City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

December 14, 1995

Dennis Lorenz
Brasher & Lorenz, Inc.
4425 Juan Tabo Blvd. NE
Suite 202
Albuquerque, NM 87111

RE: HATCHER-WESTLAND STORAGE (G10-D29D) ENGINEER'S CERTIFICATION FOR CERTIFICATE OF OCCUPANCY APPROVAL. ENGINEER'S CERTIFICATION DATED 12-5-95.

Dear Mr. Lorenz:

Based on the information provided on your December 6, 1995 submittal, the above referenced project is approved for Certificate of Occupancy.

If I can be of further assistance, please feel free to contact me at 768-3622.

Sincerely,

Lisa Ann Manwill
Engineering Assoc./Hyd.

c: Andrew Garcia
File

DRAINAGE INFORMATION SHEET

PROJECT TITLE: HATCHER-WESTLAND STORAGE ZONE ATLAS/DRNG. FILE #: G10-D29D

DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: LOT 7A VOLCANO BUSINESS PARK

CITY ADDRESS: 3000 TODOS SANTOS ST NW

ENGINEERING FIRM: BRASHER & LORENZ, INC. CONTACT: Dennis A. Lorenz, PE

ADDRESS: 4425 Juan Tabo Blvd. NE Suite 202 PHONE: 296-0422

OWNER: WESTLAND DEVELOPMENT CONTACT: LEROY CHAVEZ

ADDRESS: 401 COORS NW PHONE: 831-9600

ARCHITECT: NL CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: PRECISION SURVEYS CONTACT: L. MERANO

ADDRESS: _____ PHONE: 839-0569

CONTRACTOR: BANES SOUTHWEST CONTACT: TOM KREGE

ADDRESS: 100 IRON SE PHONE: 344-3461

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT

____ DRAINAGE PLAN

____ CONCEPTUAL GRADING & DRAINAGE PLAN

____ GRADING PLAN

____ EROSION CONTROL PLAN

X ENGINEER'S CERTIFICATION

____ OTHER: _____

PRE-DESIGN MEETING:

____ YES

____ NO

____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL

____ PRELIMINARY PLAT APPROVAL

____ S. DEV. PLAN FOR SUB'D. APPROVAL

____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL

____ SECTOR PLAN APPROVAL

____ FINAL PLAT APPROVAL

____ FOUNDATION PERMIT APPROVAL

____ BUILDING PERMIT APPROVAL

X CERTIFICATE OF OCCUPANCY APPROVAL

____ GRADING PERMIT APPROVAL

____ PAVING PERMIT APPROVAL

____ S.A.D. DRAINAGE REPORT

____ DRAINAGE REQUIREMENTS

____ OTHER _____ (SPECIFY)

30 day Temp C.O. Issued on 12-7-95

DATE SUBMITTED: 12-5-95

BY: Dennis A. Lorenz

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 29, 1995

Dennis Lorenz, PE
Brasher Engineering
4425 Juan Tabo NE #202
Albuquerque, NM 87111

RE: GRADING & DRAINAGE PLAN FOR HATCHER/WESTLAND STORAGE (~~G-T0-D29D~~)
RECEIVED JUNE 15, 1995 FOR BUILDING PERMIT
ENGINEER'S STAMP DATED 6-14-95

Dear Mr. Lorenz:

Based on the information included in the submittal referenced above, City Hydrology accepts the Grading & Drainage Plan for Building Permit.

Include a copy of the Grading & Drainage Plan, dated 6-14-95, in each set of construction documents that will be submitted to Code Administration for the Building Permit.

Engineer's Certification of grading & drainage per DPM checklist must be accepted by City Hydrology before any Certificate of Occupancy will be released.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia
Leroy Chavez, Westland Dev Co, 401 Coors Blvd NW 87121

DRAINAGE INFORMATION SHEET

PROJECT TITLE: HATCHER · WESTLAND ZONE ATLAS/DRNG. FILE #: G10 - D29D

DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: LOT 7A, VOLCANO BUSINESS PARK

CITY ADDRESS: TODOS SANTOS NW

ENGINEERING FIRM: BRASHER & LORENZ, INC. CONTACT: Dennis A. Lorenz, PE

ADDRESS: 4425 Juan Tabo Blvd. NE Suite 202 PHONE: 296-0422

OWNER: WESTLAND DEVELOPMENT CO CONTACT: L. CHAVEZ

ADDRESS: 401 COORS NW PHONE: 831-9600

ARCHITECT: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: BANES SW CONTACT: STEVE CUMMINGS

ADDRESS: 100 IRON SE PHONE: 344-3461

TYPE OF SUBMITTAL:

___ DRAINAGE REPORT
X DRAINAGE PLAN
___ CONCEPTUAL GRADING & DRAINAGE PLAN
___ GRADING PLAN
___ EROSION CONTROL PLAN
___ ENGINEER'S CERTIFICATION
___ OTHER: _____

PRE-DESIGN MEETING:

X YES
___ NO
___ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

___ SKETCH PLAT APPROVAL
___ PRELIMINARY PLAT APPROVAL
___ S. DEV. PLAN FOR SUB'D. APPROVAL
___ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
___ SECTOR PLAN APPROVAL
___ FINAL PLAT APPROVAL
___ FOUNDATION PERMIT APPROVAL
X BUILDING PERMIT APPROVAL
___ CERTIFICATE OF OCCUPANCY APPROVAL
___ GRADING PERMIT APPROVAL
___ PAVING PERMIT APPROVAL
___ S.A.D. DRAINAGE REPORT
___ DRAINAGE REQUIREMENTS
___ OTHER _____ (SPECIFY)

DATE SUBMITTED: 6-14-95

BY: D. LORENZ

RECEIVED
JUN 15 1995

BRASHER & LORENZ, INC.
CONSULTING ENGINEERS

4425 JUAN TABO BLVD NE SUITE 202 ALBUQUERQUE, NM 87111 PHONE (505) 296-0422 FAX (505) 296-0466

June 14, 1995

John Curtin
Hydrology
City of Albuquerque
PO Box 1293
Albuquerque, New Mexico 87103

SUBJECT: HATCHER/WESTLAND SELF STORAGE
(G10/D29D)

Dear John:

Submitted herewith for review and approval is 1 copy of the revised Grading & Drainage Plan for the subject project. The Plan has been revised to address the issues raised in your June 8, 1995 letter. Specifically, your comments are addressed as follows:

1. Westland Development Co., Inc, as owner of Lots 1-6 and Tract 5-A, provides the attached letter granting permission to construct the interim erosion control berm on Tract 5-A, and accepting responsibility for maintenance of the 40 foot private drainage easement located on Lots 1-6.

2. The HEC 2 run for the private easement swale has been revised to include developed flows from Lots 1-6. The supplemental Calculations include HEC 2 runs for 1) developed flows from Lot 7-A only, and 2) developed flows from Lots 1 through 7-A. The output indicates that capacity exists within the swale to convey developed flows from the development. The output also indicates that velocities will be less than 2 fps from Lot 7-A, and roughly 3.5 fps under fully developed conditions at the swale outfall.

3. We do not feel that erosion will be a problem since the re-graded portions of the swale will be re-vegetated, and the existing portions of the swale are well vegetated. The velocities reported by the HEC 2 runs are within the non-erosive range.

4. The 5 foot wide portion of the spillway has been tested for capacity and proves to be adequate. Also the invert of the pond drainline was adjusted to be consistent with the calculations. The pond routing calculations are unaffected.

JUN 15 19[illegible]

Westland Development Co, Inc. is anxious to obtain building permit and proceed with construction. If you have any questions regarding this submittal, or if I can be of any assistance, please call.

Sincerely,

BRASHER & LORENZ, INC.

Dennis A. Lorenz, PE

/dl
encl

Westland Development Co., Inc.

401 Coors Blvd. N.W.
Albuquerque, New Mexico 87121
(505) 831-9600
FAX (505) 831-4865
1-800-726-3250

June 14, 1995

Mr. John P. Curtin P.E.
Civil Engineer/Hydrology
City of Albuquerque
P.O. Box 1293
Albuquerque, NM 87103

RE: Drainage Plan For Lot 7-A
Volcano Business Park (H-10/0-15)

Dear Mr. Curtin:

This is in response to your letter dated June 8, 1995, Westland as owner of Tract 5-A-2 Volcano Business Park Phase I, hereby grants permission for the construction of diversion berm on Tract 5-A-2.

Also, as owner of lots 1 through 6 Volcano Business Park Phase I, Westland will be responsible for the maintenance within each lot of the existing 40-foot Private Drainage Easement. This obligation shall transfer onto future owners of each of these lots. Please find enclosed an executed Drainage Covenant for said 40-foot easement.

Should you have any questions or require any additional information, please do not hesitate to contact me.

Sincerely,

Leroy J. Chavez
Project Engineer

Enclosure

LJC:mo

JUN 15

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

June 8, 1995

Dennis A.Lorenz, PE
Brasher & Lorenz, Inc.
4425 Juan Tabo NE Suite 202
Albuquerque, NM 87111

RE: DRAINAGE PLAN FOR LOT 7-A, VOLCANO BUSINESS PARK (H-10/D15)
RECEIVED MAY 16, 1995 FOR BUILDING PERMIT
ENGINEER'S STAMP DATED 5-16-95

Dear Mr. Lorenz:

Based on the information included in the submittal referenced above, City Hydrology accepts the Drainage Plan for Site Development Plan, Preliminary & Final Plat. The following comments must be addressed before Building Permit:

Submit a copy of written permission from the Owner of Tract 5-A to construct the diversion berm on his property. Provide a copy of the Plat or any other document that states who is responsible for the maintenance of the 40' Private Drainage Easement (PDE). If no document currently exists, then a Private Facilities Drainage Covenant will have to be executed for each of Lots 1 - 6.

Revise the HEC-2 run for the 40' PDE to account for the developed runoff from Lots 1 - 6. Determine how much of a problem sediment will be in the 40' PDE. Check the outlet pipe for the head based on the invert shown on the Plan. Does the route reservoir routine need to be revised for the new outflow conditions? Calculate the capacity of the 5' wide spillway section.

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia
Fred Aguirre, DRB 95-162
Leroy Chavez, Westland Dev Co, 401 Coors Blvd NW, 87121

DRAINAGE INFORMATION SHEET

H 10/D15

PROJECT TITLE: Lot 7-A, Volcano Business Park ZONE ATLAS/DRNG. FILE #: ~~G/H 10~~

DRB #: _____ EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: Lot 7-A, Volcano Business Park

CITY ADDRESS: Todos Santos St NW

ENGINEERING FIRM: BRASHER & LORENZ, INC. CONTACT: Dennis A. Lorenz, PE

ADDRESS: 4425 Juan Tabo Blvd. NE Suite 202 PHONE: 296-0422

OWNER: Westland Development Co., Inc. CONTACT: L. Chavez

ADDRESS: 401 Coor N.W., Alb. NM PHONE: (505) 831-9600

ARCHITECT: Bases Southwest CONTACT: Steve Cummings

ADDRESS: 100 Iron Ave. S.E., Alb. NM PHONE: (505) 344-3461

SURVEYOR: Precision Surveys CONTACT: Larry Madrano

ADDRESS: 2929 Coors Blvd NW, Suite 105 Alb. NM PHONE: (505) 839-0569

CONTRACTOR: Bases Southwest CONTACT: Steve Cummings

ADDRESS: 100 Iron Ave. S.E., Alb. NM PHONE: (505) 344-3461

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
X DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEER'S CERTIFICATION
____ OTHER: _____

PRE-DESIGN MEETING:

X YES
____ NO
X COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ S. DEV. PLAN FOR SUB'D. APPROVAL
____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
____ SECTOR PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ FOUNDATION PERMIT APPROVAL
X BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY APPROVAL
____ GRADING PERMIT APPROVAL
____ PAVING PERMIT APPROVAL
____ S.A.D. DRAINAGE REPORT
____ DRAINAGE REQUIREMENTS
____ OTHER _____ (SPECIFY)

DATE SUBMITTED: May 15, 1995

BY: D. LORENZ

MAY 16 1995

JOHN CURTIN

EXECUTED COVENANT
FOR DRB 95-162
(CASE # G10-D29D)
TO BE HEARD BY DRB
TOMORROW!!

PLEASE INFORM
FRED OF OUR MTG
W/ DENNIS LORENZ
ON MAY 26 AND
THAT NO PUBLIC
IMPROVEMENTS
ARE REQ'D!!

THANKS LEROY

BRASHER & LORENZ, INC.
CONSULTING ENGINEERS

4425 JUAN TABO BLVD NE SUITE 202 ALBUQUERQUE, NM 87111 PHONE (505) 296-0422 FAX (505) 296-0466

June 2, 1995

John Curtin
Hydrology
City of Albuquerque
PO Box 1293
Albuquerque, New Mexico 87103

SUBJECT: HATCHER/WESTLAND SELF STORAGE
(G10/D29D)

Dear John:

Submitted herewith for review and approval are 2 copies of the revised Grading & Drainage Plan for the subject project. The Plan has been revised as requested by the owner to change the pond emergency spillway material from concrete to ashpalt. No other revisions have been made to the Plan.

If you have any questions regarding this submittal, or if I can be of any assistance, please call.

Sincerely,

BRASHER & LORENZ, INC.

Dennis A. Lorenz, PE

/dl
encl

DRAINAGE INFORMATION SHEET

D29D

PROJECT TITLE: Lot 7-A, Volcano Business Park ZONE ATLAS/DRNG. FILE #: G/H -10

DRB #: 95-162 EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: Lot 7-A, Volcano Business Park

CITY ADDRESS: Todos Santos St. NW

ENGINEERING FIRM: BRASHER & LORENZ, INC. CONTACT: Dennis A. Lorenz, PE

ADDRESS: 4425 Juan Tabo Blvd. NE Suite 202 PHONE: 296-0422

OWNER: Westland Development Co., Inc. CONTACT: L. Chavez

ADDRESS: 401 Coor N.W., Alb. NM PHONE: (505) 831-9600

ARCHITECT: Bares Southwest CONTACT: Steve Cummings

ADDRESS: 100 Iron Ave. S.E., Alb. NM PHONE: (505) 344-3461

SURVEYOR: Precision Surveys CONTACT: Larry Madrano

ADDRESS: 2929 Coors Blvd NW, Suite 105 Alb. NM PHONE: (505) 839-0569

CONTRACTOR: Bares Southwest CONTACT: Steve Cummings

ADDRESS: 100 Iron Ave. S.E., Alb. NM PHONE: (505) 344-3461

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
X DRAINAGE PLAN
____ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEER'S CERTIFICATION
____ OTHER: _____

PRE-DESIGN MEETING:

X YES
____ NO
X COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
____ S. DEV. PLAN FOR SUB'D. APPROVAL
____ S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
____ SECTOR PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ FOUNDATION PERMIT APPROVAL
X BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY APPROVAL
____ GRADING PERMIT APPROVAL
____ PAVING PERMIT APPROVAL
____ S.A.D. DRAINAGE REPORT
____ DRAINAGE REQUIREMENTS
____ OTHER _____ (SPECIFY)

DATE SUBMITTED: JUNE 2, 1995

BY: D. LORENZ

CONTRACT CONTROL FORM
PRELIMINARY REVIEW

2404.01
Project # 2404.02
CLH #
New or ~~Ext.~~ #

Contact Person Thomas
Phone No. 768-2505

Type of Agreement: Drainage covenant for dr. swale, A1
Drainage covenant for detention pond A2

Description/Project: Atrisco Business Park Ph. I
Public Works/Div: Eng / Design
Developer: Westland Dev. Co.

Contract Amount $ -0-
Contract Amount $ -0-

SIA Contract Period: _____ - _____
SW'S Contract Period: _____ - _____
Project Completed Date _____

DRAFT CONTRACT:
Recd by Legal: _____ Rejected/Returned to Dept: _____ / _____
Returned to Legal: _____ / _____ Approved: _____ Initials: _____

FINANCIAL GUARANTY:
Letter of Credit No. _____ Date _____ Attached: Yes ___ No ___ Initial ___
Other: Type _____ No. _____ Attached: Yes ___ No ___ Initial ___

FINAL CONTRACT REVIEW

APPROVALS REQUIRED:

	Date Delivered	Returned to Dept	Approved by	Approval Date
Purchasing:				
Asst. City Attorney:				
CIP:				
City Attorney:				
CAO:				
Other: Yuda	6-29-95	6-29-95	JJC	6-29-95
Council:				

EC No: _____ Approved: _____ Date: _____

DISTRIBUTION:

	Date:	By:
User Department		
Vendor		
City Clerk		
Treasury		
_____		

Revised 7/93
Doc. 1930/1vb

City of Albuquerque

P.O. BOX 1293 ALBUQUERQUE, NEW MEXICO 87103

March 16, 1995

Dennis Lorenz, PE
Brasher Engineering
4425 Juan Tabo NE #202
Albuquerque, NM 87111

RE: CONCEPTUAL G & D PLAN FOR HATCHER/WESTLAND STORAGE (G10-D29D)
RECEIVED FEBRUARY 27, 1995 FOR SITE DEVELOPMENT PLAN (SUBD & B.P.)
ENGINEER'S STAMP DATED 2-23-95

Dear Mr. Lorenz:

Based on the information included in the submittal referenced above, City Hydrology accepts the general concept for Site Development Plan.

The following comments must be addressed before Preliminary Plat approval:

What is the DRB number for this Site Plan and Plat? Include a copy of the Plat and the Infrastructure list in the submittal. Is this site 4.2 acres or 2.84 acres? Since Phase 1 & 2 will be separate lots, provide a private drainage easement on Phase 1 so that Phase 2 can drain to the pond.

The Erosion Control Plan is not acceptable. The berm on the west side of the Project must not block off-site runoff from the Private Drainage Easement. The berm between phase 1 & 2 must drain to the pond instead of Todos Santos.

As Built the existing swale. What is the permanent What is the Design of the swale solution?

If you have any questions about this project, You may contact me at 768-2727.

Sincerely,

John P. Curtin

John P. Curtin, P.E.
Civil Engineer/Hydrology

c: Andrew Garcia
Fred Aguirre, DRB ??? 95-162
Leroy Chavez, Westland Dev Co, 401 Coors Blvd NW

DRAINAGE INFORMATION SHEET

PROJECT TITLE: RAY HATCHER / WESTLAND SELF STORAGE ZONE ATLAS/DRNG. FILE #: B 10 / D291 [redacted]

DRB #: ? EPC #: _____ WORK ORDER #: _____

LEGAL DESCRIPTION: LOT 7 + PORTION TR 5A2, VOLANO BUSINESS PARK

CITY ADDRESS: TODOS SANTOS NW

ENGINEERING FIRM: BRASHER ENGINEERING CONTACT: D. LORENZ

ADDRESS: 4425 JUAN TABO NE #202 PHONE: 296-0422

OWNER: WESTLAND DEV. CO INC CONTACT: L. CHAVEZ

ADDRESS: 401 COORS BLVD NW 87121 PHONE: 831-9600

ARCHITECT: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

SURVEYOR: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

CONTRACTOR: NA CONTACT: _____

ADDRESS: _____ PHONE: _____

TYPE OF SUBMITTAL:

____ DRAINAGE REPORT
____ DRAINAGE PLAN
✓ CONCEPTUAL GRADING & DRAINAGE PLAN
____ GRADING PLAN
____ EROSION CONTROL PLAN
____ ENGINEER'S CERTIFICATION
____ OTHER _____

PRE-DESIGN MEETING:

____ YES
✓ NO
____ COPY PROVIDED

CHECK TYPE OF APPROVAL SOUGHT:

____ SKETCH PLAT APPROVAL
____ PRELIMINARY PLAT APPROVAL
X S. DEV. PLAN FOR SUB'D. APPROVAL
X S. DEV. PLAN FOR BLDG. PERMIT APPROVAL
____ SECTOR PLAN APPROVAL
____ FINAL PLAT APPROVAL
____ FOUNDATION PERMIT APPROVAL
____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY APPROVAL
____ GRADING PERMIT APPROVAL
____ PAVING PERMIT APPROVAL
____ S.A.D. DRAINAGE REPORT
____ DRAINAGE REQUIREMENTS
____ OTHER _____ (SPECIFY)

DATE SUBMITTED: 2-24-95

BY: D. LORENZ

RECEIVED
FEB 27 1995
HYDROLOGY SECTION

SUPPLEMENTAL CALCULATIONS

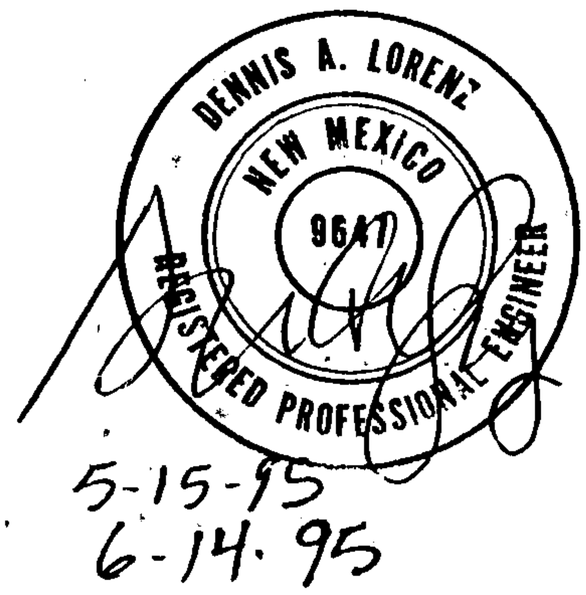
FOR

VOLCANO BUSINESS PARK

LOT 7A

BRASHER & LORENZ, INC.

MAY 1995



5-15-95
6-14-95

AHYMO

```
*S              STORAGE UNITS FOR WESTLAND DEVELOPMENT  (STRGUNIT.DAT)
*S              100-YEAR RAINFALL
START                   TIME=0.0 PUNCH CODE=0  PRINT LINE=0
*S COMPUTE BASIN A  - PHASE I OF STORAGE UNITS
RAINFALL                TYPE=2  RAIN QUARTER=0   RAIN ONE=1.90
                        RAIN SIX=2.20  RAIN DAY=2.70  DT=0.05
COMPUTE NM HYD          ID=1   HYD NO= 101.0   DA=0.00455 SQ MI
                        PER A=0.0  PER B=0.0  PER C=10.0
                        PER D=90.0  TP=0.133333HR MASSRAIN=-1
PRINT HYD               ID=1 CODE=5
*S ROUTE HYDROGRAPH THRU POND
ROUTE RESERVOIR         ID=2 HYD NO=102.0 INFLOW ID=1  CODE=5
                        OUTFLOW (CFS)  STORAGE (AC FT)  ELEV (FT)
                            0.0              0.00           33.50
                            1.7              0.0239         34.50
                            3.1              0.0554         35.50
                            4.1              0.0972         36.50
                            4.9              0.1492         37.50
                            5.5              0.2130         38.50
                        PRINT HYD          ID=2 CODE=1

*
FINISH
```

AHYMO SUMMARY TABLE (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) =05/12/1995
INPUT FILE = STRGUNIT.DAT
USER NO.= BRASHERE.I01

COMMAND	IDENTIFICATION	TIME TO PEAK (HOURS)	CFS PER ACRE	FROM ID NO.	TO ID NO.	AREA (SQ MI)	PEAK DISCHARGE (CFS)	RUNOFF VOLUME (AC-FT)	RUNOFF (INCHES)
				PAGE = 1					
*S	STORAGE UNITS FOR WESTLAND DEVELOPMENT (STRGUNIT.DAT)								
*S	100-YEAR RAINFALL								
START				TIME= .00					
*S COMPUTE BASIN A - PHASE I OF STORAGE UNITS									
RAINFALL TYPE= 2				RAIN24= 2.700					
COMPUTE NM HYD		101.00	-	1		.00455	12.28	.56	
2.32256	1.500	4.218 PER IMP= 90.00							
*S ROUTE HYDROGRAPH THRU POND									
ROUTE RESERVOIR		102.00	1	2		.00455	5.02	.56	
2.32250	1.750	1.723 AC-FT= .162							
FINISH									

AHYMO PROGRAM (AHYMO194) - AMAFCA Hydrologic Model - January, 1994
RUN DATE (MON/DAY/YR) = 05/12/1995
START TIME (HR:MIN:SEC) = 10:34:56 USER NO.= BRASHERE.I01
INPUT FILE = STRGUNIT.DAT

*S STORAGE UNITS FOR WESTLAND DEVELOPMENT (STRGUNIT.DAT)

*S 100-YEAR RAINFALL

START TIME=0.0 PUNCH CODE=0 PRINT LINE=0

*S COMPUTE BASIN A - PHASE I OF STORAGE UNITS

RAINFALL TYPE=2 RAIN QUARTER=0 RAIN ONE=1.90
RAIN SIX=2.20 RAIN DAY=2.70 DT=0.05

COMPUTED 24-HOUR RAINFALL DISTRIBUTION BASED ON NOAA ATLAS 2
- PEAK AT 1.40 HR.

DT = .050000 HOURS END TIME = 24.000000 HOURS

.0000	.0020	.0041	.0062	.0084	.0107	.0131
.0156	.0181	.0208	.0236	.0266	.0296	.0329
.0363	.0399	.0438	.0479	.0523	.0570	.0622
.0702	.0791	.1048	.1653	.2695	.4307	.6627
.9800	1.2302	1.3432	1.4377	1.5203	1.5943	1.6612
1.7223	1.7783	1.8299	1.8775	1.9215	1.9622	1.9709
1.9789	1.9863	1.9933	1.9998	2.0059	2.0117	2.0173
2.0225	2.0276	2.0324	2.0371	2.0415	2.0458	2.0500
2.0541	2.0580	2.0618	2.0655	2.0690	2.0725	2.0759
2.0792	2.0825	2.0856	2.0887	2.0918	2.0947	2.0976
2.1004	2.1032	2.1060	2.1086	2.1113	2.1138	2.1164
2.1189	2.1213	2.1237	2.1261	2.1285	2.1308	2.1330
2.1353	2.1375	2.1396	2.1418	2.1439	2.1460	2.1480
2.1500	2.1520	2.1540	2.1560	2.1579	2.1598	2.1617
2.1636	2.1654	2.1672	2.1690	2.1708	2.1726	2.1743
2.1760	2.1777	2.1794	2.1811	2.1828	2.1844	2.1860
2.1876	2.1892	2.1908	2.1924	2.1939	2.1955	2.1970
2.1985	2.2000	2.2021	2.2042	2.2063	2.2084	2.2105
2.2126	2.2147	2.2167	2.2188	2.2209	2.2229	2.2250
2.2270	2.2290	2.2310	2.2330	2.2351	2.2371	2.2390
2.2410	2.2430	2.2450	2.2470	2.2489	2.2509	2.2528
2.2548	2.2567	2.2586	2.2605	2.2625	2.2644	2.2663
2.2682	2.2701	2.2720	2.2738	2.2757	2.2776	2.2795
2.2813	2.2832	2.2850	2.2869	2.2887	2.2905	2.2923
2.2942	2.2960	2.2978	2.2996	2.3014	2.3032	2.3050
2.3068	2.3085	2.3103	2.3121	2.3138	2.3156	2.3174
2.3191	2.3208	2.3226	2.3243	2.3260	2.3278	2.3295
2.3312	2.3329	2.3346	2.3363	2.3380	2.3397	2.3414
2.3431	2.3448	2.3464	2.3481	2.3498	2.3514	2.3531
2.3547	2.3564	2.3580	2.3596	2.3613	2.3629	2.3645
2.3662	2.3678	2.3694	2.3710	2.3726	2.3742	2.3758
2.3774	2.3790	2.3806	2.3821	2.3837	2.3853	2.3869
2.3884	2.3900	2.3915	2.3931	2.3946	2.3962	2.3977
2.3993	2.4008	2.4023	2.4038	2.4054	2.4069	2.4084

2.4099	2.4114	2.4129	2.4144	2.4159	2.4174	2.4189
2.4204	2.4219	2.4234	2.4248	2.4263	2.4278	2.4293
2.4307	2.4322	2.4336	2.4351	2.4365	2.4380	2.4394
2.4409	2.4423	2.4437	2.4452	2.4466	2.4480	2.4494
2.4509	2.4523	2.4537	2.4551	2.4565	2.4579	2.4593
2.4607	2.4621	2.4635	2.4649	2.4662	2.4676	2.4690
2.4704	2.4718	2.4731	2.4745	2.4759	2.4772	2.4786
2.4799	2.4813	2.4826	2.4840	2.4853	2.4867	2.4880
2.4893	2.4907	2.4920	2.4933	2.4946	2.4960	2.4973
2.4986	2.4999	2.5012	2.5025	2.5038	2.5051	2.5064
2.5077	2.5090	2.5103	2.5116	2.5129	2.5142	2.5155
2.5168	2.5180	2.5193	2.5206	2.5219	2.5231	2.5244
2.5257	2.5269	2.5282	2.5294	2.5307	2.5319	2.5332
2.5344	2.5357	2.5369	2.5382	2.5394	2.5406	2.5419
2.5431	2.5443	2.5455	2.5468	2.5480	2.5492	2.5504
2.5516	2.5528	2.5541	2.5553	2.5565	2.5577	2.5589
2.5601	2.5613	2.5625	2.5636	2.5648	2.5660	2.5672
2.5684	2.5696	2.5708	2.5719	2.5731	2.5743	2.5754
2.5766	2.5778	2.5790	2.5801	2.5813	2.5824	2.5836
2.5847	2.5859	2.5870	2.5882	2.5893	2.5905	2.5916
2.5928	2.5939	2.5950	2.5962	2.5973	2.5984	2:5996
2.6007	2.6018	2.6029	2.6041	2.6052	2.6063	2.6074
2.6085	2.6097	2.6108	2.6119	2.6130	2.6141	2.6152
2.6163	2.6174	2.6185	2.6196	2.6207	2.6218	2.6229
2.6239	2.6250	2.6261	2.6272	2.6283	2.6294	2.6304
2.6315	2.6326	2.6337	2.6347	2.6358	2.6369	2.6379
2.6390	2.6401	2.6411	2.6422	2.6432	2.6443	2.6454
2.6464	2.6475	2.6485	2.6496	2.6506	2.6516	2.6527
2.6537	2.6548	2.6558	2.6569	2.6579	2.6589	2.6600
2.6610	2.6620	2.6630	2.6641	2.6651	2.6661	2.6671
2.6682	2.6692	2.6702	2.6712	2.6722	2.6732	2.6742
2.6752	2.6763	2.6773	2.6783	2.6793	2.6803	2.6813
2.6823	2.6833	2.6843	2.6853	2.6862	2.6872	2.6882
2.6892	2.6902	2.6912	2.6922	2.6932	2.6941	2.6951
2.6961	2.6971	2.6981	2.6990	2.7000		

COMPUTE NM HYD ID=1 HYD NO= 101.0 DA=0.00455 SQ MI

PER A=0.0 PER B=0.0 PER C=10.0

PER D=90.0 TP=0.133333HR MASSRAIN=-1

K = .072666HR TP = .133333HR K/TP RATIO = .545000 SHAPE CONSTANT, N = 7.106420
UNIT PEAK = 16.163 CFS UNIT VOLUME = .9985 B = 526.28
P60 = 1.9000
AREA = .004095 SQ MI IA = .10000 INCHES INF = .04000 INCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT = .050000

K = .106231HR TP = .133333HR K/TP RATIO = .796738 SHAPE CONSTANT, N = 4.498737
UNIT PEAK = 1.3211 CFS UNIT VOLUME = .9927 B = 387.15
P60 = 1.9000

AREA = .000455 SQ MI IA = .35000 INCHES INF = .83000 I
NCHES PER HOUR
RUNOFF COMPUTED BY INITIAL ABSTRACTION/INFILTRATION NUMBER METHOD - DT
.050000

PRINT HYD ID=1 CODE=5

PARTIAL HYDROGRAPH 101.00

TIME HRS	FLOW CFS	TIME HRS	FLOW CFS	TIME HRS	FLOW CFS
.000	.0	5.000	.1	10.000	.1
15.000	.1	20.000	.1		
.250	.0	5.250	.1	10.250	.1
15.250	.1	20.250	.1		
.500	.0	5.500	.1	10.500	.1
15.500	.1	20.500	.1		
.750	.0	5.750	.1	10.750	.1
15.750	.1	20.750	.1		
1.000	.0	6.000	.1	11.000	.1
16.000	.1	21.000	.1		
1.250	1.0	6.250	.1	11.250	.1
16.250	.1	21.250	.1		
1.500	12.3	6.500	.1	11.500	.1
16.500	.1	21.500	.1		
1.750	4.8	6.750	.1	11.750	.1
16.750	.1	21.750	.1		
2.000	3.0	7.000	.1	12.000	.1
17.000	.1	22.000	.1		
2.250	.8	7.250	.1	12.250	.1
17.250	.1	22.250	.1		
2.500	.4	7.500	.1	12.500	.1
17.500	.1	22.500	.1		
2.750	.2	7.750	.1	12.750	.1
17.750	.1	22.750	.1		
3.000	.1	8.000	.1	13.000	.1
18.000	.1	23.000	.1		
3.250	.1	8.250	.1	13.250	.1
18.250	.1	23.250	.1		
3.500	.1	8.500	.1	13.500	.1
18.500	.1	23.500	.1		
3.750	.1	8.750	.1	13.750	.1
18.750	.1	23.750	.1		
4.000	.1	9.000	.1	14.000	.1
19.000	.1	24.000	.1		
4.250	.1	9.250	.1	14.250	.1
19.250	.1	24.250	.0		
4.500	.1	9.500	.1	14.500	.1
19.500	.1	24.500	.0		
4.750	.1	9.750	.1	14.750	.1
19.750	.1				

RUNOFF VOLUME = 2.32256 INCHES = .5636 ACRE-FEET
PEAK DISCHARGE RATE = 12.28 CFS AT 1.500 HOURS BASIN AREA =

.0046 SQ. MI.

*S ROUTE HYDROGRAPH THRU POND

ROUTE RESERVOIR ID=2 HYD NO=102.0 INFLOW ID=1 CODE=5

OUTFLOW (CFS)	STORAGE (AC FT)	ELEV (FT)
0.0	0.00	33.50
1.7	0.0239	34.50
3.1	0.0554	35.50
4.1	0.0972	36.50
4.9	0.1492	37.50
5.5	0.2130	38.50

PRINT HYD ID=2 CODE=1

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

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
.00	.00	33.50	.000	.00
.25	.00	33.50	.000	.00
.50	.00	33.50	.000	.00
.75	.00	33.50	.000	.00
1.00	.00	33.50	.000	.00
1.25	1.01	33.60	.002	.17
1.50	12.28	36.48	.096	4.08
1.75	4.84	37.69	.162	5.02
2.00	2.96	37.29	.138	4.73
2.25	.81	36.22	.086	3.82
2.50	.37	34.82	.034	2.15
2.75	.19	33.95	.011	.76
3.00	.12	33.67	.004	.28
3.25	.08	33.58	.002	.14
3.50	.07	33.55	.001	.09
3.75	.06	33.54	.001	.07
4.00	.06	33.54	.001	.06
4.25	.06	33.53	.001	.06
4.50	.06	33.53	.001	.06
4.75	.06	33.53	.001	.06
5.00	.06	33.54	.001	.06
5.25	.06	33.54	.001	.06
5.50	.07	33.54	.001	.07
5.75	.07	33.54	.001	.07
6.00	.08	33.54	.001	.07
6.25	.11	33.55	.001	.09
6.50	.11	33.56	.001	.10

6.75	.11	33.56	.002	.11
7.00	.11	33.56	.001	.11
7.25	.10	33.56	.001	.11
7.50	.10	33.56	.001	.10
7.75	.10	33.56	.001	.10
8.00	.10	33.56	.001	.10
8.25	.10	33.56	.001	.10
8.50	.10	33.56	.001	.10
8.75	.10	33.56	.001	.10
9.00	.09	33.56	.001	.09
9.25	.09	33.55	.001	.09
9.50	.09	33.55	.001	.09
9.75	.09	33.55	.001	.09
10.00	.09	33.55	.001	.09
10.25	.09	33.55	.001	.09
10.50	.09	33.55	.001	.09
10.75	.08	33.55	.001	.09
11.00	.08	33.55	.001	.08
11.25	.08	33.55	.001	.08
11.50	.08	33.55	.001	.08
11.75	.08	33.55	.001	.08
12.00	.08	33.55	.001	.08
12.25	.08	33.55	.001	.08
12.50	.08	33.55	.001	.08
12.75	.08	33.55	.001	.08
13.00	.08	33.55	.001	.08
13.25	.08	33.54	.001	.08
13.50	.07	33.54	.001	.08
13.75	.07	33.54	.001	.07

TIME (HRS)	INFLOW (CFS)	ELEV (FEET)	VOLUME (AC-FT)	OUTFLOW (CFS)
14.00	.07	33.54	.001	.07
14.25	.07	33.54	.001	.07
14.50	.07	33.54	.001	.07
14.75	.07	33.54	.001	.07
15.00	.07	33.54	.001	.07
15.25	.07	33.54	.001	.07
15.50	.07	33.54	.001	.07
15.75	.07	33.54	.001	.07
16.00	.07	33.54	.001	.07
16.25	.07	33.54	.001	.07
16.50	.07	33.54	.001	.07
16.75	.07	33.54	.001	.07
17.00	.07	33.54	.001	.07
17.25	.06	33.54	.001	.06
17.50	.06	33.54	.001	.06
17.75	.06	33.54	.001	.06
18.00	.06	33.54	.001	.06
18.25	.06	33.54	.001	.06
18.50	.06	33.54	.001	.06
18.75	.06	33.54	.001	.06
19.00	.06	33.54	.001	.06
19.25	.06	33.54	.001	.06
19.50	.06	33.54	.001	.06
19.75	.06	33.53	.001	.06

20.00	.06	33.53	.001	.06
20.25	.06	33.53	.001	.06
20.50	.06	33.53	.001	.06
20.75	.06	33.53	.001	.06
21.00	.06	33.53	.001	.06
21.25	.06	33.53	.001	.06
21.50	.06	33.53	.001	.06
21.75	.06	33.53	.001	.06
22.00	.05	33.53	.001	.06
22.25	.05	33.53	.001	.05
22.50	.05	33.53	.001	.05
22.75	.05	33.53	.001	.05
23.00	.05	33.53	.001	.05
23.25	.05	33.53	.001	.05
23.50	.05	33.53	.001	.05
23.75	.05	33.53	.001	.05
24.00	.05	33.53	.001	.05
24.25	.01	33.52	.000	.03
24.50	.00	33.51	.000	.01
24.75	.00	33.50	.000	.00

PEAK DISCHARGE = 5.017 CFS - PEAK OCCURS AT HOUR 1.75
MAXIMUM WATER SURFACE ELEVATION = 37.694
MAXIMUM STORAGE = .1616 AC-FT INCREMENTAL TIME= .050000HR

FINISH

NORMAL PROGRAM FINISH END TIME (HR:MIN:SEC) = 10:34:57

HEC 2

```
**********************************************************
*  WATER SURFACE PROFILES                                *
*  VERSION OF SEPTEMBER 1988                             *
*  ERROR: 01,02                                          *
*  UPDATED:  4 APRIL    1989                             *
*  RUN DATE     5/12/95   TIME   10: 6: 0                *
**********************************************************
```

```
****************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616-4687
*  (916) 756-1104, (916) 551-1748
****************************************
```

```
X     X  XXXXXXX   XXXXX             XXXXX
X     X  X        X     X           X     X
X     X  X        X                       X
XXXXXXX  XXXX     X         XXXXX    XXXXX
X     X  X        X                 X
X     X  X        X     X           X
X     X  XXXXXXX  XXXXX             XXXXXXX
```

END OF BANNER

THIS RUN EXECUTED 5/12/95 10: 6: 0

```
**************************************************
 HEC2 RELEASE DATED SEP 88 UPDATED APR  1989

 ERROR CORR -  01,02
 MODIFICATION -
**************************************************

T1  WESTLAND DEVELOPMENT STORAGE UNITS
T2  POND OUTFLOW CHANNEL SRL MAY 2, 1995
T3  POND OUTFLOW CHANNEL

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                2                   0       .01  5

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    -1                                                          -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150

NC                              0.03
QT        1       5.80
X1        1          4          0         40          0         0         0
GR     5126          0       5125         10       5124        20    5125.5          40

X1        2          4         10         37        215       215       215
GR     5128         10       5125         22       5127        32      5128          37

X1        3          3         10         40        280       280       280
GR     5130         10       5127         25       5130        40

X1        4          3         10         40        270       270       270
GR     5133         10       5130         25       5133        40

X1        5          3          0         40        230       230       230
GR   5134.5          0     5132.3         20     5135.5        40

X1        6          3          0         20         80        60        70
GR     5137          0     5133.1         10     5136.5        20
```

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

*SECNO 1.000
2096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

1.00	.58	5124.58	5124.55	.00	5124.69	.11	.00	.00	5126.00
6.	0.	6.	0.	0.	4.	0.	0.	0.	5125.50
.00	.00	1.45	.00	.000	.030	.000	.000	5124.00	14.15
.009831	0.	0.	0.	0	15	5	.00	13.65	27.80

*SECNO 2.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.48

2.00	.97	5125.97	5125.80	.00	5126.07	.09	1.37	.00	5128.00
6.	0.	6.	0.	0.	4.	0.	1.	2.	5128.00
.04	.00	1.36	.00	.000	.030	.000	.000	5125.00	18.11
.004487	215.	215.	215.	5	11	0	.00	8.76	26.87

*SECNO 3.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .63

3.00	.78	5127.78	5127.77	.00	5127.96	.18	1.89	.00	5130.00
6.	0.	6.	0.	0.	3.	0.	2.	5.	5130.00
.09	.00	1.88	.00	.000	.030	.000	.000	5127.00	21.07
.011338	280.	280.	280.	2	15	0	.00	7.86	28.93

*SECNO 4.000

4.00	.79	5130.79	5130.77	.00	5130.97	.17	3.01	.00	5133.00
6.	0.	6.	0.	0.	3.	0.	3.	7.	5133.00
.13	.00	1.85	.00	.000	.030	.000	.000	5130.00	21.04
.010934	270.	270.	270.	4	5	0	.00	7.91	28.96

*SECNO 5.000

5.00	.71	5133.01	5132.95	.00	5133.13	.11	2.16	.00	5134.50
6.	0.	6.	0.	0.	4.	0.	4.	9.	5135.50
.17	.00	1.50	.00	.000	.030	.000	.000	5132.30	13.55
.008152	230.	230.	230.	4	16	0	.00	10.89	24.44

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

6.00	.98	5134.08	5134.08	.00	5134.33	.24	.69	.00	5137.00
6.	0.	6.	0.	0.	3.	0.	4.	10.	5136.50
.18	.00	2.19	.00	.000	.030	.000	.000	5133.10	7.49
.012181	80.	70.	60.	0	11	0	.00	5.40	12.88

PROFILE FOR STREAM OUTFLOW CHANNEL

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

```
ELEVATION  5124.     5126.     5128.     5130.     5132.     5134.     5136.     5138.     5140.     5142.
    SECNO   CUMDIS

   1.00      0.  I  E    R L      .         .         .         .         .         .         .         .         .
            20.  I  CE    R.L     .         .         .         .         .         .         .         .         .
            40.  .I  WE    R L     .         .         .         .         .         .         .         .         .
            60.  .I  CE    .R L    .         .         .         .         .         .         .         .         .
            80.  . I  WE   . R L   .         .         .         .         .         .         .         .         .
           100.  . I   WE  .  R L  .         .         .         .         .         .         .         .         .
           120.  .  I  CE  .   R L .         .         .         .         .         .         .         .         .
           140.  .  I   WE .     RL .         .         .         .         .         .         .         .         .
           160.  .  I  CWE.      L .         .         .         .         .         .         .         .         .
           180.  .  I   CE.       L.         .         .         .         .         .         .         .         .
           200.  .   I   WE       L.         .         .         .         .         .         .         .         .
   2.00    220.  .   I   CE       L         .         .         .         .         .         .         .         .
           240.  .    I   CE      .L        .         .         .         .         .         .         .         .
           260.  .    I   CWE     .L        .         .         .         .         .         .         .         .
           280.  .     I  .CE     . L       .         .         .         .         .         .         .         .
           300.  .      I . WE    .  L      .         .         .         .         .         .         .         .
           320.  .       I.  WE   .   L     .         .         .         .         .         .         .         .
           340.  .       I.  CE   .   L     .         .         .         .         .         .         .         .
           360.  .        I   WE  .    L    .         .         .         .         .         .         .         .
           380.  .        .I   WE .     L   .         .         .         .         .         .         .         .
           400.  .        .I   CE .     L   .         .         .         .         .         .         .         .
           420.  .        . I   WE.      L  .         .         .         .         .         .         .         .
           440.  .        .  I   WE.       L.         .         .         .         .         .         .         .
           460.  .        .   I  CE.        L.        .         .         .         .         .         .         .
           480.  .        .   I   WE.       L.        .         .         .         .         .         .         .
   3.00    500.  .        .    I   WE       L        .         .         .         .         .         .         .
           520.  .        .     I   WE      .L        .         .         .         .         .         .         .
           540.  .        .      I  .WE     . L       .         .         .         .         .         .         .
           560.  .        .       I . WE    .  L      .         .         .         .         .         .         .
           580.  .        .      I.  WE     .   L     .         .         .         .         .         .         .
           600.  .        .      .I  CE     .    L    .         .         .         .         .         .         .
           620.  .        .      . I   E    .    L    .         .         .         .         .         .         .
           640.  .        .      .  I   WE  .     L   .         .         .         .         .         .         .
           660.  .        .      .   I   WE.       L.         .         .         .         .         .         .
           680.  .        .      .    I   WE       L         .         .         .         .         .         .
           700.  .        .      .     I   WE      .L        .         .         .         .         .         .
           720.  .        .      .      I  .WE     . L       .         .         .         .         .         .
           740.  .        .      .      . I . WE   .  L      .         .         .         .         .         .
           760.  .        .      .        I.  WE   .   L     .         .         .         .         .         .
   4.00    780.  .        .      .        I   WE   .    L    .         .         .         .         .         .
           800.  .        .      .        .I   WE  .     L   .         .         .         .         .         .
           820.  .        .      .        . I   WE .     LR  .         .         .         .         .         .
           840.  .        .      .        .  I   WE .     LR .         .         .         .         .         .
           860.  .        .      .        .   I   WE.      LR.         .         .         .         .         .
           880.  .        .      .        .    I   WE      L R         .         .         .         .         .
           900.  .        .      .        .     I   E      L. R        .         .         .         .         .
           920.  .        .      .        .      I  CE      L  R       .         .         .         .         .
           940.  .        .      .        .       I .CE     L   R      .         .         .         .         .
```

```
        960.  .       .       .       I. CE      .L   R    .       .       .       .       .
        980.  .       .       .        I  CE     . L   R    .       .       .       .       .
5.00   1000.  .       .       .       .I   WE    .  L    R .       .       .       .       .
       1020.  .       .       .       .  I  CE   .    ML  R.       .       .       .       .
       1040.  .       .       .       .   I   WE.        M L      .       .       .       .
       1060.  .       .       .       .    I    WE         .MRL   .       .       .       .
6.00   1080.  .       .       .       .     I   W E        . R L  .       .       .       .
```

THIS RUN EXECUTED 5/12/95 10: 6: 0

****
HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02
MODIFICATION -
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OUTFLOW CHANNEL

SUMMARY PRINTOUT TABLE 150

	SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
	1.000	.00	.00	.00	5124.00	5.80	5124.58	5124.55	5124.69	98.31	1.45	3.99	.58
*	2.000	215.00	.00	.00	5125.00	5.80	5125.97	5125.80	5126.07	44.87	1.36	4.27	.87
*	3.000	280.00	.00	.00	5127.00	5.80	5127.78	5127.77	5127.96	113.38	1.88	3.09	.54
	4.000	270.00	.00	.00	5130.00	5.80	5130.79	5130.77	5130.97	109.34	1.85	3.13	.55
	5.000	230.00	.00	.00	5132.30	5.80	5133.01	5132.95	5133.13	81.52	1.50	3.87	.64
*	6.000	70.00	.00	.00	5133.10	5.80	5134.08	5134.08	5134.33	121.81	2.19	2.64	.53

OUTFLOW CHANNEL

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	1.000	5.80	5124.58	.00	.00	.00	13.65	.00
*	2.000	5.80	5125.97	.00	1.39	.00	8.76	215.00
*	3.000	5.80	5127.78	.00	1.81	.00	7.86	280.00
	4.000	5.80	5130.79	.00	3.01	.00	7.91	270.00
	5.000	5.80	5133.01	.00	2.22	.00	10.89	230.00
*	6.000	5.80	5134.08	.00	1.07	.00	5.40	70.00

```
**************************************************
*  WATER SURFACE PROFILES                        *
*  VERSION OF SEPTEMBER 1988                     *
*  ERROR: 01,02                                  *
*  UPDATED:  4 APRIL    1989                     *
*  RUN DATE     6/14/95   TIME   10:36:11        *
**************************************************
```


```
**************************************
*  U.S. ARMY CORPS OF ENGINEERS
*  THE HYDROLOGIC ENGINEERING CENTER
*  609 SECOND STREET, SUITE D
*  DAVIS, CALIFORNIA 95616-4687
*  (916) 756-1104, (916) 551-1748
**************************************
```


```
X     X  XXXXXXX   XXXXX            XXXXX
X     X  X        X     X         X     X
X     X  X        X                     X
XXXXXXX  XXXX     X           XXXXX    XXXXX
X     X  X        X                 X
X     X  X        X     X           X
X     X  XXXXXXX   XXXXX             XXXXXXX
```

END OF BANNER

THIS RUN EXECUTED 6/14/95 10:36:11

```
**************************************************
  HEC2 RELEASE DATED SEP 88 UPDATED APR  1989

  ERROR CORR -  01,02
  MODIFICATION -
**************************************************

T1  WESTLAND DEVELOPMENT STORAGE UNITS
T2  POND OUTFLOW CHANNEL SRL MAY 2, 1995
T3  POND OUTFLOW CHANNEL

J1  ICHECK    INQ       NINV      IDIR      STRT      METRIC    HVINS     Q         WSEL      FQ

                8                   0       .015

J2  NPROF     IPLOT     PRFVS     XSECV     XSECH     FN        ALLDC     IBW       CHNIM     ITRACE

    -1                                                          -1

J3  VARIABLE CODES FOR SUMMARY PRINTOUT

    150
```

20,30?

NC			0.03					
QT	7	5.80	9.40	11.8	13.8	16.1	17.9	20.3
X1	1	4	0	40	0	0	0	
GR	5126	0	5125	10	5124	20	5125.5	40
X1	2	4	10	37	215	215	215	
GR	5128	10	5125	22	5127	32	5128	37
X1	3	3	10	40	280	280	280	
GR	5130	10	5127	25	5130	40		
X1	4	3	10	40	270	270	270	
GR	5133	10	5130	25	5133	40		
X1	5	3	0	40	230	230	230	
GR	5134.5	0	5132.3	20	5135.5	40		
X1	6	3	0	20	80	60	70	
GR	5137	0	5133.1	10	5136.5	20		

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*PROF 1

CRITICAL DEPTH TO BE CALCULATED AT ALL CROSS SECTIONS

*SECNO 1.000
3096 WSEL NOT GIVEN, AVG OF MAX, MIN USED

1.00	.75	5124.75	5124.71	.00	5124.90	.15	.00	.00	5126.00
20.	0.	20.	0.	0.	6.	0.	0.	0.	5125.50
.00	.00	3.13	.00	.000	.030	.000	.000	5124.00	12.54
.014902	0.	0.	0.	0	11	3	.00	17.41	29.95

SECNO 2.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = 1.87

2.00	1.36	5126.36	5126.05	.00	5126.45	.09	1.55	.00	5128.00
20.	0.	20.	0.	0.	8.	0.	0.	0.	5128.00
.02	.00	2.45	.00	.000	.030	.000	.000	5125.00	16.57
.004247	215.	215.	215.	5	11	0	.00	12.21	28.78

SECNO 3.000

3302 WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = .62

3.00	1.09	5128.09	5128.00	.00	5128.27	.18	1.82	.00	5130.00
20.	0.	20.	0.	0.	6.	0.	0.	0.	5130.00
.05	.00	3.44	.00	.000	.030	.000	.000	5127.00	19.57
.011141	280.	280.	280.	3	19	0	.00	10.87	30.43

SECNO 4.000

4.00	1.09	5131.09	5131.00	.00	5131.27	.18	3.00	.00	5133.00
20.	0.	20.	0.	0.	6.	0.	0.	0.	5133.00
.07	.00	3.43	.00	.000	.030	.000	.000	5130.00	19.56
.011088	270.	270.	270.	4	11	0	.00	10.88	30.44

SECNO 5.000

5.00	.99	5133.29	5133.15	.00	5133.40	.12	2.13	.00	5134.50
20.	0.	20.	0.	0.	7.	0.	0.	0.	5135.50
.09	.00	2.73	.00	.000	.030	.000	.000	5132.30	11.04
.007874	230.	230.	230.	4	16	0	.00	15.12	26.16

SECNO	DEPTH	CWSEL	CRIWS	WSELK	EG	HV	HL	OLOSS	BANK ELEV
Q	QLOB	QCH	QROB	ALOB	ACH	AROB	VOL	TWA	LEFT/RIGHT
TIME	VLOB	VCH	VROB	XNL	XNCH	XNR	WTN	ELMIN	SSTA
SLOPE	XLOBL	XLCH	XLOBR	ITRIAL	IDC	ICONT	CORAR	TOPWID	ENDST

*SECNO 6.000
7185 MINIMUM SPECIFIC ENERGY
3720 CRITICAL DEPTH ASSUMED

6.00	1.27	5134.37	5134.37	.00	5134.69	.32	.78	.00	5137.00
20.	0.	20.	0.	0.	4.	0.	0.	0.	5136.50
.10	.00	4.56	.00	.000	.030	.000	.000	5133.10	6.74
.016889	80.	70.	60.	0	11	0	.00	7.00	13.74

PROFILE FOR STREAM OUTFLOW CHANNEL

PLOTTED POINTS (BY PRIORITY) E-ENERGY,W-WATER SURFACE,I-INVERT,C-CRITICAL W.S.,L-LEFT BANK,R-RIGHT BANK,M-LOWER END STA

```
ELEVATION  5124.     5126.     5128.     5130.     5132.     5134.     5136.     5138.     5140.     5142.
    SECNO   CUMDIS

    1.00     0.  I   E   R L      .         .         .         .         .         .         .         .         .
            20.  I   WE   R.L     .         .         .         .         .         .         .         .         .
            40.  .I   WE   R L     .         .         .         .         .         .         .         .         .
            60.  .I   CWE  .R L     .         .         .         .         .         .         .         .         .
            80.  . I   CE  . R L     .         .         .         .         .         .         .         .         .
           100.  . I    WE . R L     .         .         .         .         .         .         .         .         .
           120.  .  I   CWE.   R L     .         .         .         .         .         .         .         .         .
           140.  .  I    CWE     RL     .         .         .         .         .         .         .         .         .
           160.  .  I    CE      L .         .         .         .         .         .         .         .         .
           180.  .  I    CWE      L .         .         .         .         .         .         .         .         .
           200.  .   I    CWE      L.         .         .         .         .         .         .         .         .
    2.00   220.  .   I    C E      L         .         .         .         .         .         .         .         .
           240.  .    I   .CWE      .L         .         .         .         .         .         .         .         .
           260.  .    I   . CWE     .L         .         .         .         .         .         .         .         .
           280.  .     I  . C E     . L         .         .         .         .         .         .         .         .
           300.  .      I .  CWE    .  L         .         .         .         .         .         .         .         .
           320.  .       I.   CWE   .   L         .         .         .         .         .         .         .         .
           340.  .       I.   C E   .   L         .         .         .         .         .         .         .         .
           360.  .        I    CWE  .    L         .         .         .         .         .         .         .         .
           380.  .        .I    CE  .     L         .         .         .         .         .         .         .         .
           400.  .        .I     WE .     L         .         .         .         .         .         .         .         .
           420.  .        . I    CWE.      L         .         .         .         .         .         .         .         .
           440.  .        .  I    CE.       L .         .         .         .         .         .         .         .
           460.  .        .   I    WE        L.         .         .         .         .         .         .         .
           480.  .        .   I    CWE       L.         .         .         .         .         .         .         .
    3.00   500.  .        .    I    WE        L         .         .         .         .         .         .         .
           520.  .        .     I   .CE       .L         .         .         .         .         .         .         .
           540.  .        .      I  . CWE     . L         .         .         .         .         .         .         .
           560.  .        .      I . CWE    . L     .         .         .         .         .         .         .
           580.  .        .       I.   CWE   .  L     .         .         .         .         .         .         .
           600.  .        .        .I    WE  .     L     .         .         .         .         .         .         .
           620.  .        .        . I    WE .      L     .         .         .         .         .         .         .
           640.  .        .        . I    WE.       L .         .         .         .         .         .         .
           660.  .        .        .  I    WE        L.         .         .         .         .         .         .
           680.  .        .        .   I    WE        L         .         .         .         .         .         .
           700.  .        .        .    I   .CE       .L         .         .         .         .         .         .
           720.  .        .        .     I  . CWE     . L         .         .         .         .         .         .
           740.  .        .        .      I . CWE     .  L         .         .         .         .         .         .
           760.  .        .        .       I.   CWE   .   L         .         .         .         .         .         .
    4.00   780.  .        .        .        I    WE   .    L         .         .         .         .         .         .
           800.  .        .        .        .I    WE  .     L         .         .         .         .         .         .
           820.  .        .        .        . I    WE .      LR         .         .         .         .         .         .
           840.  .        .        .        . I    WE.       LR .         .         .         .         .         .
           860.  .        .        .        .  I    WE        LR.         .         .         .         .         .
           880.  .        .        .        .   I    WE       L R         .         .         .         .         .
           900.  .        .        .        .    I   .WE       L. R         .         .         .         .         .
           920.  .        .        .        .     I  . WE      L  R         .         .         .         .         .
           940.  .        .        .        .      I . CWE     L   R         .         .         .         .         .
```

```
        960.  .       .       .       .       I.  CWB     .L   R     .       .       .       .       .
        980.  .       .       .       .       I   CWB     . L   R     .       .       .       .       .
5.00   1000.  .       .       .       .       .I    WB    .  L    R  .       .       .       .       .
       1020.  .       .       .       .       .  I   CWB.     ML   R.       .       .       .       .
       1040.  .       .       .       .       .   I    CWB       M L       .       .       .       .
       1060.  .       .       .       .       .    I    .W B       .MRL     .       .       .       .
6.00   1080.  .       .       .       .       .     I   . WB       .  R L   .       .       .       .
```

THIS RUN EXECUTED 6/14/95 10:36:11

****
HEC2 RELEASE DATED SEP 88 UPDATED APR 1989

ERROR CORR - 01,02
MODIFICATION -
****

NOTE- ASTERISK (*) AT LEFT OF CROSS-SECTION NUMBER INDICATES MESSAGE IN SUMMARY OF ERRORS LIST

OUTFLOW CHANNEL

SUMMARY PRINTOUT TABLE 150

SECNO	XLCH	ELTRD	ELLC	ELMIN	Q	CWSEL	CRIWS	EG	10*KS	VCH	AREA	.01K
1.000	.00	.00	.00	5124.00	20.30	5124.75	5124.71	5124.90	149.02	3.13	6.49	1.66
2.000	215.00	.00	.00	5125.00	20.30	5126.36	5126.05	5126.45	42.47	2.45	8.28	3.11
3.000	280.00	.00	.00	5127.00	20.30	5128.09	5128.00	5128.27	111.41	3.44	5.91	1.92
4.000	270.00	.00	.00	5130.00	20.30	5131.09	5131.00	5131.27	110.88	3.43	5.92	1.93
5.000	230.00	.00	.00	5132.30	20.30	5133.29	5133.15	5133.40	78.74	2.73	7.45	2.29
6.000	70.00	.00	.00	5133.10	20.30	5134.37	5134.37	5134.69	168.89	4.56	4.45	1.56

OUTFLOW CHANNEL

SUMMARY PRINTOUT TABLE 150

	SECNO	Q	CWSEL	DIFWSP	DIFWSX	DIFKWS	TOPWID	XLCH
	1.000	20.30	5124.75	.00	.00	.00	17.41	.00
*	2.000	20.30	5126.36	.00	1.61	.00	12.21	215.00
*	3.000	20.30	5128.09	.00	1.73	.00	10.87	280.00
	4.000	20.30	5131.09	.00	3.00	.00	10.88	270.00
	5.000	20.30	5133.29	.00	2.20	.00	15.12	230.00
*	6.000	20.30	5134.37	.00	1.08	.00	7.00	70.00

SUMMARY OF ERRORS AND SPECIAL NOTES

WARNING SECNO= 2.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

WARNING SECNO= 3.000 PROFILE= 1 CONVEYANCE CHANGE OUTSIDE ACCEPTABLE RANGE

CAUTION SECNO= 6.000 PROFILE= 1 CRITICAL DEPTH ASSUMED
CAUTION SECNO= 6.000 PROFILE= 1 MINIMUM SPECIFIC ENERGY

CALCULATIONS

Volcano Bosiless Park

PROJECT NAME Final Grading and Drainage Plan **JOB NO.** 5016

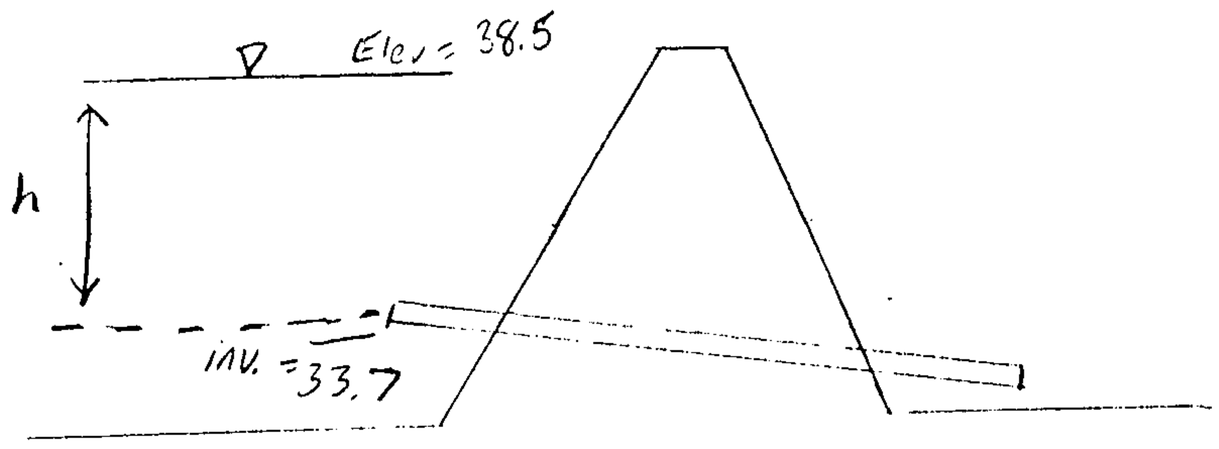
SUBJECT Pond Pipe Size (Check for sufficient size for Orifice Eqn)

BY SRL **CHECKED BY** _____ **DATE** 5/12/95 **PAGE** 1 **OF** 3

Given: $Q_{max} = 5.7 cfs$

$C \doteq 0.6$

$g = 32.2 ft/s^2$



Find: Q_{max} of 10" pipe

Soln:

$$Q = CA\sqrt{2(g)h}$$

$\frac{10}{12} = 0.833'$

$\frac{1}{2}\ 0.833 = 0.417$

$h = 38.5 - (33.7 + 0.417)$

$h = 4.383$

$A = \pi r^2 = \pi (0.417)^2 = 0.545$

$Q_{max} = 0.6(0.545)\sqrt{2(32.2)(4.83)}$

$Q_{max} = 5.77$

∴ 5.77 is only slightly greater than 5.7 thus try in rating curve, with pond routing, before trying smaller pipe.

Volcano Business Park

PROJECT NAME Final Grading and Drainage Plan JOB NO. 5016

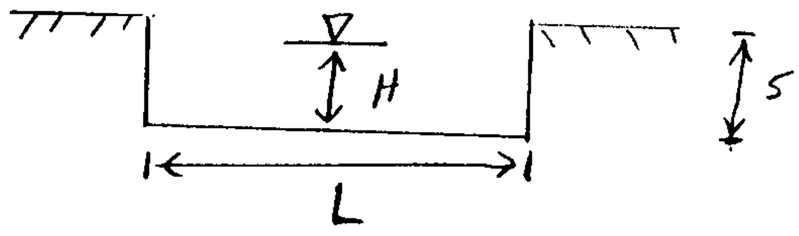
SUBJECT Pond Emergency Overflow Weir Calculation

BY SRL CHECKED BY _____ DATE 5/12/95 PAGE 2 OF 3

Given: $C = 2.8$

$Q \approx 13$ cfs

$L = 10$ ft



Find: Solve for H then find allowable S

Soln:

$$Q = 2.8 L H^{\frac{3}{2}}$$

$$H = \sqrt[\frac{3}{2}]{\frac{Q}{2.8L}}$$

$$H = \sqrt[\frac{3}{2}]{\frac{13}{2.8(10)}}$$

$$H = 0.5995 \approx 0.6'$$

$\therefore$ use $L = 10'$ and $S = H = 0.6'$

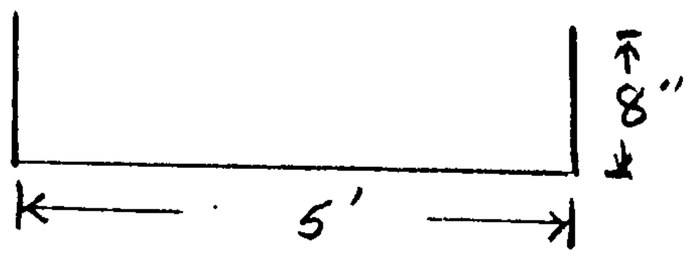
PROJECT NAME Volcano Business Park Final Grading and Drainage Plan JOB NO. 5016

SUBJECT Capacity of Emergency Overflow at Bottom

BY SRL CHECKED BY _____ DATE 6/14/95 PAGE 3 OF 3

Given:

$$Q = \frac{1.49}{n} A R^{\frac{2}{3}} S^{\frac{1}{2}}$$



$$R = \frac{A}{WP} = \frac{(.67)(5)}{(5+(.67)(2))} = 0.528 \qquad A = (.67)(5) = 3.35 ft^2$$

$S = 0.50$

$n = .017$

Find: Capacity of Bottom of Emergency Overflow

Soln: $Q = \frac{1.49}{(.017)} (3.35)(0.528)^{\frac{2}{3}} (0.50)^{\frac{1}{2}}$

$Q = 135.63 cfs$

From The AHYMO Calculation $Q_{max} = 12.28 cfs$

∴ The Bottom is more than sufficient