C12/D3B

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

August 27, 1991

PROJECT ACCEPTANCE LETTER

Sundance Mechanical & Utility Contractors
5920 Midway Park Boulevard N.E.
Albuquerque, NM 87109

RE: ALBUQUERQUE WEST, UNIT 1, TRACT A, PROJECT NO. 3791.90

Dear Mr. Spiess:

The above referenced project has been completed according to the plans and specifications. The project consisted of construction of Davenport Street south of Paradise Boulevard and installation of a 12" water line and 8" sanitary sewer line in Marna Lynn/Davenport south of Paradise Hills to end of Marna Lynn. Also poured curb and gutter on east side of Marna Lynn/Davenport and paved east side of Marna Lynn/Davenport 22 feet from center line to curb. Four (4) drop structures were not built under this project but will be constructed as part of the Phase II Education Place Project.

The City of Albuquerque accepts the referenced project as a whole and the contractual correction period begins August 27, 1991. The correction period on this project is for one (1) year.

Sincerely,

Brian L. Speicher, P.E.
Chief Construction Engineer
Public Works Department

BLS:kt

City of Albuquerque
P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

May 16, 1991

Jeffrey G. Mortensen, P.E.
Jeff Mortensen & Associates, Inc.
6010-B Midway Park Boulevard, NE
Albuquerque, New Mexico 87109

RE: DRAINAGE PLAN FOR EDUCATION PLACE, (C-12/D3B)
WORK ORDER NO. 3791.91, ENGINEER'S STAMP DATED APRIL 25, 1991

Dear Mr. Mortensen:

Based on the information provided on the referenced submittal received April 26, 1991, the plan is approved for work order.

Please be advised that the maximum discharge rate for Tract A per the master plan is as follows:

Q cfs (Tract A) = (38.4 cfs) - (Free Discharge for Education Place & Davenport Street) - (0.5 cfs/acre for Lot 1 & Tract G)

If you should have any questions, please do not hesitate to call me at 768-2650.

Cordially,

Gilbert Aldaz, P.E. & P.S.
Civil Engineer/Hydrology

GA
WP+1650

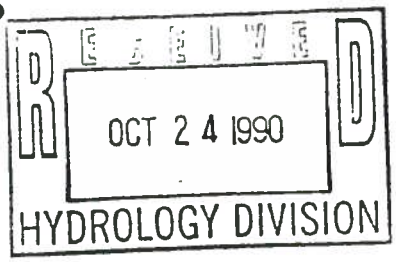
C-12/D0033

DRAINAGE REPORT

FOR

ALBUQUERQUE WEST UNIT ONE

OCTOBER 22, 1990



PREPARED BY: ISAACSON & ARFMAN, P.A.
128 MONROE STREET, N.E.
ALBUQUERQUE, NM 87108
(505) 268-8828

ATTN: FRED C. ARFMAN, P.E.

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DRAINAGE STUDY
FOR
ALBUQUERQUE WEST UNIT ONE

INTRODUCTION & SCOPE

This offered comprehensive drainage study was prepared as a subsequent study to the "Conceptual Drainage Plan for Albuquerque West Unit 1," dated January 28, 1990, and approved by the City's Hydrology Section on February 20, 1990. This plan shall pertain to those initial infrastructure improvements required for the partial development of Davenport Street and Marna Lynn Avenue and the extension of the Eagle Ranch Storm Drain southerly to Nunzio Avenue's southern right-of-way line.

Those mentioned improvements were waived by the City as part of the bulk-land platting process which reconfigured the Albuquerque West Subdivision from its original 1984 platting. As a condition of the bulk-land sale of Tract 'A' to the Albuquerque Board of Education, the construction of certain improvements were agreed upon and included into the Purchase Agreement. Those improvements consist of the following:

- Davenport Street--24 ft. paving, water & sanitary sewer
- Marna Lynn Avenue--24 ft. paving, water & sanitary sewer
- Tracts B & F--temporary earthen drainage channel
- Tract B--temporary detention & desiltation basin
- Eagle Ranch Storm Drain--extension to the south to Nunzio Ave. then west to temporary basin
- Miscellaneous underground utility lines

It is understood that additional public and private infrastructure improvements shall be required as a condition of approval of the individual tract's site development plans. The previously mentioned improvements are scheduled for construction as a result of a private co-improvement agreement and not tied to any governmental policy. The remaining public improvements required for the future development of Tract A (APS school site) or any of the surrounding tracts shall be identified by each tract's infrastructure listing at the time those parcels are developed.

This study has been prepared to investigate the existing conditions and downstream drainage facilities, the overall site drainage characteristics and runoff potential. The interim and permanent facilities shall be identified for the Phase One improvements. The following tracts' land development scenario was used to create the greatest runoff potential where temporary downstream facilities exist.

Fully Developed Parcels	Undeveloped Parcels
Tr. A	Tr. B
Tr. G	Tr. D
Tr. E	Tr. C
Tr. F	Lot 1, 2, 3; Blk. B
Lots 1 & 2; Blk. A	

SITE CONDITIONS & EXISTING FACILITIES

--Previous Study:

This 49.3-acre parcel was included in the September 10, 1984, "Grading and Drainage Plan for Albuquerque West" prepared by

Leverton-Easterling. This study covered the entire 95 acres of Albuquerque West. Due to limited down stream storm-drain capacity in Eagle Ranch Road, those upper drainage basins were recommended to have controlled discharge by ultimate individual lot ponding.

The previously mentioned February 1990 Conceptual Drainage Plan redefined the individual tracts' controlled discharge potential and identified those improvements necessary due to the reconfiguration of the roadways and tract boundaries.

--Topography:

The subject site was included in the Riverview Mass Grading Project in 1988. Therefore, the existing site drainage patterns and characteristics have changed. The result of the altered topography is that the previous drainage basin feeding into the Piedras Marcadas Arroyo has been added to the adjacent basin which discharges into the Calabasillas Arroyo. In addition, the existing area's soils have been blended and compacted. The entire site was revegetated with native grasses.

--Drainage Improvement:

As part of the Riverview Mass Grading, a detention/desiltation pond was placed at the easterly edge of the subject property adjacent to Paradise Boulevard and at the terminus of the Eagle Ranch Storm Drain (36" diameter). This temporary facility has been operating for three years and was capable of handling the 100-year event as was evident by the major storm on July 9, 1988.

--Soils:

There are two soil types previously blended by the mass grading which now cover the site and the minor offsite contributing watershed.

BKD--Bluepoint-Kokan Association--loamy fine sand and gravelly sand, SCS Hydrologic Group A.

MWA--Madurez-Wink Association--fine sandy loam, SCS Hydrologic Group B.

--Rational Formula 'C' Factor:

From Leverton-Easterling's 1984 Plan, a weighted 'C' Factor for the combined soils was 0.24. Due to the disturbance of the native soils and their compaction and revegetation, an existing 'C' Factor of 0.40 shall be used to determine those existing runoff characteristics.

--Rainfall:

From DPM Plate 22.2, D-1, the 6-hour rainfall volumes are:

100 yr. = 2.2 in.

10 yr. = 1.45 in.

--Eagle Ranch Storm Drain:

As mentioned in the narrative on Drainage Improvements above, the majority of the storm waters generated from this site are accepted

by the Eagle Ranch Storm Drain. A portion of the construction plans for this facility have been reduced and placed in the Appendix of this study. While the constructed 36" dia. RCP has a carrying capacity of 90 CFS, its allowed acceptance is limited to 55 cfs. This controlled rate of flow has necessitated upland detention or lengthening the time of concentration or a combination of the two.

EXISTING DRAINAGE CHARACTERISTICS

BASIN A: Storm-water runoff from this basin is captured by an earth ditch/berm facility along the easterly property line of the adjacent Lot 1 of Land of Taberbacle of Praise Church and Lot 6, Block C. All storm waters generated within Basin A are desilted and allowed to enter into the public 36" diameter storm drain system of Eagle Ranch Road.

BASIN B: Storm waters generated from this basin are currently allowed to discharge onto the paving of Eagle Ranch Road. Flows are then conveyed to the north within the right-of-way to the intersection of Eagle Ranch Road and Paradise Boulevard. Flows are then turned to the east and conveyed towards Coors within the southerly bar ditch of Paradise Boulevard. All storm waters are finally accepted by the New Mexico State Highway & Transportation Department storm drain inlet along the northerly right-of-way line of Paseo del Norte.

STORM WATER RUNOFF (Existing Conditions): From the previously defined drainage basins and from the attached Runoff Calculation Sheets 1 and 2, the following storm water runoff valves were computed:

Basin	Area	Anal. Pt.	Q_{100}	Q_{10}	V_{100}
A	45.2 Ac.	Ext-1	53.2 CFS	34.9 CFS	106,650 CF
B	14.86 Ac.	Ext-2	20.4 CFS	13.4 CFS	35,062 CF

(See Appendix for Runoff Calculation Sheets.)

STORM RUNOFF ANALYSIS

METHODOLOGY: Runoff analysis conforms to the methods outlined in the Development Process Manual (DPM), Chapter 22. The Rational Formula was used to calculate 100-year runoff rates at various "Analysis Points" (AP) in the project area. This is in accordance with the DPM since the tributary drainage areas involved are less than 320 acres.

The runoff coefficient, 'C', in the Rational Formula was developed for three land uses and a developed street classification. Specific runoff coefficient values for drainage subareas were determined by measuring the areas of each of the land use classification types within the contributing area and calculating the corresponding composite C value. Existing vacant lands west of Tract B was analyzed for the fully developed condition according to its land use classification.

All of the upland parcels with the exception of Tract A (APS school site) were analyzed using their net effective areas. Reduced areas were used due to the previously established storm water detention requirements.

RUNOFF RATES: Runoff rates were calculated at various key locations along the public right-of way and the temporary earthen channel alignment. The analysis points for these calculation points are labeled AP-1 through AP-9 as found on the drainage exhibit of the original Conceptual Drainage Plan. Calculations for AP-4 and AP-5* are found in the Appendix of this report.

PROPOSED SITE RUNOFF CHARACTERISTICS

As stated earlier in the scope of this study, those tracts being accessed by the proposed improved roadways of Davenport Street, Marna Lynn Avenue and Education Place were analyzed as being fully developed with runoff constraints. Detained storm water flows are allowed to enter onto the public roadways and are then routed to the southerly terminus of Education Place.

Storm water flows were analyzed at two critical points; AP-2 located at the low point of the three-way intersection and AP-4, located at the southerly and narrowest cross-section of Education Place. While this analyzed the ultimate built-out conditions, the initial phase of development does not improve Education Place. A temporary earthen swale shall be excavated within the easterly portion of Education Place's right-of-way. Those storm water

flows then enter into the temporary drainage rundown situated along the southerly boundary of the subdivision. The analysis of the temporary rundown is found in the Appendix of this report and the conclusions are presented below:

1. The natural grade along the channel's alignment ranges from 1.0% to 5.3%. Velocities created by a slope greater than 1.2% would create an overly erosive flow velocity for an unlined channel.

2. Temporary drop structures are programmed to be constructed in the channel/rundown. These structures effectively create a slope of 0.012 ft./ft. This corresponds to A Q_{100} velocity of approximately 4 fps. Considering the fact that this is a temporary facility releasing its storm waters into an oversized detention/desiltation pond, an analysis of the 10-year storm was undertaken to determine the velocity of the 10-year event. This yielded a reduced velocity of 3.8 fps and therefore less erosive.

3. The forementioned drop structures are situated to create a relative slope of 0.012 ft./ft. and are designed with a 6-foot center opening capable of conveying the 10-year flow (see preliminary design in the Appendix). The 100-year flow is confined to the drop structure but will flow over the entire width.

4. The freeboard is computed to be over 2 ft. with a corresponding depth of flow ranging from 9 to 11 inches for the 10-year event.

The previous storm water characteristics were for the fully developed westerly portion of the subdivision. An interim drainage solution to handle those undeveloped storm water flows from the proposed A.P.S. site and those undeveloped tracts to the west of Davenport and Marna Lynn must be constructed. It must handle those previously mentioned undeveloped storm waters intercepted by the public improvements of Marna Lynn and Davenport as well as what is projected to be generated by those two streets. This solution must be maintained by the surrounding property owners until such time that Education Place is constructed.

The solution consists of a temporary earthen swale within the easterly right-of-way of Education Place from the point of storm water discharge from the intersection of Davenport and Education to the southerly terminus of Education Place. At this point, all storm water flows enter into the previously described temporary earthen drainage rundown with temp. drop structures.

A typical section of this earthen swale with the hydraulic data is found in the Appendix of this report.

SITE DETENTION/DESILTATION POND

This temporary facility serves three functions. First, it accepts those storm water flows from the southerly subdivision property line rundown. Secondly, it serves as a detention pond, taking the peak off the flow allowing a flow rate entering into the Eagle Ranch Storm Drain Extension to be lowered to a rate of flow compatible with the down stream flow limitations. Thirdly, this facility was designed with a sacrificial volume for sediment accumulation. This feature allows partial filling of sediment while still leaving the required storage capacity for the storm waters in the 100-year event. A preliminary design of this facility is found in the Appendix of the report along with the pond's calculations for detention of storm water volumes.

EAGLE RANCH STORM DRAIN EXTENSION

The existing storm drain ends at the southerly right-of-way line of Paradise Boulevard, being approximately at the northwest corner of Lot 7-A-1 of the Albuquerque West Subdivision. It terminates as a 36-inch diameter R.C.P. at a modified storm drain manhole which acts as an inlet for those flows within the bar ditch along the southerly edge of pavement. See the Appendix of this report for a partial photocopy of the existing storm drain's design.

The proposed storm drain extension proceeds to the south as a 30-inch and then 24-inch dia. R.C.P., paralleling the westerly lot line of Lot 7-A-1 approximately 7.5 feet to the west. This offset alignment provides the required depth of bury over the conduit due

to the steep cross slope existing across the drainage easement. Refer to the Appendix for a cross-sectional drawing of this condition. The alignment angles to the west 45° at Nunzio Avenue's right-of-way line and then again after it crosses the street's centerline. The storm drain continues to the west as a 24-inch diameter R.C.P. to the last manhole. A 21-inch diameter R.C.P. extends 85 feet to serve as the discharge line of the previously mentioned detention/desiltation pond.

Future site developments to Tract 'B' may relocate the previously mentioned desiltation pond. The 21-inch diameter stub may be extended further into Tract 'B' as a private extension.

The hydraulic data sheets for the public extension of the storm drain as well as the inlet control measures are found in the Appendix of this report.

SUMMARY

The programmed improvements are the first of several stages of development. The public improvements which generate storm water runoff consist of the half sections of Marna Lynn Avenue and Davenport Street, NW. These two streets also accept undeveloped storm water runoff from those undeveloped tracts to the west. All flows are then discharged to the temporary drainage swale within the right-of-way of Education Place.

The concentrate storm waters are then accepted by the southerly rundown with temporary drop structures. This facility is designed to handle the 100-year event when the westerly portion (all tracts west of Tract 'B') is 100% developed. Storm waters are then discharged into the subdivision desiltation/detention pond prior to acceptance into the planned extension of the Eagle Ranch Storm Drain.

Storm waters discharge from the temporary pond at a controlled rate such that the subdivision's overall discharge into the storm drain located at the southerly right-of-way line of Paradise Boulevard does not exceed 56 cfs.

OWNER'S MAINTENANCE RESPONSIBILITY

The developer of Albuquerque West Unit One shall undertake the maintenance responsibility of the temporary drainage facilities described in this report. If required, he shall have prepared the proper Drainage Covenant which will bind him to perform the required maintenance on those temporary facilities until such time that others have taken his ownership interest or until permanent facilities have been constructed to replace those that are temporary.

CITY OF ALBUQUERQUE

March 30, 2009

Martin J. Garcia, P.E.
ABQ Engineering, Inc.
6739 Academy Rd NE Ste. 130
Albuquerque, NM 87109

Re: Fountain Hills, 8700 A & B Education Place NW,
(C-12/D003B)
Approval of Permanent Certificate of Occupancy,
Engineer's Stamp Dated: 06-18-07
Engineer's Certification Date: 1-21-09

Dear Mr. Garcia,

Based upon the information provided in your submittal on 3/30/09, the above referenced certification is approved for release of Permanent Certificate of Occupancy by Hydrology.

If you have any questions, you can contact me at 924-3982.

Sincerely,

Timothy E. Sims
Plan Checker-Hydrology, Planning Dept
Development and Building Services

C: CO Clerk—Katrina Sigala
file

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

CITY OF ALBUQUERQUE

July 6, 2007

Martin J. Garcia, P.E.
ABQ Engineering, Inc.
6739 Academy Rd. NE. Suite 130
Albuquerque, NM 87109

Re: Fountain Hills office Buildings, Tracts -2 & F Grading and Drainage Plan Engineer's Stamp dated 6-18-07 (C12-D3B)

Dear Mr. Garcia,

Based upon the information provided in your submittal received 6-18-07, the above referenced plan is approved for Building Permit. Please attach a copy of this approved plan to the construction sets prior to sign-off by Hydrology.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. In addition to submitting an NOI to the EPA and preparing a SWPPP, please send a copy of the SWPPP on a CD in .pdf format to the following address:

Department of Municipal Development
Storm Drainage Division
P.O. Box 1293, One Civic Plaza, Rm. 301
Attn: Kathy Verhage
Albuquerque, NM 87103

If you have any questions about this permit, please feel free to call the Municipal Development Department, Hydrology section at 768-3654.

Also, prior to Certificate of Occupancy release, Engineer Certification of the grading plan per the DPM checklist will be required.

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

Sincerely,

Bradley L. Bingham

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

C: File

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

CITY OF ALBUQUERQUE

July 9, 2007

Yolanda Padilla Moyer, PE
Bohannan Huston, Inc
7500 Jefferson NE
Albuquerque, NM 87109

Re: Fountain Hills Drainage Management Plan
Engineer's Stamp dated 6-4-07, (C12/D3B)

Dear Ms. Moyer,

Based upon the information provided in your submittal dated 6-5-07, the above referenced plan is approved for Site Plan for Subdivision and Preliminary Plat action by the DRB. Once that board approves the grading plan, please submit a mylar copy for my signature in order to obtain a Rough Grading Permit.

This project requires a National Pollutant Discharge Elimination System (NPDES) permit. In addition to submitting an NOI to the EPA and preparing a SWPPP, please send a copy of the SWPPP on a CD in .pdf format to the following address:

Department of Municipal Development
Storm Drainage Division
P.O. Box 1293, One Civic Plaza, Rm. 301
Attn: Kathy Verhage
Albuquerque, NM 87103

If you have any questions about this permit, please feel free to call the Municipal Development Department, Hydrology section at 768-3654.

Prior to Final Plat, Work Order or Building Permit approval, please address the following comments.

- The developed portion of Basin E drains to Education Place and the rest will drain through Basin F to SD2. Please update sheets 2 and 3 accordingly.

- The church site on Paradise does not drain to the post office. There is a pond on the south corner that retains a portion of the property.

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

- Since you will be modifying the inlets on Education Place with the construction of Fountain Hills Parkway, please provide enough inlet capacity to get as much as possible the 38.6 cfs allowed in the Fountain Hills storm drain.

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

Sincerely,

Bradley L. Bingham

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

C: Kathy Verhage, DMD
file

CITY OF ALBUQUERQUE

January 23, 2006

Martin J. Garcia, P.E.
ABQ Engineering, Inc.
6739 Academy Rd. NE. Suite 130
Albuquerque, NM 87109

Re: Fountain Hills office Buildings, Tract E-2 and Tract F Alb. West
Grading and Drainage Plan
Engineer's Stamp dated 1-13-06 (C12-D3B)

Dear Mr. Garcia,

Based upon the information provided in your submittal received 1-13-06, the above referenced plan is approved for Site Development Plan for Building Permit action by DRB. However, this plan cannot be approved for building permit until all questions given on April 7, 2005 are addressed for the overall site.

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

Sincerely,

Rudy E. Rael Associate Engineer
Planning Department.
Development and Building Services

C: File

P.O. Box 1293
Albuquerque
New Mexico 87103
www.cabq.gov

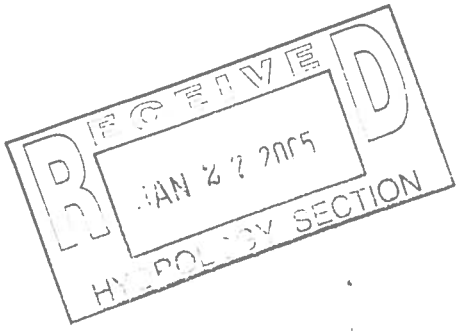
DRAINAGE REPORT

FOR

FOUNTAIN HILLS

Prepared By:

ABQ ENGINEERING, INCORPORATED
6739 Academy Road, NE – Suite 130
Albuquerque, NM 87109
Ph: (505) 255-7802
FAX:(505) 255-7902



Martin Garcia, P.E.

Table of Contents

1. Purpose and Scope

This parcel is proposed to be developed as a Neighborhood Commercial Zone (Fountain Hills). The offsite parcel to the South along Paseo del Norte is also a Neighborhood Commercial Zone. The existing Development to the North is Residential along Paradise Blvd. To the West, is a commercial area with a School and Post-office. To the East is a self-storage facility.

This report presents an overall drainage management plan of the site and adjacent contributing flows. Approval by the City of Albuquerque is requested in order that the subsequent development may proceed.

2. Site Description/Existing Drainage Conditions

This Neighborhood Commercial Zone development is located off Paseo del Norte and Eagle Ranch Road. The site is currently undeveloped with native vegetation comprising of 36.2 acres. The topography slopes to the East at approximately 3% to 5% grade with a steep drop to Eagle Ranch Road.

There are two offsite drainage areas that flow to and from the site. Drainage from Paradise Blvd. is transported to an existing AMAFCA pond located on the site. The offsite drainage from Education Blvd. is transported via open channel to a detention pond that outfalls to the AMAFCA pond. There is presently a standpipe that releases approximately 56 CFS from the existing AMAFCA pond through a 30" standpipe. These flows have been quantified by the drainage reports of Isaacson and Arfman "Paseo Crossing". The property is within the "North Coors Drainage management Plan" by Smith Engineering, and affected by the "Drainage Report for Richland Hills Unit 1" by Community Sciences Corporation, and the "Drainage Calculations for Circle K-Nunzio" by Mark Goodwin & Associates.

3. Design Criteria/Land Treatments

The drainage plan presented in this report has been prepared in accordance with the City of Albuquerque Drainage Ordinances and Chapter 22 of the Development Process Manual (DPM). The drainage will be routed via conduit to the AMAFCA pond. The pond will be enlarged from its current volume or 2.2 ac. ft. to a final volume of 3.97 ac. ft.

The 24 Hr- 100 YR pond volume required is 3.73 ac. ft. Output from pond is restricted to the 30" down stream storm drain system.

Rainfall intensities per this report are as follows:

Zone	P_{60}	P_{360}	P_{1440}
2	1.87	2.20	2.66

Land Treatment (DPM Pg. 22-11)

Treatment Type	A	B	C	D
Commercial	0	0	10	90
Existing	0	100	0	0

See AHYMO Calculations for Basin Summaries, Inputs and Output Files

4. Drainage Management Plan

Basins will drain to a catchment point that will enter the storm drain systems outlined in the attached Hydraulic calculations. The system has been designed to accommodate the 100-yr., 6-hr. storm. The discharge from the area will be restricted to the 30" downstream storm drain drainage system and the existing standpipe in the AMAFCA pond.

5. Conclusion

Per the overall plan, no adverse downstream impact will result from this development. The proposed system will, in fact, greatly improve the local drainage situation in this area. The pond will shift peak flows in that the flows generated from neighboring communities will have discharged downstream before the peak flows generated from this site enter the existing 36" storm drain system.

Hydraflow 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)	Dns line No.
1		26.88	36 c	76.0	5088.00	5088.76	1.000	5095.00*	5095.12*	0.16	End
2		22.02	36 c	303.0	5088.86	5091.89	1.000	5095.28*	5095.61*	0.15	1
3		10.28	24 c	180.0	5091.99	5092.24	0.139	5095.76*	5096.13*	0.17	2

Project File: FountainHills3.stm	I-D-F File: SAMPLE.IDF	Total No. Lines: 3	Run Date: 01-06-2005

NOTES: c = circular; e = elliptical; b = box; Return period = 2 Yrs.; * Indicates surcharge condition.

Hydraflow Inlet Report

Line No	Line ID	A (ac)	Inlet time (min)	I (in/hr)	C	Q = CIA (cfs)	Q carry (cfs)	Q capt (cfs)	Q byp (cfs)	Junc type	Curb Inlet		Grate Inlet			Gutter				Flow		Byp line No
											Ht (in)	L (ft)	area (sqft)	L (ft)	W (ft)	So (ft/ft)	W (ft)	Sw (ft/ft)	Sx (ft/ft)	depth (ft)	spread (ft)	
1		0.00	0.0	0.00	0.00	4.86*	18.65	16.49	7.02	Genr	0.0	0.00	0.00	0.00	0.00	0.040	50.00	0.040	0.040	0.48	12.00	Offsite
2		0.00	0.0	0.00	0.00	11.74*	6.91	0.00	18.65	MH	0.0	0.00	0.00	0.00	0.00	0.000	0.00	0.000	0.000	0.00	0.00	1
3		0.00	0.0	0.00	0.00	10.28*	0.00	3.37	6.91	Curb	8.0	12.00	0.00	0.00	0.00	0.080	2.00	0.062	0.020	0.31	11.30	2

Project File: FountainHills3.stm | I-D-F File: SAMPLE.IDF | Total number of lines: 3 | Run Date: 01-06-2005

NOTES: Inlet N-Values = 0.016 ; Design depth for grate(s) = 0.3 (ft); Intensity = 0.00 / (Inlet time + 0.00) ^ 0.00; Return period = 2 Yrs. ; * Indicates Known Q added

Hydraflow Hydraulic Grade Line Computations

Line	Size	Q	Downstream								Len	Upstream								Check		JL coeff	Minor loss
			Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf		Invert elev	HGL elev	Depth	Area	Vel	Vel head	EGL elev	Sf	Ave Sf	Enrgy loss		
	(in)	(cfs)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(ft)	(ft)	(ft)	(ft)	(sqft)	(ft/s)	(ft)	(ft)	(%)	(%)	(ft)	(K)	(ft)
1	36	26.88	5088.00	5095.00	3.00	7.07	3.80	0.22	5095.23	0.163	76.0	5088.76	5095.12	3.00	7.07	3.80	0.22	5095.35	0.162	0.162	0.123	0.70	0.16
2	36	22.02	5088.86	5095.28	3.00	7.07	3.12	0.15	5095.43	0.109	303	5091.89	5095.61	3.00	7.07	3.12	0.15	5095.76	0.109	0.109	0.330	1.00	0.15
3	24	10.28	5091.99	5095.76	2.00	3.14	3.27	0.17	5095.93	0.207	180	5092.24	5096.13	2.00	3.14	3.27	0.17	5096.30	0.207	0.207	0.372	1.00	0.17

Project File: FountainHills3.stm | I-D-F File: SAMPLE.IDF | Total number of lines: 3 | Run Date: 01-06-2005

NOTES: Initial tailwater elevation = 5095 (ft) , * Normal depth assumed., ** Critical depth assumed.