DRAINAGE REPORT for VISTA DEL NORTE, NORTH POND

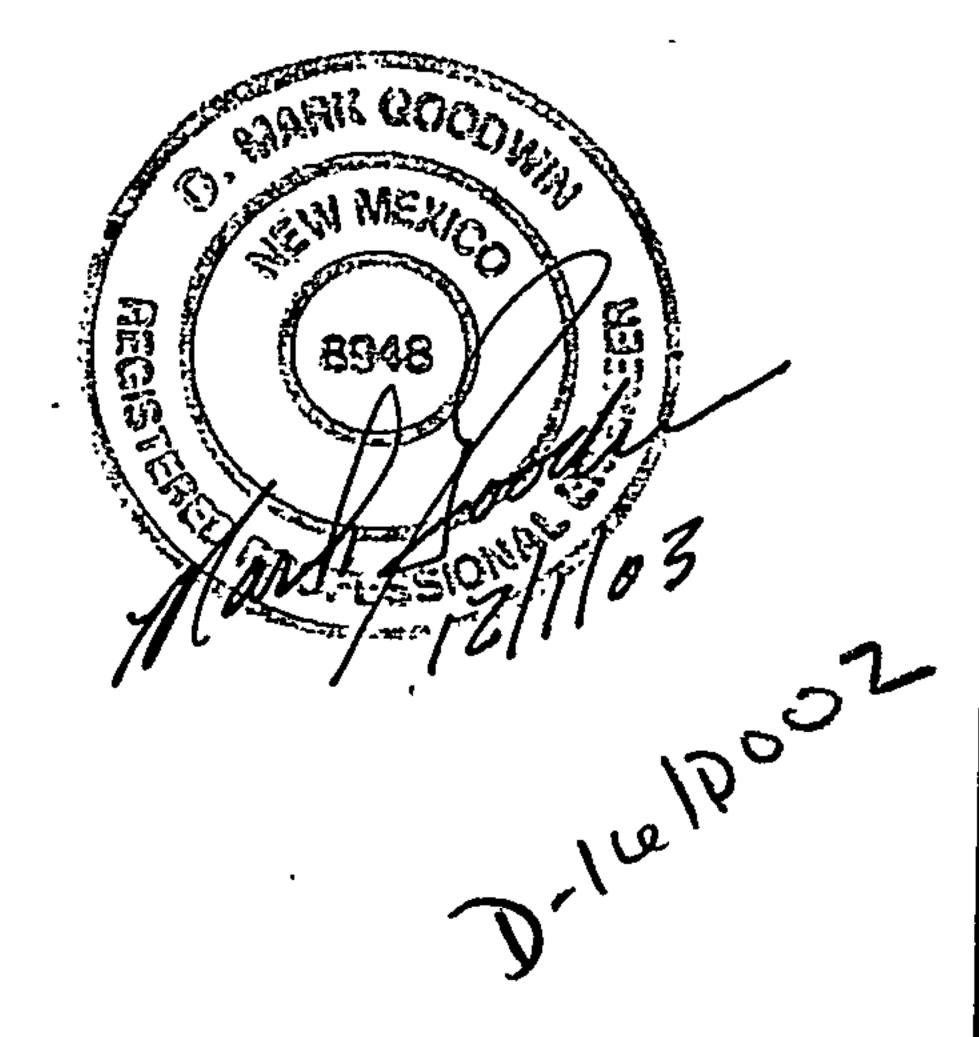
Prepared by:

Mark Goodwin & Associates, PA Consulting Engineers PO Box 90606 Albuquerque, NM 87199 (505) 828-2200

Prepared For:

Vista del Norte Development, LLC P.O. Box 3671 Albuquerque, NM 87190 (505) 883-1674

December 2003



PURPOSE

The approved drainage report for Alameda Business Park (Bohannan-Huston, Inc., 2/17/99) identifies a maximum allowable discharge of 4.15 cfs (100-year, 6-hour) from the Vista del Norte North Pond to the Edith Lift Station, located along the east side of Edith Blvd., north of Paseo del Norte (pertinent pages of report are located in Appendix A, and Master Storm Drain Plan is located in Plate 2). The purpose of this submittal is to provide the pertinent hydrologic, and hydraulic calculations to support the construction of the required storm drain infrastructure improvements that will deliver the storm flows from the north pond to the Edith Blvd. lift station.

METHODOLOGY

Hydrological conditions were analyzed for the 100-year, 6-hour storm, and 100-year, 24-hour storm (pond capacity) in accordance with the revised Section 22.2, Hydrology, of the Development Process Manual (DPM) for the City of Albuquerque, dated January 1993. All data and calculations supporting this study are located in Appendix B & C of this report.

OVERVIEW OF ANALYSIS

A +/- 30 acre-foot temporary retention pond constructed along Los Lomitas Drive has been used to receive the storm flows from various subdivisions within the Vista del Norte Master Planned Community. Plate 1 contains a boundary map identifying drainage basins contributing storm flows to this pond. With the proposed infrastructure improvements, this pond will be converted into a detention pond with an adequately sized outfall structure to regulate outflow (see outfall design calculations in Appendix C). The AHYMO run, located within Appendix B, quantifies the storm flows being routed to the pond, and the associated pond volume requirements.

Since there is no public right-of-way available adjacent to the North Pond, an emergency overflow spillway was not a viable option to consider on the future detention pond. An alternative solution is to provide a 24" riser pipe with appropriately sized orifice holes to regulate outflow from the pond, and a grated 24" opening, set at the maximum water surface elevation, in case of an emergency.

In reviewing this report, one will note that the design outflow from the pond is at 4.00 cfs instead of the 4.15 cfs identified above. This is to allow for a combined regulated discharge of 0.15 cfs from Tracts U3, U4, and U5 (see Appendix C) which cannot surface drain to the pond itself. Instead, flows from these tracts will connect to the pond outfall storm drain system, downstream of the pond outfall.

CONCLUSION

With the ongoing development of the Vista del Norte master planned community, the construction of the proposed infrastructure, along with the supporting hydrologic & hydraulic analysis contained in this report, will satisfy the recommendations of the previously approved Master drainage studies.

The site, as described in the 'Site Location and Characteristics' section below, is approximately 66.13 acres. A hydrologic computer program (AHYMO) and Part A of the DPM, Section 22.2, which provides a simplified procedure for projects with sub-basins smaller than 40 acres were used.

III. SUMMARY OF THE RELATED PLATTING AND EASEMENTS

There is currently a slope easement located along the western boundary of the Alameda Business Park boundary. It is our desire to vacate this existing slope easement along the western boundary because it is no longer necessary. The enclosed grading plan proposes to slope up from Edith Boulevard at a 3:1 in order to tie to the proposed grades along the western boundary. The grade differential could have been accomplished by the slope proposed or by the construction of a series of retaining walls. Each lot within the proposed Alameda Business Park Development is required to submit a package to EPC which includes a grading and drainage plan. The development of those lots adjacent to Edith Boulevard may construct a series of retaining walls in order to take advantage of more developable area. Subsequently, the slope easement is not a necessity for the construction of public infrastructure. Therefore a request has been made for its vacation.

Tract A will contain the interim retention pond and permanent detention pond and pump station. This tract will be given to the City of Albuquerque so as to maintain and operate the pond and future pump station. The pump station will discharge storm water to the existing AMAFCA North Diversion Channel within the public right of way within the Alameda Business Park and the necessary public storm drain easements. The future Alameda Business Park Pump Station will receive storm water flow from the Vista Del Norte Pond via a 24" RCP located within the public rights of way of El Pueblo Road and Edith Boulevard.

sump in the road. Storm water will then be direct from inlet into a storm drain under Edith, which will be directed to the detention pond within Tract A.

Basin 32 (0.88 acres, Q₁₀₀=1.69 cfs) is the remaining portion of tieback sloped areas along the western boundary of the Alameda Business Park. Basin 32 drains to Basin 23 (1.05 acres, Q₁₀₀=4.55 cfs) within Edith Boulevard. The combined flow (Q₁₀₀=6.24 cfs) from Basins 32 and 23 will drain to a low point within Basin 23 until the development of the future four-lane roadway. After the development of the future four-lane roadway, a portion of the runoff from these basins will be captured by two single grate Type "A" inlets in Edith Boulevard at the south end of the site (two inlets on each side of the roadway). The runoff caught in the inlets will then be directed into the Edith Storm Drain that was built between the Vista Del Norte and Alameda Business Park Ponds.

Basin 7 (3.08 acres, Q₁₀₀=13.36 cfs) is the area of Tract A that contains the temporary retention pond as a part of Phase 1. The temporary retention pond volume (100 year 24 hour storm event) required for the fully developed condition of the Alameda Business Park along with the future development of Edith Boulevard is 12.15 acre-feet.

Basin 7 (Tract A) will also contain the future pump station and detention pond as a part of Phase 2. The next section below describes in more detail the relationship between the pump station and the permanent detention ponds in Vista Del Norte and the Alameda Business Park.

VII. PHASE 2 DEVELOPED HYDROLOGICAL AND HYDRAULIC CONDITIONS (CONTRIBUTION FROM VISTA DEL NORTE)

For additional assistance throughout this section, please refer to the Edith Boulevard Storm Drain Plan and Profile Sheet and the Vista Del Norte Drainage Plan and Interim Grading Plan enclosed within the Exhibit section of this report.

The North Basin on the Vista Del Norte Drainage Plan will drain storm water runoff to its North Detention Pond. As shown on the Vista Del Norte Drainage Plan, the volume required for the proposed detention pond on the Vista Del Norte Drainage Plan is 21.92 acre-feet. Our analysis has determined that the runoff volume required is 20.94 acre-feet.

In order to drain the site within a 96 hour period a controlled flow rate of 4.15 cfs will discharge from the Vista Del Norte Pond into a 24" RCP storm drain directed toward the Alameda Business Park Pond. The public storm drain will be located within the El Pueblo Road right of way from the Vista Del Norte Pond to Edith Boulevard. The storm drain will continue up Edith Boulevard until it discharges into the Alameda Business Park Pond. The public storm drain within Edith Boulevard will pick up a small amount of storm water captured by a couple of future inlets within the future development of Edith.

The only inlets contributing to the storm drain between the Alameda Business Park and Vista Del Norte ponds is that portion of Edith Boulevard along the southwestern area of the Alameda Business Park. The remaining portion of Edith Boulevard along the Alameda Business Park Site will be serviced by a separate public storm drain system discharging into the Alameda Business Park Pond.

As mentioned above, Edith Boulevard is currently a two-lane roadway with no curb and gutter and contains two low points along the Alameda Business Parks western boundary. This report has analyzed the future development of Edith Boulevard based upon a four-lane divided roadway with a continuous southward slope from the southern high point. The future development of Edith will have a 2% crown in the road and will require two single Type "A" inlets on the east side and one on the west side (with wings on both sides) be constructed at the first low point mentioned above. Also, a Type "A" double inlet and a Type "A" single inlet at the south end of the site will be located on the east and west sides of the road, respectively. A single Type "A" double grate double wing inlet will accept approximately 50 cfs.

The storm water runoff from Edith Boulevard and the Vista Del Norte enter the Alameda Business Park Pond and are combined with the flow from our site. The combined runoff from the Alameda Business Park Pond is then discharged at a controlled rate of 6.75 cfs into the Pump Stations wet well. A volume of 9.55 acre-feet and controlled discharge of 6.75 cfs are needed to drain the Alameda Business Park Pond within the required 96-hour period. The pump station, located adjacent to the Alameda Business Park Pond, will pump the controlled discharge from the

VISTA DEL NORTE

To North Pond

TABLE 1B: SUMMARY OF HYDROLOGY

	<u> </u>	<u> </u>	<u> </u>		<u></u>	•	
SUBASIN ID	AREA (acres)	# Lots	N value	Land Treat. D	Land Treat.B/C	Q(100) cfs	Runoff Volume (Ac.Ft.)
TRACT D Units 4A,4B,5A,5B							
D1	4.18410	22	5.3	51	24.5	15.24	0.578
D2	4.51190	26	5.8	55	22.5	16.78	0.645
D3	1.84279	8	4.3	45	27.5	6.50	0.241
D4	2.48945	11	4.4	45	27.5	8.78	0.326
D5	4.48173	24	5.4	52	24.0	16.41	0.624
D6	4.69405	26	5.5	53	23.5	17.27	0.659
D7	5.74969	33	5.7	55	22.5	21.38	0.822
D8	1.26515	5	4.0	42	29.0	4.40	0.161
D9	7.23163	37	5.1	50	, 25.0	26.18	0.990
D10	2.12068	10	4.7	47	26.5	7.56	0.283
D11	2.94873	15	5.1	50	25.0	10.68	0.404
D12	2.07038	10	4.8	48	26.0	7.43	0.278
D13	3.10615	16	5.2	51	24.5	11.31	0.429
D14	2.68927	12	4.5	45	27.5	9.48	0.352
D15	1.35818	5	3.7	40	30.0	4.67	0.169
D16 .	1.39937	8	5.7	55	22.5	5.21	0.200
V3	2.14105	0		80	20.0	9.19	0.377
E2.1	4.45707	17	3.8	41	29.5	15.36	0.561
V2	1.68459	0		80	20.0	7.24	0.297
V1	3.25785	0		78	22.0	13.88	0.567
E1.2	19.60630	45	4.7	47	26.5	34.02	1.273
E2.3	9.55345	43	4.5	46	27.0	37.33	1.392
Bernardo Trails BT1	4.46080	26		60	40/0	16.27	0.641
Bernardo Trails BT2	6.65600	44		60	40/0	24.27	0.956
Bernardo Trails BT3	13.68320	92		60	40/0	49.87	1.966
AMAFCA slope BT4A	1.16992			0	0/100	3.59	0.108
AMAFCA slope BT5A	3.57760			0	0/100	10.98	0.329
AMAFCA slope BT6A	2.09380		<u>-</u>	0	0/100	6.42	0.193
TRACT N	5.05000			90	10.0	22.01	0.929
TRACT T-1	9.96480	74	7.4	60	40/0	36.32	1.432
TRACT T-1A	1.51400			0	0/100	4.65	0.139

TRACT U-1	3.43270		0	0/100	10.53	0.316
TRACT U-2	3.92930		90	10.0	17.13	0.723
TRACT U-6	23.44330		90	10.0	102.00	4.312
LL	4.73000		80	0/20.4	19.45	0.804
TRACT T-4-A	23.38000		90	10.0	101.84	4.300
SUB TOTAL	189.92898	609			732.37	28.820
TRACT U-3	2.15080		90	10.0	9.38	0.396
TRACT U-4	0.49860		90	10.0	2.19	0.092
TRACT U-5	2.93510		90	10.0	12.80	0.540
SUB TOTAL	5.58450			•	24.37	1.028
TOTAL	195.51348				756.74	29.848

9-15-03 f \ Vista del Norte Tr E (P.Estrella) \ hydr_t1b_rev.wpd

D. Mark Goodwin & Associates, P.A. Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199 (505) 828-2200 FAX 797-9539

e-mail: dmg@swcp.com

PROJECT	**
SUBJECT	
BY	DATE
CHECKED	DATE
	SHFFT OF

×

NORTH POND VOLLINE SUMMARY

ELEV.	AREA (SF)	VDL (AC-FT)	EVOL (AC-FT)	Qout (cfs)
5006	76,511	0	0	
5008	84,297	3.69	3.69	0.30
5010	92,083	4.05	7.74	1.01
5012	99,870	4.41	12.15	1.95
5014	107,654	4.76	16.91	3.05
5016	115,443	5.12.	22.03	3.72
5017	119,500	5.30	27.33	4.01
•		•		

+ Max USelow = 5016.90 Qut @ 5016.90 = 3,97 Cfs,.

* The top of the existing pond embankment is at 5020.

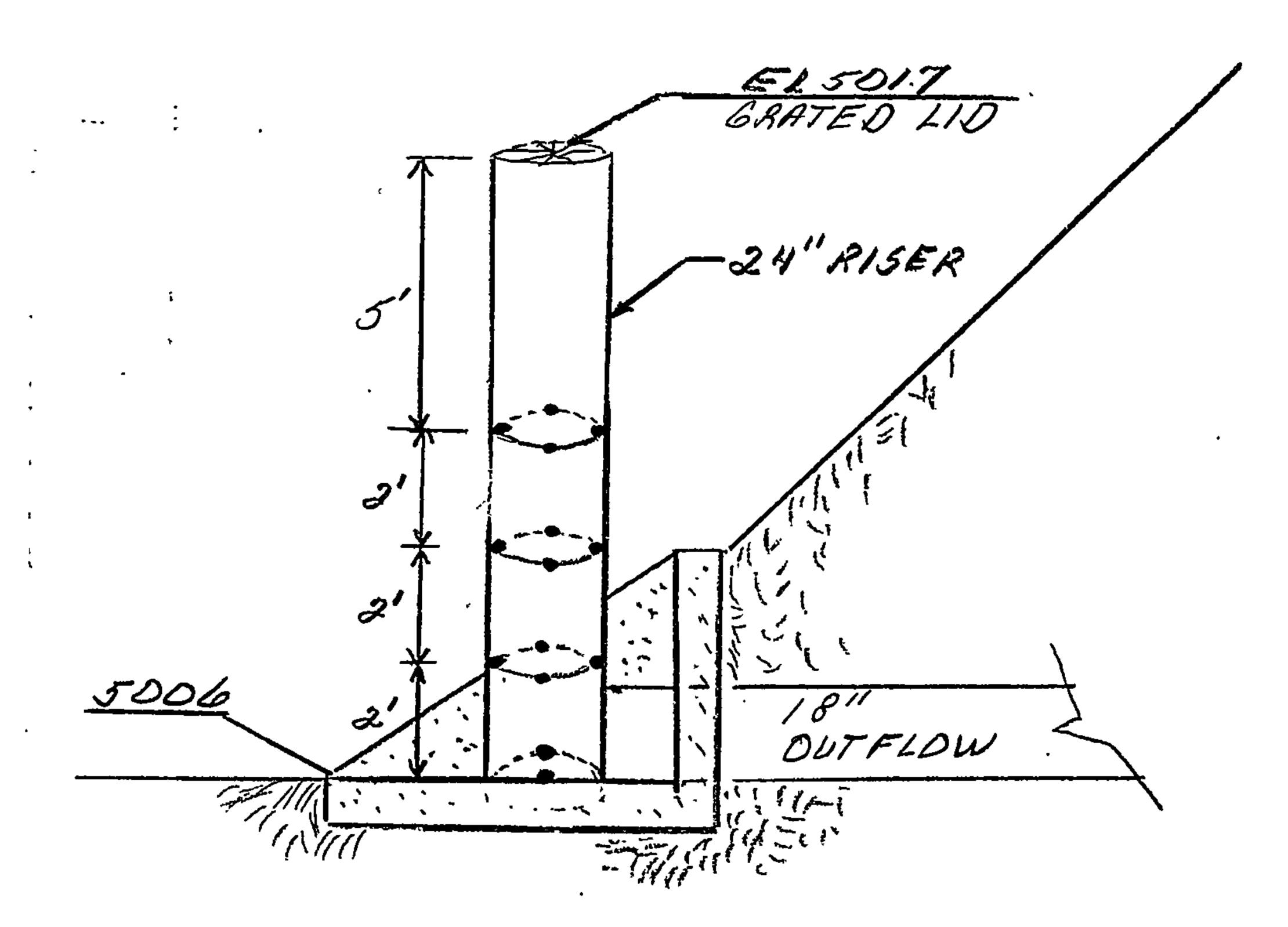
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D. Mark Goodwin & Associates, P.A. Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199 (505) 828-2200 FAX 797-9539 e-mail: dmg@swcp.com

PROJECT	*
SUBJECT	
BY	DATE
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×



At Max. W.S. Elev = 5017:

Drifice El (20ut (Cfs)

5004 (2holes) 0.70

5008 (4holes) 1.26

5010 (4holes) 1.11

5012 (4holes) 0.94

4.01 cfs

<u>M</u>

D. Mark Goodwin & Associates, P.A. Consulting Engineers

P.O. BOX 90606, ALBUQUERQUE, NM 87199 (505) 828-2200 FAX 797-9539

e-mail: dmg@swcp.com

PROJECT	VDN	*
SUBJECT	sunstream	troots
BY_750	D <i>A</i>	TE 11-18-03
CHECKED	D <i>F</i>	\TE
	SHEET	ΟF

Tracts 4-3, 4-4 & 4-5 are downstream of pond, and as such, will not gravity flow to pond.

- · Combined Runoff = 24.37 ofs
- · Lombined Runoff Hol: = 1.028 ac. -ft.
- · On site detention uf combined release rate of . 15 ofs to outfall storm drain.

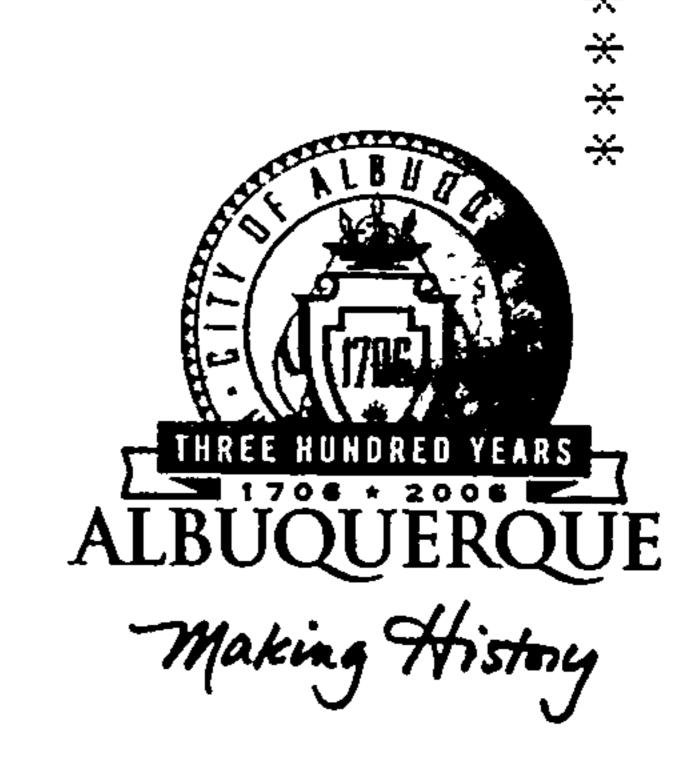
Lising a weighted ave.:

1-3 @ 2.15 acres --- Qout = .06 cfs

1-4 @ 0.50 acres --- Qout = .01 cfs

1-5 @ 2.94 acres --- Qout = .08 cfs

CITY OF ALBUQUERQUE



February 4, 2005

Diane Hoelzer, PE Mark Goodwin & Associates P.O. 90606 Albuquerque, NM 87199

Re: Las Lomitas Industrial Park Drainage Report Engineer's Stamp dated 1-18-05 (D16/D2)

Dear Ms. Hoelzer,

Based upon the information provided in your submittal dated 1-19-05, the above referenced report is approved for Preliminary Plat action by the DRB. Once that board approves the plan, please submit a mylar copy for my signature in order to obtain a Rough Grading Permit.

P.O. Box 1293

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

Albuquerque

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

New Mexico 87103

Sincerely,
Bradley L. Bingham, PE

www.cabq.gov

4.

Principal Engineer, Planning Dept.

Development and Building Services

C: Chuck Caruso, DMD file

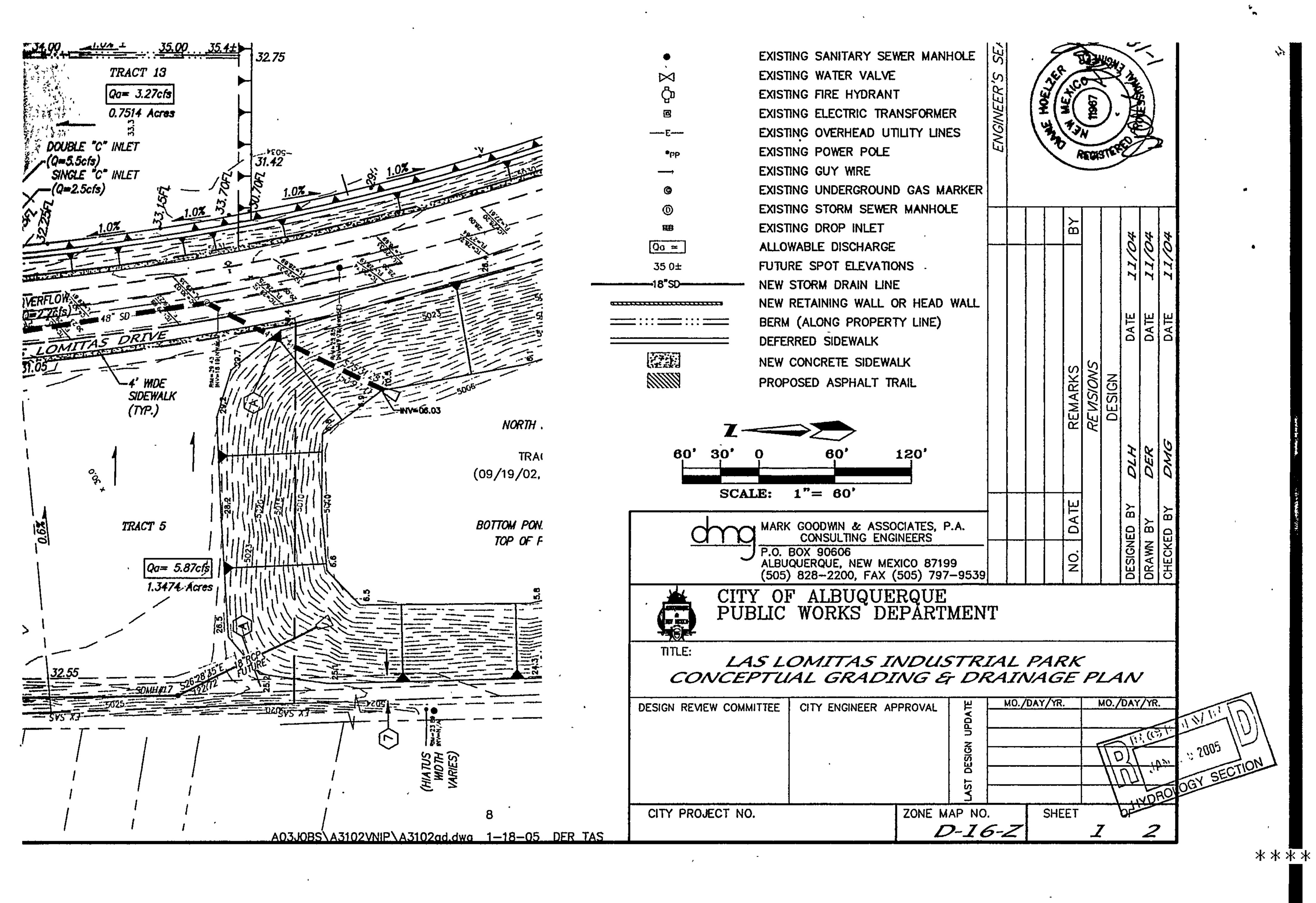
DRAINAGE INFORMATION SHEET

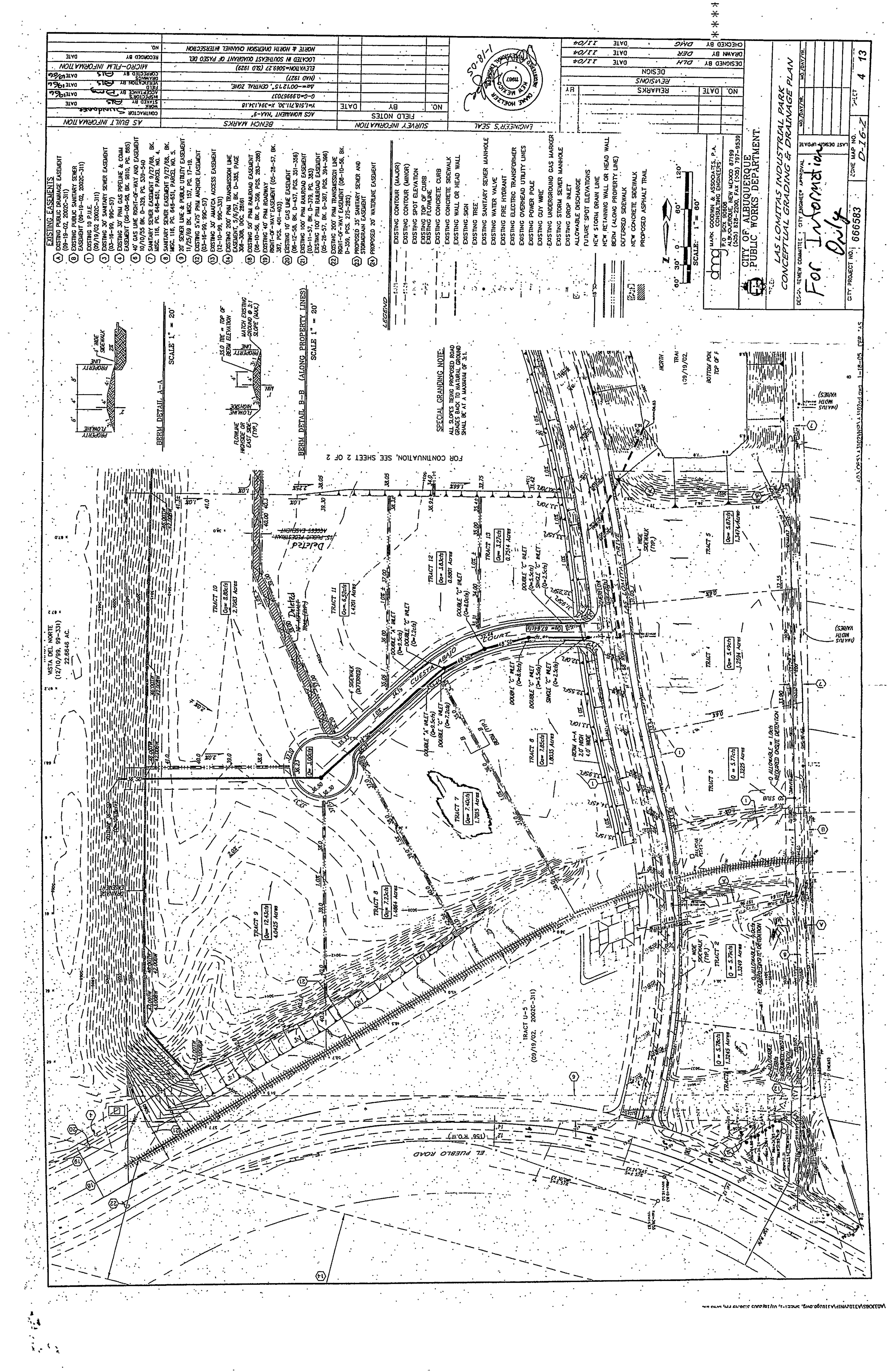
(REV. 1/28/2003rd)

PROJECT TITLE:	Las Lomitas Industrial Park		<u>,, </u>	ZONE MAP/DRG #: D 16 / D 2					
DRB#:	EPC #:			W.O.#:					
LEGAL DESCRIPTION:	Tracts U-2, U-3, U-4, U-6 Vista del Norte			· · · · · · · · · · · · · · · · · · ·					
CITY ADDRESS:									
ENGINEERING FIRM:	Mark Goodwin & Associates, PA		CONTACT:	Diane Hoelzer, PE					
ADDRESS:	PO Box 90606		PHONE:	828-2200					
CITY, STATE:	Albuquerque, NM		ZIP CODE:	87199					
OWNER:	Vista del Norte LLC		CONTACT:	Ron Brown					
ADDRESS:	3804 Carlisle NE		PHONE:	883-1674					
CITY, STATE:	ABQ, NM		ZIP CODE:	87190					
ARCHITECT:	NA		CONTACT:						
ADDRESS:			PHONE:						
CITY, STATE:			ZIP CODE:						
CONTRACTOR:	NA		CONTACT:						
ADDRESS:			PHONE:						
CITY, STATE:			ZIP CODE:						
		X	- PRELIMINARY PL	GUARANTEE RELEASE _AT APPROVAL OR SUB'D. APPROVAL					
	GRADING & DRAINAGE PLAN (rev.1/19/05)		S. DEV. PLAN FOR BLDG. PERMIT APPROVAL						
GRADING PLAN		SECTOR PLAN APPROVAL							
EROSION CON	MASION -	FINAL PLAT APPROVAL							
,	ERTIFICATION (HYDROLOGY)		FOUNDATION PERMIT APPROVAL						
CLOMR/LOMR		_	BUILDING PERMI						
	JLATION LAYOUT (TCL)			OCCUPANCY (PERM)					
	ERTIFICATION (TCL)		CERTIFICATE OF OCCUPANCY (TEMP)						
	ERTIFICATION (DRB APPR. SITE PLAN)	x	- GRADING PERMI						
	mental information)		- PAVING PERMIT	APPROVAL					
			- WORK ORDER A	PPROVAL					
WAS A PRE-DESIGN CO	NFERENCE ATTENDED?		OTHER (specify)	DECETVE DECETIVE					
X YES				D JAN 1 9 2005 Line					
NO .									
COPY PROVIDE	ED		\wedge	HYDROLOGY SECTION					
DATE SUBMITTED:	JANUARY 19, 2005	BY:	Mane I	all the second of the second o					
·· •			Diane Hoelzer, PE						

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

- 1. Conceptual Grading and Drainage Plan: Required for approval of Site Development Plans greater than five (5) acres and Sector Plans.
- 2. Drainage Plans: Required for building permits, grading permits, paving permits and site plans less than five (5) acres.
- 3. Drainage Report: Required for subdivisions containing more than ten (10) lots or constituting five (5) acres or more.





CITY OF ALBUQUERQUE

December 29, 2004

Diane Hoelzer, PE Mark Goodwin & Associates P.O. 90606 Albuquerque, NM 87199

Las Lomitas Industrial Park Drainage Report Re: Engineer's Stamp dated 11-19-04 (D16/D2)

Dear Ms. Hoelzer,

P.O. Box 1293

Albuquerque

New Mexico 87103

www.cabq.gov

Based upon the information provided in your submittal dated 11-24-04, the above referenced report cannot be approved for Preliminary Plat until the following comments are addressed.

- The berm at Las Lomitas must be entirely on the westernmost lots and no slope should be in the R/W. The maximum slope in the R/W should be 2%.
- Your grading plan shows that the water surface elevation of 5020 encroaches into Tract 5 by at least 25 feet. I would need a public drainage easement to this contour plus 10 feet. It also shows proposed grading of the pond that would keep the pond entirely on Tract U-1. If this were your intent, it would have to appear on your infrastructure list and be done by Work Order.
- Please provide an interim-grading plan showing what you will be grading. This plan should show berms at all property lines.
- Tracts 3-5 are only allowed free discharge if they drain to Las Lomitas. If these lots are proposed to drain to the pond outfall pipe, they must be constrained so as to not exceed the 4.65 cfs allowable. Lots 1 and 2 must likewise be constrained (0.15 cfs per your report). Your AHYMO output must show this.
- Please provide calculations that the 36" pipe can drain your site as well as Tract T-4. From the as-built of Las Lomitas provided, you were only expecting 97.5 cfs in the 48" and now it supposed to handle 150 cfs. Please provide a new HGL analysis of this storm drain.
- Please quantify the existing offsite flow from Tract T-4 or any other source.

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

Sincerely,

LILL Engineer, Planning Dept.,
HYDROLOGY SECTION Development and Building Services

file

Approval Denied See revised Ala submitted 1/19/2005

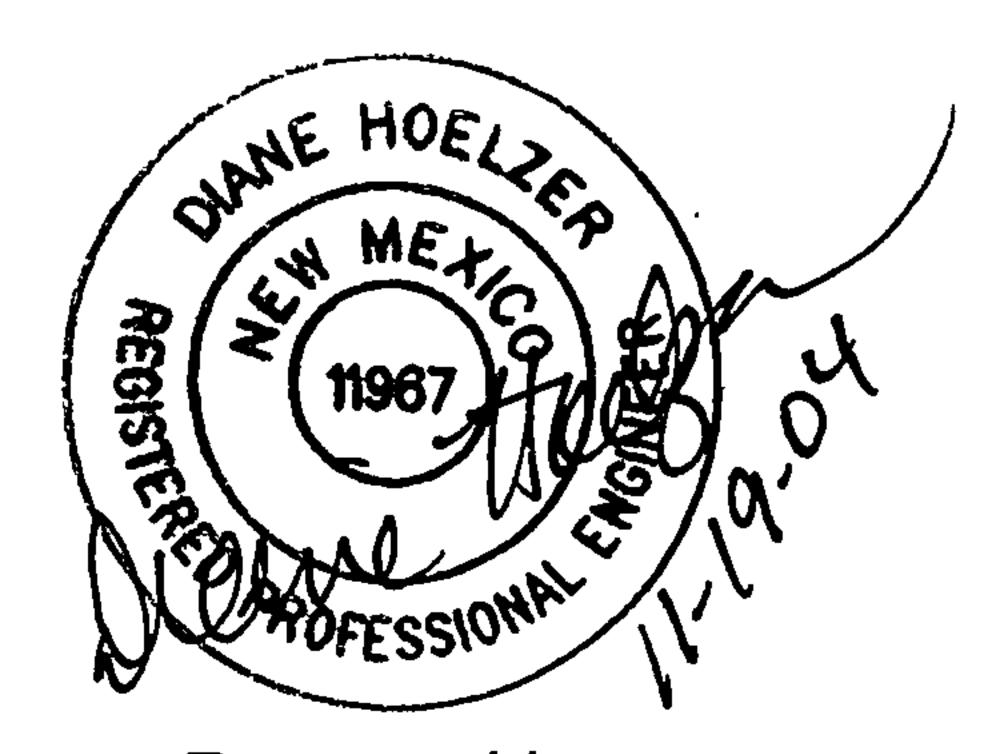
Drainage Management Plan

for

Las Lomitas Industrial Park

Vista del Norte Master Planned Community

Prepared for: Brown and Associates, Inc.



Prepared by
Diane Hoelzer, PE
Mark Goodwin & Associates, P.A.

November 19, 2004

f:\\3102 las lomitas industrial park\ drainage_rpt.wpd

D. MARK GOODWIN & ASSOCIATES

I. PROJECT DESCRIPTION

The proposed Las Lomitas Industrial Park will consist of 20 lots for industrial development covering an area of approximately 30 acres. Tract U-6 to the east will be developed into 15 tracts abutting one of either of two culdesacs. The other five tracts to the west will have access directly off of Las Lomitas Drive.

II. DESIGN CRITERIA AND PREVIOUS REPORTS

The design criteria used in this report was in accordance with Section 22.2 Hydrology of the Development Process Manual, Volume 2, Design Criteria, January 1993 edition. The 100-year 6-hour storm event was analyzed to determine street capacities using P(1 hr)=2.00", P(6 hr)=2.30", P(24 hr)=2.60". AHYMO printouts are provided in Appendix A. For additional information on the master drainage plan for this area, refer to the Drainage Report for Vista del Norte, North Pond with engineers stamp dated 12/1/03, by Mark Goodwin and Associates.

III. EXISTING DRAINAGE CONDITIONS

Runoff from the project site under 'existing drainage conditions' flows in a general westward direction on the east side of Las Lomitas Drive and in an eastward direction on the west side of Las Lomitas Drive. There is an existing storm drain in Las Lomitas Drive with storm drain stub-outs at both driveway entrances. These were previously constructed to intercept the onsite flows and convey them to the North Pond located on the west side of Las Lomitas Drive.

IV. DEVELOPED DRAINAGE CONDITIONS

The three tracts located on the west side of Las Lomitas Drive between the railroad tracts and the pond are to drain directly into the north retention pond. The two tracts to the north of the railroad tracks will drain directly into the future designed El Pueblo storm drain outfall at a maximum combined rate of 0.15 cfs as approved int the above referenced Drainage Report. The work order for the El Pueblo storm drain will provide a

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stub-out for the flows originating from Tracts 1 and 2.

Under developed drainage conditions runoff from the east side of Las Lomitas Drive will be directed from the tracts to the road and then be intercepted by a series of inlets to the existing North Retention Pond located south and west of the project site. A four foot wide berm will be constructed along the east side of Las Lomitas Drive to direct runoff north and south to one of the two culdesacs. Tract T-4 which is the area immediately adjacent to and east of the project site will discharge into a storm drain stub-out to be extended eastward from Las Lomitas Court and constructed in conjunction with this project. The required storage volume for the existing North Retention Pond was previously approved and determined in the "Drainage Report for Vista del Norte, North Pond" with engineers stamp dated 12/1/03. The as-built grades for the North Pond indicate that the pond has an approximate retention storage volume of 39 acre-feet and according to Table 1, 28.82 acre feet of storage volume is required to retain the 100 year 24 hour storm.

V. INTERIM DRAINAGE CONDITIONS

The construction plans for the El Pueblo Storm Drain has been approved but as of the date of this report has not gone to work order. For the interim conditions the North Retention Pond has more than enough storage volume to retain the 100 year 24 hour storm. Tracts 1 and 2, located north of the railroad tracts will have to have temporary retention ponds on site in order to develop.

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Vista del Norte

Flows to North Pond

Table 1: Summary of Hydrology

SUBASIN ID	AREA (acres)	# Lots	N value	Land Treat. D	Land Treat.B/C	Q(100) cfs	Runoff Volume (Ac.Ft.)
TRACT D Units 4A,4B,5A,5B	-						
D1	4.18410	22	5.3	51	24.5	15.24	0.578
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D5	4.48173	24	5.4	52	24.0	16.41	0.624
D6	4.69405	26	5.5	53	23.5	17.27	0.659
D7	5.74969	33	5.7	55	22.5	21.38	0.822
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D9	7.23163	37	5.1	50	25.0	26.18	0.990
D10	2.12068	10	4.7	47	26.5	7.56	0.283
D11	2.94873	15	5.1	50	25.0	10.68	0.404
D12	2.07038	10	4.8	48	26.0	7.43	0.278
D13	3.10615	16	5.2	51	24.5	11.31	0.429
D14	2.68927	12	4.5	45	27.5	9.48	0.352
D15	1.35818	5	3.7	40	30.0	4.67	0.169
D16	1.39937	8	5.7	55	22.5	5.21	0.200
V3	2.14105	0		80	20.0	9.19	0.377
E2.1	4.45707	17	3.8	41	29.5	15.36	0.561
V2	1.68459	0		80	20.0	7.24	0.297
V1	3.25785	0		78	22.0	13.88	0.567
E1.2	9.60630	45	4.7	47	26.5	34.02	1.273
E2.3	9.55345	43	4.5	46	27.0	37.33	1.392
Bernardo Trails BT1	4.46080	26		60	40/0	16.27	0.641
Bernardo Trails BT2	6.65600	44		60	40/0	24.27	0.956
Bernardo Trails BT3	13.68320	92		60	40/0	49.87	1.966
AMAFCA slope BT4A	1.16992			0	0/100	3.59	0.108

Vista del Norte

Flows to North Pond

Table 1: Summary of Hydrology

SUBASIN ID	AREA (acres)	# Lots	N value	Land Treat. D	Land Treat.B/C	Q(100) cfs	Runoff Volume (Ac.Ft.)
AMAFCA slope BT5A	3.57760			0	0/100	10.98	0.329
AMAFCA slope BT6A	2.09380			0	0/100	6.42	0.193
TRACT N	5.05000			90	10.0	22.01	0.929
TRACT T-1	9.96480	74	7.4	60	40/0	36.32	1.432
TRACT T-1A	1.51400			0	0/100	4.65	0.139
TRACT U-1	3.43270			0	0/100	10.53	0.316
TRACT U-2	3.92930			90	10.0	17.13	0.723
TRACT U-6	23.44330			90	10.0	102.00	4.312
LL.	4.73000			80	0/20.4	19.45	0.804
TRACT T-4-A	23.38000			90	10.0	101.84	4.300
SUB TOTAL	189.92898	609				732.37	28.820
TRACT U-3	2.15080	•		90	10.0	9.38	0.396
TRACT U-4	0.49860			90	10.0	2.19	0.092
TRACT U-5	2.93510			90	10.0	12.80	0.540
SUB TOTAL	5.58450					24.37	1.028
TOTAL	195.51348	·				756.74	29.848

LAS LOMITAS INDUSTRIAL PARK

TABLE 2 SUMMARY OF STREET CAPACITIES

LOCATION	CURB	CROWN	WIDTH ft.	SLOPE %	Q cfs	DEPTH ft.	VELOC fps	EG ft.	INLET
CUESTA ARRIBA CT	STD	Y	32' FF	1.00	34.36	0.52	3.64	0.72	7.6 x 2
CUESTA ARRIBA CT	STD	Y	32' FF	1.00	19.16	0.44	2.95	0.58	5.5 x 2
CUESTA ARRIBA CT	STD	Y	32' FF	1.00	8.16	0.35	2.28	0.43	3.0 x 2
OVERFLOW .		•							2.16 cfs
									-
CUESTA ABAJO CT	STD	Υ	. 32' FF	1.00	67.64	0.67	4.85	1.04	,
CUESTA ABAJO CT	STD	Υ	32' FF	1.00	48.00	0.59	4.27	0.87	9.5 x 2
CUESTA ABAJO CT	STD	Υ	32' FF	1.00	29.00	0.50	3.49	0.69	7.2 x 2
CUESTA ABAJO CT	STD	Υ	32' FF	1.00	34.24	0.53	3.73	0.74	8.0 x 2
CUESTA ABAJO CT	STD	Y	32' FF	1.00	18.24	0.44	2.90	0.57	5.5 x 2
CUESTA ABAJO CT	STD	Υ	32' FF	1.00	7.24	0.33	2.21	0.41	2.5 x 2
OVERFLOW	•								2.24 cfs

MTB = Mountable Curb
STD = Standard Curb

f:\laslomitas\str_cap.wpd 11-15-04 AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
INPUT FILE = vdnn&mp.dat

RUN DATE (MON/DAY/YR) =08/12/2002 USER NO.= M_GOODWN.I01

•		FROM	TO	•	PEAK	RUNOFF		TIME TO	CFS	PAGE =	1
	HYDROGRAPH	ID	ID	AREA	DISCHARGE	VOLUME	RUNOFF	PEAK	PER		
COMMAND	IDENTIFICATION	NO.	NO.	(SQ MI)	(CFS)	(AC-FT)	(INCHES)	(HOURS)	ACRE	NOTATI	ON
START							•			TIME=	.00
RAINFALL TYP	E= 2			•						RAIN24=	2.600
COMPUTE NM HY	D 100.D12	_	1	.00324	7.43	.278	1.61327	1.500	3.587	PER IMP=	48.00
COMPUTE NM HY	D 100.D13	_	2	.00485	11.31	.429	1.65683	1.500	3.642	PER IMP=	51.00
ADD HYD	101.10	1& 2	3	.00809	18.74	.707	1.63933	1.500	3.620		
COMPUTE NM HY	D 100.D11	_	1	.00461	10.68	.404	1.64231	1.500	3.623	PER IMP=	50.00
ADD HYD	101.10	1& 3	2	.01270	29.42	1.111	1.64039	1.500	3.621		
COMPUTE NM HY	D 100.D10	_	1 -	.00331	7.56	.283	1.59875	1.500	3.567	PER IMP=	47.00
ADD HYD	101.10	1& 2	3	.01601	36.99	1.393	1.63175	1.500	3.610		
COMPUTE NM HY	D 100.D9	-	1	.01130	26.18	.990	1.64231	1.500	3.620	PER IMP=	50.00
ADD HYD	101.10	1& 3	2	.02731	63.17	2.383	1.63611	1.500	3.614		
COMPUTE NM HY	D 100.D7	_	1	.00898	21.38	.822	1.71492	1.500	3.718	PER IMP=	55.00
ADD HYD	101.10	1& 2	3	.03629	84.55	3.205	1.65561	1.500	3.640		
COMPUTE NM HY	D 100.D8	-	1	.00198	4.40	.161	1.52615	1.500	3.474	PER IMP=	42.00
ADD HYD	101.10	1& 3	40	.03827	88.94	3.365	1.64892	1.500	3.631		
COMPUTE NM HY	D 100.D16	_	1	.00219	5.21	.200	1.71492	1.500	3.727	PER IMP=	55.00
COMPUTE NM HY	D 100.V3	-	2	.00335	9.19	.377	2.11559	1.500	4.294	PER IMP=	80.00
ADD HYD	101.10	1& 2	3	.00553	14.41	.577	1.95712	1.500	4.070		
COMPUTE NM HY	D 100.D14	-	1	.00420	9.48	.352	1.56971	1.500	3.526	PER IMP=	45.00
ADD HYD	101.10	1& 3	2	.00973	23.89	.929	1.78983	1.500	3.835		
COMPUTE NM HY	D 100.D15	_	1	.00212	4.67	.169	1.49711	1.500	3.435	PER IMP=	40.00
COMPUTE NM HY	D 100.E21	_	3	.00696	15.36	.561	1.51163	1.500	3.446	PER IMP=	41.00
ADD HYD	101.10	1& 3	4	.00909	20.03	.731	1.50818	1.500	3.444		
ADD HYD	101.10	2& 4	3	.01882	43.91	1.660	1.65385	1.500	3.646		
COMPUTE NM HY	D 100.V2	_	1	.00263	7.24	.297 ′	2.11559	1.500		PER IMP=	80.00
ADD HYD	101.10	1& 3	2	.02145	51.15	1.957	1.71049	1.500	3.726		
COMPUTE NM HY	D 100.V1	_	1	.00509	13.88	.567	2.09032	1.500		PER IMP=	78.00
COMPUTE NM HY	D 100.E12	_	3	.01493	34.02	1.273	1.59875	1.500		PER IMP=	47.00
ADD HYD			4	.02002	47.90	1.840	1.72372	1.500	3.739		
ADD HYD	101.10	2& 4	3	.04147	99.06	3.797	1.71687	1.500	3.732		
COMPUTE NM HY		-	1	.01647	37.33	1.392	1.58423	1.500		PER IMP=	46.00
ADD HYD	101.10	1& 3	2	.05794	136.39	5.189	1.67916	1.500	3.678		
COMPUTE NM HY			1	.00389	8.78	.326	1.56971	1.500	3.527		45.00
ADD HYD	101.10		3	.06183	145.17	5.514	1.67227	1.500	3.669		
COMPUTE NM HY			1	.00733	17.27	.659	1.68588	1.500		PER IMP=	53.00
ADD HYD	101.10		2	.06916	162.44	6.174	1.67371	1.500	3.670		
COMPUTE NM HY		_	1	.00700	16.41	.624	1.67136	1.500		PER IMP=	52.00
ADD HYD	101.10		3	.07617	178.85	6.798	1.67349	1.500	3.669		
ADD HYD	101.10		41	.11443	267.79	10.163	1.66527	1.500	3.656		C C C C
COMPUTE NM HY		-	1	.00705	16.78	.645	1.71492	1.500		PER IMP=	55.00
COMPUTE NM HY		_	2	.00288	6.50	.241	1.56971	1.500		PER IMP=	45.00
ADD HYD	101.10	1& 2	3	.00993	23.28	.886	1.67275	1.500	3.664		

•	F	'ROM	TO		PEAK	RUNOFF		TIME TO	CFS	· PAGE =	= 2
	HYDROGRAPH	ID	ID	AREA	DISCHARGE	VOLUME	RUNOFF	PEAK	PER		
COMMAND IDE	ENTIFICATION	NO.	NO.	(SQ MI)	(CFS)	(AC-FT)	(INCHES)	(HOURS)	ACRE	ITATON	ION
COMPUTE NM HYD	100.D1	_	1	.00654	15.24	.578	1.65683	1.500	3.641	PER IMP=	51.00
ADD HYD	101.10 1	.& 3	2	.01647	38.52	1.464	1.66641	1.500	3.655		
ADD HYD	101.10 41	.& 2	43	.13090	306.30	11.627	1.66542	1.500	3.656	•	
COMPUTE NM HYD	100.BT1	-	1	.00697	16.27	.641	1.72413	1.500	3.647	PER IMP=	60.00
COMPUTE NM HYD	100.BT4A	-	2	.00183	3.59	.108	1.10462	1.500	3.073	PER IMP=	.00
ADD HYD	101.10 1	.& 2	3	.00880	19.86	.749	1.59535	1.500	3.528		
COMPUTE NM HYD	100.TN	_	1	.00789	22.01	.929	2.20728	1.500	4.358	PER IMP=	90.00
ADD HYD	101.10 1	.& 3	2	.01669	41.87	1.677	1.88466	1.500	3.921		•
COMPUTE NM HYD	100.BT2	-	1	.01040	24.27	.956	1.72413	1.500	3.646	PER IMP=	60.00
ADD HYD	101.10 1	. & 2	3	.02709	66.14	2.634	1.82301	1.500	3.815		
COMPUTE NM HYD	100.BT3	_	1	.02138	49.87	1.966	1.72413	1.500	3.645	PER IMP=	60.00
COMPUTE NM HYD	100.BT5A	_	4	.00559	10.98	.329	1.10462	1.500	3.068	PER IMP=	.00
ADD HYD	101.10 1	.& 4	2	.02697	60.85	2.295	1.59570	1.500	3.525		
COMPUTE NM HYD	100.BT6A	-	1	.00327	6.42	.193	1.10462	1.500	3.070	PER IMP=	.00
ADD HYD	101.10 1	.& 2	4	.03024	67.27	2.488	1.54260	1.500	3.476		
ADD HYD	101.10 3	8 € 4	44	.05733	133.41	5.122	1.67509	1.500	3.636		
COMPUTE NM HYD	100.T1	-	1	.01557	36.32	1.432	1.72412	1.500	3.645	PER IMP=	60.00
COMPUTE NM HYD	100.T1A	-	2	.00237	4.65	.139	1.10462	1.500	3.071	PER IMP=	.00
ADD HYD	101.10 1	. & 2	20	.01794	40.97	1.571	1.64238	1.500	3.569		
COMPUTE NM HYD	100.06	_	1	.03663	102.12	4.312	2.20728	1.500	4.356	PER IMP=	90.00
ADD HYD	101.10 20)& 1	30	.05457	143.09	5.883	2.02159	1.500	4.097		
COMPUTE NM HYD	100.02	_	1	.00614	17.13	.723	2.20728	1.500	4.359	PER IMP=	90.00
ADD HYD	101.10 30)& 1	31	.06071	160.22	6.606	2.04037	1.500	4.124		
COMPUTE NM HYD	100.LL	_	1	.00739	19.45	.804	2.03979	1.500	4.112	PER IMP=	79.60
ADD HYD	101.10 31	.& 1	32	.06810	179.67	7.410	2.04030	1.500	4.123		
COMPUTE NM HYD	100.01	_	1	.00536	10.53	.316	1.10462	1.500	3.068	PER IMP=	.00
ADD HYD	101.10 32	2& 1	33	.07346	190.20	7.726	1.97197	1.500	4.046		
ADD HYD	101.10 33	8&43	34	.20436	496.50	·19.353	1.77561	1.500	3.796		
ADD HYD	101.10 34	1&44	35	.26169	629.92	24.474	1.75359	1.500	3.761		
ROUTE RESERVOIR	NORTH.POND	35	12	.26169	3.87	8.672	.62131	3.200	.023	AC-FT=	20.912
COMPUTE NM HYD	100.B1	-	1	.00697	15.02	.540	1.45355	1.500	3.368	PER IMP=	37.00
COMPUTE NM HYD	100.B2	_	2	.00997	22.36	.827	1.55519	1.500	3.504	PER IMP=	44.00
ADD HYD	101.10 1	& 2	3	.01694	37.38	1.367	1.51334	1.500	3.448		
COMPUTE NM HYD	100.B3	_	1	.00349	7.75	.284	1.52615	1.500	3.469	PER IMP=	42.00
ADD HYD	101.10 1	L& 3	2	.02043	45.13	. 1.651	1.51551	1.500	3.452		
COMPUTE NM HYD	100.B4	-	1	.00475	10.66	.394	1.55519	1.500	3.506	PER IMP=	44.00
ADD HYD	101.10 1	L& 2	3	.02518	55.79	2.045	1.52298	1.500	3.462		
COMPUTE NM HYD	100.B5	-	1	.00275	6.11	.224	1.52615	1.500	3.472	PER IMP=	42.00
ADD HYD	101.10 1	L& 3	2	.02793	61.90	. 2.269	1.52328	1.500	3.463		
COMPUTE NM HYD	100.B6	-	1	.00610	13.46	.492	1.51163	1.500		PER IMP=	41.00
ADD HYD	101.10 1	L& 2	3	.03403	75.35	2.761	1.52119	1.500	3.460		
COMPUTE NM HYD	100.B7	-	1	.00284	6.41	.238	1.56971	1.500		PER IMP=	45.00
ADD HYD	101.10 1	L& 3	2	.03687	81.77	2.999	1.52491	1.500	3.465		

	HYDROGRAPH	FROM	TO ID	AREA	PEAK DISCHARGE	RUNOFF VOLUME	RUNOFF	TIME TO PEAK	CFS PER	PAGE =	: 3
COMMAND	IDENTIFICATION	NO.	NO.	(SQ MI)	(CFS)	(AC-FT)	(INCHES)	(HOURS)	ACRE	NOTATI	ON
				, , ,		, ,	((000000)			
COMPUTE NM H	100.B8	_	1	.00582	12.77	.465	1.49711	1.500	3.427	PER IMP=	40.00
ADD HYD	101.10	1& 2	3	.04269	94.53	3.463	1.52112	1.500	3.460		
COMPUTE NM H	100.B9	_	1	.00555	12.31	.452	1.52615	1.500	3.467	PER IMP=	42.00
ADD HYD	101.10	1& 3	2	.04824	106.85	3.915	1.52169	1.500	3.461		
COMPUTE NM H	100.B10	_	1	.00168	3.83	.143	1.59875	1.500	3.574	PER IMP=	47.00
, ADD HYD	101.10	1& 2	3	.04992	110.68	4.058	1.52427	1.500	3.465		
COMPUTE NM H	100.B11	_	1	.00320	6.95	.251	1.46807	1.500	3.392	PER IMP=	38.00
ADD HYD	101.10	1& 3	2	.05312	- 117.63	4.309	1.52088	1.500	3.460		
COMPUTE NM H	IYD 100.E11	_	1	.00564	11.96	.451	1.49865	1.500	3.316	PER IMP=	46.00
ADD HYD	101.10	1& 2	3	.05876	129.60	4.759	1.51874	1.500	3.446		
COMPUTE NM H	IYD 100.E13		1	.00814	16.97	.633	1.45839	1.500	3.255	PER IMP=	43.50
ADD HYD	101.10	1& 3	2	.06690	146.57	5.393	1.51139	1.500	3.423		-
COMPUTE NM H	IYD 100.E22	_	1	.00396	8.79	.322	1.52615	1.500	3.468	PER IMP=	42.00
ADD HYD	101.10	1& 2	3	.07086	155.36	5.715	1.51221	1.500	3.426		
COMPUTE NM H	100.E3	_	1	.00624	11.22	.329	.98689	1.500	2.808	PER IMP=	.00
ADD HYD	101.10	1& 3	2	.07711	166.58	6.044	1.46967	1.500	3.376		
COMPUTE NM H	IYD 100.V4	_	1	.00213	5.85	.240	2.11559	1.500	4.299	PER IMP=	80.00
ADD HYD	101.10	1& 2	3	.07923	172.43	6.284	1.48699	1.500	3.400		
COMPUTE NM H	IYD 100.00	_	1	.02883	68.57	2.637	1.71492	1.500	3.716	PER IMP=	55.00
ADD HYD	101.10	1& 3	43	.10806	241.00	8.921	1.54780	1.500	3.485		
ROUTE RESERV	OIR POND.100	43	13	.10806	14.62	8.919	1.54754	2.250	.211	AC-FT=	6.575
COMPUTE NM H	IYD 100.U3	-	1	.00336	9.38	.396	2.20728	1.500	4.362	PER IMP=	90.00
COMPUTE NM H	IYD 100.U4	-	1	.00078	2.19	.092	2.20728	1.500	4.388	PER IMP=	90.00
COMPUTE NM H	IYD 100.U5	_	1	.00459	12.80	.540	2.20728	1.500	4.360	PER IMP=	90.00
COMPUTE NM H	YD 100.T4	_	1	.03541	98.71	4.169	2.20728	1.500	4.356	PER IMP=	90.00
FINISH											

Las Lomitas Court Inlets Calculations

48.00 cfs

9.5 x 2

(2) DBL 'A' Inlets

29.00 cfs

7.2 x 2

(2) DBL 'C' Inlets

14.60 cfs

+ 19.64 cfs

Additional Onsite Flow

34.24 cfs

- 8.00 x 2

(2) DBL 'C' Inlets

18.24 cfs

5.5 x 2

(2) DBL 'C' Inlets

7.24 cfs

2.5 x 2

(2) SGL 'C' Inlets

2.24 cfs

Overflow to Las Lomitas Drive

Las Lomitas Point Inlet Calculations

34.36 cfs

7.6 x 2

(2) DBL 'A' Inlets

19.16 cfs

5.5 x 2

(2) DBL 'C' inlets

8.16 cfs

+ 3.00 x 2

(2) DBL 'C' Inlets

2.16 cfs

Overflow to Las Lomitas Drive