	-	3	.02970	20.39	.674	.42560	1.533	1.073	PER IMP= .00
*S ADD BASINS OS2 AND OS3										
ADD HYD	OS3.1	3& 2	32	.14400	77.99	3.269	.42560	1.600	.846	
*S*** ROUTE BASINS OS2 AND OS3 THRU BASIN OS4										
ROUTE MCUNGE	33.10	32	33	.14400	76.86	3.252	.42344	1.767	.834	CCODE = .1
COMPUTE NM HYD	4.00	-	4	.06060	55.34	1.869	.57839	1.533	1.427	PER IMP= 10.00
*S*** ADD BASIN OS4 - ANALYSIS POINT 1 **********										
ADD HYD	OS4.1	4&33	3	.20460	100.11	5.121	.46933	1.733	.764	
*S*** - ANALYSIS POINT 2 **********										
COMPUTE NM HYD	6.00	-	6	.02938	23.78	.667	.42560	1.533	1.265	PER IMP= .00
*S*** - ANALYSIS POINT 3 **********										
COMPUTE NM HYD	7.00	-	7	.03838	30.45	.871	.42560	1.533	1.240	PER IMP= .00
COMPUTE NM HYD	1.00	-	1	.02300	17.71	.522	.42560	1.533	1.203	PER IMP= .00
*S*** ROUTE BASINS OS1 THRU BASIN OS8										
ROUTE MCUNGE	OS8	1	5	.02300	16.00	.502	.40952	2.633	1.087	CCODE = .1
COMPUTE NM HYD	108.00	-	8	.11220	51.85	2.912	.48671	1.667	.722	PER IMP= 4.00
*S*ADD BASIN OS1 AND OS8										
ADD HYD	OS8.1	5& 8	1	.13520	51.85	3.415	.47358	1.667	.599	
*S										
COMPUTE NM HYD	9.00	-	2	.05300	53.70	1.750	.61924	1.533	1.583	PER IMP= .00
*S*ADD BASIN OS1, OS8 AND OS9 -ANALYSIS POINT 4 **********										
ADD HYD	OS9.1	1& 2	3	.18820	98.66	5.165	.51460	1.600	.819	
*S*** - ANALYSIS POINT 5 **********										
COMPUTE NM HYD	5.00	-	5	.00920	7.45	.209	.42560	1.533	1.266	PER IMP= .00
FINISH										



TC	FL	
1	42.86	42.19
2	–	42.13
3	42.70	42.03

A1
Δ = 90°00'00"
L = 39.27'
R = 25.00'

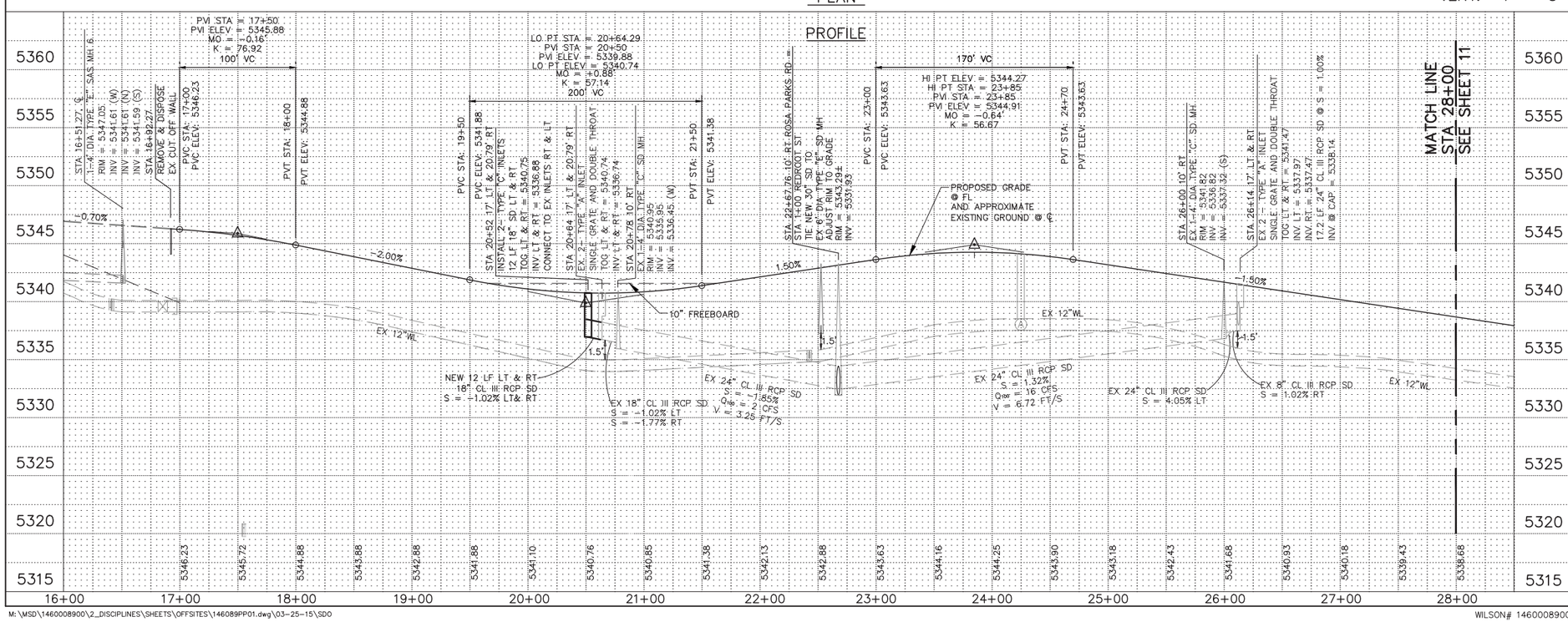
TC	FL	
1	43.38	42.71
2	–	43.07
3	44.09	43.42

A2
Δ = 90°00'00"
L = 39.27'
R = 25.00'

℄ CURVE DATA
C1 Δ = 23°04'00"
L = 296.92'
R = 737.54'

ROSA PARKS RD
PLAN

SCALE:
HORIZ: 1" = 50'
VERT: 1" = 5'



NOTES

SEE TYPICAL ROADWAY SECTION A1 SHEET 6

ADJUST ALL SD & SAS MH RIMS TO GRADE PER STD DWG 2111

(1) EXISTING STANDARD CURB & GUTTER

(2) CONSTRUCT 5' SIDEWALK PER STD DWG 2430 (NON-DEFERRED)

(3) 22+09.76 17' RT REMOVE AND DISPOSE 3 LF EXISTING C&G INCIDENTAL TO PROJECT
23+03.76 17' RT CONSTRUCT 7 LF OF STD C&G PER STD DWG 2415A

(4) CONSTRUCT 6' VALLEY GUTTER PER STD DWG 2420

(5) 50' CROWN REDUCTION PER STD DWG 2401

(6) CONSTRUCT 5' SIDEWALK PER STD DWG 2430 (DEFERRED)

(7) CONSTRUCT WHEELCHAIR RAMP PER STD DWG 2441 CASE II, SEE TYP DETAIL, SHEET 6

(8) NOT USED

(9) 4" SOLID WHITE STRIPE SEE SHEET 7

(10) 4" DOUBLE YELLOW STRIPE

(11) PAVE AROUND EX AIR RELEASE VALVE ADJUST TO GRADE AS NEEDED

ALL PROFILE ELEVATIONS ARE FLOWLINE (FL) ELEVATIONS RIGHT (RT) AND LEFT (LT) UNLESS OTHERWISE NOTED

CONSTRUCT ALL 8" ASPHALT CURB PER STD DWG 2415B

CONSTRUCT ALL STD C&G PER STD DWG 2415A

NOTE:
NON-DEFERRED SIDEWALK
STA 16+92.27 RT TO STA 22+12.76 RT
STA 23+08.76 RT TO STA 32+67.52 RT

AS-BUILT INFORMATION

	CONTRACTOR	DATE
	WORK STAKED BY	
	INSPECTOR'S NOTES POSTPONE BY	DATE
	FIELD VERIFICATION BY	DATE
	MARK-UP CORRECTED BY	DATE
	RECORDED BY	DATE

MICRO-FILM INFORMATION

BENCH MARKS
ACS 1 ¼" ALUMINUM DISK STAMPED
"ACS BM 5-D11", LOCATED 72' ± ESE OF THE CENTER OF THE CUL-DE-SAC AT THE SOUTH END OF RIDGEWAY DR. NW, EPOXIED TO LAVA ROCK IN OUTCROPPING
ELEVATION = 5270.087 FT.
NAVD 88 U.S. FEET

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE
	AERIAL MAPPING,	WCI 05/01
	BOUNDARY,	WCI 06/01
	BOUNDARY,	WCI 10/01

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	

WILSON & COMPANY, ENGINEERS & ARCHITECTS

DESIGNED BY	KIS	DATE JAN 2015
DRAWN BY	KIS/SO	DATE JAN 2015
CHECKED BY	DSA	DATE JAN 2015

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

LA CUENTISTA SUBDIVISION – UNIT II
PAVING PLAN & PROFILE
ROSA PARKS ROAD STA 16+92.27 TO STA 28+00

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

City Project No.	Zone Map No.	Drawing	Sheet
709786	C-10, C-11	10	17

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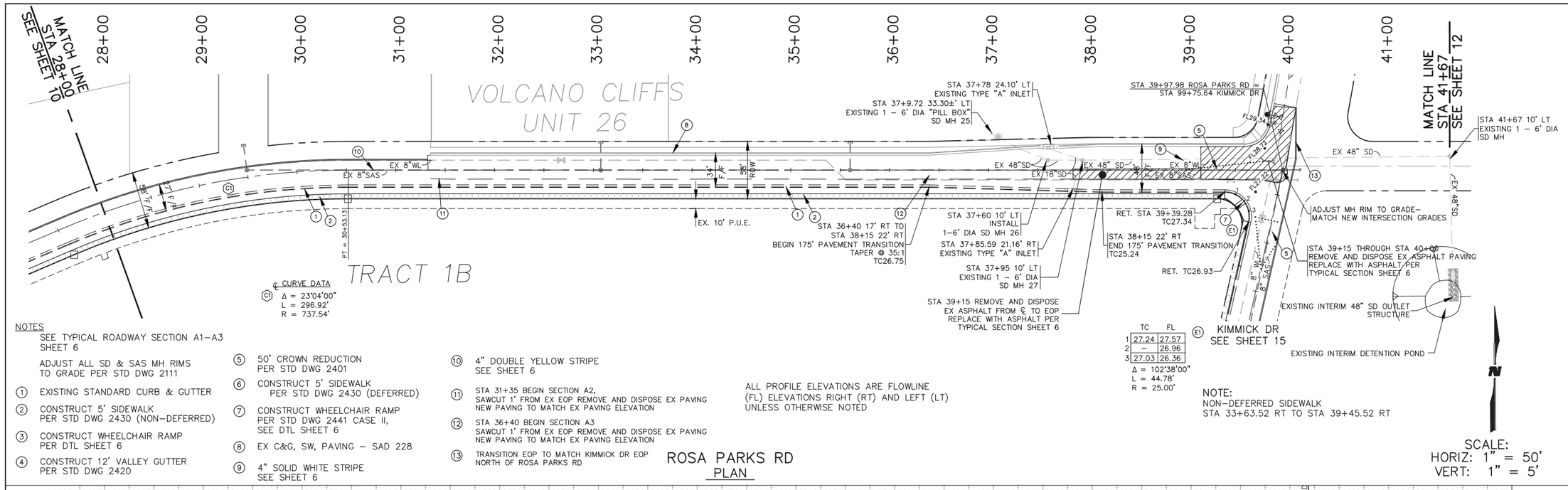
WILSON# 1460008900
JANUARY 2015

WILSON & COMPANY



NOTES

SEE TYPICAL ROADWAY SECTION A1–A3 SHEET 6

ADJUST ALL SD & SAS MH RIMS TO GRADE PER STD DWG 2111

① EXISTING STANDARD CURB & GUTTER

② CONSTRUCT 5' SIDEWALK PER STD DWG 2430 (NON–DEFERRED)

③ CONSTRUCT WHEELCHAIR RAMP PER DTL SHEET 6

④ CONSTRUCT 12' VALLEY GUTTER PER STD DWG 2420

⑤ 50' CROWN REDUCTION PER STD DWG 2401

⑥ CONSTRUCT 5' SIDEWALK PER STD DWG 2430 (DEFERRED)

⑦ CONSTRUCT WHEELCHAIR RAMP PER STD DWG 2441 CASE II, SEE DTL SHEET 6

⑧ EX C&G, SW, PAVING – SAD 228

⑨ 4" SOLID WHITE STRIPE SEE SHEET 6

⑩ 4" DOUBLE YELLOW STRIPE SEE SHEET 6

⑪ STA 31+35 BEGIN SECTION A2, SAWCUT 1' FROM EX EOP REMOVE AND DISPOSE EX PAVING NEW PAVING TO MATCH EX PAVING ELEVATION

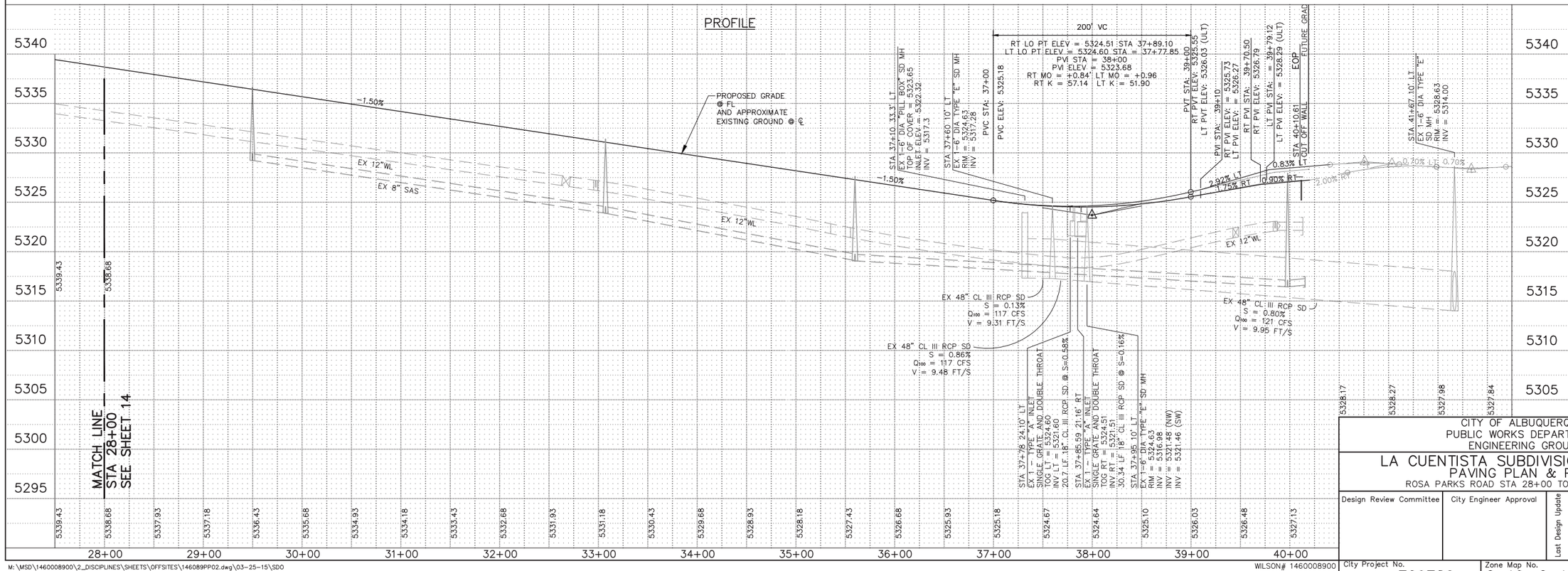
⑫ STA 36+40 BEGIN SECTION A3 SAWCUT 1' FROM EX EOP REMOVE AND DISPOSE EX PAVING NEW PAVING TO MATCH EX PAVING ELEVATION

⑬ TRANSITION EOP TO MATCH KIMMICK DR EOP NORTH OF ROSA PARKS RD

ALL PROFILE ELEVATIONS ARE FLOWLINE (FL) ELEVATIONS RIGHT (RT) AND LEFT (LT) UNLESS OTHERWISE NOTED

ROSA PARKS RD
PLAN

PROFILE



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WILSON# 1460008900
JANUARY 2015

AS–BUILT INFORMATION
CONTRACTOR
CONSTRUCTION STAKED BY — DATE
INSPECTOR'S NOTATIONS BY — DATE
FIELD VERIFICATION BY — DATE
DRAWING CORRECTED BY — DATE
MICRO–FILM INFORMATION
RECORDED BY — DATE
NO.

BENCH MARKS
ACS 1 ¾" ALUMINUM DISK STAMPED "ACS BM 5–D11", LOCATED 72' ± ESE OF THE CENTER OF THE CUL–DE–SAC AT THE SOUTH END OF RIDGEWAY DR. NW, EPOXIED TO LAVA ROCK IN OUTCROPPING
ELEVATION = 5270.087 FT.
NAVD 88 U.S. FEET

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE
	AERIAL MAPPING, WCI	05/01
	BOUNDARY, WCI	06/01
	BOUNDARY, WCI	10/01

ENGINEER'S SEAL

NO.	DATE	REMARKS
		REVISIONS

WILSON & COMPANY, ENGINEERS & ARCHITECTS

	BY	DATE
DESIGNED BY	KIS	DEC 2004
DRAWN BY	VKL	DEC 2004
CHECKED BY	DSA	DEC 2004

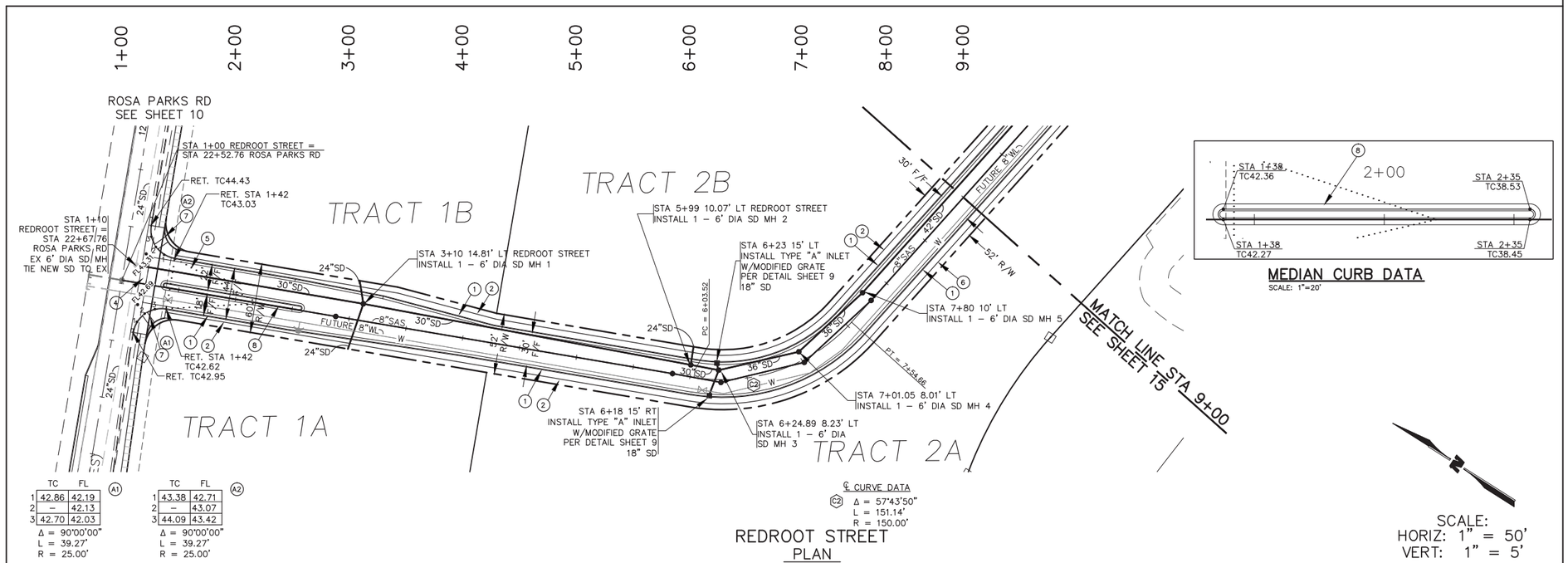
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

LA CUENTISTA SUBDIVISION – UNIT II
PAVING PLAN & PROFILE
ROSA PARKS ROAD STA 28+00 TO STA 39+97.98

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

City Project No.	Zone Map No.	Drawing	Sheet
709786	C–10, C–11	11	17

WILSON & COMPANY

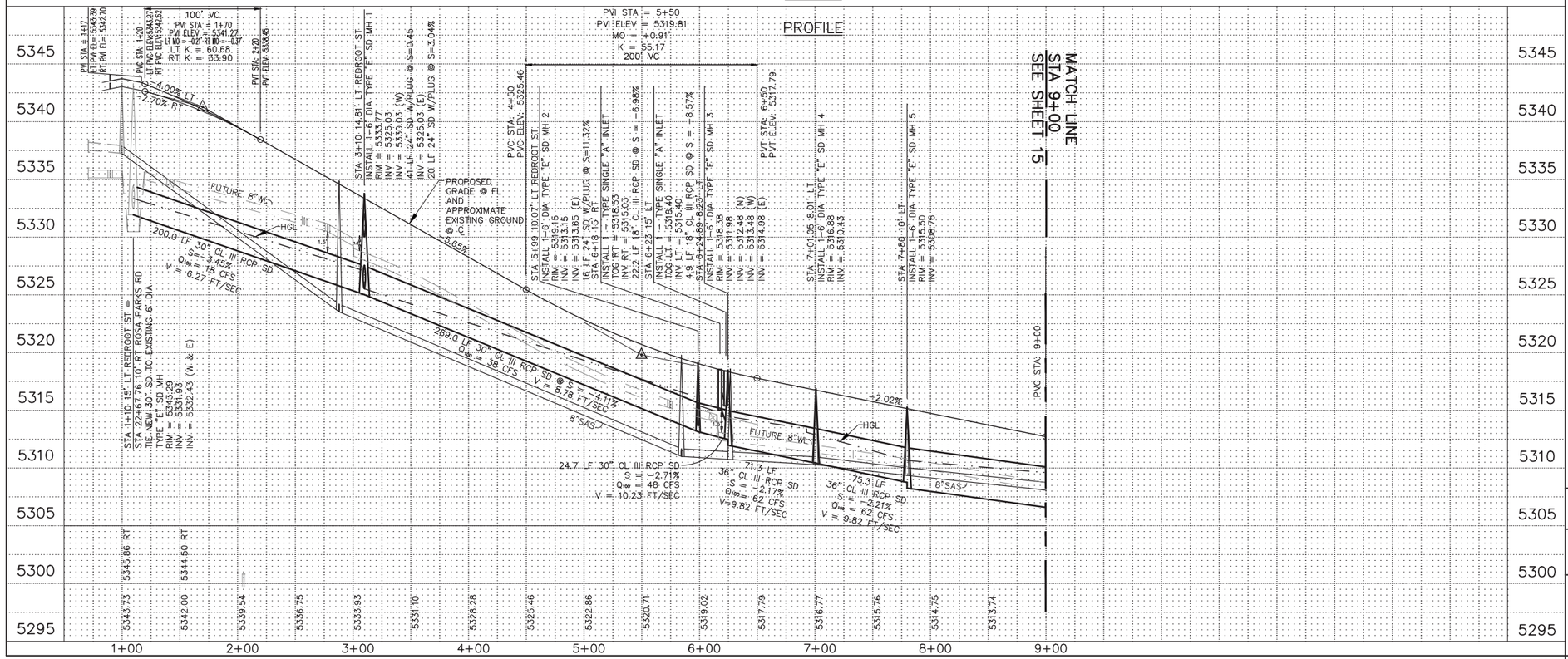


	TC	FL
1	42.86	42.19
2	–	42.13
3	42.70	42.03

Δ = 90°00'00"
L = 39.27'
R = 25.00'

	TC	FL
1	43.38	42.71
2	–	43.07
3	44.09	43.42

Δ = 90°00'00"
L = 39.27'
R = 25.00'



NOTES

SEE TYPICAL ROADWAY SECTION E SHEET 6

ADJUST ALL SD & SAS MH RIMS TO GRADE PER STD DWG 2111

1. CONSTRUCT STANDARD CURB & GUTTER PER STD DWG 2415A
2. CONSTRUCT 5' SIDEWALK PER STD DWG 2430 (NON-DEFERRED)
3. CONSTRUCT WHEELCHAIR RAMP TYPE F PER DTL SHEET 6
4. CONSTRUCT 6' VALLEY GUTTER PER STD DWG 2420
5. 78' CROWN REDUCTION PER STD DWG 2401
6. CONSTRUCT 5' SIDEWALK PER STD DWG 2430 (DEFERRED)
7. CONSTRUCT WHEELCHAIR RAMP PER STD DWG 2441 CASE II, SEE DTL SHEET 6
8. INSTALL MEDIAN C&G PER STD DWG 2415A

ALL PROFILE ELEVATIONS ARE FLOWLINE (FL) ELEVATIONS RIGHT (RT) AND LEFT (LT) UNLESS OTHERWISE NOTED

AS-BUILT INFORMATION

CONTRACTOR — DATE
WORK INSPECTED BY — DATE
INSPECTOR'S MARKINGS/NOTES BY — DATE
FIELD VERIFICATION BY — DATE
MARKINGS CORRECTED BY — DATE

MICRO-FILM INFORMATION

RECORDED BY — DATE
NO.

BENCH MARKS

ACS 1 ¾" ALUMINUM DISK STAMPED "ACS BM 5-D11", LOCATED 72' ± ESE OF THE CENTER OF THE CUL-DE-SAC AT THE SOUTH END OF RIDGEWAY DR. NW, EPOXIED TO LAVA ROCK IN OUTCROPPING

ELEVATION = 5270.087 FT.
NAVD 88 U.S. FEET

SURVEY INFORMATION

FIELD NOTES

NO.	BY	DATE
	AERIAL MAPPING,	WCI 05/01
	BOUNDARY,	WCI 06/01
	BOUNDARY,	WCI 10/01

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	

WILSON & COMPANY, ENGINEERS & ARCHITECTS

DESIGNED BY	KIS	DATE DEC 2004
DRAWN BY	VKL	DATE DEC 2004
CHECKED BY	DSA	DATE DEC 2004

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

LA CUENTISTA SUBDIVISION – UNIT II
PAVING PLAN & PROFILE
REDROOT STREET STA 1+00 TO STA 9+00

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

City Project No.	Zone Map No.	Drawing	Sheet
709786	C-10, C-11	14	17

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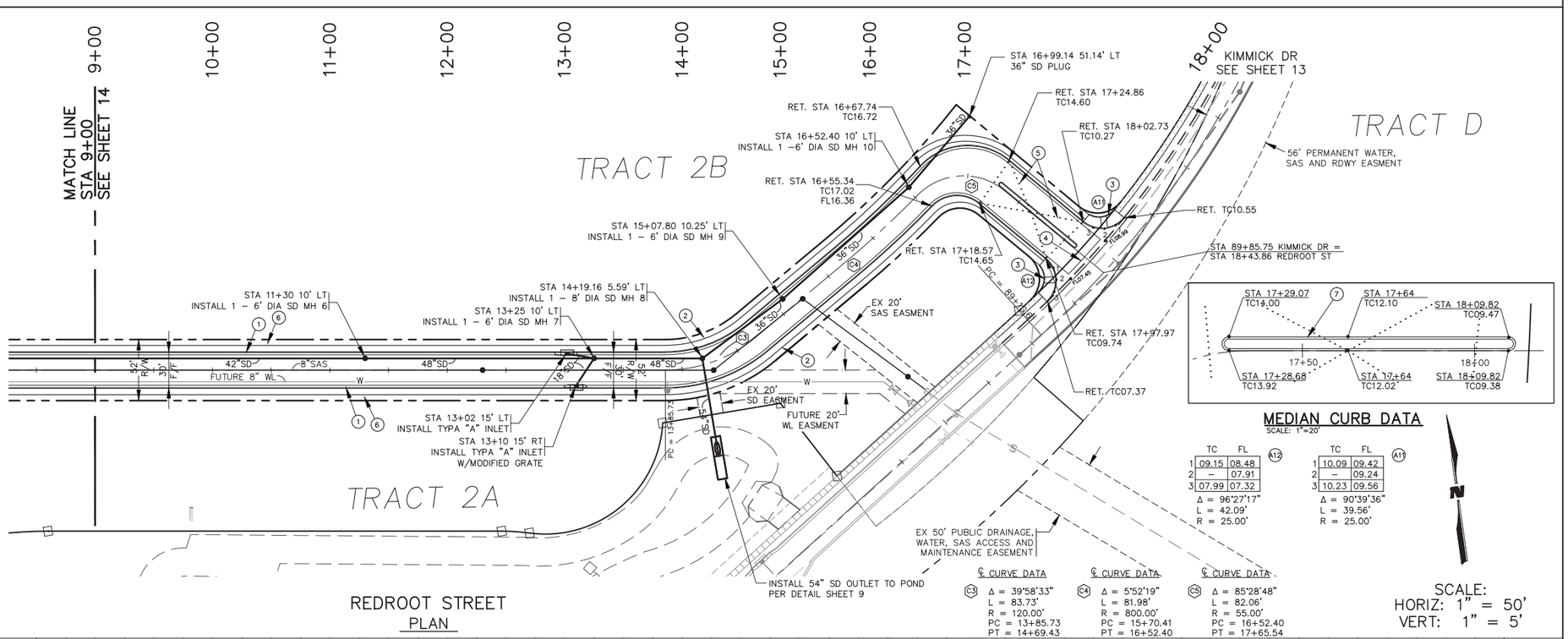
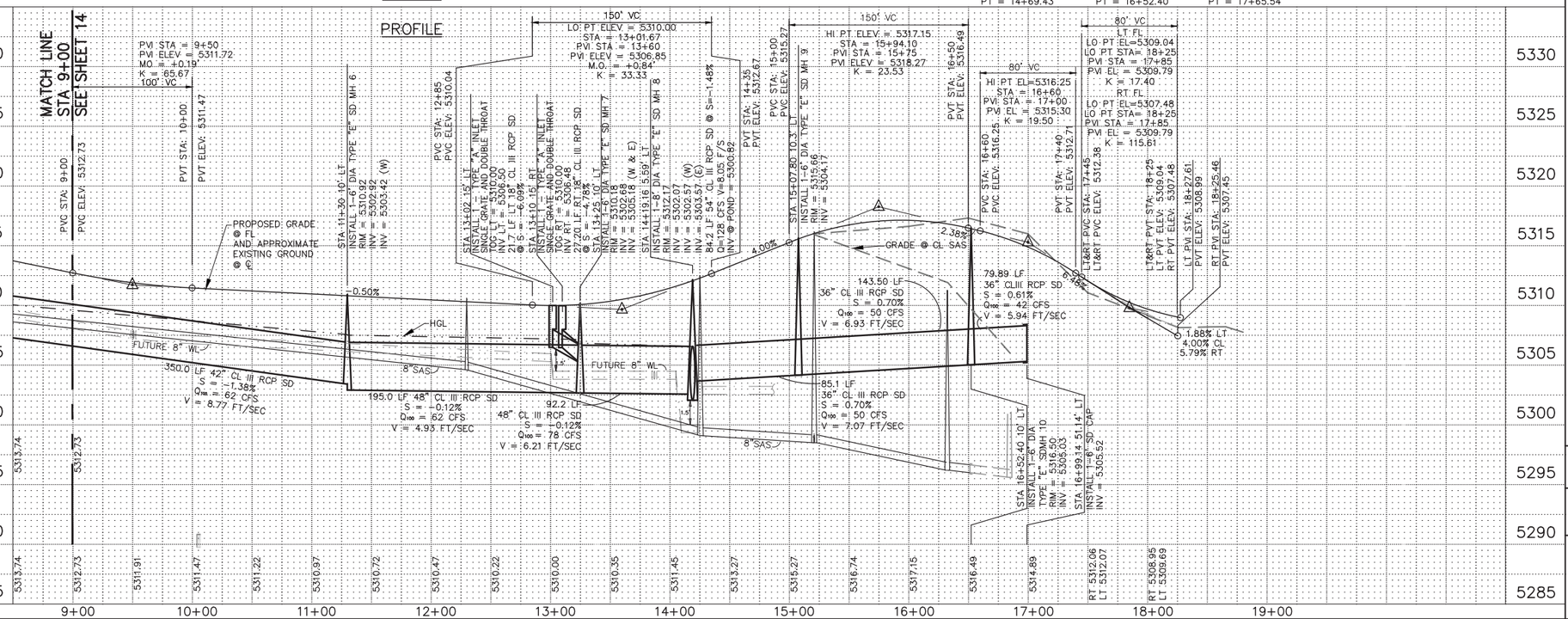
WILSON# 1460008900
JANUARY 2015

WILSON & COMPANY





NOTES

SEE TYPICAL ROADWAY SECTION C AND SECTION D SHEET 6

1. CONSTRUCT STANDARD CURB & GUTTER PER STD DWG 2415A
2. CONSTRUCT 5' SIDEWALK PER STD DWG 2430 (NON–DEFERRED)
3. CONSTRUCT WHEELCHAIR RAMP TYPE F PER DTL SHEET 6
4. CONSTRUCT 6' VALLEY GUTTER PER STD DWG 2420
5. 50' CROWN REDUCTION PER STD DWG 2401
6. CONSTRUCT 5' SIDEWALK PER STD DWG 2430 (DEFERRED)
7. INSTALL MEDIAN C&G PER STD DWG 2415A

ALL PROFILE ELEVATIONS ARE FLOWLINE (FL) ELEVATIONS RIGHT (RT) AND LEFT (LT) UNLESS OTHERWISE NOTED

NOTE:
NON–DEFERRED SIDEWALK
STA 13+82.63 RT TO STA 14+70.53
STA 13+08.93 LT TO STA 14+65.19

SURVEY INFORMATION
FIELD NOTES

NO.	BY	DATE
	AERIAL MAPPING,	WCI 05/01
	BOUNDARY,	WCI 06/01
	BOUNDARY,	WCI 10/01

BENCH MARKS
ACS 1 ¼" ALUMINUM DISK STAMPED
"ACS BM 5–D11", LOCATED 72' ± ESE OF THE CENTER OF THE CUL–DE–SAC AT THE SOUTH END OF RIDGEWAY DR. NW, EPOXIED TO LAVA ROCK IN OUTCROPPING
ELEVATION = 5270.087 FT.
NAVD 88 U.S. FEET

AS–BUILT INFORMATION
CONTRACTOR — DATE
WORK STARTED BY — DATE
INSPECTOR'S NOTES/COMMENTS BY — DATE
FIELD VERIFICATION BY — DATE
MARKINGS CORRECTED BY — DATE
RECORDED BY
NO.

MICRO–FILM INFORMATION
DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	

WILSON & COMPANY, ENGINEERS & ARCHITECTS
DESIGNED BY KIS DATE DEC 2004
DRAWN BY VKL DATE DEC 2004
CHECKED BY DSA DATE DEC 2004

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

LA CUENTISTA SUBDIVISION – UNIT II
PAVING PLAN & PROFILE
REDROOT STREET STA 9+00 TO STA 15+20.29

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

City Project No.	Zone Map No.	Drawing	Sheet
709786	C–10, C–11	15	17

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WILSON# 1460008900
JANUARY 2015

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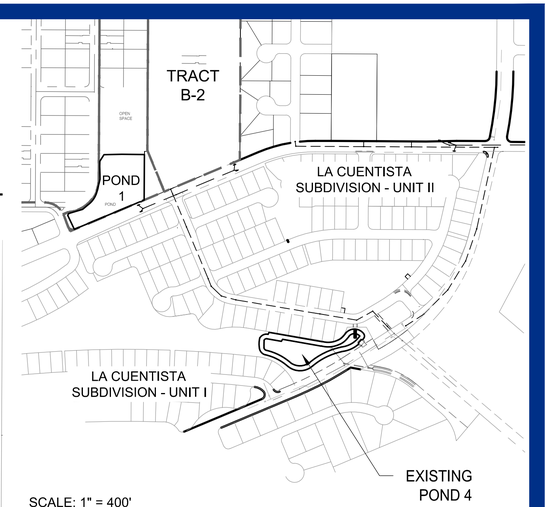
Appendix E

Plates/Plan

- Plate 1 – Ultimate Conditions Drainage Basin Map
- Plate 2 – Developed Conditions Drainage Basin Map
- Grading & Drainage Plan



SCALE: 1" = 400'

OVERALL DRAINAGE MAP

PASEO DEL NORTE BLVD

TRACT B-1

TRACT B-2

202.1

202.2

202.3

201

SMOKETREE AVE

CORNSILK AVE

REDROOT ST

PRIVET ST

CALLE PLATA

OPEN SPACE

OPEN SPACE

POND 1

POND

AZUCENA PLACE, NW

ROSA PARKS RD

REDROOT STREET

LA CUENTISTA SUBDIVISION UNIT II

BASIL PLACE

Table 1 - Ultimate Conditions AHYMO Results, 100-Yr, 24-Hr				
Basin ID	Area		Peak Flow	Volume
	ac	sq mi	cfs	ac-ft
201.00	36.97	0.06	129	5.7
202.10	8.43	0.01	27	1.1
202.20	1.69	0.00	6	0.3
202.30	11.01	0.02	38	1.7

Table 2 - Ultimate Conditions Pond Data						
Peak Flow (cfs)		Pond Elevation (ft)		Volume (ac-ft)		ft
In	Out	Top*	Bottom**	Req'd	Prv'd	Max WSEL
200.9	15.5	5344	5336.5	5.97	9.48	5341.61
* Includes 1' freeboard						
** Elevation 5337.0 to 5336.5 is provided for the first flush volume						

LEGEND

- DRAINAGE FLOW PATH
- EXIST 1 FT MAJOR CONTOUR
- EXIST 1 FT MINOR CONTOUR
- BASIN BOUNDARY LINE
- 201 BASIN ID

N

SCALE: 1" = 100'

NOTE:
TRACT B-1 LAYOUT IS CONCEPTUAL AND SHOWN FOR INFORMATION ONLY.

PLATE 1 - ULTIMATE CONDITIONS DRAINAGE MAP
LA CUENTISTA SUBDIVISION, TRACTS B-1 AND B-2

WILSON COMPANY
4900 LANG AVENUE, NE
ALBUQUERQUE, NM
87109
PH (505) 348-4000
FAX (505) 348-4055
www.wilsonco.com

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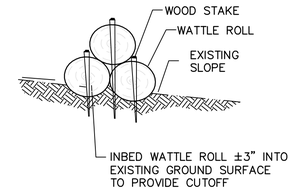
Table 3 - Developed Condition AHYMO Results, 100-Yr, 24-Hr				
Basin ID	Area		Peak Flow	Volume
	ac	sq mi	cfs	ac-ft
OS1	14.74	0.02	17	0.5
OS8.1	59.51	0.09	46	2.5
202.10	21.69	0.03	27	0.8
202.20	3.29	0.01	4	0.1
202.30	11.01	0.02	38	1.7

Table 4 - Developed Conditions Pond Data						
Peak Flow (cfs)		Pond Elevation (ft)		Volume (ac-ft)		Max WSEL
In	Out	Top*	Bottom**	Req'd	Prv'd	(ft)
103.4	15.6	5344.0	5336.00	3.4	5.28	5341.66
* Includes 1' freeboard						
** Elevation 5337.0 to 5336.0 is provided for the first flush volume						

Table 5 - Desilting Basin Data				
Basin ID	Area		Peak Flow	Runoff Volume
	ac	sq mi	cfs	ac-ft
202.1	21.69	0.034	1	0.07

Table 6 - Analysis Point	
AP	Peak Flow (cfs)
AP1	46
AP2	8
AP3	14
AP4	12
AP5	85



WATTLE ROLL DETAIL

SCALE: 1" = 2'

LEGEND

- DRAINAGE FLOW PATH
- EXIST 1 FT MAJOR CONTOUR
- EXIST 1 FT MINOR CONTOUR
- BASIN BOUNDARY LINE
- 201 — BASIN ID
- AP2 — ANALYSIS POINT

N

0 100' 200'

PLATE 2 - DEVELOPED CONDITIONS DRAINAGE MAP
LA CUENTISTA SUBDIVISION, TRACT B-2

WILSON COMPANY
4900 LANG AVENUE, NE
ALBUQUERQUE, NM
87109
PH (505) 348-4000
FAX (505) 348-4055
www.wilsonco.com

Pond 1 Summary						
Condition	Peak Outflow (cfs)	Pond Elevation (ft)		Volume (ac-ft)		Max WSEL
		Top	Bottom	Req'd	Prv'd	ft
Interim*	0.0	5344	5336.5	6.29	9.48	5341.83
Developed**	15.5	5344.0	5336.0	3.42	5.28	5341.66
* Interim condition refers to only if the proposed storm drain outfall in Redroot Road through La Cuentista Unit II is not available						
** Developed condition referes to when the outfall through La Cuentista Unit II is available						

POND 1
TOP OF POND = 5344.00
BOTTOM OF POND = 5336.00
MAX WSEL = 5341.66
VOLUME PRV'D = 5.28 AC-FT
FF VOLUME = 0.29 AC-FT
Q_{IN} = 103 CFS
Qout = 15.6 CFS

TYPE "A" INLET (SGL G)
INV = 5337.0

INV = 5337.00 18" SD
INV = 5336.45

EXIST 12" WL

EXISTING CURB INLET
TOG = 5340.74
INV = 5336.74

EXIST 24" SD

PROPOSED 36" SD STUBOUT
D=10.2'
INV=40.33 (IN)
INV=40.26 (OUT)

PILLBOX MH
MH D=9.97'

TYPE SINGLE "A" INLET

TYPE SINGLE "C" INLET

MH D=9.24'

REDROOT ST

MH D=8.51'

MH D=6.17'

MH D=10.48'

MH D=4.52'

MH D=3.97'

MH D=4.48'

REDROOT STREET

PRIVET STREET

CORNSILK AVE

SMOKETREE AVE

OPEN SPACE

LA CUENTISTA SUBDIVISION UNIT II

ROSA PARKS RD

BASIL PLACE

EXIST 12" WL

EXIST 24" SD

EXISTING CURB INLETS

PILLBOX MH
MH D=3.33'

EXISTING 24" CAP
INV=5338.14

TEMPORARY SEDIMENT CAPTURE BASIN WITH OVERFLOW TO STREET

SINGLE SIDEWALK CULVERT

PC: 12+17.92

PT: 13+35.73

RETAINING WALL TABLE

WALL POINT	ELEVATION			WALL HEIGHT ABOVE GROUND (FT)	APPROX. WALL LENGTH (FT)
	FG @ TOP OF WALL	FG @ BOTTOM OF WALL	TOP OF FOOTING		
1-1	52.33	51.33	50.32	1.00	87
1-2	53.33	49.33	47.97	4.00	100
1-3	51.83	47.83	46.47	4.00	100
1-4	50.83	46.83	45.47	4.00	100
1-5	49.83	46.00	44.47	3.83	100
1-6	49.00	45.67	44.31	3.33	100
1-7	48.33	45.67	44.31	2.66	100
1-8	47.00	44.00	42.98	3.00	100
1-9	46.00	41.67	40.64	4.33	100
1-10	42.67	41.33	39.99	1.34	20

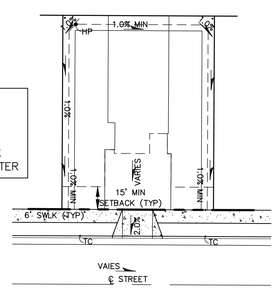
WALL POINT	ELEVATION			WALL HEIGHT ABOVE	APPROX. WALL LENGTH
	TOP OF WALL	BOTTOM OF WALL	TOP OF FOOTING		
3-1	52.95	51.22	50.27	1.73	61.5
3-2	53.56	50.06/48.46	47.53	3.50/5.10	100
3-3	52.67/51.90	47.55/47.14	45.97	5.12/4.76	115
3-4	51.00	46.33/45.41	44.30	4.67/5.59	123
3-5	49.90	48.67	47.89	1.23	

WALL POINT	ELEVATION			WALL HEIGHT ABOVE	APPROX. WALL LENGTH
	TOP OF WALL	BOTTOM OF WALL	TOP OF FOOTING		
4-1	47.33	46.00	45.99	1.33	87
4-2	48.00	45.33	45.32	2.67	61
4-3	48.67	44.08	43.31	4.59	11
4-4	45.00	44.16	42.99	0.84	

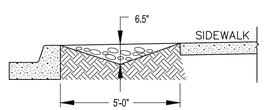
RETAINING WALL TABLE

WALL POINT	ELEVATION			WALL HEIGHT ABOVE GROUND (FT)	APPROX. WALL LENGTH (FT)
	FG @ TOP OF WALL	FG @ BOTTOM OF WALL	TOP OF FOOTING		
2-1	60.25	59.15	58.24	1.10	44
2-2	60.67	58.10	57.32	2.57	3.5
2-3	60.67	58.10	57.32	2.57	52
2-4	61.21	56.67/54.33	53.17	4.54/6.88	100
2-5	60.33/59.00	53.33/52.75	51.62	7.00/6.25	100
2-6	58.00/57.53	51.33	49.96	6.67/6.20	100
2-7	56.67	50.33	49.30	6.34	100
2-8	55.67	49.67	48.97	6.00	100
2-9	54.67	50.00/48.83	47.97	4.67/5.84	112
2-10	53.59	52.39	51.58	1.20	30
2-11	49.67	48.53	47.66	1.14	95
2-12	54.33	53.33	52.32	1.00	

TYPICAL LOT DATA
FRONT SETBACK: 15'
BACK SETBACK: 10'
SIDE SETBACK: 5'
YARD SWALE SLOPE: 1.0%
DRIVE LOCATION: CENTER



TYPICAL LOT GRADING
NTS



LANDSCAPE BUFFER SWALE
MODIFIED REVISED STD DWG 2405A & 2405B
NTS

LEGEND
RIGHT OF WAY
PROPERTY LINE
RETAINING WALL
SWALE

0 25' 50'

AS-BUILT INFORMATION
CONTRACTOR
WORK STAKED BY — DATE
FIELD CHANGES
ACCEPTANCE BY — DATE
FIELD VERIFICATION BY — DATE
DRAWINGS CORRECTED BY — DATE
MICRO-FILM INFORMATION
RECORDED BY — DATE
NO.

BENCH MARKS

SURVEY INFORMATION
FIELD NOTES
NO. BY DATE

ENGINEER'S SEAL

NO.	DATE	REMARKS	BY
		REVISIONS	
		WILSON & COMPANY, ENGINEERS & ARCHITECTS	
DESIGNED BY	XXX	DATE AUGUST 2016	
DRAWN BY	XXX	DATE AUGUST 2016	
CHECKED BY	XXX	DATE AUGUST 2016	

CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

LA CUENTISTA SUBDIVISION TRACT B-2
GRADING & DRAIANGE PLAN

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

City Project No.	Zone Map No.	Drawing	Sheet
	C-10	XX	XX

WILSON & COMPANY

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