Grading & Drainage
2013075

City of Albuquerque

Planning Department

Development & Building Services Division

RAINAGE AND TRANSPORTATION INFORMATION SHEET

(REV 02/2013)

Project Title: FedEX Ground City Drainage #:

DRB#: EPC#: 14EPC-40012 (Project #1009982) Work Order#:

Legal Description: A portion of Tract 12, Tract 13, and Tract 14A, Town of Atrisco Grant Unit 5

City Address: Not yet assigned

Engineering Firm: Tierra West, LLC Contact: Jeffrey T. Wooten, P.E.

Address: 5571 Midway Park Place NE, Albuquerque, NM 87109

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

Owner: I-40 South, LLC c/o Thomas Keleher Contact: Thomas Keleher

Address: PO Box AA, Albuquerque, NM 87103

Phone#: 505-346-4646 Fax#: E-mail: tfk@keleher-law.com

Architect: Castles Design Group Contact: Larry L. Christian

Address: 3801 Kirby Drive, Suite 600, Houston, TX 77098

Phone#: 713-664-7974 Fax#: E-mail: lchristian@castlesdesigngroup.com

Surveyor: Precision Surveys Contact: Will Plotner

Address: 5571 Midway Park Place NE, Albuquerque, NM 87109

Phone#: 505-856-5700 Fax#: E-mail: larry@presurv.com

Contractor: W&G Construction Company Contact: Chris White

Address: 470 Central Road, Fredericksburg, VA 22401

Phone#: 540-368-2688 Fax#: E-mail: cwhite@wandgconstruction.com

TYPE OF SUBMITTAL:

- X DRAINAGE REPORT
- ___ DRAINAGE PLAN 1st SUBMITTAL
- ___ DRAINAGE PLAN RESUBMITTAL
- ___ CONCEPTUAL G & D PLAN
- X GRADING PLAN
- X EROSION & SEDIMENT CONTROL PLAN (ESC)
- ___ ENGINEER'S CERT (HYDROLOGY)
- ___ CLOMR/LOMR
- ___ TRAFFIC CIRCULATION LAYOUT (TCL)
- ___ ENGINEER'S CERT (TCL)
- ___ ENGINEER'S CERT (DRB SITE PLAN)
- ___ ENGINEER'S CERT (ESC)
- ___ SO-19
- ___ OTHER (SPECIFY)

CHECK TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

- ___ SIA/FINANCIAL GUARANTEE RELEASE
- ___ PRELIMINARY PLAT APPROVAL
- ___ S. DEV. PLAN FOR SUB'D APPROVAL
- X S. DEV. FOR BLDG. PERMIT APPROVAL
- ___ SECTOR PLAN APPROVAL
- ___ FINAL PLAT APPROVAL
- ___ CERTIFICATE OF OCCUPANCY (PERM)
- ___ CERTIFICATE OF OCCUPANCY (TCL TEMP)
- ___ FOUNDATION PERMIT APPROVAL
- ___ BUILDING PERMIT APPROVAL
- X GRADING PERMIT APPROVAL
- ___ PAVING PERMIT APPROVAL
- ___ WORK ORDER APPROVAL
- ___ GRADING CERTIFICATION
- ___ SO-19 APPROVAL
- X ESC PERMIT APPROVAL
- ___ ESC CERT. ACCEPTANCE
- ___ OTHER (SPECIFY)

RECEIVED
MAY 20 2014
LAND DEVELOPMENT SECTION

WAS A PRE-DESIGN CONFERENCE ATTENDED: 7/3/14 ___ Yes X No ___ Copy Provided

DATE SUBMITTED: May 14, 2014 REVISED By: Vincent Carrica, P.E.

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

1. **Conceptual Grading and Drainage Plan**: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans
2. **Drainage Plans**: Required for building permits, grading permits, paving permits and site plans less than five (5) acres
3. **Drainage Report**: Required for subdivision containing more than ten (10) lots or constituting five (5) acres or more
4. **Erosion and Sediment Control Plan:** Required for any new development and redevelopment site with 1-acre or more of land disturbing area, including project less than 1-acre than are part of a larger common plan of development

DRAINAGE REPORT

For

FEDEX GROUND ABQ
ALBUQUERQUE, NEW MEXICO

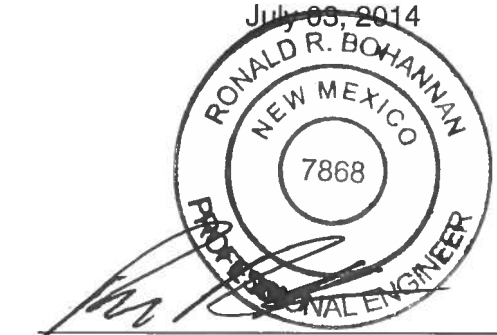
Prepared by

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

Prepared for

W&G Construction Company
470 Central Rd.
Fredericksburg, VA 22401

July 03, 2014



7/3/14

Ronald R. Bohannan, PE # 7868

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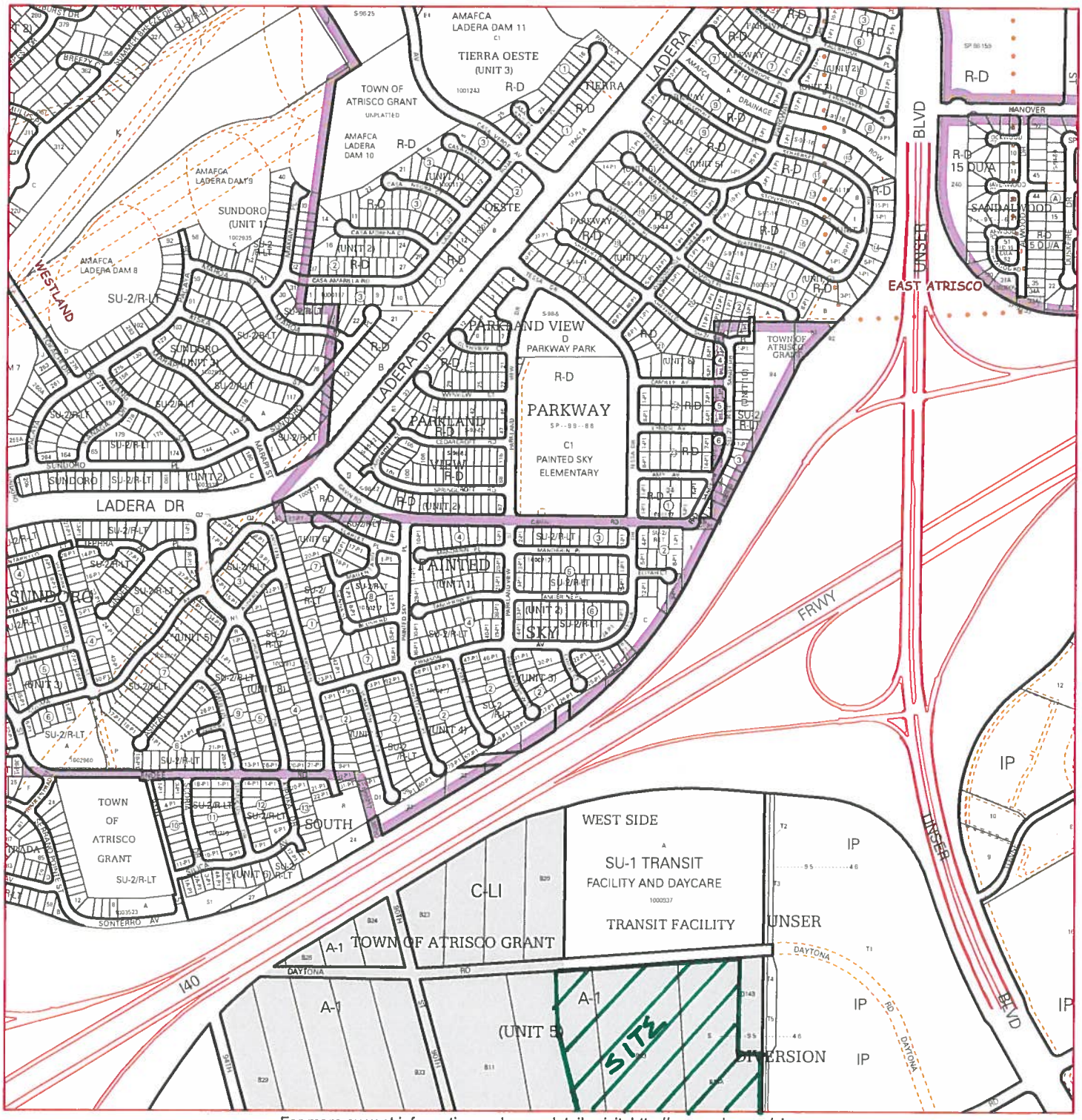


For more current information and more details visit: http://www.cabq.gov/gis

Albuquerque Geographic Information System

Map amended through: 2/4/2010

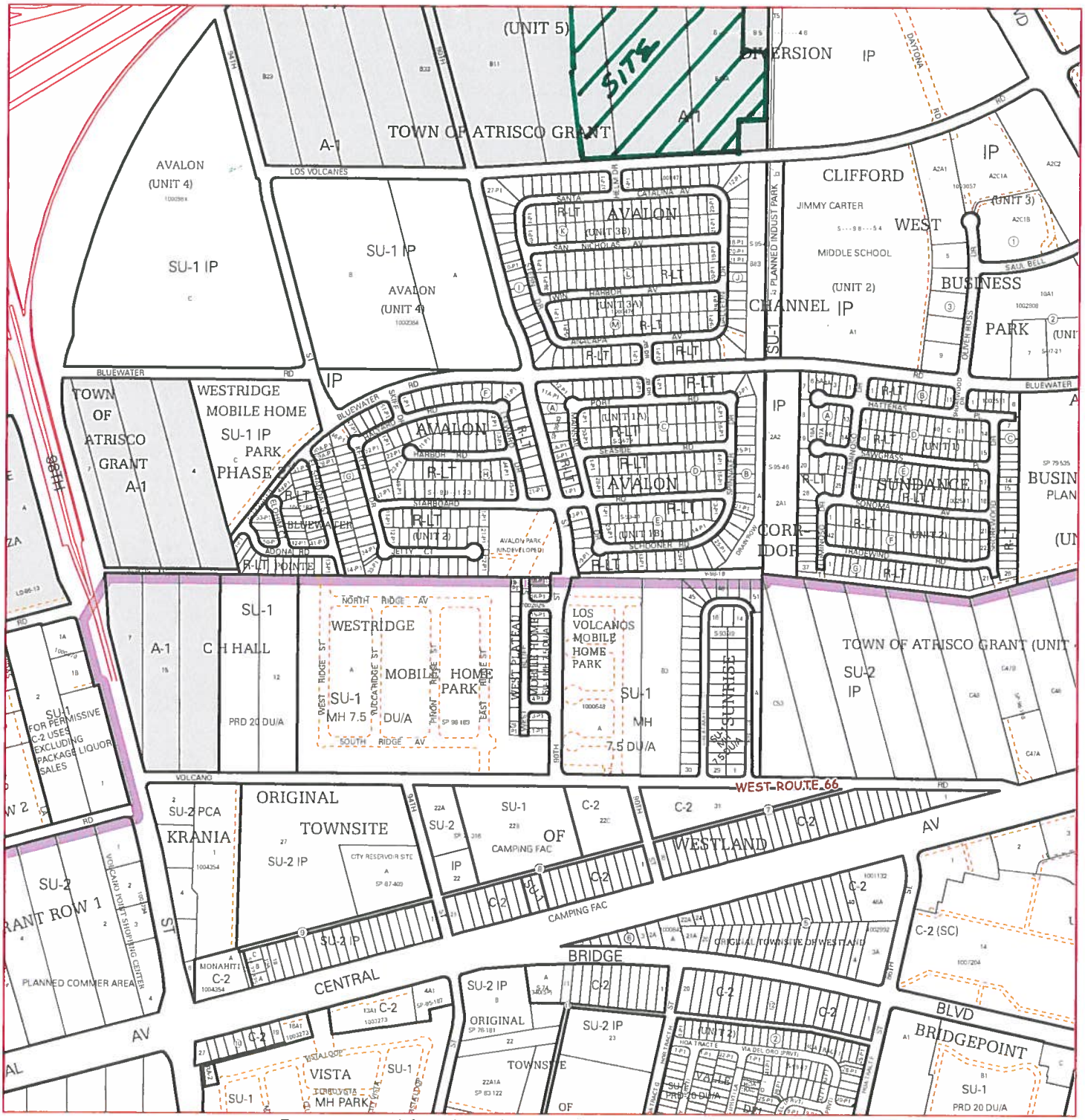
Zone Atlas Page:

J-09-Z

Selected Symbols

- SECTOR PLANS
- Design Overlay Zones
- City Historic Zones
- H-1 Buffer Zone
- Petroglyph Mon.
- Escarpment
- 2 Mile Airport Zone
- Airport Noise Contours
- Wall Overlay Zone

Feet: 0 — 750 — 1,500



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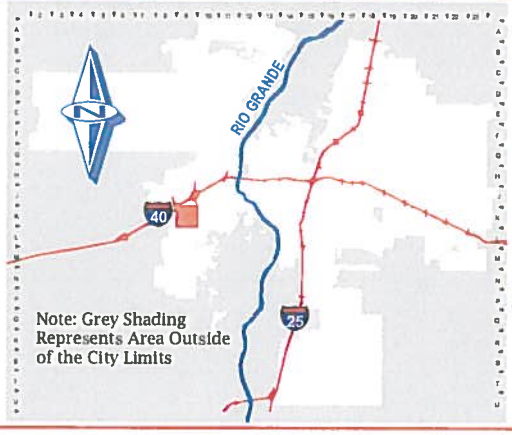

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0 750 1,500 Feet

LOCATION

The proposed commercial development, FedEx Ground ABQ, is comprised of approximately 21.86 acres zoned SU-1 For IP and C-2 Uses and is located in the City of Albuquerque, in Bernalillo County. The site is bordered by Daytona Road to the north, Los Volcanes Road to the south, undeveloped property to the west and storm drain ponds and undeveloped property to the east. An existing ABCWUA water well facility exists adjacent to the southeast corner of the site. The subject property is currently undeveloped with an existing arroyo bisecting the site from northwest to south east.

This report represents a drainage management and grading plan for approval by the City of Albuquerque, for grading and Site Plan for Subdivision and Building Permit submittal.

DRAINAGE BASIN DESIGNATION

The drainage basins for proposed conditions are as indicated on the BASIN MAP included in this report. Under historic conditions the entire site drained across the site from northwest to southeast and into an existing series of storm drain ponds.

EXISTING DRAINGE CONDITIONS

The site is currently undeveloped and drains from northwest to southeast with an existing slope ranging between two to five percent. The northernmost portion of the site is captured in the Mirehaven Arroyo and drains into the temporary Pond 5 of the Unser diversion Pond system. The remaining southern portion of the site currently drains via surface flow to Los Volcanes Road and into the existing Pond 4 of the Unser Diversion Pond system via curb inlets and storm drain pipes located at the low point in Los Volcanes Road. There is approximately 19 acres to the west of the FedEx site that drains across the site. This upland flow will be accounted for under the proposed drainage conditions.

FIRM MAP AND SOIL CONDITIONS

The FedEx Ground Albuquerque is currently partially located in a designated Flood Hazard Zone AO per FEMA – (Firm Map 35001C0328H – See Attached Map). Per the USDA Soil Conservation Services (SCS), the soils type for this site is Bluepoint Loamy fine sand and Pajarito loamy fine sand and consists largely of undulating excessively drained soils at 1 to 9 percent slopes. Runoff is medium, the hazard of soil blowing is moderate and the hazard of water erosion is slight.

DESIGN-CRITERIA

The drainage plan presented in this report was prepared in accordance with the City of Albuquerque Drainage Ordinances and Chapter 22 of the Development Process Manual DPM. The hydrological analysis is based on the 100-year frequency, 6-hour duration storm, as Represented in Section 22, Part A, Hydrology, of the Development Process Manual. Storage detention ponds are sized for the 100-year, 24-hour storm and ultimately will drain in less than 24 hours.

Rainfall intensities per this report are as follows:

FREQ	ZONE	P60	P360	P1440
100YR	1	1.87	2.20	2.66

Land Treatments:

Proposed Subdivision:

The proposed commercial developed land use values were calculated as follows:

Commercial

A = 0% (Under fully developed conditions, no undisturbed naturally vegetated areas will remain.)

B = 0 % (Under fully developed conditions, no irrigated lawns will be provided)
C = Varies 25% to 100% depending on individual basin which will be landscaped to varying degrees with gravel and Xeriscaping
D= Varies 70% to 100% depending on individual basin which will be paved or covered by buildings

DEVELOPED-DRAINAGE CONDITIONS

The current landowner worked with AMAFCA to cut off flows to the Mirehaven Arroyo from the north side of Interstate-40, which will now be routed in the North I-40 Diversion system. This diversion greatly reduces flows that impact this site. AMAFCA will also cause to have a LOMR completed and submitted to FEMA to adjust the flood plain from what is currently mapped. This adjustment to the flood plain will show the proposed site as being removed from the flood plain.

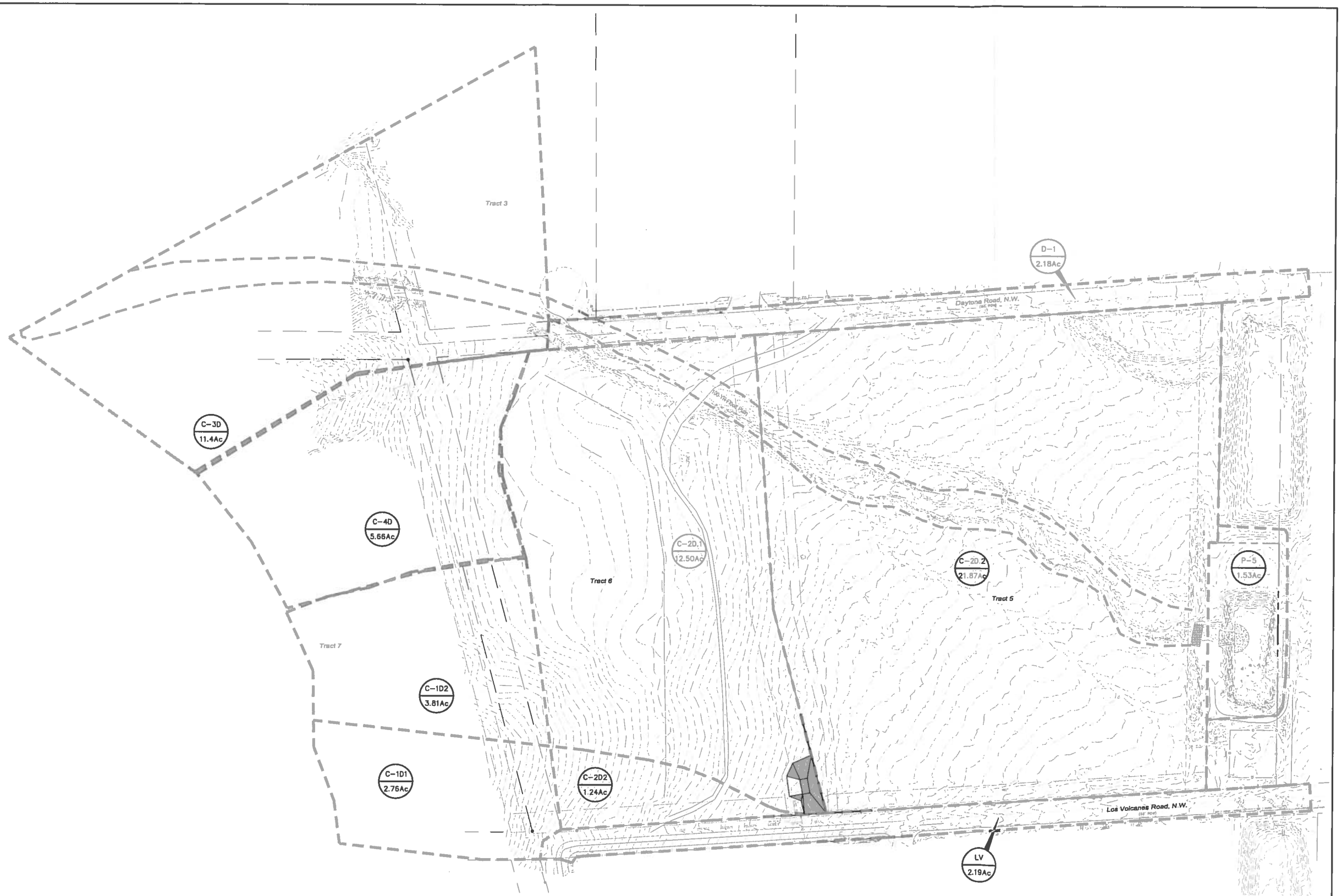
The existing Mirehaven Arroyo that traverses the site from northwest to northeast will be filled in order to construct the proposed improvements including a building, drive aisles and parking facilities. An updated master drainage plan for the area is being prepared by Easterling Consultants, LLC for the City. Approximately 11.4 acres to the west of the subject site will drain to a proposed extension of the existing storm drain in Daytona and the flows will be routed the Unser Diversion Pond 6 located east of the subject site. Another 22 acres directly west of the site will drain to a diversion swale located just west of the FedEx Ground property and will be diverted to Los Volcanes where a storm drain will be extended up from Volcanes and the flows will be routed to the Unser Diversion Pond 4. Flows from 4 acres along Los Volcanes west of the FedEx Ground site will continue to drain to Los Volcanes right of way where they will also be intercepted by the extended storm drain and routed to the Unser Diversion Pond 4. Minor onsite ponding is provided in addition to the existing detention pond that currently outfalls to an adjacent storm drain pipe into the Unser Diversion Pond system. Onsite flows will primarily be diverted to Pond 5 of the Unser Diversion System which will act as a detention pond with an outfall to the Unser Diversion System of less than 10 cfs maximum. An emergency overflow structure exists on the pond and directs flows in excess of the pond's capacity to the east along the arroyo's historic route.

The drainage plan for routing flows from the site and from the upland basins is per the I-40 South and Unser Mini Drainage Master Plan prepared by Easterling Consultants LLC as Revision #1 dated April 2014. The existing outlet structure in Pond 5 will be revised to include a ported outlet riser that will restrict the flow rate out of the pond to less than 10 cfs for the 100-year, 24-hour design storm. The proposed maximum flow rate out of Pond 5 will be far less than the allowable flow rate as provided for in the Daytona Road Storm Drain Master Plan prepared for the West Side Transit Facility by Smith Engineering, February 2001. The proposed Pond 5 volume will be 5.66 ac-ft. The required volume at a maximum 10 cfs outflow is 2.39 ac-ft. The bottom of the pond will be one foot lower than the outfall invert to account for the first flush volume and any future sediment build up.

Upland flows from the west will be routed to Los Volcanes Road to a proposed stormdrain. The ultimate maximum flow rate from these basins is approximately 80 cfs. Runoff from a portion of the FedEx Ground Albuquerque site will drain to this proposed storm drain for a combined total maximum flow rate of approximately 93 cfs. This storm drain will tie to the existing storm drain that connects Pond 6 to Pond 4.

SUMMARY

The proposed grading and drainage plan for the FedEx Ground Albuquerque site provides the grading and drainage elements which are capable of safely passing the 100-year storm and meet the COA DPM requirements. Development of the site will take place after the flows into the Mirehaven Arroyo from north of Interstate-40 were cut off, greatly reducing the upland flows from west of the site and effectively removing the site from the existing flood plain. The remaining upland flows and onsite developed flows will be routed via surface flow and underground storm drains to the existing detention pond which in turn is tied to the Unser Diversion Pond system. The proposed drainage plan for developed conditions follows the I-40 South and Unser Mini Drainage Master Plan.

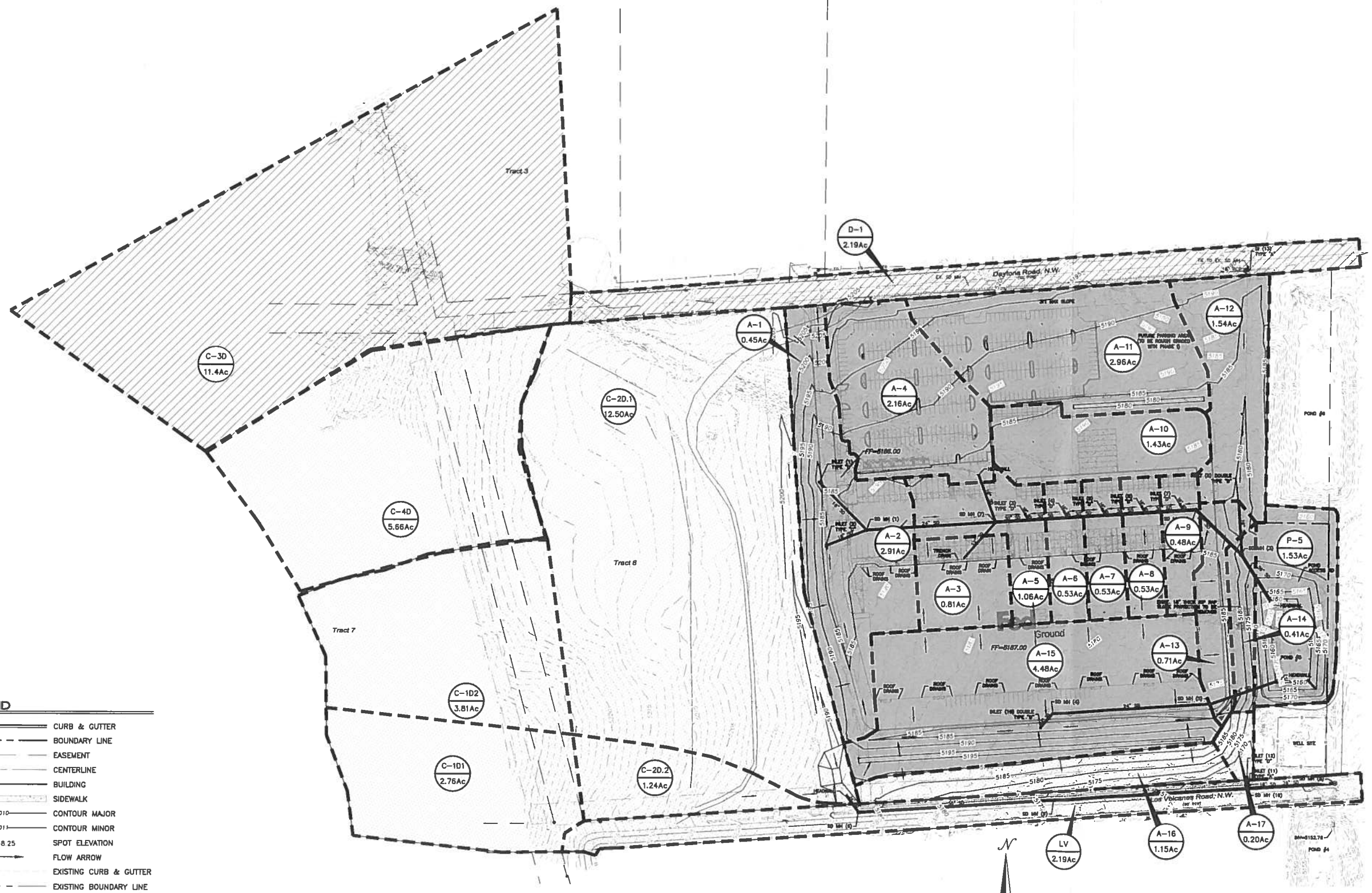


GRAPHIC SCALE

100 50 0 50 100

SCALE: 1"=100'

ENGINEER'S SEAL	FEDEX GROUND ALBUQUERQUE, NM	DRAWN BY DY
		DATE 7-3-14
	PRE DEVELOPED DRAINAGE BASIN MAP	2013075-BASINS
	TIERRA WEST, LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858-3100 www.tierrawestllc.com	SHEET # C2
RONALD R. BOHANNAN P.E. #7868		JOB # 2013075



LEGEND

- CURB & GUTTER
- BOUNDARY LINE
- EASEMENT
- CENTERLINE
- BUILDING
- SIDEWALK
- 5010 CONTOUR MAJOR
- 5011 CONTOUR MINOR
- x 5048.25 SPOT ELEVATION
- FLOW ARROW
- EXISTING CURB & GUTTER
- EXISTING BOUNDARY LINE
- EXISTING CONTOUR MAJOR
- EXISTING CONTOUR MINOR
- EXISTING SPOT ELEVATION
- RIP-RAP
- AREA DRAINS TO POND 5
- AREA DRAINS TO POND 6
- AREA DRAINS TO LOS VOLCANES

N

GRAPHIC SCALE

100 50 0 50 100

SCALE: 1"=100'

ENGINEER'S SEAL	FEDEX GROUND ALBUQUERQUE, NM	DRAWN BY DY
	POST DEVELOPED DRAINAGE BASIN MAP	DATE 7-3-14
		2013075-BASINS
	TIERRA WEST, LLC 5571 MIDWAY PARK PLACE NE ALBUQUERQUE, NM 87109 (505) 858-3100 www.tierrawestllc.com	SHEET # C2
RONALD R. BOHANNAN P.E. #7868		JOB # 2013075

Interim Post Developed FedEX Ground Drainage Calculations

FedEx Developed and Upstream Basins Undeveloped

		This table is based on the COA DPM Section 22.2, Zone: 1										
BASIN	Area	Area	Land Treatment Percentages				Q(100)	Q(100)	WT E	$V(100)_{360}$	$V(100)_{1440}$	$V(100)_{10day}$	Comments
	(SQ. FT)	(AC.)	A	B	C	D	(cfs/ac.)	(CFS)	(inches)	(CF)	(CF)	(CF)	
C-1D1	120225	2.76	100.0%	0.0%	0.0%	0.0%	1.29	3.56	0.44	4408	4408	20438	To Los Volcanes and Pond 4 (Public)
C-1D2	165963	3.81	100.0%	0.0%	0.0%	0.0%	1.29	4.91	0.44	6085	6085	28214	To Temp Swale, Los Volcanes and Pond 4 (Public)
C-2D.1	544591	12.50	100.0%	0.0%	0.0%	0.0%	1.29	16.13	0.44	19968	19968	92580	To Temp Swale, Los Volcanes and Pond 4 (Public)
C-2D.2	54001	1.24	100.0%	0.0%	0.0%	0.0%	1.29	1.60	0.44	1980	1980	9180	To Los Volcanes and Pond 4 (Public)
C-3D	497104	11.41	100.0%	0.0%	0.0%	0.0%	1.29	14.72	0.44	18227	18227	84508	To Daytona and Pond 6 (Public)
C-4D	246344	5.66	100.0%	0.0%	0.0%	0.0%	1.29	7.30	0.44	9033	9033	41878	To Temp Swale, Los Volcanes and Pond 4 (Public)
D-1	95223	2.19	0.0%	0.0%	10.0%	90.0%	4.22	9.23	1.87	14855	20854	27551	To Pond 6 (Public)
A-1	19495	0.45	0.0%	0.0%	100.0%	0.0%	2.87	1.28	0.99	1608	1608	4208	To Pond 5 (Private)
A-2	126940	2.91	0.0%	0.0%	25.0%	75.0%	4.00	11.64	1.73	18248	24912	35173	To Pond 5 (Private)
A-3	35097	0.81	0.0%	0.0%	0.0%	100.0%	4.37	3.52	1.97	5762	8219	10441	To Pond 5 (Private)
A-4	94094	2.16	0.0%	0.0%	25.0%	75.0%	4.00	8.63	1.73	13526	18466	26072	To Pond 5 (Private)
A-5	46006	1.06	0.0%	0.0%	0.0%	100.0%	4.37	4.62	1.97	7553	10773	13687	To Pond 5 (Private)
A-6	22899	0.53	0.0%	0.0%	0.0%	100.0%	4.37	2.30	1.97	3759	5362	6812	To Pond 5 (Private)
A-7	22898	0.53	0.0%	0.0%	0.0%	100.0%	4.37	2.30	1.97	3759	5362	6812	To Pond 5 (Private)
A-8	22896	0.53	0.0%	0.0%	0.0%	100.0%	4.37	2.30	1.97	3759	5361	6812	To Pond 5 (Private)
A-9	20854	0.48	0.0%	0.0%	0.0%	100.0%	4.37	2.09	1.97	3424	4883	6204	To Pond 5 (Private)
A-10	62390	1.43	0.0%	0.0%	10.0%	90.0%	4.22	6.04	1.87	9733	13663	18052	To Pond 5 (Private)
A-11	129032	2.96	0.0%	0.0%	25.0%	75.0%	4.00	11.83	1.73	18548	25323	35753	To Pond 5 (Private)
A-12	67194	1.54	0.0%	0.0%	90.0%	10.0%	3.02	4.66	1.09	6092	6563	15051	To Pond 5 (Private)
A-13	30790	0.71	0.0%	0.0%	25.0%	75.0%	4.00	2.82	1.73	4426	6043	8531	To Pond 5 (Private)
A-14	18000	0.41	0.0%	0.0%	100.0%	0.0%	2.87	1.19	0.99	1485	1485	3885	To Pond 5 (Private)
A-15	195109	4.48	0.0%	0.0%	30.0%	70.0%	3.92	17.56	1.68	27250	36811	53265	To Pond 5 (Private)
A-16	49958	1.15	0.0%	0.0%	100.0%	0.0%	2.87	3.29	0.99	4122	4122	10783	To Los Volcanes and Pond 4 (Public)
A-17	8538	0.20	0.0%	0.0%	100.0%	0.0%	2.87	0.56	0.99	704	704	1843	To Los Volcanes and Pond 4 (Public)
P-5	66622	1.53	0.0%	0.0%	100.0%	0.0%	2.87	4.39	0.99	5496	5496	14379	To Pond 5 (Private)
LV	95611	2.19	0.0%	0.0%	10.0%	90.0%	4.22	9.26	1.87	14915	20939	27663	To Pond 4 (Public)
TOTAL	2857874	65.61						157.73		228726	286550	609776	

Ultimate Post Developed FedEX Ground Drainage Calculations

FedEx Developed and Upstream Basins Developed

		This table is based on the COA DPM Section 22.2, Zone: 1										
BASIN	Area	Area	Land Treatment Percentages				Q(100)	Q(100)	WT E	$V(100)_{360}$	$V(100)_{1440}$	$V(100)_{10day}$	Comments
	(SQ. FT)	(AC.)	A	B	C	D	(cfs/ac.)	(CFS)	(inches)	(CF)	(CF)	(CF)	
C-1D1	120225	2.76	0.0%	0.0%	10.0%	90.0%	4.22	11.65	1.87	18755	26329	34785	To Los Volcanes and Pond 4 (Public)
C-1D2	165963	3.81	0.0%	0.0%	10.0%	90.0%	4.22	16.08	1.87	25890	36346	48019	To Los Volcanes and Pond 4 (Public)
C-2D.1	544591	12.50	0.0%	0.0%	10.0%	90.0%	4.22	52.76	1.87	84956	119265	157568	To Los Volcanes and Pond 4 (Public)
C-2D.2	54001	1.24	0.0%	0.0%	10.0%	90.0%	4.22	5.23	1.87	8424	11826	15624	To Los Volcanes and Pond 4 (Public)
C-3D	497104	11.41	0.0%	0.0%	10.0%	90.0%	4.22	48.16	1.87	77548	108866	143829	To Daytona and Pond 6 (Public)
C-4D	246344	5.66	0.0%	0.0%	10.0%	90.0%	4.22	23.87	1.87	38430	53949	71276	To Los Volcanes and Pond 4 (Public)
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A-17	8538	0.20	0.0%	0.0%	100.0%	0.0%	2.87	0.56	0.99	704	704	1843	To Los Volcanes and Pond 4 (Public)
P-5	66622	1.53	0.0%	0.0%	100.0%	0.0%	2.87	4.39	0.99	5496	5496	14379	To Pond 5 (Private)
LV	95611	2.19	0.0%	0.0%	10.0%	90.0%	4.22	9.26	1.87	14915	20939	27663	To Pond 4 (Public)
TOTAL	2857874	65.61						267.25		423028	583530	804078	

Pipe Capacity

Fed Ex Ground, Albuquerque, NM Los Volcanes Road

Pipe No.	Run Description	Run Length (ft)	D (in)	Slope (%)	Area (ft^2)	R	Q Required (cfs)	Q Provided (cfs)	Velocity (ft/s)
1	MH 6 to MH 9	400	30	3.31	4.91	0.625	80.01	80.49	16.84
2	MH 9 to MH 10	400	36	1.57	7.07	0.75	80.01	90.11	17.62
3	MH 10 to MH 8	179	36	2.87	7.07	0.75	93.12	121.84	17.24

Q = (1.5/N)*A*(R)^2/3*(S)^1/2

Area N=.013
D/4 R=A/P
S= Slope
N= 0.013

VOLUME CALCULATIONS

Pond 5 - Proposed Conditions

ACTUAL ELEV.	DEPTH (FT)	VOLUME (AC-FT)	Q (CFS)
59.00	0	0	0.000
60.00	1.00	0.2646	2.745
65.00	6.00	2.1906	8.002
70.00	11.00	5.2846	10.979
70.50	11.50	5.6666	11.233

Emergency Overflow

Orifice Equation

Q = CA SQRT(2gH)

C = 0.6

Diameter (in) 8 Two Each

Area (ft^2)= 0.34906585

g = 32.2

H (Ft) = Depth of water above center of orifice

Q (CFS)= Flow

FedEx Ground, Albuquerque

Pond #5
Detention Pond Volume Calculation

Elev	Area	Elev Change	Avg Area	Volume	Cumulative Volume	
	SF	FT	SF	CU.FT.	CU.FT.	ACRE-FT
5159	10648					
5160	12400	1	11524	11524	11524	0.264555
5165	21160	5	16780	83900	95424	2.190634
5170	32750	5	26955	134775	230199	5.284642
5170.5	33800	0.5	33275	16637.5	246836.5	5.666586

```
*****************************************************************
*          FEDEX GROUND ALBUQUERQUE, NM                         *
*****************************************************************
* 100-YEAR, 24-HR STORM  (UNDER PROPOSED CONDITIONS) W/ routing *
*****************************************************************
*
START                TIME=0.0
*
*
RAINFALL             TYPE=2 RAIN QUARTER=0.0 IN
                     RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                     RAIN DAY=2.66 IN DT=0.05 HR
*DEVELOPED CONDITIONS
*
*BASIN A1
*
COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.00070 SQ MI
                     PER A=0.00 PER B=0.00 PER C=100.0 PER D=0.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=1 CODE=1
*
*BASIN A2
*
COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.00363 SQ MI
                     PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=2 CODE=1
*
*BASIN A3
*
COMPUTE NM HYD       ID=3 HYD NO=100.3 AREA=0.00126 SQ MI
                     PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=3 CODE=1
*
*
*BASIN A4
*
COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.00389 SQ MI
                     PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=4 CODE=1
*
*BASIN A5
*
COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.00165 SQ MI
                     PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=5 CODE=1
*
*BASIN A6
*
COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.00082 SQ MI
                     PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                     TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD            ID=6 CODE=1
*
*
*BASIN A7
*
COMPUTE NM HYD       ID=7 HYD NO=100.7 AREA=0.00082 SQ MI
                     PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                     TP=-0.1333 HR MASS RAINFALL=-1
```

```
PRINT HYD           ID=7 CODE=1
*
*BASIN A8
*
COMPUTE NM HYD      ID=8 HYD NO=100.8 AREA=0.00082 SQ MI
                    PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=8 CODE=1
*
*BASIN A9
*
COMPUTE NM HYD      ID=9 HYD NO=100.9 AREA=0.00075 SQ MI
                    PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=9 CODE=1
*
*
*BASIN A10
*
COMPUTE NM HYD      ID=10 HYD NO=100.10 AREA=0.00224 SQ MI
                    PER A=0.00 PER B=0.00 PER C=10.0 PER D=90.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=10 CODE=1
*
*BASIN A11
*
COMPUTE NM HYD      ID=11 HYD NO=100.11 AREA=0.00433 SQ MI
                    PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=11 CODE=1
*
*BASIN A12
*
COMPUTE NM HYD      ID=12 HYD NO=100.12 AREA=0.00241 SQ MI
                    PER A=0.00 PER B=0.00 PER C=90.0 PER D=10.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=12 CODE=1
*
*
*BASIN A13
*
COMPUTE NM HYD      ID=13 HYD NO=100.13 AREA=0.00110 SQ MI
                    PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=13 CODE=1
*
*BASIN A14
*
COMPUTE NM HYD      ID=14 HYD NO=100.14 AREA=0.00065 SQ MI
                    PER A=0.00 PER B=0.00 PER C=100.0 PER D=0.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=14 CODE=1
*
*BASIN A15
*
COMPUTE NM HYD      ID=15 HYD NO=100.15 AREA=0.00700 SQ MI
                    PER A=0.00 PER B=0.00 PER C=30.0 PER D=70.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=15 CODE=1
*
*
*BASIN P5
*
```

```
COMPUTE NM HYD      ID=16 HYD NO=100.16 AREA=0.00239 SQ MI
                    PER A=0.00 PER B=0.00 PER C=100.0 PER D=0.00
                    TP=-0.1333 HR MASS RAINFALL=-1
PRINT HYD           ID=16 CODE=1
*
*
ADD HYD             ID=50 HYD NO=100.5 ID=1 ID=2
ADD HYD             ID=50 HYD NO=100.6 ID=50 ID=3
ADD HYD             ID=50 HYD NO=100.8 ID=50 ID=4
ADD HYD             ID=50 HYD NO=100.9 ID=50 ID=5
ADD HYD             ID=50 HYD NO=100.10 ID=50 ID=6
ADD HYD             ID=50 HYD NO=100.11 ID=50 ID=7
ADD HYD             ID=50 HYD NO=100.12 ID=50 ID=8
ADD HYD             ID=50 HYD NO=100.13 ID=50 ID=9
ADD HYD             ID=50 HYD NO=100.14 ID=50 ID=10
ADD HYD             ID=50 HYD NO=100.15 ID=50 ID=11
ADD HYD             ID=50 HYD NO=100.16 ID=50 ID=12
ADD HYD             ID=50 HYD NO=100.17 ID=50 ID=13
ADD HYD             ID=50 HYD NO=100.18 ID=50 ID=14
ADD HYD             ID=50 HYD NO=100.19 ID=50 ID=15
ADD HYD             ID=50 HYD NO=100.20 ID=50 ID=16
*
PRINT HYD           ID=50 CODE=1
*
*
*ROUTE THROUGH DETENTION POND NO 1
ROUTE RESERVOIR     ID=55 HYD NO=200.1 INFLOW ID=50 CODE=24
                    OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                    0.0           0.0            59.00
                    2.745         0.2646         60.00
                    8.002         2.1906         65.00
                    10.979        5.2846         70.00
                    11.233        5.6666         70.50
*
PRINT HYD           ID=55  CODE=1
*
*
FINISH
```

```
      AHYMO PROGRAM (AHYMO-S4)                    - Version: S4.01a - Rel: 01a
           RUN DATE (MON/DAY/YR) = 06/25/2014
           START TIME (HR:MIN:SEC) = 15:34:11     USER NO.=
AHYMO_Temp_User:20122010
           INPUT FILE = C:\Users\vince.TWLLC\Desktop\hymo .txt


    ************************************************************
    *          FEDEX GROUND ALBUQUERQUE, NM                    *
    ************************************************************
    * 100-YEAR, 24-HR STORM  (UNDER PROPOSED CONDITIONS) W/ routing *
    ************************************************************
    *
    START               TIME=0.0
    *
    *
    RAINFALL            TYPE=2 RAIN QUARTER=0.0 IN
                        RAIN ONE=1.87 IN RAIN SIX=2.20 IN
                        RAIN DAY=2.66 IN DT=0.05 HR

                   24-HOUR RAINFALL DIST. - BASED ON NOAA ATLAS 14 FOR CONVECTIVE
AREAS (NM & AZ) - D1
                   DT =   0.050000 HOURS       END TIME =    24.000002 HOURS
                     0.0000  0.0022  0.0045  0.0069  0.0096  0.0123  0.0154
                     0.0197  0.0264  0.0336  0.0412  0.0494  0.0578  0.0664
                     0.0753  0.0844  0.0946  0.1052  0.1168  0.1387  0.1657
                     0.2020  0.2430  0.2937  0.3614  0.4375  0.5689  0.7733
                     1.1234  1.3695  1.5635  1.6610  1.7465  1.8079  1.8568
                     1.8994  1.9306  1.9592  1.9828  1.9979  2.0087  2.0183
                     2.0273  2.0352  2.0426  2.0499  2.0568  2.0625  2.0659
                     2.0692  2.0724  2.0754  2.0784  2.0813  2.0842  2.0870
                     2.0896  2.0923  2.0949  2.0974  2.0999  2.1023  2.1046
                     2.1069  2.1092  2.1115  2.1136  2.1158  2.1179  2.1199
                     2.1220  2.1240  2.1260  2.1280  2.1299  2.1318  2.1337
                     2.1356  2.1374  2.1392  2.1411  2.1428  2.1446  2.1463
                     2.1481  2.1498  2.1514  2.1531  2.1548  2.1564  2.1580
                     2.1596  2.1612  2.1628  2.1643  2.1658  2.1674  2.1689
                     2.1704  2.1718  2.1733  2.1747  2.1762  2.1776  2.1790
                     2.1804  2.1818  2.1832  2.1845  2.1859  2.1872  2.1885
                     2.1899  2.1912  2.1925  2.1937  2.1950  2.1963  2.1975
                     2.1988  2.2000  2.2013  2.2026  2.2038  2.2051  2.2064
                     2.2077  2.2089  2.2102  2.2115  2.2128  2.2141  2.2153
                     2.2166  2.2179  2.2192  2.2204  2.2217  2.2230  2.2243
                     2.2256  2.2268  2.2281  2.2294  2.2307  2.2319  2.2332
                     2.2345  2.2358  2.2371  2.2383  2.2396  2.2409  2.2422
                     2.2434  2.2447  2.2460  2.2473  2.2486  2.2498  2.2511
                     2.2524  2.2537  2.2549  2.2562  2.2575  2.2588  2.2601
                     2.2613  2.2626  2.2639  2.2652  2.2664  2.2677  2.2690
                     2.2703  2.2716  2.2728  2.2741  2.2754  2.2767  2.2779
                     2.2792  2.2805  2.2818  2.2831  2.2843  2.2856  2.2869
                     2.2882  2.2894  2.2907  2.2920  2.2933  2.2946  2.2958
                     2.2971  2.2984  2.2997  2.3009  2.3022  2.3035  2.3048
                     2.3061  2.3073  2.3086  2.3099  2.3112  2.3124  2.3137
                     2.3150  2.3163  2.3176  2.3188  2.3201  2.3214  2.3227
                     2.3239  2.3252  2.3265  2.3278  2.3291  2.3303  2.3316
                     2.3329  2.3342  2.3354  2.3367  2.3380  2.3393  2.3406
                     2.3418  2.3431  2.3444  2.3457  2.3469  2.3482  2.3495
                     2.3508  2.3521  2.3533  2.3546  2.3559  2.3572  2.3584
                     2.3597  2.3610  2.3623  2.3636  2.3648  2.3661  2.3674
                     2.3687  2.3699  2.3712  2.3725  2.3738  2.3750  2.3763
                     2.3776  2.3789  2.3802  2.3814  2.3827  2.3840  2.3853
                     2.3865  2.3878  2.3891  2.3904  2.3917  2.3929  2.3942
```

2.3955	2.3968	2.3980	2.3993	2.4006	2.4019	2.4032
2.4044	2.4057	2.4070	2.4083	2.4095	2.4108	2.4121
2.4134	2.4147	2.4159	2.4172	2.4185	2.4198	2.4210
2.4223	2.4236	2.4249	2.4262	2.4274	2.4287	2.4300
2.4313	2.4325	2.4338	2.4351	2.4364	2.4377	2.4389
2.4402	2.4415	2.4428	2.4440	2.4453	2.4466	2.4479
2.4492	2.4504	2.4517	2.4530	2.4543	2.4555	2.4568
2.4581	2.4594	2.4607	2.4619	2.4632	2.4645	2.4658
2.4670	2.4683	2.4696	2.4709	2.4722	2.4734	2.4747
2.4760	2.4773	2.4785	2.4798	2.4811	2.4824	2.4837
2.4849	2.4862	2.4875	2.4888	2.4900	2.4913	2.4926
2.4939	2.4952	2.4964	2.4977	2.4990	2.5003	2.5015
2.5028	2.5041	2.5054	2.5067	2.5079	2.5092	2.5105
2.5118	2.5130	2.5143	2.5156	2.5169	2.5182	2.5194
2.5207	2.5220	2.5233	2.5245	2.5258	2.5271	2.5284
2.5297	2.5309	2.5322	2.5335	2.5348	2.5360	2.5373
2.5386	2.5399	2.5412	2.5424	2.5437	2.5450	2.5463
2.5475	2.5488	2.5501	2.5514	2.5527	2.5539	2.5552
2.5565	2.5578	2.5590	2.5603	2.5616	2.5629	2.5642
2.5654	2.5667	2.5680	2.5693	2.5705	2.5718	2.5731
2.5744	2.5757	2.5769	2.5782	2.5795	2.5808	2.5820
2.5833	2.5846	2.5859	2.5872	2.5884	2.5897	2.5910
2.5923	2.5935	2.5948	2.5961	2.5974	2.5987	2.5999
2.6012	2.6025	2.6038	2.6050	2.6063	2.6076	2.6089
2.6102	2.6114	2.6127	2.6140	2.6153	2.6165	2.6178
2.6191	2.6204	2.6217	2.6229	2.6242	2.6255	2.6268
2.6280	2.6293	2.6306	2.6319	2.6332	2.6344	2.6357
2.6370	2.6383	2.6395	2.6408	2.6421	2.6434	2.6447
2.6459	2.6472	2.6485	2.6498	2.6510	2.6523	2.6536
2.6549	2.6562	2.6574	2.6587	2.6600		

```
    *DEVELOPED CONDITIONS
    *
    *BASIN A1
    *
    COMPUTE NM HYD       ID=1 HYD NO=100.1 AREA=0.00070 SQ MI
                         PER A=0.00 PER B=0.00 PER C=100.0 PER D=0.00
                         TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.105867HR    TP =  0.133300HR    K/TP RATIO =  0.794199     SHAPE
CONSTANT, N =  4.514592
         UNIT PEAK =   2.0382    CFS   UNIT VOLUME =   0.9961       B =   388.14
 P60 = 1.8700
         AREA =     0.000700 SQ MI    IA =   0.35000 INCHES    INF =   0.83000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD            ID=1 CODE=1

                                       PARTIAL HYDROGRAPH   100.10


        RUNOFF VOLUME =     1.08591 INCHES     =       0.0405 ACRE-FEET
        PEAK DISCHARGE RATE =       1.41 CFS  AT   1.500 HOURS   BASIN AREA =
0.0007 SQ. MI.



    *
    *BASIN A2
    *
    COMPUTE NM HYD       ID=2 HYD NO=100.2 AREA=0.00363 SQ MI
```

```
                        PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
                        TP=-0.1333 HR MASS RAINFALL=-1

        K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   10.749    CFS   UNIT VOLUME =   0.9981       B =   526.28
 P60 = 1.8700
        AREA =     0.002723 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


        K =  0.105867HR    TP =  0.133300HR    K/TP RATIO =  0.794199     SHAPE
CONSTANT, N =  4.514593
        UNIT PEAK =   2.6424    CFS   UNIT VOLUME =   0.9970       B =   388.14
 P60 = 1.8700
        AREA =     0.000908 SQ MI    IA =   0.35000 INCHES    INF =   0.83000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=2 CODE=1

                                      PARTIAL HYDROGRAPH   100.20


        RUNOFF VOLUME =     2.08322 INCHES     =       0.4033 ACRE-FEET
        PEAK DISCHARGE RATE =       9.63 CFS  AT   1.500 HOURS   BASIN AREA =
0.0036 SQ. MI.



    *
    *BASIN A3
    *
    COMPUTE NM HYD      ID=3 HYD NO=100.3 AREA=0.00126 SQ MI
                        PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                        TP=-0.1333 HR MASS RAINFALL=-1

        K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   4.9745    CFS   UNIT VOLUME =   0.9971       B =   526.28
 P60 = 1.8700
        AREA =     0.001260 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=3 CODE=1

                                      PARTIAL HYDROGRAPH   100.30


        RUNOFF VOLUME =     2.41566 INCHES     =       0.1623 ACRE-FEET
        PEAK DISCHARGE RATE =       3.61 CFS  AT   1.500 HOURS   BASIN AREA =
0.0013 SQ. MI.



    *
    *
    *BASIN A4
```

```
    *
    COMPUTE NM HYD       ID=4 HYD NO=100.4 AREA=0.00389 SQ MI
                         PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
                         TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =   11.518    CFS   UNIT VOLUME =   0.9981       B =   526.28
 P60 = 1.8700
         AREA =     0.002918 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


         K =  0.105867HR    TP =  0.133300HR    K/TP RATIO =  0.794199     SHAPE
CONSTANT, N =  4.514593
         UNIT PEAK =   2.8317    CFS   UNIT VOLUME =   0.9977       B =   388.14
 P60 = 1.8700
         AREA =     0.000973 SQ MI    IA =   0.35000 INCHES    INF =   0.83000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD            ID=4 CODE=1

                                       PARTIAL HYDROGRAPH   100.40


        RUNOFF VOLUME =     2.08322 INCHES     =       0.4322 ACRE-FEET
        PEAK DISCHARGE RATE =      10.32 CFS  AT   1.500 HOURS   BASIN AREA =
0.0039 SQ. MI.



    *
    *BASIN A5
    *
    COMPUTE NM HYD       ID=5 HYD NO=100.5 AREA=0.00165 SQ MI
                         PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                         TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =   6.5143    CFS   UNIT VOLUME =   0.9975       B =   526.28
 P60 = 1.8700
         AREA =     0.001650 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD            ID=5 CODE=1

                                       PARTIAL HYDROGRAPH   100.50


        RUNOFF VOLUME =     2.41566 INCHES     =       0.2126 ACRE-FEET
        PEAK DISCHARGE RATE =       4.73 CFS  AT   1.500 HOURS   BASIN AREA =
0.0017 SQ. MI.


    *
```

```
    *BASIN A6
    *
    COMPUTE NM HYD       ID=6 HYD NO=100.6 AREA=0.00082 SQ MI
                         PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                         TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =   3.2374    CFS   UNIT VOLUME =   0.9959       B =   526.28
 P60 = 1.8700
         AREA =     0.000820 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD            ID=6 CODE=1

                                        PARTIAL HYDROGRAPH   100.60


        RUNOFF VOLUME =     2.41566 INCHES     =       0.1056 ACRE-FEET
        PEAK DISCHARGE RATE =       2.35 CFS  AT   1.500 HOURS   BASIN AREA =
0.0008 SQ. MI.



    *
    *
    *BASIN A7
    *
    COMPUTE NM HYD       ID=7 HYD NO=100.7 AREA=0.00082 SQ MI
                         PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                         TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =   3.2374    CFS   UNIT VOLUME =   0.9959       B =   526.28
 P60 = 1.8700
         AREA =     0.000820 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD            ID=7 CODE=1

                                        PARTIAL HYDROGRAPH   100.70


        RUNOFF VOLUME =     2.41566 INCHES     =       0.1056 ACRE-FEET
        PEAK DISCHARGE RATE =       2.35 CFS  AT   1.500 HOURS   BASIN AREA =
0.0008 SQ. MI.



    *
    *BASIN A8
    *
    COMPUTE NM HYD       ID=8 HYD NO=100.8 AREA=0.00082 SQ MI
                         PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                         TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
```

```
        UNIT PEAK =    3.2374     CFS    UNIT VOLUME =    0.9959        B =    526.28
 P60 = 1.8700
        AREA =      0.000820 SQ MI     IA =    0.10000 INCHES     INF =    0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=8 CODE=1

                                        PARTIAL HYDROGRAPH    100.80


        RUNOFF VOLUME =      2.41566 INCHES      =        0.1056 ACRE-FEET
        PEAK DISCHARGE RATE =        2.35 CFS  AT    1.500 HOURS    BASIN AREA =
0.0008 SQ. MI.



    *
    *BASIN A9
    *
    COMPUTE NM HYD      ID=9 HYD NO=100.9 AREA=0.00075 SQ MI
                        PER A=0.00 PER B=0.00 PER C=0.0 PER D=100.00
                        TP=-0.1333 HR MASS RAINFALL=-1

        K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =    2.9610     CFS    UNIT VOLUME =    0.9959        B =    526.28
 P60 = 1.8700
        AREA =      0.000750 SQ MI     IA =    0.10000 INCHES     INF =    0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=9 CODE=1

                                        PARTIAL HYDROGRAPH    100.90


        RUNOFF VOLUME =      2.41566 INCHES      =        0.0966 ACRE-FEET
        PEAK DISCHARGE RATE =        2.15 CFS  AT    1.500 HOURS    BASIN AREA =
0.0008 SQ. MI.



    *
    *
    *BASIN A10
    *
    COMPUTE NM HYD      ID=10 HYD NO=100.10 AREA=0.00224 SQ MI
                        PER A=0.00 PER B=0.00 PER C=10.0 PER D=90.00
                        TP=-0.1333 HR MASS RAINFALL=-1

        K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =    7.9593     CFS    UNIT VOLUME =    0.9978        B =    526.28
 P60 = 1.8700
        AREA =      0.002016 SQ MI     IA =    0.10000 INCHES     INF =    0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000
```

```
        K =  0.105867HR    TP =  0.133300HR    K/TP RATIO =  0.794199     SHAPE
CONSTANT, N =  4.514592
        UNIT PEAK =  0.65223    CFS   UNIT VOLUME =   0.9821       B =   388.14
 P60 = 1.8700
        AREA =     0.000224 SQ MI    IA =   0.35000 INCHES    INF =   0.83000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=10 CODE=1

                                      PARTIAL HYDROGRAPH   100.10


       RUNOFF VOLUME =     2.28268 INCHES     =       0.2727 ACRE-FEET
       PEAK DISCHARGE RATE =       6.24 CFS  AT   1.500 HOURS   BASIN AREA =
0.0022 SQ. MI.



    *
    *BASIN A11
    *
    COMPUTE NM HYD      ID=11 HYD NO=100.11 AREA=0.00433 SQ MI
                        PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
                        TP=-0.1333 HR MASS RAINFALL=-1

        K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
        UNIT PEAK =   12.821    CFS   UNIT VOLUME =   0.9983       B =   526.28
 P60 = 1.8700
        AREA =     0.003248 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


        K =  0.105867HR    TP =  0.133300HR    K/TP RATIO =  0.794199     SHAPE
CONSTANT, N =  4.514593
        UNIT PEAK =   3.1520    CFS   UNIT VOLUME =   0.9977       B =   388.14
 P60 = 1.8700
        AREA =     0.001083 SQ MI    IA =   0.35000 INCHES    INF =   0.83000
INCHES PER HOUR
        RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=11 CODE=1

                                      PARTIAL HYDROGRAPH   100.11


       RUNOFF VOLUME =     2.08322 INCHES     =       0.4811 ACRE-FEET
       PEAK DISCHARGE RATE =      11.49 CFS  AT   1.500 HOURS   BASIN AREA =
0.0043 SQ. MI.



    *
    *BASIN A12
    *
    COMPUTE NM HYD      ID=12 HYD NO=100.12 AREA=0.00241 SQ MI
                        PER A=0.00 PER B=0.00 PER C=90.0 PER D=10.00
                        TP=-0.1333 HR MASS RAINFALL=-1
```

```
         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =  0.95148    CFS   UNIT VOLUME =   0.9891       B =   526.28
 P60 = 1.8700
         AREA =     0.000241 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


         K =  0.105867HR    TP =  0.133300HR    K/TP RATIO =  0.794199     SHAPE
CONSTANT, N =  4.514593
         UNIT PEAK =   6.3156    CFS   UNIT VOLUME =   0.9999       B =   388.14
 P60 = 1.8700
         AREA =     0.002169 SQ MI    IA =   0.35000 INCHES    INF =   0.83000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=12 CODE=1

                                        PARTIAL HYDROGRAPH   100.12


        RUNOFF VOLUME =     1.21889 INCHES     =       0.1567 ACRE-FEET
        PEAK DISCHARGE RATE =       5.06 CFS  AT   1.500 HOURS   BASIN AREA =
0.0024 SQ. MI.



    *
    *
    *BASIN A13
    *
    COMPUTE NM HYD      ID=13 HYD NO=100.13 AREA=0.00110 SQ MI
                        PER A=0.00 PER B=0.00 PER C=25.0 PER D=75.00
                        TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.072649HR    TP =  0.133300HR    K/TP RATIO =  0.545000     SHAPE
CONSTANT, N =  7.106428
         UNIT PEAK =   3.2571    CFS   UNIT VOLUME =   0.9959       B =   526.28
 P60 = 1.8700
         AREA =     0.000825 SQ MI    IA =   0.10000 INCHES    INF =   0.04000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000


         K =  0.105867HR    TP =  0.133300HR    K/TP RATIO =  0.794199     SHAPE
CONSTANT, N =  4.514593
         UNIT PEAK =  0.80073    CFS   UNIT VOLUME =   0.9874       B =   388.14
 P60 = 1.8700
         AREA =     0.000275 SQ MI    IA =   0.35000 INCHES    INF =   0.83000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD           ID=13 CODE=1

                                        PARTIAL HYDROGRAPH   100.13
```

RUNOFF VOLUME = 2.08322 INCHES = 0.1222 ACRE-FEET
PEAK DISCHARGE RATE = 2.93 CFS AT 1.500 HOURS BASIN AREA = 0.0011 SQ. MI.

*
*BASIN A14
*
COMPUTE NM HYD ID=14 HYD NO=100.14 AREA=0.00065 SQ MI
PER A=0.00 PER B=0.00 PER C=100.0 PER D=0.00
TP=-0.1333 HR MASS RAINFALL=-1

K = 0.105867HR TP = 0.133300HR K/TP RATIO = 0.794199 SHAPE CONSTANT, N = 4.514592
UNIT PEAK = 1.8926 CFS UNIT VOLUME = 0.9952 B = 388.14 P60 = 1.8700
AREA = 0.000650 SQ MI IA = 0.35000 INCHES INF = 0.83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=14 CODE=1

PARTIAL HYDROGRAPH 100.14

RUNOFF VOLUME = 1.08591 INCHES = 0.0376 ACRE-FEET
PEAK DISCHARGE RATE = 1.31 CFS AT 1.500 HOURS BASIN AREA = 0.0007 SQ. MI.

*
*BASIN A15
*
COMPUTE NM HYD ID=15 HYD NO=100.15 AREA=0.00700 SQ MI
PER A=0.00 PER B=0.00 PER C=30.0 PER D=70.00
TP=-0.1333 HR MASS RAINFALL=-1

K = 0.072649HR TP = 0.133300HR K/TP RATIO = 0.545000 SHAPE CONSTANT, N = 7.106428
UNIT PEAK = 19.345 CFS UNIT VOLUME = 0.9986 B = 526.28 P60 = 1.8700
AREA = 0.004900 SQ MI IA = 0.10000 INCHES INF = 0.04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

K = 0.105867HR TP = 0.133300HR K/TP RATIO = 0.794199 SHAPE CONSTANT, N = 4.514592
UNIT PEAK = 6.1147 CFS UNIT VOLUME = 0.9999 B = 388.14 P60 = 1.8700
AREA = 0.002100 SQ MI IA = 0.35000 INCHES INF = 0.83000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = 0.050000

PRINT HYD ID=15 CODE=1

PARTIAL HYDROGRAPH 100.15

```
        RUNOFF VOLUME =      2.01673 INCHES      =        0.7529 ACRE-FEET
        PEAK DISCHARGE RATE =       18.26 CFS  AT    1.500 HOURS   BASIN AREA =
0.0070 SQ. MI.


    *
    *
    *BASIN P5
    *
    COMPUTE NM HYD       ID=16 HYD NO=100.16 AREA=0.00239 SQ MI
                         PER A=0.00 PER B=0.00 PER C=100.0 PER D=0.00
                         TP=-0.1333 HR MASS RAINFALL=-1

         K =  0.105867HR     TP =  0.133300HR     K/TP RATIO =  0.794199      SHAPE
CONSTANT, N =  4.514592
         UNIT PEAK =   6.9591     CFS    UNIT VOLUME =   0.9999        B =   388.14
 P60 = 1.8700
         AREA =      0.002390 SQ MI     IA =    0.35000 INCHES     INF =    0.83000
INCHES PER HOUR
         RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT =
0.050000

    PRINT HYD            ID=16 CODE=1

                                        PARTIAL HYDROGRAPH   100.16

        RUNOFF VOLUME =      1.08591 INCHES      =        0.1384 ACRE-FEET
        PEAK DISCHARGE RATE =        4.81 CFS  AT    1.500 HOURS   BASIN AREA =
0.0024 SQ. MI.


    *
    *
    ADD HYD                          ID=50 HYD NO=100.5 ID=1 ID=2

    ADD HYD                          ID=50 HYD NO=100.6 ID=50 ID=3

    ADD HYD                          ID=50 HYD NO=100.8 ID=50 ID=4

    ADD HYD                          ID=50 HYD NO=100.9 ID=50 ID=5

    ADD HYD                          ID=50 HYD NO=100.10 ID=50 ID=6

    ADD HYD                          ID=50 HYD NO=100.11 ID=50 ID=7

    ADD HYD                          ID=50 HYD NO=100.12 ID=50 ID=8

    ADD HYD                          ID=50 HYD NO=100.13 ID=50 ID=9

    ADD HYD                          ID=50 HYD NO=100.14 ID=50 ID=10

    ADD HYD                          ID=50 HYD NO=100.15 ID=50 ID=11

    ADD HYD                          ID=50 HYD NO=100.16 ID=50 ID=12

    ADD HYD                          ID=50 HYD NO=100.17 ID=50 ID=13

    ADD HYD                          ID=50 HYD NO=100.18 ID=50 ID=14
```

```
ADD HYD                          ID=50 HYD NO=100.19 ID=50 ID=15

ADD HYD                          ID=50 HYD NO=100.20 ID=50 ID=16

*
PRINT HYD           ID=50 CODE=1

                                      PARTIAL HYDROGRAPH   100.20


     RUNOFF VOLUME =     1.97292 INCHES     =       3.6259 ACRE-FEET
     PEAK DISCHARGE RATE =      89.04 CFS  AT   1.500 HOURS   BASIN AREA =
0.0345 SQ. MI.


*
*
*ROUTE THROUGH DETENTION POND NO 1
ROUTE RESERVOIR     ID=55 HYD NO=200.1 INFLOW ID=50 CODE=24
                         OUTFLOW (CFS) STORAGE(AC-FT) ELEVATION(FT)
                                0.0            0.0                59.00

                                2.745          0.2646             60.00

                                8.002          2.1906             65.00

                                10.979         5.2846             70.00

                                11.233         5.6666             70.50

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

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

     0.00       0.00     59.00       0.000      0.00
     1.20      10.40     59.41       0.110      1.14
     2.40       2.77     65.18       2.303      8.11
     3.60       0.13     63.54       1.630      6.47
     4.80       0.20     62.12       1.081      4.97
     6.00       0.35     61.06       0.674      3.86
     7.20       0.38     60.28       0.371      3.03
     8.40       0.38     59.62       0.163      1.69
     9.60       0.38     59.31       0.082      0.85
    10.80       0.38     59.20       0.053      0.55
    12.00       0.38     59.16       0.042      0.44
    13.20       0.38     59.15       0.039      0.40
    14.40       0.38     59.14       0.037      0.39
    15.60       0.38     59.14       0.037      0.38
    16.80       0.38     59.14       0.037      0.38
    18.00       0.38     59.14       0.037      0.38
    19.20       0.38     59.14       0.037      0.38
    20.40       0.38     59.14       0.037      0.38
    21.60       0.38     59.14       0.037      0.38
    22.80       0.38     59.14       0.037      0.38
    24.00       0.38     59.14       0.037      0.38
    25.20       0.00     59.06       0.015      0.16
    26.40       0.00     59.02       0.005      0.06
    27.60       0.00     59.01       0.002      0.02
    28.80       0.00     59.00       0.001      0.01
    30.00       0.00     59.00       0.000      0.00
```

```
 PEAK DISCHARGE =         8.196 CFS - PEAK OCCURS AT HOUR    2.10
 MAXIMUM WATER SURFACE ELEVATION =       65.325
 MAXIMUM STORAGE =         2.3919 AC-FT      INCREMENTAL TIME=    0.050000HRS

*
PRINT HYD            ID=55  CODE=1

                                      PARTIAL HYDROGRAPH   200.10


     RUNOFF VOLUME =      1.97292 INCHES     =       3.6259 ACRE-FEET
     PEAK DISCHARGE RATE =       8.20 CFS  AT   2.100 HOURS   BASIN AREA =
0.0345 SQ. MI.


*
*
FINISH

     NORMAL PROGRAM FINISH          END TIME (HR:MIN:SEC) = 15:34:11
```

TIERRA WEST, LLC

5571 Midway Park Place NE
Albuquerque, NM 87109
(505) 858-3100 Fax (505) 858-1118 1-800-245-3102
tierrawestllc.com

July 03, 2014

Mr. Curtis Cherne
Hydrology Development Section
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RE: FEDEX GROUND FACILITY
TOWN OF ATRISCO GRANT UNIT 5
DRAINAGE REPORT AND PLANS UPDATE

Dear Mr. Cherne,

Per your correspondence dated June 24, 2014, regarding the FedEx Ground Facility, please find the following responses addressing Hydrology comments as well as comments related to the area mini drainage management plan. Please review the comments listed below:

1. The area in the existing conditions that drains to this site appears to be closer to 37 ac, not the 12.5 ac in the report. Show the extents of the offsite basin on a plate.
   An Exhibit with the drainage basins under existing conditions was added. Acreages are correctly shown on the exhibit. Drainage from Basin C-3D will be intercepted by the Daytona storm drain that will be extended west into the existing arroyo. A sediment pond will be constructed outside the right of way, upstream of the inlet to the storm drain. Flows from basins C-4D, C-2D.1 and C1D.2 will be intercepted by the proposed swale west of the FexEx property line and conveyed to the Los Volcanos storm drain that will be extended as part of this project. A sediment basin will also be constructed at the inlet to this storm drain. Flows from basins C-1D.1 and C-2D.d will continue to drain to the Los Volcanes right of way as they currently do today.

2. The report references that routing flows from the site and upland basin is by a report prepared by Easterling Consultants, LLC. This report is not approved and uses HEC-HMS. There are some fundamental issues that still need to be worked out. This report should also reference the Master Drainage Plan for the Westside Transit Facility prepared by Smith Engineering February 2001.
   Reference to the MDP for the Westside Transit Facility was added to the report.

3. Where does the report provide the flow and volume for the site?
   Flow and volume calculations are provided in the tabulated drainage calculation sheet. A summary of these totals was added to the narrative portion of the report.

4. Per Easterling and Consultants engineer the FedEx pond (ex. Pond 5 Unser Diversion) is allowed 10cfs. This should be stated in the report
   The outfall structure from Pond 5 will be modified with a ported outlet riser that will restrict the flows out of the pond to less than 10 cfs for a 100-year, 24-hour storm. This was added to the report.

5. Provide calculations that show the required pond volume.
   Calculations for required ponding volume were added.

6. This report should size the storm drain in Los Volcanes Rd. How far west is the storm drain to be extended in Los Volcanes Rd?
   The storm drain in Los Volcanes adjacent to the proposed FedEx Ground site was sized and calculations were added to the report. The size and extension of the storm drain in Los Volcanes west of the site is dependent on the future development to the west and should be sized at that time.

7. Why is there an interim Post Developed basin Table? Why not just existing and developed?
   The interim post developed table was included to show conditions with the FedEx Ground site developed and the upland basins to the west undeveloped. The ultimate developed portion shows conditions for all being developed.

8. The easement for floodplain and drainage works is to be vacated.
   With recent confirmation that the entire easement will be vacated, it is our intent to proceed with the request for this vacation.

9. A slope easement is required on Tract 6.
   We are in the process of preparing the documents for the easement required on Tract 6. The owner has provided confirmation in an email of his intent to provide easement.

10. Add a LOMR to the infrastructure list with a value of $30,000.
    BHI is contracted with AMAFCA to complete the LOMR. Per recent conversations with AMAFCA the work is near completion. The LOMR was added to the FedEx Ground infrastructure list. A copy of the revised infrastructure list is attached for your review.

    The plan was not reviewed at the building Permit level; however, when submitting for Building Permit the following items should be addressed:

11. The outlet structure for Pond 5 is to be modified as the existing 8" holes easily plug. Hydrology would like a ported riser design. In addition, provide the as-builts for the outlet structure.
    A detail for the modification of the Pond 5 outlet structure to include a ported riser was added to the plans. The as-builts for the existing outlet structure are attached.

12. The offsite area that historically drained to Pond 5 in the existing condition should be accommodated by inlet 9.
    The proposed grading plan does accommodate the upland offsite area historically draining to pond 5.

If you have any questions or need additional information regarding this matter, please do not hesitate to contact me.

Sincerely,

Ronald R. Bohannan, P.E.

Enclosure/s

JN: 2013075
RRB/vc/jg

Current DRC
Project Number:_____

FIGURE 12

Date Submitted: 6/24/14
Date Site Plan Approved:_____
Date Preliminary Plat Approved:_____
Date Preliminary Plat Expires:_____
DRB Project No.:_____
DRB Application No.:_____

INFRASTRUCTURE LIST

(Rev. 9-20-05)

EXHIBIT "A"

TO SUBDIVISION IMPROVEMENTS AGREEMENT

DEVELOPMENT REVIEW BOARD (D.R.B.) REQUIRED INFRASTRUCTURE LIST

FEDEX GROUND ALBUQUERQUE
PROPOSED NAME OF PLAT

EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION

Following is a summary of PUBLIC/PRIVATE Infrastructure required to be constructed or financially guaranteed for the above development. This Listing is not necessarily a complete listing. During the SIA process and/or in the review of the construction drawings, if the DRC Chair determines that appurtenant items and/or unforeseen items have not been included in the infrastructure listing, the DRC Chair may include those items in the listing and related financial guarantee. Likewise, if the DRC Chair determines that appurtenant or non-essential items can be deleted from the listing, those items may be deleted as well as the related portions of the financial guarantees. All such revisions require approval by the DRC Chair, the User Department and agent/owner. If such approvals are obtained, these revisions to the listing will be incorporated administratively. In addition, any unforeseen items which arise during construction which are necessary to complete the project and which normally are the Subdivider's responsibility will be required as a condition of project acceptance and close out by the City.

Financially Guaranteed DRC #	Constructed Under DRC #	Size	Type of Improvement	Location	From	To	Construction Certification: Private Inspector	Private P.E.	City Cnst Engineer
		17' F-E	Residential Paving (Major Local Roadway), Curb & Gutter 6' Sidewalk (North Side)	Los Volcanes Road	West Property Line	East Property Line	/	/	/
		20' F-E	Residential Paving (Major Local Roadway), Curb & Gutter 6' Sidewalk (South Side)	Daytona Road	West Property Line	East Property Line	/	/	/
		12"	Water PVC Line	Daytona Road	90th Street	360' East of 90th Street	/	/	/
		20"	Water PVC Line (includes completion of vault piping and valving)	90th Street	I-40 South Right of Way Line Existing Vault	Daytona Road	/	/	/
		30" to 36"	RCP Storm Sewer	Los Volcanes Road	West Property Line	165' East of East Property Line	/	/	/
		36"	RCP Storm Sewer	Daytona Road	Existing Stub	108' West of Existing Stub	/	/	/
		Water infrastructure to include valves, fittings, valve boxes, and fire hydrants as required.					/	/	/
		Catch basins and RCP connections included with storm sewer.					/	/	/
		$30,000	Mirehaven LOMR				/	/	/

The items listed below are on the CCIP and approved for Impact Fee credits. Signatures from the Impact Fee Administrator and the City User Department is required prior to DRB approval of this listing. The Items listed below are subject to the standard SIA requirements.

Financially Guaranteed DRC #	Constructed Under DRC #	Size	Type of Improvement	Location	From	To	Construction Certification: Private Inspector	Private P.E.	City Cnst Engineer
							/	/	/
							/	/	/

Approval of Creditable Items:

Impact Fee Admistrator Signature Date

Approval of Creditable Items:

City User Dept. Signature Date

NOTES

If the site is located in a floodplain, then the financial guarantee will not be released until the LOMR is approved by FEMA.

Street lights per City rquirements.

1 Ceritfication of the grading plan is required for release of financial guarantees.

2

3

AGENT / OWNER

RONALD R. BOHANNAN, PE
NAME (print)

TIERRA WEST, LLC
FIRM

SIGNATURE - date

DEVELOPMENT REVIEW BOARD MEMBER APPROVALS

DRB CHAIR - date

PARKS & RECREATION - date

TRANSPORTATION DEVELOPMENT - date

AMAFCA - date

UTILITY DEVELOPMENT - date

_____ - date

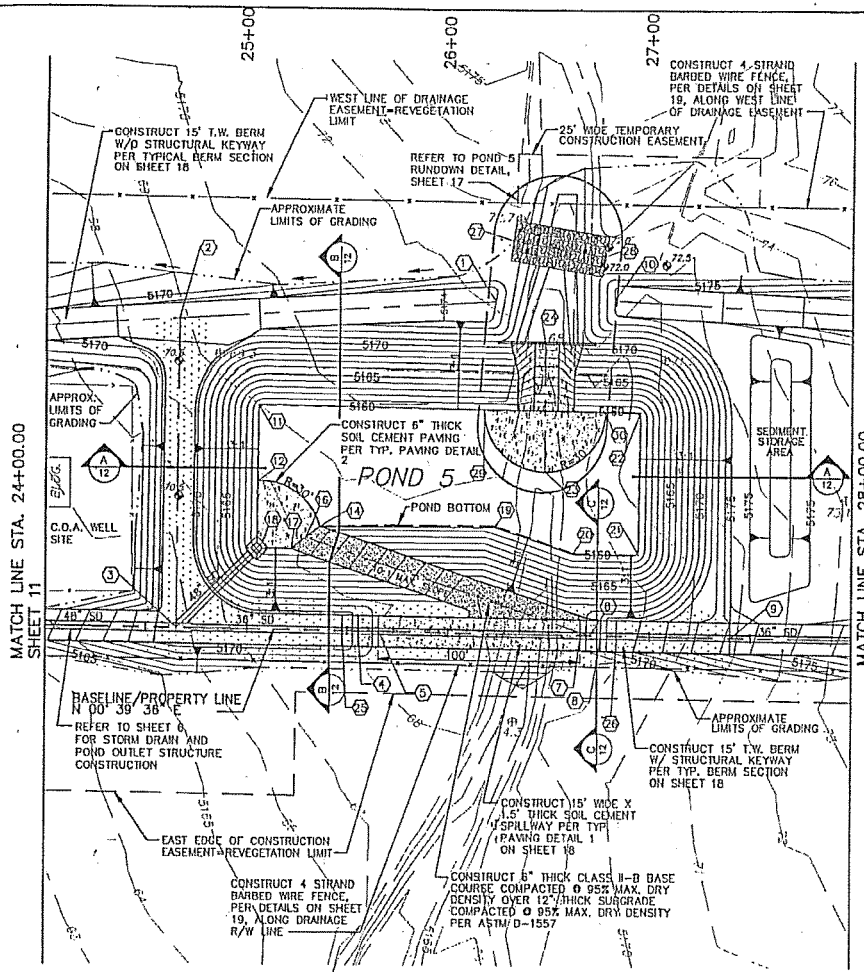
CITY ENGINEER - date

_____ - date

DESIGN REVIEW COMMITTEE REVISIONS

REVISION	DATE	DRC CHAIR	USER DEPARTMENT	AGENT /OWNER

(rev. 03.17.2011)

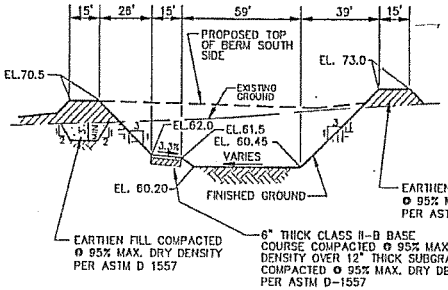


GRAPHIC SCALE

(IN FEET)
1 inch = 50 ft.

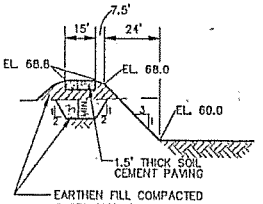
POND 5 POINT DATA

POINT I.D. NO.	STA.	OFFSET (FT)	ELEV.	POINT DESCRIPTION
①	26+21.0	161.1' LT	5174.0	BERM @ TOP OF SLOPE
2	24+64.1	149.7' LT	5171.4	℄ N/S BERM @ INT. W/ E/W BERM – END OF E/W KEY WAY
3	24+65.0	0.0	5170.5	℄ N/S BERM @ INT. W/ E/W BERM
4	25+55.7	0.0	5169.8	℄ SPILLWAY PAVING @ S. EDGE OF PAVING
5	25+65.7	0.0	5168.8	℄ SPILLWAY PAVING @ TOE OF SLOPE
6	26+70.3	0.0	5168.8	℄ SPILLWAY PAVING @ INT. W/ MAINT. RAMP
7	26+65.7	0.0	5168.8	℄ SPILLWAY PAVING @ TOE OF SLOPE
8	26+75.7	0.0	5169.8	℄ SPILLWAY PAVING @ N. EDGE OF PAVING
9	27+40.0	0.0	5174.2	℄ BERM @ END OF N/S KEY WAY
10	26+80.0	162.6' LT	5175.0	℄ BERM @ TOP OF SLOPE
11	25+04.1	108.9' LT	5160.30	S.W. CORNER OF POND BOTTOM
12	25+04.1	71.7' LT	5160.15	S.W. CORNER OF SOIL CEMENT PAVING @ EDGE OF POND BOTTOM
14	25+35.8	50.4' LT	5160.15	N.E. CORNER OF SOIL CEMENT PAVING
16	25+28.7	44.7' LT	5160.11	℄ MAINT. RAMP @ EDGE OF SOIL CEMENT PAVING
17	25+21.7	39.0' LT	5160.08	S.E. CORNER OF SOIL CEMENT PAVING @ EDGE OF POND BOTTOM
18	25+06.9	41.8' LT	5160.0	℄ S.D. & OUTLET STRUCTURE @ FACE OF OUTLET
19	26+22.4	52.1' LT	5160.62	EDGE OF POND BOTTOM @ P.I.
20	26+61.4	39.4' LT	5160.72	EDGE OF POND @ P.I.
21	26+93.9	39.3' LT	5160.91	N.E. CORNER OF POND BOTTOM
22	26+93.8	108.8' LT	5160.91	N.W. CORNER OF POND BOTTOM
23	26+46.6	79.0' LT	5160.72	℄ INLET STRUCTURE @ E. EDGE OF PAVING
24	26+45.9	141.0' LT	5167.7	℄ INLET STRUCTURE @ W. EDGE OF PAVING
25	25+47.7	0.0	5170.5	℄ BERM @ END TOP OF SLOPE
26	26+83.6	0.0	5170.5	℄ BERM @ END TOP OF SLOPE
27	26+29.2	191.4' LT	5072.0	℄ RIPRAP SLOPE PROTECTION @ S. EDGE
28	26+78.1	184.3' LT	5072.0	℄ RIPRAP SLOPE PROTECTION @ N. EDGE
29	26+16.3	109.0' LT	5060.72	INLET STRUCTURE @ S EDGE OF PAVING
30	26+76.3	109.0' LT	5060.72	INLET STRUCTURE @ N EDGE OF PAVING



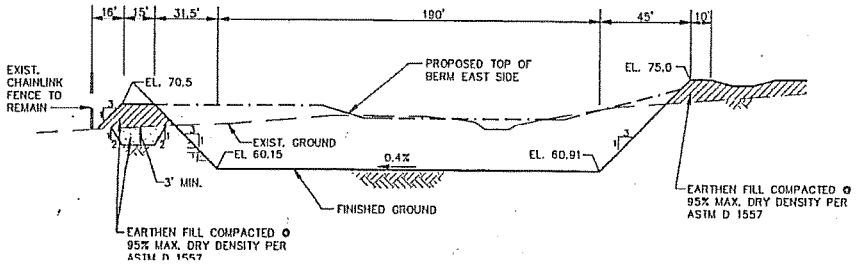
SECTION B–B

SCALE: 1" = 30' HORIZ.
1" = 10' VERT.



SECTION C–C

SCALE: 1" = 30' HORIZ.
1" = 10' VERT.



RECORD DRAWING

I, Charles M. Easterling, hereby certify that these drawings have been revised in accordance with the information furnished by Sierra-Tek, Inc. to reflect the construction as actually accomplished.

Charles M. Easterling, P.E.
N.M.P.E. No. 6411

5-8-97
Date

LEGEND

PROPOSED FEATURES

- 43.9 ⊕ — SPOT ELEVATION
- 5135 — CONTOUR
- RIPRAP
- SOIL CEMENT PAVING
- AREA TO BE OVEREXCAVATED FOR BERM STRUCTURAL KEYWAY
- COMPACTED EARTHEN FILL
- BASE COURSE SURFACE
- POND OUTLET STRUCTURE

EASTERLING & ASSOCIATES, INC.
CONSULTING ENGINEERS
10131 Coors Rd., NW, Suite H-7/8
ALBUQUERQUE, NEW MEXICO 87114
(505) 898-8021 FAX (505) 898-8501

ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY

TITLE: UNSER DIVERSION
POND 5
GRADING PLAN AND SECTIONS

AS BUILT INFORMATION
CONTRACTOR
DATE
PROJECT NO.
DATE
DRAWING NO.
DATE

BENCH MARKS
STATION NAME: 1-40-20A
N.M.S.H.D. BRASS TABLET LOCATED ON THE NORTH SIDE OF
U.S. HWY. 1-40 AND ABOUT 465' EAST OF UNSER BLVD.
OVERPASS

NORTHING: 1,480,199.97
EASTING: 265,925.16
ELEVATION: 5165.89

MICRO-FILM INFORMATION
RECORDED BY
DATE
NO.

SURVEY INFORMATION
FIELD NOTES

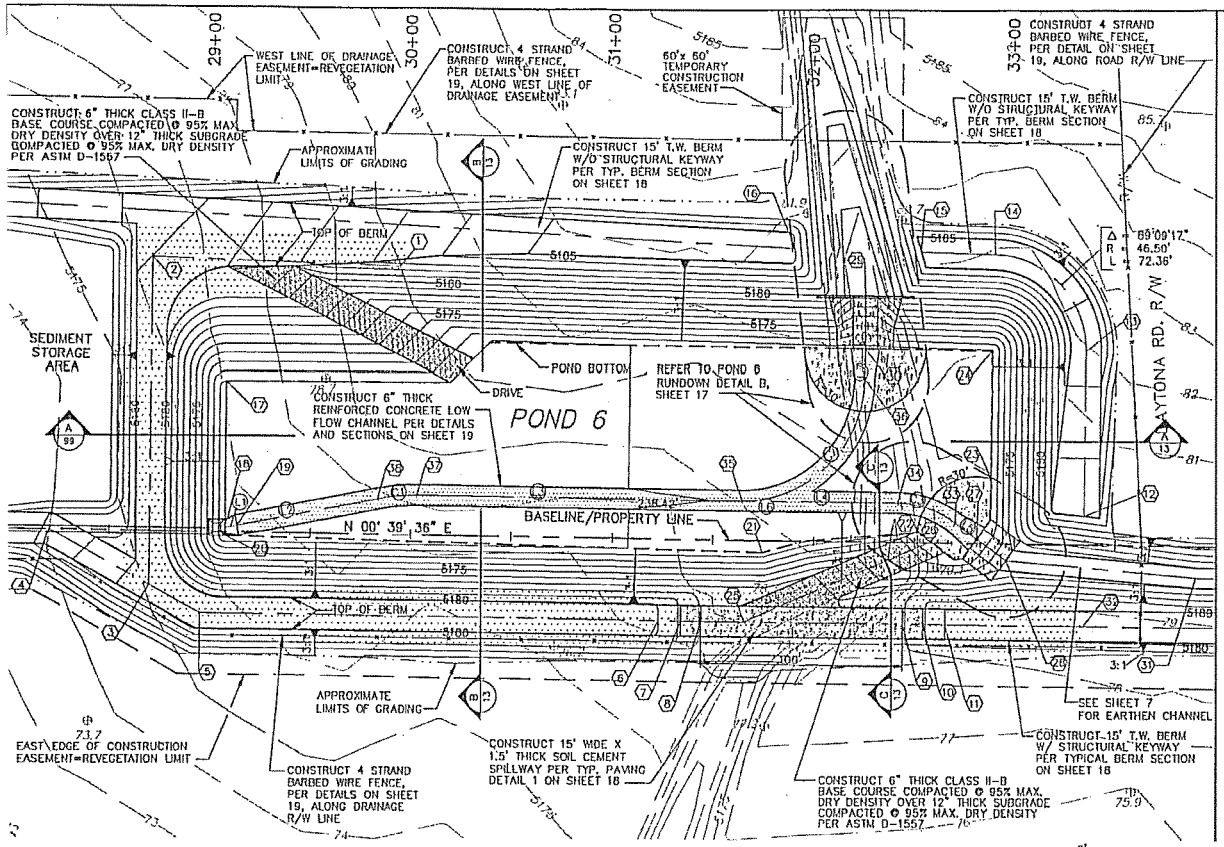
NO.	BY	DATE
TOPO	GEO SERVICE	4-93

ENGINEER'S SEAL

REVISIONS

NO.	DATE	REMARKS	BY
		DESIGN	

DESIGNED BY VSF 10/93
DRAWN BY PMT,AMH 10/93
CHECKED BY VSF,CME 9/94



GRAPHIC SCALE

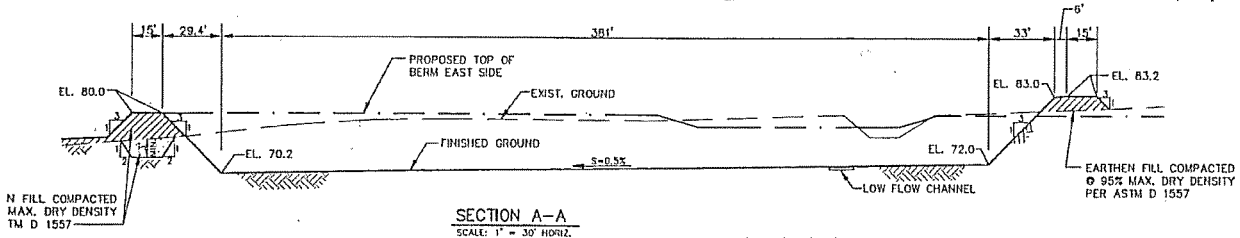
(IN FEET)
1 inch = 30 ft

POND 6 POINT DATA

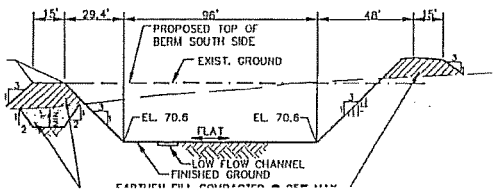
POINT I.D. NO.	STA.	OFFSET (FT)	ELEV.	POINT DESCRIPTION
(1)	29+93.4	129.5' LT	5182.7	℄ N/S KEY WAY ✪ END OF KEY WAY
2	28+70.4	131.8' LT	5180.0	℄ N/S KEY WAY AND E/W KEY WAY ✪ INT.
3	28+70.3	26.3' RT	5180.0	℄ N/S AND E/W BERMS ✪ INT.
4	28+20.0	0.0	5178.1	℄ ACCESS RD/BERM ✪ ANGLE POINT
5	28+95.5	40.0' RT	5180.0	℄ BERM ✪ ANGLE POINT
6	31+23.2	40.0' RT	5180.0	℄ BERM ✪ TOP OF SLOPE
7	31+34.6	40.0' RT	5178.9	℄ SPILLWAY PAVING ✪ SOUTH EDGE OF PAVING
8	31+44.6	40.0' RT	5177.9	℄ SPILLWAY PAVING ✪ TOE OF SLOPE
9	32+44.6	40.0' RT	5177.9	℄ SPILLWAY PAVING ✪ TOE OF SLOPE
10	32+54.6	40.0' RT	5178.9	℄ SPILLWAY PAVING ✪ NORTH EDGE OF PAVING
11	32+65.7	40.0' RT	5180.0	℄ BERM ✪ TOP OF SLOPE
12	33+34.5	14.0' LT	5182.0	℄ E/W BERM ✪ TOP OF SLOPE
13	33+34.6	93.0' LT	5184.4	℄ E/W BERM ✪ P.T.
14	32.88.8	139.8' LT	5185.0	℄ N/S BERM ✪ P.C.
15	32.51.6	140.3' LT	5185.0	℄ N/S BERM ✪ TOP OF SLOPE
16	31+89.0	141.4' LT	5185.0	℄ N/S BERM ✪ TOP OF SLOPE
17	29+07.8	72.4' LT	5170.5	S.W. CORNER OF POND BOTTOM
18	29+07.78	2.00' LT	5169.50	℄ OF LOW FLOW CHANNEL ✪ FACE OF OUTLET STRUCTURE
19	29+13.67	3.17' LT	5169.80	℄ OF LOW FLOW CHANNEL ✪ END OF TRANSITION
20	29+07.8	2.0' RT	5170.00	S.E. CORNER OF POND BOTTOM
21	31+74.8	5.5' RT	5171.4	EAST SIDE OF POND BOTTOM ✪ ANGLE POINT
22	32+51.3	5.7' LT	5171.8	EAST SIDE OF POND BOTTOM ✪ EDGE OF SOIL CEM. PAV.
23	32+87.9	31.5' LT	5172.0	NORTH SIDE OF POND BOTTOM ✪ EDGE OF SOIL CEM. PAV.
24	32+87.8	93.0' LT	5172.0	N.W. CORNER OF POND BOTTOM
25	31+66.0	40.0' RT	5177.9	℄ OF SPILLWAY PAVING AND MAINT. RAMP ✪ INT.
26	32+58.0	0.4' LT	5171.9	℄ OF MAINT. ROAD ✪ BOTTOM OF POND
27	32+80.0	2.3' LT	5171.80	℄ OF INLET STRUCTURE & ℄ OF LOW FLOW CHANNEL ✪ EDGE OF POND BOTTOM
28	32+95.8	8.0' RT	5175.0	℄ OF INLET STRUCTURE ✪ N. EDGE OF PAVING
29	32+24.3	115.5' LT	5176.7	℄ OF INLET STRUCTURE ✪ W. EDGE OF PAVING
30	32+24.32	93.0' LT	5171.70	℄ OF INLET STRUCTURE & LOW FLOW CHANNEL ✪ WEST EDGE OF POND BOTTOM
31	33+90.0	15.5' RT	5175.8	℄ OF CHANNEL ✪ ANGLE POINT
32	33+34.0	40.0' RT	5180.0	℄ OF N/S BERM ✪ N. END OF N.S. KEYWAY
33	32+70.21	9.03' LT	5171.80	℄ OF LOW FLOW CHANNEL ✪ E.C./START OF WIDTH TRANSITION
34	32+41.50	19.00' LT	5171.45	℄ OF LOW FLOW CHANNEL ✪ B.C.
35	31+64.32	19.00' LT	5171.06	INTERSECTION OF LOW FLOW CHANNELS CENTERLINES
36	32+24.32	79.00' LT	5171.53	℄ OF LOW FLOW CHANNEL ✪ E.C./START OF WIDTH TRANSITION
37	30+03.08	19.00' LT	5170.25	℄ OF LOW FLOW CHANNEL ✪ E.C.
38	29+83.57	17.08' LT	5170.16	℄ OF LOW FLOW CHANNEL ✪ B.C.

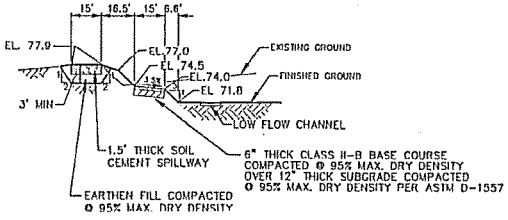
CURVE	RADIUS	LENGTH	TANGENT	DELTA
C1	100.00'	19.64'	9.85'	11°15'07"
C2	60.00'	94.25'	60.00'	90°00'00"
C3	50.00'	30.58'	15.79'	35°02'44"

LINE	DIRECTION	DISTANCE
L1	N10°35'31"W	6.00'
L2	N10°35'31"W	71.27'
L3	N00°39'36"E	161.24'
L4	N00°39'36"E	77.18'
L5	N33°52'23"E	13.24'
L6	S00°39'36"W	238.42'
L7	N89°20'24"W	14.00'



SECTION A-A
SCALE: 1" = 30' HORIZ.
1" = 10' VERT.





LEGEND

PROPOSED FEATURES

- 43.9 ✪ SPOT ELEVATION
- 5135 CONTOUR
- REINFORCED CONCRETE PAVING
- SOIL CEMENT PAVING
- AREA TO BE OVEREXCAVATED FOR BERM STRUCTURAL KEYWAY
- COMPACTED EARTHEN FILL
- BASE COURSE SURFACE
- (1) POND OUTLET STRUCTURE
- PIPE GATE(BY OTHERS)
- BARBED WIRE FENCE

RECORD DRAWING

I, Charles M. Easterling, hereby certify that these drawings have been revised in accordance with the information furnished by Sure-Tek, Inc. to reflect the construction as actually accomplished.

Charles M. Easterling, P.E.
N.M.P.E. No. 8411
Date: 5-8-97

AS BUILT INFORMATION
CONTRACTOR
DATE
SURVEY BY
DATE
INSPECTION BY
DATE
RECORD FILM INFORMATION
RECORDED BY
DATE
VOL.

BENCH MARKS
STATION NAME: 1-40-20A
N.M.S.H.C. BRASS TABLET LOCATED ON THE NORTH SIDE OF
U.S. HWY. I-40 AND ABOUT 465' EAST OF UNSER BLVD.
OVERPASS
NORTHING: 1,490,199.97
EASTING: 385,526.16
ELEVATION: 5165.59

SURVEY INFORMATION
FIELD NOTES

NO.	DATE	BY
TOPO	4-93	CED SERVICE

ENGINEERS SEAL
NEW MEXICO
CHARLES M. EASTERLING
8411
REGISTERED PROFESSIONAL ENGINEER
12-4-96

NO.	DATE	REMARKS	BY
		AS BUILTS	
		DESIGN	

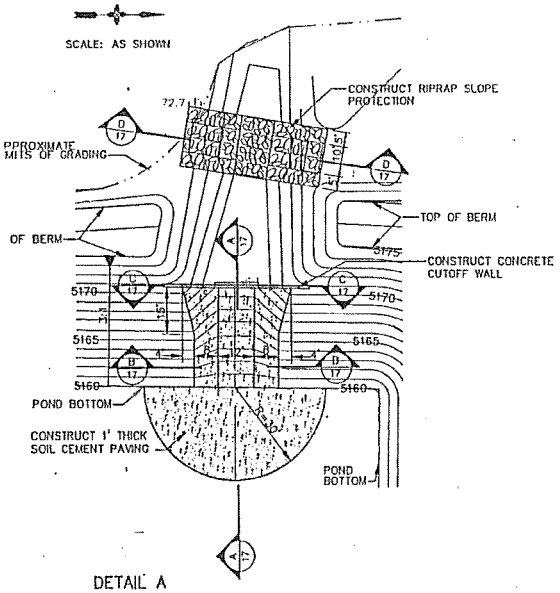
DESIGNED BY VSF DATE 10/93
DRAWN BY PMT/MM DATE 10/93
CHECKED BY VSF/CME DATE 9/94

EASTERLING & ASSOCIATES, INC.
CONSULTING ENGINEERS
10131 Coors Rd., NW, Suite H-7/8
ALBUQUERQUE, NEW MEXICO 87114
(505) 898-8021 FAX (505) 898-8501

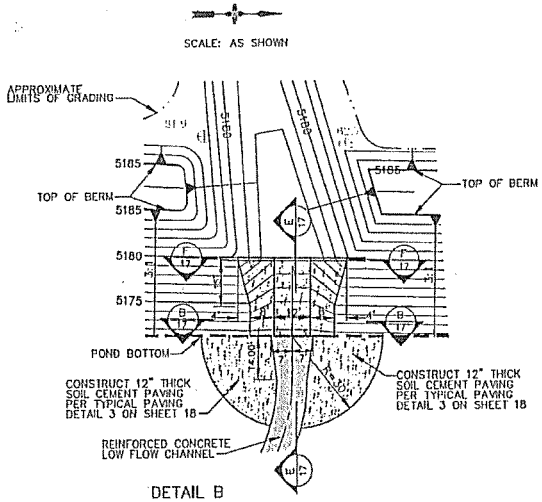
ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY

TITLE: UNSER DIVERSION
POND 6
GRADING PLAN AND SECTIONS

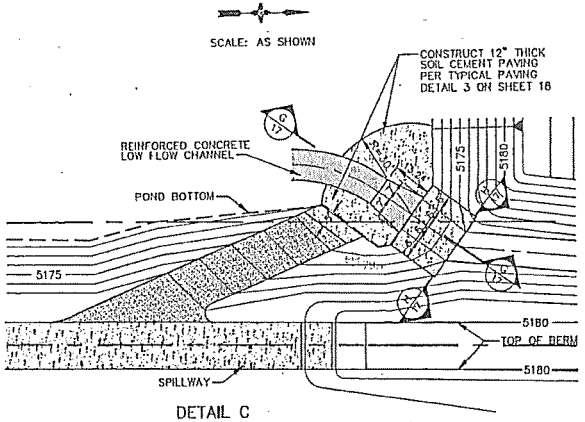
APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE



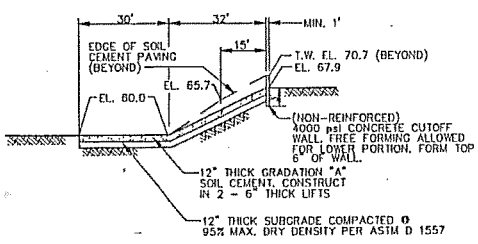
DETAIL A
POND 5 RUNDOWN STRUCTURE
SCALE: 1" = 20'



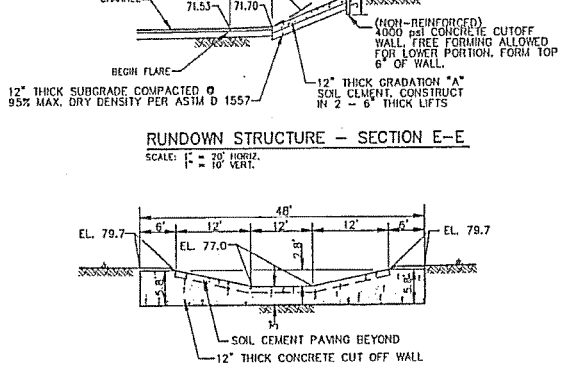
DETAIL B
POND 6 RUNDOWN STRUCTURE
SCALE: 1" = 20'



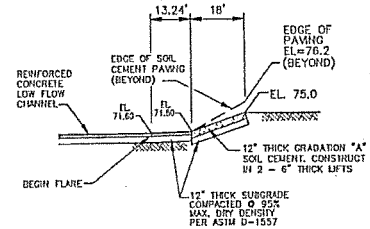
DETAIL C
POND 6 RUNDOWN STRUCTURE
SCALE: 1" = 20'



RUNDOWN STRUCTURE – SECTION A–A
SCALE: 1" = 20' HORIZ. 1" = 10' VERT.

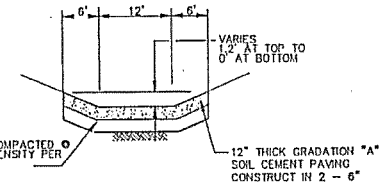


RUNDOWN STRUCTURE – SECTION E–E
SCALE: 1" = 20' HORIZ. 1" = 10' VERT.

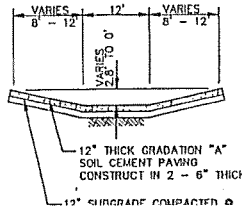


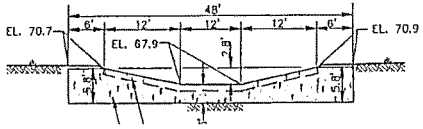
RUNDOWN STRUCTURE – SECTION G–G
SCALE: 1" = 20' HORIZ. 1" = 10' VERT.

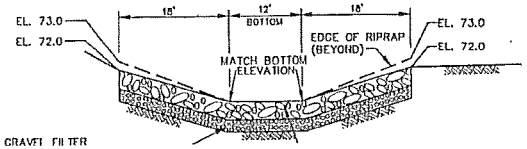
RUNDOWN CONCRETE CUT OFF WALL – SECTION F–F
SCALE: 1" = 10' HORIZ. 1" = 10' VERT.



RUNDOWN STRUCTURE – SECTION H–H
SCALE: 1" = 10' HORIZ. 1" = 5' VERT.







12" GRAVEL FILTER

RECORD DRAWING
I, Charles M. Easterling, hereby certify that these drawings have been revised in accordance with the information furnished by Surv-Tek, Inc. to reflect the construction as actually accomplished.

Charles M. Easterling, P.E. N.M.P.E. No. 6411 Date: 5-8-97

AS BUILT INFORMATION
CONTRACTOR — DATE
VERIFIED BY — DATE
INSPECTOR'S INITIALS — DATE
FIELD BOOK — DATE
CHECKED BY — DATE

BENCH MARKS
STATION NAME: I-40-25A
N.M.S.H.C. BRASS TABLET LOCATED ON THE NORTH SIDE OF U.S. HWY. I-40 AND ABOUT 465' EAST OF UNSER BLVD. OVERPASS

MICRO-FILM INFORMATION
RECORDED BY — DATE — NO.

SURVEY INFORMATION
NO. | DATE | BY | FIELD NOTES
TOPO | 4-93 | GSD SERVICE

NORTHING: 1,490,199.97
EASTING: 365,926.16
ELEVATION: 5165.89

ENGINEERS SEAL
NEW MEXICO
CHARLES M. EASTERLING
12-12-96

NO.	DATE	BY	REMARKS
			REVISIONS
			DESIGN

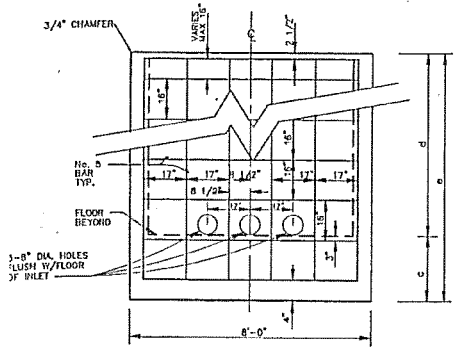
DESIGNED BY VSF DATE 10/93
DRAWN BY PMT_ANM DATE 10/93
CHECKED BY VSF_DME DATE 9/94

EASTERLING & ASSOCIATES, INC.
CONSULTING ENGINEERS
10131 Cueva Rd., NW, Suite H-7/8
ALBUQUERQUE, NEW MEXICO 87114
(505) 898-8021 FAX (505) 898-8501

ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY

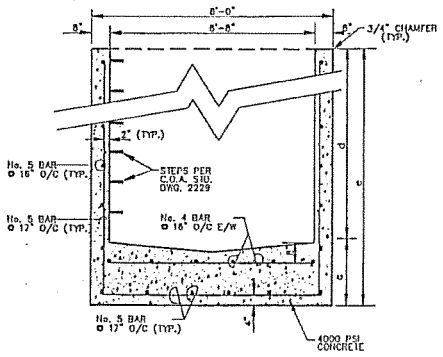
TITLE: UNSER DIVERSION
RUNDOWN STRUCTURE DETAILS AND SECTIONS
POND 5 AND POND 6

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE

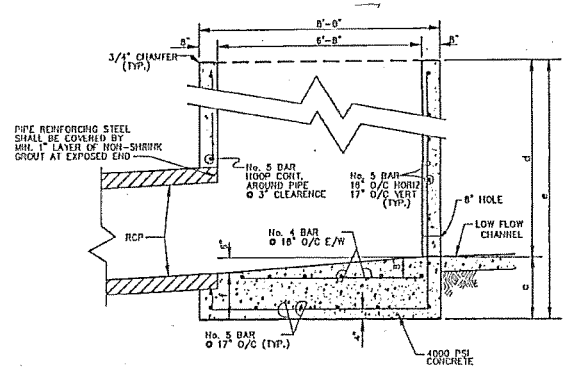


NOTE: ACCURATE PLACEMENT OF REINFORCING STEEL TO THE DIMENSIONS SHOWN IS REQUIRED TO FACILITATE CORING OF HOLES THROUGH THE FRONT WALL OF THE STRUCTURE.

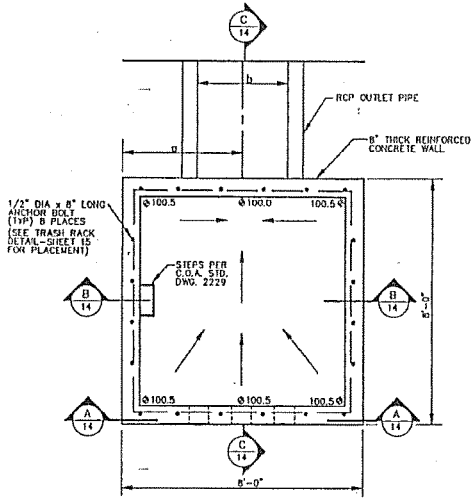
SECTION A–A
NOT TO SCALE



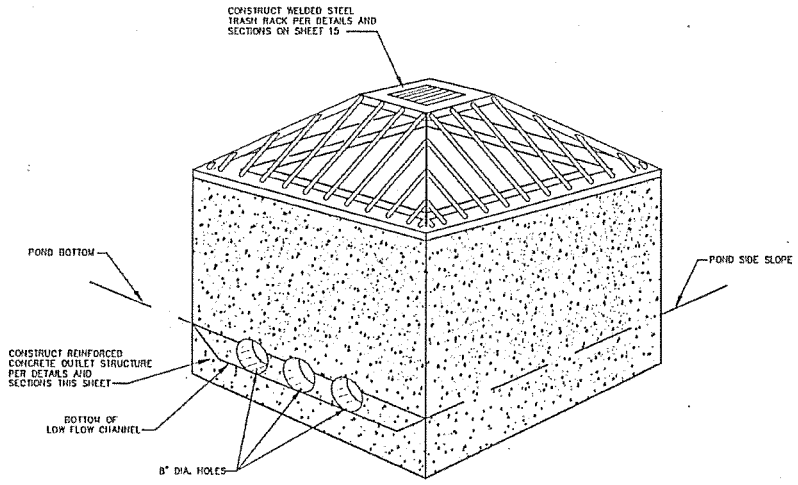
SECTION B–B
NOT TO SCALE



SECTION C–C
NOT TO SCALE



OUTLET STRUCTURE DETAIL – PLAN
SCALE: 1" = 2'



ISOMETRIC – CONCRETE OUTLET STRUCTURE
NOT TO SCALE

CONCRETE OUTLET STRUCTURE DIMENSIONS							
POND No.	* a	b	c	d	e	f	TOP OF WALL ELEVATION
1	4'-0"	3'-6"	3'-1"	8'-0"	11'-1"	2'-7"	5141.0
2	4'-0"	4'-0"	2'-11"	7'-4½"	10'-3½"	2'-5"	5144.8
3	4'-0"	3'-6"	2'-5"	5'-0"	7'-5"	1'-11"	5147.5

RECORD DRAWING
I, Charles M. Easterling, hereby certify that these drawings have been revised in accordance with

AS BUILT INFORMATION
CONTRACTOR
DATE
AS BUILT BY
DATE
INSPECTED BY
DATE
FIELD VERIFICATION BY
DATE
DRAWING BY
DATE

BENCH MARKS
STATION NAME: I-40-20A
N.M.S.H.C. BRASS TABLET LOCATED ON THE NORTH SIDE OF U.S. HWY. I-40 AND ABOUT 465' EAST OF UNSER BLVD. OVERPASS

MICRO-FILM INFORMATION
RECORDED BY
DATE
NO.

SURVEY INFORMATION
FIELD NOTES
NO. | BY | DATE
TOPO | GSD SERVICE | 04-93

NORTHING: 1,490,193.97
EASTING: 365,928.16
ELEVATION: 5161.89

ENGINEERS SEAL
CHARLES M. EASTERLING
NEW MEXICO
11-5-93

NO.	DATE	REMARKS	BY
		AS-BUILTS	
		DESIGN	

DESIGNED BY VSF DATE 10/93
DRAWN BY ALB/PUT/JAN DATE 10/93
CHECKED BY VSF/CMC DATE 9/94

EASTERLING & ASSOCIATES, INC.
CONSULTING ENGINEERS
10131 Coors Rd., NW, Suite H-7/8
ALBUQUERQUE, NEW MEXICO 87114
(505) 898-8021 FAX (505) 898-8501

ALBUQUERQUE METROPOLITAN ARROYO FLOOD CONTROL AUTHORITY

TITLE: UNSER DIVERSION
OUTLET STRUCTURE
DETAILS AND SECTIONS

APPROVALS	ENGINEER	DATE	APPROVALS	ENGINEER	DATE